

St. John Hospital & Medical Center

Moross Educational Department A/V Upgrade

Project # FJ-17-5309

Project Contacts
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Owner's Manuals

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PROJECT COMPLETION & WARRANTY COMMENCEMENT

May 31, 2018	**SoundCom Project #**	**FJ-17-5309**

Client	Project
Ascension Health – St. John Providence 28000 Dequindre Road Livonia, MI 48152	**St. John Hospital & Medical Center** **Moross Educational Department A/V Upgrade** 22101 Moross Road Detroit, MI 48236

Project Completion

SoundCom has been serving clients across the region for over 40 years and we appreciate the opportunity to work on this project with you. As part of our closeout process, this document serves as SoundCom's Warranty letter documenting our industry leading warranty for this project. This document is intended to supplement any specified warranty requirements. Some projects may have more stringent / different warranty polices specified in the contract documents, in these cases only the specified contract language shall supersede this document.

Warranty Commencement

SoundCom has provided a twelve (12) month warranty on all SoundCom provided and installed systems including Audio Visual Furniture International, Biamp, Cisco, Crestron, Crown, Elmo, Epson, LG, Middle Atlantic, Panasonic, Polycom, Samsung, and Shure.

Warranty Start Date:	April 1, 2018
Warranty Expiration Date:	April 1, 2019

Limited Warranty

SoundCom warrants to Customer that its installation of Products will be free from defects in materials and workmanship under normal authorized use consistent with the technical hardware specifications of the Products for a period of twelve (12) months from date of substantial completion.

In the case of phased or segmented installations, the warranty period will be executed upon date of completion of each phase or segment regardless of when the overall project is completed. All Rauland-Borg (Rauland) manufactured equipment and parts supplied and installed by SoundCom carry a five (5) year parts warranty, exclusive of labor, effective upon date of substantial completion. In the case of phased or segmented installations, the warranty period will be executed upon date of completion of each phase or segment regardless of when the overall project is completed. This warranty covers Rauland manufactured core components including control/switching equipment, power supplies, patient stations, sub-stations, and nurse consoles. All Rauland Software products carry a one (1) year warranty effective upon date of substantial completion. In the case of phased or segmented installations, the warranty period will be executed upon date of completion of each phase or segment regardless of when the overall project is completed.

This expressed twelve-month warranty is extended by SoundCom to the Customer and is not transferrable or assignable to any other party.

If any such Product proves defective under the foregoing warranty during the Product Warranty Period, SoundCom, at its option, will either (i) repair the defective Product without charge for parts and labor, or (ii) provide a replacement in exchange for the defective product. Replacement Products, parts and

components may include reconditioned and/or materials in a like-new condition.

SoundCom assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an authorized agent of SoundCom.

Warranty Exclusions

SoundCom will not be liable for any ancillary equipment not furnished by or installed by SoundCom which is attached to or used in connection with SoundCom provided and/or installed Products, and such equipment is expressly excluded from coverage under this warranty.

This warranty does not extend to any defect, failure or damage caused by (i) use of the Products in a manner inconsistent with the Product instructions; (ii) use of non-SoundCom furnished equipment, software, or facilities with Products; (iii) failure to follow installation, operation, maintenance or care instructions; (iv) failure to permit SoundCom timely access, remote or otherwise, to Products; (v) failure to implemental new Updates to Software to the extent such updates are made available to Customer; or (vi) virus or malware that comes into contact with the Product after installation date. SoundCom shall not be obligated in any event, to reimburse Customer for service provided by personnel other than SoundCom representatives or to furnish service under the applicable warranty: (a) to repair damage resulting from attempts by personnel other than SoundCom representatives to install, repair, or service the Product; (b) to repair damage resulting from improper use or connection to incompatible equipment; or (c) to service a Product that has been modified or integrated with other products without SoundCom's prior written approval. It is expressly understood and agreed that the Products will be maintained at operational condition, taking into account its age and normal wear and tear and nothing herein obligates SoundCom to maintain the Products in new or like-new condition.

It is expressly understood that damage or defects as a result from Product use other than its normal customary manner are excluded. Damage or defects arising as a consequence of disasters including but not limited to acts of nature, wars, earthquakes, storms, fires, floods, destruction, explosions, riots, strikes, lock-outs, neglect, water, power surges/spike/loss or any other occurrences due to external influences such as improper power supply, improper storage, air conditioning, or other damages are excluded.

Products which have had the serial number altered and/or removed and/or made illegible are excluded from warranty coverage.

Consumable items such as batteries and projection lamps are not covered under this warranty.

System Failure Classifications

Severity Level	Description	On-Site Response Time
Level I Critical	**Catastrophic or Total System Failure** System is in a complete non-functional state	Within one (1) business day during normal business hours.
Level II Minor	**Erratic, sporadic system performance.** System is still functional, but minor problems exists.	Within two (2) business days during normal business hours.

Level III Routine	**Routine system maintenance or fixes.** System is generally functional, however minor programming or firmware updates may be needed to resolve a system issue.	Within three (3) business days during normal business hours.

Customer Service

In order to obtain service under this Standard Limited Warranty, Customer must notify SoundCom of the alleged defect before the expiration of the warranty period by contacting the SoundCom Service Department during normal business hours. Upon notification, SoundCom will exercise reasonable commercial efforts to confirm the alleged defect and to determine whether the defect is a result of hardware failure. If defect is confirmed, SoundCom shall execute repair or replacement in a reasonable manner at no charge to the customer. If, however, SoundCom determines the allegedly defective Product is functional and in compliance with the technical specifications of the Product, then SoundCom reserves the right to charge the customer for problem diagnostics at SoundCom's then current, prevailing rates and all shipping charges, duties, taxes, travel and expenses.

While our service department operates 24/7/365, our standard service department business hours are, Monday through Friday (excluding holidays) from 8:00 AM to 5:00 PM EST.

Customers placing service calls during normal business hours will receive a phone response immediately or within two (2) hours.

Customers placing after-hours service calls will be connected with an answering service who will contact an available on-call technician. If classified as a Level I – Critical service disruption, the technician will call-back within two (2) hours and be on-site within four (4) hours*. Unless specifically requested, Level II and Level III classified service disruptions placed during after-hours periods will be responded to the next business day.

After-hours emergency service is for Level 1 – Critical issues specific to life safety only. Unless specifically outlined in a SoundCom Performance Maintenance Agreement or project specification, after-hours emergency service is typically limited to healthcare facilities with life-safety related systems.

To obtain warranty service, contact SoundCom's Service Department at +1 (888) 422-4349 and be prepared to provide the following information:

- Name
- On-Site Contact Name (if Different)
- Facility Name & Location
- Phone Number
- System/Equipment Issue
- Floor or Room Location
- Hours of Availability
- SoundCom Project# (If Available)

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PDX21 Executive Podium

AUDIO VISUAL FURNITURE International





Dual Wedge/Pod Configuration Shown

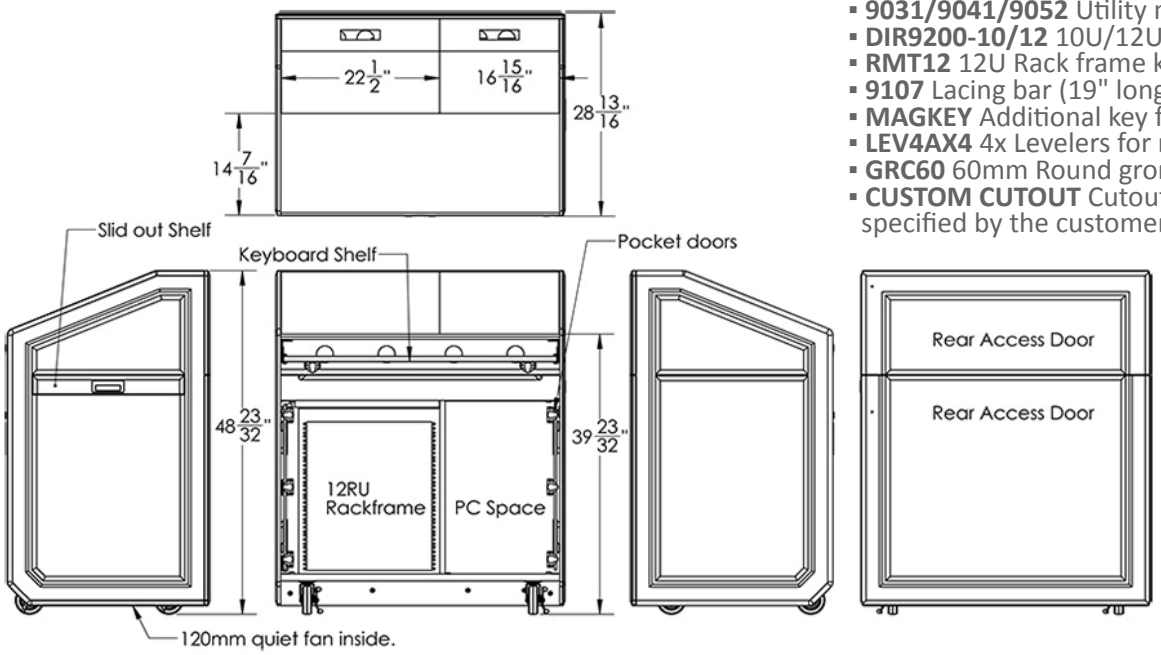
The roll-about multimedia podiums are the ideal solution for distance education, electronic classrooms and corporate training sites.

Standard Features

- Highly resistant thermowrap surf(x) surface
- Customizable electronic pods with multiple configuration options to suit your interface requirements
- 2 rear doors with innovative hidden locks for easy access to equipment from audience side as well as a locking keyboard door
- Interior space with 12 rack units (10-32 screws), tower PC compartment
- Hide away locking pocket front doors
- Slide out side shelf
- Quiet cooling fan
- 4" heavy duty casters (2 locking)
- Ships assembled

Options

- **C900S** Single adjustable monitor arm
- **PLM1022** 10" - 24" Monitor mount
- **MM1232** 12" - 32" Monitor mount
- **MCB1925** 19" - 25" Monitor/camera bracket
- **FM3** Count down timer/clock
- **MIC-18** MX418C Shure Gooseneck microphone
- **LIGHT-18** Littlite Gooseneck
- **PB** Six outlet power bar with 10 ft. cord
- **PC-PATCH** 2x 110AC, RJ45, Phone, 2xUSB
- **SF-PB3** Surface mounted 3-outlet 120V power bar
- **CUB3** Round cable well
- **CUB4** Black-B/Silver-S Power Panel
- **CUB5** Round cable well (Black or silver)
- **CUB8** Table top cable well
- **CHGQIW** Wireless charging station white. Only on flat cutout
- **CHGQI-DNGL** Dongle lightning, 30-pin, Micro-USB. Requires CHGQIW
- **9031/9041/9052** Utility metal shelves/drawer (Check website)
- **DIR9200-10/12** 10U/12U Rack module
- **RMT12** 12U Rack frame kit (Rear)
- **9107** Lacing bar (19" long)
- **MAGKEY** Additional key for hidden locks
- **LEV4AX4** 4x Levelers for non-mobile applications
- **GRC60** 60mm Round grommet. Black-B, white-W & grey-G
- **CUSTOM CUTOUT** Cutouts for electronics or other items specified by the customer



Specifications

Model: PDX21
Width: 41”
Depth: 30”
Height: 48.5”

Finishes



Other finishes are available. Check website.

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BIAMP®

TesiraFORTÉ

Fixed I/O Server Devices

Operation Manual

April 2014

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IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this product near water.

6) Clean only with dry cloth.

7) Do not block ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not install near any heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong.

The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the product.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with equipment rack, cart, stand or table designed to provide adequate mechanical strength, heat dissipation and securement to the building structure.



When a cart is used, use caution when moving the cart and product combination to avoid injury from tip-over.

13) Unplug this product during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.

Explanation of Graphical Symbols:



Lightning Bolt: Hazardous Live voltages present when this unit is in operation. Do not touch terminals marked with this symbol while the unit is connected to live power.



Exclamation Point: Replace components (i.e. fuses) only with the values specified by the manufacturer. Failure to do so will compromise safe operation of this unit



Hazardous Moving Fan Blades: Remove power before servicing and keep away from moving fan blades.

WARNING - To reduce the risk of fire or electric shock, do not expose these products to rain or moisture. These products must not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on these products.

WARNING – 100 Volt Speaker terminals marked with the symbol ⚠ are Hazardous Live. External wiring connected to these terminals requires installation by a Skilled or Instructed Person.

WARNING – MAINS Powered Products employ Safety Grounding and must be connected to a MAINS socket that is properly grounded to provide a protective earthing connection.

Disconnect Device - The MAINS plug is used to disconnect MAINS power and must remain readily operable.

CAUTION – When POTS Telephone Interface options are provided, connections to the telecom circuits of this device must be made by qualified, trained personnel. To reduce the risk of fire, use only No. 26 AWG solid copper wire for telecom circuit connections.

Intended for Installation and Service by Skilled Personnel Only:

CAUTION – To reduce the Risk of Electric Shock, Installation and Service of Biamp Products should be conducted only by Skilled Persons who are Biamp Qualified Audio Installation Professionals.

Do not perform any servicing other than that contained in the Operating Instructions unless you are a Skilled Person qualified to do so.

Skilled Persons must disconnect AC MAINS Power before opening product.

CAUTION - The Installation steps for 'Auxiliary Power' are for use by Skilled Personnel only and must comply with all local codes.

- National Electrical Code, ANSI/NFPA 70 for United States.
- Canadian Electrical Code, Part 1, CSA C22.1, Sections 2-128, 12-010(3) and 12-100 for Canada.

Wall Mounting Instructions – Wall mounted products must be securely fastened to drywall or similar surface using a minimum of 4 wood screws (2 screws for product with only two mounting holes). Alternate fasteners which may be used include drywall anchors, self-tapping sheet metal screws located in metal studs or wood screws extending a minimum of ½ inch into wood studs.



The TesiraFORTÉ products are server-class devices that are designed to operate as standalone processing devices, with Tesira expanders and controllers, or as part of a full set of Tesira devices. All TesiraFORTÉ models feature 12 analog mic/line level inputs and 8 analog mic/line level outputs in a fixed configuration. All models also include configurable USB audio, 4 GPIO connections, RS-232 serial port, Ethernet control port and an internal power supply with a standard IEC three-conductor removable power cord. The front panel of each TesiraFORTÉ server features an OLED display for system and unit information including device IP and MAC addresses. The display is navigated with capacitive touch buttons.

The TesiraFORTÉ line can be used as a standalone device or can be combined with other TesiraFORTÉ devices and Tesira servers, expanders and controllers.

The TesiraFORTÉ line is separated into AVB-equipped and non-AVB equipped devices. The four models with AVB (Audio Video Bridging) have an RJ-45 Ethernet AVB connector for connecting with other Tesira audio devices through the use of AVB switches. The TesiraFORTÉ servers have a capacity of 128 channels of audio in and 128 channels of audio out over AVB.

The non-AVB TesiraFORTÉ servers have the same features and processing functionality as the AVB-equipped servers, but without the ability to make a digital audio connection to other Tesira audio devices.

Benefits

Allows integrators to choose which model works best for the installation environment.

- Application-specific models make system design, configuration, and installation easier and faster.
- Included default configuration file allows for plug-and-play usage.
- Highly scalable and cost-effective solution that can grow over time with the needs of the customer.
- SpeechSense™ technology enhances speech processing and system behavior.
- Sona™ Acoustic Echo Cancellation (AEC) technology to enhance speech processing (CI, TI and VI models only).
- Integrates directly with soft codecs and other USB audio hosts with support for USB Audio Class 1.0.

TesiraFORTÉ models are available in four application-optimized configurations. They share a number of common features:

Common Features

- 128 x 128 channels of AVB (AVB models only)
- Gigabit Ethernet port
- Up to 8 channels of configurable USB audio
- RS-232 serial port
- 4 General Purpose Inputs/Outputs (GPIO)
- OLED display with capacitive-touch navigation
- Rack-mountable (1RU)
- Internal universal power supply

AVB AI and AI

TesiraFORTÉ AVB AI and TesiraFORTÉ AI: Standard audio processing applications

- 12 mic/line level inputs
- 8 mic/line level outputs

AVB CI and CI

TesiraFORTÉ AVB CI and TesiraFORTÉ CI: External codec conferencing applications

- 12 mic/line level inputs with Sona™ AEC on all inputs
- 8 mic/line level outputs

AVB TI and TI

TesiraFORTÉ AVB TI and TesiraFORTÉ TI: Telephone conferencing applications

- 12 mic/line level inputs with Sona™ AEC on all inputs
- 8 mic/line level outputs
- Telephone interface (RJ-11 connector)

AVB VI and VI

TesiraFORTÉ AVB VI and TesiraFORTÉ VI: Conferencing applications with Voice over IP (VoIP)

- 12 mic/line level inputs with Sona AEC on all inputs
- 8 mic/line level outputs
- VoIP interface (RJ-45 connector)



TesiraFORTÉ AVB AI model shown

1 *– Ventilation fan cover* ***2*** *– Display navigation buttons* ***3*** *– LED status indicators* ***4*** *– OLED display*

Ventilation

Each device has a perforated cover to allow cool air into the chassis. A variable speed temperature controlled fan allows air into the front of the unit and out of the rear left side. Ensure that nothing obstructs the front or side of the unit.

Display Navigation Buttons

Capacitive-touch buttons allow navigation through the OLED display menu to view and configure device and networking information, as well as see system-wide faults. Navigating the display is accomplished by touch-sensitive UP and DOWN and SELECT buttons.

LED Status Indicators

Five multi-color LEDs on the front panel of the device provide information about the status of the device and the greater Tesira system.

- Power – Reports power of the host device and Front Panel Display.
- Status – Reports the status of host device.
- Activity – Reports the activity of host device within the greater system.
- Alarm – Reports abnormal conditions local to the host device.
- AIS (Alarm Indication Signal) – Reports abnormal conditions within the greater system.

LED	Off	Green	Yellow	Red
Power	Unit is not powered	Unit is powered	Not applicable	Not applicable
Alarm	No fault is active in the device	Not applicable	Minor fault is active in the device	Major fault is active in the device
Activity	Not applicable	The host device is an active part of an active system	Not applicable	The host device is part of an inactive system. (Audio is stopped.)
Status	Not applicable	Device has received its configuration and is ready to participate in the system	Device is ready and waiting to receive a configuration	Device is not ready to receive its configuration
AIS (Alarm In System)	No fault is active in any device in the system	Not applicable	Minor fault is active in a device in the system	Major fault is active in a device in the system

OLED Display

The OLED display provides information about the server device as well as the Tesira system that is connected to the server.
The OLED display is read-only.

Home Screen

The home screen is the default screen that shows the overview of the device. If the text is too long to fit on the entire display, it will scroll to the left. Menus at the bottom allow other selections. By default the main menu icon will be selected.

Some menu icons double as status indicators. They change depending on the status of the device. The fault status icon only appears if there is an active fault in the system.

After a period of inactivity, the Front Panel Display will transition back to this home screen.

1. Device description

2. Host Name and IP address

3. Main Menu

4. Network Menu / Status



To open any of the menus, use the UP and DOWN buttons to highlight the menu icon desired, and press the SELECT button.

Menu Screen

A menu screen containing a list of items that is used to navigate to other menus is accessible from the home screen. On the right are icons that provide quick navigation to other screens. Pressing the select button on an item will transition to the screen that displays that information. A scroll indicator at the left shows if there is more information to show by scrolling down.

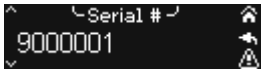
Device Information

The device information screen shows the following information:

- Device description
- Host name
- Serial number
- Firmware revision







System Information

The system information screen shows the following information:

- Device audio state (on/off)
- System description

Network Information

The network information screen shows the following information

- Host name
- IP address
- Subnet mask
- Gateway

Settings

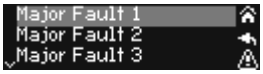
The setting operations include the following:

-Change brightness

-Change timeouts

Faults

If a fault is present in the system an exclamation icon is shown on the lower right of the screen. Each unique fault in the system will be listed.



Edit Timeouts

Dim Mode

The display has a screensaver mode where it will dim the display brightness. Pressing any button will bring the screen back to the original brightness and respond to the control movement.

Sleep Mode

After the display timeout is reached the display will go blank. The device will still have power in this state even though the display appears blank.

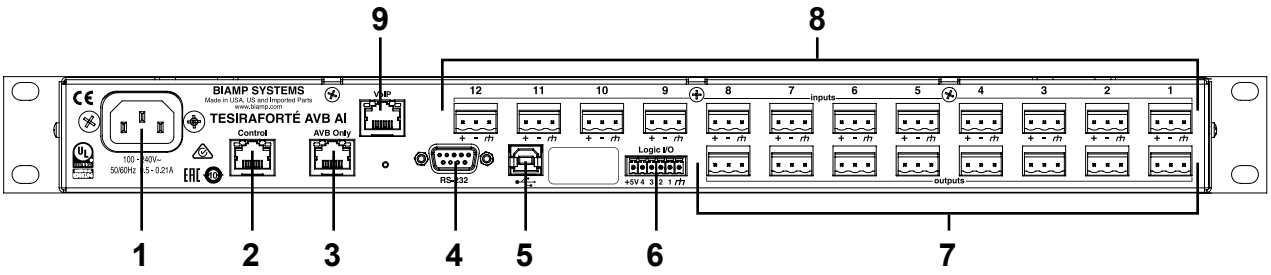
Localization

All menus and error messages are displayed in English by default. Descriptive icons are used to avoid the need for messages in specific languages. Text entered (e.g. Device description) will be displayed in the language as entered in the software.

The following alphabets are supported:

- Latin-1 (ISO/IEC 8859-1) and Latin-2 (ISO/IEC 8859-2)
- Cyrillic (Russian alphabet only)
- Simplified Chinese
- Japanese – Hiragana, Katakana, Kanji
- Thai

TesiraFORTÉ AVB AI REAR PANEL



TesiraFORTÉ AVB AI model shown

1. AC power inlet

2. Gigabit Ethernet control port (RJ-45)

3. AVB port (RJ-45) – AVB models only

4. RS-232 serial port

5. USB-B port

6. GPIO connections

7. Mic/line level output balanced analog connections

8. Mic/line level input balanced analog connections.
- AVB AI and AI – Mic/Line
- AVB CI, TI, VI and CI, TI, VI – Mic/Line with Sona AEC

9. Telephony port
- AVB AI, CI and AI, CI – Not available
- AVB TI and TI – 1 analog telephone line (RJ-11)
- AVB VI and VI – 2 VoIP telephone lines (RJ-45)

AC Power Inlet

IEC connector which will accept AC mains voltage of 100-240VAC @50/60Hz.

Gigabit Ethernet Port

Used to configure the TesiraFORTÉ unit with Tesira and BiampCanvas™ software. Can also be used to receive third-party commands over IP.

AVB Port (AVB models only)

Can send and receive up to 128x128 audio channels to other Tesira audio devices.

RS-232 port

Can be used to receive third party controls or output command strings.

USB- B port

Can be used to connect to a PC or a computer that is USB Audio Class 1 compliant. Four connection methods are supported:

1. Connection to a software based codec where the Tesira device does make use of AEC such as the TesiraFORTÉ CI, TI and VI.

2. Connection to a software based codec which does not use Tesira AEC functions – such as a TesiraFORTÉ AI.

3. Line In/Out mode – where the channels of Line In and Line Out are installed in Microsoft Windows® but do not show up by default.

Prerequisites

Before getting started please

1. **Install Tesira software on a Windows PC.**
   The software must be Tesira version 2.0 or later.
   The most up to date version can be downloaded from the Biamp website here: http://www.biamp.com/products/tesira/downloads.aspx.

2. **Minimum PC requirements:**
   a. Windows® 7 SP1 32-bit or 64-bit
   b. 1280 x 1024 screen resolution (recommended)

3. **Cables required:**
   Connection to the device should be made using either a direct connection or connection via an Ethernet switch.
   - **Direct Connection** - 1x Cat5E cable to connect from the PC to the TesiraFORTÉ Control Port
   - **Via a Switch** - 2x Cat5E cables and 1 Ethernet switch

Connecting to the TesiraFORTÉ system

1. **Connect the PC and TesiraFORTÉ to the network.**
   Connect a Cat5E cable between your PC and the TesiraFORTÉ device.
   - Direct connection: Attach an Ethernet cable from the PC's network card to the TesiraFORTÉ Ethernet port. The TesiraFORTÉ Ethernet port is autosensing so a straight or crossover cable can be used.
   - Connecting via Ethernet switch: Attach an Ethernet cable from the network card to a 100/1000 Base-T Ethernet switch. The TesiraFORTÉ Ethernet port is autosensing so a straight or crossover cable can be used.

2. **Power up TesiraFORTÉ devices:**
   Connect the supplied power cord to a grounded AC mains voltage of 100-240VAC @50/60Hz. Connect the other end of the power cord to the power entrance located on the rear of the TesiraFORTÉ unit. Note the status of the front panel LED's. Under normal conditions, the power, Activity and Status LEDS's will remain green once power-up sequence has completed.

3. **Assign an IP address to the PC.**
   The PC must have a unique IP address in the same subnet as the TesiraFORTÉ device. A TesiraFORTÉ device is configured from the factory with DHCP or Zero Conf (Link Local) address. If you wish to verify your PC network interface is set correctly, please review the ***Setting an IP address section*.**

4. **Configure the software to use the correct Network Interface.**
   Tesira software should automatically discover the available network interfaces and enable them. If you wish to verify the network interfaces you are using, open the Tesira software and select ***Tools > Options > Application settings > Network > Device Discovery***. Selecting **Interfaces** will list the available connections. These can be enabled or disabled individually. Confirm the expected Network interface is selected and IP addressing is in the correct range.

5. **Connect to the network with Tesira software.**
   Open the Tesira software. Connect to the network by going to ***System > Network > Connect to System***. The System Connect dialog will appear. Select the required device listed in the System List and press ***Connect to System***.

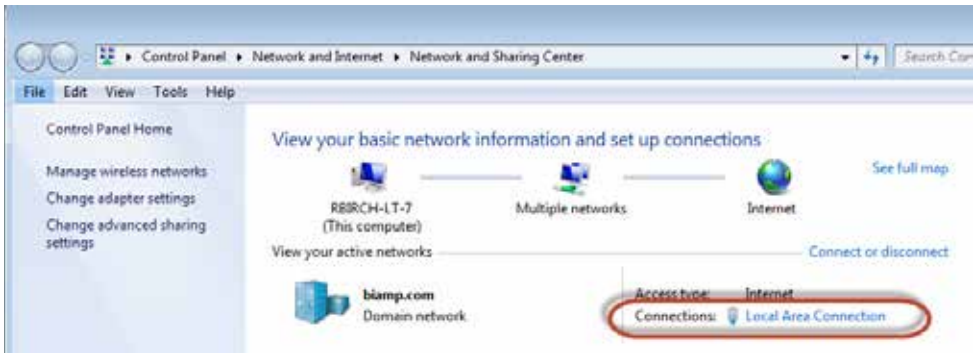
   The software will connect and allow real time user control. When the required changes have been made, disconnect the PC from the Tesira system by going to ***System > Network > Disconnect from system***.

Setting an IP address

It may be a requirement to configure your PC or TesiraFORTÉ IP address. Please review the following section.

Assigning your computer's IP address

Go to ***Control Panel > Network and Sharing Center***. Click on Local Area Connection.



The Local Area Connection Status Dialog will open. Select Properties.



The Local Area Connection Properties Dialog will open. Double-Click Internet Protocol Version 4 (TCP/IPv4).



The Internet Protocol Version 4 (TCP/IPv4) Properties will open.
Update the IP address and Subnet mask to 'Obtain an IP address automatically'



Click OK when complete. Click OK on the Local Area Connection properties dialog to confirm the changes. The PC may take up to one minute to resolve an IP address. If a DHCP server is available the PC will resolve to an address served to it. If no DHCP server is available the PC will resolve to a link local address in the 169.254.xxx.xxx range with a subnet mask of 255.255.0.0.

Auto assignment of IP Address using DHCP
All TesiraFORTÉ units ship from the factory configured for DHCP or Zero Conf (Link Local) address. If a DHCP server is available the PC will resolve to an address served to it. If no DHCP server is available the PC will resolve to a link local address in the 169.254.xxx.xxx range with a subnet of 255.255.0.0.

When using more than one device in a system, each device must have a unique IP address. Tesira device IP addresses must be different from any IP address that will be used on the same network segment. Please note that adjusting a TesiraFORTÉ IP address will stop the system audio.

Manually assigning an IP address
To make changes to the TesiraFORTÉ IP address you must first be disconnected from the system.

- In the Tesira software, go to ***System > Network > Perform Device Maintenance***.
- Select the device in the ***Device List***. Select ***Network Settings***.
- Update the IP Address, Subnet mask and Gateway values to the new settings.
- Click OK when complete.
- Close Device Maintenance when complete.
- Move the PC IP address to reside on the same subnet as the Tesira Device.
- Re-start the system audio as needed.

TesiraFORTÉ AVB AI and TesiraFORTÉ AI Specifications

Frequency Response: 20Hz to 20kHz ,+4dBu output	+0.25dB/-0.5dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (22Hz to 22kHz):		**Crosstalk, channel to channel, 1kHz:**	
0dB gain, +4dBu input	< 0.006%	0dB gain, +4dBu input	< -85dB
54dB gain, -50dBu input	< 0.040%	54dB gain, -50dBu input	< -75dB
EIN (no weighting, 22Hz to 22kHz):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (in presence of signal): 22Hz to 22kHz, 0dB gain	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** (100-240VAC 50/60Hz):	< 35W
Output Impedance (balanced):	207Ω	**USB:**	
Maximum Input:	+24dBu	**Bit Depth:**	16- or 24-bit
Maximum Output (selectable):	+24dBu, +18dBu, +12dBu, +6dBu , 0dBu, -31dBu	**Number of Channels:**	up to 8
Input Gain Range: (6dB steps):	0dB to 66dB	**Sample Rate:**	48kHz
Overall Dimensions/Weight:	Height: 1.75 inches (44 mm) Width: 19.0 inches (483 mm) Depth: 10.5 inches (267 mm) Weight: 8 lbs (3.63 kg)	**Compliance:**	FCC Part 15B (USA) Industry Canada CS-03 (Canada) CE marked (Europe) UL and C-UL listed (USA & Canada) RCM (Australia) EAC (Eurasian Customs Union) RoHS Directive (Europe)

TesiraFORTÉ AVB CI and TesiraFORTÉ CI Specifications

Frequency Response: 20Hz to 20kHz ,+4dBu output	+0.25dB/-0.5dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (22Hz to 22kHz):		**Crosstalk, channel to channel, 1kHz:**	
0dB gain, +4dBu input	< 0.006%	0dB gain, +4dBu input	< -85dB
54dB gain, -50dBu input	< 0.040%	54dB gain, -50dBu input	< -75dB
EIN (no weighting, 22Hz to 22kHz):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (in presence of signal): 22Hz to 22kHz, 0dB gain	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** (100-240VAC 50/60Hz):	< 35W
Output Impedance (balanced):	207Ω	**USB:**	
Maximum Input:	+24dBu	**Bit Depth:**	16- or 24-bit
Maximum Output (selectable):	+24dBu, +18dBu, +12dBu, +6dBu , 0dBu, -31dBu	**Number of Channels:**	up to 8
Input Gain Range: (6dB steps):	0dB to 66dB	**Sample Rate:**	48kHz
Overall Dimensions/Weight:	Height: 1.75 inches (44 mm) Width: 19.0 inches (483 mm) Depth: 10.5 inches (267 mm) Weight: 8 lbs (3.63 kg)	**Compliance:**	FCC Part 15B (USA) Industry Canada CS-03 (Canada) CE marked (Europe) UL and C-UL listed (USA & Canada) RCM (Australia) EAC (Eurasian Customs Union) RoHS Directive (Europe)

TesiraFORTÉ AVB TI and TesiraFORTÉ TI Specifications

Frequency Response: 20Hz to 20kHz ,+4dBu output	+0.25dB/-0.5dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (22Hz to 22kHz):		**Crosstalk, channel to channel, 1kHz:**	
0dB gain, +4dBu input	< 0.006%	0dB gain, +4dBu input	< -85dB
54dB gain, -50dBu input	< 0.040%	54dB gain, -50dBu input	< -75dB
EIN (no weighting, 22Hz to 22kHz):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (in presence of signal): 22Hz to 22kHz, 0dB gain	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** (100-240VAC 50/60Hz):	< 35W
Output Impedance (balanced):	207Ω	**USB:**	
Maximum Input:	+24dBu	**Bit Depth:**	16- or 24-bit
Maximum Output (selectable):	+24dBu, +18dBu, +12dBu, +6dBu , 0dBu, -31dBu	**Number of Channels:**	up to 8
Input Gain Range: (6dB steps):	0dB to 66dB	**Sample Rate:**	48kHz
Overall Dimensions/Weight:	Height: 1.75 inches (44 mm) Width: 19.0 inches (483 mm) Depth: 10.5 inches (267 mm) Weight: 8 lbs (3.63 kg)	**Compliance:**	FCC Part 15B (USA) FCC Part 68 (USA) Industry Canada CS-03 (Canada) CE marked (Europe) UL and C-UL listed (USA & Canada) RCM (Australia) EAC (Eurasian Customs Union) RoHS Directive (Europe)

TesiraFORTÉ AVB VI and TesiraFORTÉ VI Specifications

Frequency Response: 20Hz to 20kHz ,+4dBu output	+0.25dB/-0.5dB	**Phantom Power:**	+48 VDC (7mA/input)
THD+N (22Hz to 22kHz):		**Crosstalk, channel to channel, 1kHz:**	
0dB gain, +4dBu input	< 0.006%	0dB gain, +4dBu input	< -85dB
54dB gain, -50dBu input	< 0.040%	54dB gain, -50dBu input	< -75dB
EIN (no weighting, 22Hz to 22kHz):	< -125dBu	**Sampling Rate:**	48kHz
Dynamic Range (in presence of signal): 22Hz to 22kHz, 0dB gain	> 108dB	**A/D – D/A Converters:**	24-bit
Input Impedance (balanced):	8kΩ	**Power Consumption** (100-240VAC 50/60Hz):	< 35W
Output Impedance (balanced):	207Ω	**USB:**	
Maximum Input:	+24dBu	**Bit Depth:**	16- or 24-bit
Maximum Output (selectable):	+24dBu, +18dBu, +12dBu, +6dBu , 0dBu, -31dBu	**Number of Channels:**	up to 8
Input Gain Range: (6dB steps):	0dB to 66dB	**Sample Rate:**	48kHz
Overall Dimensions/Weight:	Height: 1.75 inches (44 mm) Width: 19.0 inches (483 mm) Depth: 10.5 inches (267 mm) Weight: 8 lbs (3.63 kg)	**Compliance:**	FCC Part 15B (USA) Industry Canada CS-03 (Canada) CE marked (Europe) UL and C-UL listed (USA & Canada) RCM (Australia) EAC (Eurasian Customs Union) RoHS Directive (Europe)

WARRANTY

BIAMP SYSTEMS IS PLEASED TO EXTEND THE FOLLOWING 5-YEAR LIMITED WARRANTY TO THE ORIGINAL PURCHASER OF THE PROFESSIONAL SOUND EQUIPMENT DESCRIBED IN THIS MANUAL

1. Biamp Systems warrants to the original purchaser of new products that the product will be free from defects in material and workmanship for a period of 5 YEARS from the date of purchase from an authorized Biamp Systems dealer, subject to the terms and conditions set forth below.

2. If you notify Biamp Systems during the warranty period that a Biamp Systems product fails to comply with the warranty, Biamp Systems will repair or replace, at Biamp Systems' option, the nonconforming product. As a condition to receiving the benefits of this warranty, you must provide Biamp Systems with documentation that establishes that you were the original purchaser of the products. Such evidence may consist of your sales receipt from an authorized Biamp Systems dealer. Transportation and insurance charges to and from the Biamp Systems factory for warranty service shall be your responsibility.

3. This warranty will be VOID if the serial number has been removed or defaced; or if the product has been altered, subjected to damage, abuse or rental usage, repaired by any person not authorized by Biamp Systems to make repairs; or installed in any manner that does not comply with Biamp Systems' recommendations.

4. Electro-mechanical fans, electrolytic capacitors, gooseneck microphones, cords connecting handheld microphones, hard-drives, displays, and normal wear and tear of items such as paint, knobs, handles, keypads and covers are not covered under this warranty. All server-based devices are warranted for 3 years only.

5. This warranty is in lieu of all other warranties, expressed or implied. Biamp Systems disclaims all other warranties, expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose.

6. The remedies set forth herein shall be the purchaser's sole and exclusive remedies with respect to any defective product.

7. No agent, employee, distributor or dealer of Biamp Systems is authorized to modify this warranty or to make additional warranties on behalf of Biamp Systems. Statements, representations or warranties made by any dealer do not constitute warranties by Biamp Systems. Biamp Systems shall not be responsible or liable for any statement, representation or warranty made by any dealer or other person.

8. No action for breach of this warranty may be commenced more than one year after the expiration of this warranty.

9. Biamp Systems shall not be liable for special, indirect, incidental, or consequential damages, including lost profits or loss of use arising out of the purchase, sale, or use of the products, even if Biamp Systems was advised of the possibility of such damages.

585.0393.90A

FCC COMPLIANCE

FCC Notice - Class A digital device - This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

TELECOM COMPLIANCE

CAUTION – For protection against overvoltage on telecommunication circuits, for example from power line crosses; use minimum No. 26 AWG telecommunication line cord.

Telephone Interface Information - This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the rear panel of this equipment are markings that contain, among other information, telecom product identifier US:6RMBR00BSTC-2. If requested, this number must be provided to the telephone company.

This equipment is designed for modular connection with Universal Service Order Codes (USOC) RJ-11C, RJ-11W, RJ-14C, RJ-14W.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

Ringer Equivalency Number (REN) - The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is 0.0 as indicated by part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g., 00 is a REN of 0.0).

Alarms connected to telephone line - If your facility has specially wired alarm equipment connected to the telephone line, ensure the installation of this US:6RMBR00BSTC-2 does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Automatic Dialer - WHEN PROGRAMMING EMERGENCY NUMBERS AND (OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:

1. Remain on the line and briefly explain to the dispatcher the reason for the call.
2. Perform such activities in the off-peak hours, such as early morning or late evenings.

Electrical Safety Advisory - Telephone companies report that electrical surges, typically lightning transients, are very destructive to customer terminal equipment connected to AC power sources. The use of a surge arrestor on the telephone line is recommended, particularly in areas that are prone to lightning strikes.

Service - This equipment is not user serviceable. If trouble is experienced with this equipment US:6RMBR00BSTC-2, for repair or warranty information, please contact Biamp Systems Corporation, phone number 503.641.7287. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

If this equipment US:6RMBR00BSTC-2 causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Party Lines - Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

New Zealand Telecom Notice

New Zealand Telepermit - The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services

This equipment shall not be set up to make automatic calls to the Telecom '111' Emergency Service

IMPORTANT NOTICE - Under power failure conditions, this telephone may not operate. Please ensure that a separate telephone, not dependent on local power, is available for emergency use.

BIAMP®

DoC FORTE-201401

CE

EC Declaration of Conformity

Biamp Systems Corporation, as manufacturer having sole responsibility, hereby declares that our delivered version the following described product complies with the applicable provisions of the DIRECTIVES below except as noted herein. Any alterations to the product not agreed upon and directed by Biamp Systems Corporation will invalidate this declaration.

Brand Name:	Tesira®
Product Description:	Networked Audio DSP Servers
Product Models:	TESIRAFORTÉ AVB AI, TESIRAFORTÉ AI, TESIRAFORTÉ AVB CI, TESIRAFORTÉ CI, TESIRAFORTÉ AVB TI, TESIRAFORTÉ TI, TESIRAFORTÉ AVB VI, TESIRAFORTÉ VI

Applicable EC Directives:	Applicable Harmonized Standards:	
LVD Directive (2006/95/EC)	Safety	EN 60950-1:2006, + A11:2009, + A1:2010, + A12:2011
EMC Directive (2004/108/EC)	Emissions	EN 55022: 2010, Class A
	Immunity	EN 55024: 2010, Class A
R&TTE Directive (1999/5/EC)	Terminal Equipment (applies to TESIRAFORTÉ AVB TI, TESIRAFORTÉ TI only)	
RoHS Directive (2011/65/EU)	RoHS Recast	

Special Considerations for Product Environment or Compliance:

- Non-Shielded CAT-5 cable is acceptable for all Ethernet based network connections.
- Shielded cabling must be used for analog audio I/O and non-Ethernet control connections.

Technical Documentation File, Location and Contact:

Biamp Systems Corporation 9300 S.W. Gemini Drive Beaverton, OR USA 97008	phone: fax: e-mail:	+503.641.7287 +503.626.0281 compliance@biamp.com

Authorized Representative: Larry Copley, Compliance Engineer



Authorized Signature:

Date and Place Issued: January 2014, Beaverton, Oregon USA

RoHS COMPLIANT

RoHS

This Biamp product, including all attendant cables and accessories supplied by Biamp, meets all requirements of EU Directives 2002/95/EC of January 27, 2003, and 2005/618/EC of August 18, 2005, the EU RoHS Directives. An EU RoHS Materials Content Declaration document may be obtained at www.biamp.com

(This information is presented to comply with the requirements of Chinese law SJ/T11363-2006)

有害物质表 (Hazardous Substances Table)

Biamp Systems Corporation

数字信号处理器 (Digital Signal Processor)

型号 TESIRAFORTÉ AVB AI, TESIRAFORTÉ AI, TESIRAFORTÉ AVB CI, TESIRAFORTÉ CI, TESIRAFORTÉ AVB TI, TESIRAFORTÉ TI, TESIRAFORTÉ AVB VI, TESIRAFORTÉ VI

部件名称 (Part Name)	有毒有害物质或元素 (Substances)					
	Pb 铅	Hg 汞	Cd 镉	Cr+6 六价铬	PBB	PBDE
设备机箱 (Equipment Chassis)	X	O	X	O	O	O
电源线 (Power Cord)	O	O	O	O	O	O
插拔式接线端子 (Plug-in Terminal Blocks)	O	O	O	O	O	O
手册和其他书面文档 (Manual and Paper Documents)	O	O	O	O	O	O
包装箱和所有包装材料 (Box and Packing Materials)	O	O	O	O	O	O

0：表示该部件所有均质材料中的这种有毒有害物质低于 SJ/T11363-2006 的限制要求.

X：表示该部件中至少有一种均质材料所含的这种有毒有害物质高于 SJ/T11363-2006 的限制要求.

在电触头和（或）镀镉所含的均质材料中，镉及其化合物的含量可以超过 0.01%，但欧盟指令 91/338/EEC（根据欧盟指令 76/769/EEC）限制销售和使用某些危险物质和制剂部分中所禁止的用途除外

在以下一种或多种物质所含的均质材料中，铅及其化合物的含量可以超过 0.1%:

1) 电子元器件中玻璃内所含的铅
2) 铅在钢材中是作为一种合金元素，含量可达 0.35%
3) 铅在铝材中是作为一种合金元素，含量可达 0.4%
4) 铅在铜材中是作为一种合金元素，含量可达 4%
5) 高熔点类焊料中的铅（即铅料合金，铅含量超过 85%）
6) 电子陶瓷部件内的铅
7) 由两种以上元素组成的焊料中所含的铅，用于连接针脚和微处理器包装，其中铅的含量超过 80% 但低于 85%
8) 顺应针连接系统内的铅
9) 倒装芯片封装中半导体芯片及载体之间形成可靠连接所用焊料中的



在正常使用情况下，中国环保使用期限为 10 年，条件是：

- 环境温度为 (Ambient Temperature) 0-40C (32-104°F)
- 湿度为 0-95%，无凝结
- 海拔高度为 0-10,000 英尺
- 气流不受阻碍
- 没有水或其他液体进入任何部件
- 电源为 (Power Supply) 100-240 Vac, 50/60 Hz, 0.5 - 0.21 A
- 部件没有损坏（损坏部件应立即修理）
- 由工厂授权人员使用批准的材料进行所有维修

INSTRUCCIONES DE SEGURIDAD IMPORTANTES

1) Lea estas instrucciones.

2) Guarde estas instrucciones.

3) Preste atención a todas las advertencias.

4) Siga todas las instrucciones.

5) No utilice este producto cerca del agua.

6) Limpie solo con un paño seco.

7) No obstruya los orificios de ventilación. Instale el producto según las instrucciones del fabricante.

8) No lo instale cerca de ninguna fuente de calor como radiadores, rejillas de calefacción, estufas u otros productos (incluidos amplificadores) que produzcan calor.

9) No anule el propósito de seguridad del enchufe con conexión a tierra. Un enchufe con conexión a tierra tiene dos clavijas y una tercera punta con conexión a tierra.

La tercera punta se provee para su seguridad. Si el enchufe suministrado no se adapta a su tomacorriente, recurra a un electricista para reemplazar la toma obsoleta.

10) Proteja el cable de alimentación eléctrica para evitar que sea pisado o aplastado, en especial en los enchufes, receptáculos convenientes y el punto donde salen del producto.

11) Solo utilice complementos/accesorios indicados por el fabricante.

12) Utilice solo con el soporte, carro, base o mesa diseñados para proporcionar fuerza mecánica adecuada, disipación del calor y seguridad a la estructura del edificio.



Cuando se utiliza un carro, tenga cuidado al mover la combinación del carro con el producto para evitar lesiones en caso de una caída.

13) Desenchufe este producto durante tormentas eléctricas o si no va a utilizarlo por largos períodos de tiempo.

14) Todas las reparaciones deben ser realizadas por personal calificado. La reparación es necesaria cuando el producto presenta cualquier tipo de daño como, por ejemplo, si se deteriora el cable de alimentación eléctrica o enchufe, si se derraman líquidos o caen objetos dentro del producto, si se expone el producto a la lluvia o humedad, si no funciona normalmente o si se ha caído.

Explicación de los símbolos gráficos:



Rayo: Voltajes activos peligrosos mientras la unidad está en funcionamiento. No toque las terminales marcadas con este símbolo mientras la unidad se encuentre conectada a una salida activa de energía.



Signo de exclamación: Reemplace los componentes (es decir, los fusibles) solo de acuerdo con los valores indicados por el fabricante. De no hacerlo, se pondrá en riesgo el funcionamiento seguro de esta unidad.



Aspas de ventilador en movimiento peligrosas Desenchufe el producto antes de realizar reparaciones y aléjelo de las aspas en movimiento de los ventiladores.

ADVERTENCIA – Para reducir el riesgo de incendio o descarga eléctrica, no exponga estos productos a la lluvia o humedad. Estos productos no deben exponerse a goteos o salpicaduras ni deben posarse sobre ellos objetos que contengan líquidos como, por ejemplo, jarrones.

ADVERTENCIA – Las terminales de altavoces de 100 voltios que aparecen marcadas con el símbolo ⚠ están activas y son peligrosas. La conexión externa de cables a estas terminales requiere la instalación a cargo de una persona calificada o debidamente instruida.

ADVERTENCIA – Los productos con alimentación eléctrica utilizan conexión a tierra de seguridad y deben conectarse a tomacorrientes que funcionen correctamente para brindar una conexión a tierra de protección.

Desconexión del dispositivo – El enchufe de alimentación eléctrica se utiliza para desconectar esta alimentación y deberá poder accionarse fácilmente.

PRECAUCIÓN – Cuando se proporcionan las opciones de interfaz telefónica POTS, las conexiones a los circuitos de telecomunicaciones de este dispositivo deber ser realizadas por personal calificado y entrenado. Para reducir el riesgo de incendio, use solo cables de cobre sólido N.° 26 AWG para las conexiones de los circuitos de telecomunicaciones.

Para la instalación y mantenimiento solo por parte de personal calificado:

PRECAUCIÓN – Para reducir el riesgo de descarga eléctrica, la instalación y el mantenimiento de los productos Biamp deben ser realizados por personas calificados que formen parte de los Profesionales capacitados en la instalación de audio de Biamp.

No realice ninguna reparación que no se encuentre en las Instrucciones de uso, a menos que sea una persona calificada para hacerlo.

Las personas calificadas deben desenchufar la alimentación eléctrica de CA antes de abrir el producto.

PRECAUCIÓN – Los pasos para la instalación de una “energía auxiliar” están dirigidos solo al personal calificado y deben cumplir con todos los códigos locales.

- Código eléctrico nacional: ANSI/NFPA 70 para los Estados Unidos.
- Código eléctrico canadiense: parte 1, CSA C22.1, secciones 2-128, 12-010(3) y 12-100 para Canadá.

Instrucciones para el montaje sobre la pared – Los productos que sean montados sobre la pared deben estar bien ajustados al yeso u otra superficie con el uso de, al menos, 4 tornillos para madera (2 tornillos para los productos con solo dos orificios de montaje). Los enganches alternativos que pueden utilizarse incluyen pernos de anclaje para paredes de yeso, tornillos de metal laminado con rosca cortante los cuales se ubican en montantes de metal o tornillos para madera que se prolongan poco más de 1,5 cm dentro de los montantes de madera.

CONSIGNES DE SÉCURITÉ IMPORTANTES

1) Lisez attentivement les présentes instructions.

2) Conservez les présentes instructions.

3) Prêtez une extrême attention aux avertissements.

4) Respectez toutes les consignes données.

5) N'utilisez pas ce produit à proximité d'eau.

6) Nettoyez uniquement avec un chiffon sec.

7) Ne bouchez pas les ouvertures destinées à la ventilation. Suivez les instructions d'installation du fabricant.

8) Tenez le produit à l'écart des sources de chaleur, comme les radiateurs, les grilles d'air chaud, les cuisinières ou autres produits (dont amplificateurs) qui émettent de la chaleur.

9) Préservez la protection offerte par le branchement de mise à la terre. Le connecteur est reconnaissable par ses deux broches accompagnées d'un contact de mise à la terre.

Ce troisième contact est fourni pour votre sécurité. Si le connecteur fourni ne correspond pas à votre prise, renseignez-vous auprès d'un électricien.

10) Placez le cordon à l'écart des zones de passage et veillez à ce qu'il ne soit pas pincé, en particulier au niveau des prises, des multiprises et de la sortie de l'appareil.

11) Utilisez exclusivement les fixations/accessoires spécifiés par le fabricant.

12) Utilisez uniquement des tables, supports, étagères ou chariots capables de supporter le poids du produit et d'offrir la dissipation de chaleur et la sécurité requises (fixation à la structure du bâtiment).



Si vous placez le produit sur un chariot, déplacez-le avec précaution pour éviter de le renverser.

13) Débranchez le produit pendant les orages ou les périodes d'inutilisation prolongées.

14) Confiez toutes les interventions à un personnel qualifié. Ces interventions peuvent s'avérer nécessaire dans certaines situations : détérioration du produit (connecteur ou cordon d'alimentation endommagé, par exemple), liquide renversé sur le produit, objets tombés dans le produit, exposition du produit à l'humidité ou à la pluie, fonctionnement anormal du produit, chute du produit, etc.

Signification des pictogrammes:



Éclair : tensions dangereuses présentes lorsque l'appareil est en fonctionnement. Ne touchez pas les parties de l'appareil portant ce pictogramme tant qu'il est branché sur une ligne électrique.



Point d'exclamation : remplacez les composants (fusibles, par exemple) uniquement par des composants possédant les caractéristiques spécifiées par le fabricant sous peine d'altérer le bon fonctionnement de l'appareil.



Danger : pales de ventilateur en mouvement. Coupez l'alimentation avant toute intervention et restez à distance des pales en mouvement.

AVERTISSEMENT – Pour limiter les risques d'incendie ou d'électrocution, n'exposez pas ce produit à l'humidité ou à la pluie. Mettez-le à l'abri des projections et écoulements, et veillez à ne placer aucun objet rempli de liquide (vases, par exemple) à proximité.

AVERTISSEMENT – Les bornes des haut-parleurs 100 V comportent le pictogramme ⚠ signalant une tension dangereuse. Toute connexion externe à ces bornes doit être effectuée par un technicien qualifié ou compétent.

AVERTISSEMENT – Le raccordement du produit au secteur doit être réalisé par le biais d'un câble et d'une prise offrant une mise à la terre adéquate.

Débranchement de l'appareil – La prise secteur doit être accessible pour que l'appareil puisse être débranché dès que l'utilisateur souhaite couper l'alimentation.

MISE EN GARDE – En présence d'un service téléphonique traditionnel, les connexions aux circuits de télécommunication de l'appareil doivent être effectuées par un personnel qualifié et compétent. Pour limiter les risques d'incendie, utilisez uniquement des fils de cuivre solides de calibre AWG 26 (0,129 mm^2).

Installation et interventions réservées au personnel compétent :

MISE EN GARDE – Pour limiter les risques d'électrocution, l'installation des produits Biamp et les interventions sur ces produits doivent être réalisées uniquement par du personnel compétent faisant partie des professionnels d'installation audio qualifiés de Biamp.

Seul le personnel compétent est habilité à exécuter des opérations d'entretien ou de maintenance autres que celles indiquées dans les instructions d'utilisation.

Le personnel compétent doit débrancher l'alimentation secteur avant toute tentative d'accès à l'intérieur du produit.

MISE EN GARDE – Les instructions d'installation qui se rapportent à l'alimentation auxiliaire sont exclusivement destinées au personnel compétent. Cette installation doit être effectuée conformément aux réglementations locales.

- National Electrical Code, ANSI/NFPA 70 pour les États-Unis
- Canadian Electrical Code, partie 1, CSA C22.1, sections 2-128, 12-010(3) et 12-100 pour le Canada

Consignes pour le montage mural – Dans tout montage mural, le produit doit être solidement fixé à une cloison sèche ou autre surface similaire au moyen de quatre vis à bois au minimum (deux vis s'il s'agit d'un produit comportant uniquement deux trous de montage). D'autres fixations peuvent être utilisées, comme des chevilles pour cloison sèche, des vis à tôle en cas de poteau métallique ou des vis à bois s'enfonçant au moins sur 1,5 cm (0,5 po) dans la structure bois.

WICHTIGE SICHERHEITSHINWEISE

1) Lesen Sie diese Hinweise.

2) Bewahren Sie diese Hinweise auf.

3) Beachten Sie die Warnhinweise.

4) Befolgen Sie die Hinweise.

5) Verwenden Sie dieses Produkt nicht in der Nähe von Wasser.

6) Nur mit einem trockenen Tuch reinigen.

7) Ventil- und Lüftungsöffnungen nicht abdecken. Produkte gemäß den Hinweisen des Herstellers installieren.

8) Nicht in der Nähe von Wärmequellen wie Radiatoren, Wärmespeichern, Kochflächen oder sonstigen Produkten (einschließlich Verstärker), die Wärme produzieren, installieren.

9) Sicherheitsfunktion des geerdeten Steckers nicht umgehen. Ein geerdeter Stecker hat zwei Stromkontakte und einen dritten Erdungskontakt.

Der dritte Erdungskontakt dient Ihrer Sicherheit. Passt der mitgelieferte Stecker nicht in die Steckdose, lassen Sie diese von einem Elektriker austauschen.

10) Schützen Sie das Netzkabel vor Beschädigungen, besonders am Stecker, an Mehrfachsteckdosen und am Ausgang vom Gerät.

11) Verwenden Sie ausschließlich die vom Hersteller angegebenen Befestigungen/Zubehörteile.

12) Nur mit Geräteträger, Rollwagen, Ständer oder Tisch verwenden, wobei eine ausreichende mechanische Festigkeit, Wärmeableitung und Absicherung mit der Gebäudestruktur geboten ist.



Wenn ein Rollwagen verwendet wird, beim Bewegen der Rollwagen-Gerät-Kombination vorsichtig vorgehen, um Verletzungen durch Umkippen zu vermeiden.

13) Trennen Sie das Gerät während eines Gewitters oder bei längerer Nichtbenutzung vom Stromnetz.

14) Überlassen Sie jegliche Wartung qualifiziertem Personal. Wartungsarbeiten oder Reparaturen sind erforderlich, wenn das Netzkabel oder der Stecker beschädigt ist, wenn Flüssigkeit oder Gegenstände in das Geräteinnere eingedrungen sind, wenn das Gerät im Regen oder in feuchter Umgebung gestanden ist, sich nicht erwartungsgemäß verhält oder wenn es gefallen ist.

Erklärung grafischer Symbole:



Blitz: Beim Betrieb dieses Geräts entstehen lebensgefährliche Spannungen. Berühren Sie keine Anschlüsse mit diesem Symbol, während das Gerät an ein Netzteil mit eingeschalteter Spannungsversorgung angeschlossen ist.



Ausrufezeichen: Ersetzen Sie Bauteile (z. B. Sicherungen) nur entsprechend den vom Hersteller angegebenen Werten. Bei Missachtung ist die Sicherheit dieses Geräts nicht mehr gewährleistet.



Rotierende Lüfterflügel: Vor Wartungsarbeiten Stromversorgung unterbrechen und von beweglichen Lüfterflügeln fernhalten.

ACHTUNG – Um das Risiko eines Brandes oder eines elektrischen Schlages zu vermeiden, das Gerät vor Regen und Feuchtigkeit schützen. Das Gerät vor Tropfen oder Wasserspritzern schützen. Keine mit Flüssigkeit befüllten Behälter, wie Blumenvasen oder ähnliche Gegenstände, auf das Gerät stellen.

ACHTUNG – 100-Volt-Lautsprecherklemmen mit dem Symbol ⚠ bedeuten Lebensgefahr. Die externe Verkabelung an diesen Anschlüssen darf nur von geschulten oder beaufsichtigten Personen vorgenommen werden.

ACHTUNG – An das Netzteil angeschlossene Geräte verfügen über eine Sicherheitserdung und müssen an eine ordnungsgemäß geerdete Buchse angeschlossen werden, um eine sichere Erdverbindung zu gewährleisten.

Trennen des Geräts – Der Netzstecker wird verwendet, um das Gerät von der Netzsteckdose zu trennen und muss jederzeit betriebsbereit sein.

VORSICHT – Wenn Telefonschnittstellenoptionen angeboten werden, sind die Verbindungen zum Netz des Telefonanbieters von einer qualifizierten und geschulten Person vorzunehmen. Verwenden Sie für Telekomverbindungen ausschließlich 26 AWG feste Kupferdrahtanschlüsse, um das Brandrisiko zu reduzieren.

Ausschließlich für Einbau und Wartung durch geschultes Personal vorgesehen:

VORSICHT – Zur Verringerung der Stromschlaggefahr sind Einbau und Wartung von Biamp-Geräten ausschließlich durch geschulte Personen, bei denen es sich um von Biamp geschulte Audio-Fachleute handelt, vorzunehmen.

Führen Sie keine anderen als die in der Betriebsanleitung angegebenen Wartungsarbeiten aus, vorausgesetzt, Sie wurden hierfür geschult.

Vor dem Öffnen des Geräts ist das Gerät von einer geschulten Person von der AC-Netzspannung zu trennen.

VORSICHT – Die Installationsschritte für die Hilfsspannungsversorgung sind nur zur Verwendung durch geschulte Personen vorgesehen und müssen mit den örtlichen Bestimmungen übereinstimmen.

- National Electrical Code, ANSI/NFPA 70 für die USA.
- Canadian Electrical Code, Part 1, CSA C22.1, Kapitel 2-128, 12-010(3) und 12-100 für Kanada.

Anweisungen zur Wandmontage – Geräte zur Wandmontage sind mit mindestens 4 Holzschrauben sicher an einer Trockenbauwand oder an einer ähnlichen Oberfläche zu befestigen (2 Schrauben für Geräte mit nur zwei Befestigungsösen). Alternativ verwendete Befestigungselemente umfassen Dübel für Trockenwände, selbstschneidende Schrauben in Metallrohlingen oder Holzschrauben, die mindestens 1,5 cm in die Holzrohlinge eingedreht werden können.

重要安全说明

1) 阅读这些说明。

2) 妥善保管这些说明。

3) 留意所有警告。

4) 遵守所有说明。

5) 不得在靠近水源处使用本产品。

6) 只能用干布进行清洁。

7) 不要堵塞通风口。按照厂商说明进行安装。

8) 不要在靠近任何热源处，如散热器、热调节器、火炉或其他释放热量的产品（包括扩音器）附近进行安装。

9) 不要损坏用于安全目的的接地插头。 接地插头有两个插片和第三端接地管脚。

第三端管脚是为了确保您的安全而提供。如果附带的插头不适用于您的插座，请让电工更换插座。

10) 防止电源线被踩踏或挤压，尤其是在插头、电源插座以及产品周围进出的位置。

11) 只使用厂商指定的附属装置/附件。

12) 只配合专为建筑结构提供足够的机械强度、热消散性和稳固性的机柜、手推车、支架或设备桌使用。



在用手推车时应小心移动，避免因翻倒而带来伤害。

13) 在室外出现闪电或长期未使用的情况下应拔掉本产品的电源线。

14) 请与有资历的服务人员联系，获得所有维修服务。当产品以任何方式受到损害时有必要进行维修，如电源线或插头被损坏、沾染上液体或有异物落入产品中、产品暴露在雨水或潮湿的环境中、无法正常运行或已掉落在地上损坏了。

图形符号解释：



闪电：此设备运行时会伴随有危险的实时电压。当设备与电源连接时，不要触碰带有此符号的端子。



惊叹号：只能按照厂商指定的技术参数更换组件（例如：保险丝）。 否则，将会降低本设备的运行安全性。



危险的移动风扇叶片：请在提供服务之前切断电源，并与移动风扇叶片保持距离。

警告 – 为减少火灾或雷电冲击带来的风险，不要将这些产品暴露在雨水或潮湿的环境中。这些产品不得暴露在有液体滴落或飞溅的环境中，也不应在这些产品上放置装有液体的物品（如花瓶）。

警告 – 标有符号 ⚠ 的 100 伏特扬声器端子是危险的带电线路。与这些端子相连的外部布线需要由专业技术人员或经过培训的人员来安装。

警告 – 由市电供电的产品采用了安全接地技术，必须与正确接地的市电插座连接，才能提供接地防护。

断开设备连接 – 市电插头可用于断开 市电电源且必须保持时刻可运行状态。

小心 – 在提供了 POTS 电话接口选项时，必须由训练有素的人员将电话接口与本设备的电信回路进行连接。为减少火灾风险，只能使用 26 号 AWG 实心铜线连接电话端口。

只适用于专业技术人员来执行的安装和服务：

小心 – 为减少电击带来的风险，Biamp 产品的安装和服务应该只能由 Biamp 音频安装专业技术人员来执行。

除非您是专业技术人员，否则不能执行未包含在操作说明中的任何服务。

在打开产品之前，专业人员必须先断开交流市电电源。

小心 – “辅助电源”的安装步骤只适用于专业技术人员，而且必须遵循所有的本地法规。

- 对于美国，国家电气法规 ANSI/NFPA 70。
- 对于加拿大，加拿大电气法规第 1 部 CSA C22.1 第 2-128、12-010(3) 和 12-100 节。

壁挂安装说明 – 壁挂安装产品必须至少使用 4 个木螺丝（只有两个安装孔的产品则用 2 个螺丝）安全地固定在石膏板/隔断墙或类似表面上。可能会用到的其他紧固件包括胀管、用于金属支撑架中的自攻钢板金属螺丝或是用于木制支撑架上的 ½ 英寸木螺丝。

중요 안전성 지침

1) 이 지침서를 읽으십시오.

2) 이 지침 내용을 지키십시오.

3) 모든 경고에 주의를 기울이십시오.

4) 모든 지침을 따르십시오.

5) 이 제품을 물 가까이에서 사용하지 마십시오.

6) 마른 헝겊으로만 닦으십시오.

7) 환풍구를 막지 마십시오. 제조업체의 지침에 따라 설치하십시오.

8) 라디에이터, 온풍기, 스토브 또는 열을 내는 다른 제품(증폭기 포함)과 같은 열원 근처에 설치하지 마십시오.

9) 접지형 플러그의 안전 목적에 어긋나지 않도록 하십시오. 접지형 플러그에는 두 개의 날과 접지 단자가 있습니다.
세 번째 접지 단자는 안전을 위해 제공되는 것입니다. 제공된 플러그가 콘센트에 맞지 않는다면, 해당 콘센트의 교체를 위해 전기 기술자와 상의하십시오.

10) 전원 코드가 밟히거나 집히지 않도록 보호하십시오. 특히 플러그, 콘센트, 제품과 연결된 부분에 주의해 주십시오.

11) 제조업체가 명시한 부가 장비 및 부속품만 사용하십시오.

12) 적합한 기계적 내구성, 열 방산, 건물 구조에 대한 적절한 보호를 제공할 수 있게 설계된 장비 랙, 카트, 스탠드 또는 테이블과만 함께 사용하십시오.



카트를 이용할 때에는 카트와 제품을 함께 옮길 때 넘어뜨림으로 인한 부상을 입지 않도록 주의해 주십시오.

13) 천둥 번개가 치거나 오랜 기간 사용하지 않을 경우에는 제품의 플러그를 뽑아 주십시오.

14) 모든 서비스는 자격을 갖춘 서비스 기술자에게 문의하십시오. 제품이 어떤 방식으로든 파손되었을 경우, 예를 들어 전원 공급 코드나 플러그가 파손되었을 때, 제품에 액체 또는 물체가 쏟아졌거나 제품이 비나 습기 등에 노출되었을 때, 정상적으로 작동하지 않을 때, 제품을 떨어뜨렸을 때 등의 경우에는 서비스를 받아야 합니다.

그래픽 기호 설명:



번개 표시: 본 장비가 작동 중일 때는 위험한 전압이 발생합니다. 본 장비가 전원에 연결되어 있는 동안에는 이 기호가 표시된 터미널에 손을 대지 마십시오.



느낌표: 구성 부품(예:퓨즈)은 제조업체에 의해 지정된 사양으로만 교환합니다. 그렇지 않으면 본 장비의 안전한 작동에 문제가 생길 수 있습니다.



위험한 이동식 송풍기 블레이드: 전원을 끄고 나서 서비스를 제공하고, 이동식 송풍기 블레이드를 가까이 두지 마십시오.

경고 – 화재 또는 전기 충격의 위험을 낮추려면, 이 제품을 비 또는 수분에 노출시키지 마십시오. 이 제품에 물이 떨어지거나 튀기면 안되며, 꽃병같이 액체로 가득 찬 물건이 있을 경우 이 제품 가까이에 놓지 마십시오.

경고 – 이 기호가 표시된 100 V 확성기 단자 ⚠ 는 Hazardous Live 입니다. 이 단자에 연결된 외부 배선은 숙련되거나 전문 교육을 받은 인력이 설치해야 합니다.

경고 – MAINS로 구동되는 제품들은 접지 안정성이 있어야 하고, MAINS 소켓에 연결하여 보호 접지 연결을 제공하도록 정확하게 접지되어야 합니다.

장치 연결 해제 – MAINS 플러그는 MAINS 전원을 차단하는 데 사용되며 즉시 작동할 수 있는 상태로 유지해야 합니다.

주의 – POTS 전화 인터페이스 옵션을 제공할 경우, 이 장비의 전화 회로망 연결은 전문 교육을 받은 인력이 담당해야 합니다. 화재의 위험을 줄이기 위해서는 전기 통신 회로 연결은 26번 AWG 솔리드 동선만 이용하십시오.

공인 전문가의 설치 및 서비스:

주의 – 전기 충격의 위험을 줄이기 위해, Biamp 제품의 설치 및 서비스는 Biamp 공인 오디오 설치 전문가에게 의뢰해야 합니다.

전문 인력이 아닌 경우, 작업 지침에 담긴 내용 이외의 사항에 대해 서비스를 제공하면 안됩니다.

전문 인력은 AC MAINS 전원을 차단하고 나서 제품을 열어야 합니다.

주의 – '보조 전원'의 설치 단계는 전문 인력에게만 해당되며, 현지의 코드를 모두 준수해야 합니다.

- 국제 전기 코드, ANSI/NFPA 70 (미국)
- 캐나다 전기 코드, Part 1, CSA C22.1, Sections 2-128, 12-010(3) 및 12-100 (캐나다)

벽면 설치 지침 – 벽걸이 제품은 최소 4개의 나무못을 사용하여 건식벽체 또는 이와 유사한 표면에 확실하게 조여야 합니다(설치 구멍은 2개이며, 2개 나사는 제품용임). 교대용 패스너로는 건식벽체 앵커, 메탈 스터드에 조이는 셀프 태핑 판금 나사 또는 나무 스터드 안에 ½ 인치 이상 들어가는 나무못이 있습니다.

تعليمات سلامة هامة

1) اقرأ هذه التعليمات.
2) احتفظ بهذه التعليمات.
3) انتبه لجميع التحذيرات.
4) اتبع هذه التعليمات.
5) لا تستخدم هذا المنتج بالقرب من الماء.
6) نظفه فقط بقطعة قماش جافة.
7) لا تسد فتحات التهوية. ثبته وفقًا لتعليمات الشركة المصنعة.
8) لا تقم بتركيبه بالقرب من أي مصدر حرارة مثل المشعاعات أو منظمات الحرارة أو المواقد أو غيرها من المنتجات (بما في ذلك مكبرات الصوت) التي تُنتج حرارة.
9) لا تُعق غرض السلامة للقابس الكهربائي من النوع الأرضي إن القابس الكهربائي من النوع الأرضي له شفرتان وسن أرضي ثالث.
يتم توفير السن الثالث لسلامتك. إذا كان القابس المزود لا يتناسب مع مأخذ التيار، فاستشر فنياً كهربائيًا لاستبدال المأخذ القديم.
10) احمِ سلك الطاقة من السير أو الضغط عليه، وخاصة عند المقابس والمقابس المناسبة والمكان الذي تخرج منه من المنتج.
11) لا تستخدم سوى الملحقات/الإكسسوارات المحددة من قبل الشركة المصنعة.
12) استخدمه فقط مع رف المعدات أو العربة أو المنصة أو الطاولة المصممة لتوفير قوة ميكانيكية كافية وتبديد الحرارة وتقديم الحماية لهيكل المبنى.



عندما يتم استخدام عربة، توخَّ الحذر عند تحريك العربة وتركيب المنتج عليها لتجنب خطر الإصابة من الانقالب.
13) افصل هذا المنتج أثناء العواصف الرعدية أو عند عدم استخدامه لفترات طويلة من الزمن.
14) ارجع في كل أمور الصيانة إلى أفراد الخدمة المؤهلين. يجب إجراء صيانة عندما يتضرر المنتج بأي شكل من الأشكال، مثل تلف سلك إمداد الطاقة أو القابس أو انسكاب سوائل أو سقوط أجسام على المنتج أو تعرض المنتج للمطر أو الرطوبة أو كان المنتج لا يعمل بشكل طبيعي أو تم إسقاطه.

شرح الرموز البيانية:

صاعقة كهربائية: تظهر الفولطية الخطرة على الحياة عندما تعمل هذه الوحدة. لا تلمس الأطراف المعلمة بهذا الرمز عندما تكون الوحدة موصله بمصدر طاقة نشط

علامة تعجب: لا تستبدل المكونات (مثل الصمامات الكهربائية Fuses) إلا بالقيم المحددة من قبل الشركة المصنعة. القيام بغير ذلك من شأنه أن يهدد التشغيل الآمن لهذه الوحدة

خطورة شفرات المروحة المتحركة: افصل الطاقة قبل إجراء صيانة وابتعد عن شفرات المروحة المتحركة

تحذير - لتقليل خطر نشوب حريق أو التعرض لصدمة كهربية، لا تُعرض هذه المنتجات للمطر أو الرطوبة. يجب عدم تعريض هذه المنتجات للتنقيط أو الرش ولا يجب وضع أي أشياء مليئة بالسوائل، مثل المزهريات، فوق هذه المنتجات.

تحذير - محطات ربط و توصيل مكبرات الصوت 100 فولط المعلمة بالرمز ⚠ تكون خطرة على الحياة. يتطلب تثبيت الأسلاك الخارجية المتصلة بهذه المحطات من قبل شخص مؤهل أو مدرّب.

تحذير - المنتجات الرئيسية التي تعمل بالطاقة تستخدم التأريض الكهربي الآمن ويجب أن تكون متصلة بمأخذ التيار الكهربائي الرئيسي المؤرض بشكل صحيح لتوفير اتصال أرضي واقٍ.

فصل الجهاز - يُستخدم القابس الكهربائي الرئيسي لفصل الطاقة الرئيسية عن الجهاز ويجب أن يظل القابس جاهزاً للتشغيل بسهولة.

تنبيه - عندما يتم توفير خيارات الربط بهاتف خدمة POTS يجب إجراء تمديدات الروابط بدوائر الاتصالات بهذا الجهاز من قبل موظف مدرّب ومؤهل. للحد من خطر نشوب حريق، لا تستخدم إلا أسلاكًا نحاسية صلبة رقم AWG 26 لتمديدات روابط دائرة الاتصالات.

هذا الجهاز معد للتركيب والصيانة من قبل الموظفين الماهرين فقط:

تنبيه - للحد من خطر حدوث صدمة كهربائية، ينبغي ألا يتم تركيب وصيانة منتجات Biamp إلا من قبل الأشخاص المهرة وهم المهنيون المؤهلون في أجهزة الصوت من Biamp.

لا تقم بإجراء أي صيانة غير الواردة في تعليمات التشغيل إلا إذا كنت الشخص الماهر المؤهل للقيام بذلك.

يجب أن يفصل الأشخاص المهرة التيار الكهربائي الرئيسي المتردد قبل فتح المنتج.

تنبيه - إن خطوات التثبيت لـ "الطاقة المساعدة" هي للاستخدام من قبل الموظفين المهرة فقط ويجب أن تتوافق مع جميع القوانين المحلية.

- قانون الكهرباء الوطني، ANSI/NFPA رقم 70 للولايات المتحدة.
- قانون الكهرباء الكندي، الجزء 1، CSA C22.1 الأقسام 2-128 و(3)010-12 و 12-100 لكندا.

تعليمات التركيب على الجدار - يجب تركيب المنتجات على الجدار بشكل آمن على جدار جاف أو سطح مشابه باستخدام 4 مسامير خشب على الأقل (يوجد مسماران للمنتج بفتحتي تركيب اثنتين فقط). المثبتات البديلة التي يمكن استخدامها تشمل مثبتات Drywall أو المسامير المعدنية لثقب الألواح ذاتيًا داخل الدعامات المعدنية أو المسامير الخشبية التي تمتد لمسافة نصف بوصة على الأقل داخل الدعامات الخشبية.

IMPORTANTES INSTRUÇÕES DE SEGURANÇA

1) Leia estas instruções.

2) Guarde estas instruções.

3) Preste atenção a todos os avisos.

4) Siga todas as instruções.

5) Não utilize este produto próximo à água.

6) Limpe apenas com um pano seco.

7) Não obstrua as aberturas de ventilação. Instale de acordo com as instruções do fabricante.

8) Não instale próximo a fontes de calor, como radiadores, aquecedores, fogões ou outros produtos (incluindo amplificadores) que produzam calor.

9) Não anule o propósito de segurança do plugue de aterramento. Um plugue de aterramento possui dois pinos e um terceiro pino de aterramento.

O terceiro pino é fornecido para sua segurança. Se o plugue fornecido não encaixar na sua tomada, consulte um eletricista para trocar a tomada obsoleta.

10) Proteja o cabo de alimentação de ser pisado ou prensado, especialmente nos plugues, receptáculos de conveniência e no ponto onde ele sai do produto.

11) Utilize apenas acessórios especificados pelo fabricante.

12) Utilize apenas com equipamentos de rack, carrinho, suporte, ou mesa projetada para fornecer resistência mecânica adequada, dissipação de calor e fixação à estrutura da construção.



Ao utilizar um carrinho, tenha cuidado ao mover a combinação carrinho e produto para evitar lesões devido a uma queda.

13) Desligue este produto durante tempestades com raios ou quando não for utilizado por longos períodos de tempo.

14) Solicite a assistência de pessoal qualificado. A manutenção é necessária quando o produto for danificado de alguma forma, como quando o cabo de alimentação ou o plugue estiverem danificados, líquido for derramado ou objetos tiverem caído dentro do produto, o produto for exposto à chuva ou umidade, não operar normalmente ou se tiver caído.

Explicação dos Símbolos Gráficos:



Relâmpago: Tensões perigosas presentes quando esta unidade estiver em operação. Não toque nos terminais marcados com este símbolo enquanto o aparelho estiver conectado na corrente elétrica.



Ponto de Exclamação: Substitua os componentes (ou seja, fusíveis), apenas com os valores especificados pelo fabricante. Não fazer isso, irá comprometer a operação segura deste aparelho.



Lâminas do Ventilador em Movimento Perigoso: Desligue a alimentação antes da manutenção e mantenha-se afastado do movimento das pás do ventilador.

AVISO – Para reduzir o risco de incêndio ou choque elétrico, não exponha esses produtos à chuva ou umidade. Estes produtos não devem ser expostos a goteiras ou respingos e nenhum objeto contendo líquidos, como vasos, deve ser colocado sobre os mesmos.

AVISO – Os terminais de alto-falantes de 100 Volts marcados com o símbolo ⚠ são Partes Perigosas. A fiação externa ligada a estes terminais requerem a instalação por um técnico ou pessoa instruída.

AVISO – Os Produtos Alimentados em REDE empregam Aterramento de Segurança e devem ser conectados a uma REDE elétrica que esteja devidamente aterrada para fornecer uma conexão de aterramento de proteção.

Dispositivo de desconexão – O plugue da REDE é utilizado para desconectar a alimentação do CENTRO DE ABASTECIMENTO e deve estar sempre acessível.

ATENÇÃO – Quando as opções da Interface do Telefone POTS são fornecidas, as conexões para os circuitos de telecomunicações deste dispositivo devem ser feitas por pessoal treinado e qualificado. Para reduzir o risco de incêndio, utilize apenas fio de cobre sólido AWG No. 26 para as conexões do circuito de telecomunicações.

Destinado para Instalação e Manutenção apenas por Pessoal Qualificado:

ATENÇÃO – Para reduzir o risco de choque elétrico, a instalação e a manutenção dos produtos Biamp devem ser realizadas somente por pessoas qualificadas, que são profissionais de instalação de áudio qualificados da Biamp.

Não execute nenhum serviço que não esteja contido nas Instruções de Operação, a menos que você seja uma pessoa qualificada para fazê-lo.

As pessoas qualificadas devem desconectar a REDE de Energia AC antes de abrir o produto.

ATENÇÃO – Os passos de Instalação para “Energia Auxiliar” são para uso por pessoal qualificado apenas e devem cumprir com todos os códigos locais.

- Código Elétrico Nacional, ANSI/NFPA 70 para os Estados Unidos.
- Código Elétrico Canadense, Parte 1, CSA C22.1, Seções 2-128, 12-010(3) e 12-100 para o Canadá.

Instruções de Montagem na Parede – Os produtos montados na parede devem ser solidamente fixados ao drywall ou superfície similar, usando no mínimo 4 parafusos para madeira (2 parafusos para o produto com apenas dois orifícios de fixação). Os fixadores alternativos que podem ser utilizados incluem Âncoras Drywall, parafusos de chapa de metal de autobandagem localizados em pregos ou parafusos para metal ou madeira que se estendem no mínimo ½ polegada em vigas de madeira.

ВАЖНЫЕ ИНСТРУКЦИИ ПО ТЕХНИКЕ БЕЗОПАСНОСТИ

1) Прочтите эту инструкцию.

2) Сохраните эту инструкцию.

3) Обратите внимание на все предостережения.

4) Соблюдайте все указания этой инструкции.

5) Не используйте данное устройство вблизи воды.

6) Очищайте данное устройство только сухой тканью.

7) Не перекрывайте вентиляционные отверстия устройства. Производите установку согласно инструкциям производителя.

8) Не устанавливайте устройство вблизи источников тепла, например радиаторов, обогревателей, электроплит и других приборов (включая усилители), выделяющих тепло.

9) Не пренебрегайте защитной функцией вилки с заземлением. Вилка с заземлением имеет два питающих контакта и вывод заземления.

Вывод заземления обеспечивает безопасность. Если вилка не подходит к разъему розетки, проконсультируйтесь с электриком касательно замены устаревшей розетки.

10) Не наступайте на шнур электропитания и не перегибайте его, особенно в местах крепления вилки, возле электрических розеток и мест выхода шнура из устройства.

11) Используйте только предусмотренные производителем комплектующие и аксессуары.

12) Используйте достаточно прочные аппаратные стойки, тележки, подставки или столы, обеспечивающие требуемое тепловыделение и крепление к конструкции здания.



Соблюдайте осторожность при перемещении тележки с устройством, чтобы избежать травм при опрокидывании.

13) Отключите устройство от сети во время грозы и в случае, если оно не используется в течение длительного времени.

14) Для технического обслуживания обращайтесь только к квалифицированным специалистам. Обслуживание необходимо, если устройство было каким-либо образом повреждено, например, если повреждены шнур питания или вилка, пролита жидкость, внутрь попали предметы, устройство подвергалось воздействию дождя или влаги, не функционирует нормально , а также если устройство уронили.

Пояснение графических символов



Разряд молнии: наличие опасного для жизни напряжения во время работы данного устройства. Не прикасайтесь к контактам, обозначенным этим символом, когда устройство подключено к питанию.



Знак восклицания: заменяйте компоненты (например, предохранители) только компонентами с характеристиками, рекомендованными производителем. Невыполнение этого правила негативно скажется на безопасной работе устройства.



Опасность движущихся лопастей вентилятора: перед обслуживанием отключите питание и держитесь на расстоянии от движущихся лопастей вентилятора..

ПРЕДУПРЕЖДЕНИЕ! Для снижения риска возгорания или поражения электрическим током не подвергайте устройства воздействию дождя или влаги. Защищайте устройства от капель и брызг и не ставьте на них какие-либо предметы, наполненные жидкостью, например, вазы.

ПРЕДУПРЕЖДЕНИЕ! Контакты 100 В громкоговорителей, обозначенные символом ⚠ опасны для жизни, когда находятся под напряжением. Внешняя проводка, подводимая к этим контактам, должна устанавливаться квалифицированным обученным персоналом.

ПРЕДУПРЕЖДЕНИЕ! Устройства с питанием от сети используют защитное заземление, поэтому должны подключаться к надлежащим образом заземленной сетевой розетке.

Отключение устройства. Электрическая вилка используется для отключения питания от сети и должна оставаться доступной для эксплуатации.

ПРЕДОСТЕРЕЖЕНИЕ! При наличии телефонного интерфейса POTS подключение устройства к телефонным линиям должно производиться квалифицированным обученным персоналом. Для снижения риска возгорания при подключении к телефонным линиям используйте только одножильный медный провод типа 26 AWG.

Предназначено для установки и обслуживания только опытным персоналом

ПРЕДОСТЕРЕЖЕНИЕ! Для снижения риска поражения электрическим током установку и обслуживание устройств Biamp должны выполнять только лица, которые являются опытными специалистами по установке аудиосистем Biamp.

Не проводите какое-либо обслуживание, помимо указанного в инструкциях по эксплуатации, если вы не обладаете соответствующим опытом и квалификацией.

Опытный персонал должен отключить питание прежде чем открывать устройство.

ПРЕДОСТЕРЕЖЕНИЕ! Шаги по установке, касающиеся вспомогательного питания, предназначены только для опытного персонала и должны отвечать всем нормам и законам, действующим в вашей стране.

- Национальный электрический кодекс, ANSI/NFPA 70 для США.
- Канадский электрический кодекс, часть 1, CSA C22.1, разделы 2–128, 12–010(3) и 12–100 для Канады.

Инструкции по настенному монтажу. Устройства, монтируемые на стену, должны надежно крепиться к гипсокартону или подобной поверхности не менее чем 4 винтами для дерева (2 винта для устройств с двумя монтажными отверстиями). Можно использовать альтернативные крепления, в том числе анкеры для гипсокартона, саморезы для листового металла, размещенные в металлических стойках, или винты для дерева, заходящие в деревянные стойки не менее чем на 1,5 см.

Описание продукт

TesiraFORTÉ AI/CI/TI/VI — это DSP-аудиоплатформа класса серверов с 12 аналоговыми входами и 8 аналоговыми выходами, которая имеет до 8 настраиваемых каналов для передачи звука по USB. В модель TesiraFORTÉ AVB AI/CI/TI/VI добавлена функция передачи цифрового звука по сети с использованием стандарта Audio Video Bridging (AVB). Модель с поддержкой AVB может использоваться как отдельное устройство или в сочетании с другими устройствами TesiraFORTÉ, а также серверами, блоками расширения и панелями управления Tesira.

biamp.

Tesira®

SERVER
SERVER IO
OPERATION MANUAL

585.0278.90C
MARCH 2016

BIAMP SYSTEMS 9300 SW GEMINI DRIVE, BEAVERTON, OREGON 97008 U.S.A. 503.641.7287 BIAMP.COM

SERVER and SERVER IO Product Description

The Tesira SERVER is a digital network server. It is factory configured with one DSP-2 card and can accept up to a total of eight DSP-2 cards. The SERVER is also factory configured with one AVB-1 card and has a second slot that can be outfitted with an additional AVB-1 card, a 32 x 32 channel SCM-1 CobraNet card, a 64 x 64 channel DAN-1 Dante™ card, or a standard I/O card for four channels of local I/O. The SERVER is the core of a Tesira digital audio system and can be used with Tesira expanders to form a highly scalable audio network. Two Tesira SERVERs can also be designed as a redundant pair, carrying identical processing and card configurations. The secondary SERVER stays 'live' with the primary, updating runtime parameters. If the primary SERVER should need maintenance, the secondary takes over with no loss of continuity or downtime.

The Tesira SERVER-IO is a digital network server. It is factory configured with one DSP-2 card and is capable of handling up to two additional DSP-2 cards. The SERVER-IO has capacity for up to three total audio networking cards per server. The combinations of networking cards can include up to two AVB-1 Audio Video Bridging network cards, up to two SCM-1 CobraNet network cards, and up to two DAN-1 Dante network cards in any configuration. The SERVER-IO can support up to 12 standard Tesira I/O cards for up to 48 channels of audio I/O (e.g. mic and line level, VoIP, and telephone interface). The SERVER-IO can be used as a standalone or with Tesira expanders to form a highly scalable audio network.

Tesira SERVER — цифровой сетевой сервер. Данный сервер поставляется с одной картой DSP-2, опционально может быть установлено до 8 таких карт. Также сервер укомплектован одной картой AVB-1 (420 x 420 каналов AVB) и, на выбор, дополнительной картой AVB-1, картой SCM-1 (32 x 32 канала CobraNet), картой DAN-1 (64 x 64 канала Dante) или стандартной картой
входов/выходов. Этот сервер является "сердцем" системы Tesira. Сервер можно использовать с модулями расширения в составе масштабируемой сети. Два устройства SERVER могут работать в паре, где один является резервным. Серверы должны иметь одинаковый набор карт и конфигурацию. Второй сервер работает одновременно с первым, обновляя свои параметры в ходе работы. При выходе из строя основного сервера сбоя в работе системы не происходит
благодаря функции резервирования

Tesira SERVER-IO — цифровой сетевой сервер. Поставляется с одной картой DSP-2, опционально может быть установлено до 3 таких карт. Также может включать одну карту AVB-1 (420 x 420 каналов AVB) или две карты SCM-1 (32 x 32 канала CobraNet) или две карты DAN-1 (64 x 64 канала Dante). SERVER-IO поддерживает до 12 стандартных карт входов/выходов Tesira, что дает до 48 входов/выходов, например, для сигналов линейного или микрофонного уровня или подключения аналоговых или IP-телефонных линий. Сервер можно использовать как самостоятельное устройство или вместе с модулями расширения в составе масштабируемой сети.



1. Ventilation filter cover
2. Multi-color LEDs
3. Display navigation buttons
4. OLED display

DISPLAY

The Servers feature an OLED display that provides information about the server device as well as the Tesira system that is connected to the server. The OLED display is read-only. Navigating the display is accomplished by touch-sensitive UP and DOWN buttons and a touch sensitive SELECT button.

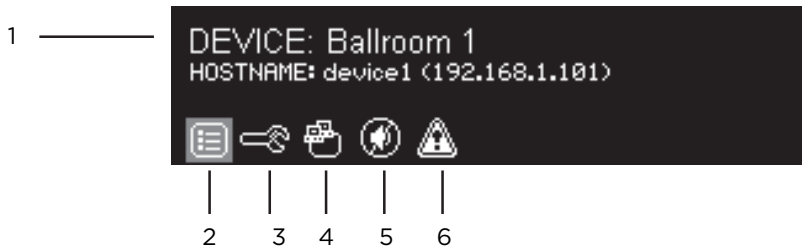
Home Screen

The home screen is the default screen that shows the overview of the device. If the text is too long to fit on the entire display, it will scroll to the left. Menus at the bottom allow other selections. By default, the main menu icon will be selected.

Some menu icons double as status indicators. They change depending on the status of the device. The fault status icon only appears if there is an active fault in the system.

After a period of inactivity, the Front Panel Display will transition back to this home screen.

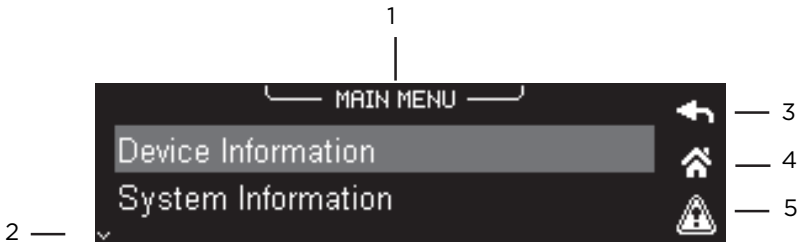
1. Device and Host name
2. Main Menu
3. Settings Menu
4. Network Menu / Status
5. Audio Menu / State
6. Fault Menu / Status



To open any of the menus, use the UP and DOWN buttons to highlight the menu icon desired, and press the

Menu Screen

1. Menu Title Bar
2. Scroll Indicator
3. Previous Screen
4. Home Screen
5. Fault Menu



A menu screen contains a list of items from which navigation to other menus can be selected. At the right are icons that provide quick navigation to other screens. Pressing the select button on an item in the list will transition to the screen that displays that information. A scroll indicator at the left shows there is more information to show by scrolling down. Scroll up to select from the icons at the right.

The previous screen icon goes up one menu level in the menu structure. The home screen icon transitions back to the home screen. If a fault is active in the system, the fault icon will appear and can be selected to view active faults.

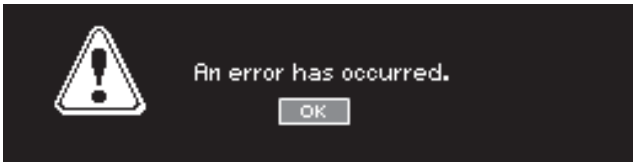
Settings Screen

1. Display Brightness – adjusts brightness
2. Edit Timeouts



Error Screen

When an error is detected when communicating with the host device, the following screen would be displayed. There will be more information than what is shown that describes the reason of the error. Press the select button to go back to the previous screen.



Dim Mode

The display is at the [Dim display brightness] and should appear the same except for the brightness level. Pressing any button will transition back to the previous mode and respond to the control movement (i.e. move the cursor, make a selection, etc.).



Sleep Mode

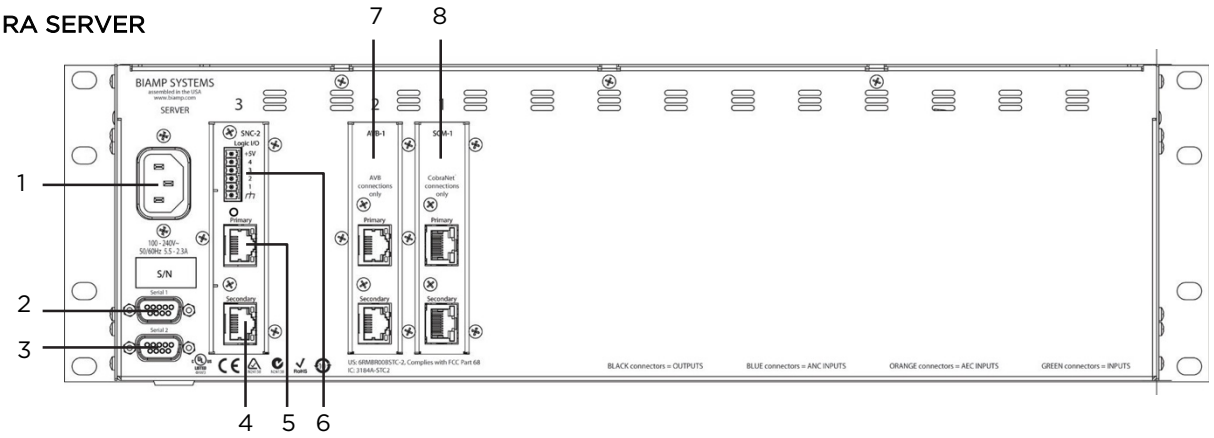
After the Display timeout is reached, the display will go blank. However, the Front Panel Display board and Server device still have power.

LED Display

The front panel of the servers displays five multi-color LEDs that provide information about the status of the servers.

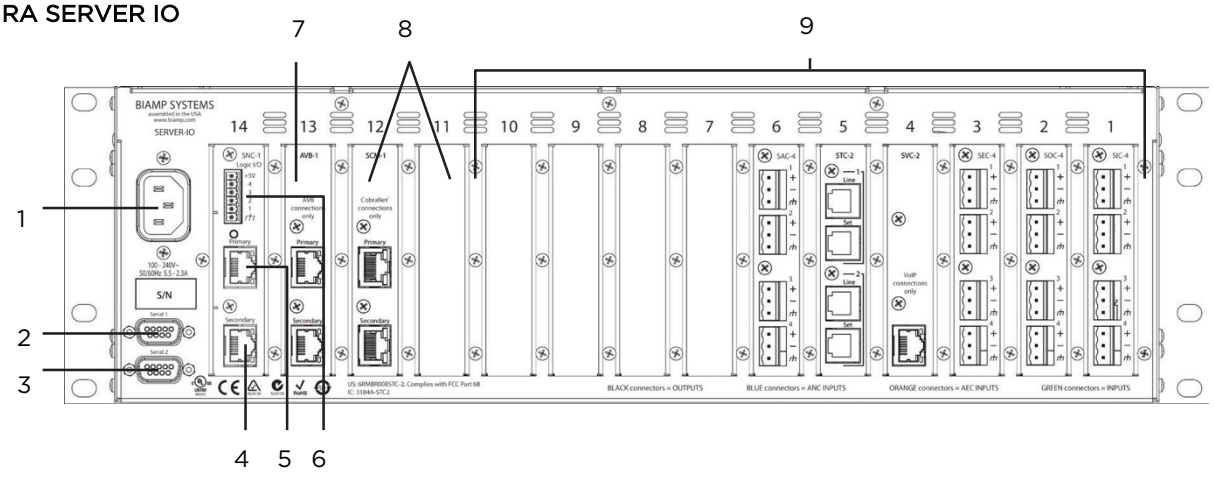
LED	Off	Green	Yellow	Red
Power	Unit is not powered	Unit is powered	Not applicable	Not applicable
Alarm	No fault is active	Not applicable	Minor fault is active in the device	Major fault is active in the device
Activity	Not applicable	The host device is an active part of an active system	Not applicable	The host device is part of an inactive system (audio has stopped)
Status	Not applicable	Device has received its configuration and is ready to participate in the system	Device is ready and waiting to receive a configurations	Device is not ready to receive its configuration
AIS (Alarm in System)	No fault is active in any device in the system	Not applicable	Minor fault is active in a device in the system	Major fault is active in a device in the system

TESIRA SERVER



1. AC Power inlet
2. Serial Port 1
3. Serial Port 2
4. Secondary Ethernet control port (RJ-45)
5. Primary Ethernet control port (RJ-45)
6. GPIO connections
7. Slot 2; always loaded with AVB-1 digital audio networking card for AVB
8. Slot 1; optional slot that can be factory loaded or field loaded with any server card

TESIRA SERVER IO



1. AC Power inlet
2. Serial Port 1
3. Serial Port 2
4. Secondary Ethernet control port (RJ-45)
5. Primary Ethernet control port (RJ-45)
6. GPIO connections
7. Slot 13; optional slot that can be factory loaded or filed loaded with AVB-1 digital audio networking card for AVB, SCM-1 digital audio networking card for CobraNet or DAN-1 digital audio networking card for Dante™
8. Slot 12 and Slot 11; optional slot that can be factory loaded or field loaded with SCM-1 digital audio networking card for CobraNet, any telephone card or any analog audio card
9. Slot 10 through Slot 1; optional slots that can be factory loaded or field loaded with any telephone card (STC-2, SVC-2) or any analog audio card (SIC-4, SEC-4, SAC-4 or SOC-4).

SIC-4
The Tesira SIC-4 is a modular analog input card for use with Tesira SERVER and SERVER-IO devices. Each SIC-4 provides four channels of mic or line level audio input. The inputs are electrically balanced and provided on plug-in barrier strip connectors. Software control of each input includes gain with clip indicator, +48V phantom power, mute, level and signal invert.

SEC-4
The Tesira SEC-4 is a modular analog input card for use with Tesira SERVER or SERVER-IO devices. Each SEC-4 provides four channels of mic or line level audio input with Acoustic Echo Cancellation. The SEC-4 utilizes the next generation of the proprietary Sona™ algorithm and also features two new Biamp algorithms, SpeechSense and AmbientSense which enhance speech processing by more accurately distinguishing between human speech and other noises.

SAC-4
The Tesira SAC-4 is a modular analog input card for use with Tesira SERVER or SERVER-IO devices. Each SAC-4 provides four channels of mic or line level audio input with Ambient Noise Compensation. The SAC-4 features a new Biamp algorithm, AmbientSense, which intelligently distinguishes ambient noise from program material or announcements, thus greatly improving processing performance over traditional ambient noise compensation.

SOC-4
The Tesira SOC-4 is a modular analog output card for use with Tesira SERVER or SERVER-IO devices. Each SOC-4 provides four channels of line level audio output. The outputs are electrically balanced and provided on plug-in barrier strip connectors. Software control of each output includes mute, level, signal invert and fullscale output reference.

STC-2
The Tesira STC-2 is a modular telephone interface card for use with Tesira SERVER and SERVER-IO devices. The STC-2 allows a Tesira system to connect directly to standard analog telephone lines. Being more than just a normal “hybrid,” each channel includes line-echo cancellation, noise suppression, caller ID decoding, ring detection/validation, DTMF decoding, and call progress tone decoding. When used in conjunction with Automatic Echo Cancellation processing, Tesira becomes an extraordinarily powerful, flexible and affordable conferencing platform.

SVC-2
The Tesira SVC-2 is a modular Voice over Internet Protocol (VoIP) card for use with Tesira SERVER and SERVER-IO devices. The SVC-2 allows a Tesira system to connect directly to IP-based telephone systems. When used in conjunction with Automatic Echo Cancellation processing, Tesira becomes an extraordinarily powerful, flexible and affordable conferencing platform.

Tesira SERVER Specifications (Audio specifications given reflect use of SIC-4 and SOC-4)

Frequency Response (20Hz~20kHz @ +4dBu):	+0/-0.25dB	Phantom Power:	+48 VDC (7mA/input)
THD+N (20Hz~20kHz):		Cross Talk (channel to channel @ 1kHz):	
@ 0dB Gain, +4dBu In	< 0.006%	@ 0dB Gain, +4dBu In:	< -85dB
@ 54dB Gain, -50dBu In	< 0.040%	@ 54dB Gain, -50dBu In:	< -75dB
EIN (20Hz~20kHz, 66dB Gain, 150Ω):	< -125dBu	Overall Dimensions:	
		Height:	5.25 inches (133 mm)
		Width:	19.0 inches (483 mm)
		Depth:	17 inches (432 mm)
		Weight:	18 lbs (8.2 kg)
Dynamic Range (20Hz~20kHz, 0dB):	> 108dB	Sampling Rate:	48kHz
Tail Length:	Up to 300ms	A/D – D/A Converters:	24-bit
Convergence:	Up to 100dB/sec	Power Consumption:	
		(100~240AC 50/60Hz):	< 150W
Input Impedance (balanced):	8kΩ		
Maximum Input:	+24dBu		
Input Gain Range (6dB Steps):	0 - 66dB		
Output Impedance (balanced):	200Ω		
Maximum Output:	+24dBu	Compliance:	FCC Part B (USA)
			FC Part 68 (USA)
			Industry Canada CS-03 (Canada)
			CE marked (Europe)
			UL and C-UL listed (USA & Canada)
			RCM (Australia)
			EAC (Eurasian Customs Union)
			RoHS Directive (Europe

Tesira SERVER IO Specifications (Audio specifications given reflect use of SIC-4 and SOC-4)

Frequency Response (20Hz~20kHz @ +4dBu):	+0/-0.25dB	Phantom Power:	+48 VDC (7mA/input)
THD+N (20Hz~20kHz):		Cross Talk (channel to channel @ 1kHz):	
@ 0dB Gain, +4dBu In	< 0.006%	@ 0dB Gain, +4dBu In:	< -85dB
@ 54dB Gain, -50dBu In	< 0.040%	@ 54dB Gain, -50dBu In:	< -75dB
EIN (20Hz~20kHz, 66dB Gain, 150Ω):	< -125dBu	Overall Dimensions:	
		Height:	5.25 inches (133 mm)
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Dynamic Range (20Hz~20kHz, 0dB):	> 108dB	Sampling Rate:	48kHz
Tail Length:	Up to 300ms	A/D – D/A Converters:	24-bit
Convergence:	Up to 100dB/sec	Power Consumption:	
		(100~240AC 50/60Hz):	< 150W
Input Impedance (balanced):	8kΩ		
Maximum Input:	+24dBu		
Input Gain Range (6dB Steps):	0 - 66dB		
Output Impedance (balanced):	200Ω		
Maximum Output:	+24dBu	Compliance:	FCC Part B (USA)
			FC Part 68 (USA)
			Industry Canada CS-03 (Canada)
			CE marked (Europe)
			UL and C-UL listed (USA & Canada)
			RCM (Australia)
			EAC (Eurasian Customs Union)
			RoHS Directive (Europe

FCC Notice - Class B digital device -

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

CAUTION – changes or modifications not approved by Biamp could void the user's authority to operate the equipment.

RoHS COMPLIANT

RoHS

This Biamp product, including all attendant cables and accessories supplied by Biamp, meets all requirements of EU Directive 2011/65/EU.
An EU RoHS Materials Content Declaration document may be obtained at www.biamp.com

(This information is presented to comply with the requirements of Chinese law SJ/T11363-2006)

有害物质表 (Hazardous Substances Table)

Biamp Systems Corporation

数字信号处理器 (Digital Signal Processor)

型号 SERVER, SERVER-IO

部件名称 (Part Name)	有毒有害物质或元素 (Substances)					
	Pb 铅	Hg 汞	Cd 镉	Cr+6 六价铬	PBB	PBDE
设备机箱 (Equipment Chassis)	X	O	X	O	O	O
电源线 (Power Cord)	O	O	O	O	O	O
插拔式接线端子 (Plug-in Terminal Blocks)	O	O	O	O	O	O
手册和其他书面文档 (Manual and Paper Documents)	O	O	O	O	O	O
包装箱和所有包装材料 (Box and Packing Materials)	O	O	O	O	O	O

0：表示该部件所有均质材料中的这种有毒有害物质低于 SJ/T11363-2006 的限制要求.

X：表示该部件中至少有一种均质材料所含的这种有毒有害物质高于 SJ/T11363-2006 的限制要求.

在电触头和（或）镀镉所含的均质材料中，镉及其化合物的含量可以超过 0.01%，但欧盟指令 91/338/EEC（根据欧盟指令 76/769/EEC）限制销售和使用某些危险物质和制剂部分中所禁止的用途除外

在以下一种或多种物质所含的均质材料中，铅及其化合物的含量可以超过 0.1%:

1) 电子元器件中玻璃内所含的铅
2) 铅在钢材中是作为一种合金元素，含量可达 0.35%
3) 铅在铝材中是作为一种合金元素，含量可达 0.4%
4) 铅在铜材中是作为一种合金元素，含量可达 4%
5) 高熔点类焊料中的铅（即铅料合金，铅含量超过 85%）
6) 电子陶瓷部件内的铅
7) 由两种以上元素组成的焊料中所含的铅，用于连接针脚和微处理器包装，其中铅的含量超过 80% 但低于 85%
8) 顺应针连接系统内的铅
9) 倒装芯片封装中半导体芯片及载体之间形成可靠连接所用焊料中的



在正常使用情况下，中国环保使用期限为 10 年，条件是：

- 环境温度为 (Ambient Temperature) 0-40C (32-104°F)
- 湿度为 0-95%，无凝结
- 海拔高度为 0-10,000 英尺
- 气流不受阻碍
- 没有水或其他液体进入任何部件
- 电源为 (Power Supply) 100-240 Vac, 50/60 Hz, 5.5-2.3 A
- 部件没有损坏（损坏部件应立即修理）
- 由工厂授权人员使用批准的材料进行所有维修

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this product near water.
6) Clean only with dry cloth.
7) Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong.

The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the product.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with equipment rack, cart, stand or table designed to provide adequate mechanical strength, heat dissipation and securement to the building structure.



When a cart is used, use caution when moving the cart and product combination to avoid injury from tip-over.

13) Unplug this product during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.

Explanation of Graphical Symbols:



Lightning Bolt: Hazardous Live voltages present when this unit is in operation. Do not touch terminals marked with this symbol while the unit is connected to live power.



Exclamation Point: Replace components (i.e. fuses) only with the values specified by the manufacturer. Failure to do so will compromise safe operation of this unit



Hazardous Moving Fan Blades: Remove power before servicing and keep away from moving fan blades.

WARNING - To reduce the risk of fire or electric shock, do not expose these products to rain or moisture. These products must not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on these products.

WARNING – 100 Volt Speaker terminals marked with the symbol ⚠ are Hazardous Live. External wiring connected to these terminals requires installation by a Skilled or Instructed Person.

WARNING – MAINS Powered Products employ Safety Grounding and must be connected to a MAINS socket that is properly grounded to provide a protective earthing connection.

Disconnect Device - The MAINS plug is used to disconnect MAINS power and must remain readily operable.

CAUTION – When POTS Telephone Interface options are provided, connections to the telecom circuits of this device must be made by qualified, trained personnel. To reduce the risk of fire, use only No. 26 AWG solid copper wire for telecom circuit connections.

Intended for Installation and Service by Skilled Personnel Only:

CAUTION – To reduce the Risk of Electric Shock, Installation and Service of Biamp Products should be conducted only by Skilled Persons who are Biamp Qualified Audio Installation Professionals.

Do not perform any servicing other than that contained in the Operating Instructions unless you are a Skilled Person qualified to do so.

Skilled Persons must disconnect AC MAINS Power before opening product.

CAUTION - The Installation steps for 'Auxiliary Power' are for use by Skilled Personnel only and must comply with all local codes.

- National Electrical Code, ANSI/NFPA 70 for United States.
- Canadian Electrical Code, Part 1, CSA C22.1, Sections 2-128, 12-010(3) and 12-100 for Canada.

Wall Mounting Instructions – Wall mounted products must be securely fastened to drywall or similar surface using a minimum of 4 wood screws (2 screws for product with only two mounting holes). Alternate fasteners which may be used include drywall anchors, self-tapping sheet metal screws located in metal studs or wood screws extending a minimum of ½ inch into wood studs.

INSTRUCCIONES DE SEGURIDAD IMPORTANTES

1) Lea estas instrucciones.

2) Guarde estas instrucciones.

3) Preste atención a todas las advertencias.

4) Siga todas las instrucciones.

5) No utilice este producto cerca del agua.

6) Limpie solo con un paño seco.

7) No obstruya los orificios de ventilación. Instale el producto según las instrucciones del fabricante.

8) No lo instale cerca de ninguna fuente de calor como radiadores, rejillas de calefacción, estufas u otros productos (incluidos amplificadores) que produzcan calor.

9) No anule el propósito de seguridad del enchufe con conexión a tierra. Un enchufe con conexión a tierra tiene dos clavijas y una tercera punta con conexión a tierra.

La tercera punta se provee para su seguridad. Si el enchufe suministrado no se adapta a su tomacorriente, recurra a un electricista para reemplazar la toma obsoleta.

10) Proteja el cable de alimentación eléctrica para evitar que sea pisado o aplastado, en especial en los enchufes, receptáculos convenientes y el punto donde salen del producto.

11) Solo utilice complementos/accesorios indicados por el fabricante.

12) Utilice solo con el soporte, carro, base o mesa diseñados para proporcionar fuerza mecánica adecuada, disipación del calor y seguridad a la estructura del edificio.



Cuando se utiliza un carro, tenga cuidado al mover la combinación del carro con el producto para evitar lesiones en caso de una caída.

13) Desenchufe este producto durante tormentas eléctricas o si no va a utilizarlo por largos períodos de tiempo.

14) Todas las reparaciones deben ser realizadas por personal calificado. La reparación es necesaria cuando el producto presenta cualquier tipo de daño como, por ejemplo, si se deteriora el cable de alimentación eléctrica o enchufe, si se derraman líquidos o caen objetos dentro del producto, si se expone el producto a la lluvia o humedad, si no funciona normalmente o si se ha caído.

Explicación de los símbolos gráficos:



Rayo: Voltajes activos peligrosos mientras la unidad está en funcionamiento. No toque las terminales marcadas con este símbolo mientras la unidad se encuentre conectada a una salida activa de energía.



Signo de exclamación: Reemplace los componentes (es decir, los fusibles) solo de acuerdo con los valores indicados por el fabricante. De no hacerlo, se pondrá en riesgo el funcionamiento seguro de esta unidad.



Aspas de ventilador en movimiento peligrosas Desenchufe el producto antes de realizar reparaciones y aléjelo de las aspas en movimiento de los ventiladores.

ADVERTENCIA – Para reducir el riesgo de incendio o descarga eléctrica, no exponga estos productos a la lluvia o humedad. Estos productos no deben exponerse a goteos o salpicaduras ni deben posarse sobre ellos objetos que contengan líquidos como, por ejemplo, jarrones.

ADVERTENCIA – Las terminales de altavoces de 100 voltios que aparecen marcadas con el símbolo ⚠ están activas y son peligrosas. La conexión externa de cables a estas terminales requiere la instalación a cargo de una persona calificada o debidamente instruida.

ADVERTENCIA – Los productos con alimentación eléctrica utilizan conexión a tierra de seguridad y deben conectarse a tomacorrientes que funcionen correctamente para brindar una conexión a tierra de protección.

Desconexión del dispositivo – El enchufe de alimentación eléctrica se utiliza para desconectar esta alimentación y deberá poder accionarse fácilmente.

PRECAUCIÓN – Cuando se proporcionan las opciones de interfaz telefónica POTS, las conexiones a los circuitos de telecomunicaciones de este dispositivo deber ser realizadas por personal calificado y entrenado. Para reducir el riesgo de incendio, use solo cables de cobre sólido N.° 26 AWG para las conexiones de los circuitos de telecomunicaciones.

Para la instalación y mantenimiento solo por parte de personal calificado:

PRECAUCIÓN – Para reducir el riesgo de descarga eléctrica, la instalación y el mantenimiento de los productos Biamp deben ser realizados por personas calificados que formen parte de los Profesionales capacitados en la instalación de audio de Biamp.

No realice ninguna reparación que no se encuentre en las Instrucciones de uso, a menos que sea una persona calificada para hacerlo.

Las personas calificadas deben desenchufar la alimentación eléctrica de CA antes de abrir el producto.

PRECAUCIÓN – Los pasos para la instalación de una “energía auxiliar” están dirigidos solo al personal calificado y deben cumplir con todos los códigos locales.

- Código eléctrico nacional: ANSI/NFPA 70 para los Estados Unidos.
- Código eléctrico canadiense: parte 1, CSA C22.1, secciones 2-128, 12-010(3) y 12-100 para Canadá.

Instrucciones para el montaje sobre la pared – Los productos que sean montados sobre la pared deben estar bien ajustados al yeso u otra superficie con el uso de, al menos, 4 tornillos para madera (2 tornillos para los productos con solo dos orificios de montaje). Los enganches alternativos que pueden utilizarse incluyen pernos de anclaje para paredes de yeso, tornillos de metal laminado con rosca cortante los cuales se ubican en montantes de metal o tornillos para madera que se prolongan poco más de 1,5 cm dentro de los montantes de madera.

CONSIGNES DE SÉCURITÉ IMPORTANTES

1) Lisez attentivement les présentes instructions.

2) Conservez les présentes instructions.

3) Prêtez une extrême attention aux avertissements.

4) Respectez toutes les consignes données.

5) N'utilisez pas ce produit à proximité d'eau.

6) Nettoyez uniquement avec un chiffon sec.

7) Ne bouchez pas les ouvertures destinées à la ventilation. Suivez les instructions d'installation du fabricant.

8) Tenez le produit à l'écart des sources de chaleur, comme les radiateurs, les grilles d'air chaud, les cuisinières ou autres produits (dont amplificateurs) qui émettent de la chaleur.

9) Préservez la protection offerte par le branchement de mise à la terre. Le connecteur est reconnaissable par ses deux broches accompagnées d'un contact de mise à la terre.

Ce troisième contact est fourni pour votre sécurité. Si le connecteur fourni ne correspond pas à votre prise, renseignez-vous auprès d'un électricien.

10) Placez le cordon à l'écart des zones de passage et veillez à ce qu'il ne soit pas pincé, en particulier au niveau des prises, des multiprises et de la sortie de l'appareil.

11) Utilisez exclusivement les fixations/accessoires spécifiés par le fabricant.

12) Utilisez uniquement des tables, supports, étagères ou chariots capables de supporter le poids du produit et d'offrir la dissipation de chaleur et la sécurité requises (fixation à la structure du bâtiment).



Si vous placez le produit sur un chariot, déplacez-le avec précaution pour éviter de le renverser.

13) Débranchez le produit pendant les orages ou les périodes d'inutilisation prolongées.

14) Confiez toutes les interventions à un personnel qualifié. Ces interventions peuvent s'avérer nécessaire dans certaines situations : détérioration du produit (connecteur ou cordon d'alimentation endommagé, par exemple), liquide renversé sur le produit, objets tombés dans le produit, exposition du produit à l'humidité ou à la pluie, fonctionnement anormal du produit, chute du produit, etc.

Signification des pictogrammes:



Éclair : tensions dangereuses présentes lorsque l'appareil est en fonctionnement. Ne touchez pas les parties de l'appareil portant ce pictogramme tant qu'il est branché sur une ligne électrique.



Point d'exclamation : remplacez les composants (fusibles, par exemple) uniquement par des composants possédant les caractéristiques spécifiées par le fabricant sous peine d'altérer le bon fonctionnement de l'appareil.



Danger : pales de ventilateur en mouvement. Coupez l'alimentation avant toute intervention et restez à distance des pales en mouvement.

AVERTISSEMENT – Pour limiter les risques d'incendie ou d'électrocution, n'exposez pas ce produit à l'humidité ou à la pluie. Mettez-le à l'abri des projections et écoulements, et veillez à ne placer aucun objet rempli de liquide (vases, par exemple) à proximité.

AVERTISSEMENT – Les bornes des haut-parleurs 100 V comportent le pictogramme ⚠ signalant une tension dangereuse. Toute connexion externe à ces bornes doit être effectuée par un technicien qualifié ou compétent.

AVERTISSEMENT – Le raccordement du produit au secteur doit être réalisé par le biais d'un câble et d'une prise offrant une mise à la terre adéquate.

Débranchement de l'appareil – La prise secteur doit être accessible pour que l'appareil puisse être débranché dès que l'utilisateur souhaite couper l'alimentation.

MISE EN GARDE – En présence d'un service téléphonique traditionnel, les connexions aux circuits de télécommunication de l'appareil doivent être effectuées par un personnel qualifié et compétent. Pour limiter les risques d'incendie, utilisez uniquement des fils de cuivre solides de calibre AWG 26 (0,129 mm^2).

Installation et interventions réservées au personnel compétent:

MISE EN GARDE – Pour limiter les risques d'électrocution, l'installation des produits Biamp et les interventions sur ces produits doivent être réalisées uniquement par du personnel compétent faisant partie des professionnels d'installation audio qualifiés de Biamp.

Seul le personnel compétent est habilité à exécuter des opérations d'entretien ou de maintenance autres que celles indiquées dans les instructions d'utilisation.

Le personnel compétent doit débrancher l'alimentation secteur avant toute tentative d'accès à l'intérieur du produit.

MISE EN GARDE – Les instructions d'installation qui se rapportent à l'alimentation auxiliaire sont exclusivement destinées au personnel compétent. Cette installation doit être effectuée conformément aux réglementations locales.

- National Electrical Code, ANSI/NFPA 70 pour les États-Unis
- Canadian Electrical Code, partie 1, CSA C22.1, sections 2-128, 12-010(3) et 12-100 pour le Canada

Consignes pour le montage mural – Dans tout montage mural, le produit doit être solidement fixé à une cloison sèche ou autre surface similaire au moyen de quatre vis à bois au minimum (deux vis s'il s'agit d'un produit comportant uniquement deux trous de montage). D'autres fixations peuvent être utilisées, comme des chevilles pour cloison sèche, des vis à tôle en cas de poteau métallique ou des vis à bois s'enfonçant au moins sur 1,5 cm (0,5 po) dans la structure bois.

WICHTIGE SICHERHEITSHINWEISE

1) Lesen Sie diese Hinweise.
2) Bewahren Sie diese Hinweise auf.
3) Beachten Sie die Warnhinweise.
4) Befolgen Sie die Hinweise.
5) Verwenden Sie dieses Produkt nicht in der Nähe von Wasser.
6) Nur mit einem trockenen Tuch reinigen.
7) Ventil- und Lüftungsöffnungen nicht abdecken. Produkte gemäß den Hinweisen des Herstellers installieren.
8) Nicht in der Nähe von Wärmequellen wie Radiatoren, Wärmespeichern, Kochflächen oder sonstigen Produkten (einschließlich Verstärker), die Wärme produzieren, installieren.
9) Sicherheitsfunktion des geerdeten Steckers nicht umgehen. Ein geerdeter Stecker hat zwei Stromkontakte und einen dritten Erdungskontakt.
Der dritte Erdungskontakt dient Ihrer Sicherheit. Passt der mitgelieferte Stecker nicht in die Steckdose, lassen Sie diese von einem Elektriker austauschen.
10) Schützen Sie das Netzkabel vor Beschädigungen, besonders am Stecker, an Mehrfachsteckdosen und am Ausgang vom Gerät.
11) Verwenden Sie ausschließlich die vom Hersteller angegebenen Befestigungen/Zubehörteile.
12) Nur mit Geräteträger, Rollwagen, Ständer oder Tisch verwenden, wobei eine ausreichende mechanische Festigkeit, Wärmeableitung und Absicherung mit der Gebäudestruktur geboten ist.



Wenn ein Rollwagen verwendet wird, beim Bewegen der Rollwagen-Gerät-Kombination vorsichtig vorgehen, um Verletzungen durch Umkippen zu vermeiden.
13) Trennen Sie das Gerät während eines Gewitters oder bei längerer Nichtbenutzung vom Stromnetz.
14) Überlassen Sie jegliche Wartung qualifiziertem Personal. Wartungsarbeiten oder Reparaturen sind erforderlich, wenn das Netzkabel oder der Stecker beschädigt ist, wenn Flüssigkeit oder Gegenstände in das Geräteinnere eingedrungen sind, wenn das Gerät im Regen oder in feuchter Umgebung gestanden ist, sich nicht erwartungsgemäß verhält oder wenn es gefallen ist.

Erklärung grafischer Symbole:



Blitz: Beim Betrieb dieses Geräts entstehen lebensgefährliche Spannungen. Berühren Sie keine Anschlüsse mit diesem Symbol, während das Gerät an ein Netzteil mit eingeschalteter Spannungsversorgung angeschlossen ist.



Ausrufezeichen: Ersetzen Sie Bauteile (z. B. Sicherungen) nur entsprechend den vom Hersteller angegebenen Werten. Bei Missachtung ist die Sicherheit dieses Geräts nicht mehr gewährleistet.



Rotierende Lüfterflügel: Vor Wartungsarbeiten Stromversorgung unterbrechen und von beweglichen Lüfterflügeln fernhalten.

ACHTUNG – Um das Risiko eines Brandes oder eines elektrischen Schlages zu vermeiden, das Gerät vor Regen und Feuchtigkeit schützen. Das Gerät vor Tropfen oder Wasserspritzern schützen. Keine mit Flüssigkeit befüllten Behälter, wie Blumenvasen oder ähnliche Gegenstände, auf das Gerät stellen.

ACHTUNG – 100-Volt-Lautsprecherklemmen mit dem Symbol ⚠ bedeuten Lebensgefahr. Die externe Verkabelung an diesen Anschlüssen darf nur von geschulten oder beaufsichtigten Personen vorgenommen werden.

ACHTUNG – An das Netzteil angeschlossene Geräte verfügen über eine Sicherheitserdung und müssen an eine ordnungsgemäß geerdete Buchse angeschlossen werden, um eine sichere Erdverbindung zu gewährleisten.

Trennen des Geräts – Der Netzstecker wird verwendet, um das Gerät von der Netzsteckdose zu trennen und muss jederzeit betriebsbereit sein.

VORSICHT – Wenn Telefonschnittstellenoptionen angeboten werden, sind die Verbindungen zum Netz des Telefonanbieters von einer qualifizierten und geschulten Person vorzunehmen. Verwenden Sie für Telekomverbindungen ausschließlich 26 AWG feste Kupferdrahtanschlüsse, um das Brandrisiko zu reduzieren.

Ausschließlich für Einbau und Wartung durch geschultes Personal vorgesehen:

VORSICHT – Zur Verringerung der Stromschlaggefahr sind Einbau und Wartung von Biamp-Geräten ausschließlich durch geschulte Personen, bei denen es sich um von Biamp geschulte Audio-Fachleute handelt, vorzunehmen.

Führen Sie keine anderen als die in der Betriebsanleitung angegebenen Wartungsarbeiten aus, vorausgesetzt, Sie wurden hierfür geschult.

Vor dem Öffnen des Geräts ist das Gerät von einer geschulten Person von der AC-Netzspannung zu trennen.

VORSICHT – Die Installationsschritte für die Hilfsspannungsversorgung sind nur zur Verwendung durch geschulte Personen vorgesehen und müssen mit den örtlichen Bestimmungen übereinstimmen.

- National Electrical Code, ANSI/NFPA 70 für die USA.
- Canadian Electrical Code, Part 1, CSA C22.1, Kapitel 2-128, 12-010(3) und 12-100 für Kanada.

Anweisungen zur Wandmontage – Geräte zur Wandmontage sind mit mindestens 4 Holzschrauben sicher an einer Trockenbauwand oder an einer ähnlichen Oberfläche zu befestigen (2 Schrauben für Geräte mit nur zwei Befestigungsösen). Alternativ verwendete Befestigungselemente umfassen Dübel für Trockenwände, selbstschneidende Schrauben in Metallrohlingen oder Holzschrauben, die mindestens 1,5 cm in die Holzrohlinge eingedreht werden können.

重要安全说明

1) 阅读这些说明。
2) 妥善保管这些说明。
3) 留意所有警告。
4) 遵守所有说明。
5) 不得在靠近水源处使用本产品。
6) 只能用干布进行清洁。
7) 不要堵塞通风口。按照厂商说明进行安装。
8) 不要在靠近任何热源处，如散热器、热调节器、火炉或其他释放热量的产品（包括扩音器）附近进行安装。
9) 不要损坏用于安全目的的接地插头。 接地插头有两个插片和第三端接地管脚。
第三端管脚是为了确保您的安全而提供。如果附带的插头不适用于您的插座，请让电工更换插座。
10) 防止电源线被踩踏或挤压，尤其是在插头、电源插座以及产品周围进出的位置。
11) 只使用厂商指定的附属装置/附件。
12) 只配合专为建筑结构提供足够的机械强度、热消散性和稳固性的机柜、手推车、支架或设备桌使用。



在用手推车时应小心移动，避免因翻倒而带来伤害。
13) 在室外出现闪电或长期未使用的情况下应拔掉本产品的电源线。
14) 请与有资历的服务人员联系，获得所有维修服务。 当产品以任何方式受到损害时有必要进行维修，如电源线或插头被损坏、沾染上液体或有异物落入产品中、产品暴露在雨水或潮湿的环境中、无法正常运行或已掉落在地上损坏了。

图形符号解释：



闪电：此设备运行时会伴随有危险的实时电压。当设备与电源连接时，不要触碰带有此符号的端子。



惊叹号：只能按照厂商指定的技术参数更换组件（例如：保险丝）。 否则，将会降低本设备的运行安全性。



危险的移动风扇叶片：请在提供服务之前切断电源，并与移动风扇叶片保持距离。

警告 – 为减少火灾或雷电冲击带来的风险，不要将这些产品暴露在雨水或潮湿的环境中。这些产品不得暴露在有液体滴落或飞溅的环境中，也不应在这些产品上放置装有液体的物品（如花瓶）。

警告 – 标有符号 ⚠ 的 100 伏特扬声器端子是危险的带电线路。与这些端子相连的外部布线需要由专业技术人员或经过培训的人员来安装。

警告 – 由市电供电的产品采用了安全接地技术，必须与正确接地的市电插座连接，才能提供接地防护。

断开设备连接 – 市电插头可用于断开 市电电源且必须保持时刻可运行状态。

小心 – 在提供了 POTS 电话接口选项时，必须由训练有素的人员将电话接口与本设备的电信回路进行连接。为减少火灾风险，只能使用 26 号 AWG 实心铜线连接电话端口。

只适用于专业技术人员来执行的安装和服务：

小心 – 为减少电击带来的风险，Biamp 产品的安装和服务应该只能由 Biamp 音频安装专业技术人员来执行。

除非您是专业技术人员，否则不能执行未包含在操作说明中的任何服务。

在打开产品之前，专业人员必须先断开交流市电电源。

小心 – “辅助电源”的安装步骤只适用于专业技术人员，而且必须遵循所有的本地法规。

- 对于美国，国家电气法规 ANSI/NFPA 70。
- 对于加拿大，加拿大电气法规第 1 部 CSA C22.1 第 2-128、12-010(3) 和 12-100 节。

壁挂安装说明 – 壁挂安装产品必须至少使用 4 个木螺丝（只有两个安装孔的产品则用 2 个螺丝）安全地固定在石膏板/隔断墙或类似表面上。可能会用到的其他紧固件包括胀管、用于金属支撑架中的自攻钢板金属螺丝或是用于木制支撑架上的 ½ 英寸木螺丝。

중요 안전성 지침

1) 이 지침서를 읽으십시오.
2) 이 지침 내용을 지키십시오.
3) 모든 경고에 주의를 기울이십시오.
4) 모든 지침을 따르십시오.
5) 이 제품을 물 가까이에서 사용하지 마십시오.
6) 마른 헝겊으로만 닦으십시오.
7) 환풍구를 막지 마십시오. 제조업체의 지침에 따라 설치하십시오.
8) 라디에이터, 온풍기, 스토브 또는 열을 내는 다른 제품(증폭기 포함)과 같은 열원 근처에 설치하지 마십시오.
9) 접지형 플러그의 안전 목적에 어긋나지 않도록 하십시오. 접지형 플러그에는 두 개의 날과 접지 단자가 있습니다. 세 번째 접지 단자는 안전을 위해 제공되는 것입니다. 제공된 플러그가 콘센트에 맞지 않는다면, 해당 콘센트의 교체를 위해 전기 기술자와 상의하십시오.
10) 전원 코드가 밟히거나 집히지 않도록 보호하십시오. 특히 플러그, 콘센트, 제품과 연결된 부분에 주의해 주십시오.
11) 제조업체가 명시한 부가 장비 및 부속품만 사용하십시오.
12) 적합한 기계적 내구성, 열 방산, 건물 구조에 대한 적절한 보호를 제공할 수 있게 설계된 장비 랙, 카트, 스탠드 또는 테이블과만 함께 사용하십시오.



카트를 이용할 때에는 카트와 제품을 함께 옮길 때 넘어뜨림으로 인한 부상을 입지 않도록 주의해 주십시오.
13) 천둥 번개가 치거나 오랜 기간 사용하지 않을 경우에는 제품의 플러그를 뽑아 주십시오.
14) 모든 서비스는 자격을 갖춘 서비스 기술자에게 문의하십시오. 제품이 어떤 방식으로든 파손되었을 경우, 예를 들어 전원 공급 코드나 플러그가 파손되었을 때, 제품에 액체 또는 물체가 쏟아졌거나 제품이 비나 습기 등에 노출되었을 때, 정상적으로 작동하지 않을 때, 제품을 떨어뜨렸을 때 등의 경우에는 서비스를 받아야 합니다.

그래픽 기호 설명:

번개 표시: 본 장비가 작동 중일 때는 위험한 전압이 발생합니다. 본 장비가 전원에 연결되어 있는 동안에는 이 기호가 표시된 터미널에 손을 대지 마십시오.

느낌표: 구성 부품(예:퓨즈)은 제조업체에 의해 지정된 사양으로만 교환합니다. 그렇지 않으면 본 장비의 안전한 작동에 문제가 생길 수 있습니다.

위험한 이동식 송풍기 블레이드: 전원을 끄고 나서 서비스를 제공하고, 이동식 송풍기 블레이드를 가까이 두지 마십시오.

경고 – 화재 또는 전기 충격의 위험을 낮추려면, 이 제품을 비 또는 수분에 노출시키지 마십시오. 이 제품에 물이 떨어지거나 튀기면 안되며, 꽃병같이 액체로 가득 찬 물건이 있을 경우 이 제품 가까이에 놓지 마십시오**.**

경고 – 이 기호가 표시된 100 V 확성기 단자 ⚠ 는 Hazardous Live 입니다. 이 단자에 연결된 외부 배선은 숙련되거나 전문 교육을 받은 인력이 설치해야 합니다.

경고 – MAINS로 구동되는 제품들은 접지 안정성이 있어야 하고, MAINS 소켓에 연결하여 보호 접지 연결을 제공하도록 정확하게 접지되어야 합니다.

장치 연결 해제 – MAINS 플러그는 MAINS 전원을 차단하는 데 사용되며 즉시 작동할 수 있는 상태로 유지해야 합니다.

주의 – POTS 전화 인터페이스 옵션을 제공할 경우, 이 장비의 전화 회로망 연결은 전문 교육을 받은 인력이 담당해야 합니다. 화재의 위험을 줄이기 위해서는 전기 통신 회로 연결은 26번 AWG 솔리드 동선만 이용하십시오.

공인 전문가의 설치 및 서비스:

주의 – 전기 충격의 위험을 줄이기 위해, Biamp 제품의 설치 및 서비스는 Biamp 공인 오디오 설치 전문가에게 의뢰해야 합니다.

전문 인력이 아닌 경우, 작업 지침에 담긴 내용 이외의 사항에 대해 서비스를 제공하면 안됩니다.

전문 인력은 AC MAINS 전원을 차단하고 나서 제품을 열어야 합니다.

주의 – '보조 전원'의 설치 단계는 전문 인력에게만 해당되며, 현지의 코드를 모두 준수해야 합니다.

- 국제 전기 코드, ANSI/NFPA 70 (미국)
- 캐나다 전기 코드, Part 1, CSA C22.1, Sections 2-128, 12-010(3) 및 12-100 (캐나다)

벽면 설치 지침 – 벽걸이 제품은 최소 4개의 나무못을 사용하여 건식벽체 또는 이와 유사한 표면에 확실하게 조여야 합니다(설치 구멍은 2개이며, 2개 나사는 제품용임). 교대용 패스너로는 건식벽체 앵커, 메탈 스터드에 조이는 셀프 태핑 판금 나사 또는 나무 스터드 안에 ½ 인치 이상 들어가는 나무못이 있습니다.

تعليمات سلامة هامة

1) اقرأ هذه التعليمات.
2) احتفظ بهذه التعليمات.
3) انتبه لجميع التحذيرات.
4) اتبع هذه التعليمات.
5) لا تستخدم هذا المنتج بالقرب من الماء.
6) نظفه فقط بقطعة قماش جافة.
7) لا تسد فتحات التهوية. ثبته وفقًا لتعليمات الشركة المصنعة.
8) لا تقم بتركيبه بالقرب من أي مصدر حرارة مثل المشعاعات أو منظمات الحرارة أو المواقد أو غيرها من المنتجات (بما في ذلك مكبرات الصوت) التي تُنتج حرارة.
9) لا تُعق غرض السلامة للقابس الكهربائي من النوع الأرضي إن القابس الكهربائي من النوع الأرضي له شفرتان وسن أرضي ثالث.
يتم توفير السن الثالث لسلامتك. إذا كان القابس المزود لا يتناسب مع مأخذ التيار، فاستشر فنياً كهربائيًا لاستبدال المأخذ القديم.
10) احمِ سلك الطاقة من السير أو الضغط عليه، وخاصة عند المقَابس والمقابس المناسبة والمكان الذي تخرج منه من المنتج.
11) لا تستخدم سوى الملحقات/الإكسسوارات المحددة من قبل الشركة المصنعة.
12) استخدمه فقط مع رف المعدات أو العربة أو المنصة أو الطاولة المصممة لتوفير قوة ميكانيكية كافية وتبديد الحرارة وتقديم الحماية لهيكل المبنى.
عندما يتم استخدام عربة، توخَّ الحذر عند تحريك العربة وتركيب المنتج عليها لتجنب خطر الإصابة من الانقالب.
13) افصل هذا المنتج أثناء العواصف الرعدية أو عند عدم استخدامه لفترات طويلة من الزمن.
14) ارجع في كل أمور الصيانة إلى أفراد الخدمة المؤهلين. يجب إجراء صيانة عندما يتضرر المنتج بأي شكل من الأشكال، مثل تلف سلك إمداد الطاقة أو القابس أو انسكاب سوائل أو سقوط أجسام على المنتج أو تعرض المنتج للمطر أو الرطوبة أو كان المنتج لا يعمل بشكل طبيعي أو تم إسقاطه.



شرح الرموز البيانية:

صاعقة كهربائية: تظهر الفولطية الخطرة على الحياة عندما تعمل هذه الوحدة. لا تلمس الأطراف المعلمة بهذا الرمز عندما تكون الوحدة موصله بمصدر طاقة نشط

علامة تعجب: لا تستبدل المكونات (مثل الصمامات الكهربائية Fuses) إلا بالقيم المحددة من قبل الشركة المصنعة. القيام بغير ذلك من شأنه أن يهدد التشغيل الآمن لهذه الوحدة

خطورة شفرات المروحة المتحركة: افصل الطاقة قبل إجراء صيانة وابتعد عن شفرات المروحة المتحركة

تحذير - لتقليل خطر نشوب حريق أو التعرض لصدمة كهربية، لا تُعرض هذه المنتجات للمطر أو الرطوبة. يجب عدم تعريض هذه المنتجات للتنقيط أو الرش ولا يجب وضع أي أشياء مليئة بالسوائل، مثل المزهريات، فوق هذه المنتجات.

تحذير - محطات ربط و توصيل مكبرات الصوت 100 فولط المعلمة بالرمز ⚠ تكون خطرة على الحياة. يتطلب تثبيت الأسلاك الخارجية المتصلة بهذه المحطات من قبل شخص مؤهل أو مدرّب.

تحذير - المنتجات الرئيسية التي تعمل بالطاقة تستخدم التأريض الكهربي الآمن ويجب أن تكون متصلة بمأخذ التيار الكهربائي الرئيسي المؤرض بشكل صحيح لتوفير اتصال أرضي واقٍ.

فصل الجهاز - يُستخدم القابس الكهربائي الرئيسي لفصل الطاقة الرئيسية عن الجهاز ويجب أن يظل القابس جاهزاً للتشغيل بسهولة.

تنبيه - عندما يتم توفير خيارات الربط بهاتف خدمة POTS يجب إجراء تمديدات الروابط بدوائر الاتصالات بهذا الجهاز من قبل موظف مدرّب ومؤهل. للحد من خطر نشوب حريق، لا تستخدم إلا أسلاكًا نحاسية صلبة رقم 26 AWG لتمديدات روابط دائرة الاتصالات.

هذا الجهاز معد للتركيب والصيانة من قبل الموظفين الماهرين فقط:

تنبيه - للحد من خطر حدوث صدمة كهربائية، ينبغي ألا يتم تركيب وصيانة منتجات Biamp إلا من قبل الأشخاص المهرة وهم المهنيون المؤهلون في أجهزة الصوت من Biamp.

لا تقم بإجراء أي صيانة غير الواردة في تعليمات التشغيل إلا إذا كنت الشخص الماهر المؤهل للقيام بذلك.

يجب أن يفصل الأشخاص المهرة التيار الكهربائي الرئيسي المتردد قبل فتح المنتج.

تنبيه - إن خطوات التثبيت لـ "الطاقة المساعدة" هي للاستخدام من قبل الموظفين المهرة فقط ويجب أن تتوافق مع جميع القوانين المحلية.

- قانون الكهرباء الوطني، ANSI/NFPA رقم 70 للولايات المتحدة.
- قانون الكهرباء الكندي، الجزء 1، CSA C22.1 الأقسام 128-2 و(3)010-12 و 100-12 لكندا.

تعليمات التركيب على الجدار - يجب تركيب المنتجات على الجدار بشكل آمن على جدار جاف أو سطح مشابه باستخدام 4 مسامير خشب على الأقل (يوجد مسماران للمنتج بفتحتي تركيب اثنتين فقط). المثبتات البديلة التي يمكن استخدامها تشمل مثبتات Drywall أو المسامير المعدنية لثقب الألواح ذاتيًا داخل الدعامات المعدنية أو المسامير الخشبية التي تمتد لمسافة نصف بوصة على الأقل داخل الدعامات الخشبية.

IMPORTANTES INSTRUÇÕES DE SEGURANÇA

1) Leia estas instruções.

2) Guarde estas instruções.

3) Preste atenção a todos os avisos.

4) Siga todas as instruções.

5) Não utilize este produto próximo à água.

6) Limpe apenas com um pano seco.

7) Não obstrua as aberturas de ventilação. Instale de acordo com as instruções do fabricante.

8) Não instale próximo a fontes de calor, como radiadores, aquecedores, fogões ou outros produtos (incluindo amplificadores) que produzam calor.

9) Não anule o propósito de segurança do plugue de aterramento. Um plugue de aterramento possui dois pinos e um terceiro pino de aterramento.

O terceiro pino é fornecido para sua segurança. Se o plugue fornecido não encaixar na sua tomada, consulte um eletricista para trocar a tomada obsoleta.

10) Proteja o cabo de alimentação de ser pisado ou prensado, especialmente nos plugues, receptáculos de conveniência e no ponto onde ele sai do produto.



11) Utilize apenas acessórios especificados pelo fabricante.

12) Utilize apenas com equipamentos de rack, carrinho, suporte, ou mesa projetada para fornecer resistência mecânica adequada, dissipação de calor e fixação à estrutura da construção.

Ao utilizar um carrinho, tenha cuidado ao mover a combinação carrinho e produto para evitar lesões devido a uma queda.

13) Desligue este produto durante tempestades com raios ou quando não for utilizado por longos períodos de tempo.

14) Solicite a assistência de pessoal qualificado. A manutenção é necessária quando o produto for danificado de alguma forma, como quando o cabo de alimentação ou o plugue estiverem danificados, líquido for derramado ou objetos tiverem caído dentro do produto, o produto for exposto à chuva ou umidade, não operar normalmente ou se tiver caído.

Explicação dos Símbolos Gráficos:

Relâmpago: Tensões perigosas presentes quando esta unidade estiver em operação. Não toque nos terminais marcados com este símbolo enquanto o aparelho estiver conectado na corrente elétrica.

Ponto de Exclamação: Substitua os componentes (ou seja, fusíveis), apenas com os valores especificados pelo fabricante. Não fazer isso, irá comprometer a operação segura deste aparelho.

Lâminas do Ventilador em Movimento Perigoso: Desligue a alimentação antes da manutenção e mantenha-se afastado do movimento das pás do ventilador.

AVISO – Para reduzir o risco de incêndio ou choque elétrico, não exponha esses produtos à chuva ou umidade. Estes produtos não devem ser expostos a goteiras ou respingos e nenhum objeto contendo líquidos, como vasos, deve ser colocado sobre os mesmos.

AVISO – Os terminais de alto-falantes de 100 Volts marcados com o símbolo ⚠ são Partes Perigosas. A fiação externa ligada a estes terminais requerem a instalação por um técnico ou pessoa instruída.

AVISO – Os Produtos Alimentados em REDE empregam Aterramento de Segurança e devem ser conectados a uma REDE elétrica que esteja devidamente aterrada para fornecer uma conexão de aterramento de proteção.

Dispositivo de desconexão – O plugue da REDE é utilizado para desconectar a alimentação do CENTRO DE ABASTECIMENTO e deve estar sempre acessível.

ATENÇÃO – Quando as opções da Interface do Telefone POTS são fornecidas, as conexões para os circuitos de telecomunicações deste dispositivo devem ser feitas por pessoal treinado e qualificado. Para reduzir o risco de incêndio, utilize apenas fio de cobre sólido AWG No. 26 para as conexões do circuito de telecomunicações.

Destinado para Instalação e Manutenção apenas por Pessoal Qualificado:

ATENÇÃO – Para reduzir o risco de choque elétrico, a instalação e a manutenção dos produtos Biamp devem ser realizadas somente por pessoas qualificadas, que são profissionais de instalação de áudio qualificados da Biamp.

Não execute nenhum serviço que não esteja contido nas Instruções de Operação, a menos que você seja uma pessoa qualificada para fazê-lo.

As pessoas qualificadas devem desconectar a REDE de Energia AC antes de abrir o produto.

ATENÇÃO – Os passos de Instalação para “Energia Auxiliar” são para uso por pessoal qualificado apenas e devem cumprir com todos os códigos locais.

- Código Elétrico Nacional, ANSI/NFPA 70 para os Estados Unidos.
- Código Elétrico Canadense, Parte 1, CSA C22.1, Seções 2-128, 12-010(3) e 12-100 para o Canadá.

Instruções de Montagem na Parede – Os produtos montados na parede devem ser solidamente fixados ao drywall ou superfície similar, usando no mínimo 4 parafusos para madeira (2 parafusos para o produto com apenas dois orifícios de fixação). Os fixadores alternativos que podem ser utilizados incluem Âncoras Drywall, parafusos de chapa de metal de autobandagem localizados em pregos ou parafusos para metal ou madeira que se estendem no mínimo ½ polegada em vigas de madeira.

ВАЖНЫЕ ИНСТРУКЦИИ ПО ТЕХНИКЕ БЕЗОПАСНОСТИ

1) Прочтите эту инструкцию.

2) Сохраните эту инструкцию.

3) Обратите внимание на все предостережения.

4) Соблюдайте все указания этой инструкции.

5) Не используйте данное устройство вблизи воды.

6) Очищайте данное устройство только сухой тканью.

7) Не перекрывайте вентиляционные отверстия устройства. Производите установку согласно инструкциям производителя.

8) Не устанавливайте устройство вблизи источников тепла, например радиаторов, обогревателей, электроплит и других приборов (включая усилители), выделяющих тепло.

9) Не пренебрегайте защитной функцией вилки с заземлением. Вилка с заземлением имеет два питающих контакта и вывод заземления.

Вывод заземления обеспечивает безопасность. Если вилка не подходит к разъему розетки, проконсультируйтесь с электриком касательно замены устаревшей розетки.

10) Не наступайте на шнур электропитания и не перегибайте его, особенно в местах крепления вилки, возле электрических розеток и мест выхода шнура из устройства.

11) Используйте только предусмотренные производителем комплектующие и аксессуары.

12) Используйте достаточно прочные аппаратные стойки, тележки, подставки или столы, обеспечивающие требуемое тепловыделение и крепление к конструкции здания.



Соблюдайте осторожность при перемещении тележки с устройством, чтобы избежать травм при опрокидывании.

13) Отключите устройство от сети во время грозы и в случае, если оно не используется в течение длительного времени.

14) Для технического обслуживания обращайтесь только к квалифицированным специалистам. Обслуживание необходимо, если устройство было каким-либо образом повреждено, например, если повреждены шнур питания или вилка, пролита жидкость, внутрь попали предметы, устройство подвергалось воздействию дождя или влаги, не функционирует нормально , а также если устройство уронили.

Пояснение графических символов



Разряд молнии: наличие опасного для жизни напряжения во время работы данного устройства. Не прикасайтесь к контактам, обозначенным этим символом, когда устройство подключено к питанию.



Знак восклицания: заменяйте компоненты (например, предохранители) только компонентами с характеристиками, рекомендованными производителем. Невыполнение этого правила негативно скажется на безопасной работе устройства.



Опасность движущихся лопастей вентилятора: перед обслуживанием отключите питание и держитесь на расстоянии от движущихся лопастей вентилятора..

ПРЕДУПРЕЖДЕНИЕ! Для снижения риска возгорания или поражения электрическим током не подвергайте устройства воздействию дождя или влаги. Защищайте устройства от капель и брызг и не ставьте на них какие-либо предметы, наполненные жидкостью, например, вазы.

ПРЕДУПРЕЖДЕНИЕ! Контакты 100 В громкоговорителей, обозначенные символом опасны для жизни, когда находятся под напряжением. Внешняя проводка, подводимая к этим контактам, должна устанавливаться квалифицированным обученным персоналом.

ПРЕДУПРЕЖДЕНИЕ! Устройства с питанием от сети используют защитное заземление, поэтому должны подключаться к надлежащим образом заземленной сетевой розетке.

Отключение устройства. Электрическая вилка используется для отключения питания от сети и должна оставаться доступной для эксплуатации.

ПРЕДОСТЕРЕЖЕНИЕ! При наличии телефонного интерфейса POTS подключение устройства к телефонным линиям должно производиться квалифицированным обученным персоналом. Для снижения риска возгорания при подключении к телефонным линиям используйте только одножильный медный провод типа 26 AWG.

Предназначено для установки и обслуживания только опытным персоналом

ПРЕДОСТЕРЕЖЕНИЕ! Для снижения риска поражения электрическим током установку и обслуживание устройств Biamp должны выполнять только лица, которые являются опытными специалистами по установке аудиосистем Biamp.

Не проводите какое-либо обслуживание, помимо указанного в инструкциях по эксплуатации, если вы не обладаете соответствующим опытом и квалификацией.

Опытный персонал должен отключить питание прежде чем открывать устройство.

ПРЕДОСТЕРЕЖЕНИЕ! Шаги по установке, касающиеся вспомогательного питания, предназначены только для опытного персонала и должны отвечать всем нормам и законам, действующим в вашей стране.

- Национальный электрический кодекс, ANSI/NFPA 70 для США.
- Канадский электрический кодекс, часть 1, CSA C22.1, разделы 2–128, 12–010(3) и 12–100 для Канады.

Инструкции по настенному монтажу. Устройства, монтируемые на стену, должны надежно крепиться к гипсокартону или подобной поверхности не менее чем 4 винтами для дерева (2 винта для устройств с двумя монтажными отверстиями). Можно использовать альтернативные крепления, в том числе анкеры для гипсокартона, саморезы для листового металла, размещенные в металлических стойках, или винты для дерева, заходящие в деревянные стойки не менее чем на 1,5 см.

Biamp's Limited Warranty

BIAMP SYSTEMS IS PLEASED TO EXTEND THE FOLLOWING 5-YEAR LIMITED WARRANTY TO THE ORIGINAL END USER CUSTOMER OF THE PRODUCTS DESCRIBED IN THIS MANUAL

1. This limited warranty is being offered by Biamp Systems Corporation. Biamp Systems warrants to the original end user customer of new Biamp Systems products from an authorized Biamp Systems dealer that the product will be free from defects in materials and workmanship for a specified period (the "Warranty Period"), subject to the terms and conditions set forth below. The Warranty Period for the products described in this manual shall be five (5) years. The Warranty Period begins (a) the date of the original end user's purchase from an authorized Biamp Systems dealer or (b) six months after the product is first shipped from Biamp Systems' factory to an authorized Biamp Systems dealer or distributor, whichever occurs earlier. This warranty extends only to the original end user customer and is not assignable or transferrable.

2. Within the Warranty Period, Biamp Systems will repair or replace, at Biamp Systems' option, nonconforming product, provided that Biamp Systems is notified within 30 days of the identification of such defect or failure. Replacement products may be new or reconditioned. If the repair or replacement of your nonconforming product is not reasonably available, at Biamp Systems' discretion, Biamp Systems will refund you the purchase price. As a condition to receiving the benefits of this warranty, you must provide Biamp Systems with documentation that establishes that you were the original end user purchaser of the product from an authorized Biamp Systems dealer. Such evidence may consist of your sales receipt.

3. Upon notice, Biamp Systems will provide instructions on the warranty claim procedures to be followed and issue a Return Authorization (RA) number if required. Any export/import authorizations or duties, transportation and insurance charges to the Biamp Systems factory, or other service facility designated by Biamp Systems, for warranty service shall be your responsibility. Transportation and insurance charges from the Biamp Systems' factory or service facility after a warranty repair or for a warranty replacement will be paid by Biamp Systems. Biamp Systems is not responsible for any damage to the product during transit to the Biamp Systems' factory or service facility. Biamp Systems, at its sole discretion, will determine warrantable failures upon receipt of your product or upon inspection of your product by an authorized Biamp Systems dealer. All products that are returned by you and replaced by Biamp Systems will become the property of Biamp Systems.

4. This warranty will be VOID if the serial number has been removed or defaced; or if the product has been altered, subjected to damage, abuse or rental usage, repaired by any person not authorized by Biamp Systems to make repairs; damaged due to improper or inadequate maintenance; operated outside the normal environmental specifications for the product; or installed in any manner that does not comply with Biamp Systems' recommendations. This warranty does not apply to damage caused by an accident, power surge, flooding, fire, earthquake, or other external causes. This warranty does not apply to damage caused by abuse or misuse of the product.

5. Electro-mechanical fans, electrolytic capacitors, gooseneck microphones, cords connecting handheld microphones, hard-drives, displays, consumable parts (i.e. batteries), and normal wear and tear of items such as paint, knobs, handles, keypads and covers are not covered under this warranty. All software or firmware distributed by Biamp Systems is provided AS IS and without any warranty of any kind, except as expressly provided in any documentation or license agreement furnished with the software or firmware. This warranty does not apply to third party products resold by Biamp Systems.

6. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. BIAMP SYSTEMS DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

7. The remedies set forth herein shall be the purchaser's sole and exclusive remedies with respect to any defective product. No repair or replacement of any product or part thereof will extend the applicable warranty period for the entire product. The specific warranty for any repair will extend for a period of 90 days following the repair or the remainder of the warranty period for the product, whichever is longer.

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Revision effective as of October 27, 2015

GETTING STARTED GUIDE



Cisco Aironet 1850 Series Access Points

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1 About this Guide

This guide provides instructions on how to install and configure your Cisco Aironet 1850 Series Access Point. This guide also provides mounting instructions and limited troubleshooting procedures.

The 1850 Series Access Point is referred to as the *access point,* or abbreviated as *AP* in this document.

2 About the Access Point

The Cisco Aironet 1850 series access point is an 802.11 a/b/g/n/ac (Wave 2) access point, with both external antenna (AP1852E) and internal antenna (AP1852I) models. This access point can be mounted on a wall or a ceiling, and supports 2.4 GHz 3x4 802.11b/g/n MIMO and 5 GHz 4x4 802.11 a/n/ac (Wave 2) MIMO applications simultaneously.

Access Point Model Numbers and Regulatory Domains

The Cisco Aironet 1850 series access point comes in both universal regulatory domain and non-universal regulatory domain model number formats. See the following table for the model number formats.

	Universal Regulatory Domain Model Number Format	**Non- Universal Regulatory Domain Model Number Format**
External antenna models	AIR-AP1852E-UXK9	AIR-AP1852E-*x*-K9
	AIR-AP1852E-UXK9C	AIR-AP1852E-*x*-K9C
Internal antenna models	AIR-AP1852I-UXK9	AIR-AP1852I-*x*-K9
	AIR-AP1852I-UXK9C	AIR-AP1852I-*x*-K9C

The '*UX*' in a model number indicates a universal regulatory domain access point. For information on how to set the regulatory domain and country configurations of a universal regulatory domain access point, see the *Cisco Aironet Universal AP Priming and Cisco AirProvision User Guide*, at:

http://www.cisco.com/c/en/us/td/docs/wireless/access_point/ux-ap/guide/uxap-mobapp-g.html

The '*x*' placeholder in the other model numbers represents the regulatory domain. The '*x*' can be any one of these supported regulatory domains: A, B, C, D, E, F, H, I, K, N, Q, R, S, T, Z.

For more information on supported regulatory domains, see the following page:

http://www.cisco.com/c/en/us/products/collateral/wireless/access-points/product_data_sheet0900aecd80537b6a.html

Model numbers ending in C are factory-shipped with a Cisco Mobility Express software image. For more information, see the *Cisco Mobility Express User Guide* at the following URL:

http://www.cisco.com/c/en/us/td/docs/wireless/access_point/mob_exp/1/user_guide/b_ME_User_Guide.html

Access Point Features

The features of the 1850 series access points are:

- Supported mode(s) of operation:
  - Centralized
- Supports Cisco Mobility Express solution. The 1850 series access point can operate as a master AP (having an integrated wireless controller functionality) in a Cisco Mobility Express network. For more information, see the *Cisco Mobility Express User Guide* at the following URL:

  http://www.cisco.com/c/en/us/td/docs/wireless/access_point/mob_exp/1/user_guide/b_ME_User_Guide.html
- Radio features supported are:
  - 2.4 GHz and 5 GHz concurrent radios
  - 2 GHz radio with 3TX x 4RX and three spatial streams SU-MIMO
  - 5 GHz radio with 4TX x 4RX 802.11ac Wave 2 capable with four spatial stream SU-MIMO and 3 spatial streams MU-MIMO
  - 802.11ac based Transmit Beamforming
  - Quality of Service (QoS)
  - Radio Resource Management (RRM)
  - Rogue Detection
  - BandSelect
- The AP supports the following hardware external interfaces:
  - RS-232 Console Interface through RJ-45
  - Local Power DC Jack
  - Mode button. For information on how to use the Mode button, see "Using the Mode Button" section on page 23.
  - USB 2.0 port (no software support at this time)

  - One multi-color LED status indicator. See the "Checking the Access Point LEDs" section on page 21 for information on the colors of the LED status indicator.
  - 1 x 10/100/1000 Mbps WAN Ethernet Port (RJ-45), with PoE support.
  - 1 x 10/100/1000 Mbps Auxiliary Ethernet port (RJ-45). For the Link Aggregation feature only. Does not require or provide PoE support.
- 1852I model access point has four integrated 2.4 GHz/5 GHz dual-band antennas located near each corner of the 1852I access point under the top housing. Peak antenna gain is approximately 3 dBi and 5 dBi in 2.4 GHz and 5 GHz bands respectively.
- The 1852E model supports up to four external antennas using the RTNC antenna connectors on the top of the access point. The following Cisco external antennas are supported on the 1852E:
  - AIR-ANT2524DB-R
  - AIR-ANT2524DG-R
  - AIR-ANT2524DW-R
  - AIR-ANT2535SDW-R
  - AIR-ANT2524V4C-R
  - AIR-ANT2566P4W-R
  - AIR-ANT2566D4M-R
  - AIR-ANT2544V4M-R

A full listing of the access point's features and specification are provided in the Cisco Aironet 1850 Series Access Point Data Sheet, at the following URL:

http://www.cisco.com/c/en/us/products/collateral/wireless/aironet-1850-series-access-points/datasheet-c78-734256.html

3 Safety Instructions

Translated versions of the following safety warnings are provided in the translated safety warnings document that is shipped with your access point. The translated warnings are also in the *Translated Safety Warnings for Cisco Aironet Access Points*, which is available on Cisco.com.

Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Warning

Read the installation instructions before you connect the system to its power source. Statement 1004

Warning

Installation of the equipment must comply with local and national electrical codes. Statement 1074

Warning

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20A. Statement 1005

Warning

Do not operate your wireless network device near unshielded blasting caps or in an explosive environment unless the device has been modified to be especially qualified for such use. Statement 245B

Caution

The fasteners you use to mount an access point on a ceiling must be capable of maintaining a minimum pullout force of 20 lbs (9 kg) and must use a minimum of 4 holes on the mounting bracket, or a minimum of 2 holes when mounting on a network box.

Caution This product and all interconnected equipment must be installed indoors within the same building, including the associated LAN connections as defined by Environment A of the IEEE 802.3af/at Standard.

Note The access point is suitable for use in environmental air space in accordance with section 300.22.C of the National Electrical Code and sections 2-128, 12-010(3), and 12-100 of the Canadian Electrical Code, Part 1, C22.1. You should not install the power supply or power injector in air handling spaces.

Note Use only with listed Information Technology Equipment (ITE) equipment. For more information on ITE equipment, refer to article 645 of the latest National Electrical Code (NEC).

4 Unpacking the AP

To unpack the access point, follow these steps:

Step 1 Unpack and remove the access point and the mounting accessories and antennas, if included for external antenna model access points, from the shipping box.

Step 2 Return any packing material to the shipping container and save it for future use.

Step 3 Verify that you have received the items listed below. If any item is missing or damaged, contact your Cisco representative or reseller for instructions.

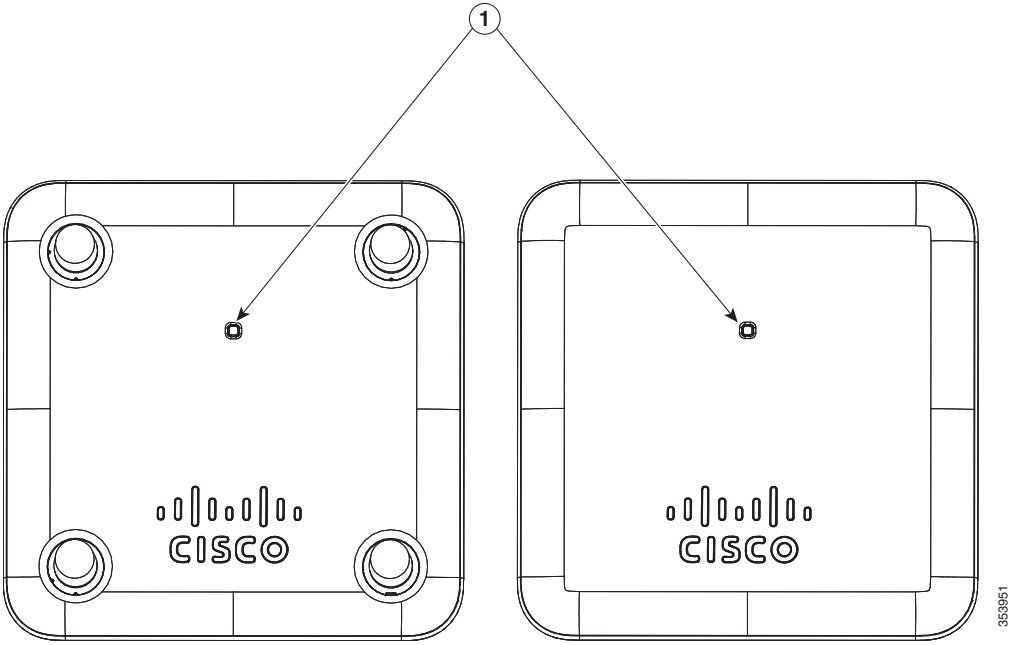
- The access point
- Mounting bracket (AIR-AP-BRACKET-1= or AIR-AP-BRACKET-2=, only if selected when you ordered the access point)
- T-RAIL clips and Channel Adapter (only if selected when you ordered the access point)

5 Ports and Connectors on the AP

The 1850 series access points have an LED indicator on the face of the unit, above the Cisco logo, as shown in Figure 1. For information on the LED scheme, see the "Access Point Status LEDs" section on page 21.

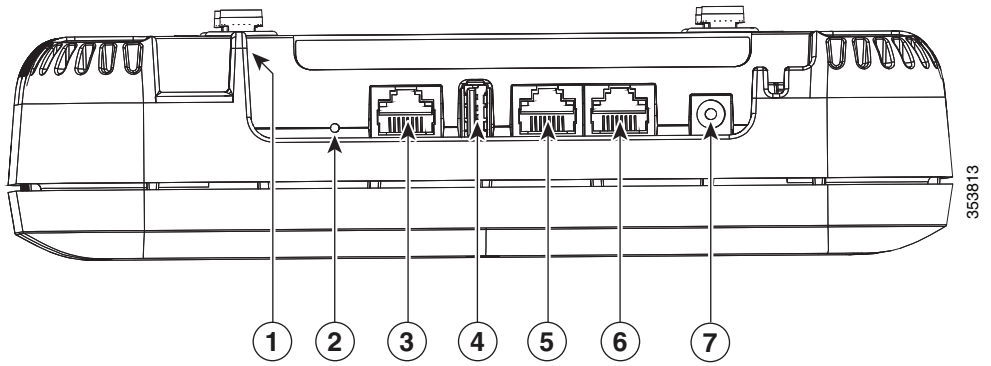
The ports and connections on the access point are shown in Figure 2.

Figure 1 Access Point LED Indicator Position



1	LED indicator position on both internal and external antenna models. For information on the LED scheme, see the "Access Point Status LEDs" section on page 21.

Figure 2 Access Point Ports and Connections



1	Security hasp for padlocking AP to mounting bracket	**5**	AUX (Auxiliary) port. This port appears in the wireless controller user interface as *GigabitEthernet1*. This port, along with the PoE-In port, is used for Link Aggregation. This port is disabled when using 802.3af (15.4W) power.
2	Mode button For information on how to use the Mode button, see "Using the Mode Button" section on page 23.	**6**	PoE-In port (Ethernet Uplink port)
3	RJ-45 console port	**7**	48 V DC input power port
4	USB 2.0 port (no software support at this time)		

6 Preparing the AP for Installation

Before you mount and deploy your access point, we recommend that you perform a site survey (or use the site planning tool) to determine the best location to install your access point.

You should have the following information about your wireless network available:

- Access point locations.
- Access point mounting options: below a suspended ceiling, on a flat horizontal surface, or on a desktop.

Note You can mount the access point above a suspended ceiling but you must purchase additional mounting hardware: See "Mounting and Grounding the Access Point" section on page 15 for additional information.

- Access point power options: power supplied by the recommended external power supply (Cisco AIR-PWR-C), a DC power supply, PoE from a network device, or a PoE power injector/hub (usually located in a wiring closet).

Note Access points mounted in a building's environmental airspace must be powered using PoE to comply with safety regulations.

Cisco recommends that you make a site map showing access point locations so that you can record the device MAC addresses from each location and return them to the person who is planning or managing your wireless network.

7 Installation Overview

Installing the access point involves these operations:

Step 1 Performing a Pre-Installation Configuration, page 11 (optional)

Step 2 Mounting and Grounding the Access Point, page 15

Step 3 Powering the Access Point, page 16

Step 4 Configuring and Deploying the Access Point, page 18

8 Performing a Pre-Installation Configuration

For a Cisco Mobility Express deployment, see the Cisco Mobility Express User Guide at this URL: http://www.cisco.com/c/en/us/td/docs/wireless/access_point/mob_exp/1/user_guide/b_ME_User_Guide.html

The following procedures ensure that your access point installation and initial operation go as expected. This procedure is optional.

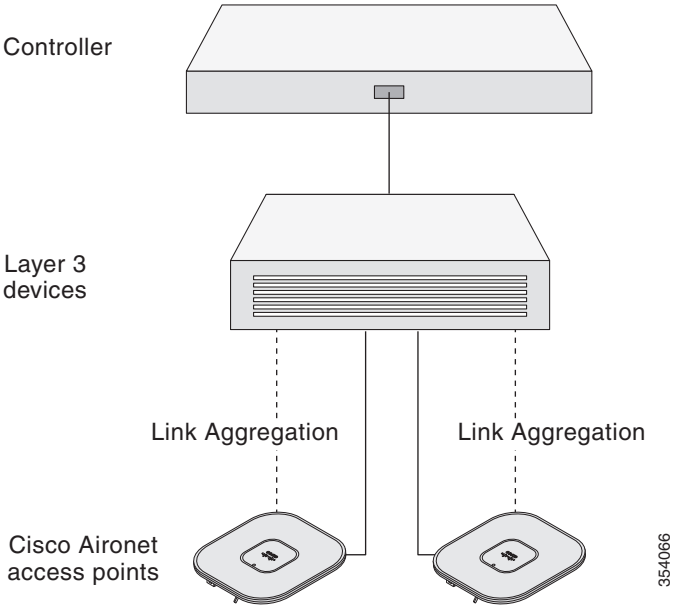
Note Performing a pre-installation configuration is an optional procedure. If your network controller is properly configured, you can install your access point in its final location and connect it to the network from there. See the "Deploying the Access Point on the Wireless Network" section on page 20 for details.

The following Pre-Installation Configuration procedure given does not include configuring Link Aggregation. For information on configuring Link Aggregation, see the Cisco Wireless LAN Controller Configuration Guide, Release 8.1, at this URL:

http://www.cisco.com/c/en/us/td/docs/wireless/controller/8-1/configuration-guide/b_cg81.html

The pre-installation configuration setup is illustrated in Figure 3.

Figure 3 Pre-Installation Configuration Setup



To perform pre-installation configuration, perform the following steps:

Step 1 Make sure that the Cisco wireless LAN controller DS port is connected to the network. Use the CLI, web-browser interface, or Cisco Prime Infrastructure procedures as described in the appropriate Cisco wireless LAN controller guide.

- **a.** Make sure that access points have Layer 3 connectivity to the Cisco wireless LAN controller Management and AP-Manager Interface.
- **b.** Configure the switch to which your access point is to attach. See the *Cisco Wireless LAN Controller Configuration Guide* for the release you are using, for additional information.
- **c.** Set the Cisco wireless LAN controller as the master so that new access points always join with it.
- **d.** Make sure DHCP is enabled on the network. The access point must receive its IP address through DHCP.
- **e.** CAPWAP UDP ports must not be blocked in the network.
- **f.** The access point must be able to find the IP address of the controller. This can be accomplished using DHCP, DNS, or IP subnet broadcast. This guide describes the DHCP method to convey the controller IP address. For other methods, refer to the product

documentation. See also the "Configuring DHCP Option 43" section on page 26 for more information.

Note The access point requires a gigabit Ethernet (GbE) link to prevent the Ethernet port from becoming a bottleneck for traffic because wireless traffic speeds exceed transmit speeds of a 10/100 Ethernet port.

Step 2 Apply power to the access point. See Powering the Access Point, page 16.

a. As the access point attempts to connect to the controller, the LEDs cycle through a green, red, and amber sequence, which can take up to 5 minutes.

Note If the access point remains in this mode for more than five minutes, the access point is unable to find the Master Cisco wireless LAN controller. Check the connection between the access point and the Cisco wireless LAN controller and be sure that they are on the same subnet.

b. If the access point shuts down, check the power source.

c. After the access point finds the Cisco wireless LAN controller, it attempts to download the new operating system code if the access point code version differs from the Cisco wireless LAN controller code version. While this is happening, the Status LED blinks amber.

d. If the operating system download is successful, the access point reboots.

Step 3 Configure the access point if required. Use the controller CLI, controller GUI, or Cisco Prime Infrastructure to customize the access-point-specific 802.11ac network settings.

Step 4 If the pre-installation configuration is successful, the Status LED is green indicating normal operation. Disconnect the access point and mount it at the location at which you intend to deploy it on the wireless network.

Step 5 If your access point does not indicate normal operation, turn it off and repeat the pre-installation configuration.

Note When you are installing a Layer 3 access point on a different subnet than the Cisco wireless LAN controller, be sure that a DHCP server is reachable from the subnet on which you will be installing the access point, and that the subnet has a route back to the Cisco wireless LAN controller. Also be sure that the route back to the Cisco wireless LAN controller has destination UDP ports 5246 and 5247 open for CAPWAP communications. Ensure that the route back to the primary, secondary, and tertiary wireless LAN controller allows IP packet fragments. Finally, be sure that if address translation is used, that the access point and the Cisco wireless LAN controller have a static 1-to-1 NAT to an outside address. (Port Address Translation is not supported.)

9 Mounting and Grounding the Access Point

Cisco Aironet 1852 series access points can be mounted in several configurations – on a suspended ceiling, on a hard ceiling or wall, on an electrical or network box, and above a suspended ceiling.

Go to the following URL for access point mounting instructions:

http://www.cisco.com/c/en/us/td/docs/wireless/access_point/mounting/guide/apmount.html

The standard mounting hardware supported by the AP is listed in Table 1.

Table 1 Brackets and Clips for Mounting the AP

	Part Number	Description
Brackets	AIR-AP-BRACKET-1	Low-profile bracket (This is the default option)
	AIR-AP-BRACKET-2	Universal bracket
Clips	AIR-AP-T-RAIL-R	Ceiling Grid Clip (Recessed mounting) (This is the default option)
	AIR-AP-T-RAIL-F	Ceiling Grid Clip (Flush mounting)
	AIR-CHNL-ADAPTER	Optional adapter for channel-rail ceiling grid profile.

10 Powering the Access Point

The AP can be powered using:

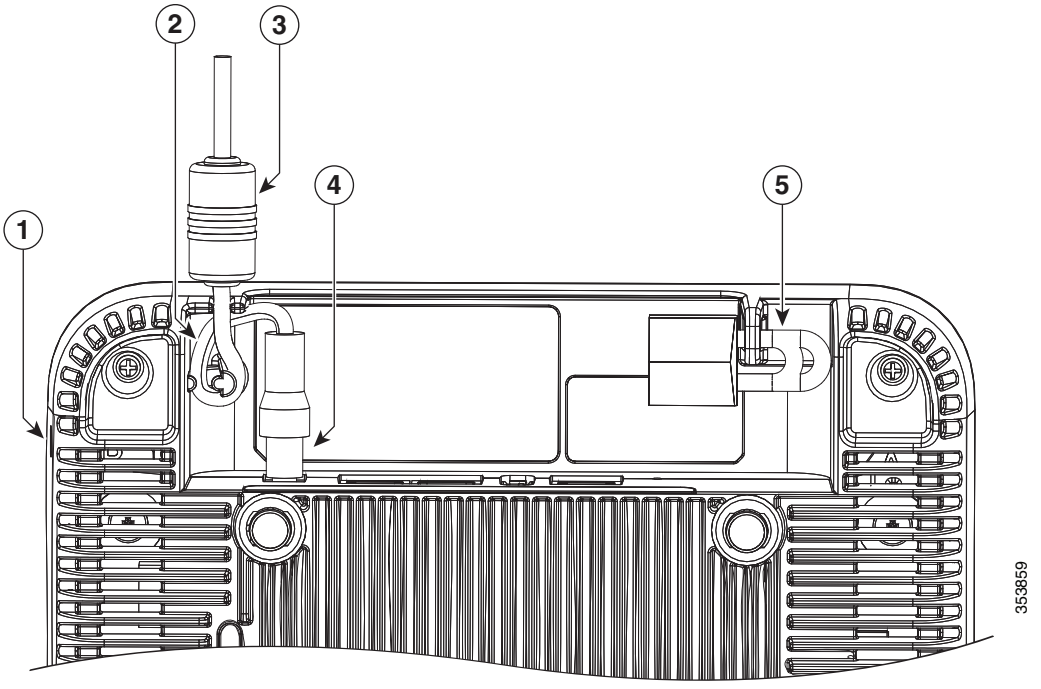
- 48 V DC power via the 48VDC port, using Cisco Power Adapter AC DC AIR-PWR-C=. Ensure that the power cable is routed through the strain relief retention clips cast into the enclosure. See Figure 4.
- Power-over-Ethernet (PoE) from the Ethernet cable, from an external power source such as the Cisco Power Injector AIR-PWRINJ6=.You can also use the AIR-PWRINJ5 Cisco Power Injector but with reduced functionality.
- Any 802.3at (25.5 W) or 802.3af (15.4 W) compliant power injector.

  However, when powered by an 802.3af powering source, the following operations are supported:

  - For 1852I – the AUX and USB ports are disabled. Both radios operate at full operation.
  - For 1852E – the AUX and USB ports are disabled. The 2.4GHz radio will shift to 2x3:2SS operation and the 5GHz radio will remain at full operation.

  With an 802.3at or the AIR-PWR-C= as the power source, the AP1852I/E provides full operation including the AUX and USB ports.

Figure 4 Routing the DC Power Cable



1	Kensington lock slot	**4**	DC power cable plugged into the 48VDC port
2	Power cable routed through the strain relief retention clips	**5**	AP secured using a padlock
3	DC power cable		

11 Configuring and Deploying the Access Point

This section describes how to connect the access point to a wireless LAN controller. Because the configuration process takes place on the controller, see the *Cisco Wireless LAN Controller Configuration Guide* for additional information.

For a Cisco Mobility Express deployment, see the Cisco Mobility Express User Guide at this URL: http://www.cisco.com/c/en/us/td/docs/wireless/access_point/mob_exp/1/user_guide/b_ME_User_Guide.html

The information in this section does not include configuring Link Aggregation. For information on configuring Link Aggregation, see the Cisco Wireless LAN Controller Configuration Guide, Release 8.1, at the following URL:

http://www.cisco.com/c/en/us/td/docs/wireless/controller/8-1/configuration-guide/b_cg81.html

The Controller Discovery Process

The access point uses standard Control and Provisioning of Wireless Access Points Protocol (CAPWAP) to communicate between the controller and other wireless access points on the network. CAPWAP is a standard, inter-operable protocol which enables an access controller to manage a collection of wireless termination points. The discovery process using CAPWAP is identical to the Lightweight Access Point Protocol (LWAPP) used with previous Cisco Aironet access points. LWAPP-enabled access points are compatible with CAPWAP, and conversion to a CAPWAP controller is seamless. Deployments can combine CAPWAP and LWAPP software on the controllers.

The functionality provided by the controller does not change except for customers who have Layer 2 deployments, which CAPWAP does not support.

In a CAPWAP environment, a wireless access point discovers a controller by using CAPWAP discovery mechanisms and then sends it a CAPWAP join request. The controller sends the access point a CAPWAP join response allowing the access point to join the controller. When the access point joins the controller, the controller manages its configuration, firmware, control transactions, and data transactions.



Note For additional information about the discovery process and CAPWAP, see the *Cisco Wireless LAN Controller Software Configuration Guide*. This document is available on Cisco.com.

Note CAPWAP support is provided in controller software release 5.2 or later. However, your controller must be running the release that supports 1850 series access points, as specified in the access point's data sheet.

Note You cannot edit or query any access point using the controller CLI if the name of the access point contains a space.

Note Make sure that the controller is set to the current time. If the controller is set to a time that has already occurred, the access point might not join the controller because its certificate may not be valid for that time.

Access points must be discovered by a controller before they can become an active part of the network. The access point supports these controller discovery processes:

- **Layer 3 CAPWAP discovery**—Can occur on different subnets than the access point and uses IP addresses and UDP packets rather than MAC addresses used by Layer 2 discovery.
- **Locally stored controller IP address discovery**—If the access point was previously joined to a controller, the IP addresses of the primary, secondary, and tertiary controllers are stored in the access point's non-volatile memory. This process of storing controller IP addresses on an access point for later deployment is called *priming the access point*. For more information about priming, see the "Performing a Pre-Installation Configuration" section on page 11.
- **DHCP server discovery**—This feature uses DHCP option 43 to provide controller IP addresses to the access points. Cisco switches support a DHCP server option that is typically used for this capability. For more information about DHCP option 43, see the "Configuring DHCP Option 43" section on page 26.
- **DNS discovery**—The access point can discover controllers through your domain name server (DNS). For the access point to do so, you must configure your DNS to return controller IP addresses in response to CISCO-CAPWAP-CONTROLLER.*localdomain*, where *localdomain* is the access point domain name. Configuring the CISCO-CAPWAP-CONTROLLER provides backwards compatibility in an existing customer deployment. When an access point receives an IP address and DNS information from a DHCP server, it contacts the DNS to resolve CISCO-CAPWAP-CONTROLLER.*localdomain*. When the DNS sends a list of controller IP addresses, the access point sends discovery requests to the controllers.

Deploying the Access Point on the Wireless Network

After you have mounted the access point, follow these steps to deploy it on the wireless network:

Step 1 Connect and power up the access point.

Step 2 Observe the access point LED (for LED descriptions, see "Checking the Access Point LEDs" section on page 21).

- **a.** When you power up the access point, it begins a power-up sequence that you can verify by observing the access point LED. If the power-up sequence is successful, the discovery and join process begins. During this process, the LED blinks sequentially green, red, and off. When the access point has joined a controller, the LED is chirping green if no clients are associated or green if one or more clients are associated.
- **b.** If the LED is not on, the access point is most likely not receiving power.
- **c.** If the LED blinks sequentially for more than 5 minutes, the access point is unable to find its primary, secondary, and tertiary Cisco wireless LAN controller. Check the connection between the access point and the Cisco wireless LAN controller, and be sure the access point and the Cisco wireless LAN controller are either on the same subnet or that the access point has a route back to its primary, secondary, and tertiary Cisco wireless LAN controller. Also, if the access point is not on the same subnet as the Cisco wireless LAN controller, be sure that there is a properly configured DHCP server on the same subnet as the access point. See the "Configuring DHCP Option 43" section on page 26 for additional information.

Step 3 Reconfigure the Cisco wireless LAN controller so that it is not the Master.



Note A Master Cisco wireless LAN controller should be used only for configuring access points and not in a working network.

12 Checking the Access Point LEDs

Access Point Status LEDs

The location of the access point status LED is shown in Figure 1.

Note Regarding LED status colors, it is expected that there will be small variations in color intensity and hue from unit to unit. This is within the normal range of the LED manufacturer's specifications and is not a defect.

The access point status LED indicates various conditions and are described in Table 2.

Table 2 LED Status Indications

Message Type	LED State	Message Meaning
Association status	Chirping Green	Normal operating condition, but no wireless client associated
	Green	Normal operating condition, at least one wireless client association
Boot loader status	Green	Executing boot loader
Boot loader error	Red	Boot loader signing verification failure
Access point regulatory domain priming status	Blinking Amber	AP priming to a new regulatory domain by Neighbor Discovery Protocol (NDP), in progress
	Cycling Red, Green and off	AP waiting to be primed
	Chirping Red	AP primed to a wrong regulatory domain

Table 2 LED Status Indications (continued)

Message Type	LED State	Message Meaning
Operating status	Blinking amber	Software upgrade in progress
	Cycling through green, red, and amber	Discovery/join process in progress
	Rapidly cycling through red, green, amber, and off.	Access point location command invoked from controller web interface.
Access point operating system errors	Cycling through red, green, amber, and off	General warning; insufficient inline power

Ethernet Port LEDs

Each Ethernet port has two LEDs for showing Link (Green) and Activity (Amber) statuses. They are integrated on the RJ45 connector. For a description of the statuses they indicate, see the following table.

	10M Link	10M Active	100M Link	100M Active	1000M Link	1000M Active
Link (Green) LED State	Off	Off	Off	Off	On	On
Activity (Amber) LED State	On	Blinking	On	Blinking	On	Blinking

13 Miscellaneous Usage and Configuration Guidelines

Using the Mode Button

Using the Mode button (see Figure 2) you can:

- Reset the AP to it's default factory-shipped configuration.
- Clear the AP's internal storage, including all configuration files and the regulatory domain configuration.

To use the mode button, press, and keep pressed, the mode button on the access point during the AP's boot cycle. Wait until the AP's status LED changes to Amber. During this, the AP console shows a seconds counter, counting the number of seconds the mode button is pressed. Then:

- To reset the AP to it's default factory-shipped configuration, keep the mode button pressed for less than 20 seconds. The AP's configuration files are cleared.

  This resets all configuration settings to factory defaults, including passwords, WEP keys, the IP address, and the SSID. However, the regulatory domain provisioning is not reset.

- To clear the AP's internal storage, including all configuration files and the regulatory domain configuration, keep the mode button pressed for more than 20 seconds, but less than 60 seconds.

  The AP's status LED changes from Amber to Red, and all the files in the AP's storage directory are cleared. This also removes any regulatory domain provisioning made previously and resets the AP back to -UX domain.

If you keep the mode button pressed for more than 60 seconds, the mode button is assumed faulty and no changes are made.

Troubleshooting the Access Point to Cisco Controller Join Process

Note Ensure that your controller is running the latest Cisco Wireless Controller Software Release as specified in the access point's data sheet.

Access points can fail to join a controller for many reasons: a RADIUS authorization is pending; self-signed certificates are not enabled on the controller; the access point's and controller's regulatory domains don't match, and so on.

Controller software enables you to configure the access points to send all CAPWAP-related errors to a syslog server. You do not need to enable any debug commands on the controller because all of the CAPWAP error messages can be viewed from the syslog server itself.

The state of the access point is not maintained on the controller until it receives a CAPWAP join request from the access point. Therefore, it can be difficult to determine why the CAPWAP discovery request from a certain access point was rejected. In order to troubleshoot such joining problems without enabling CAPWAP debug commands on the controller, the controller collects information for all access points that send a discovery message to it and maintains information for any access points that have successfully joined it.

The controller collects all join-related information for each access point that sends a CAPWAP discovery request to the controller. Collection begins with the first discovery message received from the access point and ends with the last configuration payload sent from the controller to the access point.

You can view join-related information for up to three times the maximum number of access points supported by the platform for the 2500 series controllers and the Controller Network Module within the Cisco 28/37/38xx Series Integrated Services Routers.

Note The maximum number of access points varies for the Cisco WiSM2, depending on which controller software release is being used.

When the controller is maintaining join-related information for the maximum number of access points, it does not collect information for any more access points.

An access point sends all syslog messages to IP address 255.255.255.255 by default when any of the following conditions are met:

- An access point running software release 8.0.x.x or later has been newly deployed.

- An existing access point running software release 8.0.x.x or later has been reset after clearing the configuration.

If any of these conditions are met and the access point has not yet joined a controller, you can also configure a DHCP server to return a syslog server IP address to the access point using option 7 on the server. The access point then starts sending all syslog messages to this IP address.

When the access point joins a controller for the first time, the controller sends the global syslog server IP address (the default is 255.255.255.255) to the access point. After that, the access point sends all syslog messages to this IP address until it is overridden by one of the following scenarios:

- The access point is still connected to the same controller, and the global syslog server IP address configuration on the controller has been changed using the **config ap syslog host global syslog_server_IP_address** command. In this case, the controller sends the new global syslog server IP address to the access point.
- The access point is still connected to the same controller, and a specific syslog server IP address has been configured for the access point on the controller using the **config ap syslog host specific Cisco_AP syslog_server_IP_address** command. In this case, the controller sends the new specific syslog server IP address to the access point.
- The access point is disconnected from the controller and joins another controller. In this case, the new controller sends its global syslog server IP address to the access point.
- Whenever a new syslog server IP address overrides the existing syslog server IP address, the old address is erased from persistent storage, and the new address is stored in its place. The access point also starts sending all syslog messages to the new IP address provided the access point can reach the syslog server IP address.

You can configure the syslog server for access points and view the access point join information only from the controller CLI.

Important Information for Controller-based Deployments

Keep these guidelines in mind when you use 1852 series access points:

- The access point can only communicate with Cisco wireless LAN controllers.
- The access point does not support Wireless Domain Services (WDS) and cannot communicate with WDS devices. However, the controller provides functionality equivalent to WDS when the access point joins it.
- CAPWAP does not support Layer 2. The access point must get an IP address and discover the controller using Layer 3, DHCP, DNS, or IP subnet broadcast.
- The access point console port is enabled for monitoring and debug purposes. All configuration commands are disabled when the access point is connected to a controller.

Configuring DHCP Option 43

You can use DHCP Option 43 to provide a list of controller IP addresses to the access points, enabling them to find and join a controller.

The following is a DHCP Option 43 configuration example on a Windows 2003 Enterprise DHCP server for use with Cisco Aironet lightweight access points. For other DHCP server implementations, consult product documentation for configuring DHCP Option 43. In Option 43, you should use the IP address of the controller management interface.

Note DHCP Option 43 is limited to one access point type per DHCP pool. You must configure a separate DHCP pool for each access point type.

The 1850 series access point uses the type-length-value (TLV) format for DHCP Option 43. DHCP servers must be programmed to return the option based on the access point's DHCP Vendor Class Identifier (VCI) string (DHCP Option 43). The VCI string for the 1850 series access point is:

Cisco AP c1850

The format of the TLV block is listed below:

- Type: 0xf1 (decimal 241)
- Length: Number of controller IP addresses * 4
- Value: List of WLC management interfaces

To configure DHCP Option 43 in the embedded Cisco IOS DHCP server, follow these steps:

Step 1 Enter configuration mode at the Cisco IOS CLI.

Step 2 Create the DHCP pool, including the necessary parameters such as default router and name server. A DHCP scope example is as follows:

```
ip dhcp pool <pool name>
network <IP Network> <Netmask>
default-router <Default router>
dns-server <DNS Server>

Where:
<pool name> is the name of the DHCP pool, such as AP1852
<IP Network> is the network IP address where the controller resides, such as
10.0.15.1
```

```
<Netmask> is the subnet mask, such as 255.255.255.0
<Default router> is the IP address of the default router, such as 10.0.0.1
<DNS Server> is the IP address of the DNS server, such as 10.0.10.2
```

Step 3 Add the option 43 line using the following syntax:

option 43 hex *<hex string>*

The *hex string* is assembled by concatenating the TLV values shown below:

Type + *Length* + *Value*

Type is always *f1(hex)*. *Length* is the number of controller management IP addresses times 4 in hex. *Value* is the IP address of the controller listed sequentially in hex.

For example, suppose that there are two controllers with management interface IP addresses, 10.126.126.2 and 10.127.127.2. The type is *f1(hex)*. The length is *2 * 4 = 8 = 08 (hex)*. The IP addresses translate to *0a7e7e02* and *0a7f7f02*. Assembling the string then yields *f1080a7e7e020a7f7f02*. The resulting Cisco IOS command added to the DHCP scope is **option 43 hex f1080a7e7e020a7f7f02**.

14 Related Documentation

All user documentation for the Cisco Aironet 1850 series access point is available at the following URL:

http://www.cisco.com/c/en/us/support/wireless/aironet-1850-series-access-points/tsd-products-support-series-home.html

For detailed information and guidelines for configuring and deploying your access point in a wireless network, see the following documentation:

- Cisco Wireless LAN Controller Configuration Guide, Release 8.1, at the following URL:

  http://www.cisco.com/c/en/us/td/docs/wireless/controller/8-1/configuration-guide/b_cg81.html
- Cisco Aironet 1850 Series Access Point Deployment Guide, at the following URL:

  http://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-1/1850_DG/b_Cisco_Aironet_Series_1850_Access_Point_Deployment_Guide.html

15 Declarations of Conformity and Regulatory Information

This section provides declarations of conformity and regulatory information for the Cisco Aironet 1850 Series Access Points. You can find additional information at this URL:

www.cisco.com/go/aironet/compliance

Manufacturers Federal Communication Commission Declaration of Conformity Statement



Access Point Models	Certification Number
AIR-AP1852I-B-K9	LDK102095
AIR-AP1852E-B-K9	
AIR-AP1852I-B-K9C	
AIR-AP1852E-B-K9C	
AIR-AP1852I-UXK9	
AIR-AP1852E-UXK9	
AIR-AP1852I-UXK9C	
AIR-AP1852E-UXK9C	

Manufacturer:

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA

This device complies with Part 15 rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician.



Caution The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the integrated antennas. Any changes or modification to the product not expressly approved by Cisco could void the user's authority to operate this device.

VCCI Statement for Japan

Warning

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

警告　この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

ＶＣＣＩ－Ｂ

Guidelines for Operating Cisco Aironet Access Points in Japan

This section provides guidelines for avoiding interference when operating Cisco Aironet access points in Japan. These guidelines are provided in both Japanese and English.

Japanese Translation

この機器の使用周波数帯では、電子レンジ等の産業・科学・医療用機器のほか工場の製造ライン等で使用されている移動体識別用の構内無線局（免許を要する無線局）及び特定小電力無線局（免許を要しない無線局）が運用されています。

1　この機器を使用する前に、近くで移動体識別用の構内無線局及び特定小電力無線局が運用されていないことを確認して下さい。

2　万一、この機器から移動体識別用の構内無線局に対して電波干渉の事例が発生した場合には、速やかに使用周波数を変更するか又は電波の発射を停止した上、下記連絡先にご連絡頂き、混信回避のための処置等(例えば、パーティションの設置など)についてご相談して下さい。

3　その他、この機器から移動体識別用の特定小電力無線局に対して電波干渉の事例が発生した場合など何かお困りのことが起きたときは、次の連絡先へお問い合わせ下さい。

連絡先：03-6434-6500

208697

English Translation

This equipment operates in the same frequency bandwidth as industrial, scientific, and medical devices such as microwave ovens and mobile object identification (RF-ID) systems (licensed premises radio stations and unlicensed specified low-power radio stations) used in factory production lines.

1. Before using this equipment, make sure that no premises radio stations or specified low-power radio stations of RF-ID are used in the vicinity.
2. If this equipment causes RF interference to a premises radio station of RF-ID, promptly change the frequency or stop using the device; contact the number below and ask for recommendations on avoiding radio interference, such as setting partitions.
3. If this equipment causes RF interference to a specified low-power radio station of RF-ID, contact the number below.

   Contact Number: 03-6434-6500

Statement 371—Power Cable and AC Adapter

接続ケーブル、電源コード、AC アダプタ、バッテリーなどの部品は、必ず添付品または指定品をご使用ください。添付品・指定品以外の部品をご使用になると故障や動作不良、火災の原因となります。また、電気用品安全法により、当該法の認定（PSE とコードに表記）でなく UL 認定（UL または CSA マークがコードに表記）の電源ケーブルは弊社が指定する製品以外の電気機器には使用できないためご注意ください。

English Translation

When installing the product, please use the provided or designated connection cables/power cables/AC adaptors. Using any other cables/adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL-certified cables (that have the “UL” shown on the code) for any other electrical devices than products designated by CISCO. The use of cables that are certified by Electrical Appliance and Material Safety Law (that have “PSE” shown on the code) is not limited to CISCO-designated products.

Industry Canada

Access Point Models	Certification Number
AIR-AP1852I-A-K9	2461B-102095
AIR-AP1852E-A-K9	
AIR-AP1852I-A-K9C	
AIR-AP1852E-A-K9C	
AIR-AP1852I-UXK9	
AIR-AP1852E-UXK9	
AIR-AP1852I-UXK9C	
AIR-AP1852E-UXK9C	

Canadian Compliance Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antenna Type	Antenna Gain	Antenna Impedance
Dual-band Omni	2/4 dBi	50 ohms
Dual-band Dipole	2/4 dBi	50 ohms
Dual-Band Directional	6/6 dBi	50 ohms

Operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
La bande 5 150-5 250 MHz est réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Users are advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.
Les utilisateurs êtes avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

European Community, Switzerland, Norway, Iceland, and Liechtenstein

Access Point Models:

AIR-AP1852I-E-K9

AIR-AP1852E-E-K9

AIR-AP1852I-UXK9

AIR-AP1852E-UXK9

AIR-AP1852I-E-K9C
AIR-AP1852E-E-K9C
AIR-AP1852I-UXK9C
AIR-AP1852E-UXK9C

Declaration of Conformity with regard to the R&TTE Directive 1999/5/EC & Medical Directive 93/42/EEC

Български [Bulgarian]	Това оборудване отговаря на съществените изисквания и приложими клаузи на Директива 1999/5/EC.
Česky [Czech]:	Toto zařízení je v souladu se základními požadavky a ostatními odpovídajícími ustanoveními Směrnice 1999/5/EC.
Dansk [Danish]:	Dette udstyr er i overensstemmelse med de væsentlige krav og andre relevante bestemmelser i Direktiv 1999/5/EF.
Deutsch [German]:	Dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
Eesti [Estonian]:	See seade vastab direktiivi 1999/5/EÜ olulistele nõuetele ja teistele asjakohastele sätetele.
English:	This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]:	Este equipo cumple con los requisitos esenciales asi como con otras disposiciones de la Directiva 1999/5/CE.
Ελληνική [Greek]:	Αυτός ο εξοπλισμός είναι σε συμμόρφωση με τις ουσιώδεις απαιτήσεις και άλλες σχετικές διατάξεις της Οδηγίας 1999/5/EC.
Français [French]:	Cet appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la Directive 1999/5/EC.
Íslenska [Icelandic]:	Þetta tæki er samkvæmt grunnkröfum og öðrum viðeigandi ákvæðum Tilskipunar 1999/5/EC.
Italiano [Italian]:	Questo apparato é conforme ai requisiti essenziali ed agli altri principi sanciti dalla Direttiva 1999/5/CE.
Latviešu [Latvian]:	Šī iekārta atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.

Nederlands [Dutch]:	**Dit apparaat voldoet aan de essentiele eisen en andere van toepassing zijnde bepalingen van de Richtlijn 1999/5/EC.**
Malti [Maltese]:	**Dan l-apparat huwa konformi mal-ħtiġiet essenzjali u l-provedimenti l-oħra rilevanti tad-Direttiva 1999/5/EC.**
Magyar [Hungarian]:	**Ez a készülék teljesíti az alapvető követelményeket és más 1999/5/EK irányelvben meghatározott vonatkozó rendelkezéseket.**
Norsk [Norwegian]:	**Dette utstyret er i samsvar med de grunnleggende krav og andre relevante bestemmelser i EU-direktiv 1999/5/EF.**
Polski [Polish]:	**Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE: 1999/5/EC.**
Português [Portuguese]:	**Este equipamento está em conformidade com os requisitos essenciais e outras provisões relevantes da Directiva 1999/5/EC.**
Română [Romanian]	**Acest echipament este in conformitate cu cerintele esentiale si cu alte prevederi relevante ale Directivei 1999/5/EC.**
Slovensko [Slovenian]:	**Ta naprava je skladna z bistvenimi zahtevami in ostalimi relevantnimi pogoji Direktive 1999/5/EC.**
Slovensky [Slovak]:	**Toto zariadenie je v zhode so základnými požiadavkami a inými príslušnými nariadeniami direktív: 1999/5/EC.**
Suomi [Finnish]:	**Tämä laite täyttää direktiivin 1999/5/EY olennaiset vaatimukset ja on siinä asetettujen muiden laitetta koskevien määräysten mukainen.**
Svenska [Swedish]:	**Denna utrustning är i överensstämmelse med de väsentliga kraven och andra relevanta bestämmelser i Direktiv 1999/5/EC.**
Türk [Turkish]	**Bu cihaz 1999/5/EC Direktifi'nin temel gereklerine ve ilgili diğer hükümlerine uygundur.**

142730

The following standards were applied:

EMC—EN 301.489-1 v1.9.2; EN 301.489-17 v2.2.1

Health & Safety—EN60950-1: 2006; EN 50385: 2002

Radio—EN 300 328 v 1.8.1; EN 301.893 v 1.7.1

The conformity assessment procedure referred to in Article 10.4 and Annex III of Directive 1999/5/EC has been followed.

This device also conforms to the EMC requirements of the Medical Devices Directive 93/42/EEC.

Note This equipment is intended to be used in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. For more details, contact Cisco Corporate Compliance.

The product carries the CE Mark:



Declaration of Conformity for RF Exposure

This section contains information on compliance with guidelines related to RF exposure.

Generic Discussion on RF Exposure

The Cisco products are designed to comply with the following national and international standards on Human Exposure to Radio Frequencies:

- US 47 Code of Federal Regulations Part 2 Subpart J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers / IEEE C 95.1 (99)
- International Commission on Non Ionizing Radiation Protection (ICNIRP) 98
- Ministry of Health (Canada) Safety Code 6. Limits on Human Exposure to Radio Frequency Fields in the range from 3kHz to 300 GHz
- Australia Radiation Protection Standard

To ensure compliance with various national and international Electromagnetic Field (EMF) standards, the system should only be operated with Cisco approved antennas and accessories.

This Device Meets International Guidelines for Exposure to Radio Waves

The 1850 series device includes a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) recommended by international guidelines. The guidelines were developed by an independent scientific organization (ICNIRP) and include a substantial safety margin designed to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Separation Distance		
MPE	Distance	Limit
0.69 mW/cm^2	20 cm (7.87 inches)	1.00 mW/cm^2

The World Health Organization has stated that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure then you can easily do so by reorienting antennas away from the user or placing he antennas at a greater separation distance then recommended.

This Device Meets FCC Guidelines for Exposure to Radio Waves

The 1850 series device includes a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) as referenced in FCC Part 1.1310. The guidelines are based on IEEE ANSI C 95.1 (92) and include a substantial safety margin designed to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

The device has been tested and found compliant with the applicable regulations as part of the radio certification process.

Separation Distance		
MPE	Distance	Limit
0.69 mW/cm^2	20 cm (7.87 inches)	1.00 mW/cm^2

The US Food and Drug Administration has stated that present scientific information does not indicate the need for any special precautions for the use of wireless devices. The FCC recommends that if you are interested in further reducing your exposure then you can easily do so by reorienting antennas away from the user or placing the antennas at a greater separation distance then recommended or lowering the transmitter power output.

This Device Meets the Industry Canada Guidelines for Exposure to Radio Waves

The 1850 series device includes a radio transmitter and receiver. It is designed not to exceed the limits for exposure to radio waves (radio frequency electromagnetic fields) as referenced in Health Canada Safety Code 6. The guidelines include a substantial safety margin designed into the limit to ensure the safety of all persons, regardless of age and health.

As such the systems are designed to be operated as to avoid contact with the antennas by the end user. It is recommended to set the system in a location where the antennas can remain at least a minimum distance as specified from the user in accordance to the regulatory guidelines which are designed to reduce the overall exposure of the user or operator.

Separation Distance			
Frequency	MPE	Distance	Limit
2.4 GHz	2.9 W/m^2	20 cm (7.87 inches)	5.4 W/m^2
5 GHz	3.8 W/m^2		9.2 W/m^2

Health Canada states that present scientific information does not indicate the need for any special precautions for the use of wireless devices. They recommend that if you are interested in further reducing your exposure you can easily do so by reorienting antennas away from the user, placing the antennas at a greater separation distance than recommended, or lowering the transmitter power output.

Cet appareil est conforme aux directives internationales en matière d'exposition aux fréquences radioélectriques

Cet appareil de la gamme 1850 comprend un émetteur-récepteur radio. Il a été conçu de manière à respecter les limites en matière d'exposition aux fréquences radioélectriques (champs électromagnétiques de fréquence radio), recommandées dans le code de sécurité 6 de Santé Canada. Ces directives intègrent une marge de sécurité importante destinée à assurer la sécurité de tous, indépendamment de l'âge et de la santé.

Par conséquent, les systèmes sont conçus pour être exploités en évitant que l'utilisateur n'entre en contact avec les antennes. Il est recommandé de poser le système là où les antennes sont à une distance minimale telle que précisée par l'utilisateur conformément aux directives réglementaires qui sont conçues pour réduire l'exposition générale de l'utilisateur ou de l'opérateur.

Distance d'éloignement			
Fréquence	MPE	Distance	Limite
2.4 GHz	2.9 W/m^2	20 cm (7.87 inches)	5.4 W/m^2
5 GHz	3.8 W/m^2		9.2 W/m^2

Santé Canada affirme que la littérature scientifique actuelle n'indique pas qu'il faille prendre des précautions particulières lors de l'utilisation d'un appareil sans fil. Si vous voulez réduire votre exposition encore davantage, selon l'agence, vous pouvez facilement le faire en réorientant les antennes afin qu'elles soient dirigées à l'écart de l'utilisateur, en les plaçant à une distance d'éloignement supérieure à celle recommandée ou en réduisant la puissance de sortie de l'émetteur.

Additional Information on RF Exposure

You can find additional information on the subject at the following links:

- Cisco Systems Spread Spectrum Radios and RF Safety white paper at this URL: http://www.cisco.com/warp/public/cc/pd/witc/ao340ap/prodlit/rfhr_wi.htm
- FCC Bulletin 56: Questions and Answers about Biological Effects and Potential Hazards of Radio Frequency Electromagnetic Fields
- FCC Bulletin 65: Evaluating Compliance with the FCC guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

You can obtain additional information from the following organizations:

- World Health Organization Internal Commission on Non-Ionizing Radiation Protection at this URL: www.who.int/emf
- United Kingdom, National Radiological Protection Board at this URL: www.nrpb.org.uk
- Cellular Telecommunications Association at this URL: www.wow-com.com
- The Mobile Manufacturers Forum at this URL: www.mmfai.org

Administrative Rules for Cisco Aironet Access Points in Taiwan

This section provides administrative rules for operating Cisco Aironet access points in Taiwan. The rules for all access points are provided in both Chinese and English.

Chinese Translation

低功率電波輻射性電機管理辦法

第十二條　經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條　低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

127048

English Translation

Administrative Rules for Low-power Radio-Frequency Devices

Article 12

For those low-power radio-frequency devices that have already received a type-approval, companies, business units or users should not change its frequencies, increase its power or change its original features and functions.

Article 14

The operation of the low-power radio-frequency devices is subject to the conditions that no harmful interference is caused to aviation safety and authorized radio station; and if interference is caused, the user must stop operating the device immediately and can't re-operate it until the harmful interference is clear.

The authorized radio station means a radio-communication service operating in accordance with the Communication Act.

The operation of the low-power radio-frequency devices is subject to the interference caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.

Chinese Translation

低功率射頻電機技術規範

4.7 無線資訊傳輸設備

4.7.5 在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

4.7.6 無線資訊傳輸設備須忍受合法通信之干擾且不得干擾合法通信；如造成干擾，應立即停用，俟無干擾之虞，始得繼續使用。

4.7.7 無線資訊傳輸設備的製造廠商應確保頻率穩定性，如依製造廠商使用手冊上所述正常操作，發射的信號應維持於操作頻帶中。

202591

English Translation

Low-power Radio-frequency Devices Technical Specifications

4.7 Unlicensed National Information Infrastructure

4.7.5 Within the 5.25-5.35 GHz band, U-NII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operations.

4.7.6 The U-NII devices shall accept any interference from legal communications and shall not interfere the legal communications. If interference is caused, the user must stop operating the device immediately and can't re-operate it until the harmful interference is clear.

4.7.7 Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user manual.

Operation of Cisco Aironet Access Points in Brazil

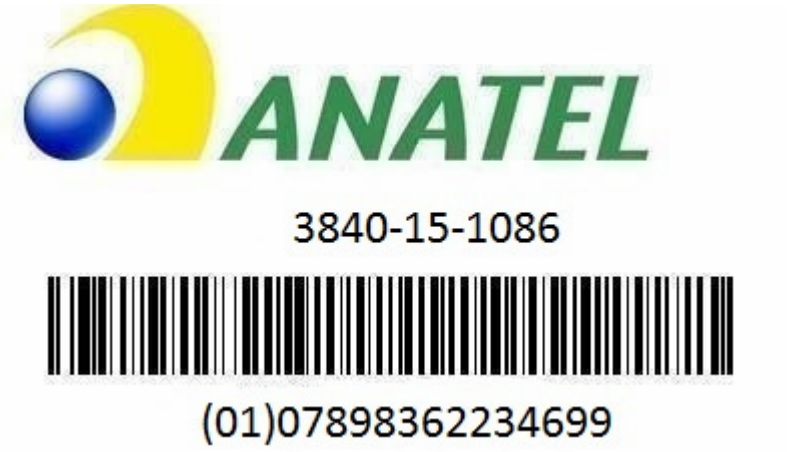
This section contains special information for operation of Cisco Aironet access points in Brazil.

Access Point Models:

AIR-AP1852I-Z-K9

AIR-AP1852E-Z-K9

Figure 5 Brazil Regulatory Information



Portuguese Translation

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

English Translation

This equipment operates on a secondary basis and consequently must accept harmful interference, including interference from stations of the same kind. This equipment may not cause harmful interference to systems operating on a primary basis.

Declaration of Conformity Statements

All the Declaration of Conformity statements related to this product can be found at the following location: http://www.ciscofax.com

16 Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation*.

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Catalyst 3560-CX and 2960-CX Switch Hardware Installation Guide

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Preface

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Document Conventions

This document uses the following conventions:

Convention	Description
^ or Ctrl	Both the ^ symbol and Ctrl represent the Control (Ctrl) key on a keyboard. For example, the key combination **^D** or **Ctrl-D** means that you hold down the Control key while you press the D key. (Keys are indicated in capital letters but are not case sensitive.)
bold font	Commands and keywords and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
`Courier` font	Terminal sessions and information the system displays appear in `courier` font.
`Bold Courier` font	**`Bold Courier`** font indicates text that the user must enter.
[x]	Elements in square brackets are optional.
...	An ellipsis (three consecutive nonbolded periods without spaces) after a syntax element indicates that the element can be repeated.
|	A vertical line, called a pipe, indicates a choice within a set of keywords or arguments.
[x | y]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Convention	Description
{x | y}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Reader Alert Conventions

This document may use the following conventions for reader alerts:



Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.



Tip Means *the following information will help you solve a problem.*



Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



Timesaver Means *the described action saves time.* You can save time by performing the action described in the paragraph.



Warning IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Related Documentation

Note Before installing or upgrading the switch, refer to the release notes.

- Catalyst 3560-CX and Catalyst 2960-CX switch documentation at these URLs:
  - http://www.cisco.com/c/en/us/support/switches/catalyst-3560-cx-series-switches/tsd-products-support-series-home.html
  - http://www.cisco.com/c/en/us/support/switches/catalyst-2960-cx-series-switches/tsd-products-support-series-home.html
- Cisco SFP and SFP+modules documentation, including compatibility matrixes, located at:

  http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html
- Cisco Validated Designs documents at this URL:

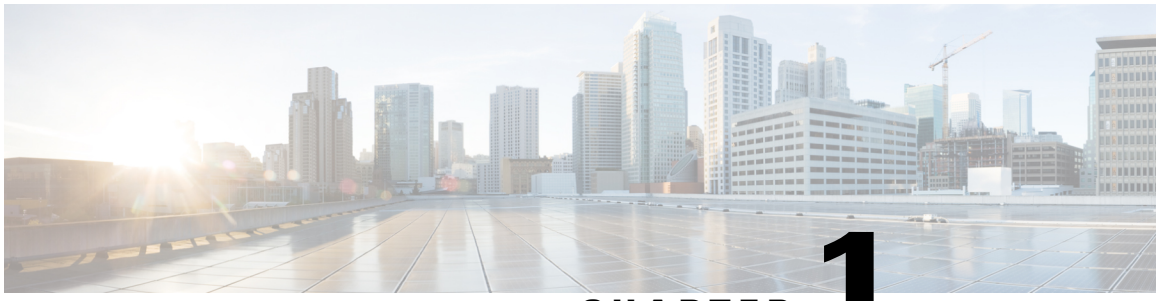
  http://www.cisco.com/go/designzone

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CHAPTER 1

Product Overview

The Catalyst 3560-CX and 2960-CX switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

You can deploy these switches outside of the traditional wiring closet environment, such as in office workspaces, hotel rooms, slot machines, kiosks, and classrooms. The switch is suitable for deployments where there are space and power constraints (access to power outlets).

See the switch software configuration guide for deployment examples.

This chapter contains these topics:

- Switch Models, page 1
- Front Panel, page 2
- Rear Panel, page 9
- Management Options, page 13
- Network Configurations, page 14

Switch Models

Table 1: Catalyst 3560-CX and 2960-CX Switch Models and Descriptions

Switch Model	Software Image	Description
WS-3560CX-8PC-S	IP Base	8 10/100/1000 Power over Ethernet plus (PoE+) ports (PoE budget of 240 W); 2 Gigabit Ethernet and 2 small form-factor pluggable (SFP)[1] module uplink slots.
WS-3560CX-8TC-S	IP Base	8 10/100/1000 Ethernet ports; 2 Gigabit Ethernet and 2 small form-factor pluggable (SFP) module uplink slots.
WS-3560CX-12PC-S	IP Base	12 10/100/1000 PoE+ ports (PoE budget of 240 W); 2 Gigabit Ethernet and 2 SFP module uplink slots.

Switch Model	Software Image	Description
WS-3560CX-12TC-S	IP Base	12 10/100/1000 Ethernet ports; 2 Gigabit Ethernet and 2 SFP module uplink slots.
WS-3560CX-12PD-S	IP Base	12 10/100/1000 PoE+ ports (PoE budget of 240 W); 2 Gigabit Ethernet and 2 SFP+ [2] module uplink slots.
WS-3560CX-8PT-S	IP Base	8 10/100/1000 PoE+ ports (PoE budget of 146W); 2 Gigabit Ethernet uplink ports.
WS-3560CX-8XPD-S	IP Base	2 Multigigabit [3]100/1000/2500/5000/10000 PoE+ ports; 6 10/100/1000 PoE+ ports (PoE budget of 240 W); 2 SFP+ module uplink slots.
WS-C3560CPX-8PT-S	IP Base	8 Gigabit Ethernet PoE+ ports; and 2 SFP module uplink slots.
WS-C3560CX-8PD-S	IP Base	6 Gigabit Ethernet ports; 2 multi-Gigabit Ethernet PoE+ ports; and 2 SFP+ uplink slots.
WS-2960CX-8PC-L	LAN Base	8 10/100/1000 PoE+ ports (PoE budget of 124 W); 2 Gigabit Ethernet and 2 SFP module uplink slots.
WS-2960CX-8TC-L	LAN Base	8 10/100/1000 Ethernet ports; 2 Gigabit Ethernet and 2 SFP module uplink slots.

1 SFP = Gigabit uplink.
2 SFP+ = 10-Gigabit uplink.
3 Multigigabit ports support speeds of 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps on Category 5e cable and up to 10 Gbps over Category 6a cabling

Note IP Base switches can be upgraded to IP Services with the RTU (right to use) software license.

Front Panel

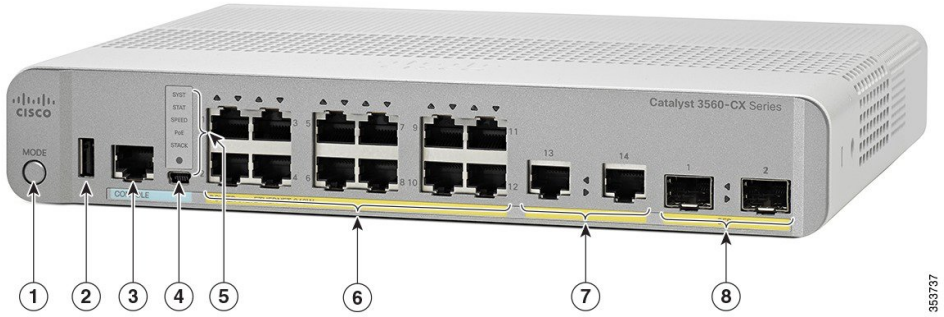
- 8 or 12 downlink Ethernet ports of one of these types:
  - 10/100/1000
  - 10/100/1000 PoE+

Note The Catalyst 3560CX-8XPD-S has 6 PoE+ ports and 2 Multigigabit PoE+ ports.

- Two 10/100/1000 uplink ports and two SFP or SFP+ module ports depending on the switch model.

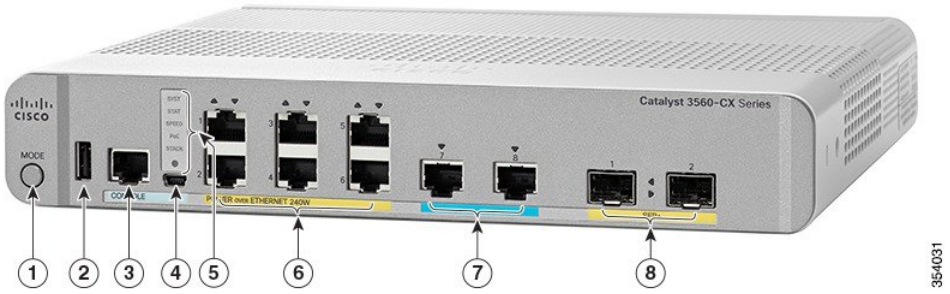
- RJ-45 console port
- USB mini-Type B (console) port
- USB Type A port
- LEDs

Figure 1: Catalyst 3560CX Front Panel View



1	Mode button	5	System LEDs
2	USB Type A port	6	10/100/1000 PoE+ ports
3	RJ-45 console port	7	10/100/1000 uplink ports
4	USB mini-Type B (console) port	8	SFP module slots

Figure 2: Catalyst 3560CX-8XPD-S Front Panel View



1	Mode button	5	System LEDs
2	USB Type A port	6	10/100/1000 PoE+ ports
3	RJ-45 console port	7	Multigigabit PoE+ ports

4	USB mini-Type B (console) port	8	SFP module slots

Note PoE+ ports 1 to 6 are Gigabit Ethernet 1/0/1 to 1/0/6. The remaining ports are 10-Gigabit Ethernet 1/0/1 and 1/0/2. However, depending on the SFP type, the rightmost ports will either be 10-Gigabit Ethernet 1/0/3 and10-Gigabit Ethernet 1/0/4 or Gigabit Ethernet 1/0/7 and Gigabit Ethernet 1/0/8.

PoE and PoE+ Ports

The ports provide PoE+ support for devices compliant with IEEE 802.3af, IEEE 802.3at, and ePoE and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

The maximum switch power output is either 124 W or 240 W, depending on the switch mode. Intelligent power management allows flexible power allocation across all ports.

For switches with a 124 W power budget, you can budget the PoE and PoE+:

- 15.4 W of PoE output on 8 ports
- 30 W of PoE+ output on 4 ports

For switches with a 240 W power budget, you can budget the PoE and PoE+:

- 15.4 W of PoE output on 12 ports
- 30 W of PoE+ output on 8 ports

On a per-port basis, you control whether or not a port automatically provides power when an IP phone or an access point is connected.

The PoE ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

Cisco intelligent power management capabilities include enhanced power negotiation, power reservation, and per-port power policing. For information about configuring and monitoring PoE ports, see the switch software configuration guide on Cisco.com.

Note The output of the PoE circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

10/100/1000 Ports

The 10/100/1000 ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5 or Category 5e twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

Multigigabit ports

The Multigigabit ports can be configured to auto-negotiate multiple speeds on switch ports, and support 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps speeds on Category5e cables, and up to 10 Gbps over Category6 and Category 6A cables.

The Multigigabit ports support PoE and PoE+ for all the supported speeds and cable types. The following table lists the cable types and speed.

Cable Type	100Mbps	1G	2.5G	5G	10G
Category5E	Yes	Yes	Yes	Yes	N/A
Category6	Yes	Yes	Yes	Yes	Yes (55meters)
Category6A	Yes	Yes	Yes	Yes	Yes

Management Ports

The management ports connect the switch to a PC running Microsoft Windows or to a terminal server.

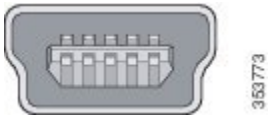
- RJ-45 console port (EIA/TIA-232). The RJ-45 console port connection uses an RJ-45-to-DB-9 female cable.
- USB mini-Type B console port (5-pin connector).

If you use the USB mini-Type B console port, the Cisco Windows USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers.

The 4-pin mini-Type B connector resembles the 5-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B.

This illustration shows a 5-pin mini-Type B USB port.

Figure 3: USB Mini-Type B Port



With the Cisco Windows USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

The console output always goes to both the RJ-45 and the USB console connectors, but the console input is active on only one of the console connectors at any one time. The USB console takes precedence over the RJ-45 console. When a cable is connected into the USB console port, the RJ-45 console port becomes inactive. Conversely, when the USB cable is disconnected from the USB console port, the RJ-45 port becomes active.

You can use the command-line interface (CLI) to configure an inactivity timeout which reactivates the RJ-45 console if the USB console has been activated and no input activity has occurred on the USB console for a specified time.

After the USB console deactivates due to inactivity, you cannot use the CLI to reactivate it. Disconnect and reconnect the USB cable to reactivate the USB console. For information on using the CLI to configure the USB console interface, see the software guide.

SFP and SFP+ Module Slots

The switch has either two 1-Gigabit SFP or 10-Gigabit SFP+ module slots. The slots marked *SFP+* support both SFP and SFP+ modules. The *SFP* slots support only the SFP modules.

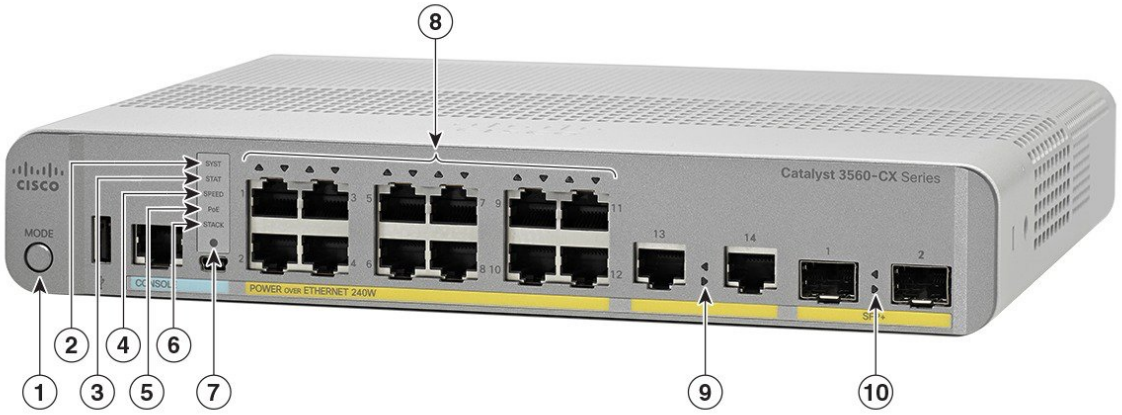
For Cisco SFP and SFP+ modules documentation, including compatibility matrixes, refer to this URL: http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

LEDs

You can use the switch system and port LEDs to monitor switch activity and performance.

This figure shows the switch LEDs and the Mode button that you use to select a port mode.

Figure 4: Switch LEDs and Mode Button



353731

1	Mode button	6	STACK LED [4]
2	SYST LED (system)	7	Console LED
3	STAT LED (status)	8	Port LEDs
4	SPEED LED	9	Uplink port LED (copper)

5	PoE LED [5]	10	Uplink port LED (SFP/SFP+)

4 Only on switch models that have stacking capability. Note that this release does not support switch stacking.
5 Only on switch models that support PoE.

System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not operating properly.

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not operating properly.
Blinking Green	POST is in progress.

Modes for Port LEDs

The port LEDs, as a group or individually, display information about the switch and about the individual ports.

LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
PoE	PoE port power	The PoE status.

PoE LED

Even if the PoE mode is not selected, the LED shows PoE problems when they are detected. The PoE LED is only on the switches that support PoE.

Color	Description
Off	PoE is not enabled.
Green	PoE is enabled. Ports are functioning correctly.
Blinking amber	• PoE mode is not selected • At least one of the 10/100 or 10/100/100 PoE ports has been denied power • At least one of the ports has a PoE fault

Console LEDs

The console LEDs show which console port is in use.

If you connect a cable to a console port, the switch automatically uses that port for console communication. If you connect two console cables, the USB-mini console port has priority.

LED	Color	Description
RJ-45 console port	Green	RJ-45 console port is active. USB-mini console port LED is not active.
	Off	Port is not active. USB-mini console port is active.
USB-mini console port	Green	USB-mini console port is active. RJ-45 console port LED is not active.
	Off	Port is not active. RJ-45 console port is active.

Port LEDs

RJ-45 ports and SFP-module slots have port LEDs. These LEDs, as a group or individually, provide information about the switch and about the individual ports.

LED Color	Description
Off	No link or port was administratively shut down.
Green	Link present but is not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for link faults.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops.

Rear Panel

- A security slot
- An AC power connector or a power adapter connector (on Catalyst 3560CX-8PT-S only)
- A loop (for the optional power cord retainer)

- Heat sink fins (PoE models only)

Figure 5: Rear Panel of a Non-PoE Switch

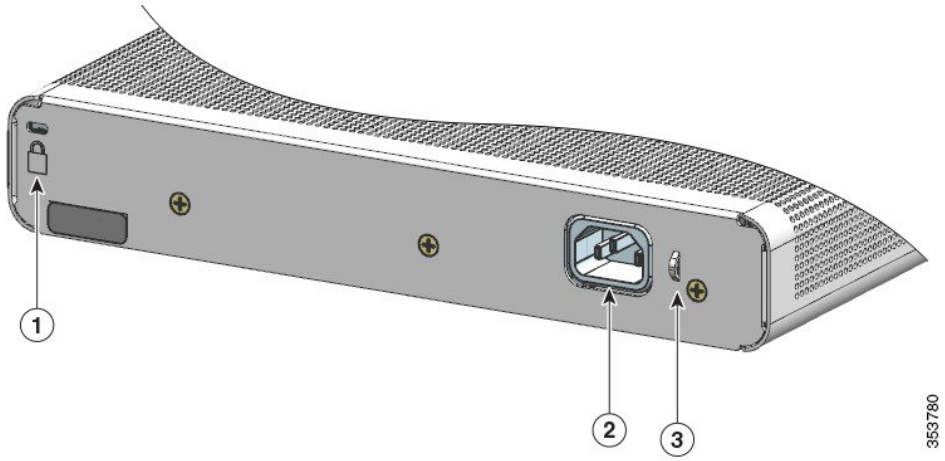
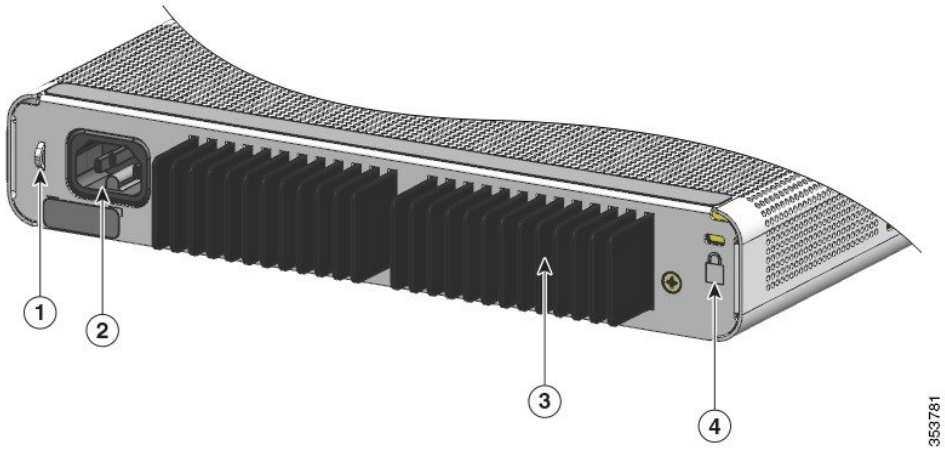


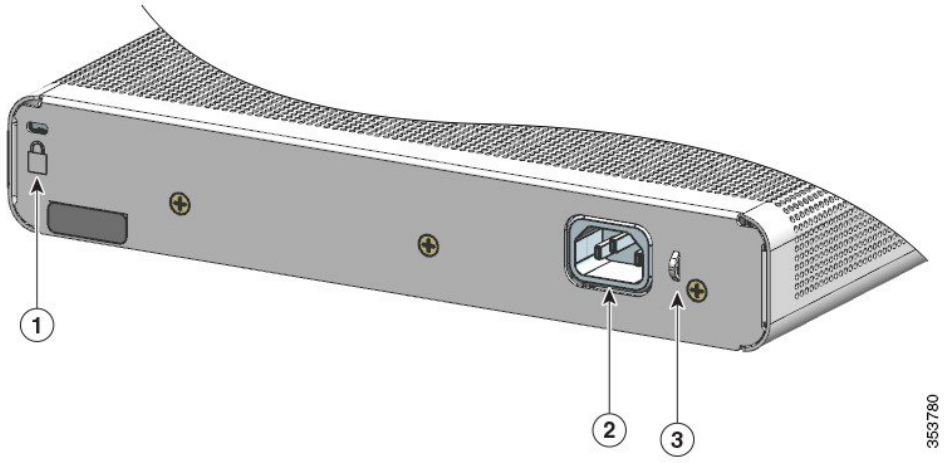
Figure 6: Rear Panel of a PoE Switch



- A security slot
- An AC power connector
- A loop (for the optional power cord retainer)

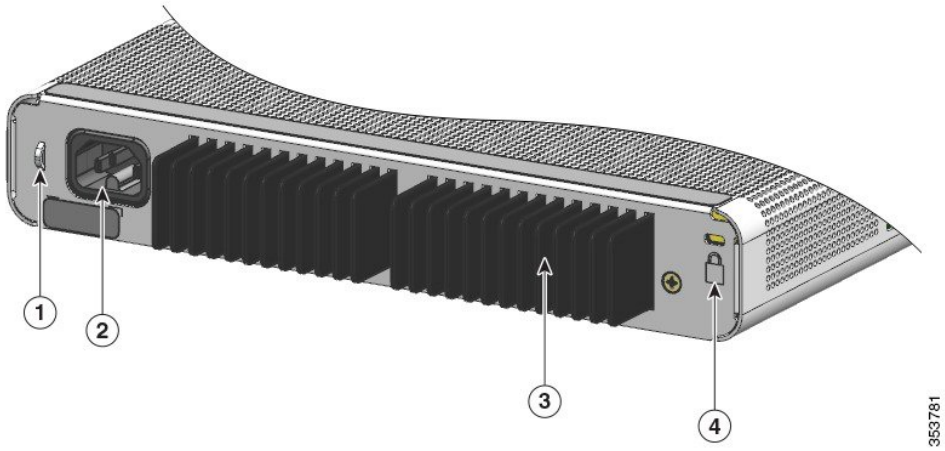
- Heat sink fins (PoE models only)

Figure 7: Rear Panel of a Non-PoE Switch



1	Security Slot	3	A loop (for the optional power cord retainer)
2	An AC power connector		

Figure 8: Rear Panel of a PoE Switch



1	Security Slot	3	A loop (for the optional power cord retainer)
2	An AC power connector	4	Heat sink fins

Internal Power Supply

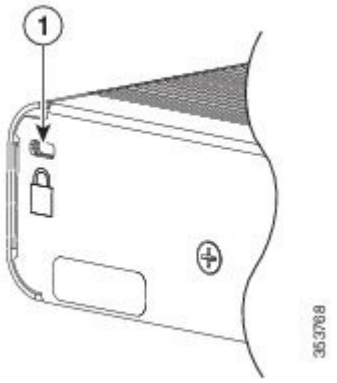
All the switches except Catalyst 3560CX-8PT-S are powered through their internal power supplies. The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Plug the AC power cord into the AC power connector and into an AC power outlet.

All the switches are powered through their internal power supplies. The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC (max of 90V to 264V). The AC frequency range of the power supply is 50Hz~60Hz. Plug the AC power cord into the AC power connector and into an AC power outlet.

Security Slot

The switches have security slots on the rear panel. You can install an optional cable lock, such as the type that is used to secure a laptop computer, to secure the switch.

Figure 9: Switch Rear Panel



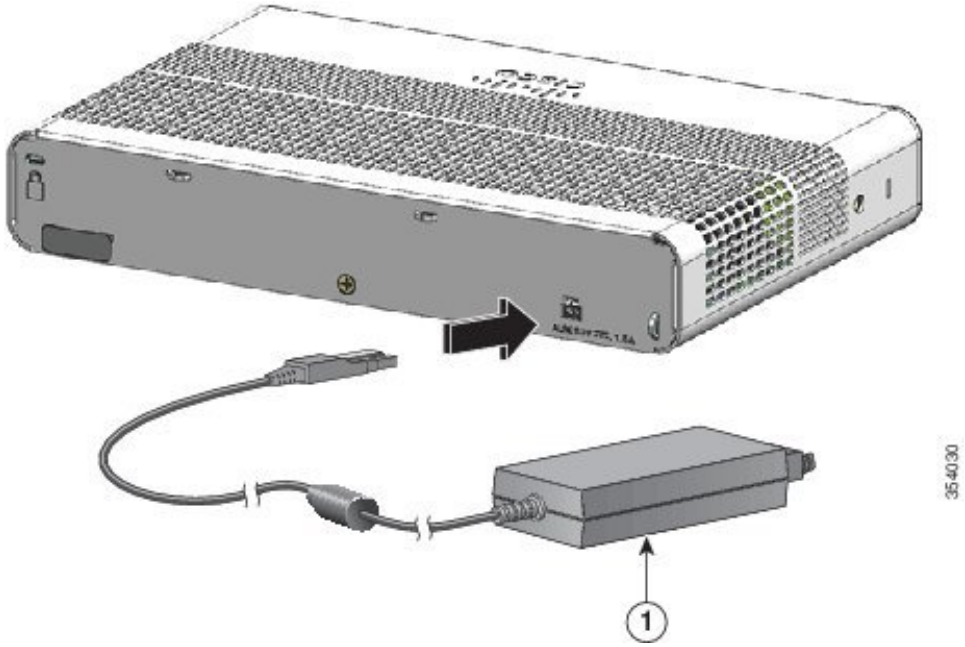
Note For PoE models, the security slot is on the right side of the rear panel.

Auxiliary Power Adapter

Catalyst 3560CX-8PT-S switches can be powered either through the 10/100/1000 uplink ports receiving power from a PoE, PoE+ or UPOE switch or through an auxiliary AC-DC or DC-DC power adapter. You can order

either the AC-DC power adapter (PWR-ADPT) or the DC-DC power adapter (PWR-ADPT-DC) with the switch, or you can order it later from your Cisco representative.

Figure 10: Connecting Through an External Auxiliary Power Adapter



1	Power adapter

Management Options

- Cisco Network Assistant

  Cisco Network Assistant is a PC-based network management GUI application for LANs of small and medium-sized businesses. You can use the GUI to configure and manage switch clusters or standalone switches. Cisco Network Assistant is available at no cost and can be downloaded from this URL: http://www.cisco.com/en/US/products/ps5931/index.html

  For information on starting the Network Assistant application, see the *Getting Started with Cisco Network Assistant* guide on Cisco.com.

- Device Manager

  You can use Device Manager in the switch memory to manage individual and standalone switches. This web interface provides configuration and monitoring from anywhere in your network. For information, see the switch getting started guide and the Device Manager online help.

- Cisco IOS CLI

  You can configure and monitor the switch and switch cluster members from the CLI. Access the CLI by connecting your management station to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for information.

- Cisco Prime Infrastructure

  Cisco Prime Infrastructure combines the wireless functionality of Cisco Prime Network Control System (NCS) and the wired functionality of Cisco Prime LAN Management Solution (LMS), with application performance monitoring and troubleshooting capabilities of Cisco Prime Assurance Manager. For more information, see the Cisco Prime Infrastructure documentation on Cisco.com.

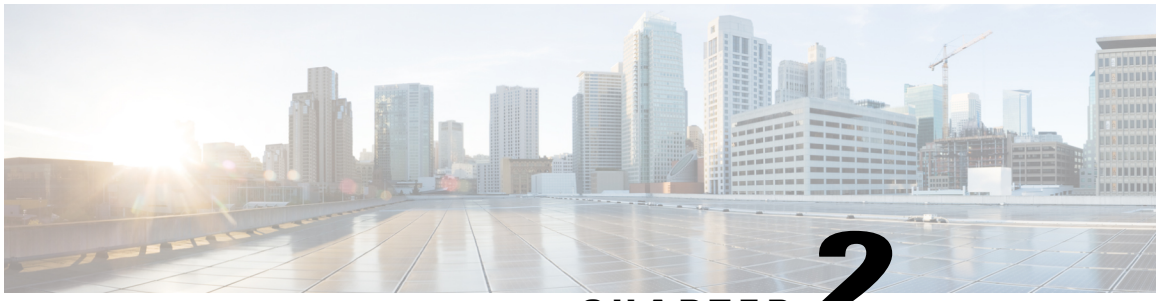
- Catalyst Smart Operations

  The Smart Install feature provides a single point of management (director) in a network. You can use it to provide a zero touch image and configuration upgrade of newly deployed switches and image and configuration downloads for any client switches. For information, see the *Cisco Smart Install Configuration Guide* on Cisco.com.

  Auto Smartports macros dynamically configure ports based on the device type detected on the port. When the switch detects a new device, it applies the appropriate Auto Smartports macro on the port. For information about configuring Auto Smartports, see the switch software configuration guide on Cisco.com.

Network Configurations

See the switch software configuration guide on Cisco.com for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Fast Ethernet and Gigabit Ethernet connections.



CHAPTER 2

Switch Installation

For initial switch setup, assigning the switch IP address, and powering on information, see the switch getting started guide on Cisco.com.

This chapter contains these topics:

- Warnings, page 15
- Box Contents, page 17
- Tools and Equipment, page 18
- Installation Guidelines, page 18
- Verifying Switch Operation, page 19
- Mounting the Switch, page 20
- Attaching the Adapter Bracket to the Switch (Optional), page 38
- Installing the Power Cord Retainer (Optional), page 39
- Installing the Cable Guard (Optional), page 42
- Installing SFP and SFP+Modules, page 46
- 10/100/1000 PoE and PoE+Port Connections, page 47
- 10/100/1000 Port Connections, page 49
- Where to Go Next, page 49

Warnings

This section includes the warning statements relating to basic installation. Read this section before you start the installation procedure.

Warning

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. **Statement 43**

Warning Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. **Statement 378**

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity. **Statement 1001**

Warning Read the installation instructions before connecting the system to the power source. **Statement 1004**

Warning To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Statement 1006

Warning Class 1 laser product. **Statement 1008**

Warning This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. **Statement 1024**

Warning Ultimate disposal of this product should be handled according to all national laws and regulations. **Statement 1040**

Warning For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection: 10/100/1000 Ethernet. **Statement 1044**

Warning To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: <113°F (45°C). **Statement 1047**

Note The maximum operating temperature is 40°C for Catalyst 3560CX-12PD-S and C3560CX-8XPD-S switches and 45°C for all the other switch models. However, for WS-C3560CX-8XPD-S, the maximum operating temperature will be 35°C when installed inverted and under fully loaded conditions (maximum PoE and 10G SFP+ transceivers installed).

Warning This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. **Statement 1071**

Warning Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. **Statement 1072**

Warning No user-serviceable parts inside. Do not open. **Statement 1073**

Warning Installation of the equipment must comply with local and national electrical codes. **Statement 1074**

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 inches (7.6 cm). **Statement 1076**

Warning Hot surface. **Statement 1079**

Box Contents

The switch getting started guide describes the box contents. If any item is missing or damaged, contact your Cisco representative or reseller for support.

Tools and Equipment

Obtain these necessary tools and equipment:

- Number-2 Phillips screwdriver
- Drill with a #27 drill bit (0.144-inch [3.7 mm])

Installation Guidelines

When determining where to install the switch, verify that these guidelines are met:

- Clearance to front panels is such that the LEDs can be easily read.
- Power cord reaches from the power outlet to the connector on the switch.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.
- Temperature around the unit does not exceed 113°F (45°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

Note The Catalyst 3560CX-12PD-S and C3560CX-8XPD-S switches have a maximum operating temperature of 40°C. All the other switches have a maximum operating temperature of 45°C. However, for WS-C3560CX-8XPD-S, the maximum operating temperature will be 35°C when installed inverted and under fully loaded conditions (maximum PoE and 10G SFP+ transceivers installed).

Note When using these products with the GLC-T SFP module, the thermal limitations are as follows:

- At sea level, table top installation temperature should not exceed 35°C and inverted installation temperature should not exceed 30°C
- At 5000 feet, table top installation temperature should not exceed 30°C and inverted installation temperature should not exceed 25°C
- At 10000 feet, table top installation temperature should not exceed 25°C and inverted installation temperature should not exceed 20°C

- Humidity around the switch does not exceed 95 percent.
- Altitude at the installation site is not greater than 10,000 feet.
- Airflow around the switch and through the vents must be unrestricted. To avoid any flow blockage, we strongly recommend these guidelines:
  - Allow at least 3 in. (7.6 cm) of clearance from the left and right sides, and the front and rear of the switch.

- If you are installing the switch upright, allow at least 1.75 in. (4 cm) of clearance from the top cover.
- If you are installing the switch inverted, under a table, allow at least 3 in. (7.6 cm) of clearance from the top cover.
- If you are installing the switch in a rack, allow at least 1RU of empty rack space above each switch.

Note For Catalyst 3560CX-12PD-S and C3560CX-8XPD-S switches operating at the maximum specified temperature and fully loaded conditions (with transceivers installed and maximum PoE), when installed inverted, there should be unrestricted airflow all around the switch (and not just limited to the minimum 3 in. requirement). When installed upright, at least 3 in. of clearance from the top cover is required. When installed in a rack, at least 2RU of empty rack space above each switch is required.

- When placing the switch on a flat horizontal surface, we strongly recommend that you attach the rubber feet to the switch.
- For 10/100/1000 fixed ports, cable lengths from the switch to connected devices can be up to 328 feet (100 meters).
- For cable requirements for SFP module connections, see the "SFP Module Cables, on page 64" section. Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the minimum cable length.

Verifying Switch Operation

Before you install the switch in a rack, on a wall, or on a table or shelf, power on the switch and verify that it passes POST.

To power on the switch, do one of the following, depending on your switch model:

- Connect a 10/100/1000 uplink port to a PoE or PoE+ switch.
- Plug the auxiliary power adapter cord into the switch AUX power connector and into an AC power outlet.

Note You can use both the uplink port and the auxiliary power adapter. The switch shares power from all the available power sources. The total available power to the switch is the sum of power available from all the power sources minus the power that is lost.

- Plug one end of the AC power cord into the switch AC power connector, and plug the other end into an AC power outlet.

Note If you have a Catalyst WS-C3560CX-8PT-S switch that is connected to a Power Source Equipment (PSE) PoE or PoE+ port with ether-channel configuration, do not power on the switch by connecting only one 10/100/1000 uplink port to the PSE. Doing so will cause the PSE to detect a port channel misconfiguration when the switch tries to boot in low power mode, and hence the port will go into error disabled mode.

For Catalyst WS-C3560CX-8PT-S switches, you must connect both uplink ports to the PSE. Alternatively, use the auxiliary power supply.

For more details on Low Power Bootup, see the *PoE and PoE Pass-Through Ports on Catalyst WS-C3560CX-8PT-S* section in the *Configuring PoE* chapter of the switch's Software Configuration Guide on Cisco.com.

As the switch powers on, it begins the POST, a series of tests that runs automatically to ensure that the switch functions properly. LEDs can blink during the test. POST lasts approximately 1 minute. When the switch begins POST, the SYST, STAT, and SPEED LEDs turn green. The SYST LED blinks green, and the other LEDs remain solid green.

When the switch completes POST successfully, the SYST LED remains green. The other LEDs turn off and then reflect the switch operating status. If a switch fails POST, the SYST LED turns amber.

POST failures are usually fatal. Call Cisco technical support representative if your switch fails POST.

After a successful POST, unplug the power cord from the switch and install the switch in a rack, on a wall, on a table, or on a shelf.

Mounting the Switch

Mounting on a Desk or Shelf Without Mounting Screws

Step 1 Locate the adhesive strip with the rubber feet in the accessory kit.

Step 2 Remove the four rubber feet from the adhesive strip, and attach them to the recessed areas at the bottom of the unit. This prevents the switch from sliding on the desk or shelf.

Note We strongly recommend that you attach the rubber feet. Doing so also helps prevent airflow restriction and overheating.

- **Warning** To prevent airflow restriction, allow clearance around the ventilation openings to be at least 3 inches (7.6 cm). **Statement 1076**

Step 3 Place the switch on the desk or shelf.

On a Desk, Shelf, or Wall (with Mounting Screws)

Desk- or Shelf-Mounting

Step 1 Use the screw template to align the mounting screw holes and also as a guide to make sure that you install the screws into the desk or shelf with proper clearance.

Step 2 Position the screw template on top of the desk or shelf so that the edge that is marked as CABLE SIDE ENTRY faces the front of the desk or shelf. This ensures that the power cord faces the rear of the desk or shelf after the switch is installed.

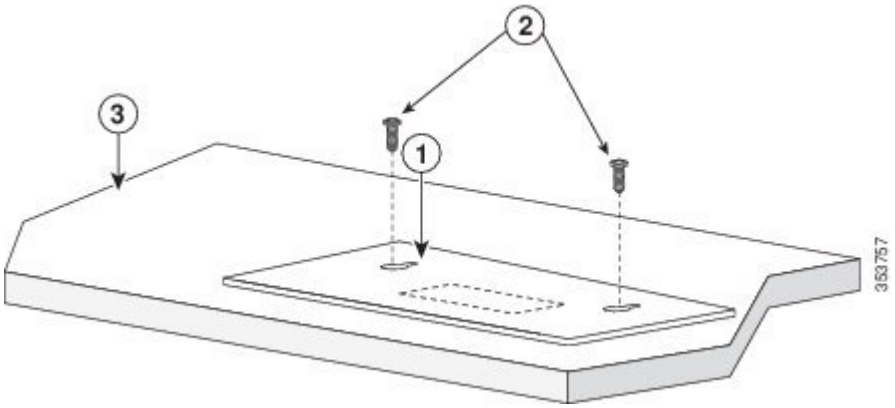
Note Wait before you attach the screw template to the desk or shelf.

Step 3 Peel the adhesive strip off the bottom of the screw template, and attach it to the top of the desk or shelf.

Step 4 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 5 Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

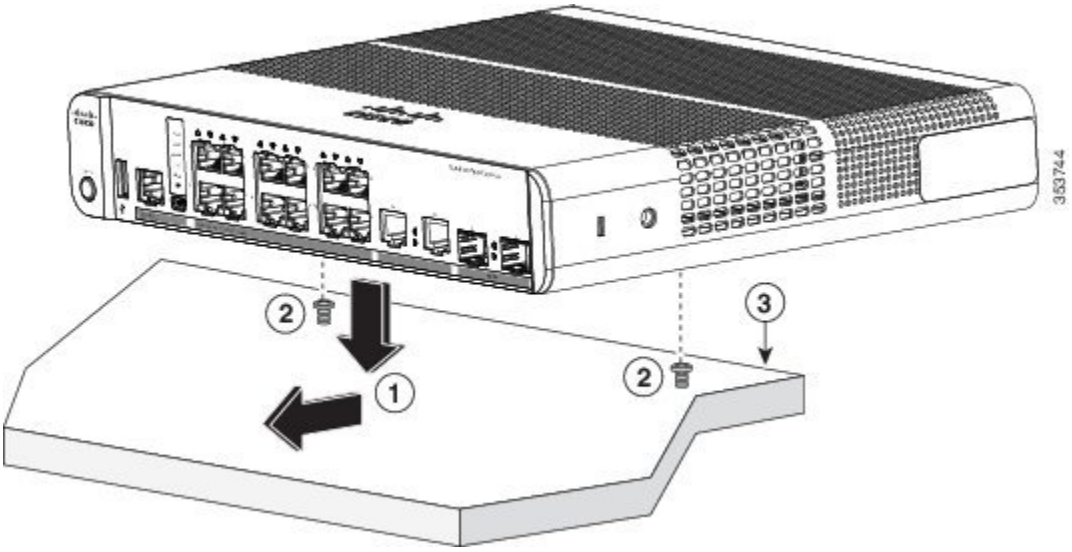
Figure 11: Installing the Mounting Screws on Top of a Desk or a Shelf



Step 6 Remove the screw template from the desk or shelf.

Step 7 Place the switch onto the mounting screws, and slide it forward until it locks in place.

Figure 12: Mounting the Switch on Top of a Desk or Shelf



Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Under a Desk- or Shelf-Mounting

Step 1 Use the screw template to align the mounting screw holes and also as a guide to make sure that you install the screws under the desk or shelf with proper clearance.

Step 2 Position the screw template on top of the desk or shelf so that the edge that is marked as CABLE SIDE ENTRY faces the front of the desk or shelf. This ensures that the power cord faces the rear of the desk or shelf after the switch is installed.

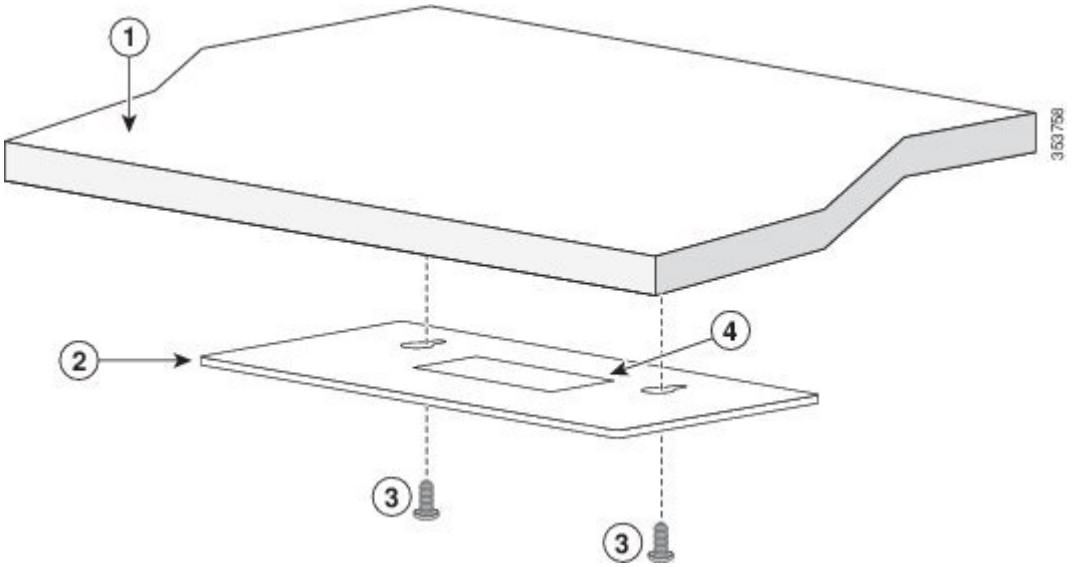
Note Wait before you attach the screw template to the desk or shelf.

Step 3 Peel the adhesive strip off the bottom of the screw template, and attach it to the top of the desk or shelf.

Step 4 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 5 Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

Figure 13: Installing the Mounting Screws Under a Desk or Shelf

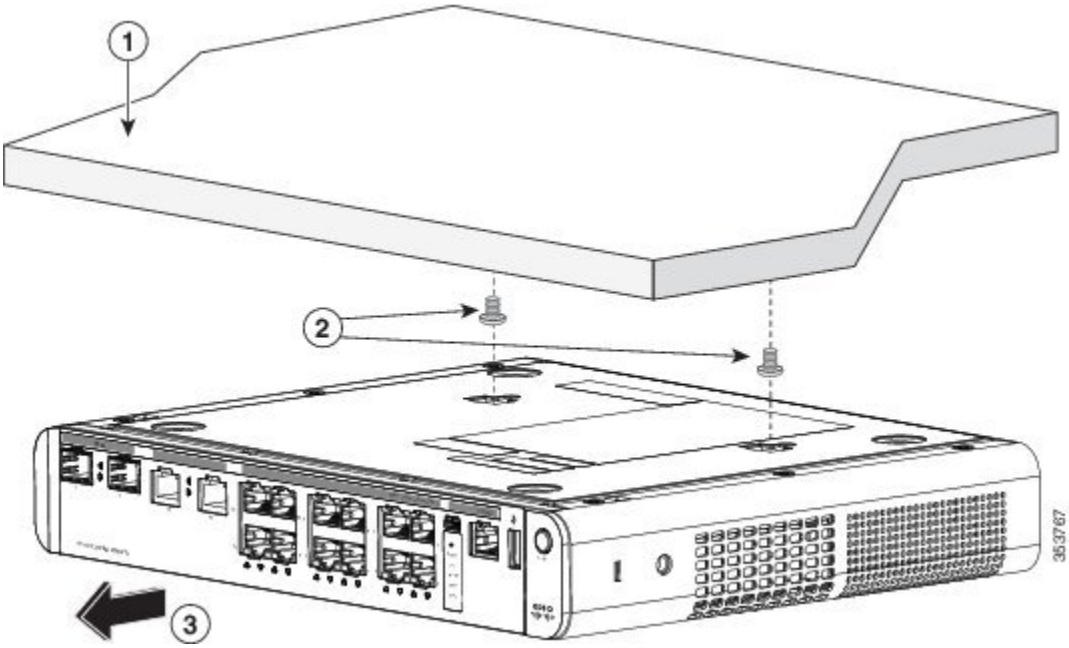


Step 6 Remove the screw template from underneath the desk or shelf.

Step 7 Place the switch upside down onto the mounting screws, and slide it forward until it locks in place.

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Figure 14: Mounting the Switch Under a Desk or Shelf



Wall-Mounting

Warning Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378

Caution Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side to prevent airflow restriction and to provide easier access to the cables

Step 1 Locate the screw template. The template is used to align the mounting screw holes.

Step 2 Position the screw template so that the edge that is marked as CABLE SIDE ENTRY faces toward the floor.

Note For the best support of the switch and cables, make sure that you attach the switch securely to a wall stud or to a firmly attached plywood mounting backboard

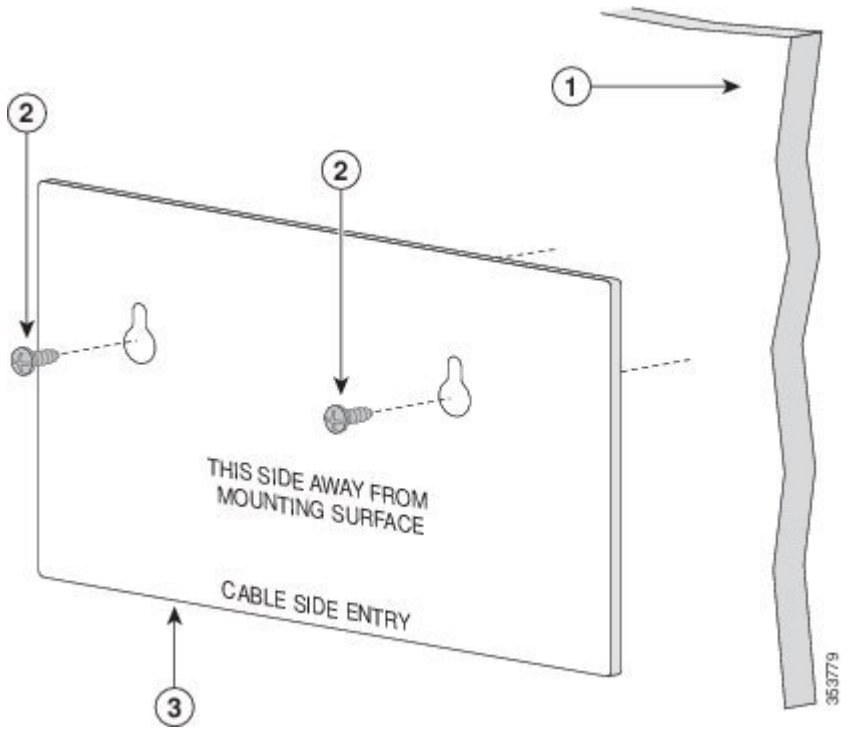
Step 3 Peel the adhesive strip off the bottom of the screw template.

Step 4 Attach the screw template to the wall.

Step 5 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 6 Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

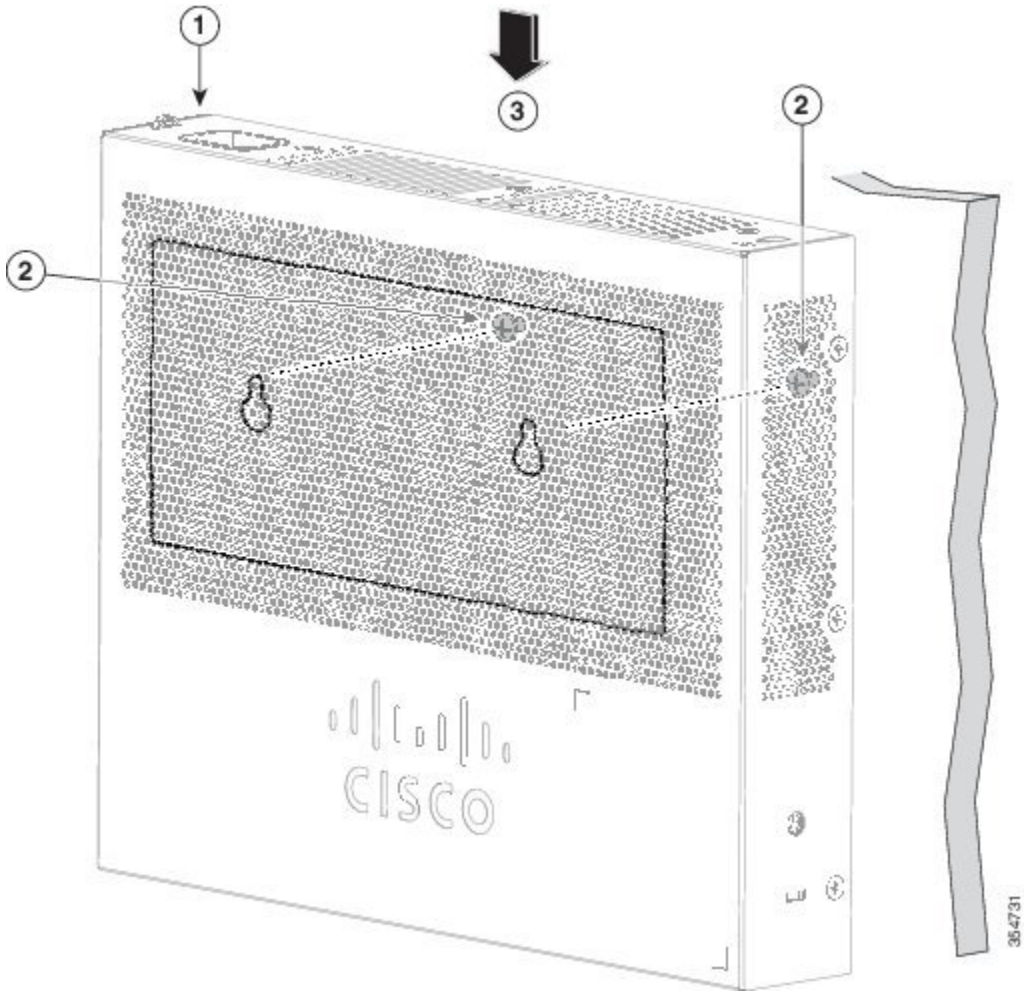
Figure 15: Installing the Mounting Screws on the Wall



Step 7 Remove the screw template from the wall.

Step 8 Place the switch onto the mounting screws, and slide it down until it locks in place.

Figure 16: Installing the Switch on a Wall



With a Mounting Tray

The mounting kit (part number CMPCT-MGNT-TRAY=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

The mounting kit ships contents:

- Two number-10 Phillips pan-head screws
- Three number-8 Phillips pan-head screws

- Mounting tray
- Magnet

You can use the mounting tray by itself with mounting screws, or with a magnet.

Mounting Tray with Screws

You can use the mounting tray to secure the switch:

- On a desk or shelf
- Under a desk or shelf
- On a wall

Caution Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side, to allow sufficient airflow and to provide easier access to the cables.

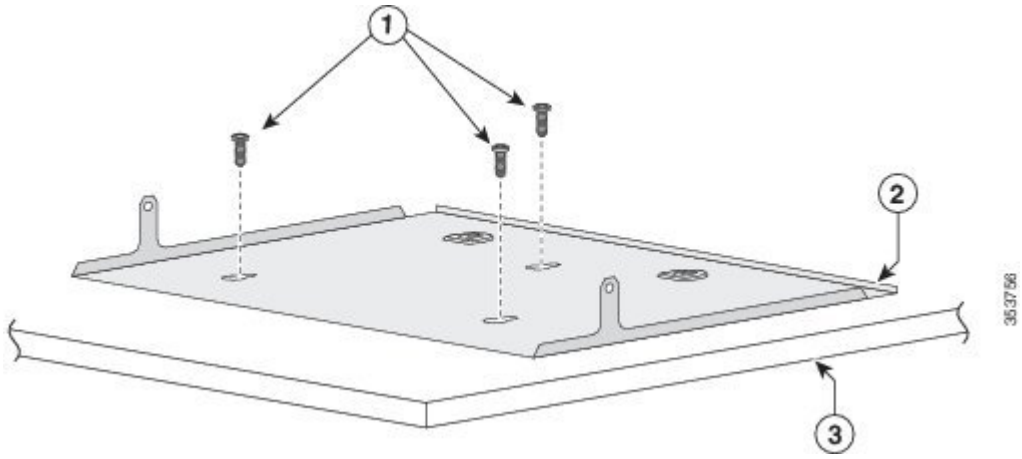
This example shows you how to mount the switch on a desk or shelf. You can use a similar procedure to mount the switch under a desk or on a wall.

Step 1 Place the mounting tray on the desk.

Step 2 Use a 0.144-in. (3.7 mm) or a #27 drill bit to drill three 1/2-in. (12.7 mm) holes in the desk.

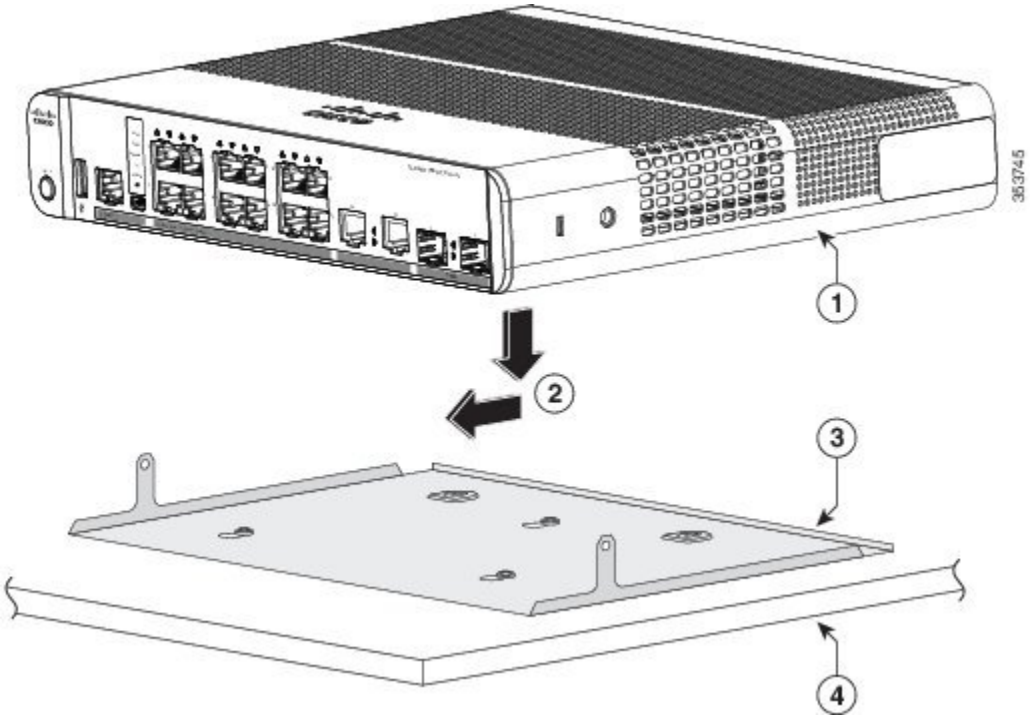
Step 3 Insert the three number-8 Phillips pan-head screws in the slots on the mounting tray, and tighten them.

Figure 17: Attaching the Tray to the Desk or Shelf



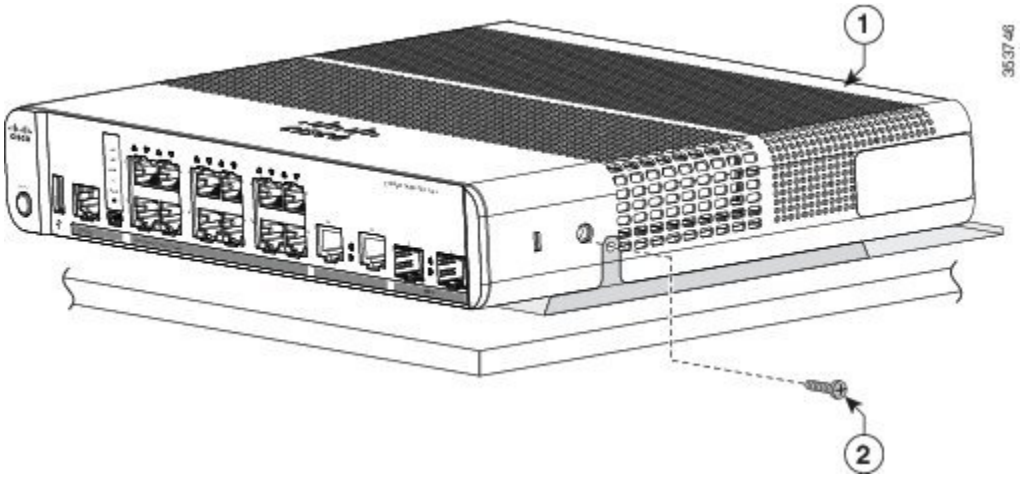
Step 4 Place the switch onto the mounting screws, and slide the switch until it locks into place.

Figure 18: Installing the Switch on the Mounting Tray



Step 5 Use the two number-10 Phillips pan-head screws to secure the switch to the mounting tray.

Figure 19: Securing the Switch to the Mounting Tray



Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Mounting Tray with a Magnet

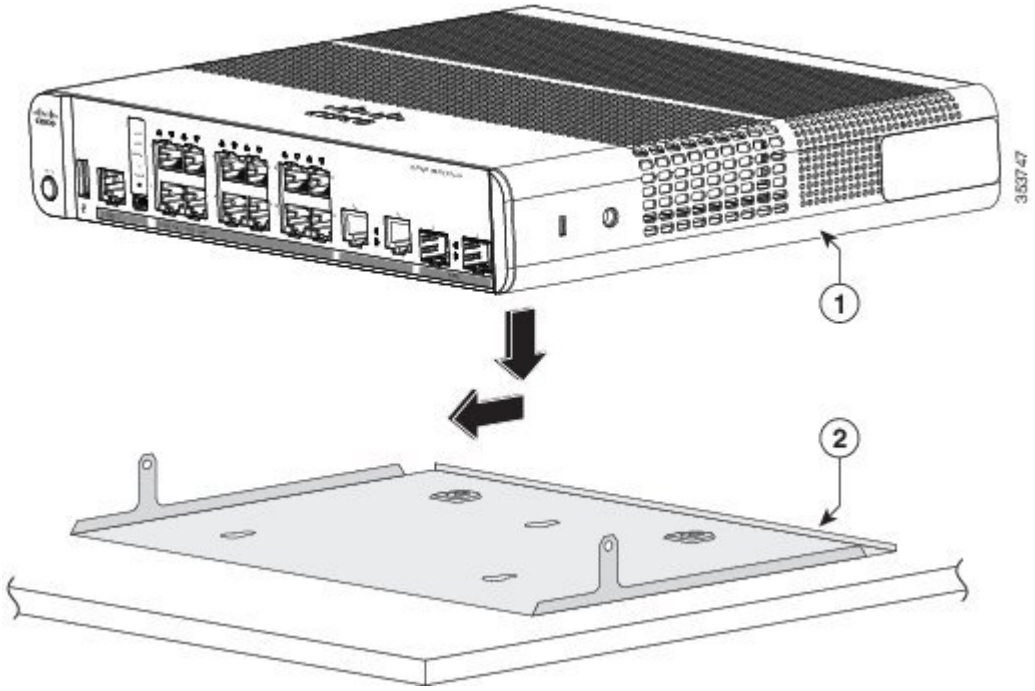
You can use a magnet with the mounting tray to mount the switch on a metal surface.

Caution Do not use the magnet without a mounting tray

This example shows you how to mount the switch on a metal wall. You can use a similar procedure to mount the switch on, or under, a metal desk.

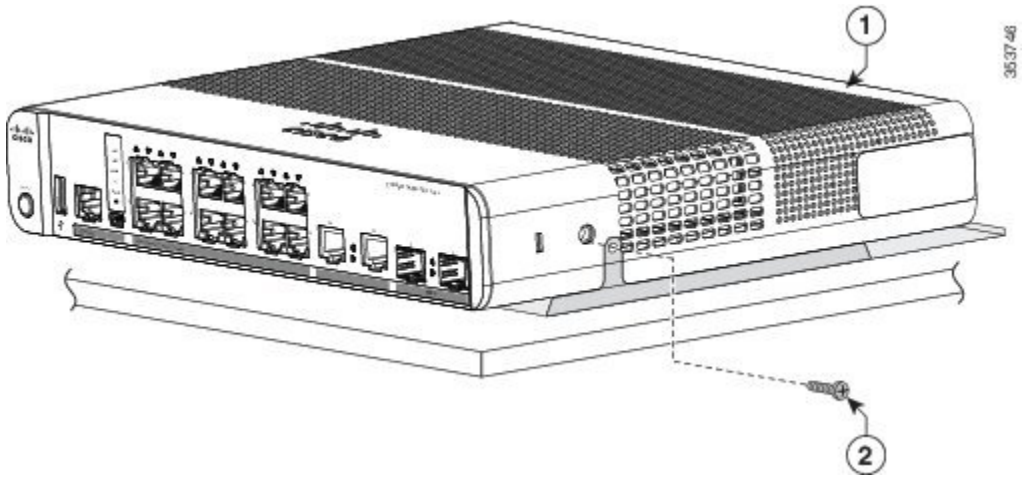
Step 1 Place the switch on the mounting tray.

Figure 20: Placing the Switch on the Mounting Tray



Step 2 Use the two number-10 Phillips pan-head screws to secure the mounting tray to the switch.

Figure 21: Securing the Mounting Tray to the Switch

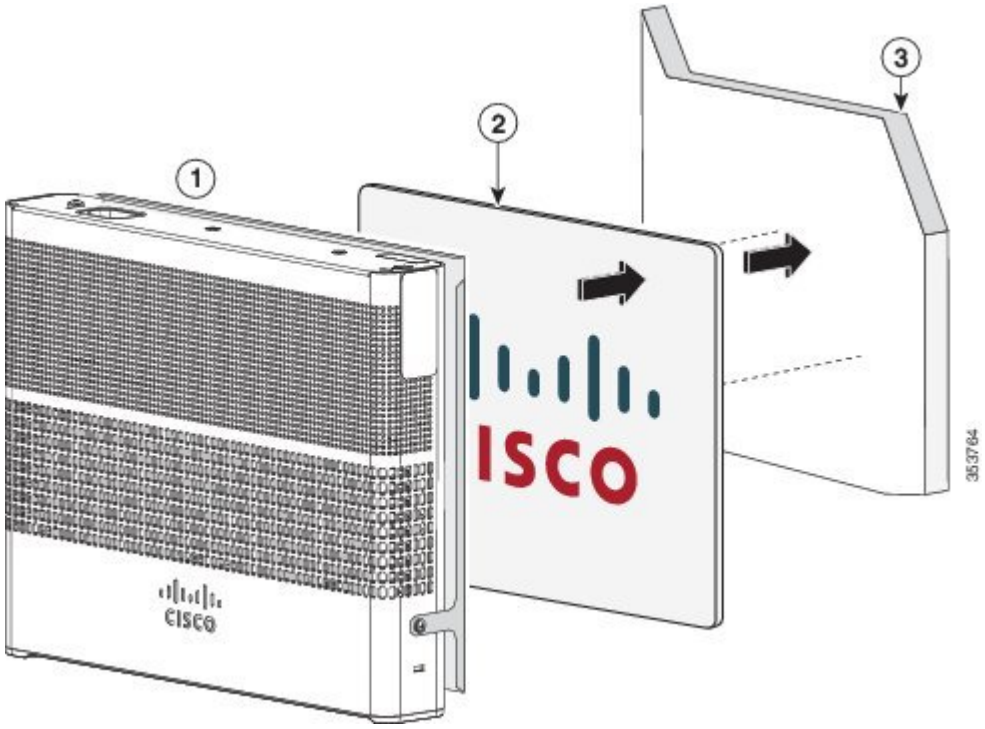


Step 3 Place one side of the magnet against the bottom of the mounting tray. Mount the magnet and switch on a metal wall.

Warning Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378

Caution Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side, to allow sufficient airflow and to provide easier access to the cables.

Figure 22: Wall-Mounting with a Magnet



Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

In a Rack

Installing the switch in a rack requires an optional bracket kit that is not included with the switch. You can order these kits from your Cisco representative:

- 19-inch rack-mounting brackets (RCKMNT-19-CMPCT=)
- 23- and 24-inch rack-mounting brackets (RCKMNT-23-CMPCT=)

Warning To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Statement 1006

Attach a bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side. The following figures show how to attach the 19-inch rack-mounting bracket and the 23-inch rack-mounting bracket.

Figure 23: Attaching the 19-inch Brackets for Rack-Mounting

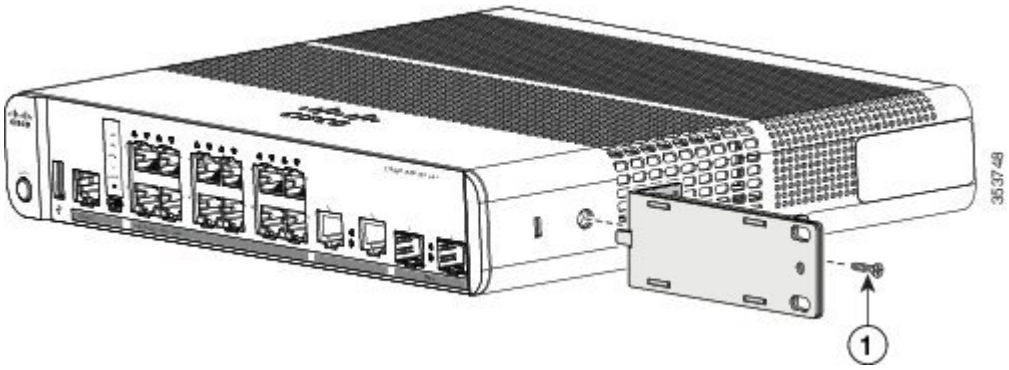
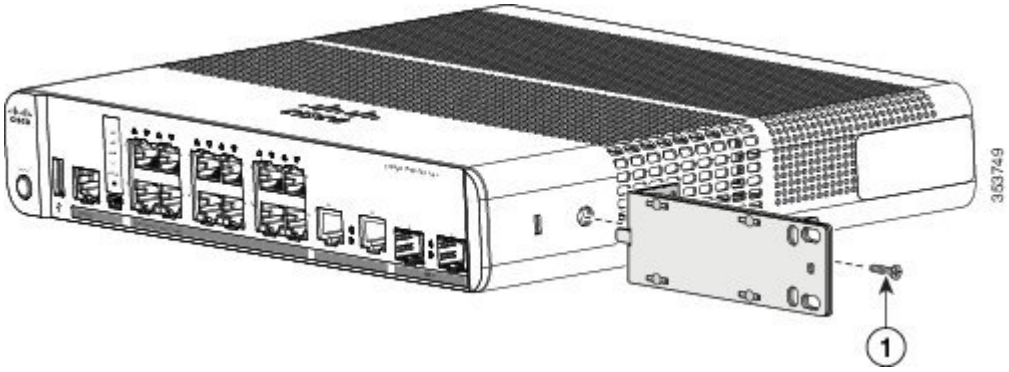


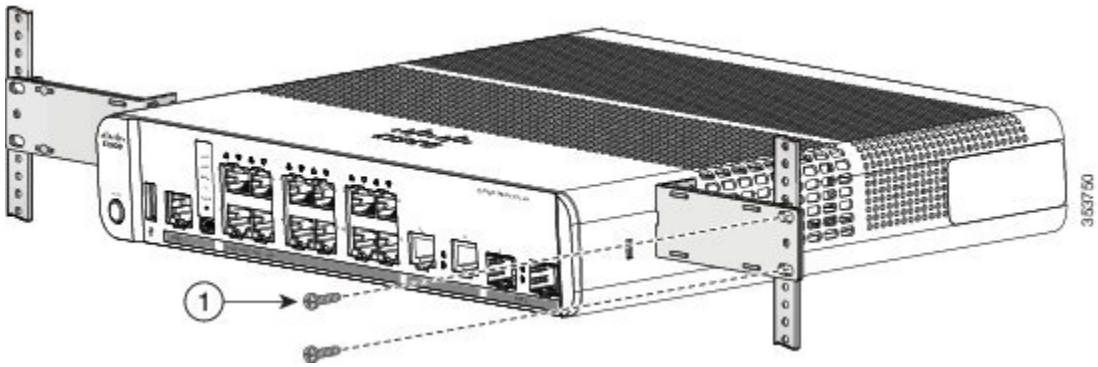
Figure 24: Attaching the 23-inch Brackets for Rack-Mounting



Insert the switch into the rack and align the bracket in the rack. Use either the number-12 or number-10 Phillips machine screws to secure the switch in the rack.

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Figure 25: Mounting the Switch in a Rack



On a DIN Rail

The DIN-mount kit (part number CMPCT-DIN-MNT=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

The DIN-mount kit contains:

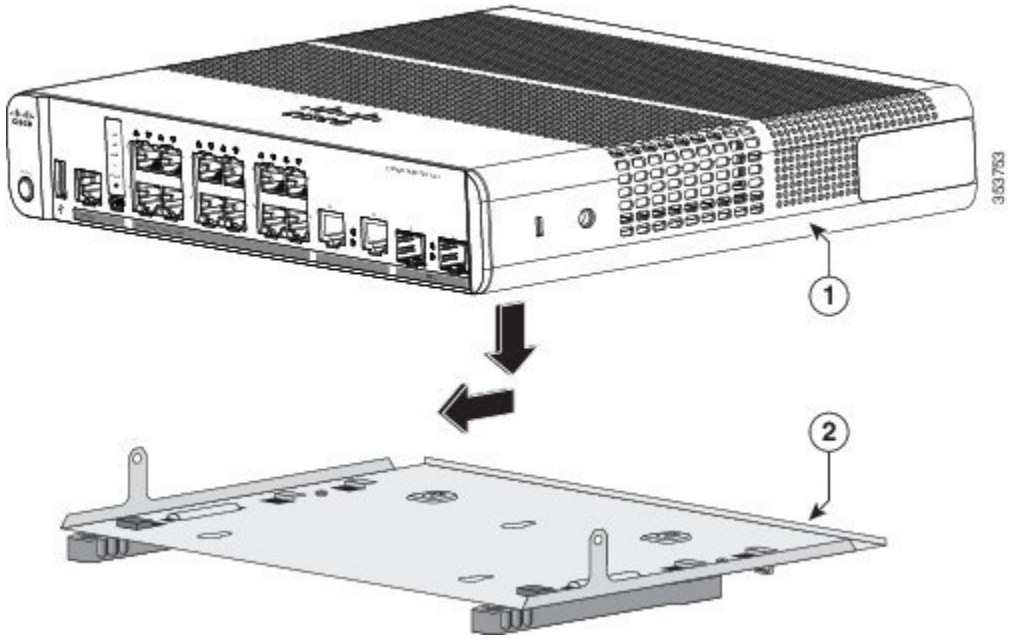
- Two number-10 Phillips pan-head screws
- DIN rail mount

To install the switch on a DIN rail, follow the instructions described in these sections:

Attaching the DIN-Mount Tray to the Switch

Step 1 Place the switch on the DIN rail mount.

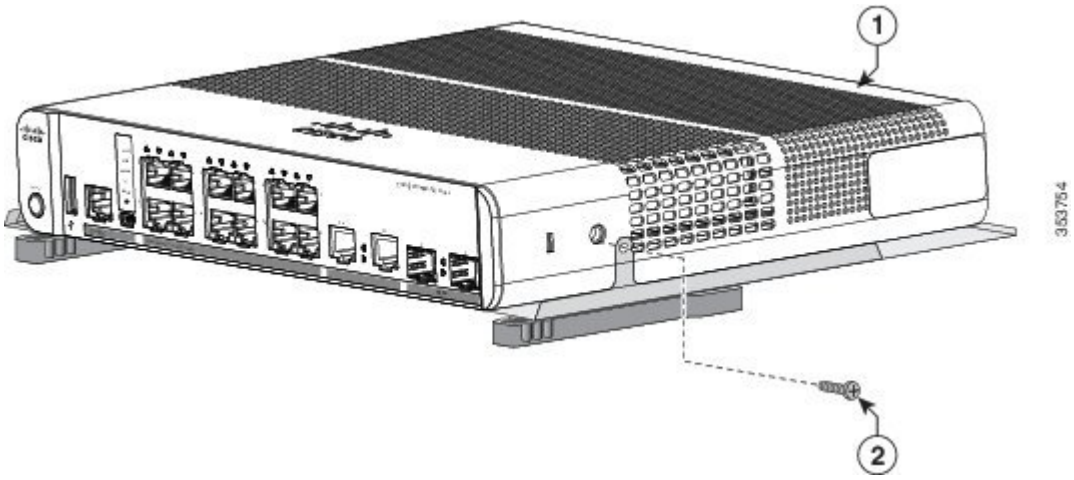
Figure 26: Placing the Switch on the DIN-Mount Tray



1	Switch	2	DIN rail mount

Step 2 Use the two number-10 Phillips pan-head screws to secure the DIN rail mount to the switch.

Figure 27: Securing the DIN-Mount Tray to the Switch



1	Switch	2	Number-10 Phillips pan-head screws

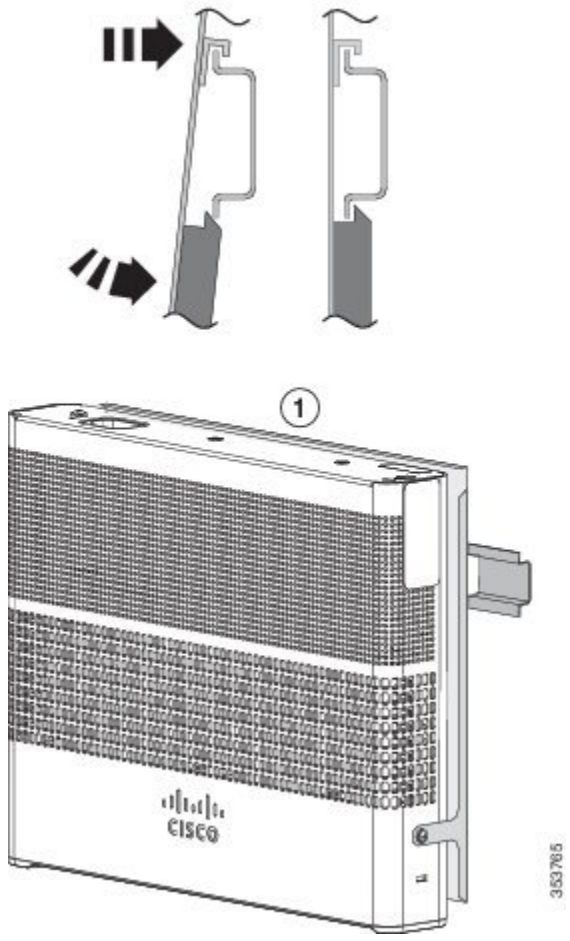
Mounting the Switch on a DIN Rail

Caution Do not install the switch with its front panel facing up. Following safety regulations, install the switch with its front panel facing down, to allow sufficient airflow and to provide easier access to the cables.

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Step 1 Position the switch directly in front of the DIN rail, making sure that the top of the DIN rail mount clip hooks over the top of the DIN rail.

Figure 28: Mounting the Switch on a DIN Rail



Step 2 Rotate the switch down toward the DIN rail until the release tabs on the DIN rail mount clicks.

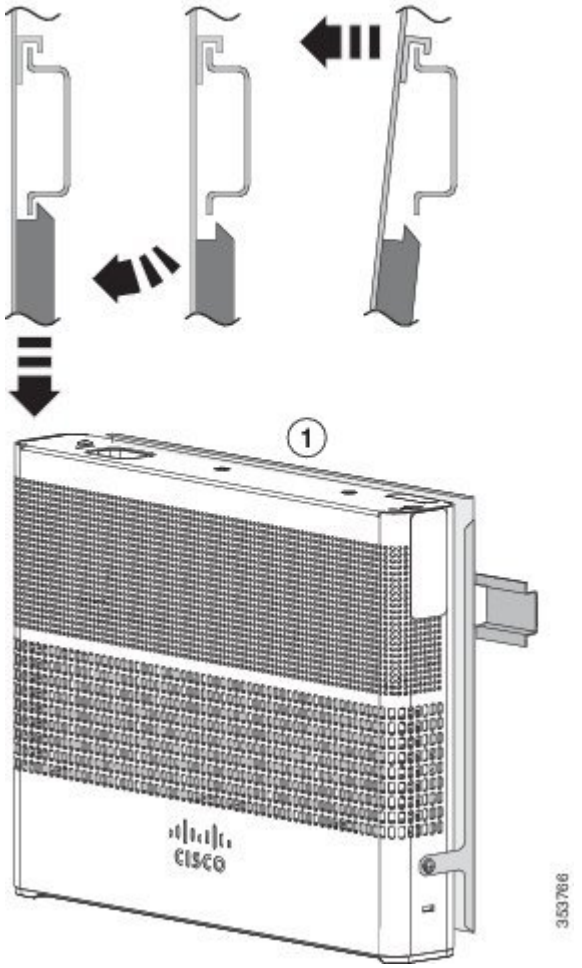
Step 3 Lift lightly on the bottom of the switch to ensure that it is firmly locked in place.

Removing the Switch from a DIN Rail

Step 1 Ensure that power is removed from the switch, and disconnect all cables and connectors from the front panel of the switch.

Step 2 Pull down on the DIN rail mount release tabs. As the clips release, lift the bottom of the switch.

Figure 29: Switch Removal



Attaching the Adapter Bracket to the Switch (Optional)

If you are using an auxiliary power adapter to power the switch which is placed on a mounting tray or a DIN rail mount, you can use the optional power adapter bracket to secure the power adapter. You can order the power adapter bracket (PWR-ADPT-BRKT) from your Cisco representative.

Before You Begin

- AC-DC or DC-DC power adapter (PWR-ADPT or PWR-ADPT-DC)
- Power adapter bracket (PWR-ADPT-BRKT)
- Phillips screwdriver

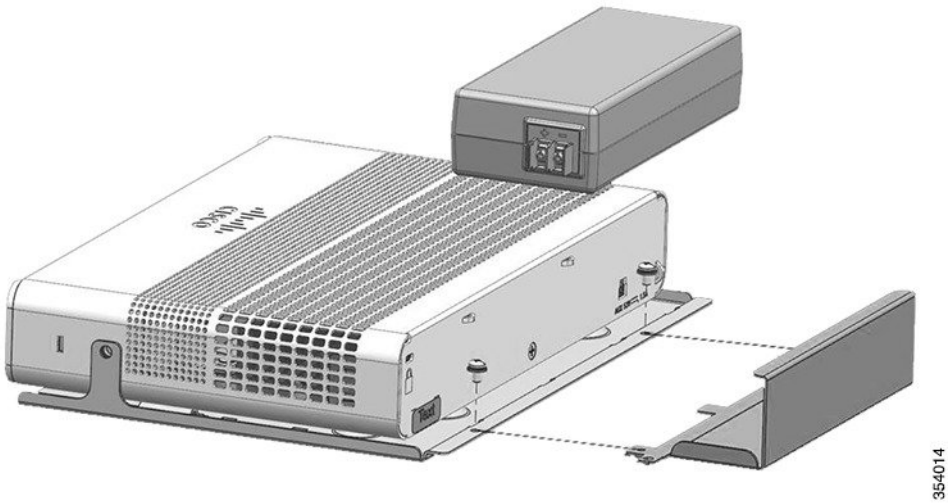
Step 1 Ensure that you have attached the switch to a mounting tray or a DIN rail mount.

Note The power adapter bracket cannot be used without a mounting tray or a DIN rail mount.

Step 2 Place the adapter into the power adapter bracket.

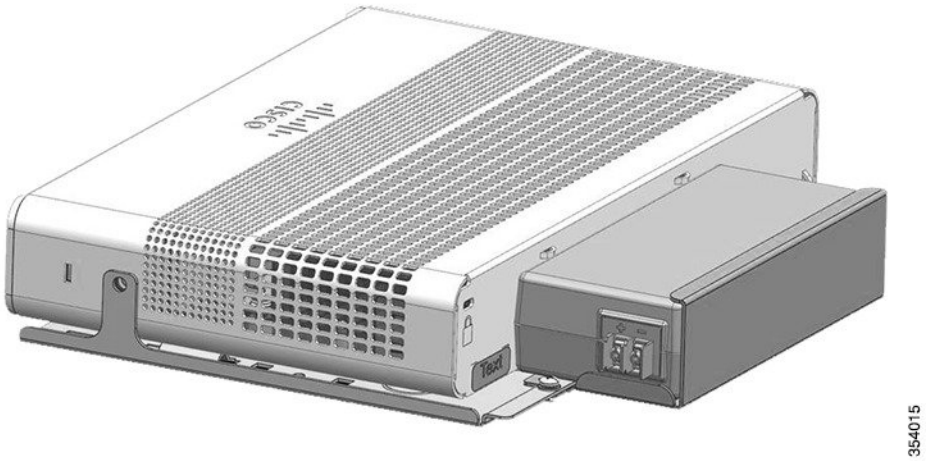
Step 3 Insert the 3 tabs of the power adapter bracket into the corresponding 3 slots on the rear side of the mounting tray or DIN rail mount.

Figure 30: Inserting the power adapter bracket in to the mounting tray or DIN rail mount



Step 4 Insert the screws in the holes on the mounting tray or DIN rail mount, and tighten them.

Figure 31: Attaching the power adapter to the switch



Installing the Power Cord Retainer (Optional)

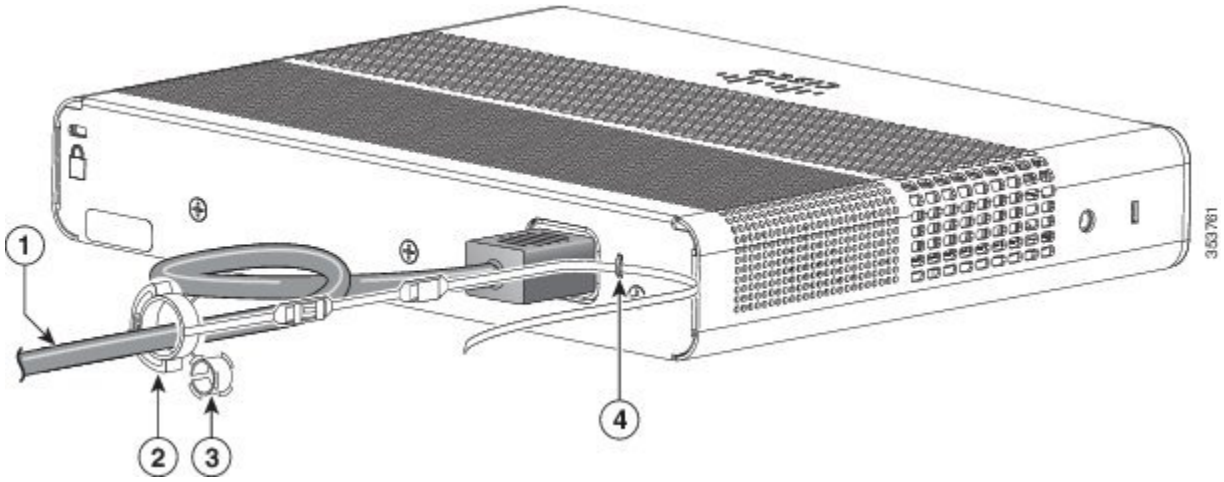
Note This section applies to switches with an AC power connector.

The power cord retainer part number (PWR-CLP=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

Step 1 Choose the sleeve size of the power cord retainer based on the thickness of the cord. The smaller sleeve can be snapped off and used for thin cords.

Step 2 Slide the retainer around the AC power cord, and pass it around the loop on the switch.

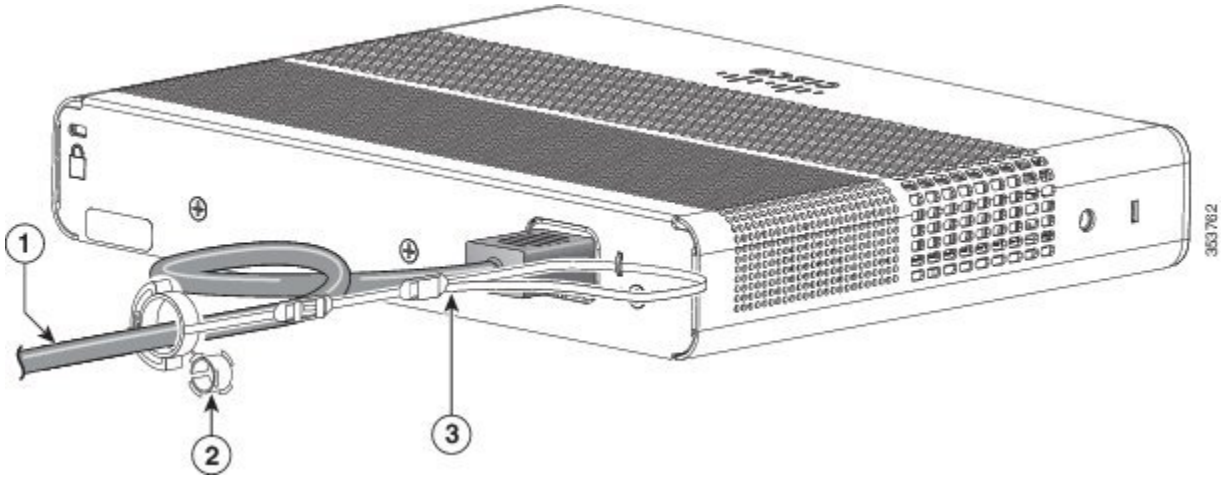
Figure 32: Inserting the Retainer through the Lanced Loop



1	AC power cord	3	Sleeve for thinner power cords
2	Power cord retainer	4	Loop

Step 3 Slide the retainer through the first latch.

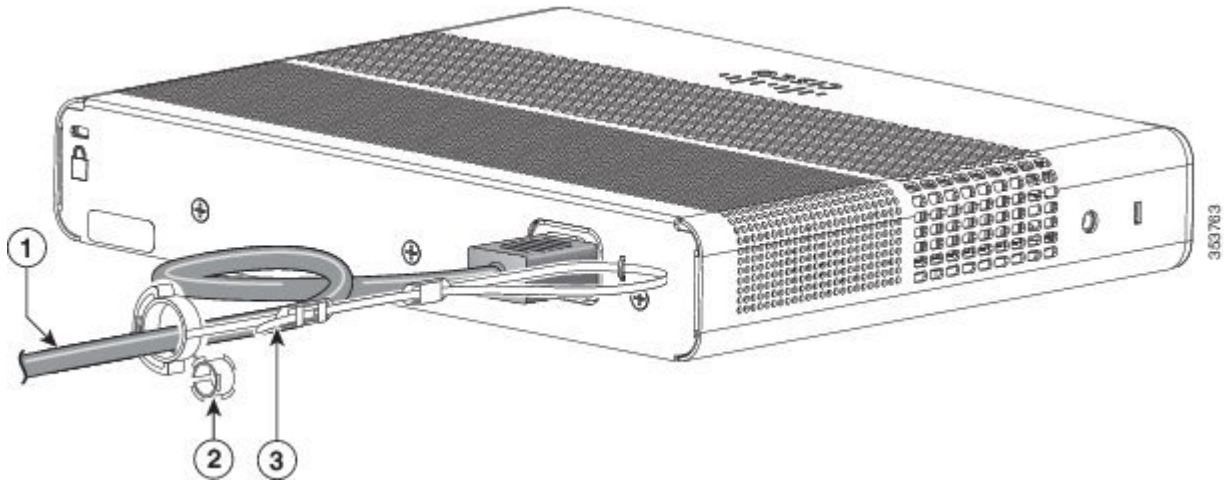
Figure 33: Sliding the Retainer Through the Latch



1	AC power cord	3	Latch
2	Smaller sleeve for thin power cords		

Step 4 Slide the retainer through the other latches to lock it.

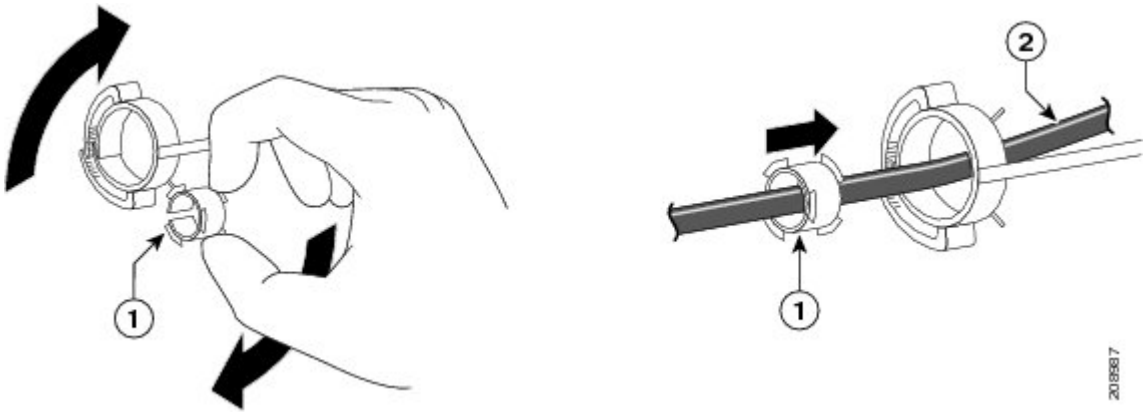
Figure 34: Locking the Retainer



1	AC power cord	3	Latches
2	Smaller sleeve for thin power cords		

Step 5 (Optional) Use the small sleeve for thin power cords. Use the small sleeve to provide greater stability for thin cords. Detach the sleeve, and slide it over the power cord.

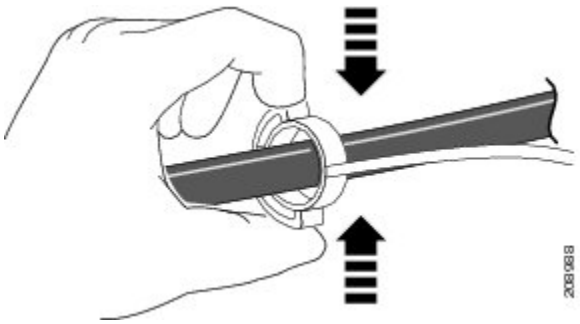
Figure 35: Sleeve Around the Power Cord



1	Smaller sleeve for thin power cords	2	AC power cord

Step 6 Secure the AC power cord by pressing on the retainer.

Figure 36: Securing the Power Cord in the Retainer



Installing the Cable Guard (Optional)

The cable guard prevents tampering with the cables after the cables are installed. The cable guard (CMPCT-CBLE-GRD=) is not included with the switch, but you can order it from your Cisco representative.

Note You can use the cable guard when the switch is mounted on a desk, under a desk, or on a wall.

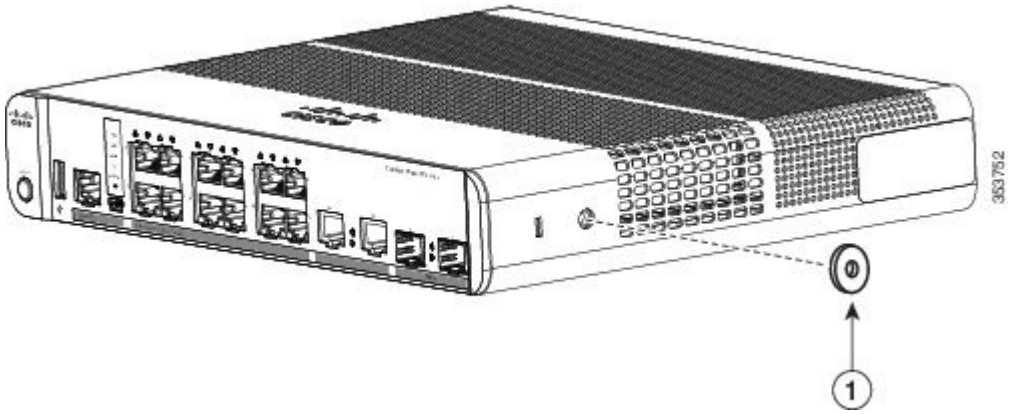
The cable guard is shipped with these items:

- Two 0.5 in. (12.7 mm) number-8 Phillips wood screws
- Two number-10 Phillips pan-head screws
- Two washers

Step 1 (Optional) Attach the supplied washers before you install the cable guard.

Note This is only required if you are not installing the wall-mount brackets.

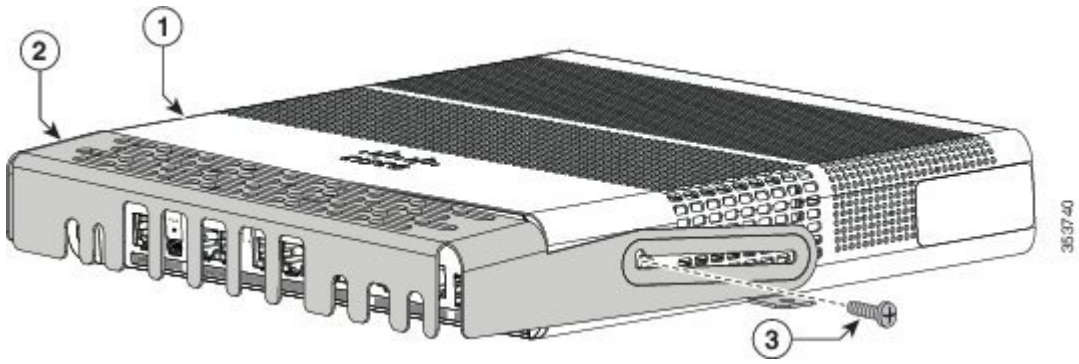
Figure 37: Using the Washer



1	Washer

Step 2 Use the supplied number-10 pan-head screws to attach the cable guard to the switch.

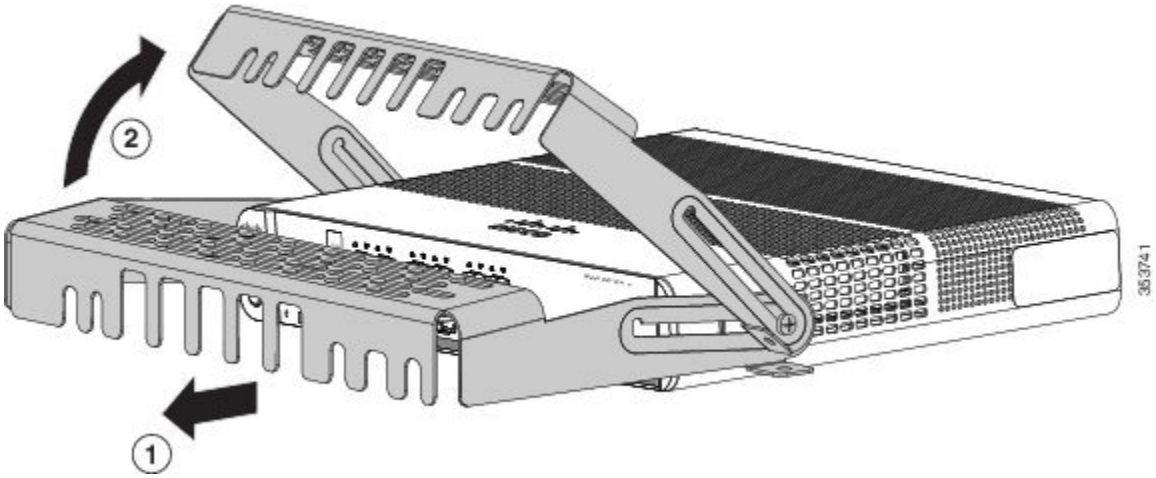
Figure 38: Attaching the Cable Guard to the Switch



1	Switch	3	Two number-10 Phillips pan-head screws
2	Cable Guard		

Step 3 Loosen the number-10 Phillips pan-head screws, slide the cable guide out, and pivot it upwards so that you can install the cables.

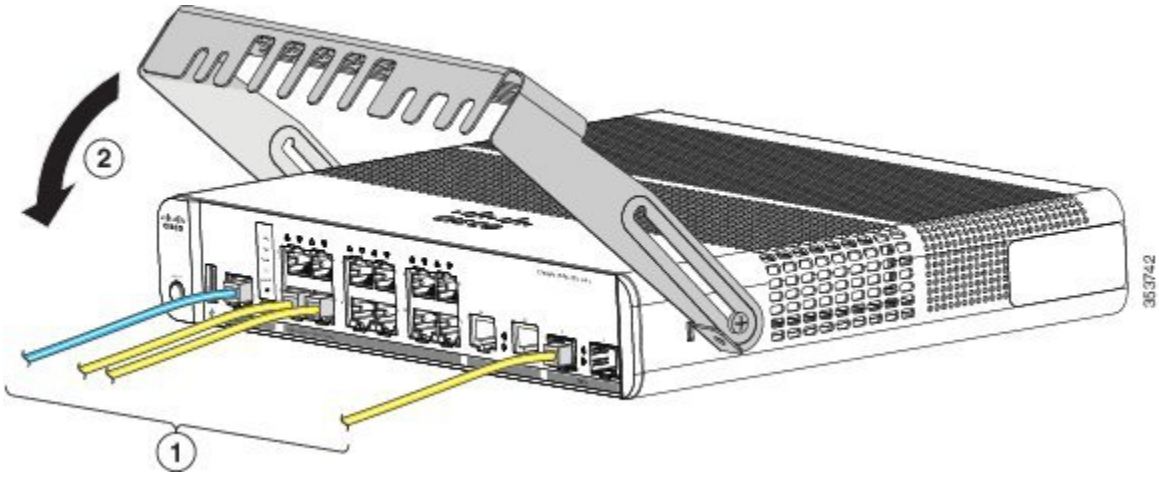
Figure 39: Pivoting the Cable Guard Upwards



1	Cable guard	2	Pivot direction for cable guard pivots

Step 4 Attach the cables to the switch.

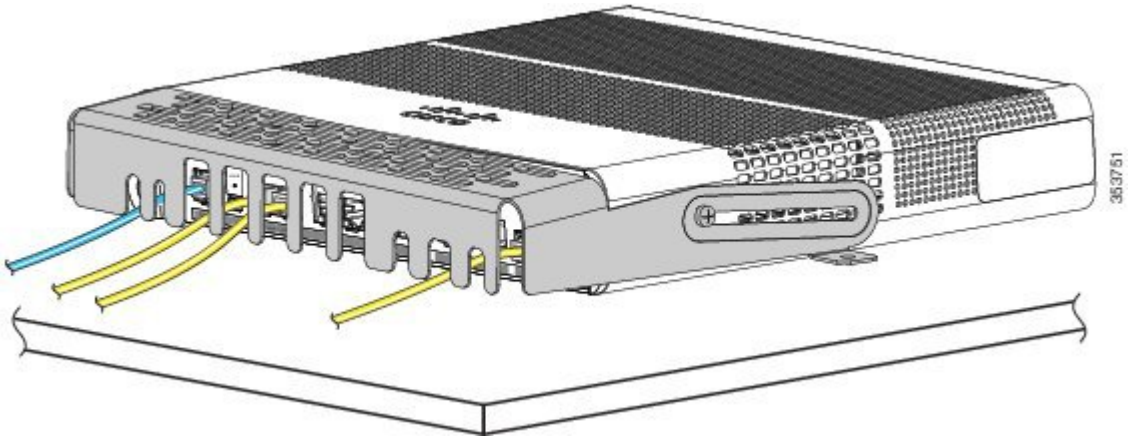
Figure 40: Attaching the Cables to the Switch



1	Cables	2	Pivot direction for cable guard pivots

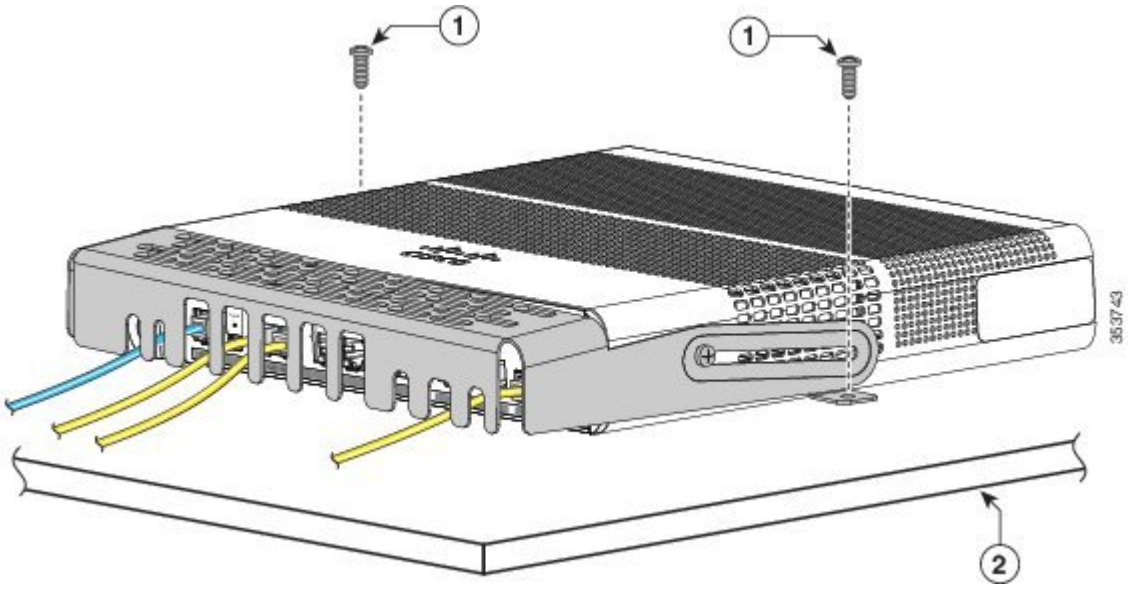
Step 5 Guide the connected cables through the slots in the front of the cable guard. Slide the cable guide in as shown in the following figure. Tighten the screws

Figure 41: Guiding the Cables through the Guard



Step 6 (Optional) To attach the cable guard to the desk or wall, use a 0.144-inch (3.7 mm) or a #27 drill bit to drill 1/2-inch (12.7 mm) holes at each of the two mounting locations. Insert the supplied 0.5 in. (12.7 mm) number-8 Phillips wood screws and tighten them.

Figure 42: Securing the Cable Guard to the Desk



1	Number-8 Phillips wood screws	2	Desk or shelf

Installing SFP and SFP+Modules

Some switch models support SFP modules, SFP+ modules, or both. The *SFP* slots support only the SFP modules. The *SFP+* slots support both SFP and SFP+ modules.

See the switch release notes on Cisco.com for the list of supported SFP modules. Use only Cisco SFP modules on the switch. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the module meets the requirements for the switch.

For information about installing, removing, cabling, and troubleshooting SFP modules, see the module documentation that shipped with your device.

Installing an SFP or SFP+Module

Before You Begin

When installing SFP or SFP+ modules, observe these guidelines:

- Do not remove the dust plugs from the modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.
- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

Caution Removing and installing an SFP or SFP+ module can shorten its useful life. Do not remove and insert any module more often than is absolutely necessary.

Warning Class 1 laser product. Statement 1008

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Find the send (TX) and receive (RX) markings on the module top.
On some SFP or SFP+ modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection.

Step 3 If the module has a bale-clasp latch, move it to the open, unlocked position.

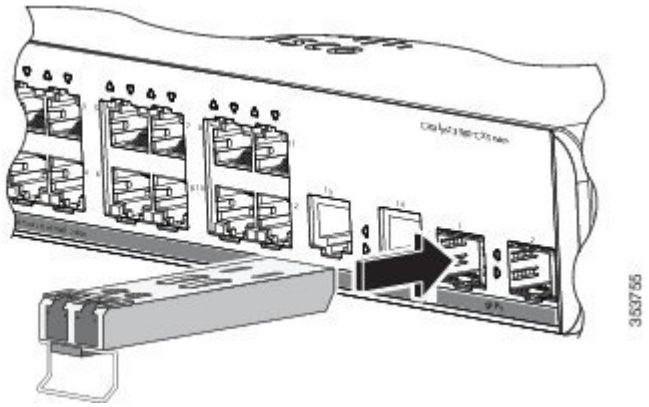
Step 4 Align the module in front of the slot opening, and push until you feel the connector snap into place.

Step 5 If the module has a bale-clasp latch, close it.

Step 6 For fiber-optic SFP or SFP+ modules, remove the dust plugs and save.

Step 7 Connect the SFP cables.

Figure 43: Installing an SFP Module



Removing an SFP or SFP+Module

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3 Insert a dust plug into the optical ports of the SFP or SFP+ module to keep the optical interfaces clean.

Step 4 If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the latch is obstructed and you cannot use your finger, use a small, flat-blade screwdriver or other long, narrow instrument to open the latch.

Step 5 Grasp the SFP or SFP+ module, and carefully remove it from the module slot.

Step 6 Place the module in an antistatic bag or other protective environment.

10/100/1000 PoE and PoE+Port Connections

The ports provide PoE support for devices compliant with IEEE 802.3af and 802.3at (PoE+), and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

On a per-port basis, you can control whether or not a port automatically provides power when an IP phone or an access point is connected.

To access an advanced PoE planning tool, use the Cisco Power Calculator available on Cisco.com at this URL: http://tools.cisco.com/cpc/launch.jsp

You can use this application to calculate the power supply requirements for a specific PoE configuration. The results show output current, output power, and system heat dissipation.

Warning Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072

Caution Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points, IEEE 802.3af, or 802.3at (PoE+)-compliant devices. You must remove any cable or device that causes a PoE fault.

SUMMARY STEPS

1. Connect one end of the cable to the switch PoE port.
2. Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established link.
3. Reconfigure and reboot the connected device if needed.
4. Repeat Steps 1 through 3 to connect each device.

DETAILED STEPS

Step 1 Connect one end of the cable to the switch PoE port.

Step 2 Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established link.
The port LED is amber while STP discovers the topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green. If the LED is off, the other device might not be turned on, there might be a cable problem, or there might be a problem with the adapter in the other device.

Step 3 Reconfigure and reboot the connected device if needed.

Step 4 Repeat Steps 1 through 3 to connect each device.

Note Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

10/100/1000 Port Connections

The switch 10/100/1000 port configuration changes to operate at the speed of the attached device. If the attached ports do not support autonegotiation, you can manually set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have the speed and duplex parameters manually set can reduce performance or result in no linkage.

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.
- Set the interface speed and duplex parameters on both ends of the connection.

Auto-MDIX Connections

The autonegotiation and the auto-MDIX features are enabled by default on the switch.

With autonegotiation, the switch port configurations change to operate at the speed of the attached device. If the attached device does not support autonegotiation, you can manually set the switch interface speed and duplex parameters.

With auto-MDIX, the switch detects the required cable type for copper Ethernet connections and configures the interface accordingly.

If auto-MDIX is disabled, use the guidelines in this table to select the correct cable.

Table 2: Recommended Ethernet Cables (When Auto-MDIX is Disabled)

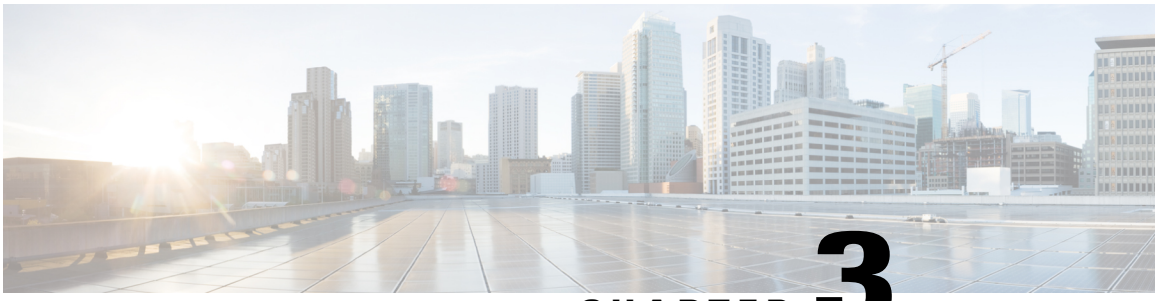
Device	Crossover Cable[6]	Straight-Through Cable
Switch to switch	Yes	No
Switch to hub	Yes	No
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

6 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5, Category 5e, or Category 6 cable. 10BASE-T traffic can use Category 3 or Category 4 cable.

Where to Go Next

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start the Network Assistant application, which is described in the getting started guide. Through this GUI, you can configure and monitor a switch cluster or an individual switch.
- Use the CLI to configure the switch as a member of a cluster or as an individual switch from the console.
- Use the Cisco Prime Infrastructure application.



CHAPTER 3

Troubleshooting

This chapter contains these topics:

- Diagnosing Problems, page 51
- Resetting the Switch, page 55
- Finding the Switch Serial Number, page 56

Diagnosing Problems

The LEDs on the front panel provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from Device Manager, from the CLI, or from an SNMP workstation.

Switch POST Results

Note POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

Switch LEDs

If you have physical access to the switch, look at the port LEDs for troubleshooting information about the switch. See the LED section for a description of the LED colors and their meanings.

Switch Connections

Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this situation because the port has many packet errors or the port constantly flaps (loses and regains link).

- Examine or exchange the copper or fiber-optic cable with a known, good cable.
- Look for broken or missing pins on cable connectors.
- Rule out any bad patch panel connections or media convertors between the source and the destination. If possible, bypass the patch panel, or eliminate faulty media convertors (fiber-optic-to-copper).
- Try the cable in another port or interface, if possible, to see if the problem follows the cable.

Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable for the connection.

- For Ethernet, use Category 3 copper cable for 10 Mb/s UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100/1000 Mb/s connections.
- For fiber-optic cables, verify that you have the correct cable for the distance and port type. Make sure that the connected device ports both match and use the same type encoding, optical frequency, and fiber type.
- For copper connections, determine if a crossover cable was used when a straight-through was required or the reverse. Enable auto-MDIX on the switch, or replace the cable.

Link Status

Verify that both sides have link. A single broken wire or a shutdown port can cause one side to show link even though the other side does not have link.

A port LED that is on does not guarantee that the cable is fully functional. The cable might have encountered physical stress that causes it to function at a marginal level. If the port LED does not turn on:

- Connect the cable from the switch to a known good device.
- Make sure that both ends of the cable are connected to the correct ports.
- Verify that both devices have power.
- Verify that you are using the correct cable type.
- Look for loose connections. Sometimes a cable appears to be seated, but is not. Disconnect the cable and then reconnect it.

10/100/1000 Port Connections

A port appears to malfunction:

- Use the Mode button to show the status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shutdown. Reenable the port if necessary.

10/100/1000 PoE+ Port Connections

A powered device connected to a PoE port does not receive power:

- Use the Mode button to show the PoE status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is in error-disabled, disabled, or shutdown. Reenable the port if necessary.
- Verify that the power supply installed in the switch meets the power requirements of your connected devices.
- Verify that there is sufficient PoE power budget to provide power to the attached device. Use the **show power inline** global configuration command to check on the available PoE power budget.
- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.



Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices. You must remove any cable or device that causes a PoE fault.

SFP and SFP+ Module

Use only Cisco SFP or SFP+ modules in the switch. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the module meets the requirements for the switch.

- Inspect the SFP module. Exchange the suspect module with a known good module. Verify that the module is supported on this platform. (The switch release notes on Cisco.com list the SFP modules that the switch supports.)
- Use the **show interfaces** privileged EXEC command to see if the port or module is error-disabled, disabled, or shutdown. Reenable the port if needed.
- Make sure that all fiber-optic connections are properly cleaned and securely connected.

Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you reenable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shutdown on either side of the connection. If needed, reenable the interface.

Ping End Device

Ping from the directly connected switch first, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

Spanning Tree Loops

STP loops can cause serious performance issues that look like port or interface problems.

A unidirectional link can cause loops. It occurs when the traffic sent by the switch is received by its neighbor, but the traffic from the neighbor is not received by the switch. A broken fiber-optic cable, other cabling problems, or a port issue could cause this one-way communication.

You can enable UniDirectional Link Detection (UDLD) on the switch to help identify unidirectional link problems.

Switch Performance

Speed, Duplex, and Autonegotiation

If the port statistics show a large amount of alignment errors, frame check sequence (FCS), or late-collisions errors, this might mean a speed or duplex mismatch.

A common issue with speed and duplex occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes autonegotiation issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on your NIC. You can resolve this by upgrading the NIC driver to the latest version.

Cabling Distance

If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines.

Resetting the Switch



Note Resetting the switch reboots the switch.

To reset the switch:

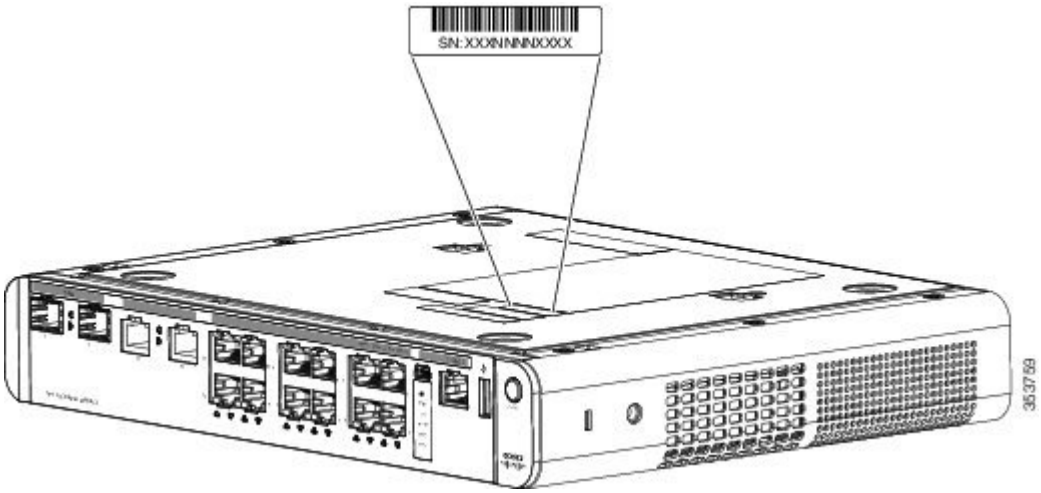
Step 1 At the switch prompt, enter **enable**, and press **Return** or **Enter**.

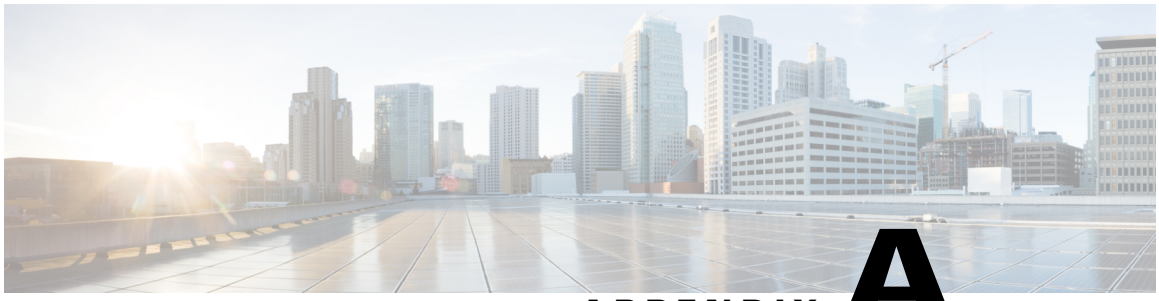
Step 2 At the Privileged EXEC prompt, `switch#`, enter **setup** and press **Return** or **Enter**.
The switch displays the prompt to run the initial configuration dialog.

Finding the Switch Serial Number

If you contact Cisco Technical Assistance, you need to know the switch serial number. You can also use the **show version** privileged EXEC command to see the switch serial number.

Figure 44: Serial Number Location





APPENDIX A

Technical Specifications

This appendix contains these topics:

- Environmental Specifications, page 58
- Physical Specifications, page 59
- Power Requirements, page 60
- PoE Power Consumption, page 61

Environmental Specifications

Environmental Ranges	
Operating temperature	40°C for Catalyst 3560CX-12PD-S and 3560CX-8XPD-S switches and 45°C for all the other switches **Note** For Catalyst 3560CX-8XPD-S, the maximum operating temperature will be 35°C when installed inverted and under fully loaded conditions (maximum PoE and 10G SFP+ transceivers installed). When using the Catalyst 3560-CX and 2960-CX switches with the GLC-T SFP module, the thermal limitations are as follows: • At sea level, table top installation temperature should not exceed 35°C and inverted installation temperature should not exceed 30°C • At 5000 feet, table top installation temperature should not exceed 30°C and inverted installation temperature should not exceed 25°C • At 10000 feet, table top installation temperature should not exceed 25°C and inverted installation temperature should not exceed 20°C
	When using these products with the GLC-T SFP module, the thermal limitations are as follows: • At sea level, table top installation temperature should not exceed 35°C and inverted installation temperature should not exceed 30°C • At 5000 feet, table top installation temperature should not exceed 30°C and inverted installation temperature should not exceed 25°C • At 10000 feet, table top installation temperature should not exceed 25°C and inverted installation temperature should not exceed 20°C
Storage temperature	-22 to 158°F (-30 to 70°C) up to 15,000 ft (4573 m)
Relative humidity	5 to 95% (noncondensing)
Operating altitude	Up to 10,000 ft (3000 m)
Storage altitude	Up to 15,000 ft (4500 m)

Physical Specifications

Weight	
Catalyst 3560CX-8PC-S	5.0 lb (2.27 kg)
Catalyst 3560CX-8TC-S	3.8 lb (1.72 kg)
Catalyst 2960CX-8PC-L	5.0 lb (2.27 kg)
Catalyst 2960CX-8TC-L	3.8 lb (1.72 kg)
Catalyst 3560CX-12PC-S	5.1 lb (2.31 kg)
Catalyst 3560CX-12TC-S	3.9 lb (1.77 kg)
Catalyst 3560CX-12PD-S	5.1 lb (2.31 kg)
Catalyst 3560CX-8PT-S	3.5 lb (1.58 kg)
Catalyst 3560CX-8XPD-S	6.0 lb (2.72 kg)

Dimensions (H x D x W)	
Catalyst 3560CX-8PC-S	1.75 x 10.6 x 9.4 (4.44 x 26.9 x 23.8 cm)
Catalyst 3560CX-8TC-S	1.75 x 10.6 x 8.4 (4.44 x 26.9 x 21.3 cm)
Catalyst 2960CX-8PC-L	1.75 x 10.6 x 9.4 (4.44 x 26.9 x 23.8 cm)
Catalyst 2960CX-8TC-L	1.75 x 10.6 x 8.4 (4.44 x 26.9 x 21.3 cm)
Catalyst 3560CX-12PC-S	1.75 x 10.6 x 9.4 (4.44 x 26.9 x 23.8 cm)
Catalyst 3560CX-12TC-S	1.75 x 10.6 x 8.4 (4.44 x 26.9 x 21.3 cm)
Catalyst 3560CX-12PD-S	1.75 x 10.6 x 9.4 (4.44 x 26.9 x 23.8 cm)
Catalyst 3560CX-8PT-S	1.75 x 10.6 x 7.0 (4.44 x 26.9 x 17.7 cm)
Catalyst 3560CX-8XPD-S	1.75 x 10.6 x 10.4 (4.44 x 26.9 x 26.4 cm)

Power Requirements

AC Input Voltage - 100 to 240 VAC (autoranging)	
Catalyst 3560CX-8PC-S	100-240 VAC, 50-60 Hz, 3.25-1.5A
Catalyst 3560CX-8TC-S	100-240 VAC, 50-60 Hz, 0.5-0.2A
Catalyst 2960CX-8PC-L	100-240 VAC, 50-60 Hz, 3.25-1.5A
Catalyst 2960CX-8TC-L	100-240 VAC, 50-60 Hz, 3.25-1.5A
Catalyst 3560CX-12PC-S	100-240 VAC, 50-60 Hz, 3.25-1.5A
Catalyst 3560CX-12TC-S	100-240 VAC, 50-60 Hz, 0.5-0.2A
Catalyst 3560CX-12PD-S	100-240 VAC, 50-60 Hz, 3.25-1.5A
Catalyst 3560CX-8PT-S	18-60 VDC, 50-60 Hz, 6.0-1.6A
Catalyst 3560CX-8XPD-S	100-240 VAC, 50-60 Hz, 3.25-1.5A

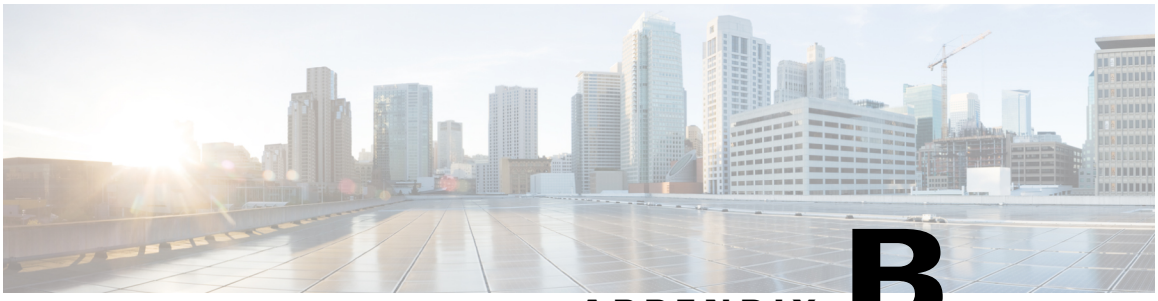
Power Consumption	BTUs per Hour
Catalyst 3560CX-8PC-S	1023.6
Catalyst 3560CX-8TC-S	170.6
Catalyst 2960CX-8PC-L	1023.6
Catalyst 2960CX-8TC-L	170.6
Catalyst 3560CX-12PC-S	1023.6
Catalyst 3560CX-12TC-S	170.6
Catalyst 3560CX-12PD-S	1057.7
Catalyst 3560CX-8PT-S	375.3
Catalyst 3560CX-8XPD-S	1057.7

Power Rating	BTUs per Hour
Catalyst 3560CX-8PC-S	0.3 KVA

Power Rating	BTUs per Hour
Catalyst 3560CX-8TC-S	0.05 KVA
Catalyst 2960CX-8PC-L	0.3 KVA
Catalyst 2960CX-8TC-L	0.05 KVA
Catalyst 3560CX-12PC-S	0.3 KVA
Catalyst 3560CX-12TC-S	0.05 KVA
Catalyst 3560CX-12PD-S	0.31 KVA
Catalyst 3560CX-8PT-S	0.11 KVA
Catalyst 3560CX-8XPD-S	0.31 KVA

PoE Power Consumption

Switch	Consumption without PoE	Consumption with PoE	Available PoE
Catalyst 3560CX-8PC-S	25.4W	247.4W	240W
Catalyst 3560CX-8TC-S	19.7W	NA	NA
Catalyst 3560CX-12PC-S	27.8W	253.0W	240W
Catalyst 3560CX-12TC-S	21.9W	NA	NA
Catalyst 3560CX-12PD-S	32.6W	254.7W	240W
Catalyst 2960CX-8PC-L	24.5W	135.5W	1 24W
Catalyst 2960CX-8TC-L	20.0W	NA	NA
Catalyst 3560CX-8PT-S	TBD	TBD	Up to 146W
Catalyst 3560CX-8XPD-S	TBD	TBD	240W



APPENDIX B

Connector and Cable Specifications

This appendix contains these topics:

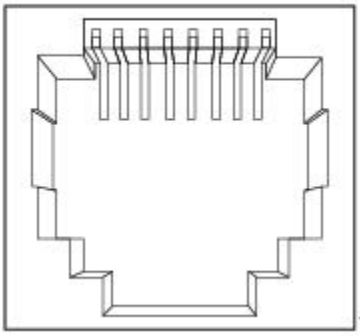
- Connector Specifications, page 63
- Cables and Adapters, page 64

Connector Specifications

10/100/1000 Ports (Including PoE)

All 10/100/1000 ports use standard RJ-45 connectors and Ethernet pinouts.

Figure 45: 10/100/1000 Port Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	

SFP Module Connectors

Figure 46: Duplex LC Cable Connector

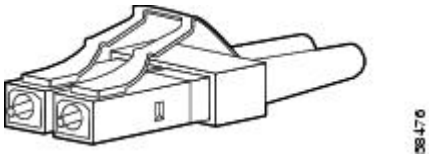


Figure 47: Simplex LC Cable Connector

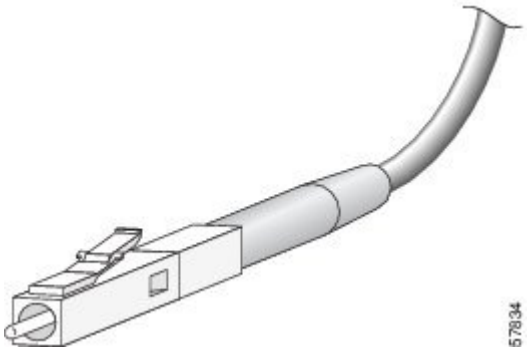
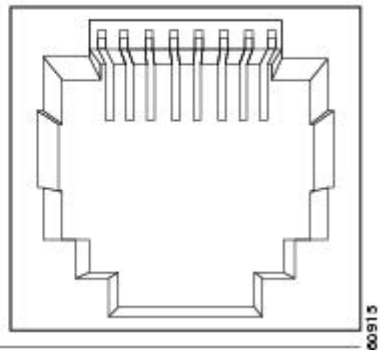


Figure 48: Copper SFP Module LC Connector

Pin	Label	1 2 3 4 5 6 7 8
1	TP0+	
2	TP0-	
3	TP1+	
4	TP2+	
5	TP2-	
6	TP1-	
7	TP3+	
8	TP3-	



Cables and Adapters

SFP Module Cables

For cabling specifications, refer to the following notes:

- Cisco SFP and SFP+ Transceiver Module Installation Notes
- Cisco 40-Gigabit QSFP+ Transceiver Modules Installation Note

Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the stipulated cable length. Copper 1000BASE-T SFP module transceivers use standard four twisted-pair, Category 5 cable at lengths up to 328 feet (100 meters).

Cable Pinouts

Figure 49: Four Twisted-Pair Straight-Through Cable Schematic

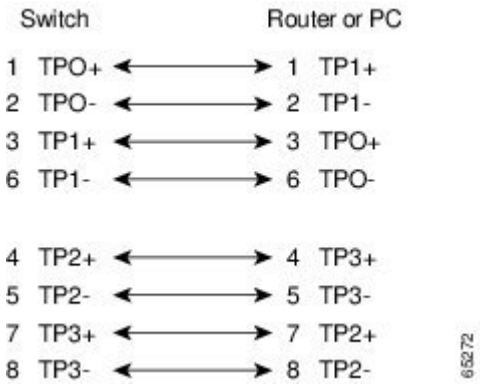


Figure 50: Four Twisted-Pair Semi-Cross Cable Schematic

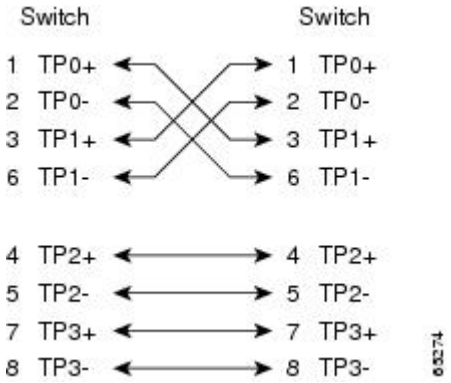


Figure 51: Two Twisted-Pair Straight-Through Cable Schematic

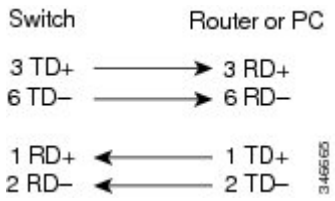
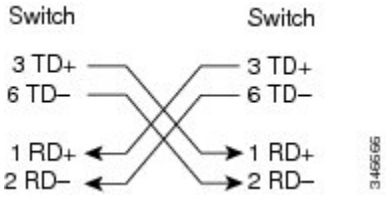


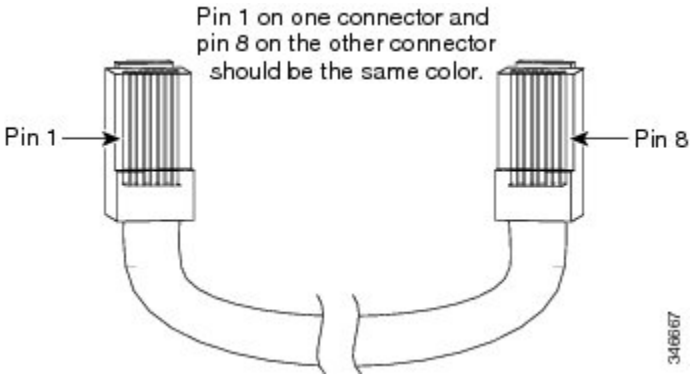
Figure 52: Two Twisted-Pair Crossover Cable Schematic



Identifying a Crossover Cable

To identify a crossover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be a different color from the wire connected to the pin on the inside of the right plug.

Figure 53: Identifying a Crossover Cable



Console Port Adapter Pinouts

The RS-232 console port uses an 8-pin RJ-45 connector. Use an RJ-45-to-DB-9 adapter cable to connect the switch console port to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter to connect the switch console port to a terminal.

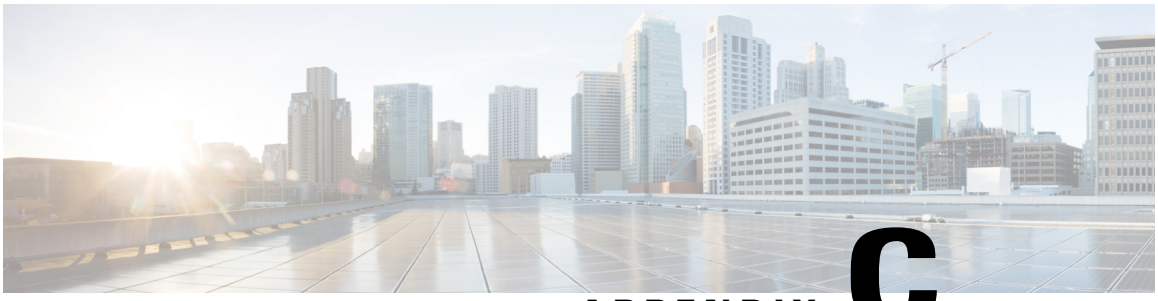
Table 3: Console Port Signaling with a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**DB-9 Pin**	**Signal**
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	**DB-9 Pin**	**Signal**
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table 4: Console Port Signaling with a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	**DB-25 Pin**	**Signal**
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS



APPENDIX C

Configuring the Switch with the CLI-Based Setup Program

This appendix contains these topics:

- Accessing the CLI Through Express Setup, page 69
- Accessing the CLI Through the Console Port, page 69
- Entering the Initial Configuration Information, page 77

Accessing the CLI Through Express Setup

You can access the CLI on an unconfigured switch. Set the switch in Express Setup mode and connect a switch Ethernet port to an Ethernet port on your PC or workstation. Follow the steps described in the getting started guide for turning on the switch and using Express Setup.

When the switch is in Express Setup mode, open a Telnet session to the switch by entering the IP address 10.0.0.1. Enter the **setup** user EXEC command. Enter the information described in IP Settings, on page 77 and Completing the Setup Program, on page 78.

After you have entered the configuration information for the switch, save it to flash memory by using the **write memory** privileged EXEC command.

Note In Express Setup mode, the IP address 10.0.0.1 remains active on the switch until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

Accessing the CLI Through the Console Port

You can access the CLI on a configured or unconfigured switch by connecting the RJ-45 console port or USB console port of the switch to your PC or workstation and accessing the switch through a terminal emulation program.

Note If you have stacked your switches, connect to the console port of one of the switches in the stack. You can initially configure the entire stack from any member switch.

Connecting the RJ-45 Console Port

SUMMARY STEPS

1. Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.
2. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.
3. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:
4. Power on the switch as described in the switch getting started guide.
5. The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in Entering the Initial Configuration Information, on page 77.

DETAILED STEPS

Step 1 Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.

Step 2 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 3 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 4 Power on the switch as described in the switch getting started guide.

Step 5 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in Entering the Initial Configuration Information, on page 77.

Connecting the USB Console Port

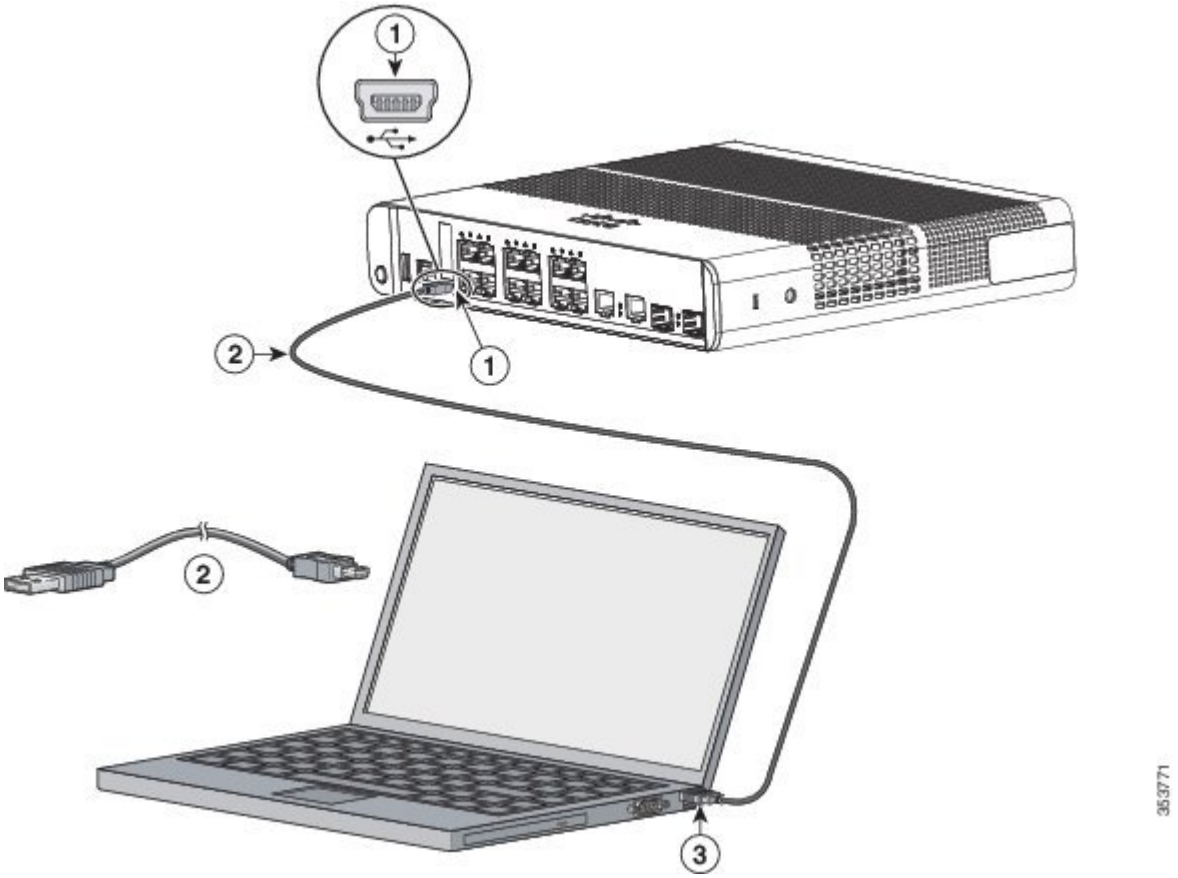
SUMMARY STEPS

1. If you are connecting the switch USB console port to a Windows-based PC for the first time, install the USB driver. See Installing the Cisco Microsoft Windows USB Device Driver, on page 73.
2. Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port.
3. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.
4. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:
5. Power on the switch as described in the switch getting started guide.
6. The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the Setup program.

DETAILED STEPS

Step 1 If you are connecting the switch USB console port to a Windows-based PC for the first time, install the USB driver. See Installing the Cisco Microsoft Windows USB Device Driver, on page 73.

Figure 54: Connecting the USB Console Cable to the Switch



1	USB console port (5-pin mini-Type B)	3	USB Type A connection on the laptop
2	USB Type A to 5-pin mini-Type B cable		

Step 2 Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port.

Step 3 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 4 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud

- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 5 Power on the switch as described in the switch getting started guide.

Step 6 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the Setup program.

Installing the Cisco Microsoft Windows USB Device Driver

A USB device driver must be installed the first time a Microsoft Windows-based PC is connected to the USB console port on the switch.

- Installing the Cisco Microsoft Windows XP USB Driver
- Installing the Cisco Microsoft Windows 2000 USB Driver
- Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Installing the Cisco Microsoft Windows XP USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.
3. The Cisco Virtual Com InstallShield Wizard begins.
4. The Ready to Install the Program window appears. Click **Install**.
5. The InstallShield Wizard Completed window appears. Click **Finish**.
6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3 The Cisco Virtual Com InstallShield Wizard begins.

Step 4 The Ready to Install the Program window appears. Click **Install**.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows 2000 USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. Double-click the setup.exe file.
3. The Cisco Virtual Com InstallShield Wizard begins. Click **Next.**
4. The Ready to Install the Program window appears. Click **Install.**
5. The InstallShield Wizard Completed window appears. Click **Finish.**
6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 Double-click the setup.exe file.

Step 3 The Cisco Virtual Com InstallShield Wizard begins. Click **Next.**

Step 4 The Ready to Install the Program window appears. Click **Install.**

Step 5 The InstallShield Wizard Completed window appears. Click **Finish.**

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.
3. The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.
4. The Ready to Install the Program window appears. Click **Install**.
5. The InstallShield Wizard Completed window appears. Click **Finish**.
6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3 The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.

Step 4 The Ready to Install the Program window appears. Click **Install**.

Note If a User Account Control warning appears, click **Allow - I trust this program** to proceed.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Uninstalling the Cisco Microsoft Windows USB Driver

Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver

Use the Windows Add or Remove Programs utility or the setup.exe file.

Using the Setup.exe Program

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
3. When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
4. When the Remove the Program window appears, click **Remove.**
5. When the InstallShield Wizard Completed window appears, click **Finish.**

DETAILED STEPS

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
Step 3 When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
Step 4 When the Remove the Program window appears, click **Remove.**
Step 5 When the InstallShield Wizard Completed window appears, click **Finish.**

Using the Add or Remove Programs Utility

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Click **Start** > **Control Panel** > **Add or Remove Programs.**
2. Scroll to Cisco Virtual Com and click **Remove.**
3. When the Program Maintenance window appears, select the **Remove** radio button. Click **Next.**

DETAILED STEPS

Step 1 Click **Start** > **Control Panel** > **Add or Remove Programs.**
Step 2 Scroll to Cisco Virtual Com and click **Remove.**
Step 3 When the Program Maintenance window appears, select the **Remove** radio button. Click **Next.**

Uninstalling the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Before You Begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
3. When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
4. When the Remove the Program window appears, click **Remove.**
5. When the InstallShield Wizard Completed window appears, click **Finish.**

DETAILED STEPS

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**

Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**

Step 3 When the Program Maintenance window appears, select the Remove radio button. Click **Next.**

Step 4 When the Remove the Program window appears, click **Remove.**

Note If a User Account Control warning appears, click **Allow - I trust this program to proceed**.

Step 5 When the InstallShield Wizard Completed window appears, click **Finish.**

Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch is powered on. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also needed to use Device Manager or Cisco Network Assistant to configure and manage the switch.

IP Settings

Obtain this information from your network administrator before you start the setup program:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Completing the Setup Program

If your switches are stacked and there are multiple console connections to individual switches in the stack, the initial setup dialog box appears at the console where you first press **Enter**.

SUMMARY STEPS

1. Enter **Yes** at these two prompts:
2. Enter a host name for the switch, and press **Return.**
3. Enter an enable secret password, and press **Return.**
4. Enter an enable password, and press **Return.**
5. Enter a virtual terminal (Telnet) password, and press **Return.**
6. To configure the country code, enter **yes** and press **Return**.
7. Enter the country code, and press **Return**.
8. (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, Device Manager, or the Network Assistant application. To configure SNMP later, enter **no**.
9. Enter the interface name (physical interface or VLAN name) of the connection to the management network, and press **Return**. For this release, always use **vlan1** as that interface.
10. Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown are examples.
11. Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.
12. From these choices that appear, make your selection and press **Return.**

DETAILED STEPS

Step 1 Enter **Yes** at these two prompts:

```
Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
```

Step 2 Enter a host name for the switch, and press **Return.**

On a command switch, the host name is limited to 28 characters; on a member switch the name is limited to 31 characters. Do not use *-n*, where *n* is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

Step 3 Enter an enable secret password, and press **Return.**
The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted, and the enable password is in plain text.

```
Enter enable secret: secret_password
```

Step 4 Enter an enable password, and press **Return.**

```
Enter enable password: enable_password
```

Step 5 Enter a virtual terminal (Telnet) password, and press **Return.**

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

Step 6 To configure the country code, enter **yes** and press **Return**.

```
Do you want to configure country code? [no]: yes
```

Step 7 Enter the country code, and press **Return**.

```
Enter the country code[US]:US
```

Step 8 (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, Device Manager, or the Network Assistant application. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

Step 9 Enter the interface name (physical interface or VLAN name) of the connection to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

```
Enter interface name used to connect to the
management network from the above interface summary: vlan1
```

Step 10 Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. The IP address and subnet masks shown are examples.

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

Step 11 Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the Network Assistant GUI. You can configure the switch as a command switch later through the CLI, Device Manager, or the Network Assistant application. To configure it later, enter **no**.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have now completed the initial configuration of the switch. This is an example of the configuration output that appears:

```
The following configuration command script was created:
hostname switch1
enable secret 5 $1$Ulq8$DlA/OiaEbl90WcBPd9cOn1
enable password enable_password
line vty 0 15
password terminal-password
no snmp-server
!
no ip routing

!
interface Vlan1
no shutdown
ip address 10.4.120.106 255.0.0.0
!
interface GigabitEthernet1/0/1
!
interface GigabitEthernet1/0/2

interface GigabitEthernet1/0/3
!
...<output abbreviated>
!


interface GigabitEthernet1/0/23
!
end
```

Step 12 From these choices that appear, make your selection and press **Return.**

```
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.

Choose (2) to save the configuration to NVRAM to use it the next time the switch reboots.

Enter your selection [2]:2
```

The switch now runs this default configuration. If you want to change this configuration or perform other management tasks, see Management Options, on page 13.

AM-101

AirMedia® Presentation Gateway

Supplemental Guide

Crestron Electronics, Inc.

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AM-101: AirMedia Presentation Gateway

Introduction

With AirMedia®, a user can wirelessly present PowerPoint®, Excel®, Word, and PDF documents, as well as photos, on the room display from a personal iOS® or Android™ mobile device. MacBook® and PC laptops can be connected as well. There are no wires to hook up, no settings to configure, and no AV or control system is required. All that is required to share content from a portable device is a connection to a local Wi-Fi® network.

For information on installation and basic operation, refer to the DO Guide (Doc. 7930) at http://www.crestron.com/manuals for details.

Configuration

Make all connections as described in AM-101 DO Guide (Doc. 7930). The connected display device shows the AM-101 welcome screen.

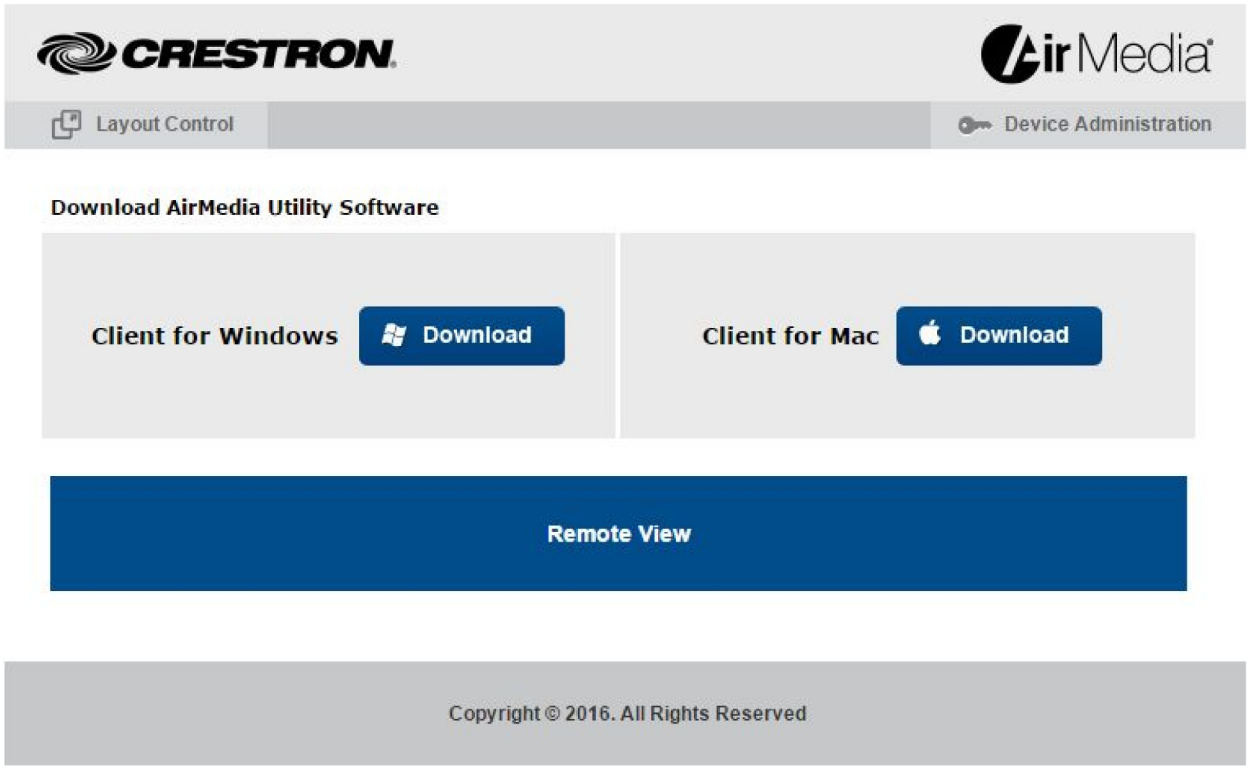
AM-101 Welcome Screen



1. Open a web browser on the computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen. The download screen is displayed.

NOTE: By default, the AM-101 displays the IP address in parentheses to assist in the configuration of the device. The IP address can be hidden so that the end user sees only a friendly URL (i.e., http://AirMedia-019647). For details, refer to "OSD Setup" on page 10.

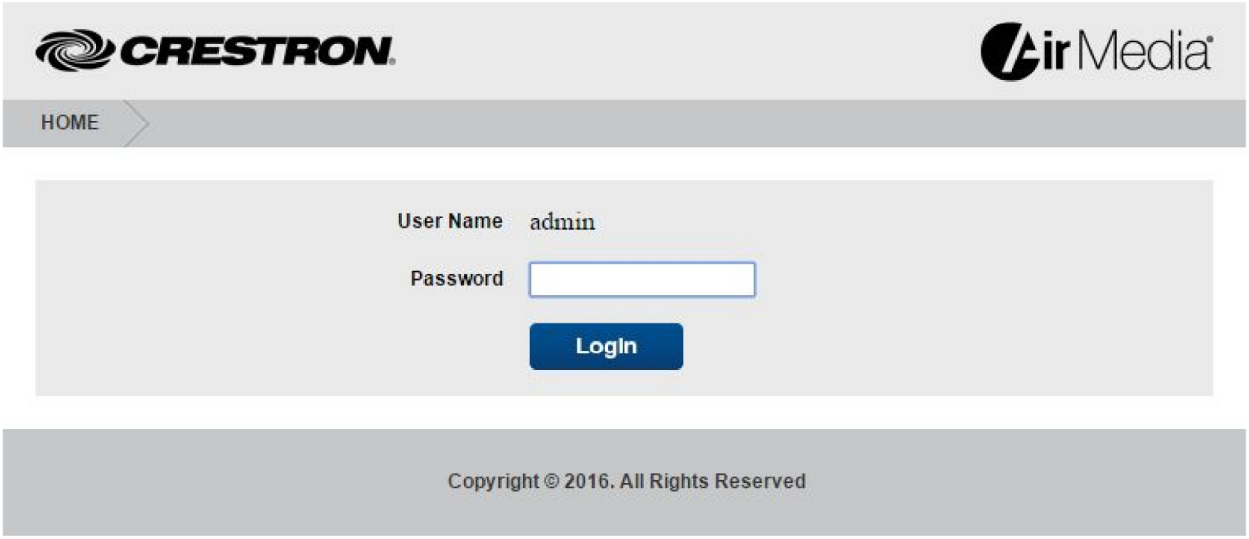
Download Screen



2. Click **Device Administration**. The admin login screen is displayed.

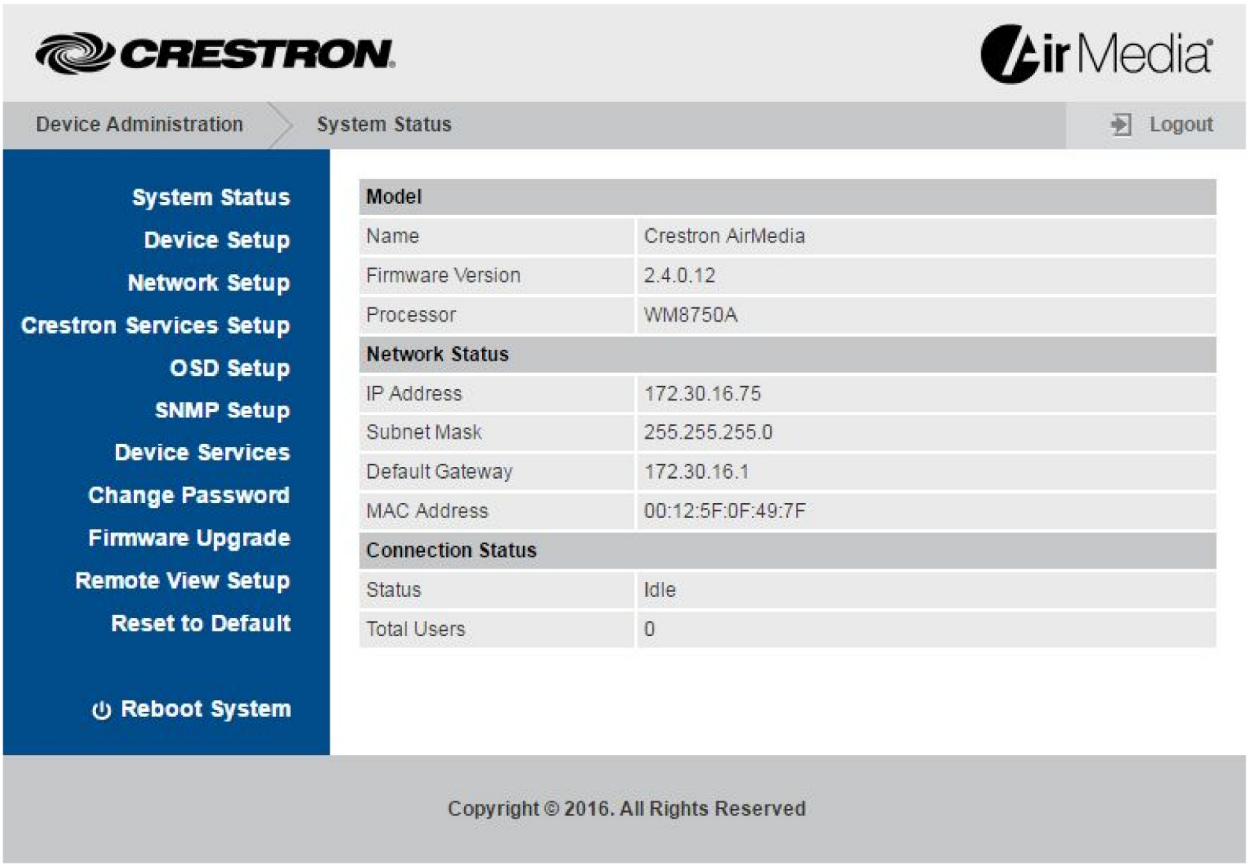
NOTE: Prior to displaying the admin login screen, the web browser displays a security warning message about the security certificate. It is safe to ignore this warning as long as the user verifies that the browser's address bar indicates the correct IP address or host name.

Admin Login Screen



3. Enter the admin password (the default password is "admin") and click **Login**. The **Device Administration** menu showing the **System Status** screen is displayed.

Device Administration Menu Showing the System Status Screen



NOTE: Changes made in any section of the **Device Administration** menu require that the AM-101 be rebooted for the settings to take effect. For details, refer to "Reboot System" on page 18 for details.

The **Device Administration** menu is divided into 12 sections:

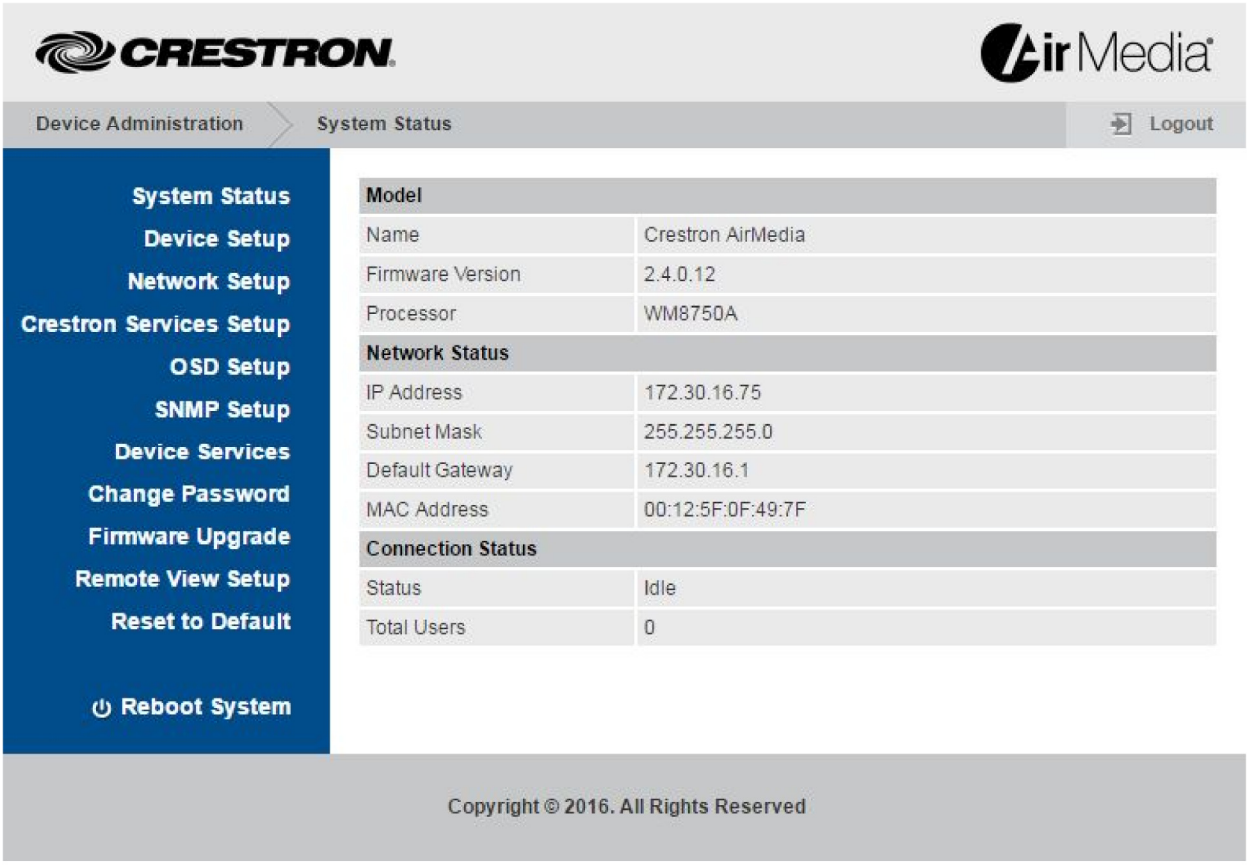
- **System Status** displays the operational status of the AM-101.
- **Device Setup** sets the AM-101's output resolution, under-scan setting, and access code.
- **Network Setup** sets the AM-101's parameters for operating in a network environment.
- **Crestron Services Setup** sets the AM-101's parameters for operating in a Crestron® network environment.
- **OSD Setup** configures the AM-101's on-screen display.
- **SNMP Setup** configures the AM-101 to use the Simple Network Management Protocol (SNMP).
- **Device Services** enables and disables remote viewing, SNMP, and other features.
- **Change Password** changes the admin password.
- **Firmware Upgrade** imports or exports the system configuration to match other AM-101 devices and upgrades the AM-101's firmware.

- **Remote View Setup** specifies the auto-refresh interval.
- **Reset to Default** resets the AM-101 to the default settings.
- **Reboot System** reboots the AM-101.

System Status

Click **System Status** to display the operational status of the AM-101.

Device Administration Menu Showing the System Status Screen

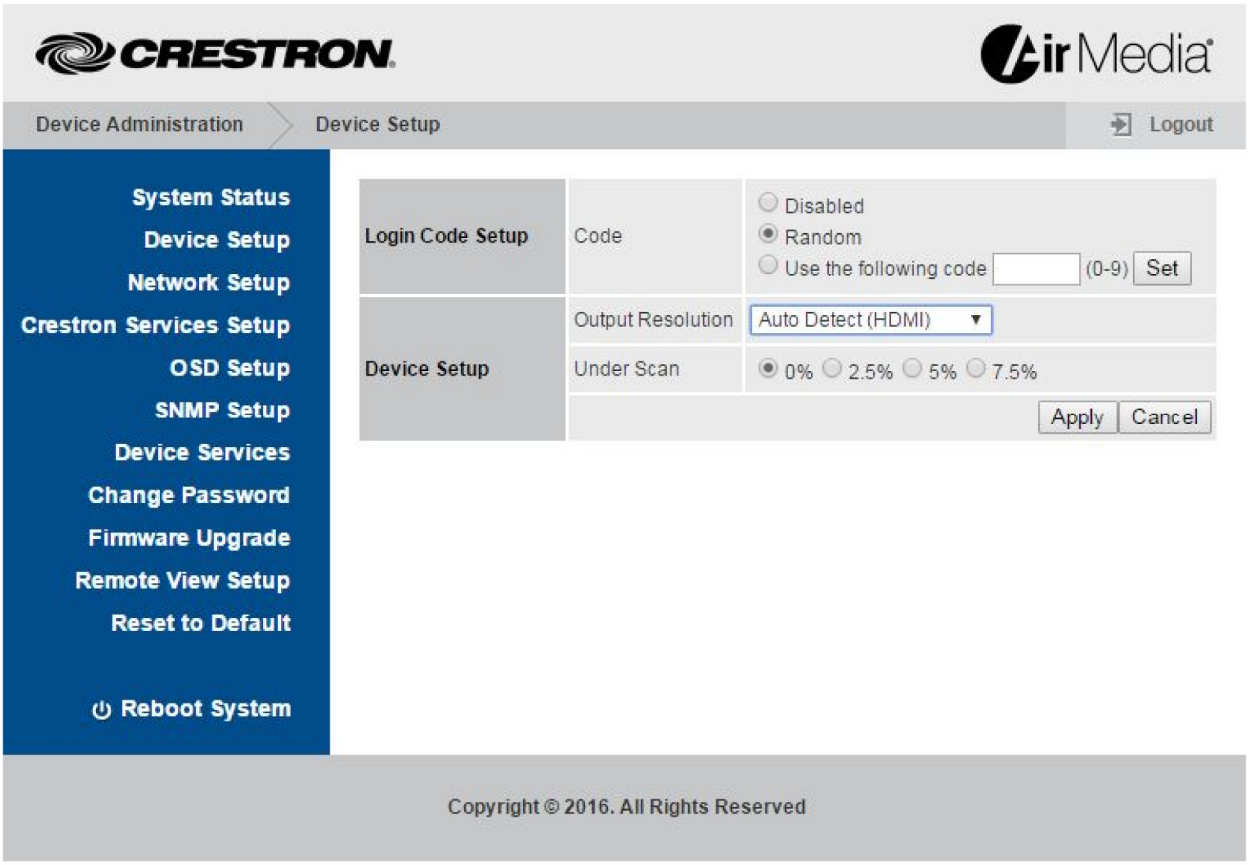


The **System Status** screen displays the device's name (host name), firmware version, network status (IP address, subnet mask, default gateway, and MAC address), and connection status.

Device Setup

Click **Device Setup** to configure the output resolution, under-scan setting, and access code.

Device Administration Menu Showing the Device Setup Screen



Code

A code can be used to limit access to the AM-101. The code feature can be disabled, randomly generated, or fixed to a specific value.

1. Select one of the following options from the **Code** section to specify how the access code is used:
   - **Disabled** allows any user with the AM-101's IP address or host name to open a client connection without entering an access code.
   - **Random** sets the AM-101 to randomly generate an access code. A new code is generated when the last connected presenter disconnects from the AM-101. The access code is displayed on the top right of the AM-101 welcome screen as shown on page 2.
   - **Use the following code** sets the AM-101 to display a user-specified, four-digit access code. Enter a code and click **Set**. The access code is displayed on the top right of the AM-101 welcome screen as shown on page 2.
2. Click **Apply** to apply any changes. Click **Cancel** to cancel.

Output Resolution

1. Select a resolution setting from the **Output Resolution** drop-down menu.
2. Click **Apply** to apply any changes. Click **Cancel** to cancel.

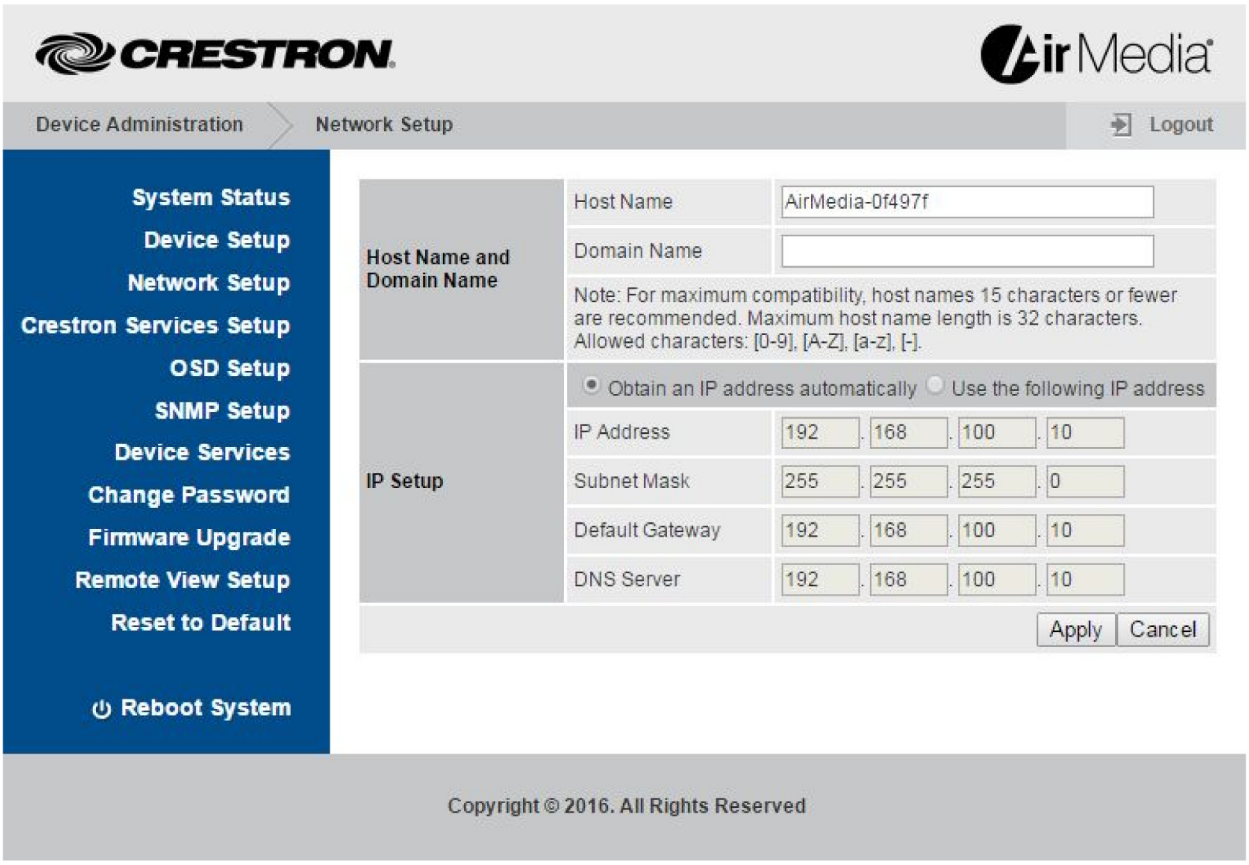
Under Scan

1. Select an amount of under scan to be applied to the displayed image.
2. Click **Apply** to apply any changes. Click **Cancel** to cancel.

Network Setup

Click **Network Setup** to configure the AM-101's parameters for operating in a network environment.

Device Administration Menu Showing the Network Setup Screen



Host Name and Domain Name

Use a host name and domain name as an alternative to IP addressing when connecting client computers to the AM-101.

NOTE: When specifying a host name, choose one that has less than 15 characters.

NOTE: To use a host name, set the AM-101's **IP Setup** to **Obtain an IP address automatically** or, if using a static IP address, specify the domain name in the **Domain Name** field.

1. Enter a host name (15 characters or less) in the **Host Name** field and a domain name (optional) in the **Domain Name** field.
2. Click **Apply** to apply any changes. Click **Cancel** to cancel.

IP Setup

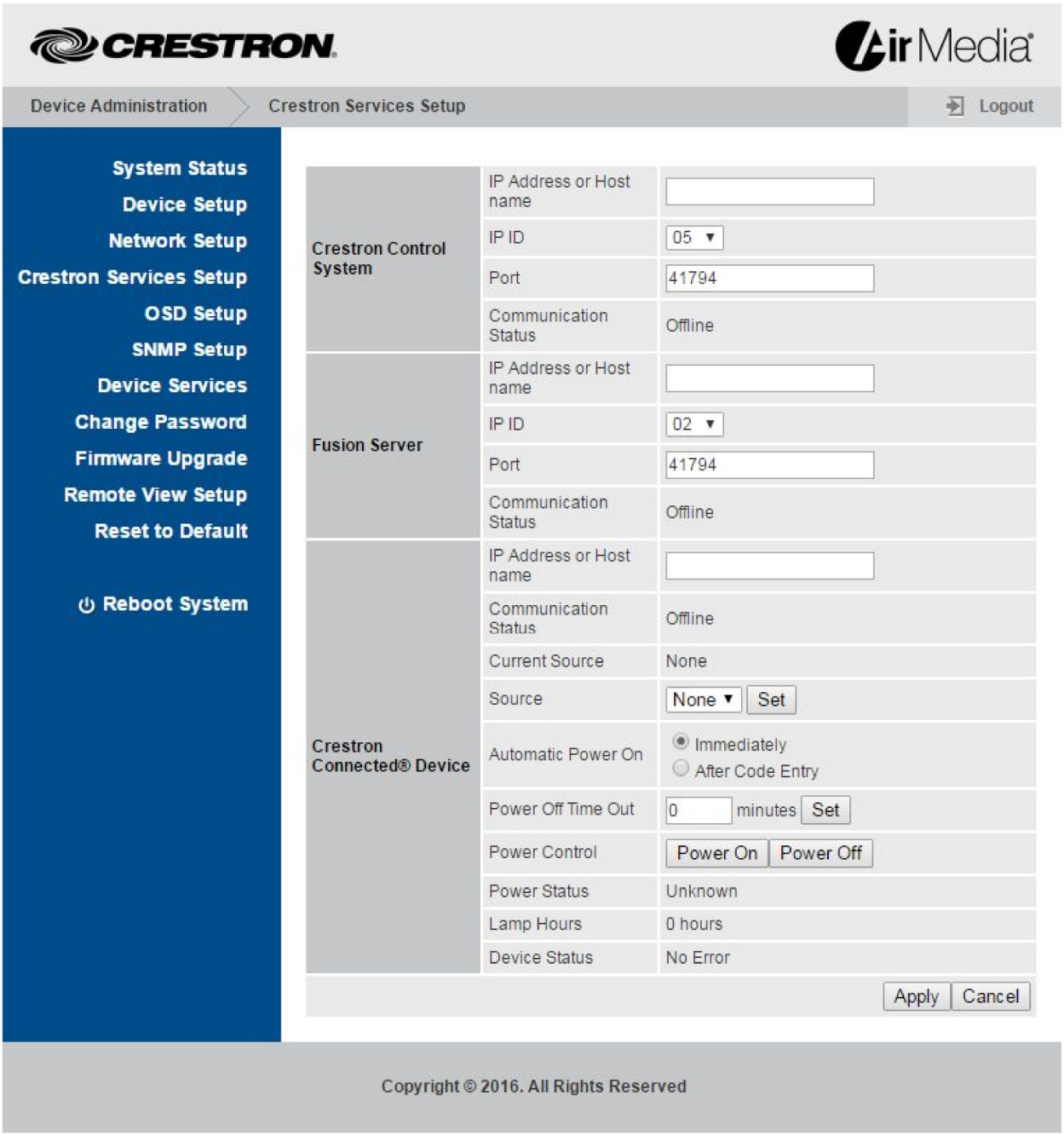
In the **IP Setup** section, the IP address, subnet mask, default gateway, and DNS server of the AM-101 can be set. The settings can be set manually or obtained from a DHCP server.

1. Select **Obtain an IP address automatically** to use a DHCP server to provide the IP address, subnet mask, default gateway, and DNS server. Otherwise, select **Use the following IP address** and enter the Ethernet parameters.
2. Click **Apply** to apply any changes. Click **Cancel** to cancel.

Crestron Services Setup

Click **Crestron Services Setup** to configure the AM-101 for operation in a Crestron network environment.

Device Administration Menu Showing the Crestron Services Setup Screen



Crestron Control System

The **Crestron Control System** section specifies the control system controlling the AM-101.

- **IP Address or Host name** is the IP address or host name of the Crestron control system. Enter the IP address or host name of the Crestron control system and click **Apply**.
- **IP ID** identifies the AM-101 in the control system's program. Select the AM-101's IP ID from the drop-down menu and click **Apply**.

- **Port** is the port number used to communicate with the control system.
- **Communication Status** indicates the status of the communication link between the control system and the AM-101.

To apply any changes, click **Apply**. To cancel, click **Cancel**.

Fusion Server

The **Fusion Server** section specifies the Crestron Fusion® server communicating with the AM-101.

- **IP Address or Host name** is the IP address or host name of the Crestron Fusion server. Enter the IP address or host name of the Crestron Fusion server and click **Apply.**
- **IP ID** identifies the AM-101 in the Crestron Fusion server's program. Select the AM-101's IP ID from the drop-down menu and click **Apply**.
- **Port** is the port number used to communicate with the Crestron Fusion server.
- **Communication Status** indicates the status of the communication link between the Crestron Fusion server and the AM-101.
- Click **Apply** to apply any changes. Click **Cancel** to cancel.

Crestron Connected Device

The **Crestron Connected Device** section specifies the Crestron Connected® display device that is connected to the AM-101. Once the device is specified, basic status information and controls are displayed.

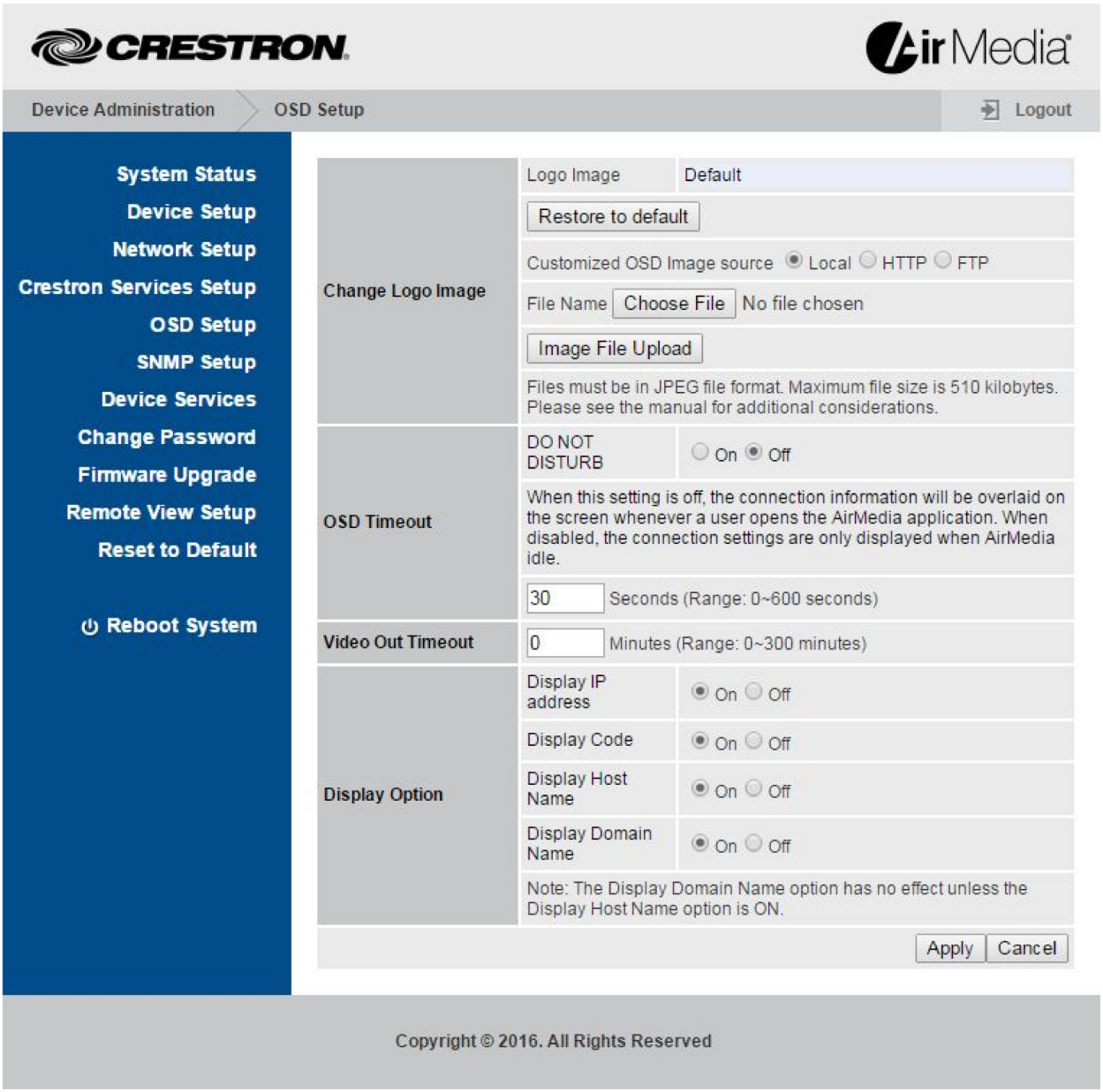
1. Enter the IP address or host name of the Crestron Connected device to specify the Crestron Connected device.
2. Click **Set** to apply changes to the **Source** and **Power Off Time Out** settings.
3. Click **Apply** to apply any changes. Click **Cancel** to cancel.

NOTE: The **Apply** button does not affect changes made to the **Source** and **Power Off Time Out** settings.

OSD Setup

Click **OSD Setup** to specify a logo image to display and to display or hide the AM-101's connection information.

Device Administration Menu Showing the OSD Setup Screen



Change Logo Image

The Change Logo Image section is used to select the logo image on the AM-101 welcome screen.

- Logo Image displays the file name of the logo image. If the default logo image is used, "Default" is displayed.
- Restore to default reverts to the default logo image.
- Customized OSD Image source allows the user to select a static image file from the connected PC, a website, or an FTP server. Select the desired option and specify the location of the image file.

When choosing a file, follow these guidelines:

- Use logo images in JPEG format.
- Do not exceed a file size of 510 kB.
- For a given native display resolution, use the following table to create a properly sized logo.

Native Display Resolution and Logo Image Size

NATIVE DISPLAY RESOLUTION	LOGO IMAGE SIZE
800 x 600	800 x 500
1280 x 720	1280 x 600
1024 x 768	1024 x 640
1360 x 768	1360 x 640
1280 x 800	1280 x 667
1400 x 900	1400 x 750
1920 x 1080	1920 x 900
1600 x 1200	1600 x 1000

OSD Timeout

The **OSD Timeout** section specifies how long the connection information is displayed after a presenter connects to the AM-101.

Video Out Timeout

The **Video Out Timeout** section specifies how long the video output stays on after inactivity.

Display Option

The **Display Option** section controls how the connection information is displayed.

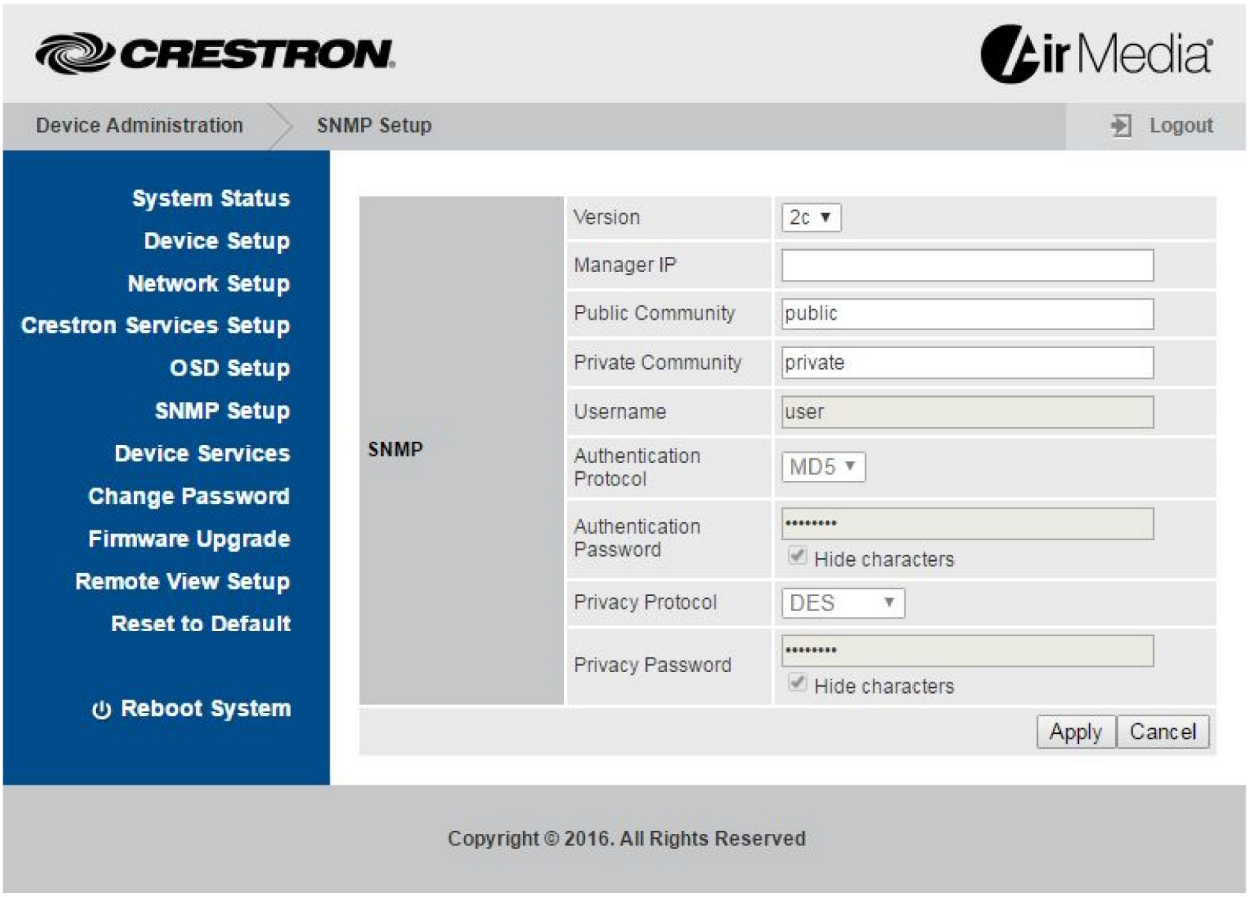
- **Display IP address** sets the AM-101 to display the IP address after the host name. Select **On** and click **Apply** to display the IP address, or select **Off** and click **Apply** to hide the IP address.
- **Display Code** sets the AM-101 to display the access code on the AM-101 welcome screen. Select **On** and click **Apply** to display the access code, or select **Off** and click **Apply** to hide the access code.
- **Display Host Name** sets the AM-101 to display the host name. Select **On** and click **Apply** to display the host name after the presenter connects to the AM-101, or select **Off** and click **Apply** to hide connection information after the presenter connects to the AM-101.
- **Display Domain Name** sets the AM-101 to display the domain name to which the AM-101 is attached when a host name is used to connect with the AM-101 instead of an IP address. To display the domain name when the AM-101's host name is used for connection, select **On** and click **Apply**. To hide the domain name, select **Off** and click **Apply**.

Click **Apply** to apply any changes. Click **Cancel** to cancel.

SNMP Setup

Click **SNMP Setup** to configure the AM-101 to use SNMP.

Device Administration Menu Showing the SNMP Setup Screen



- The AM-101 supports SNMP versions 1, 2c, and 3. Select the version from the **Version** drop-down menu.
- The AM-101 uses an IP filter for SNMP connections. When an IP address is specified in the **Manager IP** field, the device accepts an SNMP request only from that IP address. If the field is blank, the SNMP request is honored from any IP address.
- If using SNMP version 3, specify a user name, authentication protocol, authentication password, privacy protocol, and privacy password.

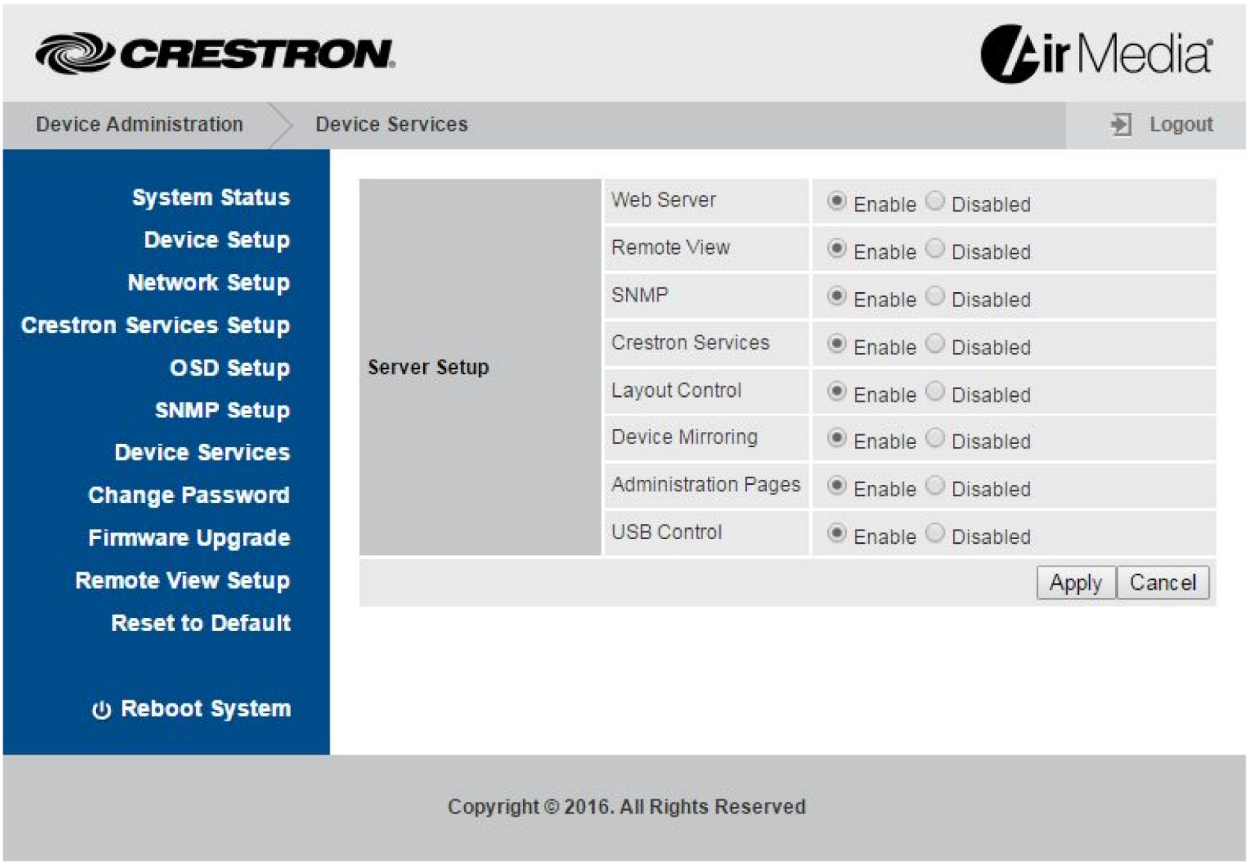
The default settings are as follows: **Version** is set to **2c**, **Public Community** is set to **public**, and **Private Community** is set to **private**.

Click **Apply** to apply any changes. Click **Cancel** to cancel.

Device Services

Click **Device Services** to enable and disable remote viewing, SNMP, and other features.

Device Administration Menu Showing the Device Services Screen



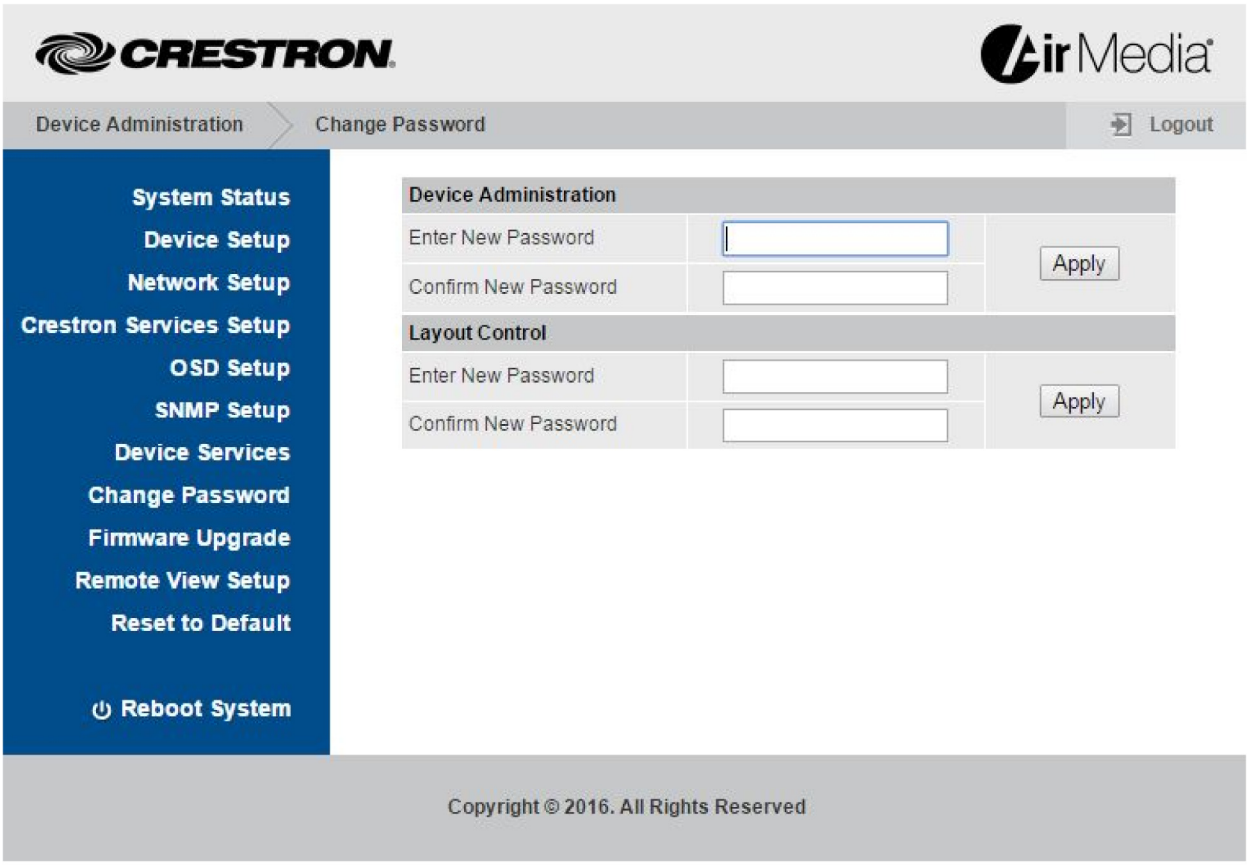
Select **Enable** or **Disabled** for each service listed in **Server Setup**.

NOTE: Disabling the administration pages prevents access to the AM-101's configuration screens. These pages can still be enabled by SNMP or the control system connection. However, if SNMP and Crestron Services are disabled as well, the AM-101 must be restored to the original factory settings to gain access to the configuration screens. For details, refer to "Hardware Reset" on page 27.

Change Password

Click **Change Password** to set a new admin password or layout control password.

Device Administration Menu Showing the Change Password Screen



Device Administration

Perform the following to change the admin password:

1. Enter a new password in the **Enter New Password** field.
2. Enter the new password in the **Confirm New Password** field and click **Apply**.

Layout Control

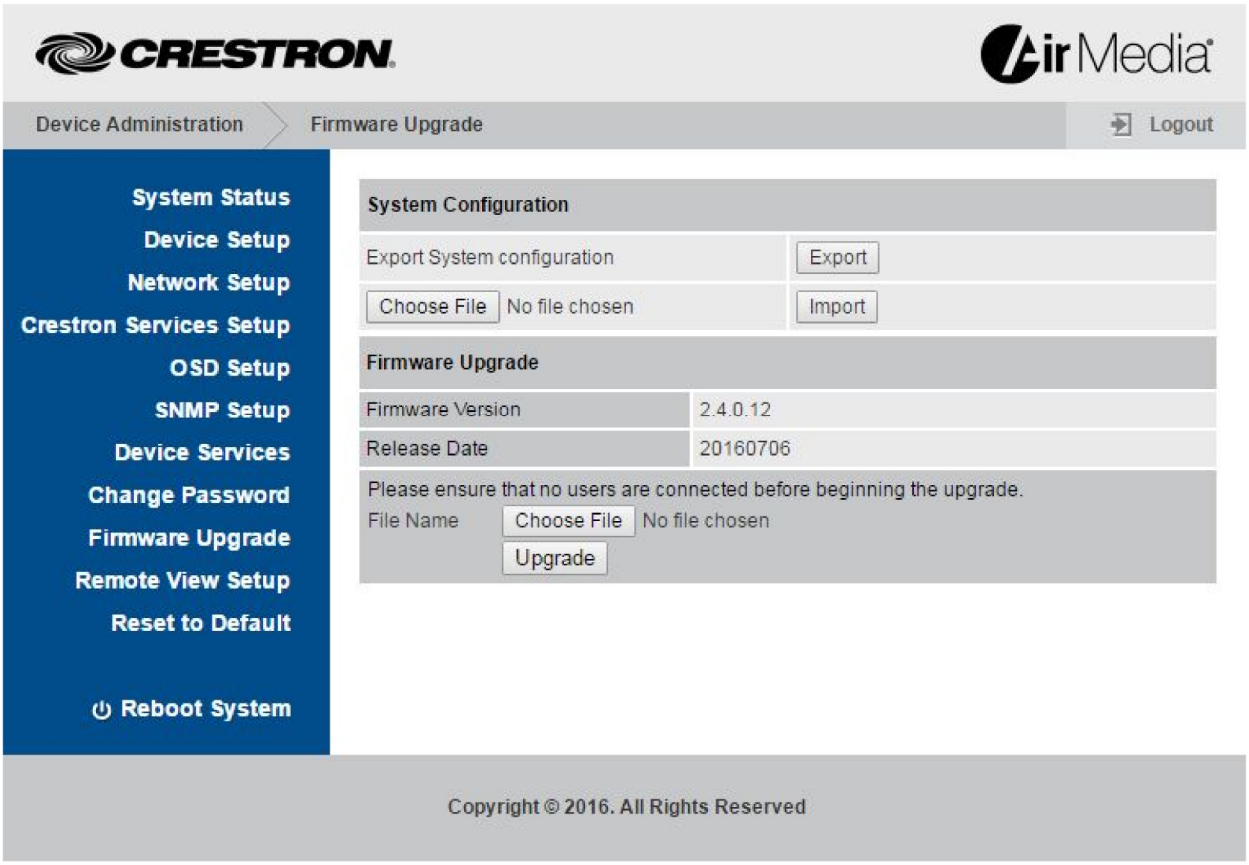
Perform the following to change the layout control password:

1. Enter a new password in the **Enter New Password** field.
2. Enter the new password in the **Confirm New Password** field and click **Apply**.

Firmware Upgrade

Click **Firmware Upgrade** to import or export device configuration settings or upload new firmware.

Device Administration Menu Showing the Firmware Upgrade Screen



Device settings can be imported from another device or exported to a file for use on another device.

Export and Import System Configuration Settings

Click **Export** to export the system configuration file.

Perform the following to import a system configuration file:

1. Click **Choose File** to select a file to import. The file has the .conf extension.
2. Click **Import** to import the configuration file and change the AM-101's settings.

Upgrade Firmware

Perform the following to update the AM-101's firmware:

1. Click **Choose File** to select the desired firmware file. The file has the .img extension.
2. Click **Upgrade** to update the AM-101's firmware.

NOTE: Firmware upgrades may take up to 30 minutes.

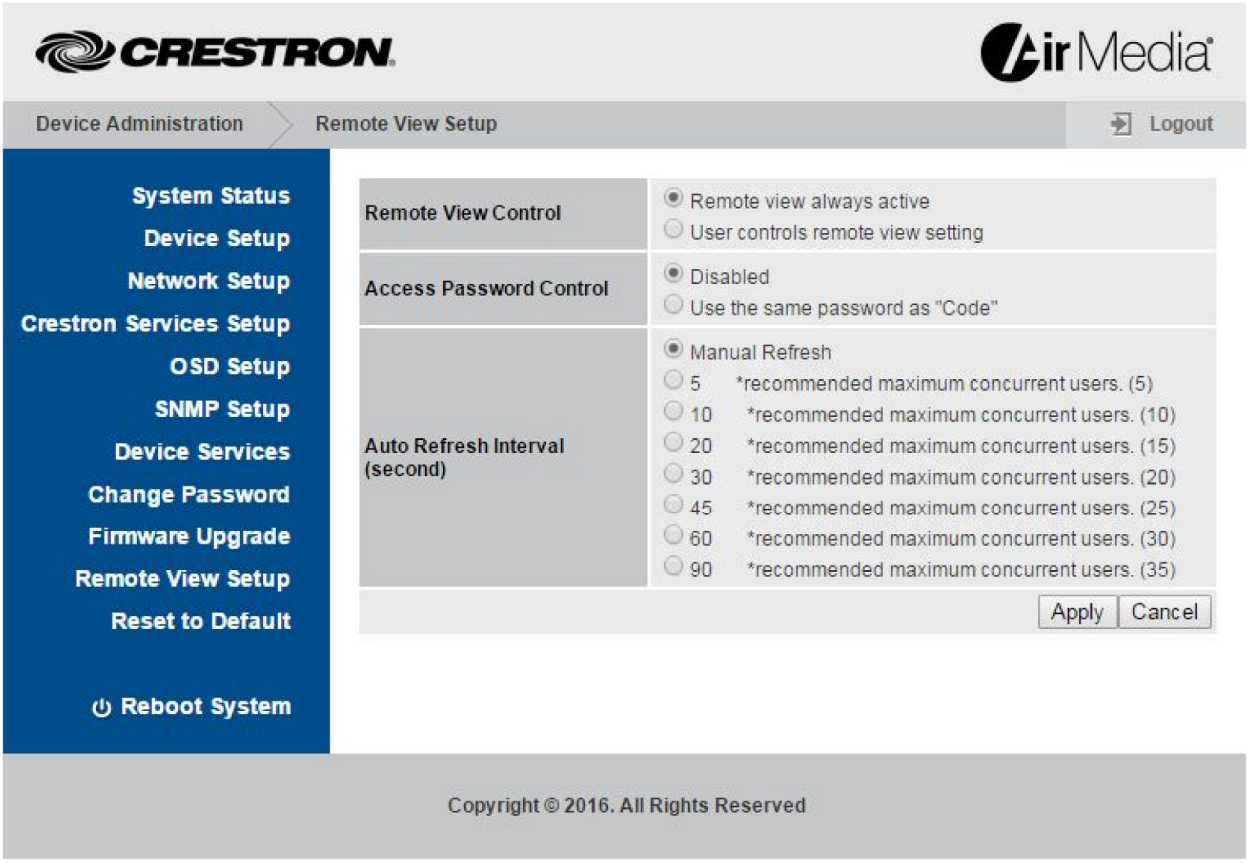
NOTE: Ensure that all users are disconnected from the AM-101 before upgrading the firmware.

NOTE: Use the AirMedia Firmware Update Utility (which is available for download from www.crestron.com/airmedia to update multiple AM-101s across an enterprise.

Remote View Setup

Click **Remote View Setup** to configure remote view operations.

Device Administration Menu Showing the Remote View Setup Screen



Remote View Control

The **Remote View Control** section specifies whether remote viewing is available to connected viewers when a presenter connects to the AM-101.

Select **Remote view always active** to automatically allow remote viewing when the presenter connects to the AM-101. Select **User controls remote view setting** to require the presenter to allow remote viewing.

Access Password Control

The **Access Password Control** section allows the code that is displayed on the screen to control access to the device when remote view is used. Select **Disabled** or **Use the same password as "Code."**

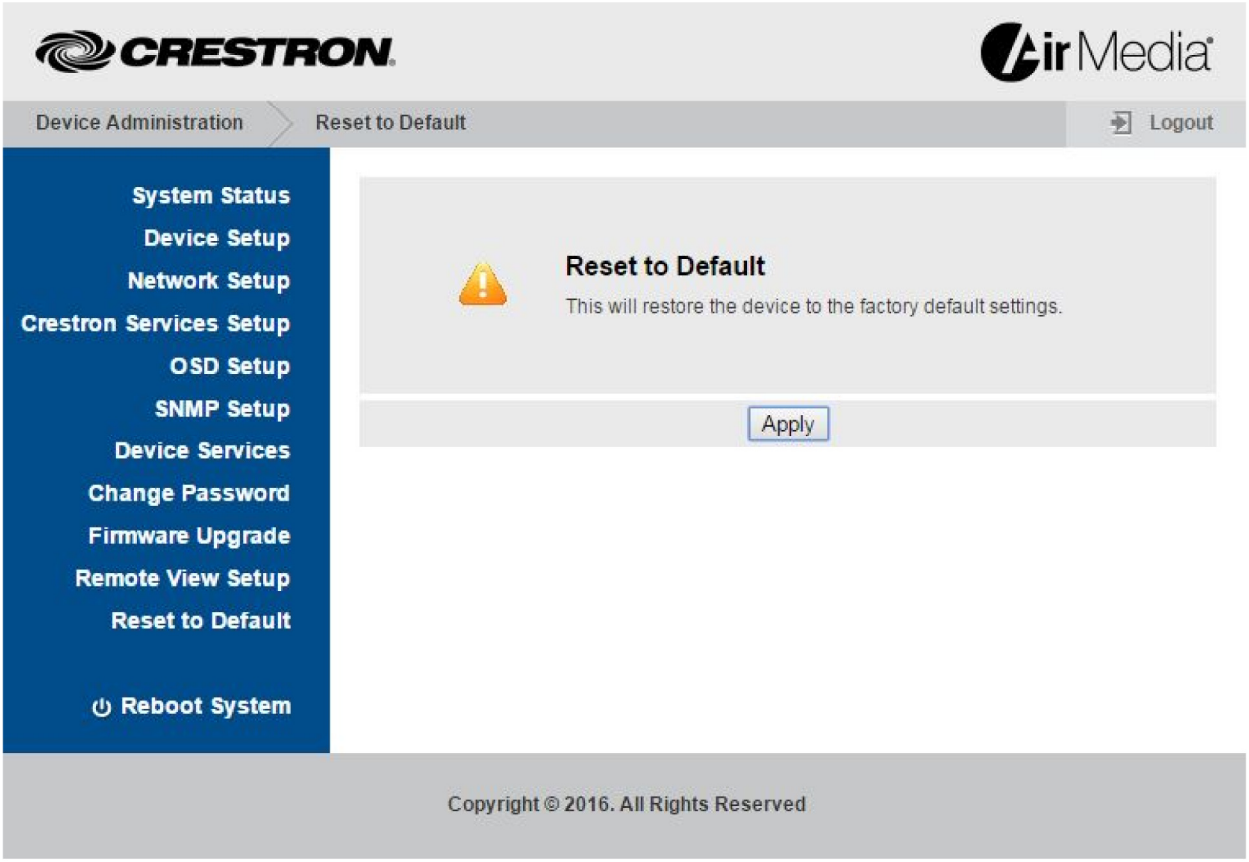
Auto Refresh Interval

The **Auto Refresh Interval** section specifies how often the presented content should be refreshed. Using the recommended maximum amount of concurrent users shown, select a refresh interval (in seconds) from the list and click **Apply**. To cancel, click **Cancel**.

Reset to Default

Click **Reset to Default** and then click **Apply** to reset the AM-101 to the factory settings.

Device Administration Menu Showing the Reset to Default Screen



Reboot System

Click **Reboot System** and click **Apply** to reboot the AM-101.

Operation

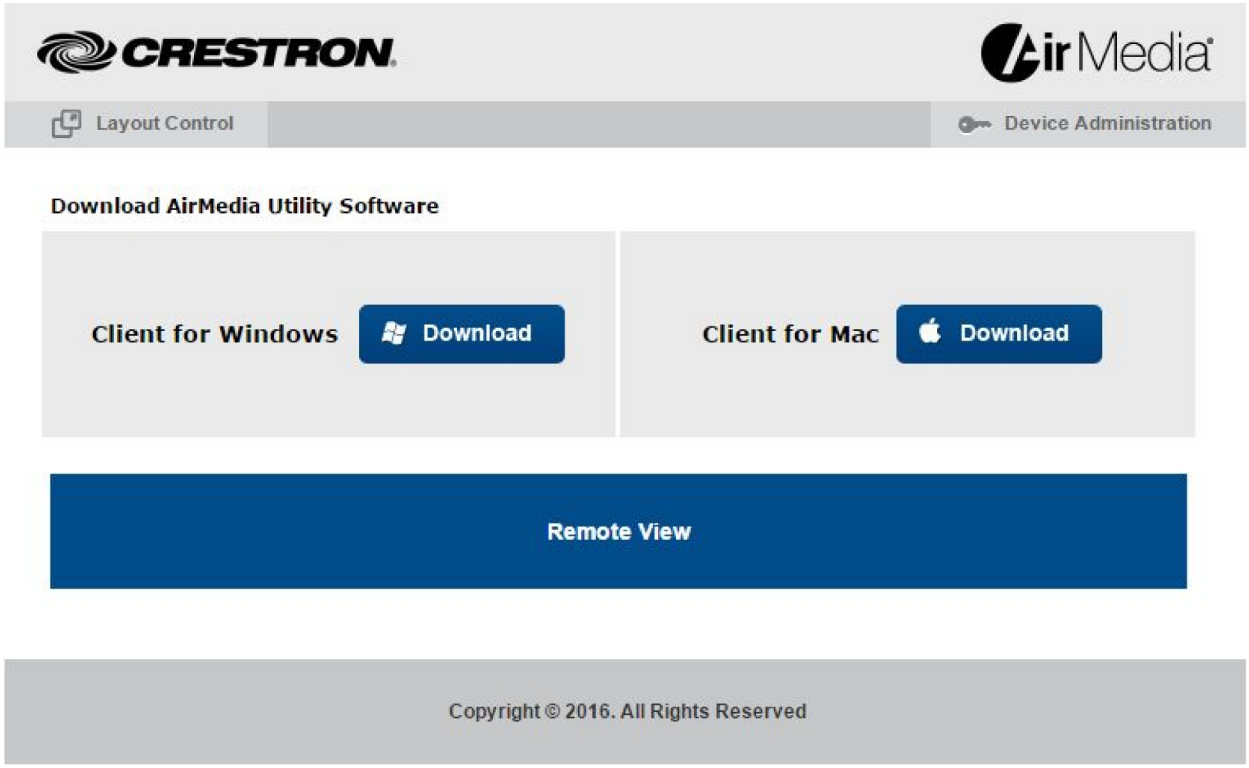
The AM-101 uses client software to share a PC or Mac® (hereafter referred to as "computer") desktop. The computer should be able to access the AM-101 over the network.

NOTE: Crestron offers a stand-alone application for enterprise deployments. This application features additional connection methods and device management. For details, visit the Crestron website.

NOTE: Mobile devices can share their content using the Crestron PinPoint™ mobile app or the AirMedia app, which are available for iOS® and Android™ devices. Crestron PinPoint may be used for full screensharing on devices running Android 5.0 Lollipop and above. Download the latest version of these apps from the App Store® app in iTunes® software or Google Play™ store.

1. Open a web browser on the computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen as shown on page 2. The download screen is displayed.

Download Screen



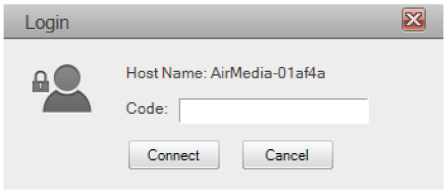
2. Click on the **Download** icon for the computer's operating system and follow the instructions for installing the client software.

NOTE: When used on a Mac, the AirMedia application must be run from within the disk image file. Do not drag the application out of the disk image file.

Run the AM-101 Client

1. Run the client software. The **Login** screen is displayed.

   Login Screen

2. Enter the code displayed on the AM-101 welcome screen in the **Code** field and click **Connect**. The client establishes a connection between the computer and the AM-101 while displaying the presentation control screen on the computer.

   Presentation Control Screen

   The contents of the computer screen are shown on the display connected to the AM-101.

   NOTE: The application mutes the PC's local audio, since the audio is transmitted to the device and played through the display's speakers.

Control the Presentation

Direct the presentation with the following controls:

- ■ Stop showing the computer's screen.
- ▶ Start showing the computer's screen.
- ❚❚ Freeze the computer's screen.
- **x** Close the client application and the connection between the computer and the AM-101.
- ▤ Display a pop-up menu of additional options. For details, refer to "Configure Basic Presentation Settings" below.
- — Minimize the presentation control screen.

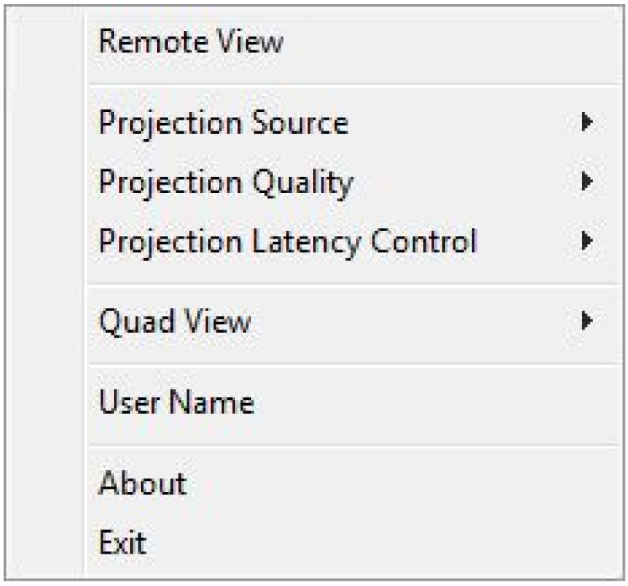
Configure Basic Presentation Settings

Once a link between the computer and the AM-101 has been established, the AM-101 can be configured for custom operation.

Perform the following to configure the AM-101:

1. Click the menu button ( ) to display a pop-up menu.

   Pop-Up Menu



2. Configure the following options:

   - Remote View allows the device to serve images of the desktop to remote viewers via the built-in web server.
   - Projection Source (Windows® operating system only) allows the user to share a secondary desktop. This is similar to the Extend mode in Windows for multiple displays.
   - Projection Quality improves the quality of the transmitted image but uses more bandwidth. The user's computer should be connected to the AM-101 via a wired Ethernet connection when this setting is used.
   - Projection Latency Control reduces the latency of the projected image but is more computationally intense.
   - Quad View selects the image position of the screen when multiple PCs are shown on the AM-101. For details, refer to "Quad View" below.
   - User Name sets the name displayed for the user who is showing on the display connected to the AM-101.

Quad View

Up to four computers can simultaneously share their desktops with the AM-101. Shared desktops are arranged with each computer using one quarter of the projected image.

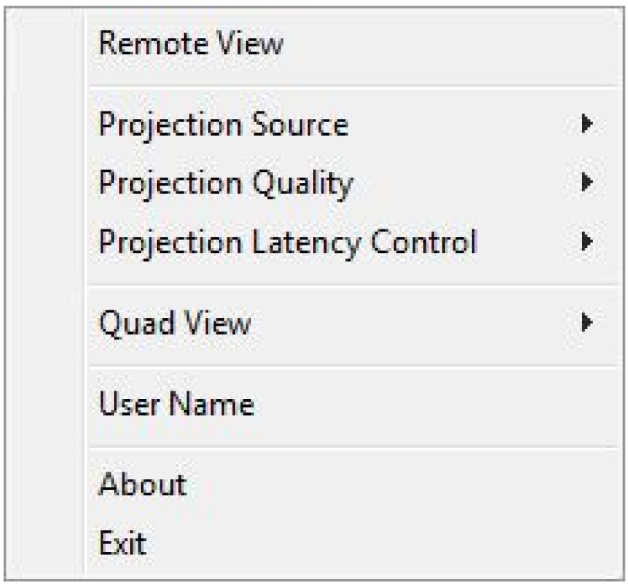
NOTE: If moderator controls are enabled, the screen position can be set by the moderator only. For details, refer to "Moderator Controls" on page 24.

NOTE: Although the AM-101 can support up to 32 connected computers for sharing, only four desktops can be displayed simultaneously.

Perform the following to share multiple desktops simultaneously:

1. Connect the computer to the AM-101 as described in “Run the AM-101 Client” on page 20.
2. Connect up to three other computers as described in “Run the AM-101 Client” on page 20.
3. Click the menu button ( ) to display a pop-up menu.

   Pop-Up Menu



4. Click Quad View and select the shared desktop's quadrant on the display device.

NOTE: If another computer is already sharing the selected position, the position is replaced by the newly shared desktop. Desktop playback ceases on the “booted” computer.

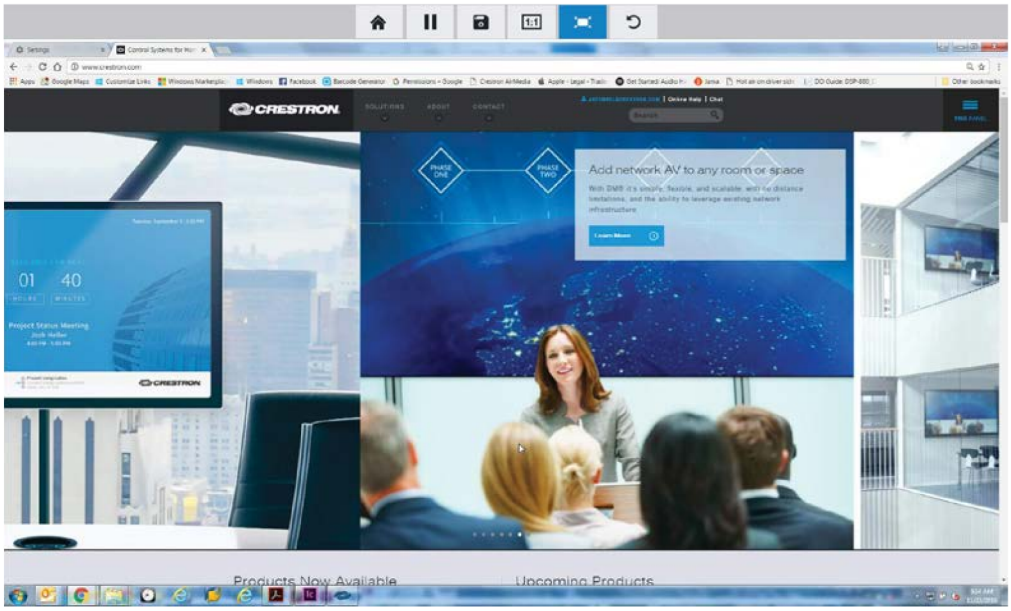
NOTE: If Full is chosen, any other shared desktops are replaced by the newly shared desktop. Desktop playback ceases on the “booted” computers.

View a Presentation Remotely

If Remote View is enabled, users can view desktop images via the AM-101’s built-in web server. Perform the following to remotely view images:

1. Open a web browser on a remote computer, and navigate to the web address or IP address supplied by the user or users that are sharing their desktops. The download screen as shown on page 19 is displayed.
2. Click Remote View. The shared desktop is displayed in the web browser as a web page.

Remote View Web Page



3. Use the following buttons when viewing the AM-101's output in a web browser.

	Pause the currently displayed image.
	Save the currently displayed image.
1:1	View the currently displayed image at actual size.
	View the currently displayed image at full-screen size.
	Refresh the image.

Moderator Controls

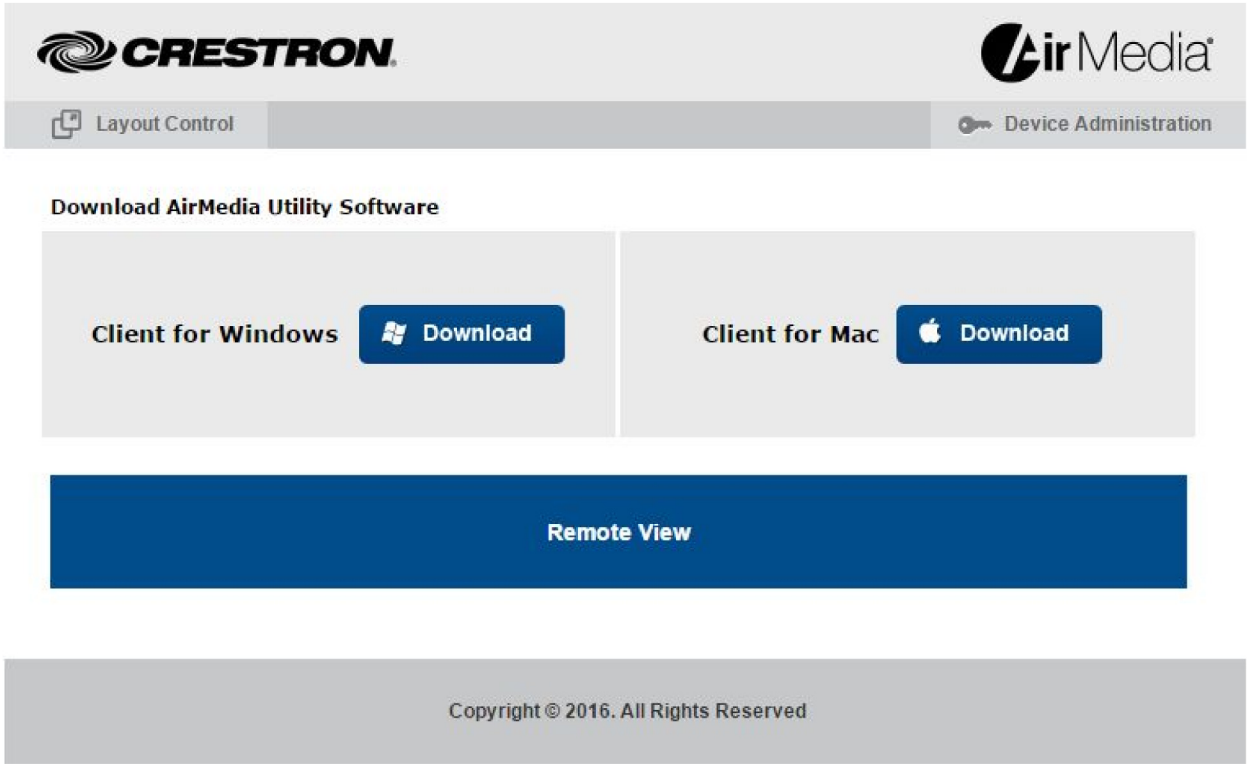
Moderator controls are used to determine which users can present to the display device and where their presented content is located on the display.

Log In

1. Open a web browser on a remote computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen. The download screen is displayed.

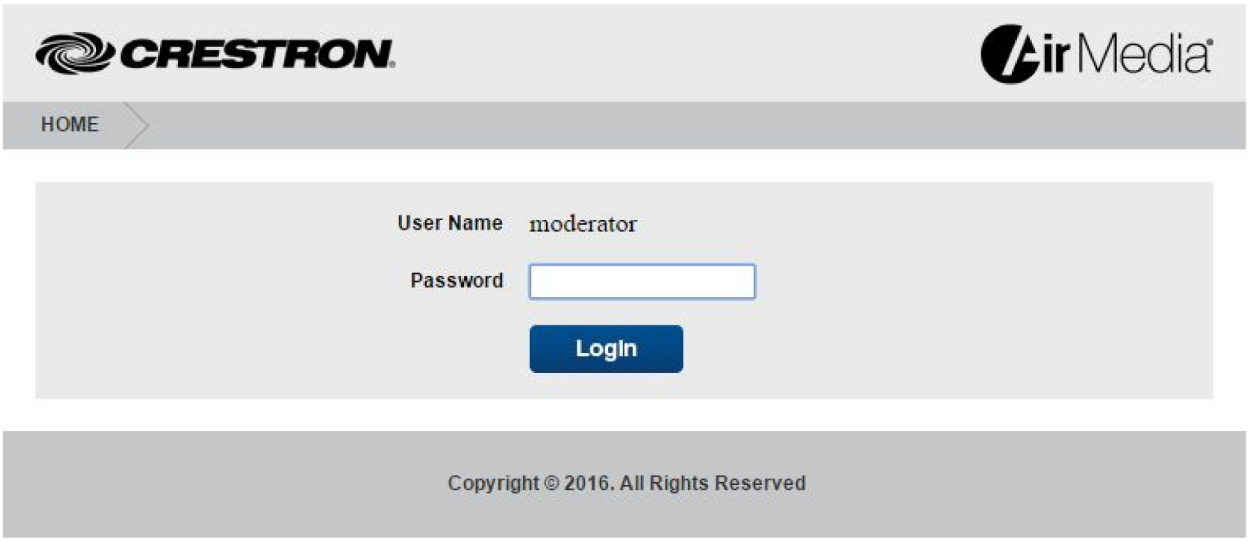
   NOTE: By default, the AM-101 displays the IP address in parentheses to assist in the configuration of the device. The IP address can be hidden so that the end user sees only a friendly URL (i.e., http://AirMedia-019647). For details, refer to "OSD Setup" on page 10.

Download Screen



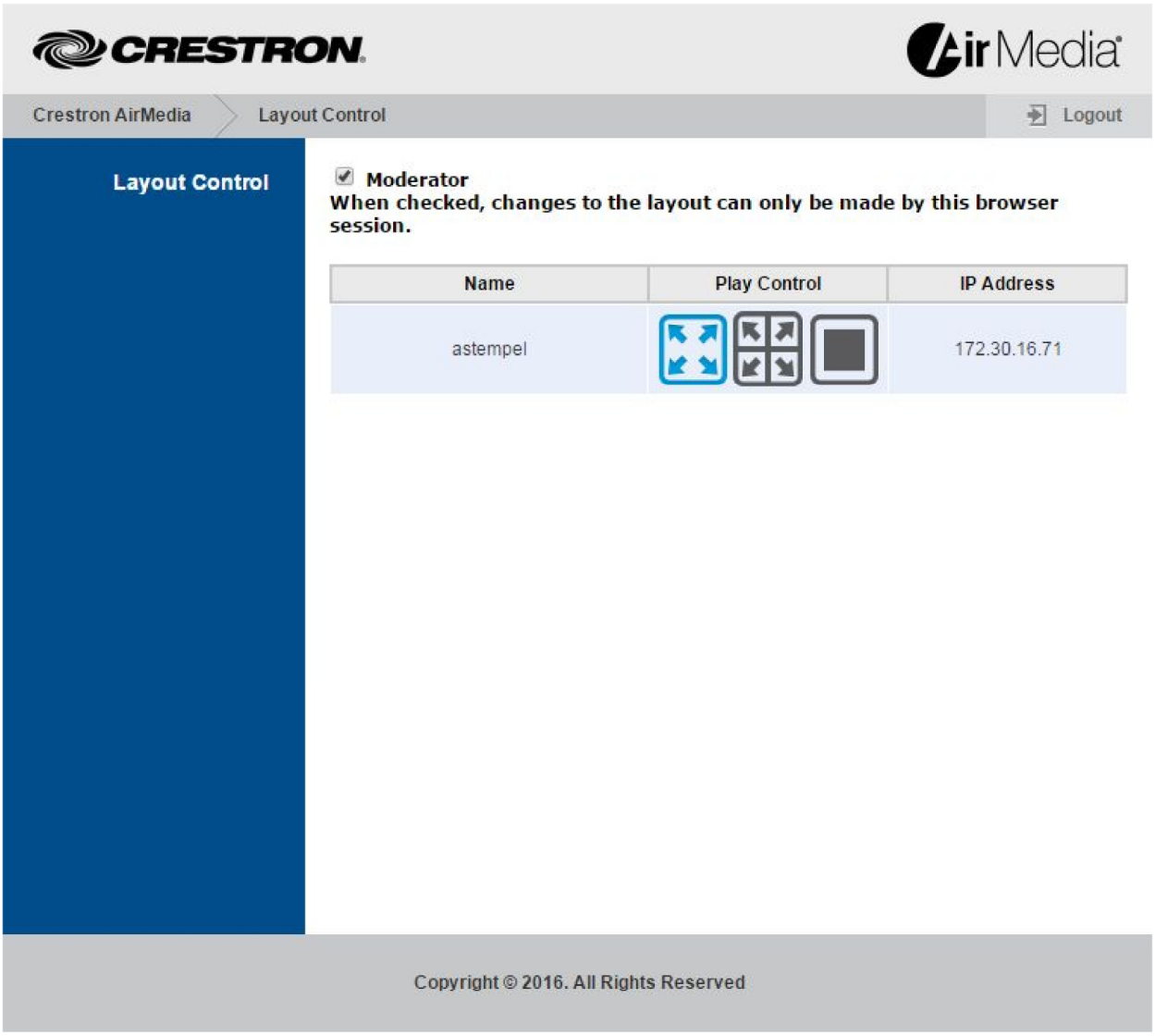
2. Click Layout Control. The moderator login screen is displayed.

Moderator Login Screen



3. Enter the moderator password (the default password is “moderator”) and click **Login**. The **Layout Control** screen is displayed showing a list of connected presenters.

Layout Control Screen



Control the Display Layout

1. Click the **Moderator** check box to enable layout control.

   NOTE: If **Moderator** is enabled, the play control can be changed only by the user who is logged in as the moderator.

2. Up to four connected users can share content on the display at a time. Select the display capability of each connected user. Use the following controls for each connected presenter.

    Sets the selected presenter to display in full screen.

    Sets the selected presenter to display in a specific quadrant of the display. Click on the quadrant where the presenter's content is to be displayed.

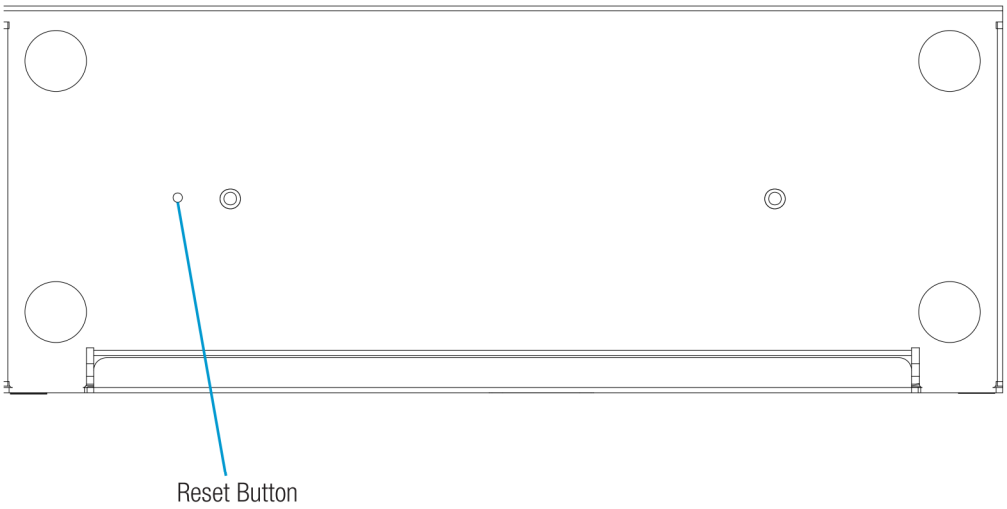
    Disconnects the selected presenter from the display.

Hardware Reset

In the event that the administration pages are disabled or the device is configured with a static IP address that is on a different subnet and the AM-101's configuration screens cannot be accessed, the AM-101 must be reset to the factory settings. Perform the following to restore the factory settings:

1. Turn the AM-101 upside down as shown in the following diagram.

   Underside of the AM-101



This page is intentionally left blank.

2. Unplug the AM-101
3. Press and hold the reset button.
4. Plug in the AM-101 with the button still pressed.
5. Wait approximately 30 seconds or until the front LED turns green.
6. Release the reset button.
7. Unplug the AM-101.
8. Plug in the AM-101.

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Supplemental Guide – DOC. 7918B
(2047114)
12.16
Specifications subject to
change without notice.

Crestron **AMP-2210T/3210T/2210HT** Commercial Power Amplifiers, 4/8Ω or 70/100V

Operations & Installation Guide



CRESTRON®

This document was prepared and written by the Technical Documentation department at:

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Disconnect power prior to connecting or disconnecting equipment.
- Do not install in direct sunlight.
- The apparatus must be installed in a way that the power cord can be removed either from the wall outlet or from the device itself in order to disconnect the mains power.
- Prevent foreign objects from entering the device.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

THIS IS AN APPARATUS WITH CLASS I CONSTRUCTION. IT SHALL BE CONNECTED TO AN ELECTRICAL OUTLET WITH AN EARTHING GROUND TERMINAL.

IMPORTANT:

The AMP-2210T/3210T/2210HT can be used with Class 2 output wiring.

Regulatory Compliance

As of the date of manufacture, the AMP-2210T/3210T/2210HT has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:
(1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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Commercial Power Amplifiers, 4/8Ω or 70/100V: AMP-2210T/3210T/2210HT

Introduction

Crestron® AMP-series Commercial Power Amplifiers provide a perfect combination of high output and efficiency for all types of professional audio applications. 100% Crestron engineered and built, these amplifiers are ENERGY STAR® qualified to enable organizations to fulfill their green initiatives without compromising audio performance. Advanced design features include a high efficiency amp topology with active power factor corrected power supply, delivering a generous amount of power in a space saving 1U rack-mountable chassis.

The amplifiers are available in three models:

Models

DESCRIPTION	MODEL NUMBER
Two independent channels with each channel rated for 210W @ 4Ω, or 120 W @ 8Ω, 70V or 100V*	AMP-2210T
Three independent channels with each channel rated for 210W @ 4Ω, or 120 W @ 8Ω, 70V or 100V*	AMP-3210T
Two independent channels with each channel rated for 210W @ 70V or 4Ω, or 120 W @ 8Ω*	AMP-2210HT

* In addition, channels 1 and 2 may be bridged together to deliver a robust 420W @ 8Ω to a single load. The 70/100V outputs are transformer isolated to handle long and complex wire runs.

The AMP-2210T, AMP-3210T, and AMP-2210HT are functionally identical. For simplicity within this guide, the term “AMP-2210T/3210T/2210HT” is used except where noted.

Features and Functions

- ENERGY STAR® qualified power amplifier
- Ultra-efficient space-saving design
- Low total cost of ownership
- High-output power, low noise, low distortion performance
- Each channel selectable for 4/8 Ω, 70 V, or 100 V operation[1, 2]
- Two or three channels each rated 210W @ 4Ω, 120W @ 8Ω, and 120W @ 70/100V [1, 2]
- Transformer isolated 70 and 100 Volt outputs[1, 2]
- Channels 1 and 2 bridgeable for 420W @ 8Ω
- Individual channel power control via jumper or remote contact
- Auto power down after 30 minutes of no signal
- Instant auto power on when an input signal is detected
- No inrush current during power up
- Over current and DC offset protection per output
- Thermal protection on the power supply and each channel
- Front panel signal, clip, and fault indicators per channel
- Professional balanced inputs
- Detachable terminal block connectors
- Rear panel ±10 dB input level controls
- Convection cooled - no noisy fans
- Single-space 1U rack mountable
- Under 15 inches deep
- Universal power supply with active power factor correction

2-or 3-Channel Universal Design

The AMP-2210T and AMP-2210HT provide two independent channels of amplification–the AMP-3210T provides three–with configurable outputs to suit a range of system designs. Each channel is configurable via a simple selector switch to handle either low-Z or constant voltage speaker systems. Each channel is rated for 210W @ 4Ω (or 70V with the AMP-2210HT), or 120W @ 8Ω, 70V, or100V[2]. Additionally, channels 1 and 2 may be bridged together to deliver a robust 420W @ 8Ω to a single load. On the AMP-2210T and AMP-3210T, the 70/100V outputs are transformer isolated to handle long and complex wire runs.

ENERGY STAR® Qualified

Its ultra-efficient design allows the AMP-2210T/3210T/2210HT to meet demanding ENERGY STAR qualification requirements, affording a cost reducing solution for boardrooms, auditoriums, and other commercial systems. Auto power-down places the amplifier into a low power standby state if no input signal is detected for 30 minutes. The amplifier quickly powers back on the instant an input signal is detected. In addition, each amp channel can be independently enabled or disabled via jumpers or remote contacts, reducing power consumption by shutting down individual channels when they are not needed. Whether switched remotely or through an AC power controller, the AMP-2210T/3210T/2210HT draws no added inrush current during power up, reducing AC circuit requirements and potentially eliminating the need for extra power sequencing equipment.

1. The 70V constant voltage output of the AMP-2210HT is not transformer isolated.
2. 100V operation not available on AMP-2210HT.

Professional System Integration

The AMP-2210T/3210T/2210HT includes professional balanced inputs with rear panel ±10 dB input level adjustments to assure compatibility with a wide range of audio sources. Remote power control is enabled for each channel using external contact closures, switches, or control system relays. All input, output, and remote control connections are facilitated via detachable screw terminal connectors to simplify installation and servicing.

Cool and Compact

The AMP-2210T/3210T/2210HT features a durable, lightweight chassis that may be placed on a shelf, or rack-mounted using the rack ears provided. At only one rack space high and under 15 inches (381 mm) deep, they are ideal for installations requiring a lot of power in a limited space. Their efficient, cool running design gives off substantially less heat than comparably rated amplifiers. Convection cooling means there are no noisy fans, allowing the AMP-2210T/3210T/2210HT to be installed in a boardroom lectern or credenza without affecting noise levels.

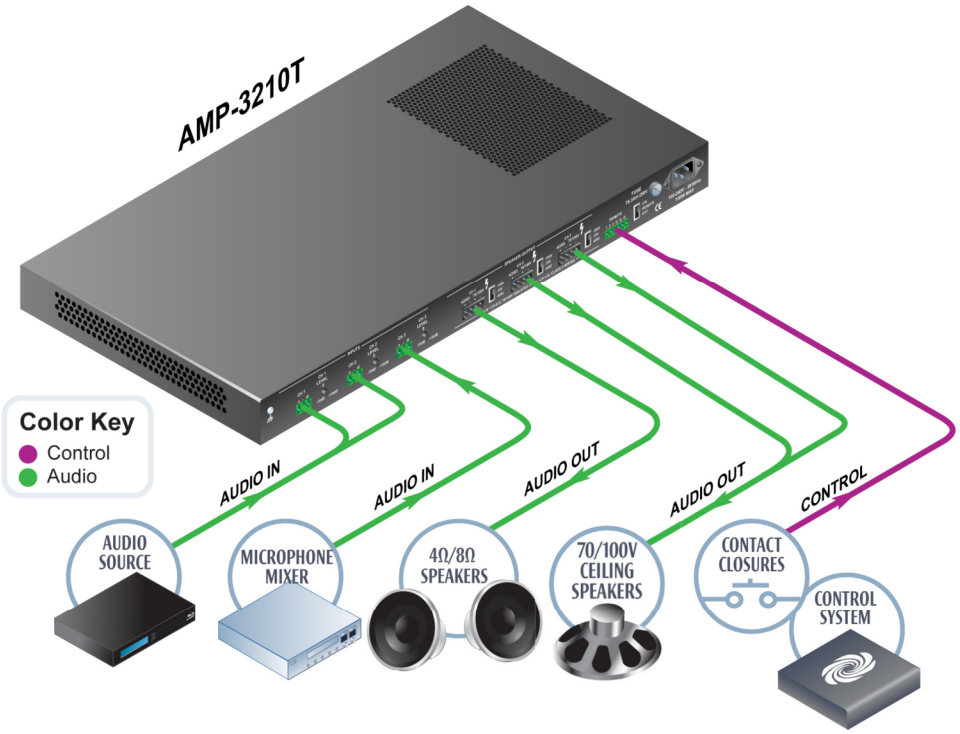
Rugged and Dependable

All AMP-series amplifiers are designed for ultimate dependability in a wide range of commercial environments. Built-in over current and DC offset protection on each channel helps prevent damage to the amplifier and speakers due to external or internal faults. Discrete thermal protection is also provided on each channel and the power supply. Front panel indicators are provided for each channel to show signal presence, clipping, and fault conditions.

Applications

The following diagram shows an AMP-2210T/3210T/2210HT in a typical application.

AMP-2210T/3210T/2210HT in a Basic Application (AMP-3210T Shown)



Specifications

Specifications for the AMP-2210T/3210T/2210HT are listed in the following table.

AMP-2210T/3210T/2210HT Specifications

SPECIFICATION	DETAILS
Audio	
Typical of mono amplifier channels	
Input Signal Type	Balanced or unbalanced analog line level
Output Signal Type	4/8 Ohms
Output Power	120 Watts at 8 Ohms; 210 Watts at 4 Ohms; 420 Watts at 8 Ohms bridged (channels 1 and 2); 120 Watts at 70 or 100 Volts (transformer isolated)*
Damping Factor	>100
Protection	Over current, over/under voltage, over temperature, DC offset

(Continued on following page)

AMP-2210T/3210T/2210HT Specifications (Continued)

SPECIFICATION	DETAILS
Audio	
Typical of mono amplifier channels (Continued)	
Frequency Response	20 Hz to 20 kHz ± 0.5 dB at 4/8 Ohms, 80 Hz to 20 kHz +0/-3 dB at 70/100 Volts
THD	0.05% at 1 kHz at full rated power at 4/8 Ohms, 8 Ohms bridged, or 70/100 Volts; 0.1% at 20 Hz to 20 kHz, 120 W at 8 Ohms; 0.2% at 20 Hz to 20 kHz, 210 W at 4 Ohms; 0.1% at 20 Hz to 20 kHz, 420 W at 8 Ohms bridged; 0.1% at 80 Hz to 20 kHz, 120 W at 70/100 Volts
S/N Ratio	>103 dB, A-weighted
Crosstalk	>70 dB @ 1 kHz
Gain	23 dB with **INPUT LEVEL** control set at 12 o'clock nominal position
Input Sensitivity	2.22 V_{rms} for rated output power with **INPUT LEVEL** control set at 12 o'clock nominal position
Input Detection Threshold	40 mV RMS @ 1 kHz
Input Level Adjustment	±10 dB from nominal
Power Requirements	
Main Power	100-240 Volts AC, 50/60 Hz
Power Consumption, AMP-2210T	62 Watts @ 8 Ohms, all channels driven at 1/8 power; 88 Watts @ 4 Ohms, all channels driven at 1/8 power; 63 Watts @ 70/100V, all channels driven at 1/8 power; 26 Watts, all channels idle; <1 Watt in standby
Power Consumption, AMP-2210HT	62 Watts @ 8 Ohms, all channels driven at 1/8 power; 88 Watts @ 4 Ohms, all channels driven at 1/8 power; 89 Watts @ 70/100V, all channels driven at 1/8 power; 26 Watts, all channels idle; <1 Watt in standby
Power Consumption, AMP-3210T	85 Watts @ 8 Ohms, all channels driven at 1/8 power; 126 Watts @ 4 Ohms, all channels driven at 1/8 power; 86 Watts @ 70/100V, all channels driven at 1/8 power; 32 Watts, all channels idle; <1 Watt in standby
Environmental	
Temperature	41° to 104°F (5° to 40°C)
Humidity	10% to 90% RH (non-condensing)

(Continued on following page)

AMP-2210T/3210T/2210HT Specifications (Continued)

SPECIFICATION	DETAILS
Environmental (Continued)	
Heat Dissipation, AMP-2210T	110 BTU/Hr @ 8 Ohms, all channels driven at 1/8 power; 121 BTU/Hr @ 4 Ohms, all channels driven at 1/8 power; 113 BTU @ 70/100V, all channels driven at 1/8 power; 110 BTU/Hr, all channels idle; <3.4 BTU/Hr in standby
Heat Dissipation, AMP-3210T	137 BTU/Hr @ 8 Ohms, all channels driven at 1/8 power; 1662 BTU/Hr @ 4 Ohms, all channels driven at 1/8 power; 140 BTU @ 70/100V, all channels driven at 1/8 power; 110 BTU/Hr, all channels idle; <3.4 BTU/Hr in standby
Heat Dissipation, AMP-2210HT	110 BTU/Hr @ 8 Ohms, all channels driven at 1/8 power; 121 BTU/Hr @ 4 Ohms, all channels driven at 1/8 power; 125 BTU @ 70/100V, all channels driven at 1/8 power; 89 BTU/Hr, all channels idle; <3.4 BTU/Hr in standby
Enclosure	
Chassis	Metal with black finish, vented top and sides, convection cooled
Front Panel	Metal, black finish with polycarbonate label overlay
Mounting	Freestanding or 1U 19-inch rack-mountable (adhesive feet and rack ears included)
Dimensions	
Height	1.70 in (44 mm)
Width	17.28 in (439 mm), 19.0 in (483 mm) with rack ears
Depth	14.59 in (371 mm)
Weight AMP-2210T AMP-3210T AMP-2210HT	 15.1 lbs (6.9 kg) 17.8 lbs (8.1 kg) 15.6 lbs (7.1 kg)

* The 70V output is not transformer isolated on the AMP-2210HT model.

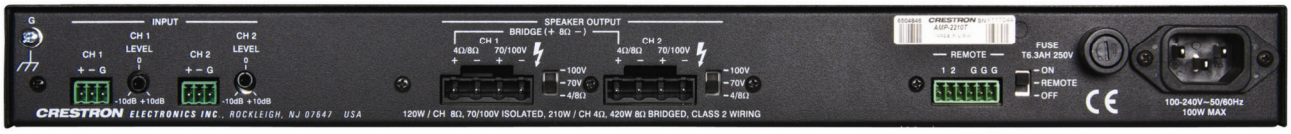
Physical Description

This section provides information on the connections, controls and indicators available on your AMP-2210T/3210T/2210HT.

AMP-2210T Physical View (Front)



AMP-2210T Physical View (Rear)



AMP-3210T Physical View (Front)



AMP-3210T Physical View (Rear)



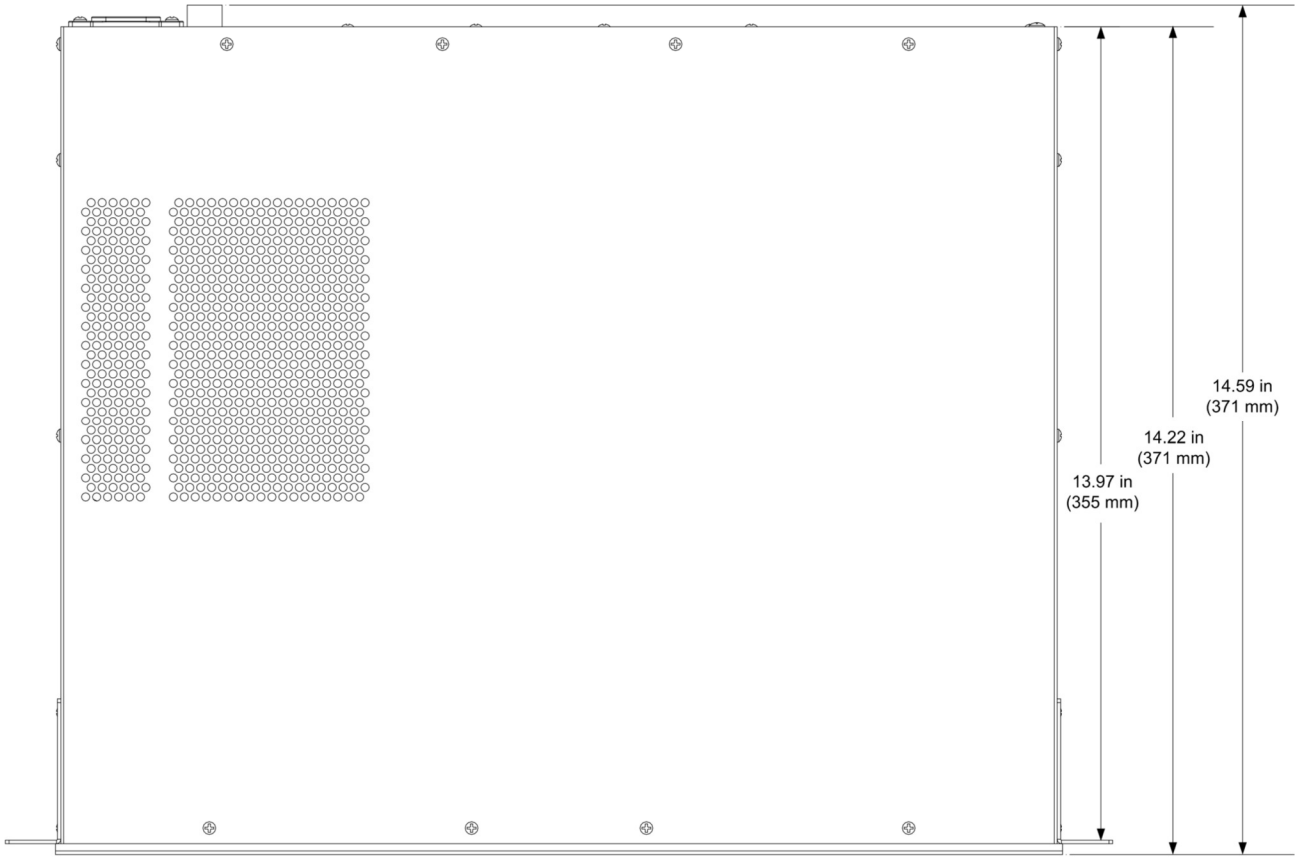
AMP-2210HT Physical View (Front)



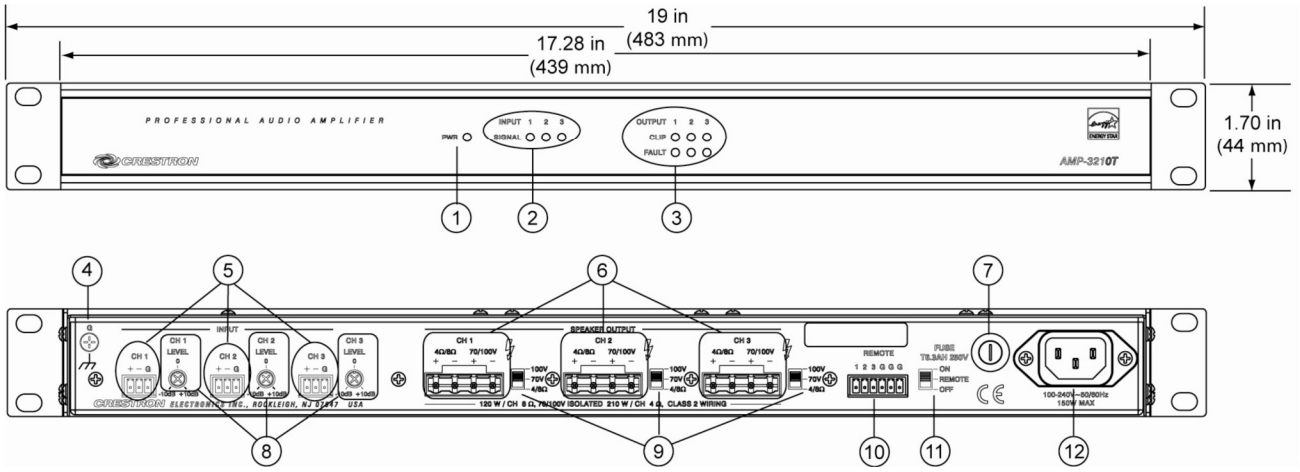
AMP-2210HT Physical View (Rear)



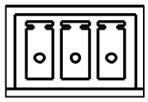
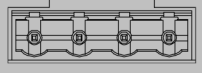
AMP-2210T/3210T/2210HT Overall Dimensions (Top View – AMP-3210T Shown)



AMP-2210T/3210T/2210HT Overall Dimensions (Front & Rear Views – AMP-3210T Shown)

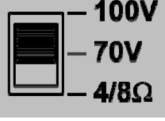


AMP-2210T/3210T/2210HT Connectors, Controls & Indicators

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
1	PWR LED	(1) Green LED indicates on; amber indicates standby
2	INPUT 1 - 3 LED	(3) Green LEDs (2 on 2210T and 2210HT) indicates signal presence on each corresponding channel. **NOTE**: These LEDs are not active in standby mode
3	OUTPUT 1 – 3, CLIP/FAULT	(3) Amber LEDs (2 on 2210T and 2210HT) indicate a clipping condition on each corresponding channel; (3) Red LEDs (2 on 2210T and 2210HT) indicate over temperature, over current, over or under power supply voltage, or DC offset condition on each corresponding channel.
4	G 	6-32 screw, chassis ground lug
5	INPUT CH 1 - 3 **+ – G** 	(3) 3-pin 3.5 mm detachable terminal blocks (2 on 2210T and 2210HT); Balanced/unbalanced line level; Input level: 5.3 V_{rms} maximum with **INPUT LEVEL** control set at minimum position; Input impedance: 24k Ohms balanced; 12k Ohms unbalanced; For unbalanced input, connect **–** and **G** pins to signal return of source; For balanced input, connect shield to **G**, positive signal to **+**, negative signal to **–**
6	SPEAKER OUTPUT CH1 – 3 4W/8W 70/100V + – + – 	(3) 4-pin 7.62 mm 15A detachable terminal blocks (2 on 2210T and 2210HT); 4Ω/8Ω and 70/100V power amplifier outputs; Wire size: Terminals accept up to 14 AWG
7	FUSE T6.3AH 250V 	5 x 20 mm, 250V, 6.3AH, time lag, high rupture rated
8	INPUT CH 1 – 3 LEVEL **LEVEL** **0**  **-10dB +10dB**	(3) Rotary input boost/attenuate adjustments with center detent at nominal

(Continued on following page)

AMP-2210T/3210T/2210HT Connectors, Controls & Indicators (Continued)

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
9	SPEAKER OUTPUT CH I – 3 	(3) 3-position slide switches (2 on 2210T and 2210HT), select the output configuration for each corresponding channel
10	REMOTE 	(1) 6-pin 3.5 mm detachable terminal block; Provides (3) remote control inputs (2 on 2210T and 2210HT); Enables independent power control of each channel via local jumpers or remote contact closures; Inputs may be safely paralleled for global control; Channel is enabled when appropriate input pin is connected to ground (**G**)
11	ON/REMOTE/OFF 	(1) 3-position slide switch; Selects between all channels powered on, off, or remote controlled
12	100-240V~50/60Hz 150W MAX 	(1) IEC C14 male chassis plug, main power input; Mates with removable power cord (included)

* Interface connectors for **INPUT**, **SPEAKER OUTPUT**, and **REMOTE** ports are provided with the unit.

Setup

Installation

Ventilation

The AMP-2210T/3210T/2210HT should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation and/or incrementing the spacing between units to reduce overheating. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the environment may be greater than the room ambient temperature. Contact with thermal insulating materials should be avoided on all sides of the unit.

Rack Mounting

The AMP-2210T/3210T/2210HT can be mounted in a rack or stacked with other equipment. Two "ears" are provided with the AMP-2210T/3210T/2210HT so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach the ears to the unit. The only tool required is a #1 or #2 Phillips screwdriver.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

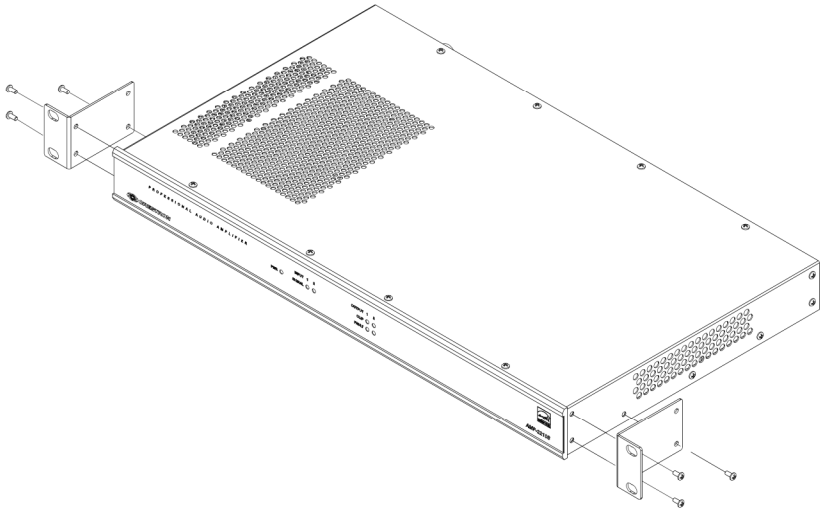
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

NOTE: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

To install the ears:

1. There are screws that secure each side of the AMP-2210T/3210T/2210HT top cover. Using a #1 or #2 Phillips screwdriver, remove the three screws closest to the front panel from one side of the unit. Refer to the diagram following step 3 for a detailed view.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Secure the ear to the unit with three screws from step 1, as shown in the following diagram.

Ear Attachment for Rack Mounting

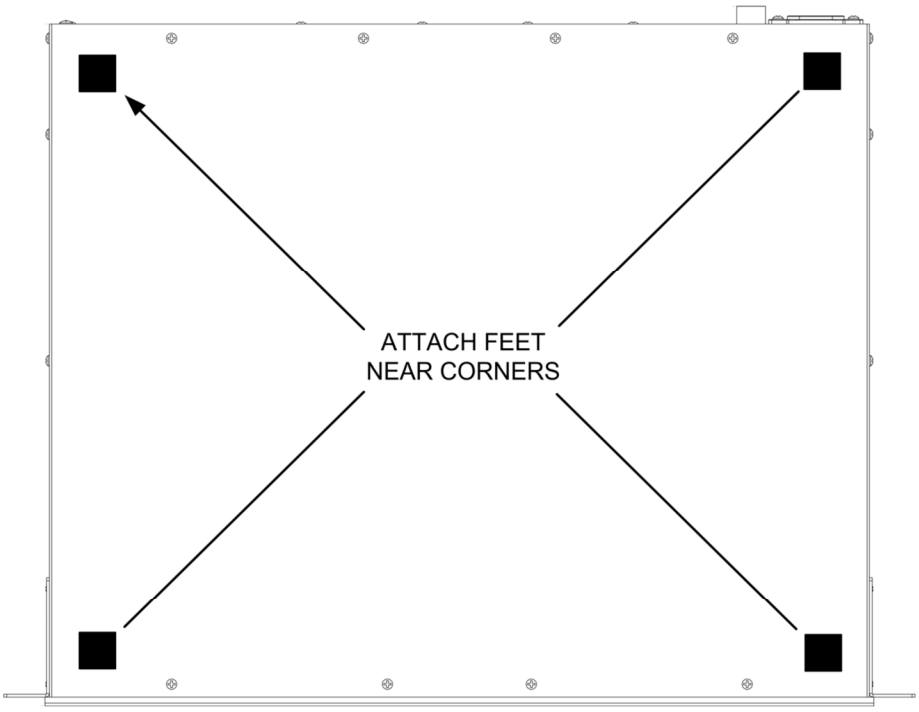


4. Repeat procedure (steps 1 through 3) to attach the remaining ear to the opposite side.

Stacking

Four "feet" are provided with the AMP-2210T/3210T/2210HT so that if the unit is not rack mounted, the rubber feet can provide stability when the unit is placed on a flat surface or stacked. These feet should be attached prior to the hookup procedure. Refer to the following illustration for placement of the feet.

Foot Placement for the AMP-2210T/3210T/2210HT



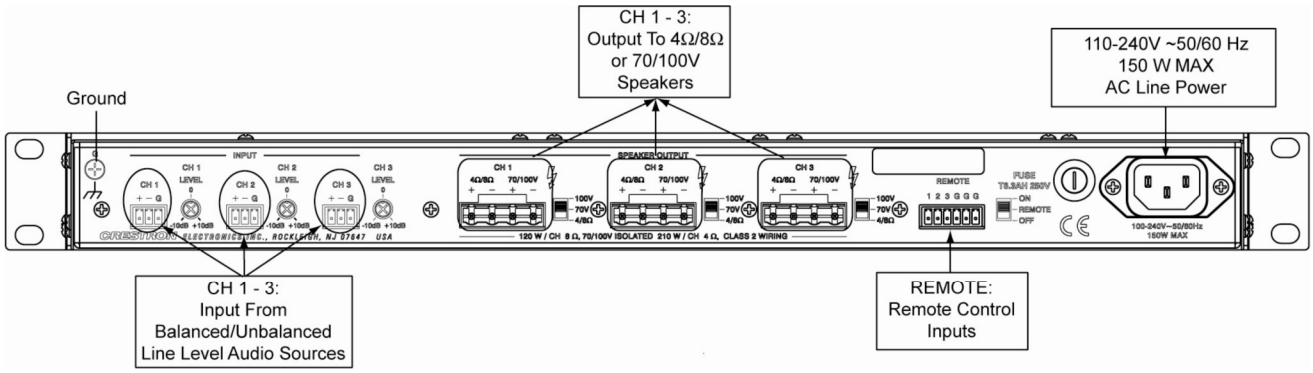
NOTE: No more than three AMP-2210T/3210T/2210HT units should be stacked.

Hardware Hookup

Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. Apply power after all connections have been made.

Hardware Connections for the 3210T



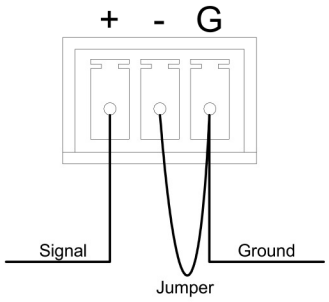
NOTE: Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

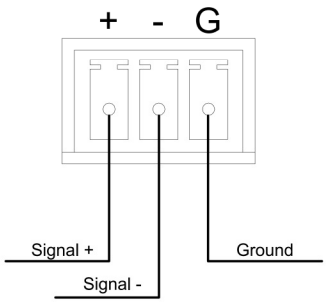
Connecting Audio Sources

The AMP-2210T/3210T/2210HT can receive balanced or unbalanced audio input signals. Refer to the following illustrations when connecting balanced and unbalanced sources to the input connectors.

Wiring for Unbalanced Audio



Wiring for Balanced Audio



Fuse Replacement

If the AMP-2210T/3210T/2210HT does not power up when it is plugged into an AC outlet, the fuse may need to be replaced. The fuse holder is located on the rear panel. To replace the fuse:

CAUTION: Use only time lag type fuses, T6.3AH / 250 Volts. Failure to do so may cause damage to the AMP-2210T/3210T/2210HT.

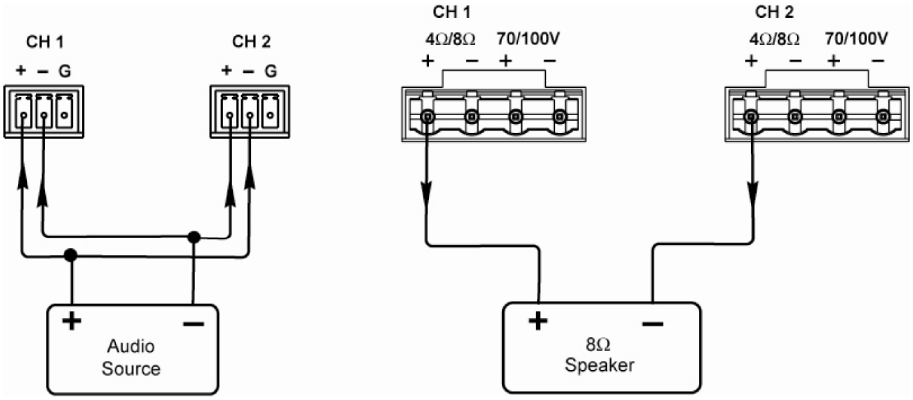
1. Disconnect power to the AMP-2210T/3210T/2210HT.
2. Use a flat head screwdriver to push in the fuse holder.

3. While pushing in the fuse holder, turn screwdriver counterclockwise until the fuse holder pops out.
4. Remove the fuse from the fuse holder and insert a new fuse.
5. Insert the fuse holder in the AMP-2210T/3210T/2210HT.
6. Push in the fuse holder with a flat head screwdriver. While pushing in the fuse holder, turn the screwdriver clockwise until the fuse holder sets into place.
7. Push in the fuse holder a little further and turn the screwdriver clockwise until the fuse holder locks in place.
8. Connect power to the AMP-2210T/3210T/2210HT.

Bridging Inputs/Outputs

Channels 1 and 2 can be bridged to provide a more robust 420W @ 8Ω to a single load. To bridge channels 1 and 2, refer to the following illustrations.

Bridging Audio Input Channels ***Bridging Speaker Output Channels***



NOTE: The **INPUT LEVEL** controls for both channels must be set to the same level.

NOTE: The minimum allowable load impedance in bridged mode is 8 Ohms.

NOTE: When operating in bridged mode, the **CLIPPING** and **FAULT** LEDs for each channel continue to operate independently.

Operation

Ensure that the procedures and instructions given in "Setup" on page 11 have been completed, and then do the following:

- Set all **INPUT CH LEVEL** knobs to their center detent position. These can be adjusted as necessary to balance the sound between channels or to accommodate different audio sources.
- Verify that the **REMOTE** selection switch is set appropriately:

  ⇒ ON = all channels are turned on

  ⇒ REMOTE = channels are activated remotely
- Check the front panel LEDs to ensure that power is applied and that a signal is present on each appropriate channel.
- If an **OUTPUT CLIP** LED is on (amber), use the corresponding **INPUT CH LEVEL** knob to reduce the signal level to eliminate the clipping condition.
- If an **OUTPUT FAULT** LED is on (red), eliminate the cause of the fault condition before continuing.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

AMP 2210S/3210S Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
PWR LED does not illuminate	AMP-2210T/3210T/2210HT is not receiving power	Verify that the AMP-2210T/3210T/2210HT is connected to an AC outlet. Check the fuse.
Hum on audio	Grounding problem	Connect chassis to earth ground.
Audio is distorted or not present at speakers	Audio input cables loose or not connected.	Verify that the input cables are connected to the appropriate input ports.
	Room speaker wires loose or disconnected.	Verify that the speaker wires are connected to the appropriate output ports.

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876]. For assistance in your region, please refer to the Crestron Web site (www.crestron.com) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron Web site (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the AMP-2210T/3210T/2210HT, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron Web site periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.



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Operations & Installation Guide – DOC. 7252A
(2031867)
09.11
Specifications subject to
change without notice.

DGE-100/DM-DGE-200-C

Digital Graphics Engines

Supplemental Guide

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DGE-100/DM-DGE-200-C: Digital Graphics Engines

Access the Setup Screens

The setup screens enable basic configuration prior to regular operation of the Crestron® DGE-100 and DM-DGE-200-C.

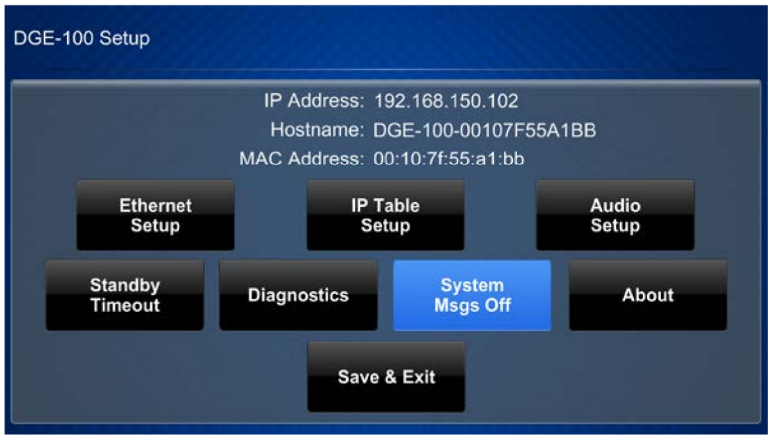
The DGE-100 and DM-DGE-200-C are functionally similar. For simplicity within this guide, the term “DGE” is used except where noted.

During regular operation of the DGE, there are two ways to access the setup screens:

1. Place a button on the project main page and assign the reserved join number (17242) that accesses the setup screens.
2. Press the SETUP button on the DGE.

The main setup screen is displayed.

Setup Screen



The setup screen is composed of buttons for Ethernet setup, IP table setup, audio setup, standby timeout, and diagnostics. In addition, there is a button to toggle system messages on or off, an About button that provides information about the touch screen, and a Save & Exit button. The functions of each are detailed in the following pages of this guide.

Configure the DGE

Ethernet Setup

On the main setup screen, tap **Ethernet Setup** to display the **Ethernet Setup** screen.

Ethernet Setup Screen



The **Ethernet Setup** screen displays the DGE's MAC and IP addresses, subnet mask, default router, primary and secondary DNS, hostname, and domain. There are controls for turning DHCP on and off, and when DHCP is off, a **Set Static IP Address Settings** button provides access to controls that allow editing of these settings. This screen also contains a link indicator to show the status of the Ethernet connection.

DHCP is enabled by default. To change to a static IP address, tap **Off** under **DHCP Enabled**, and then tap **Set Static IP Address Settings** to display the **Ethernet Setup - Static IPs** screen.

Ethernet Setup - Static IPs Screen



To edit the static IP address, static subnet mask, static default router, preferred DNS, or alternate preferred DNS, tap the button directly under the label for the entry to edit. The on-screen numeric keypad opens.

On-Screen Numeric Keypad



Tap the "x" in the text field to clear any previous entry. Use the keypad to make the new entry. Tap  to delete the last digit. Tap **Save** to save the new entry or  to return to the **Ethernet Setup - Static IPs** screen.

After new settings have been saved, tap **Reboot** on the **Ethernet Setup - Static IPs** screen to reboot the DGE so that the new settings can take effect.

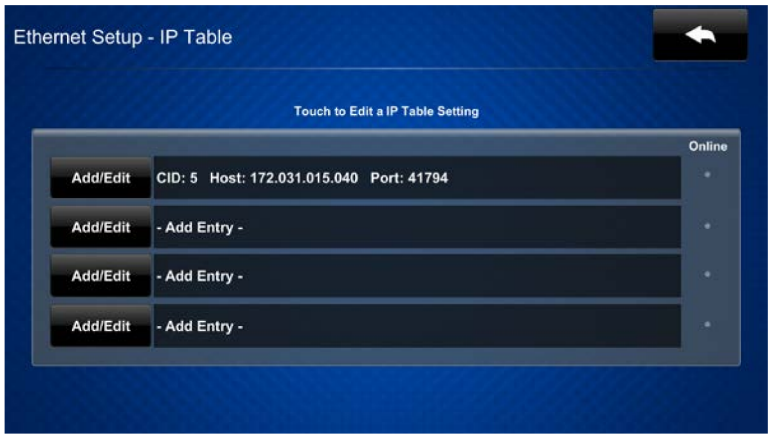
If not making any changes, tap  to return to the **Ethernet Setup** screen.

Tap  again to return to the main setup screen.

IP Table Setup

On the main setup screen, tap **IP Table Setup** to display the **Ethernet Setup - IP Table** screen.

Ethernet Setup - IP Table Screen



The **Ethernet Setup - IP Table** screen displays up to four IP table settings, each of which has an **Online** indicator. To add or edit an entry, tap the **Add/Edit** button to its left. The **Ethernet Setup - Edit IP Table Entry** screen is displayed.

Ethernet Setup - Edit IP Table Entry Screen



Tap the field below CIP ID to display the on-screen hex keypad.

On-Screen Hex Keypad



Tap the “x” in the text field to clear any previous entry. Use the keypad to make the new entry. Tap  to delete the last digit. Tap Save to save the new entry or  to return to the Ethernet Setup - Edit IP Table Entry screen.

Tap the field below IP Address/Hostname to display the on-screen keyboard.

On-Screen Keyboard



Tap the "x" in the text field to clear any previous entry. Use the keyboard to make the new entry. Tap **Cancel** to return to the **Ethernet Setup - Edit IP Table Entry** screen. Tap  to delete the last digit. Tap **Save** to save the new entry and return to the **Ethernet Setup - Edit IP Table Entry** screen.

On the **Ethernet Setup - Edit IP Table Entry** screen, tap **Save Entry** to save the current entry or **Delete Entry** to clear it.

If not making any changes, tap  to return to the **Ethernet Setup - IP Table** screen.

Tap  again to return to the main setup screen.

Audio Setup

On the main setup screen, tap **Audio Setup** to display the **Audio Setup** screen.

Audio Setup Screen



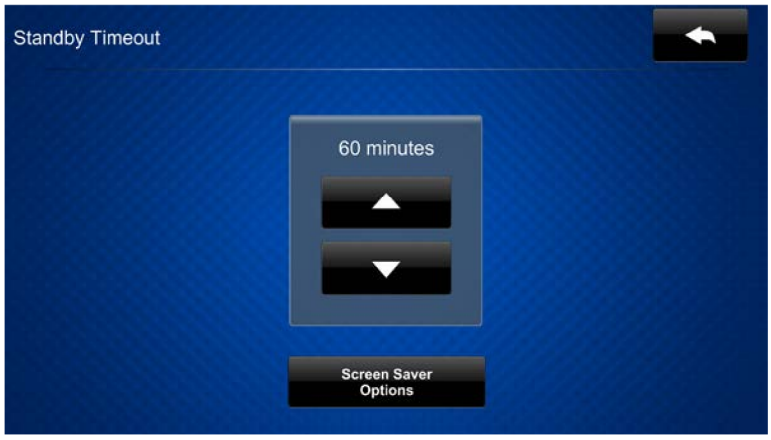
The **Audio Setup** screen provides controls for muting or unmuting the audio, and for adjusting levels for the master volume, media volume, and beep volume. The **Media Volume** controls adjust the H.264 streaming media level in relation to the **Master Volume** controls.

Tap  to return to the main setup screen.

Standby Timeout

On the main setup screen, tap **Standby Timeout** to display the **Standby Timeout** screen.

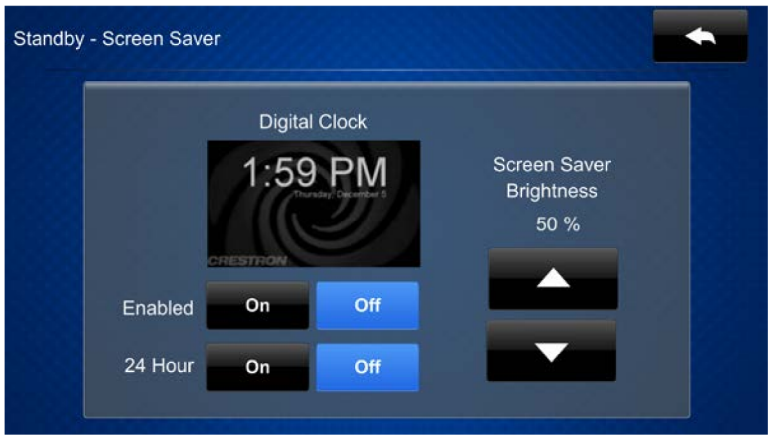
Standby Timeout Screen



The **Standby Timeout** screen provides controls to adjust standby timeout from 0 to 120 minutes.

Tap **Screen Saver Options** to display the **Standby - Screen Saver** screen.

Standby - Screen Saver Screen



The **Standby - Screen Saver** screen provides controls to turn the digital clock screen saver on and off, as well as controls to display the time in a 24-hour format and to adjust the screen saver brightness.

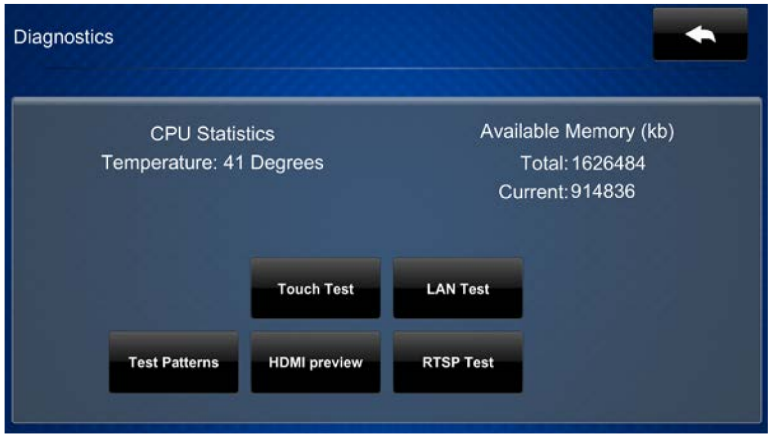
Tap  to return to the **Standby Timeout** screen.

Tap  again to return to the main setup screen.

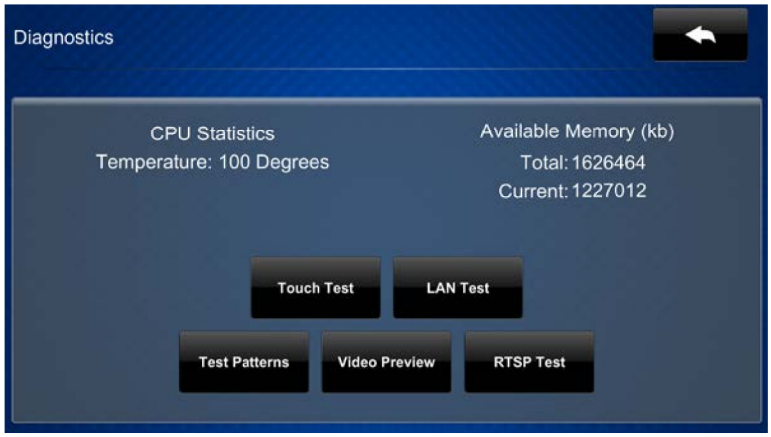
Diagnostics

On the main setup screen, tap **Diagnostics** to display the **Diagnostics** screen.

Diagnostics Screen (DGE-100)



Diagnostics Screen (DM-DGE-200-C)

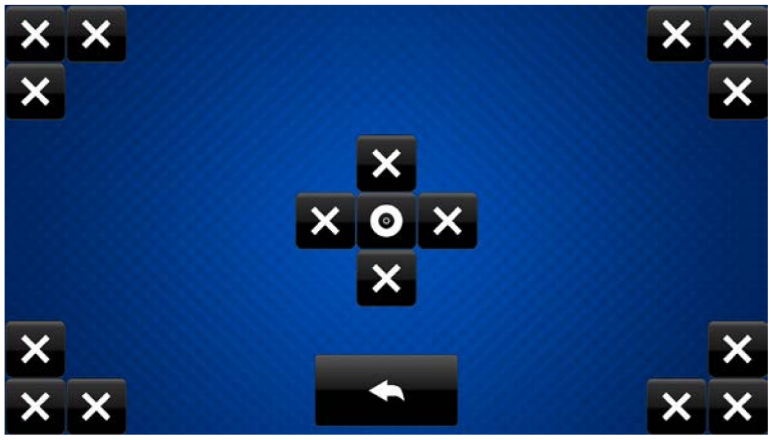


The **Diagnostics** screen displays the CPU temperature and the available memory, and it provides controls to open various test screens. These are explained in the sections that follow.

Touch Test

On the **Diagnostics** screen, tap **Touch Test** to display the touch test screen.

Touch Test Screen



The touch test screen can be used to test the function of the screen. When a location button is tapped, its indicator on the screen lights.

Tap  to return to the **Diagnostics** screen.

LAN Test

On the **Diagnostics** screen, tap **LAN Test** to display the **Diagnostics - LAN** screen.

Diagnostics - LAN Screen



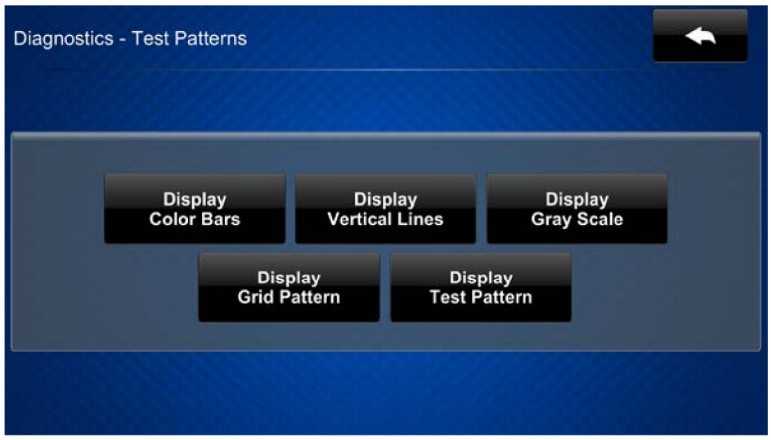
The **Diagnostics - LAN** screen displays the touch screen's MAC and IP addresses, subnet mask, default router, primary and secondary DNS, hostname, and domain. This screen also contains a Link indicator to show the status of the Ethernet connection, and controls to test the connection to the default router.

Tap  to return to the **Diagnostics** screen.

Test Patterns

On the **Diagnostics** screen, tap **Test Patterns** to display the **Diagnostics - Test Patterns** screen.

Diagnostics - Test Patterns Screen



The **Diagnostics - Test Patterns** screen provides buttons for selecting the different available test patterns: **Display Color Bars**, **Display Vertical Lines**, **Display Gray Scale**, **Display Grid Pattern**, and **Display Test Pattern**.

Tap  to return to the **Diagnostics** screen.

HDMI Preview (DGE-100 Only)

On the **Diagnostics** screen, tap **HDMI preview** to display the **Diagnostics - HDMI Preview** screen.

Diagnostics - HDMI Preview Screen



The **Diagnostics - HDMI Preview** screen provides a view of the HDMI® input, as well as controls to adjust the volume and mute the audio.

Tap  to return to the **Diagnostics** screen.

Local Video Preview (DM-DGE-200-C Only)

On the **Diagnostics** screen, tap **Video Preview** to display the **Diagnostics - Local Video Preview** screen.

Diagnostics - Local Video Preview Screen



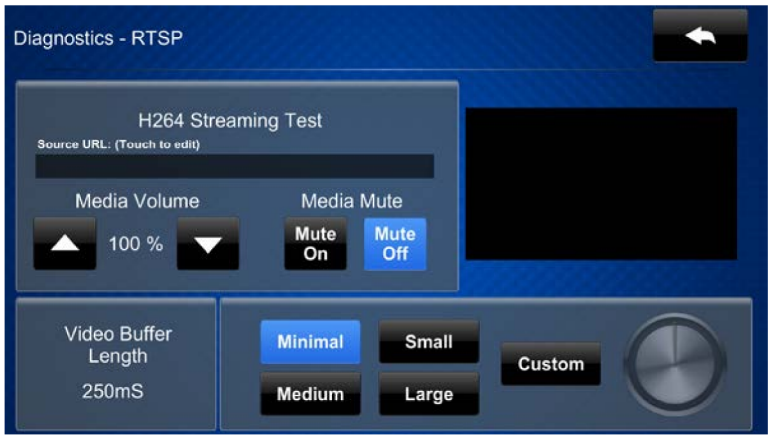
The **Diagnostics - Local Video Preview** screen provides views of the HDMI or DM® inputs, as well as controls to adjust the volume and mute the audio.

Tap  to return to the **Diagnostics** screen.

RTSP Test

On the **Diagnostics** screen, tap **RTSP Test** to display the **Diagnostics - RTSP** screen.

Diagnostics - RTSP Screen



The **Diagnostics - RTSP** screen is used to test whether Real Time Streaming Protocol is functioning on the touch screen. Tap the area below **Source URL: (Touch to edit)** to open the on-screen keyboard. Enter the URL for an H.264 video and then tap **Save**. The video is displayed on the right side of the **Diagnostics - RTSP** screen. The bottom part of the screen provides controls to select among video buffer lengths, or to select a custom length adjustable via a virtual knob.

Tap  to return to the **Diagnostics** screen.

Tap  again to return to the main setup screen.

About

On the main setup screen, tap **About** to display the **About** screen.

About Screen



The **About** screen displays information about the DGE, including the currently loaded firmware and operating system versions.

Tap  to return to the main setup screen.

Save & Edit

On the main setup screen, tap **Save & Exit** to save all settings, exit the setup screens, and return to the main project.

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06.16
Specifications subject to
change without notice.

Crestron **DM-MD8X8/16X16/32X32** DigitalMedia™ Switchers

Operations Guide



Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Disconnect power prior to connecting or disconnecting equipment.
- Do not install in direct sunlight.
- The apparatus must be installed in a way that the power cord can be removed either from the wall outlet or from the device itself in order to disconnect the mains power.
- Prevent foreign objects from entering the device.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

THIS IS AN APPARATUS WITH CLASS I CONSTRUCTION. IT SHALL BE CONNECTED TO AN ELECTRICAL OUTLET WITH AN EARTHING GROUND TERMINAL.

IMPORTANT:

This device can be used with Class 2 output wiring.

Regulatory Compliance

As of the date of manufacture, the DM-MD8X8, DM-MD16X16, and DM-MD32X32 have been tested and found to comply with specifications for CE marking.

CE

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

CAN ICES-3(B)/NMB-3(B)

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DigitalMedia Switchers: DM-MD8X8/16X16/32X32

Introduction

Crestron® DigitalMedia™ switchers provide the foundation for a complete DigitalMedia system, delivering a true high-definition multi-room AV signal routing solution that is flexible and installer-friendly. The DM-MD8X8, DM-MD16X16, and DM-MD32X32 afford low-latency switching and pure, lossless distribution of HDMI® and other signals to support the latest Blu-ray Disc® players, HDTV receivers, digital media servers, computers, and other AV devices.

Features and Functions

- Three Models: **DM-MD8X8** (eight inputs, eight outputs), **DM-MD16X16** (16 inputs, 16 outputs), and **DM-MD32X32** (32 inputs, 32 outputs)
- Distributes uncompressed digital video and audio over twisted-pair wire or fiber
- Supports HDMI with Deep Color and 7.1 channel HD lossless audio
- Supports video resolutions up to WUXGA 1920x1200 and HD 1080p60
- Allows cable length to 450 feet (137 m) using DigitalMedia cable, 1000 feet (300 m) using CresFiber®
- Supports up to eight (DM-MD8X8), 16 (DM-MD16X16), or 32 (DM-MD32X32) DM® receivers and room controllers with easy expansion for more outputs
- Configurable inputs support a complete range of digital and analog signal types
- Detects and displays detailed video and audio input information
- QuickSwitch HD® technology achieves low-latency HDMI switching
- Manages HDCP digital rights management for every device
- Performs automatic AV signal format management via EDID
- Enables device control via CEC
- Distributes USB HID mouse and keyboard signals
- Allows full audio and USB breakaway switching
- Integrates with analog audio distribution systems
- Enables simultaneous output of stereo and surround sound audio
- Includes integrated Ethernet switch with Gigabit LAN port

(Continued on following page)

Features and Functions

(Continued)

- Includes built-in power distribution for DM transmitters, repeaters, and room controllers
- Provides easy setup and diagnostics tools via front panel or software
- 19-inch rack-mountable (DM-MD8X8: 4-space, DM-MD16X16: 7-space, DM-MD32X32: 14-space)

DM switchers are field-configurable to handle up to 32 AV sources of virtually any type. The outputs of the DM-MD32X32 are field-configurable to provide up to 32 DM room outputs and/or HDMI outputs in a single chassis, with expansion capability possible for up to 160 outputs using multiple chassis. The outputs of the DM-MD16X16 are factory-configurable to provide up to 16 DM room outputs and/or HDMI outputs in a single chassis, with expansion capability possible for up to 80 outputs using multiple chassis. The outputs of the DM-MD8X8 are field-configurable to provide up to eight DM room outputs and/or HDMI outputs in a single chassis, with expansion capability possible for up to 40 outputs using multiple DM-MD8X8 chassis.

A full selection of DM switcher input cards, DM transmitters, DM receivers, and DM room controllers provides extensive connectivity throughout the home or office, supporting a complete range of analog and digital signal types — all through one switcher. User-friendly setup and troubleshooting tools are provided through the front panel, or via Crestron Toolbox™ software, to simplify setup.

DigitalMedia switchers are part of a High Definition Audio-Video distribution system that allows virtually any mix of AV sources to be distributed throughout the home from a centralized rack location using DigitalMedia.

DigitalMedia

Creating a professional HD AV distribution system means handling the challenges that come with HDMI. HDMI is the new standard for interfacing high-definition AV equipment, but despite its many benefits, it was not developed with multi-room distribution in mind. Crestron has developed DigitalMedia, the first complete HD AV distribution system that allows virtually any mix of HD AV sources to be distributed throughout the home from a centralized rack location.

DigitalMedia distributes uncompressed digital video and audio signals over a choice of shielded twisted-pair copper wire or multi-mode fiber. DigitalMedia manages all of the different signals and devices, matching each source's output to the capabilities of the selected display(s) without using scaling or compression. Every signal is preserved in its native video resolution and audio format, ensuring a pure, lossless signal path throughout.

Integrated Ethernet and USB HID distribution allows computers and media servers, to be installed out-of-sight and accessed from anywhere in the house. Crestron control is also built-in for controlling the displays and other room devices without additional wiring.

Modular Architecture

DM switchers feature a modular architecture with eight (DM-MD8X8), 16 (DM-MD16X16), or 32 (DM-MD32X32) input card slots and two output card slots with two, four, six, or eight outputs. Each input card slot on a DM switcher is

field-installable, allowing for easy and flexible system configuration with the ability to make changes to the system as needs change.

A wide selection of DM input cards are offered to support a complete range of digital and analog AV signal types. Depending on the switcher, up to eight output cards may be installed to feed up to eight (DM-MD8X8), 16 (DM-MD16X16), or 32 (DM-MD32X32) DM Receivers/Room Controllers using either DigitalMedia (DM) Cable or CresFiber. DigitalMedia allows for cable lengths up to 450 feet (137 m) using DM cable, or 1000 feet (300 m) using CresFiber. HDMI outputs are also available for direct connection to centralized audio processors and video monitors.

Output Expansion

An HDMI loop back output is provided on every input card to allow the inputs of up to five DM switchers to be daisy-chained, enabling the configuration of very large distribution systems with many DM and HDMI outputs.

Versatile Audio Routing

HDMI is the key to handling all the latest 7.1 surround sound formats like Dolby® TrueHD and DTS-HD Master Audio™. Great for your high-end home theater, but how do you share that same source with other audio zones in the house?

DigitalMedia allows for the simultaneous distribution of multi-channel surround sound (i.e., Dolby TrueHD and DTS-HD Master Audio) and two-channel stereo signals from the same HDMI source. Equipped with a DMC-HD-DSP, DMC-F-DSP, or DMC-CAT-DSP input card (all sold separately), the DM switcher employs onboard DSP processing to derive a stereo down-mix from the original multi-channel signal. Both signals can be routed separately or simultaneously from any of the switcher's DM outputs, allowing either signal to be selected for output at each DM receiver location.

The switcher also converts the digital stereo signal to analog to enable sharing with every other room in the house via an AAE, CNX-PAD8A (both sold separately), or other multi-room audio distribution system. DM switchers also allow surround sound processors and amplifiers to be located centrally instead of at the display location using optional local HDMI outputs.

Computer Compatibility

Besides handling every available HDTV format supported by HDMI, DigitalMedia also supports the distribution of DVI, DisplayPort multimode*, and RGB computer signals, and is fully compatible with DVI computer monitors up to 1920 x 1200 WUXGA.

Built-in Ethernet Switch

In addition to transporting digital video and audio, DigitalMedia can also extend 10/100 Ethernet out to each display and source device via DM room controllers and select DM transmitters, providing high-speed connectivity for any room device that requires a LAN connection. Its Gigabit Ethernet connection to the external LAN helps maximize bandwidth for each network port. Ethernet is also utilized internally by the Crestron control bus to manage all of the DM devices in the system and provide display control in each room.

* DisplayPort multimode connectivity is supported via an HDMI or DVI input port using a suitable adapter or interface cable (not included).

USB HID Switch

DigitalMedia lets you centralize all HD sources – not just television receivers and DVD changers, but also media servers and computers. Built-in USB HID (Human Interface Device) signal routing allows USB HID compatible keyboards and mice to be connected at a remote display location, conference table or presentation lectern, extending their signals through to the centralized equipment via USB HID ports provided on select switcher input cards.

EDID Format Management

Using HDMI provides a variety of video and audio formats to keep track of, and chances are not every device in a system supports all of the same formats. In a typical one-room system, HDMI attempts to resolve this confusion using EDID (Extended Display Identification Data). When two HDMI devices are connected together, the receiving device (a display or surround sound processor) uses EDID to announce its format capabilities to the source device (a TV tuner or video player), which in turn configures itself to output the most effective format that both devices can support.

However, serious conflicts arise in a facility filled with different displays and audio systems. For instance, the Blu-ray Disc player that is feeding a 1080p projector in the theater may restrict itself to a lower resolution, or even shut off completely, if someone decides to view the same signal on the 20” TV in the kitchen. And, instead of listening to a 7.1 Dolby TrueHD format supported by a high-end theater sound system, the listening experience may be limited to Dolby 5.1, or even stereo sound.

DM switchers use EDID to prevent such conflicts, assessing the formats supported by each system device, and then allowing the installer to assign compatible devices in logical arrangements. Conflicting combinations can be prohibited so only the optimum signal formats get delivered to each display and audio system in the house. All DigitalMedia wiring is also tested for integrity and bandwidth capability, optimizing system operation by instructing sources to output only resolutions and formats that the wiring can reliably handle.

QuickSwitch HD Technology

Crestron QuickSwitch HD technology minimizes the switching latency that plagues typical HDMI switchers. As the move to digital takes hold, more and more movie studios and television service providers are using HDCP (High-bandwidth Digital Content Protection) to protect their DVDs, Blu-ray Discs, and broadcast signals against unauthorized copying. Viewing the HDCP encrypted content in its full high-definition format requires a source device to “authenticate” each display and signal processor in the system through an HDMI connection before delivering an output signal. Normally the authentication process occurs every time any HDMI signal is switched, causing a complete loss of signal for up to 15 seconds whenever a new source or display is selected anywhere in the system.

QuickSwitch HD technology achieves very fast switching of HDMI signals by maintaining a constant HDCP connection with each HDMI device in the system, eliminating the need to re-authenticate each time a different source is selected.

HDCP Key Management

Another aspect to HDCP is its use of "keys" to manage the handshaking that occurs between any two devices. Every HDMI source device has a limit to how many downstream devices it can support, determined by the number of HDCP keys it has available. Rarely is that limit advertised or specified by the manufacturer or service provider, so connect too many displays or processors and the source will simply stop outputting a signal without warning.

To prevent such surprises, DM switchers test the HDCP limits of each HDMI source, allowing the installer to configure the system around any limitations, or substitute a different component.

CEC Embedded Device Control

The primary objective of every Crestron system is to enable precisely the control desired for a seamless user experience. DigitalMedia provides an alternative to conventional IR and RS-232 device control by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to the control system, the DM switcher provides a gateway for controlling many devices right through their HDMI connections, potentially eliminating the need for any dedicated control wires or IR probes. Through proper CEC signal management, DigitalMedia allows you to take control of each device as you like.

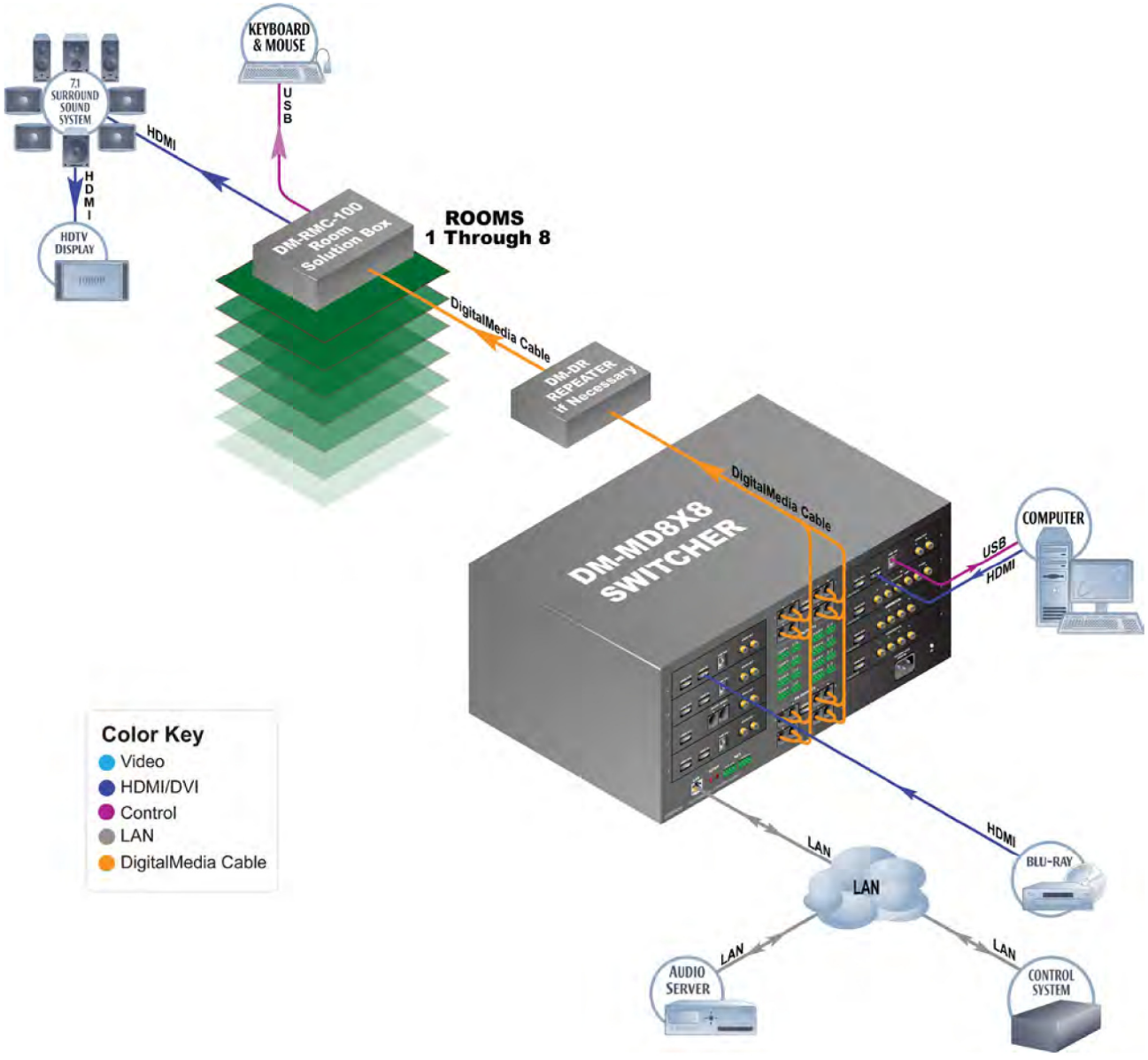
Easy Setup

Via the front panel or using Crestron Toolbox™ software, every step of the DM switcher's setup process is designed to be quick and easy, configuring inputs and outputs automatically while letting the installer make intelligent design decisions along the way. The switcher tests and measures the length of each DM cable, automatically making the appropriate calibrations for optimal signal transmission to every room. With DigitalMedia, an entire switcher system can be commissioned in as little as 15 minutes.

Applications

The following diagram shows a DM-MD8X8 in a lecture hall application.

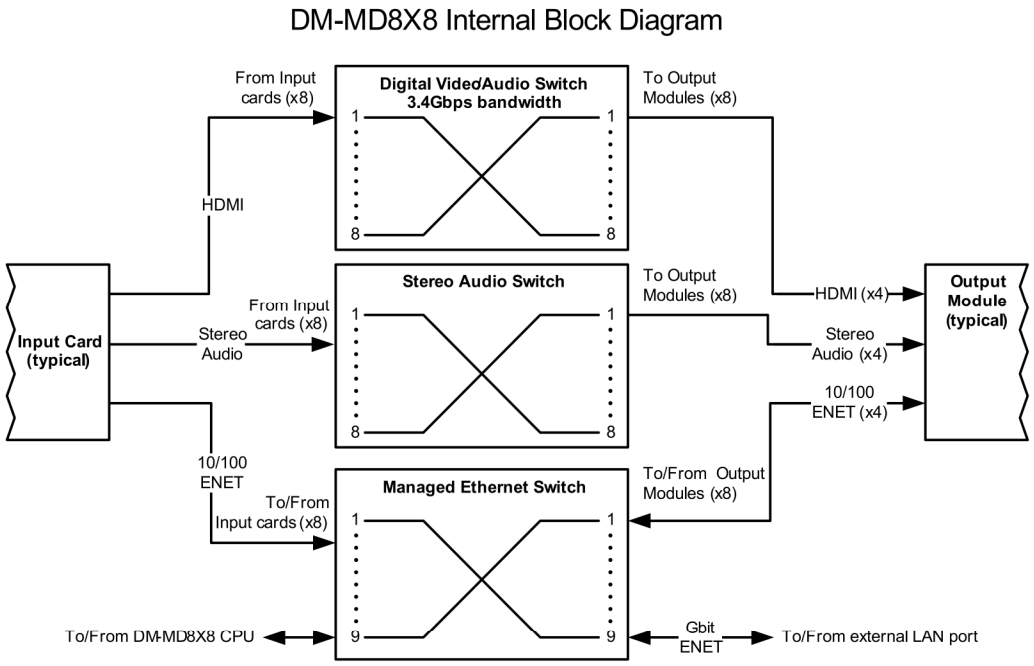
DM-MD8X8 in a Lecture Hall Application



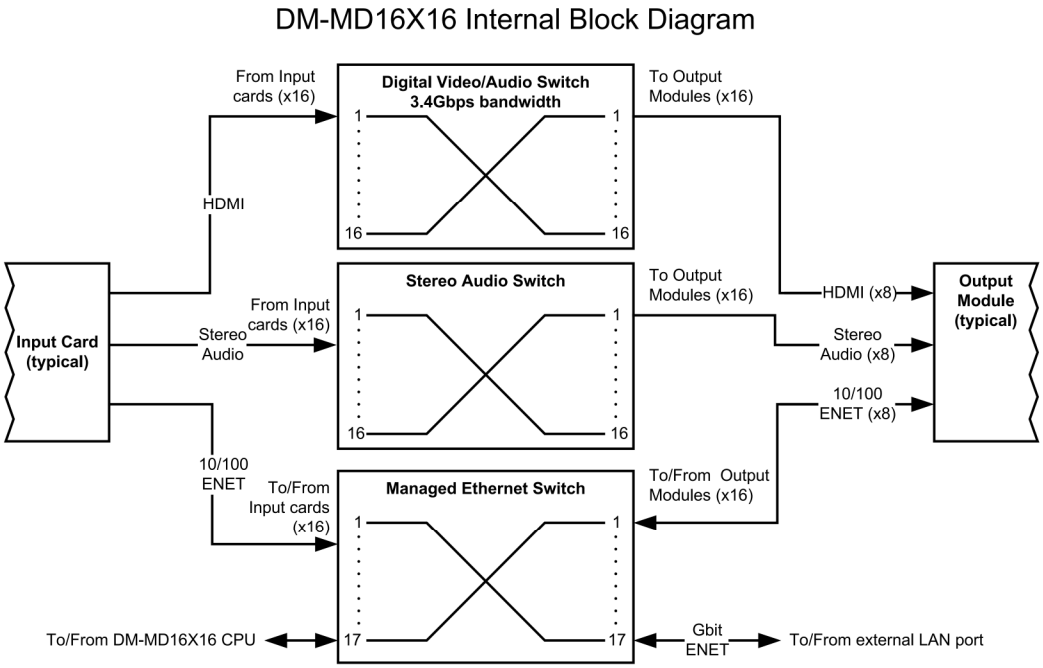
Internal Block Diagrams

The following diagrams represent the switching abilities of the DM switchers.

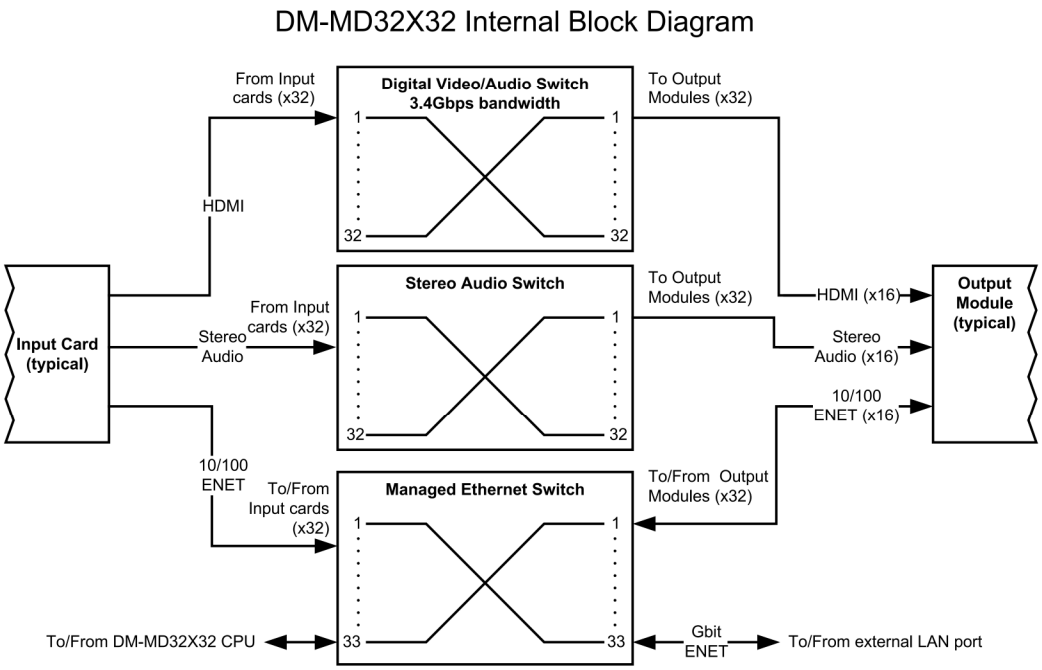
Internal Block Diagram of the DM-MD8X8



Internal Block Diagram of the DM-MD16X16



Internal Block Diagram of the DM-MD32X32



Specifications

Specifications for DM switchers are listed in the following table.

DM Switcher Specifications

SPECIFICATION	DETAILS
Video	
Switcher	**DM-MD8X8:** 8x8 digital matrix, modular input/output cards, Crestron QuickSwitch HD **DM-MD16X16:** 16x16 digital matrix, modular input/output cards, Crestron QuickSwitch HD **DM-MD32X32:** 32x32 digital matrix, modular input/output cards, Crestron QuickSwitch HD
Input Signal Types	Configurable via modular plug-in cards supporting HDMI, DisplayPort Multimode[1], DVI, SDI, RGB, component (YP_bP_r), S-video (Y/C), composite video, DM CAT, and DM fiber
Output Signal Types	Configurable via plug-in cards (factory-installed on DM-MD16X16) supporting DM CAT, DM fiber, and HDMI (All input cards also include HDMI loop back outputs)
Formats (determined by input cards)	HDMI with Deep Color, DVI, HDCP v.1.2 content protection support, SD-SDI, HD-SDI, 3G-SDI, RGBHV up to UXGA/WUXGA, HDTV up to 1080p60, NTSC or PAL
Input Resolutions HDMI/DVI, Progressive	640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Video (continued)	
Input Resolutions	
HDMI/DVI, Interlaced	720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock
RGB	640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz
Component	480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60
Composite and S-video	480i, 576i
SDI	SMPTE 425M (3G-SDI) 4:2:2 Colorspace: 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60); SMPTE 425M (3G-SDI) 4:4:4 Colorspace: 1280x720@24Hz (720p24), 1280x720@25Hz (720p25), 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30); SMPTE 260M (HD-SDI): 1920x1035@60Hz (1035i60); SMPTE 295M (HD-SDI): 1920x1080@50Hz (1080i50); SMPTE 274M (HD-SDI): 1920x1080@24Hz (1080p24), 1920x1080@24Hz (1080sF24), 1920x1080@25Hz (1080p25), 1920x1080@30Hz (1080p30), 1920x1080@50Hz (1080i50 or 1080sF25), 1920x1080@60Hz (1080i60 or 1080sF30); SMPTE 296M (HD-SDI): 1280x720@24Hz (720p24), 1280x720@25Hz (720p25), 1280x720@30Hz (720p30), 1280x720@50Hz (720p50), 1280x720@60Hz (720p60); SMPTE 259M-C (SD-SDI): 720x480@59.94 (NTSC), 720x576@50i (PAL)
Output Resolutions	Matched to inputs
Backplane Data Rate	12.5 Gbps

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Audio	
Switcher	**DM-MD8X8:** 8x8 digital multi-channel audio-follow-video matrix switching, plus independent 8x8 stereo matrix for audio breakaway **DM-MD16X16:** 16x16 digital multi-channel audio-follow-video matrix switching, plus independent 16x16 stereo matrix for audio breakaway **DM-MD32X32:** 32x32 digital multi-channel audio-follow-video matrix switching, plus independent 32x32 stereo matrix for audio breakaway
Input Signal Types	Configurable via modular plug-in cards supporting HDMI, DisplayPort Multimode[1], SDI, analog (stereo 2-channel), SPDIF, DM CAT, and DM fiber
Output Signal Types	Configurable via plug-in cards (factory-installed on DM-MD16X16) supporting DM CAT, DM fiber, HDMI, and analog (stereo 2-channel); (All input cards also include HDMI loop back outputs, and some input cards also include analog stereo loop back audio outputs)
Formats	
HDMI only	Dolby Digital Plus, Dolby® TrueHD, DTS-HD High Res, DTS-HD Master Audio™, up to 8ch PCM
HDMI & SPDIF	Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, 2ch PCM
Analog	Stereo 2-Channel
SDI	SMPTE 272M & SMPTE 299M (2 or 8 channel), 2 or 8 channel PCM via HDMI, 2-channel via analog
Communications	
DigitalMedia	DM fiber, DM CAT, DMNet®, HDCP management, EDID format management, CEC
Ethernet	10/100/1000BASE-T, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, RSTP
USB	Supports USB HID class devices

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Ethernet Switch	**DM-MD8X8:** Provides (1) onboard 10/100/1000BASE-T Gigabit Ethernet port, (1) internal 10BASE-T/100BASE-TX Ethernet port for the switcher, and (16) remote 10BASE-T/100BASE-TX Ethernet ports via select outboard devices **DM-MD16X16:** Provides (1) onboard 10/100/1000BASE-T Gigabit Ethernet port, (1) internal 10BASE-T/100BASE-TX Ethernet port for the switcher, and (32) remote 10BASE-T/100BASE-TX Ethernet ports via select outboard devices **DM-MD32X32**: Provides (1) onboard 10/100/1000BASE-T Gigabit Ethernet port, (1) internal 10BASE-T/100BASE-TX Ethernet port for the switcher, and (64) remote 10BASE-T/100BASE-TX Ethernet ports via select outboard devices
USB Switch	**DM-MD8X8:** 8x8 matrix **DM-MD16X16:** 16x16 matrix **DM-MD32X32:** 32x32matrix
Power Requirements Main Power	 **DM-MD8X8:** 300 Watts @ 100-240 Volts AC, 50/60 Hz **DM-MD16X16:** 550 Watts @ 100-240 Volts AC, 50/60 Hz **DM-MD32X32:** 1100 Watts @ 100-240 Volts AC, 50/60 Hz
Available DMNet Power	**DM-MD8X8:** 55 Watts (2.3 Amps @ 24 Volts DC) from internal power supply **DM-MD16X16:** 110 Watts (4.6 Amps @ 24 Volts DC) from internal power supply **DM-MD32X32:** 220 Watts (9.2 Amps @ 24 Volts DC) from internal power supply
Minimum 2-Series Control System Update File[2,3]	Version 4.001.1012 or later
Environmental Temperature Humidity Heat Dissipation	 32º to 104º F (0º to 40º C) 10% to 90% RH (non-condensing) **DM-MD8X8:** 750 BTU/Hr **DM-MD16X16:** 1500 BTU/Hr **DM-MD32X32:** 3000 BTU/Hr

(Continued on following page)

DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Enclosure	
Chassis	Metal with black finish, vented sides, fan-cooled
Faceplate	Metal, black finish with polycarbonate label overlay
Mounting	**DM-MD8X8:** Freestanding or 4U 19-inch rack-mountable (adhesive feet and rack ears included) **DM-MD16X16:** Freestanding or 7U 19-inch rack-mountable (adhesive feet and rack ears included) **DM-MD32X32:** Freestanding or 14U 19-inch rack-mountable (adhesive feet and integrated rack ears)
Dimensions (without cards)	
Height	**DM-MD8X8:** 6.97 in (177 mm) without feet **DM-MD16X16:** 12.22 in (311 mm) without feet **DM-MD32X32:** 24.44 in (621 mm) without feet
Width	**DM-MD8X8 and DM-MD16x16:** 17.28 in (439 mm) without ears 19.00 in (483 mm) with ears **DM-MD32X32:** 19.15 in (487 mm)
Depth	**DM-MD8X8 & DM-MD16X16:** 18.13 in (461 mm) **DM-MD32X32:** 15.72 in (400 mm)
Weight (without cards)	**DM-MD8X8:** 20.0 lbs (9.1 kg) **DM-MD16X16:** 28.4 lbs (12.9 kg) **DM-MD32X32:** 64.5 lbs (29.3 kg)

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DM Switcher Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories	
CRESFIBER	CresFiber Fiber Optic Cable
CRESFIBER-CONN-SC50UM-12	CresFiber Fiber Optic Cable Connector
CRESFIBER-DUAL-SC	CresFiber Duplex Fiber Optic Cable Assembly, 50/125, SC
CRESFIBER-DUAL-SC-ARMORED	CresFiber Armored Duplex Fiber Optic Cable Assembly, 50/125, SC
DM-CBL	DigitalMedia Cable
DM-CONN	DigitalMedia Cable Connector
DM-DR	DigitalMedia CAT Repeater
DMC-CAT	DM CAT Input Card
DMC-CAT-DSP	DM CAT Input Card with DSP
DMC-DVI	DVI/RGBHV Input Card
DMC-F	DM Fiber Input Card
DMC-F-DSP	DM Fiber Input Card with DSP
DMC-HD	HDMI Input Card
DMC-HD-DSP	HDMI Input Card with DSP
DMC-SDI	SDI Input Card
DMC-VID-BNC	BNC Analog Video Input Card
DMC-VID-RCA-A	RCA Analog Video Input Card with Analog Audio
DMC-VID-RCA-D	RCA Analog Video Input Card with SPDIF Audio
DMC-VID4	Security Camera Input Card
DMCO Series	Output Cards

1. DisplayPort Multimode connectivity is supported via an HDMI or DVI input port using a suitable adapter or interface cable (not included).
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

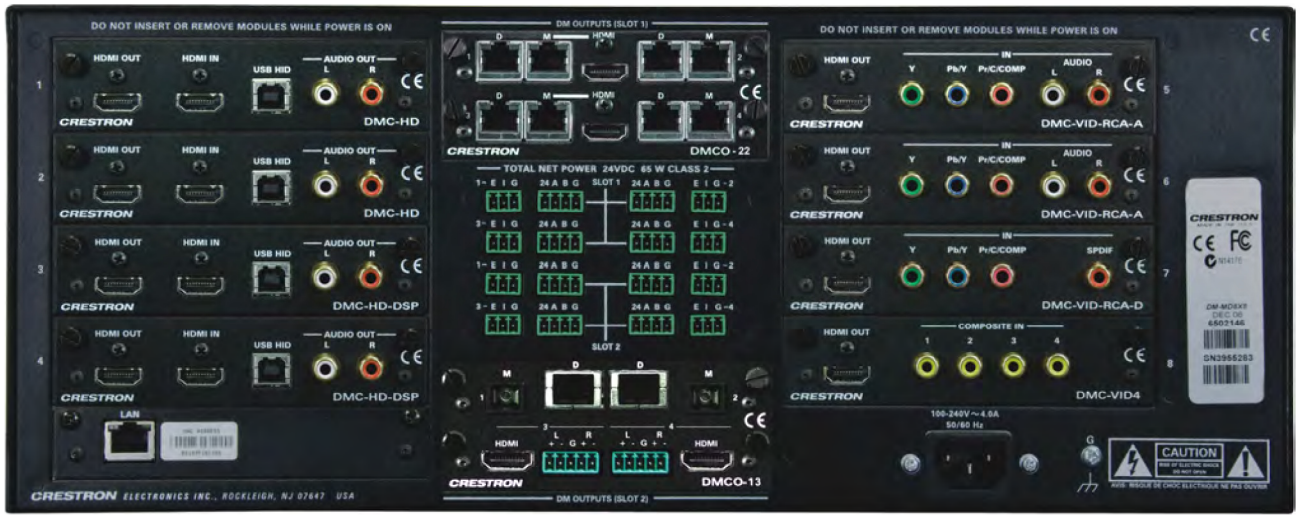
Physical Description

This section provides information on the connections, controls and indicators available on the DM switchers.

DM-MD8X8 Physical View (Front)



DM-MD8X8 Physical View (Rear, Shown with Optional DM Cards)



DM-MD16X16 Physical View (Front)



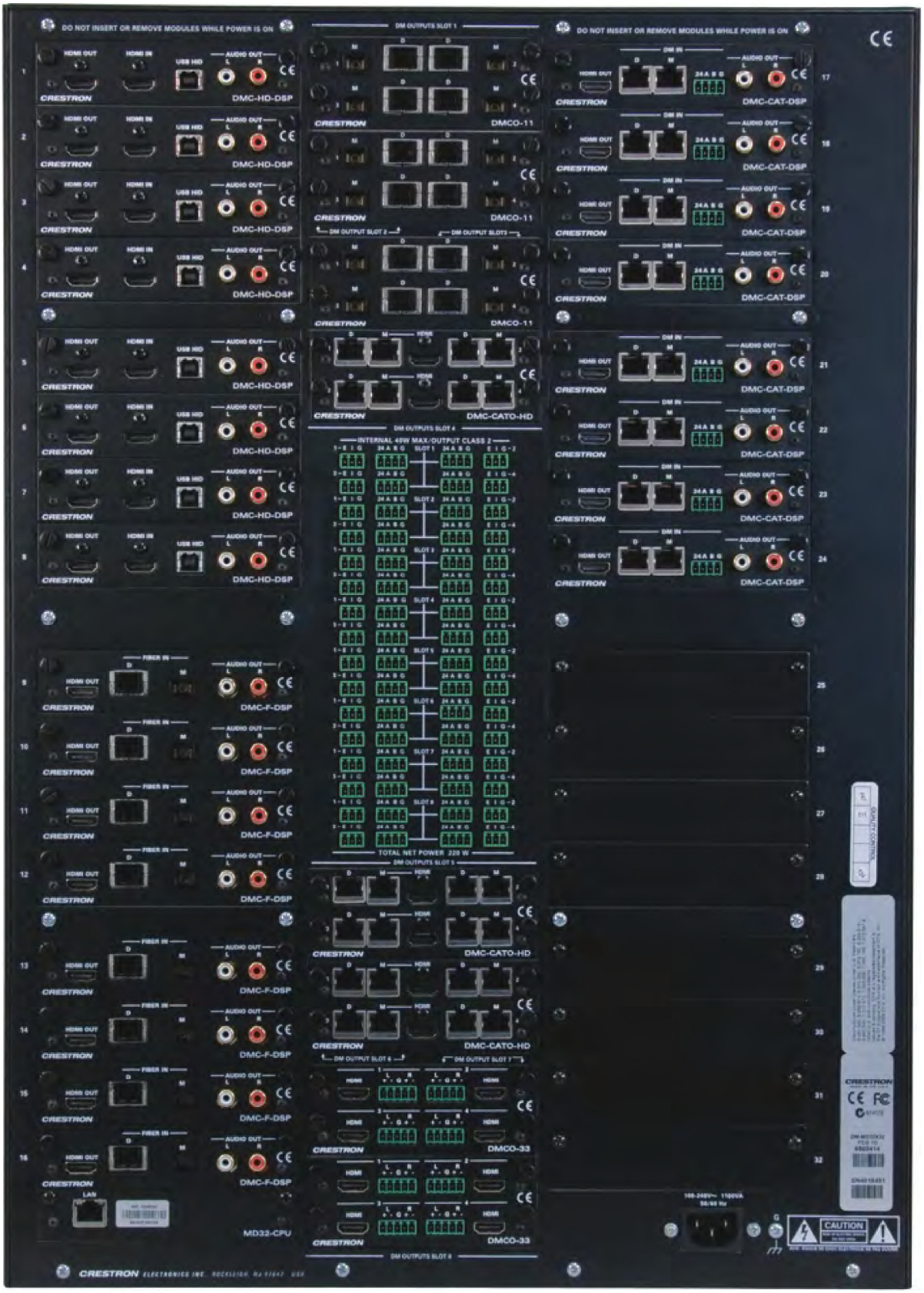
DM-MD16X16 Physical View (Rear, Shown with Optional DM Cards)



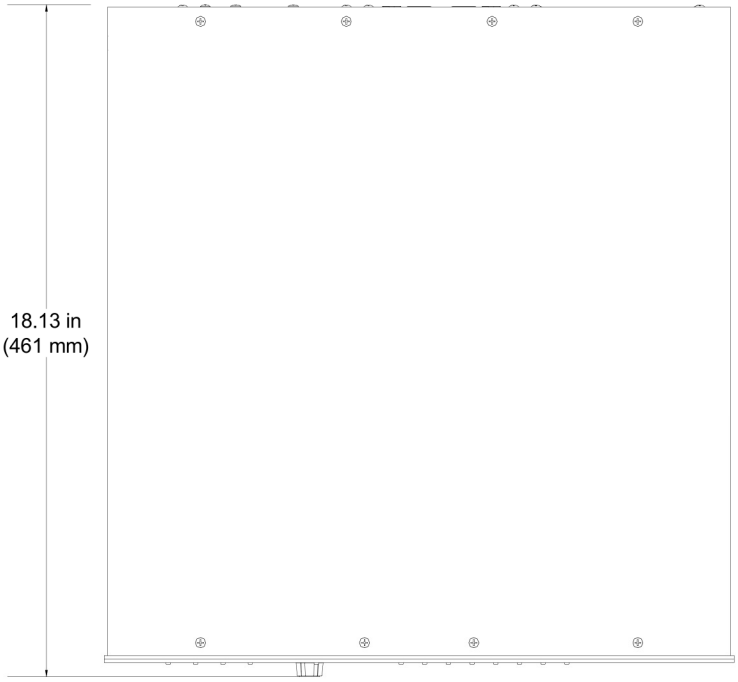
DM-MD32X32 Physical View (Front)



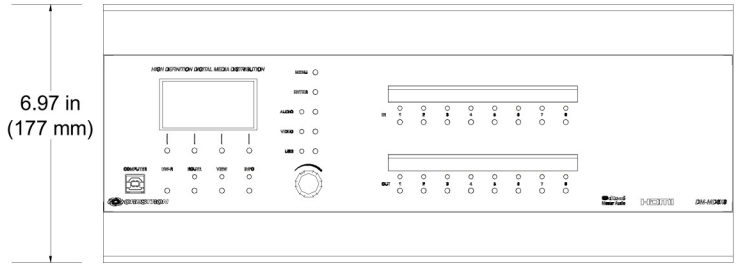
DM- MD32X32 Physical View (Rear, Shown with Optional DM Cards)



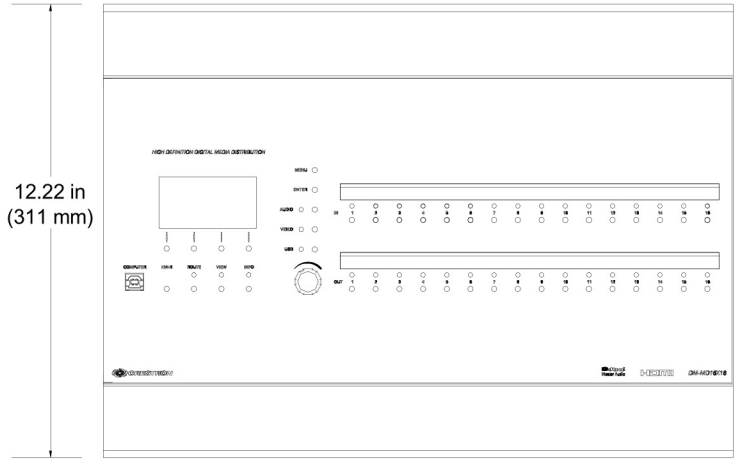
DM-MD8X8 & DM-MD16X16 Overall Dimensions



DM-MD8X8

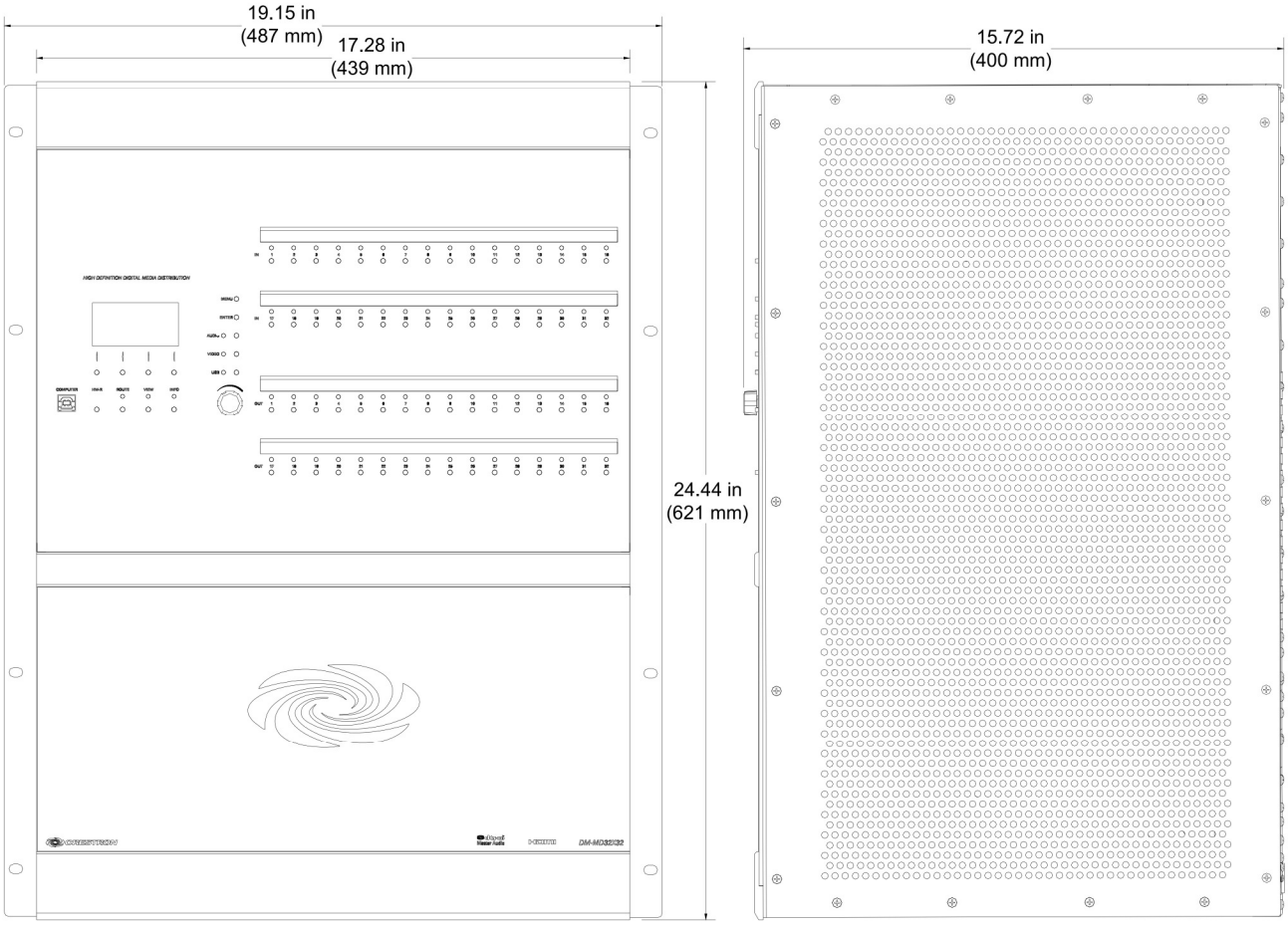


DM-MD16X16



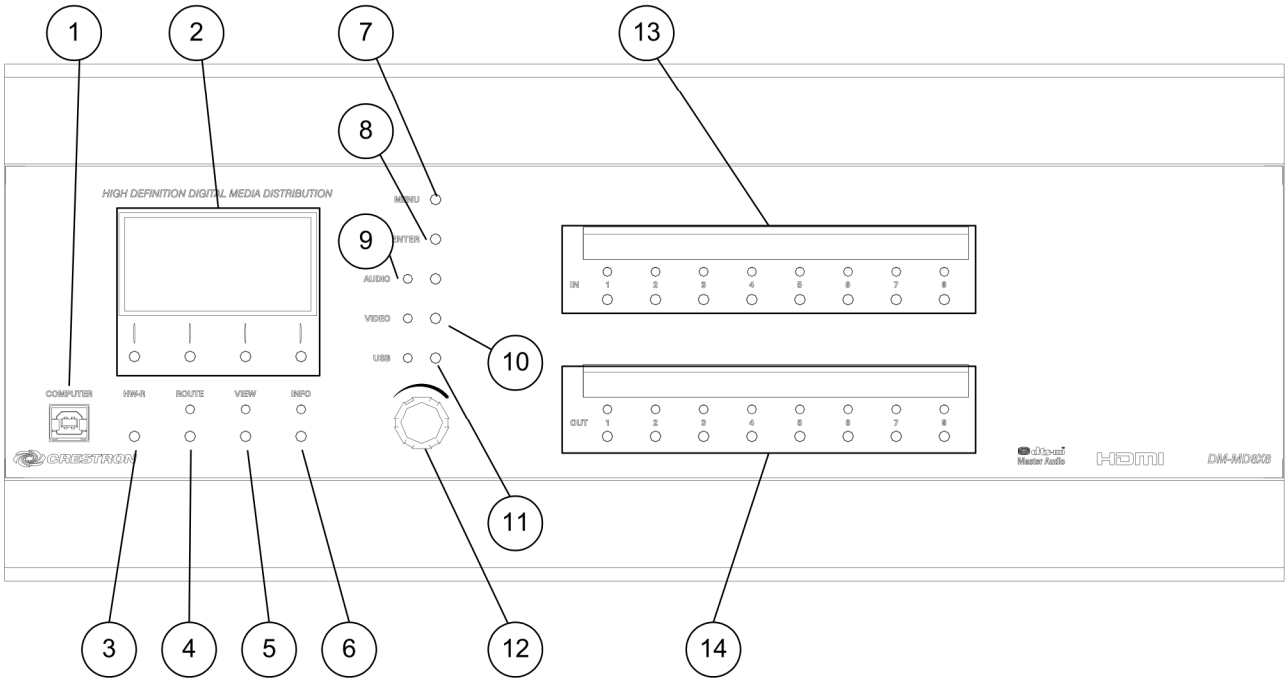
NOTE: Cable connections can extend the overall depth of the DM switcher by approximately two to three inches.

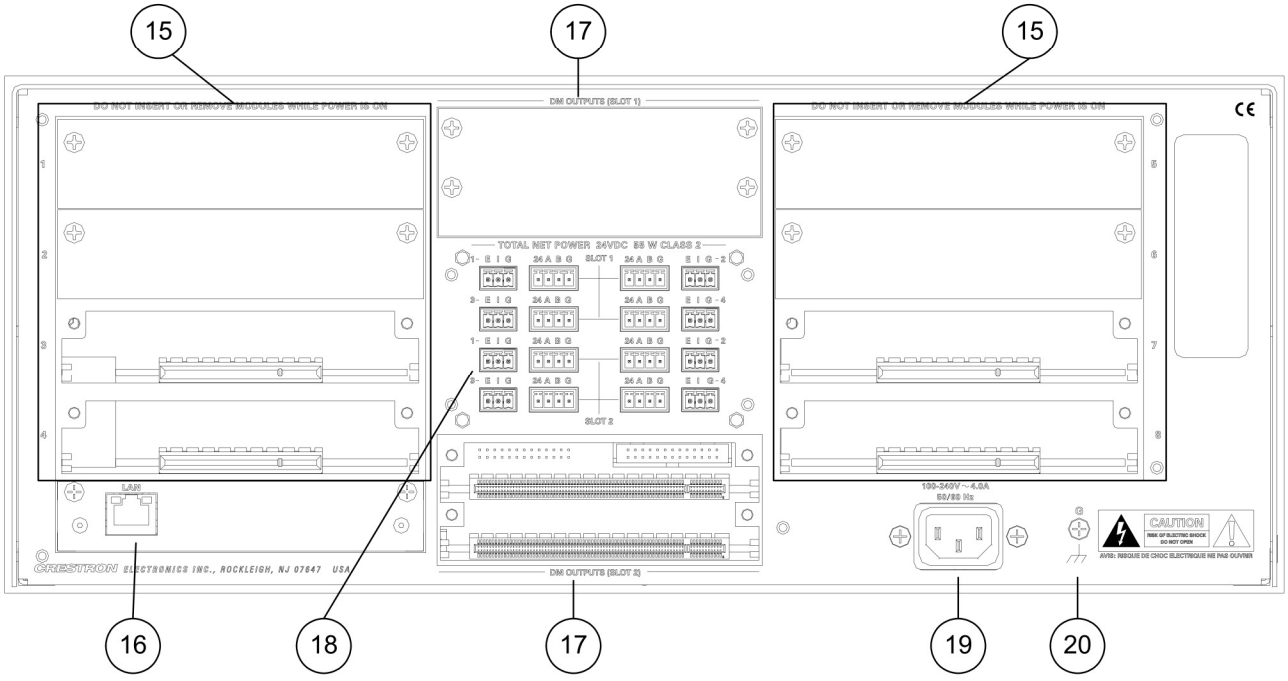
DM-MD32X32 Overall Dimensions



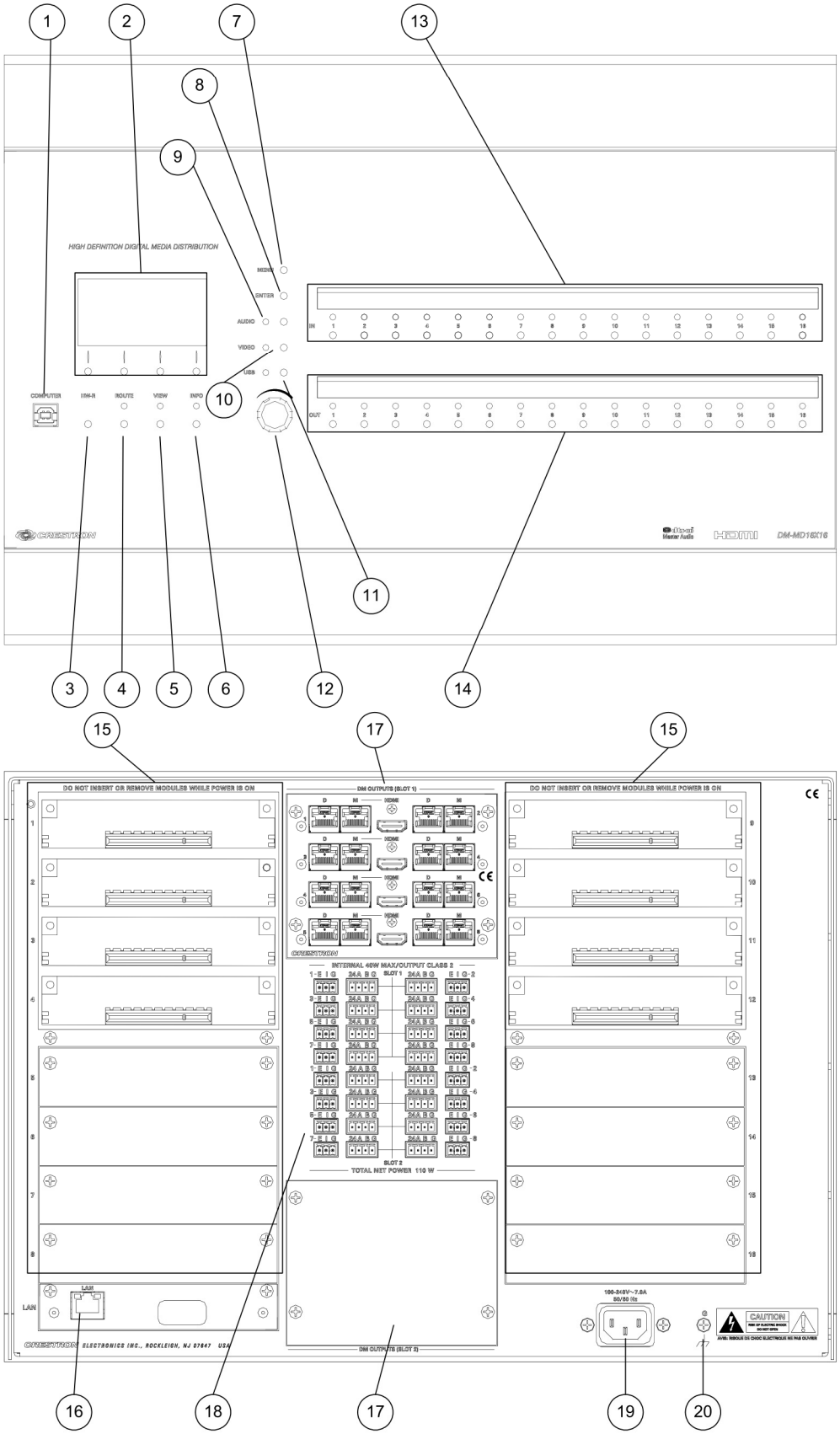
NOTE: Cable connections can extend the overall depth of the DM switcher by approximately two to three inches.

DM-MD8X8 Buttons and Ports

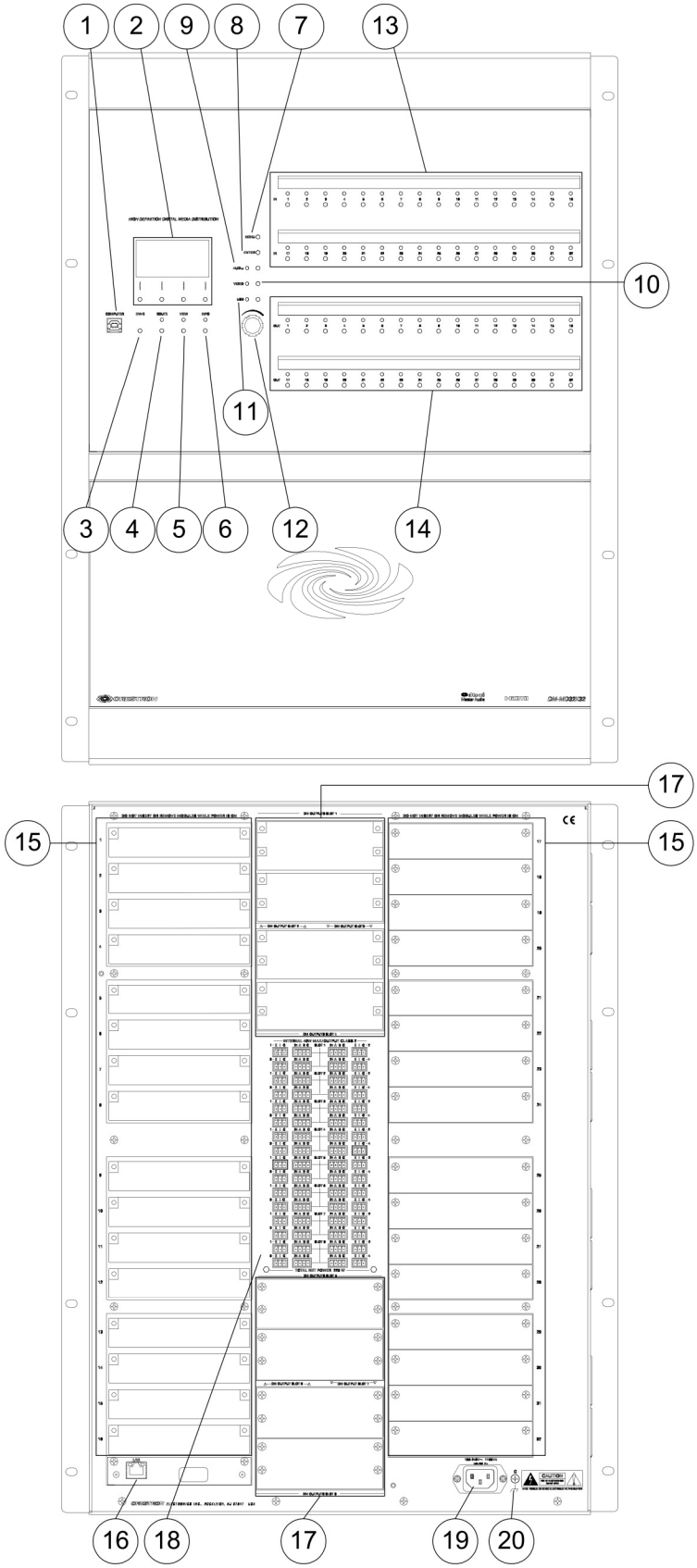




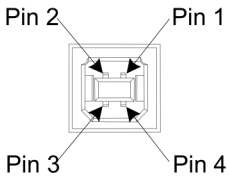
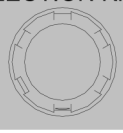
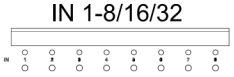
DM-MD16X16 Buttons and Ports



DM-MD32X32 Buttons and Ports



Connectors, Controls & Indicators

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
1	COMPUTER 	USB Type B female; USB 1.1 computer console port (6 ft cable included) **PIN** / **DESCRIPTION** 1 – +5 VDC 2 – Data - 3 – Data + 4 – Ground
2	LIQUID CRYSTAL DISPLAY & SOFT BUTTONS	**LIQUID CRYSTAL DISPLAY (LCD):** Green LCD dot matrix, 128 x 64 resolution, adjustable LED backlight; Displays inputs/outputs by name, video & audio signal information, Ethernet configuration and setup menus; **SOFT BUTTONS:** (4) pushbuttons for activation of LCD driven functions
3	HW-R BUTTON	(1) recessed miniature pushbutton for hardware reset, reboots the switcher
4	ROUTE BUTTON & LED	(1) pushbutton and red LED, selects *Route* mode to allow routing changes
5	VIEW BUTTON & LED	(1) pushbutton and red LED, selects *View* mode for viewing current routes
6	INFO BUTTON & LED	(1) pushbutton and red LED, selects *Info* mode for viewing AV and device information
7	MENU BUTTON	(1) pushbutton, steps menu back one level
8	ENTER BUTTON	(1) pushbutton, executes highlighted menu or value
9	AUDIO BUTTON & LED	(1) pushbutton & red LED, selects audio routing view
10	VIDEO BUTTON & LED	(1) pushbutton & red LED, selects video routing view
11	USB BUTTON & LED	(1) pushbutton & red LED, selects USB routing view
12	SELECTION KNOB 	(1) Continuous turn rotary encoder, adjusts menu parameters
13	IN 1-8/16/32 	**DM-MD8X8** (8) pushbuttons and red LEDs, select input for routing **DM-MD16X16** (16) pushbuttons and red LEDs, select input for routing **DM-MD32X32** (32) pushbuttons and red LEDs, select input for routing

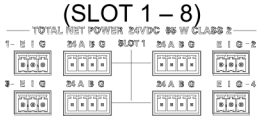
(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
14	OUT 1-8/16/32 	**DM-MD8X8** (8) pushbuttons and red LEDs, select output for routing **DM-MD16X16** (16) pushbuttons and red LEDs, select output for routing **DM-MD32X32** (32) pushbuttons and red LEDs, select output for routing
15	CARD SLOTS 1-8/16/32	**DM-MD8X8** (8) DM switcher input card slots; Accepts (1) DMC-series input card; Input cards are field-installable **DM-MD16X16** (16) DM switcher input card slots; Accepts (1) DMC-series input card; Input cards are field-installable **DM-MD32X32** (32) DM switcher input card slots; Accepts (1) DMC-series input card; Input cards are field-installable
16	LAN 	(1) 8-wire RJ-45 with 2 LED indicators, 10/100/1000BASE-T Ethernet port; Green LED indicates link status, Yellow LED indicates Ethernet activity
17	DM OUTPUT SLOT[2] 1 & 2 / 1-8	**DM-MD8X8 and DM-MD16X16** (2) DM switcher output card slots; Each slot accepts (1) 4-channel (DM-MD8X8) or (1) 8-channel (DM-MD16X16) DM output card; **DM-MD32X32** (8) DM switcher output card slots; Each slot accepts (1) 4-channel DM output card;

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
18	24ABG/EIG 1 – 4 (SLOT 1 – 8) 	**DM-MD8X8** (8) sets of (1) 4-pin and (1) 3-pin 3.5 mm detachable terminal blocks **DM-MD16X16** (16) sets of (1) 4-pin and (1) 3-pin 3.5 mm detachable terminal blocks **DM-MD32X32** (32) sets of (1) 4-pin and (1) 3-pin 3.5 mm detachable terminal blocks **The following applies to all DM switchers:** Comprises (8, 16, or 32) DMNet ports with "EIG" power selection ports, each set associated with a corresponding DM output port on the output card in either output slot; Each DMNet port provides power and communications for a DM device connected via DM cable; Each **EIG** port connects to an external power supply[3], or to the internal power source via a jumper, to power the DM device connected to the corresponding DMNet port; Maximum Load: 75 Watts (3.13 Amps @ 24 Volts DC) per port, when connected to external power supply[3], otherwise limited to available DMNet power
19	100–240V ~ 4.0A/7.0A 50/60 Hz 	(1) IEC Socket, main power input; Mates with removable power cord (included) **DM-MD8X8:** 4.0 Amps Max. Current Draw **DM-MD16X16:** 7.0 Amps Max. Current Draw **DM-MD32X32:** 11 Amps Max. Current Draw
20	GROUND 	(1) 6-32 screw, chassis ground lug

1. Interface connectors for **DMNET** and **EIG** ports are provided with the unit.
2. Output cards on DM-MD8X8 and DM-MD32X32 are field-installable (DMC-series). Output cards on DM-MD16X16 (DMCO-series) require factory installation.
3. For external DMNet power, use Crestron CNPWS-75, C2N-SPWS300, or other Cresnet power supply as required.

Setup

DigitalMedia Wiring

Connections between DigitalMedia Switchers and DigitalMedia Room Controllers can be made using a variety of wiring solutions. For optimum performance, Crestron recommends Crestron DigitalMedia cable or CresFiber.

When wiring the DigitalMedia network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available for download from the Crestron website (www.crestron.com/manuals).

DigitalMedia Cable

The Crestron DigitalMedia cable contains two CAT5E cables (one shielded, one unshielded) and one DMNet cable in triamese jackets. Installation of any DigitalMedia device is as simple as connecting DigitalMedia cable from the output of the DigitalMedia switcher to the input of a DigitalMedia device such as a DM-RMC-100 DigitalMedia Room Controller. For more information, refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789), which is available for download from the Crestron website (www.crestron.com/digitalmedia).

The following pinouts are given for DigitalMedia cable:

D and M Port Wiring



PIN	WIRE COLOR
1	Orange/White
2	Orange
3	Green/White
4	Blue
5	Blue/White
6	Green
7	Brown/White
8	Brown

24 A B G Port Wiring



PIN	SIGNAL	DESC.	WIRE COLOR
24	+24V	DC Power	Red
A	DM-Net+	DMNet	Orange
B	DM-Net-	DMNet	Grey
G	GND	DC Ground	Black

NOTE: Do not untwist the two wires in a single pair for more than 1/3-1/2" (8-12 mm) when making a connection. The twists are critical to canceling out interference between the wires.

The maximum transmission distances between repeaters are determined by the video resolution sent over the wires. The total distance that video can be sent using repeaters is shown in the following table for DigitalMedia cable. While up to three repeaters may be used to extend the transmission distance, the aggregate length of a cable run must not exceed 450 feet (137.1 meters) when using DigitalMedia cable. The following table shows the maximum cable lengths allowed between repeaters when using DigitalMedia cable.

Maximum Resolution and Cable Length

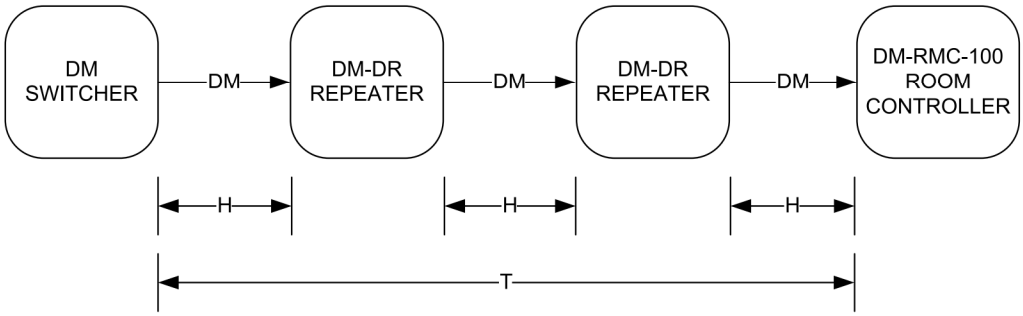
Cable Type:	**DM-CBL DigitalMedia Cable**	
Resolution:	Maximum length without, between, before or after repeaters	Maximum total length using up to 2 repeaters
720p, 1080i, 1080p24	200 ft (60 m)	450 ft (137 m)
1024x768 @ 75 Hz	200 ft (60 m)	450 ft (137 m)
1080p60	150 ft (45 m)	450 ft (137 m)
1280x1024 @ 75 Hz	150 ft (45 m)	450 ft (137 m)
1920x1200 @ 60 Hz	150 ft (45 m)	450 ft (137 m)
1600x1200 @ 60 Hz	125 ft (38 m)	375 ft (114 m)
1080p60 Deep Color	100 ft (30 m)	300 ft (91 m)

NOTE: 1080p60 is the most common resolution used in residential installations.

NOTE: Deep color is part of the HDMI specification. It allows devices to transmit video using 36 bits per pixel instead of 24 bits per pixel. The color depth allows for 4096 shades each of red, green, and blue (instead of 256). Due to bandwidth requirements and limited support, deep color is not often used.

Up to two repeaters can be used to extend the transmission distance between the DM switcher and the Room Controller. The following diagram illustrates the maximum hop length between switcher/room controller and repeaters and maximum aggregate cable length.

Maximum Cable Lengths



H = The maximum hop distance between a DM Switcher/ DM-RMC-100 Room Controller and a DM-DR Repeater
T = The maximum total distance from the DM Switcher to the DM-RMC-100 Room Controller

For more information on DigitalMedia and other cable products, visit the Crestron website (http://www.crestron.com/wireoverview).

CresFiber

CresFiber provides for longer distances between the DigitalMedia switcher and a DigitalMedia Room Controller without the use of repeaters or sacrifice in video resolution. For more information, refer to the latest revision of the Crestron DigitalMedia Design Guide (Doc. 4789), which is available for download from the Crestron website.

The following table lists the maximum cable length of CresFiber.

Maximum Length Using CresFiber

RESOLUTION	CRESFIBER
720p, 1080i, 1080p24	1000’ (~300 m)
1024 x 768 @ 75 Hz	
1280 x 1024 @ 75 Hz	
1600 x 1200 @ 60 Hz	
1920 x 1200 @ 60 Hz	
1080p60	
1080p60 Deep Color	

Other fiber optic cable can be used as well.

NOTE: 1080p60 is the most common resolution used in residential installations.

NOTE: Deep color is part of the HDMI specification. It allows devices to transmit video using 36 bits per pixel instead of 24 bits per pixel. The color depth allows for 4096 shades each of red, green, and blue (instead of 256). Due to bandwidth requirements and limited support, deep color is not often used.

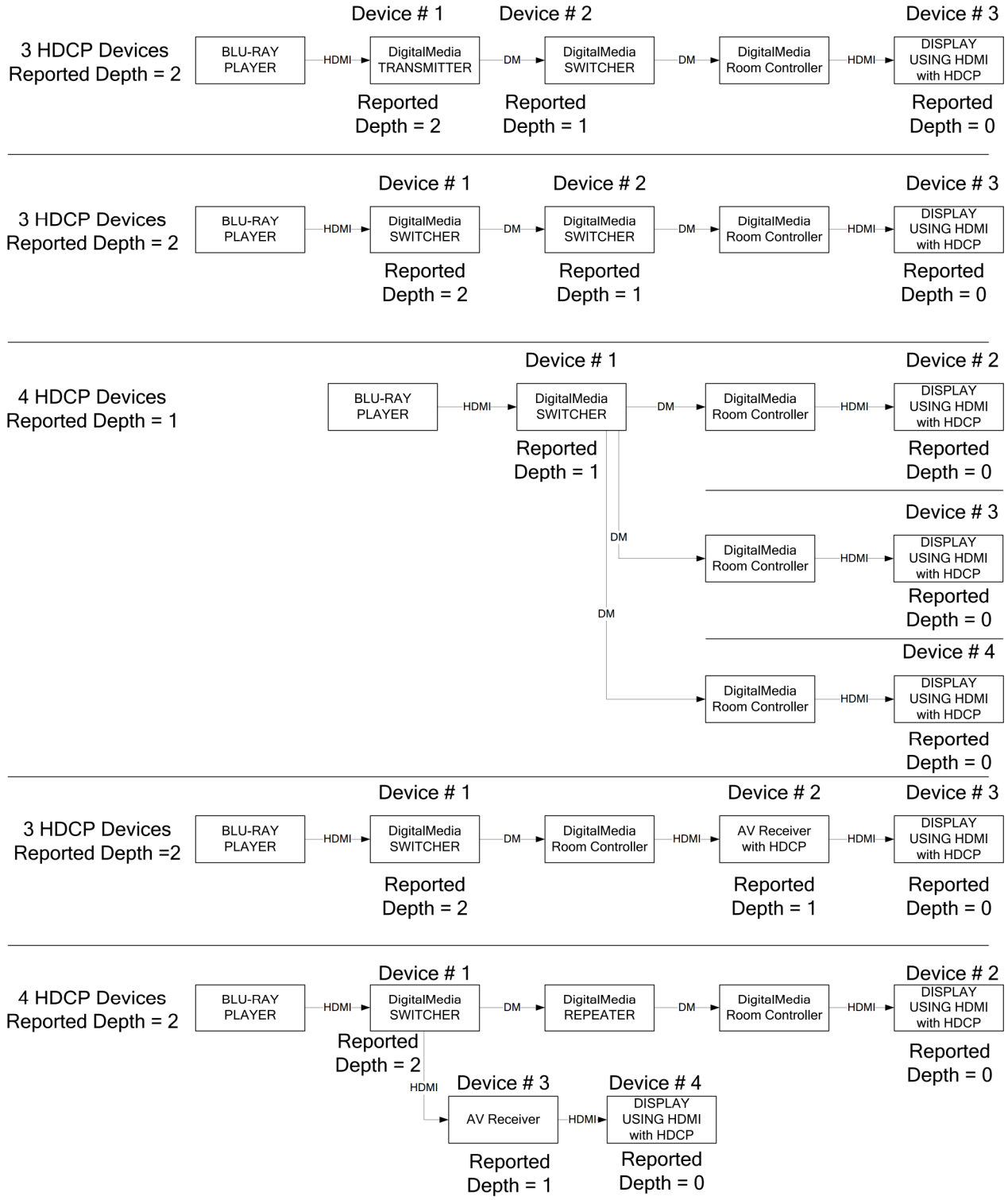
For more information on CresFiber and other cable products, visit the Crestron website (http://www.crestron.com/wireoverview).

HDCP Signal Path

Sources using HDCP limit the number of display devices it can transmit to while simultaneously limiting the depth of devices in the signal path. Too many devices or

greater-than-allowed depth in a signal path (from source to display) may create problems with displaying of audio and video content. The HDCP specification states that the maximum depth of devices between source and display is six. Some examples are shown in the following diagram.

Examples of Reported HDCP Devices and Reported HDCP Depth



Ethernet Setup

DigitalMedia switchers are designed to control the Ethernet settings of lightweight DM devices around them in order to reduce the amount of IP configuration necessary and make the certain DM devices swappable without reconfiguration.

IP Configuration

DigitalMedia switchers have the ability to operate in *DHCP* or *Static IP* address mode. In addition, DM switchers control the IP addressing information for input cards that have Ethernet capabilities as well as neighboring DigitalMedia devices. When the DM switcher is set to *DHCP* mode, these cards and DM devices will also be set to *DHCP* mode. When the DM switcher is set into *Static IP* mode, these cards and DM devices will receive a *Static IP* configuration equivalent to the DM switcher's IP address plus their slot number. This configuration is sent when the DM switcher starts up.

Example:

A DM-MD8X8 is set to IP address 192.168.1.30. The IP mask is 255.255.255.0 and the default router is 192.168.1.1. The HDMI input card on slot 3 would be set to IP address 192.168.1.33 and receive the same IP mask and default router as the DM switcher.

Since there can be up to 64 slots in the DigitalMedia switcher, the last octet in the DM switcher IP address may not be set higher than 222 (DM-MD8x8 and DM-MD16X16) or 190 (DM-MD32X32). Otherwise not all devices will receive a valid IP address.

DigitalMedia devices that send this IP configuration are the DM-MD8X8, DM-MD16X16, and the DM-MD32X32.

DigitalMedia devices that receive this IP configuration are the DMC-HD, DMC-HD-DSP, DMC-DVI, DM-RMC-100, DM-RMC-100-F, DM-TX-100, and DM-TX-200.

If two DigitalMedia switchers were connected to one another via a DMC-CATO output and DMC-CAT input card, each switcher would maintain control over its own IP configuration.

IP Table Setup

DigitalMedia devices that receive their IP address configuration via the switcher can also receive their IP table configuration from the DM switcher.

Identity Code

The IP ID can be set from the front panel using Installer Tools or in the DM switcher's IP table using Crestron Toolbox. For information on using Installer Tools to set the IP ID, refer to "Control System IP ID" on page 48. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple DM switchers in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Installation

Ventilation

The DM switcher should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation and/or increasing the spacing between units to reduce overheating. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the environment may be greater than the room ambient temperature. Contact with thermal insulating materials should be avoided on all sides of the unit.

Rack Mounting

A DM switcher can be mounted in a rack or stacked with other equipment. Two "ears" are provided with the switcher so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach the ears to the unit. The only tool required is a #2 Phillips screwdriver.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

NOTE: The DM-MD32X32 has rack ears molded into the chassis. They cannot be removed.

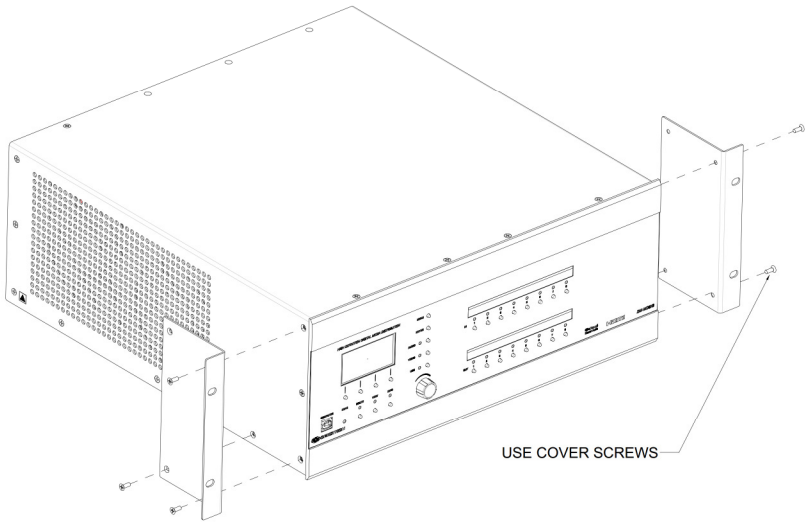
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

NOTE: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

To install the ears:

1. There are screws that secure each side of the DM switcher's top cover. Using a #2 Phillips screwdriver, remove three screws from one side of the unit as shown in the diagram of step 3.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Secure the ear to the unit with three screws from step 1, as shown in the following diagram.

Ear Attachment for Rack Mounting (DM-MD8X8 shown)



4. Repeat procedure (steps 1 through 3) to attach the remaining ear to the opposite side.

Stacking

Four "feet" are provided with the DM-MD8X8, DM-MD16X16 and the DM-MD32X32 so that if the units are not rack mounted, the rubber feet can provide stability when the units are placed on a flat surface or stacked. These feet should be attached near the corners prior to the hookup procedure.

NOTE: No more than two DM switchers should be stacked.

Hardware Hookup

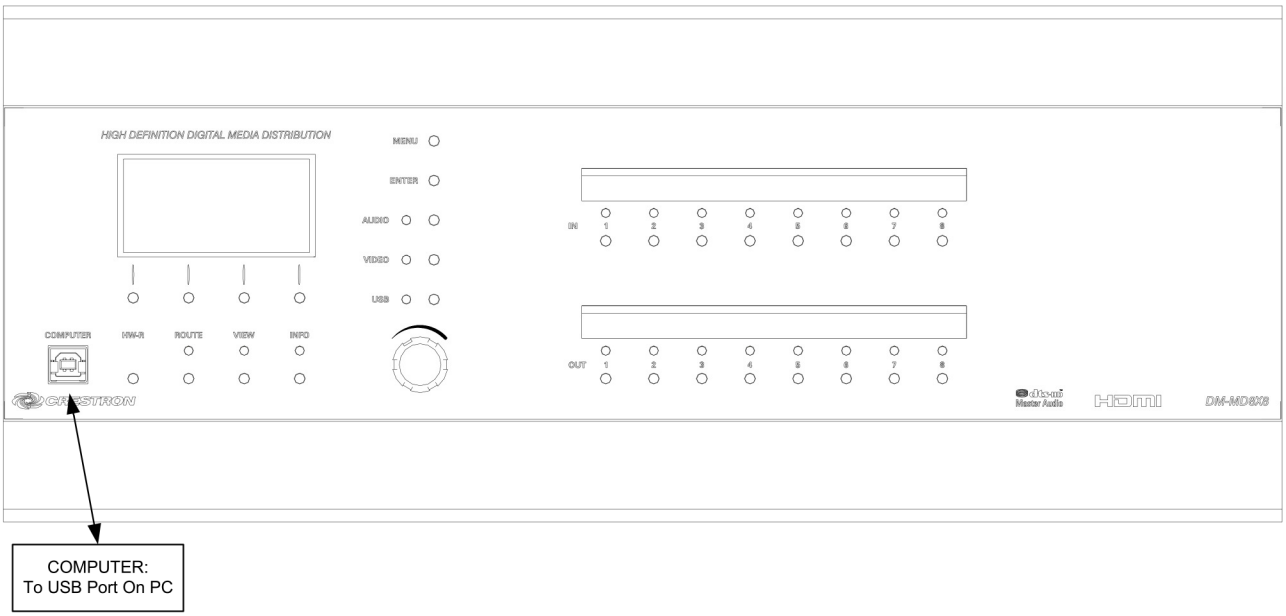
Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. For details on making connections to installed DM input cards and DM output cards, refer to "Appendix A: Hardware Hookup for DM Cards" on page 70.

Apply power after all connections have been made.

When making connections to the DM switcher, use Crestron power supplies for Crestron equipment.

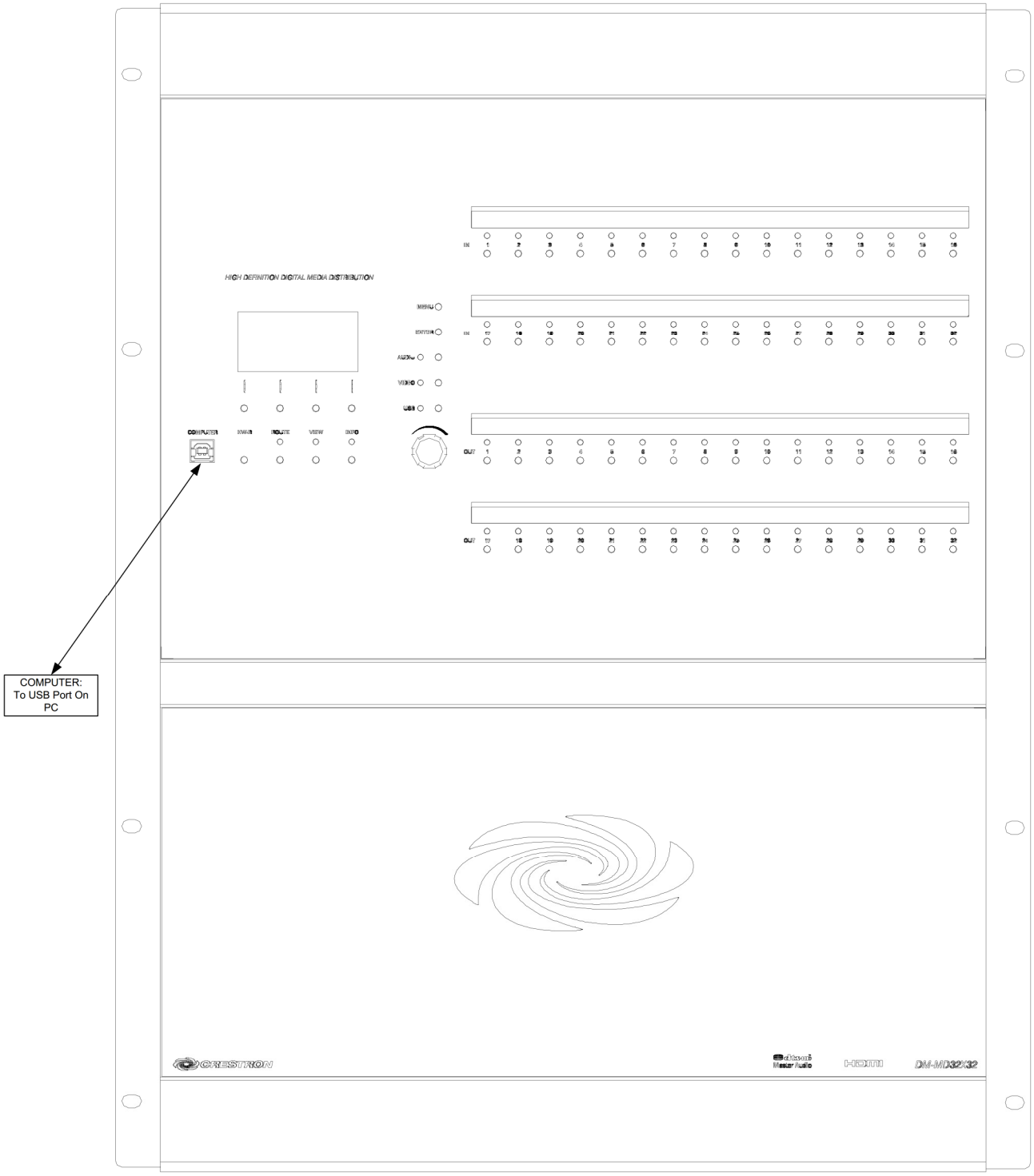
Hardware Connections for the DM-MD8X8, Front



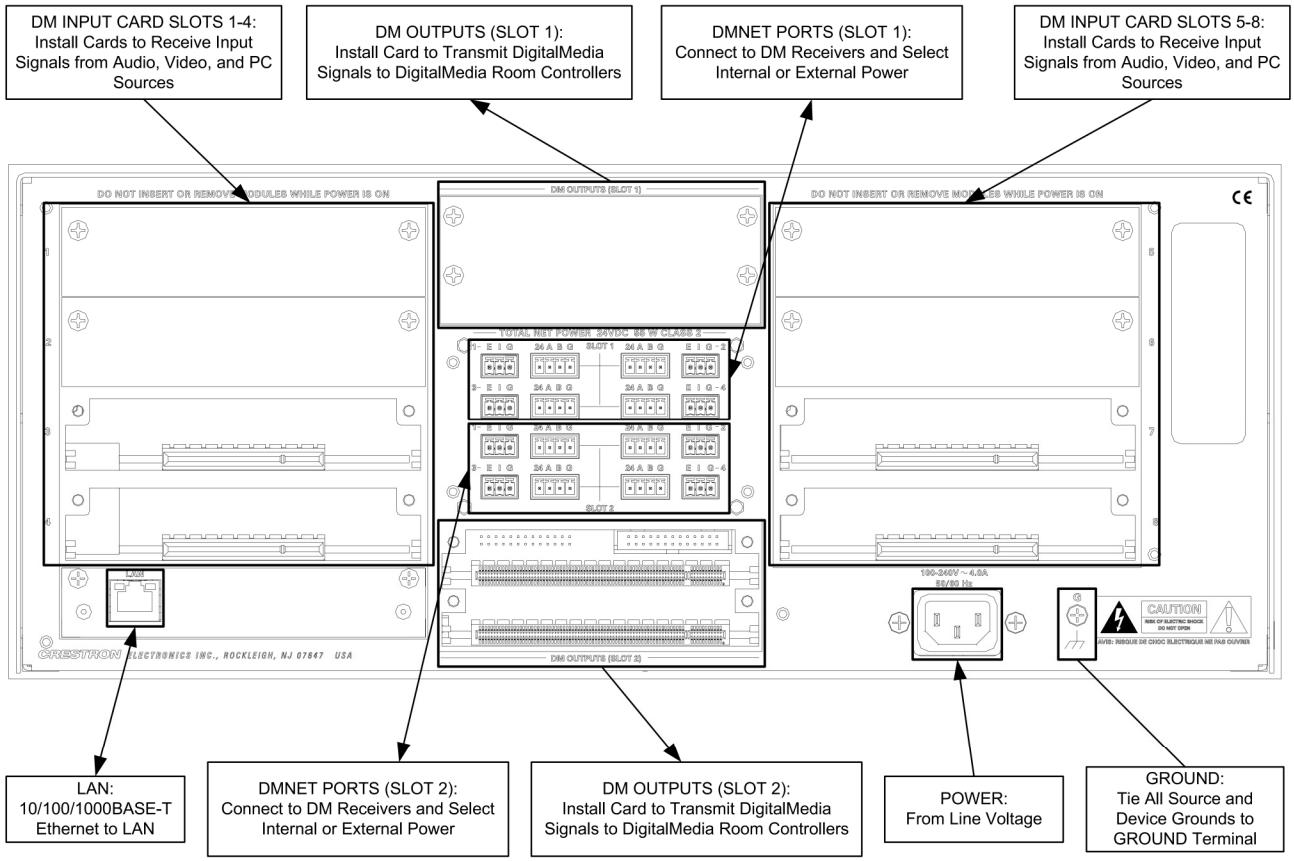
Hardware Connections for the DM-MD16X16, Front



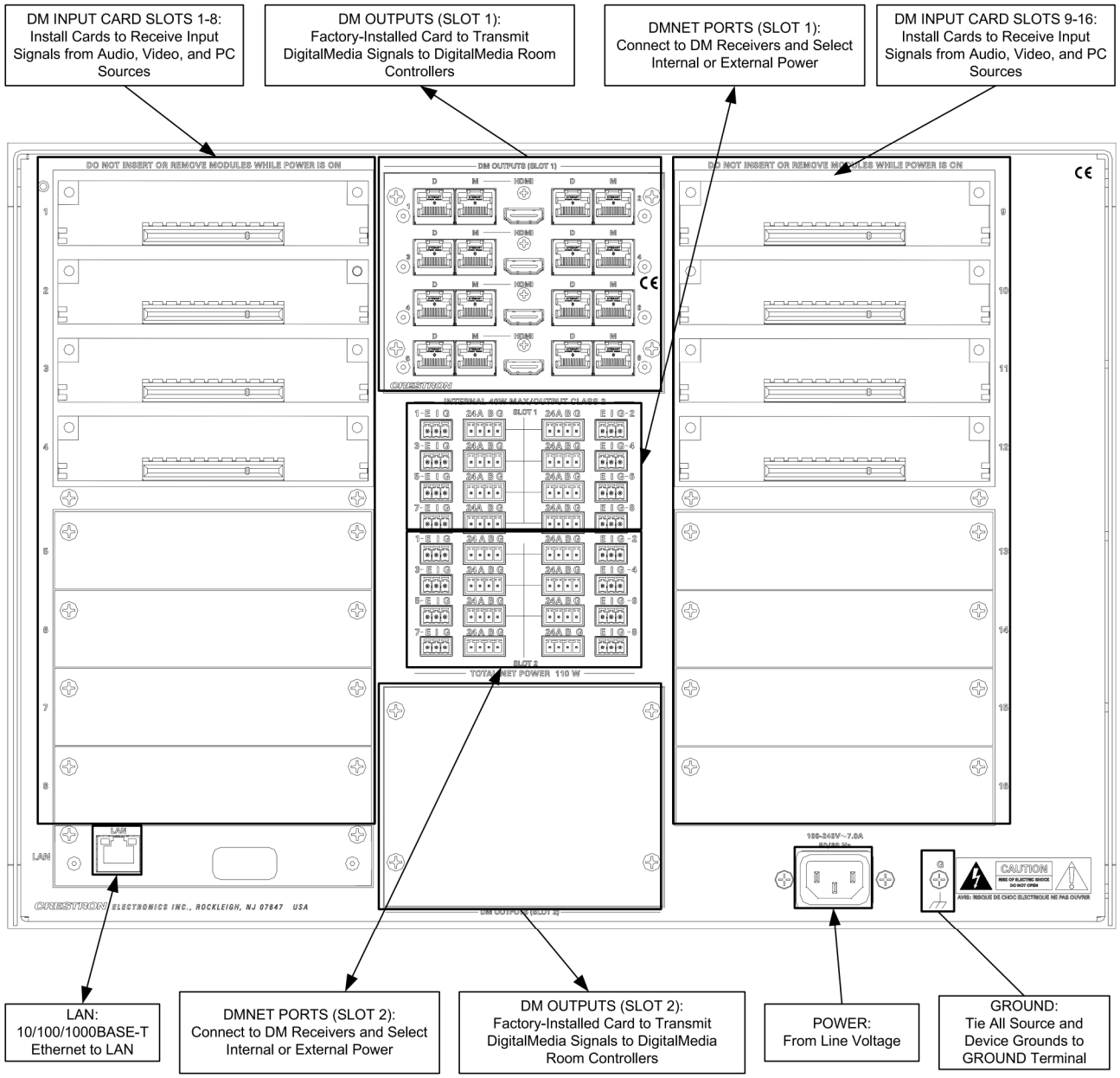
Hardware Connections for the DM-MD32X32, Front



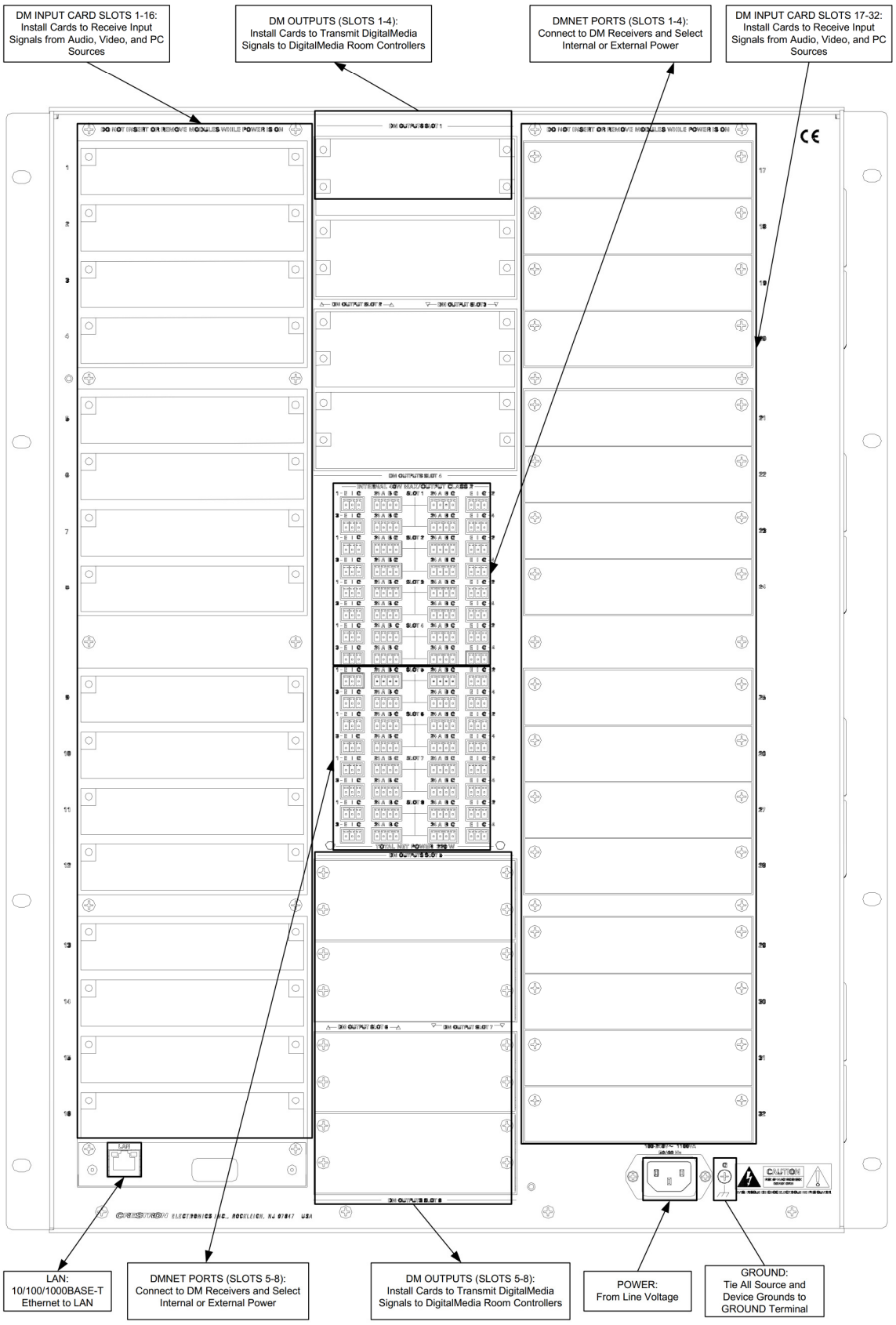
Hardware Connections for the DM-MD8X8, Rear



Hardware Connections for the DM-MD16X16 Rear



Hardware Connections for the DM-MD32X32Rear



NOTE: The actual configuration of the output cards are specified during ordering. For details on output connections, refer to "Output Connections" on page 82.

NOTE: Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

NOTE: For optimum performance, Crestron strongly recommends using DM cable or CresFiber, available from Crestron. Other high-quality fiber optic cable (such as InfiniCor300) may also be used with varying performance.

NOTE: When using fiber, it is recommended that you have at least two spare fibers for each location. DM fiber components use SC multimode connectors.

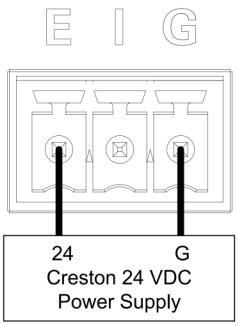
DMNet Power

Devices connected to each DMNet port can receive power from the DM switcher's internal power supply or from an external power supply such as the C2N-SPWS300.

The DMNet ports are preconfigured for operation using the DM switcher's internal power supply.

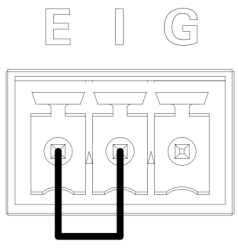
To power a DMNet port externally from a Cresnet 24 VDC power supply, connect the power supply to the **E** (External) and **G** (Ground) pins on the **EIG** connector as shown in the following diagram.

Providing DMNet Power Externally



To power a DMNet port using the DM switcher's internal power supply, install a jumper on the **EIG** connector from the **E** (External) pin to the **I** (Internal) pin as shown in the following diagram.

Providing DMNet Power Internally



Label the Buttons

Use Crestron Engraver software to print custom labels for the DM switcher's front panel buttons and LEDS. Crestron recommends printing on 100-pound paper. Paper with a weight less than 100 pounds will tend to crumple while sliding in, while paper with a weight of more than 100 pounds may not fit.

Configuration

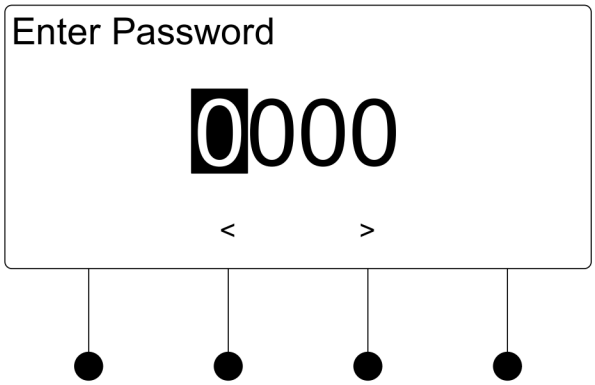
After making all hardware connections, the DM switcher must be configured for operation. The DM switcher can be configured from the DM switcher's front panel using Installer Tools or from a PC using Crestron Toolbox. This document contains instructions for using Installer Tools. For information on using Crestron Toolbox to configure the DM switcher, refer to the Crestron Toolbox help file.

Open Installer Tools

To open Installer Tools:

1. Press the **MENU** button.
2. Enter the password. The default password is **1234**.
   a. Use the selection knob and the soft buttons labeled ➤ and ➤ to enter the password.

      Enter Password

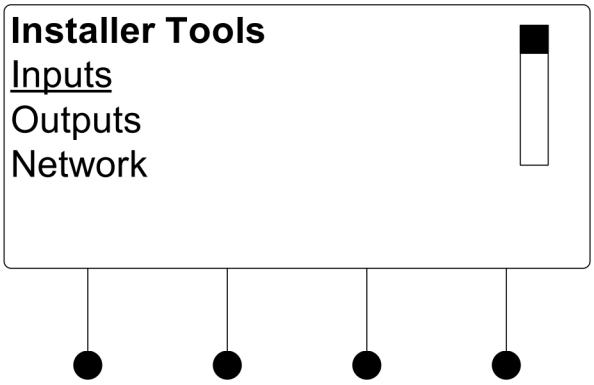
      NOTE: If the password contains digits greater than 0 and less than 9, the **IN** buttons (1 through 8) can be used to enter the password.

   b. Turn the selection knob until the correct digit is displayed.
   c. Press the ➤ button to move the cursor to the next digit and select the next digit in the password with the volume control. Press the ➤ button to move to the previous digit.
   d. Press the **ENTER** button once the password is displayed. If an incorrect password is entered, the display will show "Invalid Password". Press the soft button labeled **OK** to exit Installer Tools.

   The password can be changed or disabled. For information on changing or disabling the password, refer to "Password" on page 50 for more information.

The Installer Tools menu is displayed.

Installer Tools



Installer Tools is separated into six sections:

- **Inputs:** Configure and view the settings of input cards installed on the DM switcher.
- **Outputs:** Configure and view the settings of the output cards installed on the DM switcher.
- **Network:** Configure and view the Ethernet settings of the DM switcher.
- **Control:** Configures and views the settings of the DM switcher front panel.
- **Message Log:** Displays messages contained in the DM switcher message log.
- **Commission System:** Manages HDCP keys and optimizes EDID settings for devices connected to the DM switcher.

NOTE: Changes made to any setting will only be saved upon exiting Installer Tools. For instructions on exiting Installer Tools, refer below.

Exit Installer Tools

To exit Installer Tools, press the **MENU** button. Press the soft button labeled **Yes** to save any changes and exit Installer Tools or press the soft button labeled **No** to return to Installer Tools.

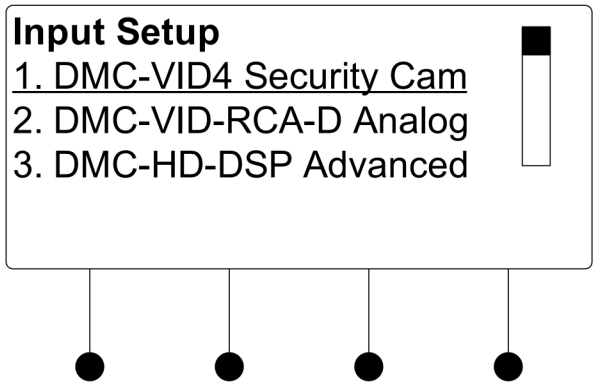
Inputs

The Inputs section of Installer Tools is used to configure and view information about input cards installed on the DM switcher. Any changes made to the Inputs section will be saved upon exiting Installer Tools. For more information on exiting Installer Tools, refer to "Exit Installer Tools" above.

To open the Inputs section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Inputs** and press the **ENTER** button. A list of installed input cards will be displayed.

Input Setup



3. To configure an input, turn the selection knob to highlight an input and press the **ENTER** button.

   For instructions on configuring a specific input card model, refer to "Appendix B: Input Card Configuration" on page 85.

4. To exit the Inputs section and return to Installer Tools, press the **MENU** button.

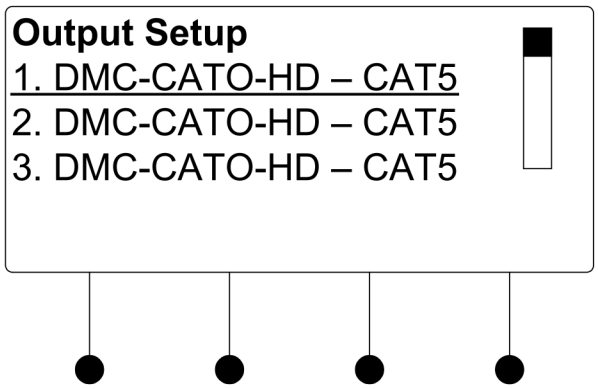
Outputs

The Outputs section of Installer Tools is used to view information about output cards installed on the DM switcher. Any changes made to the Outputs section will be saved upon exiting Installer Tools. For more information on exiting Installer Tools, refer to "Exit Installer Tools" on page 42.

To open the Outputs section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Outputs** and press the **ENTER** button. A list of outputs will be displayed.

   Output Setup



3. To configure an output, turn the selection knob to highlight an output and press the **ENTER** button.

   For instructions on configuring a specific output card, refer to "Appendix C: Output Configuration" on page 170.

4. To exit the Outputs section and return to Installer Tools, press the **MENU** button.

Network

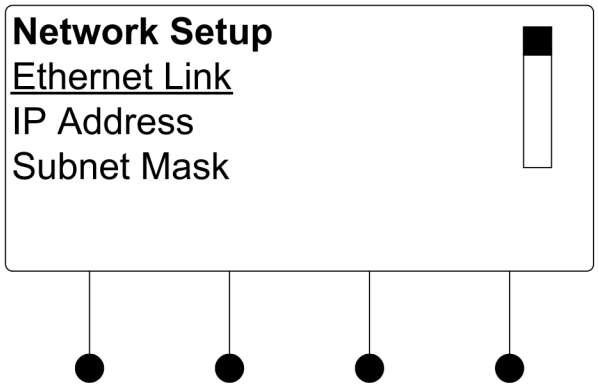
The Network section of Installer Tools is used to configure the DM switcher for use on an Ethernet network. Any changes made to the Network section will be saved upon exiting Installer Tools. For more information on exiting Installer Tools, refer to "Exit Installer Tools" on page 42.

Open Network Section

To open the Network section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Network** and press the **ENTER** button. A list of functions will be displayed.

Network Functions



NOTE: The image shown above will only be displayed if DHCP is disabled. If DHCP is enabled (default setting), the display will show the functions **DHCP**, **Hostname** and **Control System IP ID**. For information on enabling or disabling DHCP, refer to "DHCP" on page 46.

Ethernet Link

The front panel can display the status of the DM switcher's Ethernet connection ("Online" or "Offline"). To view the status of the Ethernet connection:

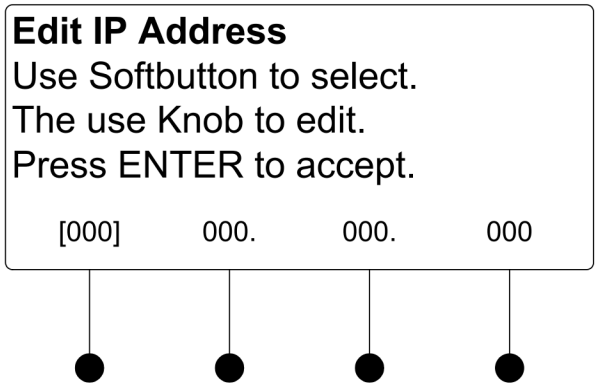
1. Open the Network section as described above.
2. Turn the selection knob to highlight **Ethernet Link** and press the **ENTER** button to display the status of the Ethernet connection.
3. Press the **MENU** button to return to the Network section.

IP Address

DM switchers use TCP/IP communications for communications between network devices, the Crestron control system and other devices. The IP address can be obtained from a DHCP server or manually set. For information on using DHCP to obtain an IP address, refer to "DHCP" on page 46. To view or set the IP address:

1. Open the Network section as described above.
2. Turn the selection knob to highlight **IP Address** and press the **ENTER** button to display the IP Address. If DHCP is disabled, controls for changing the IP address will be displayed as shown in the following diagram.

Set IP Address



3. Press the soft button under the octet to be adjusted.
4. Turn the selection knob to the desired number.
5. Repeat for each octet until the IP address is displayed.

NOTE: Since the DM switcher reserves a range of IP addresses during configuration, certain IP addresses cannot be used. Refer to "Ethernet Setup" on page 32 for more information.

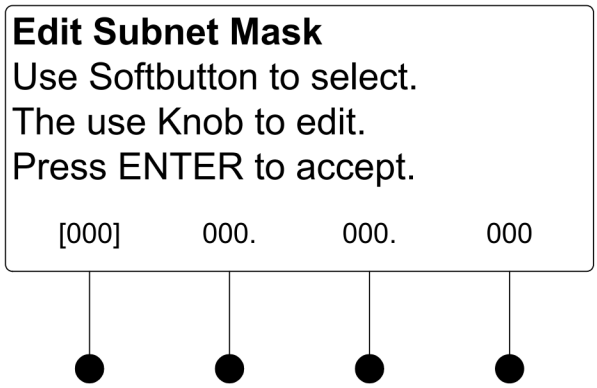
6. To save the IP address and return to the Network section, press the **ENTER** button. To cancel the operation and return to the Network section, press the **MENU** button.

Set the Subnet Mask

DM switchers can be configured to use a Subnet Mask for TCP/IP communications. To view or set the address of the Subnet Mask:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Subnet Mask** and press the **ENTER** button to display the address of the Subnet Mask. If DHCP is disabled, controls changing the address will be displayed as shown in the following diagram.

Set Subnet Mask



3. Press the soft button under the octet to be adjusted.
4. Turn the selection knob to the desired number.
5. Repeat for each octet until the Subnet Mask address is displayed.

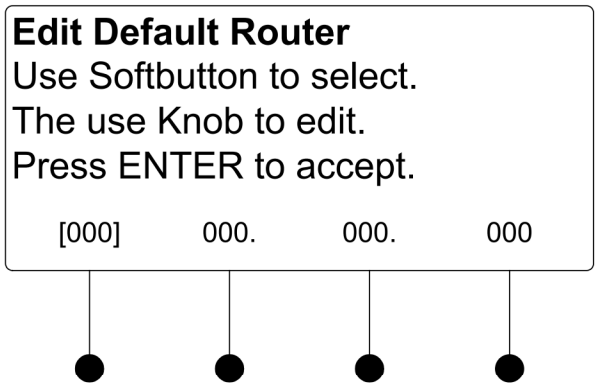
6. To save the Subnet Mask address and return to the Network section, press the **ENTER** button. To cancel the operation and return to the Network section, press the **MENU** button.

Set the Default Router

DM switchers can be configured to use a Default Router for TCP/IP communications. To view or set the address of the Default Router:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Default Router** and press the **ENTER** button to display the address of the Default Router. If DHCP is disabled, controls for changing the address will be displayed as shown in the following diagram.

Set Default Router



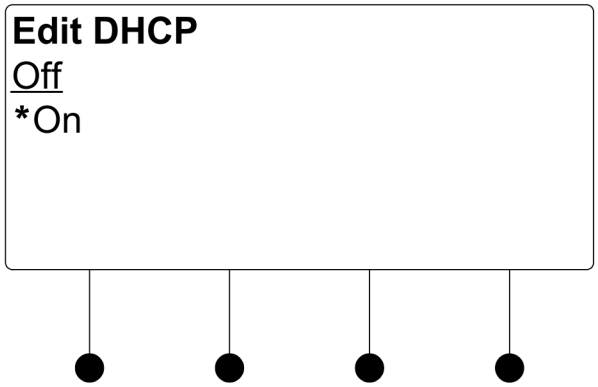
3. Press the soft button under the octet to be adjusted.
4. Turn the selection knob to the desired number.
5. Repeat for each octet until the Default Router address is displayed.
6. To save the Default Router address and return to the Network section, press the **ENTER** button. To cancel the operation and return to the Network section, press the **MENU** button.

DHCP

A DM switcher's IP address can be obtained from a DHCP server or manually set using Crestron Toolbox. The default setting for the DHCP mode is "On". For information on manually setting the IP address, refer to "IP Address" on page 44. To set the DHCP mode:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **DHCP** and press the **ENTER** button to display the DHCP controls.

DHCP Settings



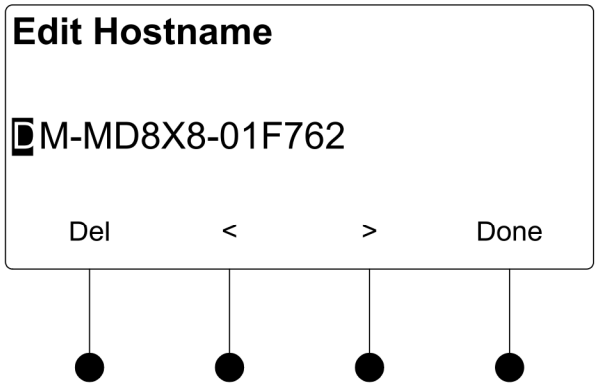
3. Turn the selection knob to highlight **On** or **Off**. The current setting is indicated with an asterisk (*).
4. To save the setting and return to the Network section, press the **ENTER** button. To cancel the operation and return to the Network section, press the **MENU** button.

Hostname

A DM switcher can be recognized by its hostname in a networked environment. To view and set the hostname:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Hostname** and press the **ENTER** button to display the Hostname controls.

Hostname



3. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Valid hostname characters are ASCII letters “a” through “z” (case-insensitive), the digits “0” through “9”, and the hyphen. Hostname cannot begin or end with a hyphen. No other symbols, punctuation characters or blank spaces are permitted.

   Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for the hostname is 64 characters.

4. After the new name has been entered, press **Done** to save the name and return to the Network section.

Control System Link

The front panel can display the status of a DM switcher's connection ("Online" or "Offline") to a control system (corresponding entries on the respective IP tables). To view the status of the Control System Link:

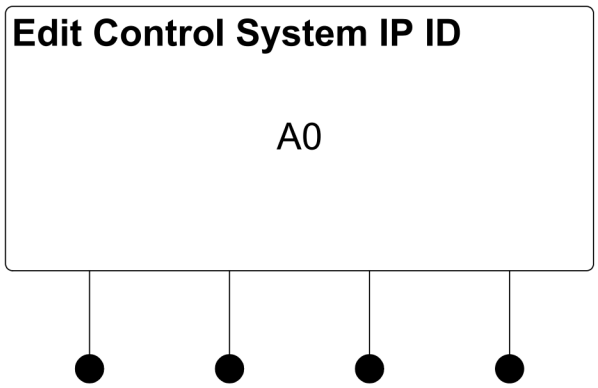
1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Control System Link** and press the **ENTER** button to display the status of the connection between the DM switcher and the control system.
3. Press the **MENU** button to return to the Network section.

Control System IP ID

To properly function with a control system, the IP ID of a DM switcher must be set to match the value specified in the SIMPL Windows program and the value on the control system's IP table. To view and set the IP ID:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Control System IP ID** and press the **ENTER** button to display the Control System IP ID controls. The current IP ID will be displayed.

Control System IP ID



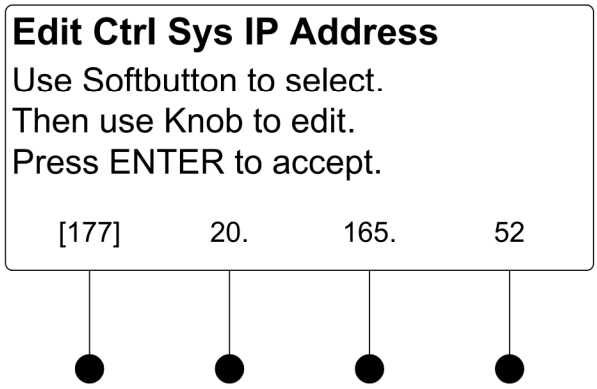
3. Turn the selection knob to display the desired IP ID and press the **ENTER** button to return to the Network section.

Control System IP Address

To properly function with a control system, the IP address of the control system that is controlling the DM switcher must be provided to the DM switcher. To view and set the Control System IP Address:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **Control System IP Address** and press the **ENTER** button to display the Control System IP Address controls. If previously entered, the IP address of the control system will be displayed.

Control System IP ID



3. Press the soft button under the octet to be adjusted.
4. Turn the selection knob to the desired number.
5. Repeat for each octet until the Control System IP Address is displayed.
6. To save the Control System IP Address and return to the Network section, press the **ENTER** button. To cancel the operation and return to the Network section, press the **MENU** button.

MAC Address

The DM switcher can display its MAC address. To view the MAC address:

1. Open the Network section as described on page 44.
2. Turn the selection knob to highlight **MAC Address** and press the **ENTER** button to display the MAC Address.
3. Press the **MENU** button to return to the Network section.

Control

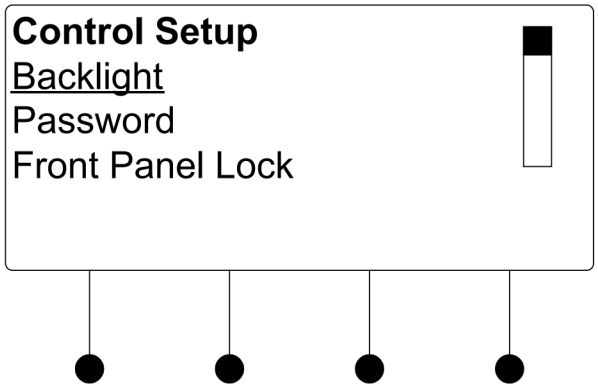
The Control section of Installer Tools is used to configure the front panel of the DM switcher. Any changes made to the Control section will be saved upon exiting Installer Tools. For more information on exiting Installer Tools, refer to "Exit Installer Tools" on page 42.

Open Control Section

To open the Control section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Control** and press the **ENTER** button. A list of functions will be displayed.

Control Functions

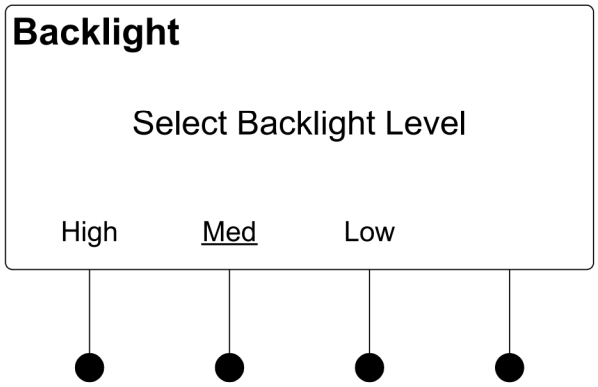


Backlight

The brightness of the display's backlight can be adjusted. To set the backlight level:

1. Open the Control section as described on page 49.
2. Turn the selection knob to highlight **Backlight** and press the **ENTER** button to display the Backlight controls. The current setting is underlined.

Backlight Controls



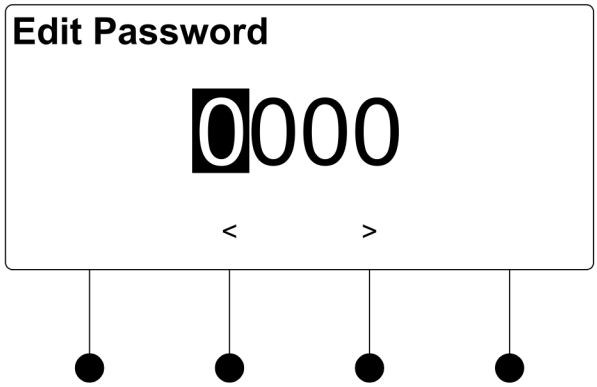
3. Press the soft button under the desired backlight brightness.
4. Press the **ENTER** button to save the backlight brightness and return to the Control section.

Password

The front panel password can be changed. To set a new password:

1. Open the Control section as described on page 49.
2. Turn the selection knob to highlight **Password** and press the **ENTER** button to display the Password controls. The current password is displayed.

Password Controls



3. Use the selection knob and the soft buttons labeled ◄ and ► to enter the password.
4. Turn the selection knob until the correct digit is displayed.
5. Press the ► button to move the cursor to the next digit and select the next digit in the password with the volume control. Press the ◄ button to move to the previous digit.
6. When the password is displayed, press the **ENTER** button to save it and return to the Control section.

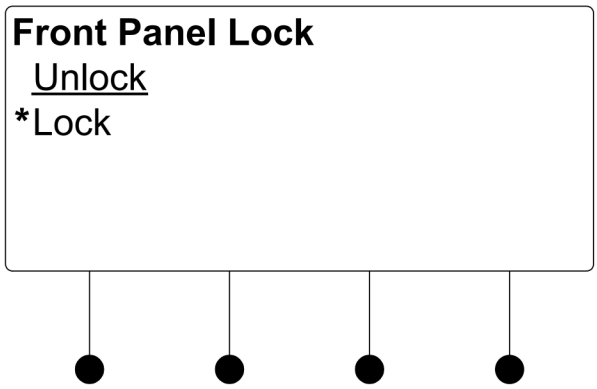
NOTE: Setting the password to **0000** will remove password protection from Installer Tools.

Front Panel Lock

The front panel controls of the DM switcher can be locked to prevent changes to signal routings. However, signal and routing information can still be displayed. To lock the front panel controls:

1. Open the Control section as described on page 49.
2. Turn the selection knob to highlight **Front Panel Lock** and press the **ENTER** button to display the Front Panel Lock controls. The current setting is displayed.

Front Panel Lock Controls



3. Turn the selection knob to highlight **Lock** or **Unlock**. The current setting is indicated with an asterisk (*).

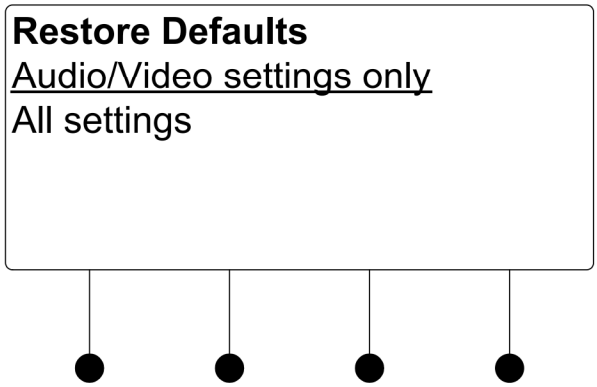
4. To save the setting and return to the Control section, press the **ENTER** button. To cancel the operation and return to the Control section, press the **MENU** button.

Restore Defaults

The DM switcher's default settings can be restored from the front panel. Restoration can be set to restore all defaults or just the audio and video settings. To restore default settings:

1. Open the Control section as described on page 49.
2. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button to display the Restore Defaults controls.

Restore Defaults Controls



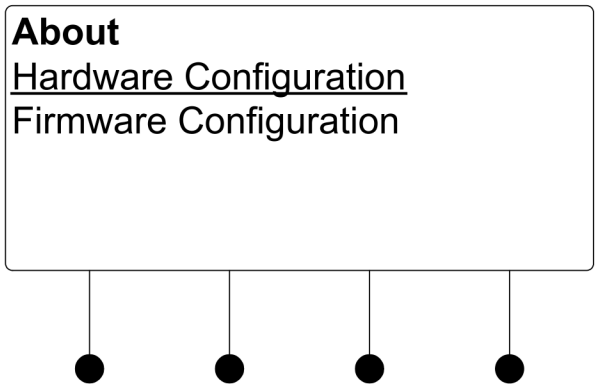
3. Turn the selection knob to highlight the defaults to be restored and press the **ENTER** button.
4. A confirmation message will be displayed. To continue restoring the default settings, press the soft button labeled **Yes**. To cancel restoring the default settings and return to the Restore Defaults control, press the soft button labeled **No**.
5. To cancel the operation and return to the Restore Defaults control, press the **MENU** button.

About

Information about the DM switcher's hardware and firmware can be viewed on the front panel. To view information about the DM switcher:

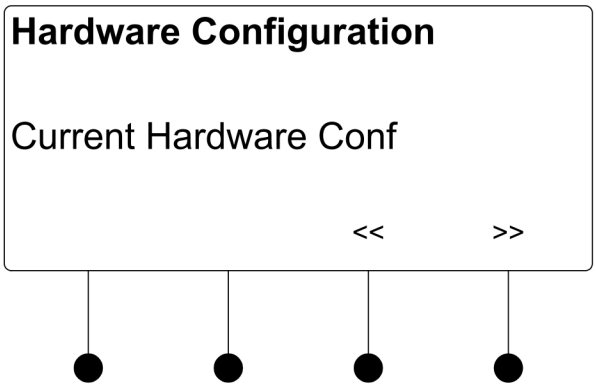
1. Open the Control section as described on page 49.
2. Turn the selection knob to highlight **About** and press the **ENTER** button to display the About controls.

About Controls



3. Turn the selection knob to highlight **Hardware Configuration** or **Firmware Configuration** and press the **ENTER** button.

   a. For Hardware Configuration:

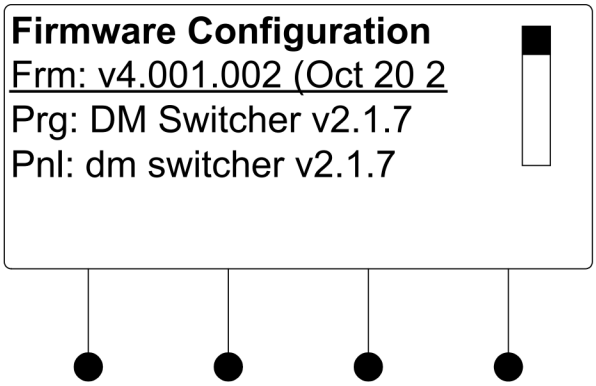


      i. Press the soft buttons labeled ◄◄ and ►► to display the data that does not fit on the display.

      ii. Turn the selection knob to view other data.

      iii. Press the **MENU** button to return to the About controls.

   b. For Firmware Configuration:



      i. Turn the selection knob to view other data.

      ii. Press the **MENU** button to return to the About controls.

4. Press the **MENU** button to return to the Control section.

Message Log

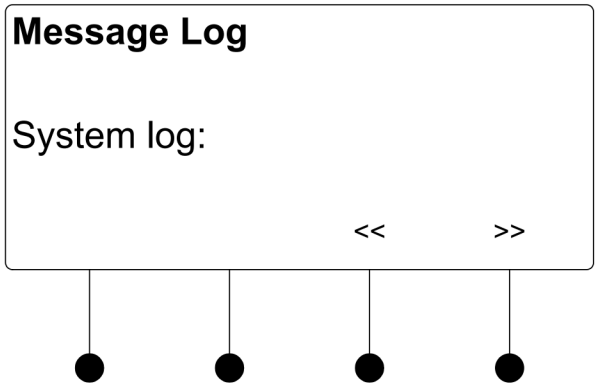
The Message Log section of Installer Tools contains system messages from the DM switcher.

Open Message Log

To open the Message Log section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Message Log** and press the **ENTER** button. The Message Log will be displayed.

Message Log



3. Press the soft buttons labeled ⮜⮜ and ⮞⮞ to display the data that does not fit on the display.
4. Turn the selection knob to scroll through the list of messages.
5. Press the **MENU** button to return to Installer Tools.

Commission System

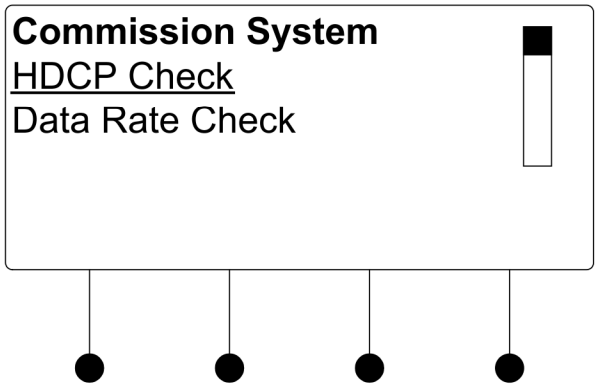
The Commission System section of Installer Tools is used to manage HDCP and EDID capabilities of sources and displays connected to the DM switcher.

Open Commission System

To open the Commission System section of Installer Tools:

1. Open Installer Tools as described on page 41.
2. Turn the selection knob to highlight **Commission System** and press the **ENTER** button. A list of functions will be displayed.

Commission System Functions

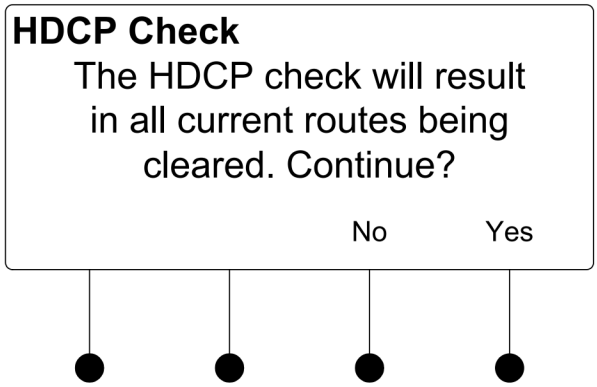


HDCP Check

The switcher can test HDMI sources and displays for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over HDMI using HDCP authentication. To run an HDCP check:

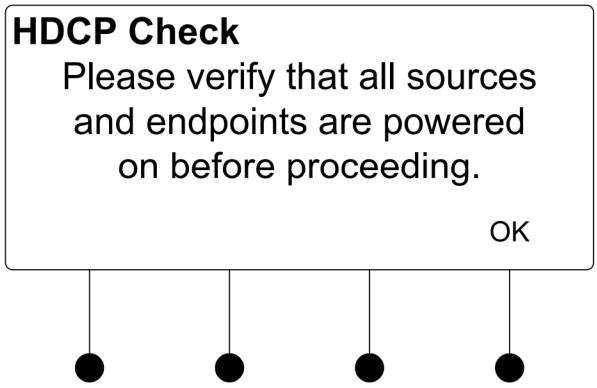
1. Open the Commission System section as described on page 54.
2. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



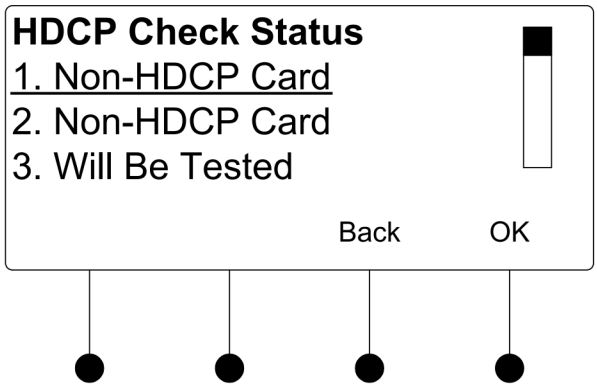
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



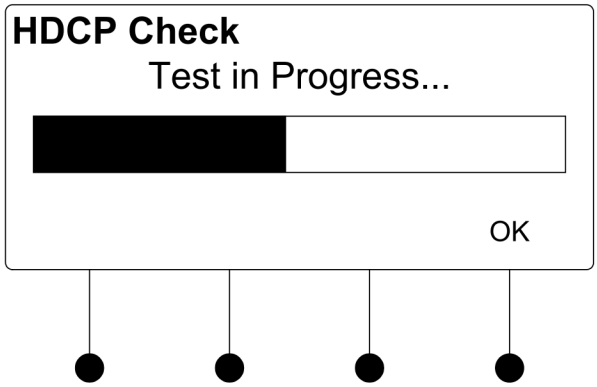
3. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to continue.
4. The display will show the input cards that will be tested. Press the soft button labeled **OK** to begin the HDCP check.

Analysis of Cards to Be Tested



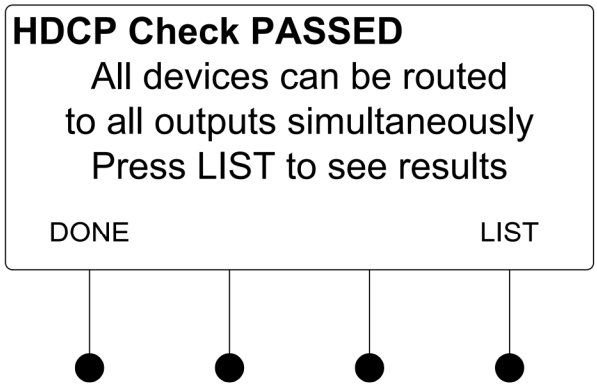
A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

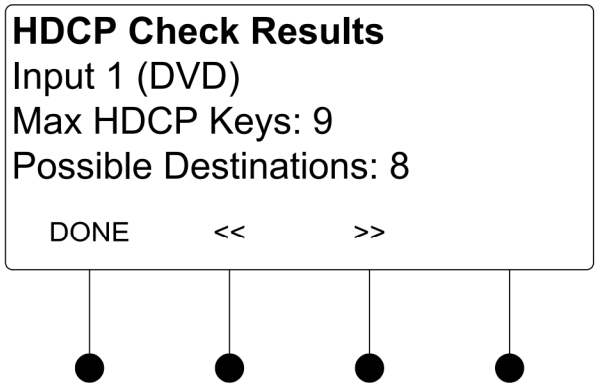
HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed. To view the results for each input source, press the soft button labeled **LIST**. Otherwise, press the soft button labeled **DONE** to return to the Commission System section.

- **View HDCP Check Results**

HDCP Check Results



a. Press the soft buttons labeled ◄◄ and ►► to scroll through the results for other inputs.

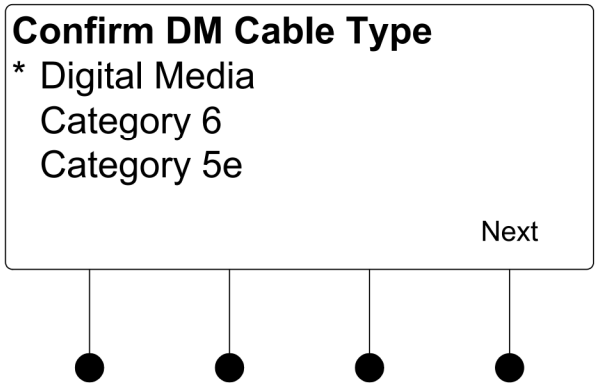
b. Press the soft button labeled **DONE** to return to the Commission System section.

Data Rate Check

The switcher can test the cable run on each output to determine the maximum data rate that can be delivered. To run a data rate check:

1. Open the Commission System section as described on page 54.
2. Turn the selection knob to highlight **Data Rate Check** and press the **ENTER** button. A screen showing available cable types will be displayed.

   Confirm DM Cable Type

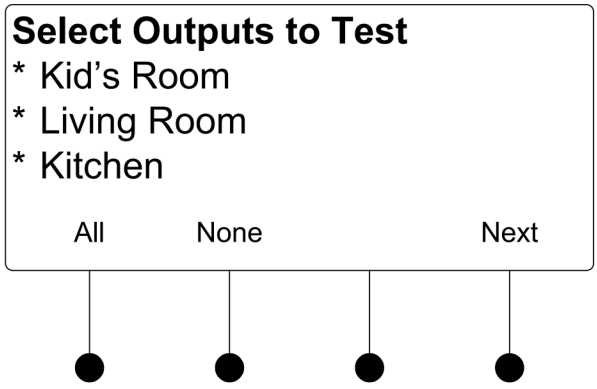
   

   Cable types that were chosen when output ports were configured (refer to "DM CAT Output Information" on page 171) and selected for testing are shown with an asterisk (*).
3. If necessary, turn the selection knob to highlight the cable type to be tested and press the **ENTER** button to confirm.

   NOTE: Selecting a different cable type will cause the other cable types to be deselected. The parameters of the newly selected cable type will be used for testing the outputs specified in the next step.

4. Press the soft button labeled **Next** to continue.

   Select Outputs to Test

5. Turn the selection knob to highlight an output for testing and press the **ENTER** button to mark it. Outputs to be tested are marked with an asterisk (*).

   To test all of the outputs, press the soft button labeled **All**.

To remove all of the outputs from the test list, press the soft button labeled **None**.

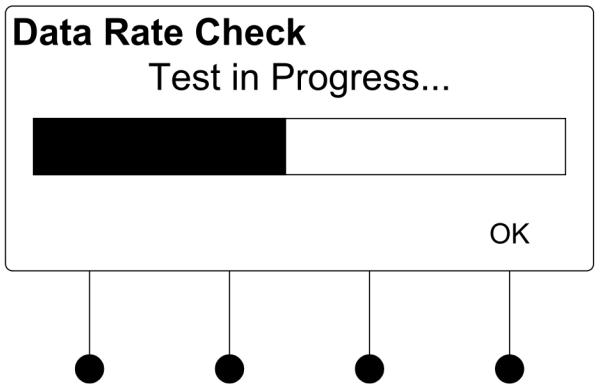
To remove an output from the test, highlight the output with the selection knob and press the **ENTER** button.

NOTE: If an output uses a cable type that is different than the cable type selected in the previous step, remove it from the list of outputs to be tested. Repeat the data rate check using the installed cable type.

After the outputs to be tested are selected, press the soft button labeled **Next**.

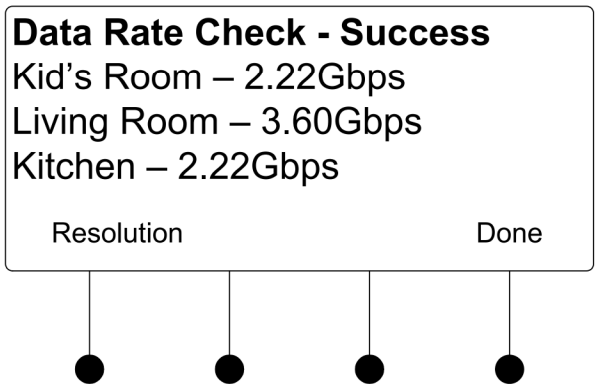
6. Verify that all sources and selected outputs are powered on and press the soft button labeled **OK** to begin the data rate check. A progress bar will be displayed to show the progress of the data rate check.

Data Rate Check in Progress



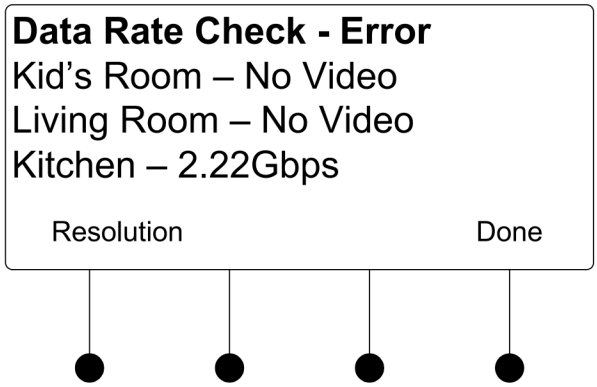
When the test is complete the results will be displayed.

Data Rate Check Results-Success



If an error was encountered during the data rate check, an error message will be displayed.

Data Rate Check Results-Error



7. Turn the selection knob to scroll through the test results. To view the results expressed in resolution, press the soft button labeled **Resolution**. To view the results in terms of data rate, press the soft button labeled **Data Rate**.
8. Press the soft button labeled **Done** to return to the Commission System section.

EDID

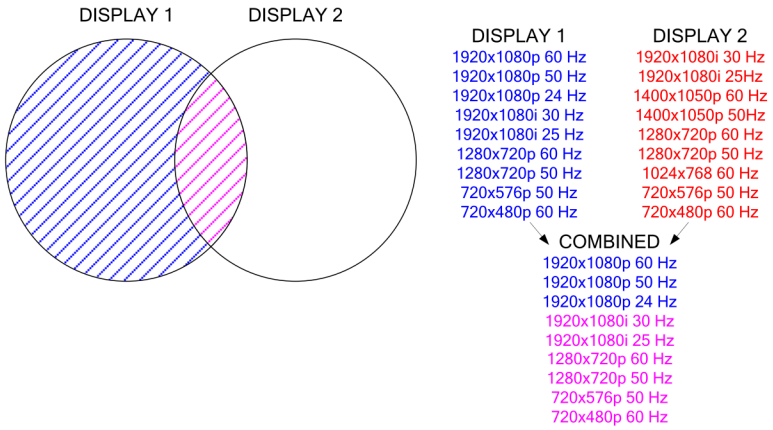
EDID is a piece of data that HDMI receivers use to indicate their capabilities to the HDMI sources.

The DM switcher routes DigitalMedia (DM) signals from any of the input cards to one or more of the output channels. According to the HDMI standard, HDMI sources are expected to only deliver audio and video formats that are supported by the destination. To do this, the DM switcher reads the EDID information from devices connected to the outputs and determines the video resolutions and audio format to send to the input cards to program EDID on the input card receivers.

Using Crestron Toolbox, the DM switcher can be configured to use several different algorithms to determine what EDID information is sent to each source:

- **Copy Display**

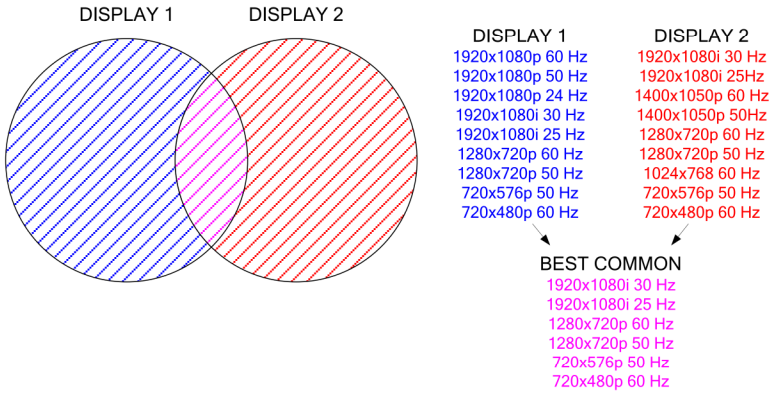
Copy Display



The EDID information from a DigitalMedia or HDMI output is copied to the input verbatim. This means that all resolution, audio and vendor information will be from that display.

- **Best Common**

  Best Common



  Only resolutions that are available in all of the displays that are connected will be transmitted to the source. This ensures that any video signal coming in from the source will be able to be shown on all displays. If certain resolutions are only available on a subset of the displays, they will be omitted.

- **Manual**

  Use Crestron Toolbox to select which resolutions are transmitted to the source.

"Best Common" is initially set to use information from all displays, but can be modified to use information from just a subset of displays by deselecting them in Crestron Toolbox.

By managing which displays are used for the EDID calculations, you can maximize the resolution of each source while ensuring that the source can be shown on each display where it is needed.

The EDID calculations also affect audio formats. Each HDMI receiver sends its supported audio formats to the source in the following format:

<Format> <Maximum # of channels> <sampling freq supported>

For example, a 5.1channel audio processor may have the following audio EDID information:

- Linear PCM, 2ch, 32/44.1/48kHz
- AC3, 6ch, 32/44.1/48kHz
- DTS, 6ch, 32/44.1/48kHz

Under "Best Common", the same rules apply to audio as video.

For more information, refer to the Crestron Toolbox help file.

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

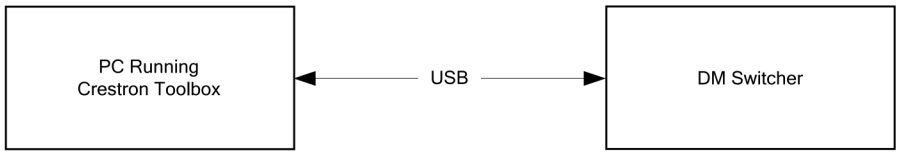
Establishing Communication

Use Crestron Toolbox for communicating with the DM switcher; refer to the Crestron Toolbox help file for details. There are two methods of communication.

USB

NOTE: Required for initial setup of Ethernet parameters.

USB Communication



The **COMPUTER** port on the DM switcher connects to the USB port on the PC via the included Type A to Type B USB cable.

1. Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the DM switcher by entering "DM-MD8X8", "DM-MD16X16", or "DM-MD32X32" in the *Model* textbox, the unit is serial number in the *Serial* textbox or the unit is hostname in the *Hostname* textbox. The hostname can be found in the "System Info" window in the section marked *Ethernet* however, communications must be established in order to see this information in the "System Info" window.
2. Display the DM switcher's "System Info" window (click the icon); communications are confirmed when the device information is displayed.

TCP/IP

NOTE: Required for operation with a Crestron control system.

Ethernet Communication



1. Establish USB communication between the DM switcher and PC.
2. Enter the IP address, IP mask and default router of the DM switcher via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.

NOTE: Use the Device Discovery Tool in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.

3. Confirm Ethernet connections between the DM switcher and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.
4. Use the Address Book in Crestron Toolbox to create an entry for the DM-MD8X8, DM-MD16X16, or DM-MD32X32 with the DM switcher's TCP/IP communication parameters.
5. Display the "System Info" window (click the  icon) and select the DM switcher's entry.

Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, SIMPL Windows help file, or the Crestron Toolbox help file.

Crestron Studio or SIMPL Windows

If a Crestron Studio (or SIMPL Windows) program is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

Firmware

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

Upgrade the DM switcher's firmware via Crestron Toolbox.

1. Establish communication with the DM switcher and display the "System Info" window.
2. Select **Functions | Firmware…** to upgrade the DM switcher's firmware.

Program Checks

Actions that can be performed on a DM switcher vary depending on whether it is connected via USB or Ethernet.

USB Connections

For USB connections, using Crestron Toolbox, display the "System Info" window (click the  icon) and select the **Functions** menu to display actions that can be performed on the DM switcher.

Ethernet Connections

For Ethernet connections, using Crestron Toolbox, display the "System Info" window (click the  icon) and select the **Functions** menu to display actions that can be performed on the DM switcher.

Be sure to use Crestron Toolbox to create the DM switcher's IP table.

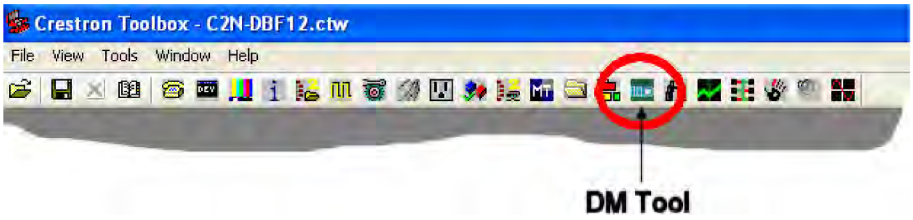
1. Select **Functions** | **IP Table Setup**.
2. Add, modify or delete entries in the IP table. The DM switcher can have only one IP table entry.
3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the DM switcher. The entry should list the DM switcher's IP ID (specified on the DM switcher's IP table) and the internal gateway IP address 127.0.0.1.

DM Tool

In the Crestron Toolbox Address Book, select the DM switcher. Then use the DM Tool to configure EDID, HDCP or to troubleshoot AV on the DM switcher. Refer to the help file for additional information.

DM Tool



Operation

Operating Modes

A DM switcher can operate in the *Route* mode, the *View* mode, or the *Info* mode.

The DM switcher can also be controlled from Crestron Toolbox. For more information, refer to the Crestron Toolbox help file.

Route Mode

The *Route* mode uses the front panel controls to route input signals to outputs. Press the **ROUTE** button to activate the *Route* mode.

- When in the *Route* mode, pressing an input button will show the outputs that are connected to the input.
- Audio, video, and USB portions of an input can be routed independently. For more information, refer to "*Route* Mode" below.

View Mode

The *View* mode uses the front panel controls to view routing information for inputs and outputs.

Routing information for audio, video, and USB portions of an input can be viewed independently. For more information, refer to "*View* Mode" on page 65.

Info Mode

The *Info* mode uses the front panel controls to view data about signals that are passed through the inputs and outputs of the DM switcher. For more information, refer to "*Info* Mode" on page 66.

Route Mode

Signals coming in to the DM switcher can be switched to single or multiple outputs. Additionally, the audio, video, and USB portions of an input signal can be switched simultaneously or separately.

To enter the *Route* mode, press the **ROUTE** button. The **ROUTE** LED will light.

Switch Audio, Video, and USB Simultaneously

1. Press the **AUDIO**, **VIDEO**, and **USB** buttons to select the audio, video, and USB portions for switching. The respective LEDS will light.

   NOTE: If an output has different audio, video, or USB portions, a new route will cause the audio and USB portions on the output to switch to the newly selected video input.

2. Press the button corresponding to the input to be switched. The LED of the selected input will light.

   To turn off an output, deselect the input. The display will show "IN None" and the input LEDs will be extinguished.

3. Press the button(s) corresponding to the output(s) to be switched. The LED(s) of the selected output(s) will flash.

   If a button press will result in changing the current routing, the LEDs of the newly selected outputs will flash and the display will state "Press **ENTER** to Route".

4. Press **ENTER** to make the connection(s) shown on the front panel.

Changes made on the front panel are made only after the **ENTER** button is pressed. If you do not press **ENTER**, the connection is not made.

Only one input can be routed at a time. Pressing a different input button will lose any routing plans that were not confirmed by pressing the **ENTER** button.

NOTE: If **ENTER** has not been pressed, you can go back and "undo" changes made to the current routing.

5. Repeat for any other routes to be changed.

Switch Audio, Video & USB Separately

1. Press the **AUDIO**, **VIDEO**, or **USB** buttons to select the audio, video, or USB portions to be switched. The respective LEDS will light.

NOTE: When audio is switched independently, the signal is 2-channel audio.

2. Press the button corresponding to the input to be switched. The LED of the selected input will light.

   To turn off an output, deselect the input. The display will show "IN None" and the input LEDs will be extinguished.

3. Press the button(s) corresponding to the output(s) to be switched. The LED(s) of the selected output(s) will light.

   If a button press will result in changing the current routing, the LEDs of the newly selected outputs will flash and the display will state "Press **ENTER** to Route".

4. Press **ENTER** to make the connection(s) shown on the front panel.

   Changes made on the front panel are made only after the **ENTER** button is pressed. If you do not press **ENTER**, the connection is not made.

   Only one input can be routed at a time. Pressing a different input button will lose any routing plans that were not confirmed by pressing the **ENTER** button.

NOTE: If **ENTER** has not been pressed, you can go back and "undo" changes made to the current routing.

5. Repeat for any other routes to be changed.

View Mode

Use the *View* Mode to view routing information for inputs and outputs. To select the *View* mode, press the **VIEW** button.

View Source Routing

1. Press an input signal button to display all of the outputs that are connected to it.
2. Press **AUDIO**, **VIDEO**, or **USB** to see where the audio, video, or USB portions of an input signal are routed.

View Output Routing

1. Press an output signal button to display the input signal that is connected. All outputs that are receiving the same input signal are also displayed.
2. Press **AUDIO**, **VIDEO**, or **USB** to see the input that is providing the audio, video, or USB portions of the output signal.

Info Mode

Use the *Info* mode to view information about the signal on an input or output. Depending on the input selected, available information can include the name of the input, the detected resolution, the detected video type, the detected frame rate, the detected aspect ratio, the HDCP state, and the deep color setting. To select the *Info* mode, press the **INFO** button. If an input port is receiving a signal from its connected source, the accompanying LED will illuminate.

View Input Information

1. Press an input button to display information about the input signal. The accompanying LED will flash.

   NOTE: If the DMC-VID4 is selected, each composite video input can be selected for viewing by pressing the soft button of the desired input.

2. Turn the selection knob to display available information.
3. Press another input button to view its information.

View Output Information

1. Press an output button to display information about the output signal. The accompanying LED will flash.

   NOTE: If a DM output with HDMI is selected, information for the DM port and the HDMI port can be selected for viewing by pressing the soft button of the desired output.

2. Turn the selection knob to display available information.
3. Press another output button to view its information.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

DM Switcher Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Incorrect Audio or Video displayed.	Audio is routed separately from video.	Reroute audio together with video.
Distorted audio or video.	Source does not match capabilities of destination.	Use Crestron Toolbox to manage EDID capabilities of devices in the system.
No video. Bandwidth check passes and **VIDEO** LED on DM-RMC-100 is lit.	"D" cable is incorrectly terminated.	Terminate cable as described in "DigitalMedia Cable" on page 28.
No video displayed, but audio is heard.	Possible HDCP error.	Check control system error log, or DM switch for HDCP errors.
HDCP Check Failure Message during commissioning.	Violation of HDCP rules (number of display devices exceeds the source's number of allowed displays).	Disconnect displays that may not be used with source during run time and repeat HDCP check.
		Replace source device with a device that allows more displays to be connected.
	Violation of HDCP rules (device depth exceeds allowable depth specification).	Reconfigure signal path to remove midpoint devices that increase overall device depth.
Bandwidth Test Failure Message during commissioning.	Poor cable connection to a DM-RMC-100 (on the "D" line).	Verify that cable is not crimped or damaged.
DM-DR Repeater or DM-RMC-100 Room Controller do not report to DM switcher.	Poor cable connection to the DM-DR or DM-RMC-100 (on the "D" line).	Verify that cable is not crimped or damaged.
No audio output from RCA connectors on DMC-HD	Source is not providing a 2-channel audio signal.	Replace DMC-HD card with DMC-HD-DSP to provide 2-channel stereo downmix from audio source.
Loss of functionality due to electrostatic discharge.	Improper grounding.	Check that all ground connections have been made properly.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. The **EIG** connector on the DM switcher is used to bring in external power. Additional power is rarely required as switchers provide enough power for their maximum configuration of room controllers and repeaters. Please use the DMNet Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

CresFiber fiber optic cables provide for longer distances between the DigitalMedia switcher and a DigitalMedia Room Controller. For more information, refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789).

Refer to the following tables for maximum cable lengths using various cables.

Maximum DM Cable Length

Cable Type:	**DM-CBL DigitalMedia Cable**	
Resolution:	Maximum length without, between, before or after repeaters	Maximum total length using up to 2 repeaters
720p, 1080i, 1080p24	200 ft (60 m)	450 ft (137 m)
1024x768 @ 75 Hz	200 ft (60 m)	450 ft (137 m)
1080p60	150 ft (45 m)	450 ft (137 m)
1280x1024 @ 75 Hz	150 ft (45 m)	450 ft (137 m)
1920x1200 @ 60 Hz	150 ft (45 m)	450 ft (137 m)
1600x1200 @ 60 Hz	125 ft (38 m)	375 ft (114 m)
1080p60 Deep Color	100 ft (30 m)	300 ft (91 m)

NOTE: All Crestron certified DMNet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the A conductor and the B conductor.

Maximum CresFiber Cable Length

RESOLUTION	CRESFIBER
720p, 1080i, 1080p24	1000’ (~300 m)
1024 x 768 @ 75 Hz	
1280 x 1024 @ 75 Hz	
1600 x 1200 @ 60 Hz	
1920 x 1200 @ 60 Hz	
1080p60	
1080p60 Deep Color	

Other fiber optic cable can be used as well.

NOTE: 1080p60 is the most common resolution used in residential installations.

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
Crestron DigitalMedia Design Guide
Crestron e-Control Reference Guide

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of DM switchers, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

Appendix A: Hardware Hookup for DM Cards

This section contains information for connecting sources and other devices to input and output cards installed on a DM switcher. For installation instructions, refer to the latest version of the card's Installation Guide.

Input Cards

This section contains information on the following input cards:

- DMC-CAT DM CAT Input Card for DM Switchers below.
- DMC-CAT-DSP DM CAT Input Card with Down-mixing for DM Switchers on page 71.
- DMC-DVI DVI/RGB Input Card for DM Switchers on page 72.
- DMC-F DM Fiber Input Card for DM Switchers on page 74.
- DMC-F-DSP DM Fiber Input Card with Down-mixing for DM Switchers on page 75.
- DMC-HD HDMI Input Card for DM Switchers on page 76.
- DMC-HD-DSP HDMI Input Card with DSP for DM Switchers on page 77.
- DMC-SDI SDI Input Card for DM Switchers on page 78.
- DMC-VID4 Security Camera Input Card for DM Switchers on page 79.
- DMC-VID-BNC BNC Analog Video Input Card for DM Switchers on page 79.
- DMC-VID-RCA-A RCA Analog Video Input Card with Analog Audio for DM Switchers on page 81.
- DMC-VID-RCA-D RCA Analog Video Input Card with Digital Audio for DM Switchers on page 81.

Connections for output cards can be found on page 82.

Refer to the following diagrams when connecting sources to DM input cards.

DMC-CAT DM CAT Input Card for DM Switchers

The DMC-CAT is an input card for a DigitalMedia switcher, providing one CAT-type DM input. The DM CAT input enables the connection of a DM transmitter or the output of another DM switcher, with a potential cable length up to 450 feet (137 m) using DigitalMedia cable.

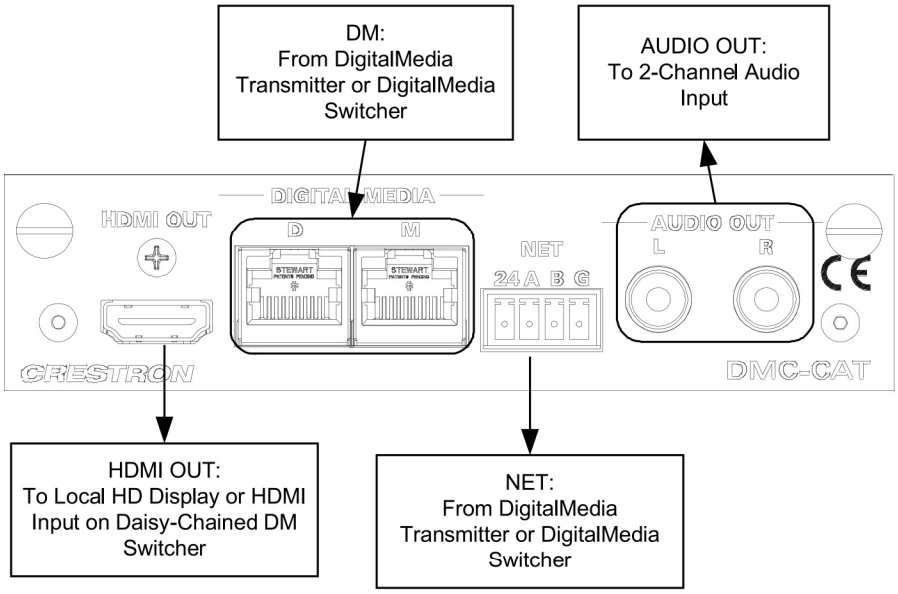
NOTE: For optimum performance, Crestron recommends Crestron DigitalMedia cable.

Additional connections on the card include both HDMI and stereo analog audio loopback outputs. The HDMI output passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output, which features programmable volume control, breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

NOTE: For applications requiring the simultaneous distribution of surround sound and 2-channel audio signals, use model DMC-CAT-DSP.

The DMC-CAT may also be used with the DMCI DigitalMedia Card Interface to provide a DM CAT receiver solution that is perfect for installation in an equipment rack or AV cart, or as a portable display interface. As a DM receiver, and as a DM switcher input card, the DMC-CAT enables EDID signal detection and format management, CEC device control, and audio breakaway.

Hardware Hookup for DMC-CAT DM CAT Input Card for DM Switchers



DMC-CAT-DSP DM CAT Input Card with Down-mixing for DM Switchers

The DMC-CAT-DSP is an input card for a DigitalMedia switcher, providing one CAT-type DM input. The DM CAT input enables the connection of a DM transmitter or the output of another DM switcher, with a potential cable length up to 450 feet (137 m) using DigitalMedia cable.

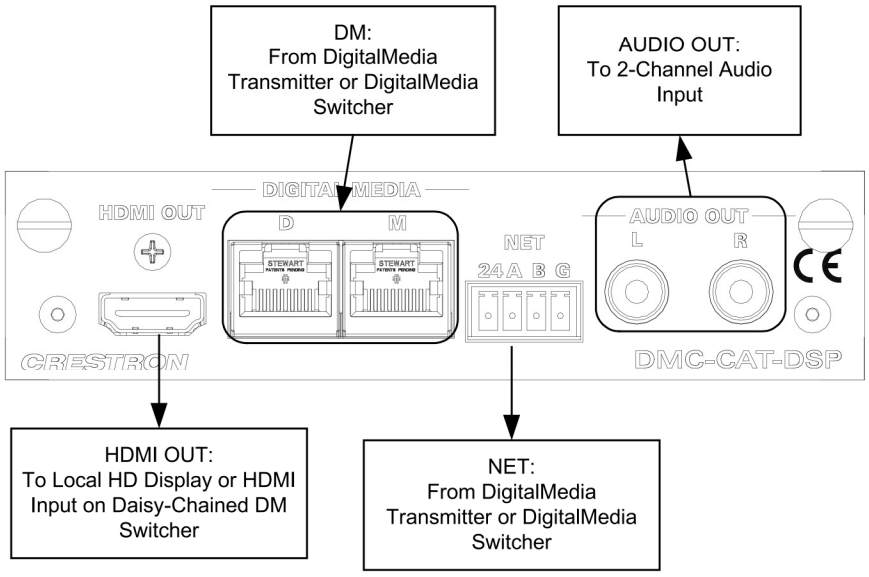
NOTE: For optimum performance, Crestron recommends Crestron DigitalMedia cable.

The DMC-CAT-DSP provides all of the features of the DMC-CAT with the addition of internal DSP processing to enable the simultaneous distribution of uncompressed 7.1 channel HD surround sound and 2-channel audio. The DMC-CAT-DSP is recommended for use with Blu-ray Disc players and other HD sources that output multi-channel surround sound audio via HDMI, allowing the multi-channel signal to reach the surround sound system without requiring any decoding, while also providing a 2-channel down-mix to feed a stereo zone or audio distribution system.

Additional connections on the card include both HDMI and stereo analog audio loop back outputs. The HDMI output simply passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output, which features programmable volume control, breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

The DMC-CAT-DSP may also be used with the DMCI DigitalMedia Card Interface to provide a DM CAT receiver solution that is perfect for installation in an equipment rack or AV cart, or as a portable display interface. As a DM receiver, and as a DM switcher input card, the DMC-CAT-DSP enables EDID signal detection and format management, CEC device control, and audio breakaway.

Hardware Hookup for DMC-CAT-DSP DM CAT Input Card with Down-mixing for DM Switchers



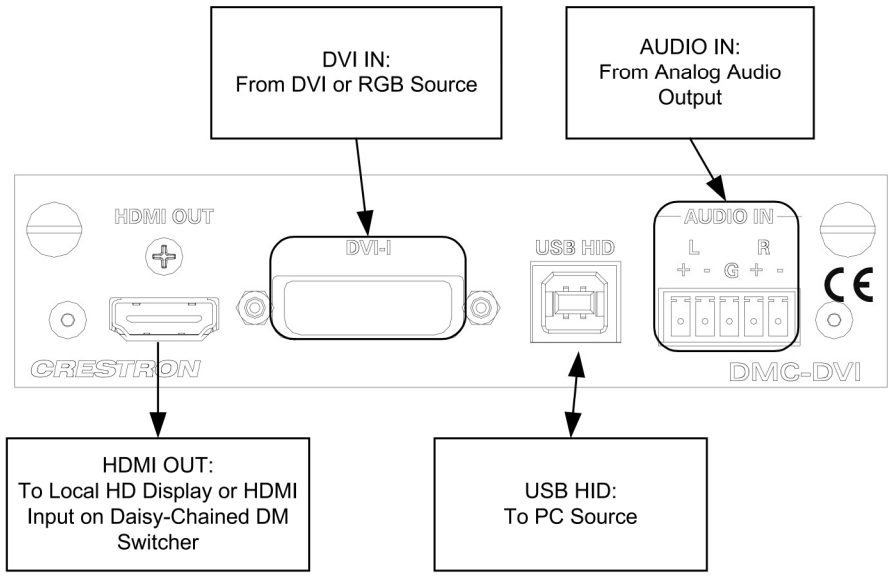
DMC-DVI DVI/RGB Input Card for DM Switchers

The DMC-DVI is an input card for a DigitalMedia switcher, providing one DVI digital video input or analog RGB/Component input, with balanced stereo analog audio. The DMC-DVI handles computer resolutions up to WUXGA 1920 x 1200, as well as HDTV up to 1080p60. Professional balanced/unbalanced audio inputs are included to accept a stereo line level audio signal.

NOTE: DVI-I connection requires an appropriate adapter to accommodate an RGB or YP_bP_r signal. (1) RGB-to-DVI-I adapter is included. YP_bP_r adapter not included.

Additional connections on the card include an HDMI loop back output, and a USB HID port. The HDMI output passes the audio and video input signals through digitally to feed a local device, or to feed a second DM switcher for output expansion purposes. The USB HID host port allows a remote mouse/keyboard connected at the display location, to control a centralized source device (i.e. computer, media server, etc.) at the equipment rack.

Hardware Hookup for DMC- DVI Input Card for DM Switchers

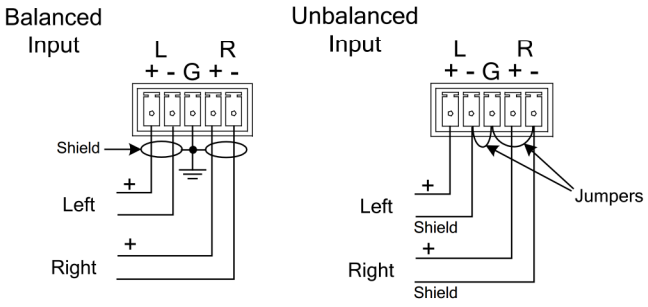


Balanced/unbalanced audio inputs are provided, utilizing five-pin terminal block connectors. For connection details, refer to the following table and diagrams.

Audio Connections

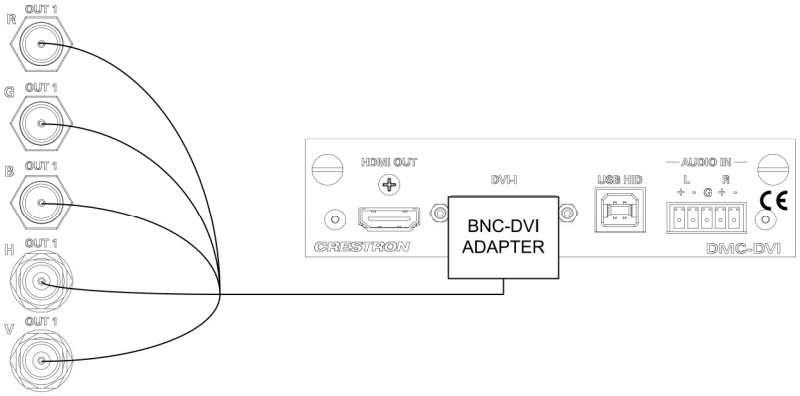
SIGNAL NAME	BALANCED AUDIO INPUT	UNBALANCED AUDIO INPUT
+	L +	L +
-	L -	L – signal return, jumper to GND
G	Shield/Ground	Ground
+	R +	R +
-	R -	R – signal return, jumper to GND

Typical Balanced/Unbalanced Inputs



The BNC output of a wideband RGB switcher such as the Crestron CEN-RGBHV12X4 can be connected to a DMC-DVI using either a BNC-to-DVI adapter (not included) or a BNC-VGA adapter (not included) with the included VGA-DVI adapter to provide further expansion. When connecting sources to the switcher, please make the following connections.

Hardware Hookup, BNC to DVI



Port Connections

SIGNAL TYPE	INPUT SIGNAL	CONNECTS TO
RGBHV	R	**R**
	G	**G**
	B	**B**
	H	**H**
	V	**V**
YP_bP_r	Y	**G**
	P_b	**B**
	P_r	**R**
S-video	C	**R**
	Y	**G**
Composite	Composite	**B**

DMC-F DM Fiber Input Card for DM Switchers

The DMC-F is an input card for a DigitalMedia switcher, providing one optical fiber type DM input. The DM fiber input enables the connection of a DM transmitter, or the output of another DM switcher, with a potential cable length up to 1000 feet (300 m) using multimode fiber optic cable.

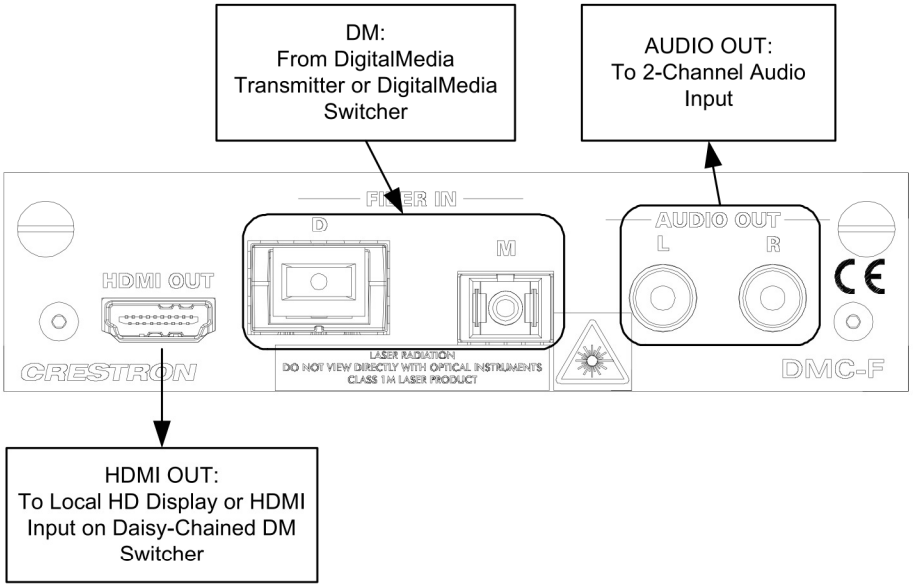
NOTE: For optimum performance, Crestron recommends Crestron DigitalMedia cable.

Additional connections on the card include both HDMI and stereo analog audio loop back outputs. The HDMI output simply passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output, which features programmable volume control, breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

NOTE: For applications requiring the simultaneous distribution of surround sound and 2-channel audio signals, use model DMC-F-DSP.

The DMC-F may also be used with the DMCI DigitalMedia Card Interface to provide a DM fiber receiver solution that is perfect for installation in an equipment rack or AV cart, or as a portable display interface. As a DM receiver, and as a DM switcher input card, the DMC-F enables EDID signal detection and format management, CEC device control, and audio breakaway.

Hardware Hookup for DMC-F DM Fiber Input Card for DM Switchers



DMC-F-DSP DM Fiber Input Card with Down-mixing for DM Switchers

The DMC-F-DSP is an input card for a DigitalMedia switcher, providing one optical fiber type DM input. The DM fiber input enables the connection of a DM transmitter, or the output of another DM switcher, with a potential cable length up to 1000 feet (300 m) using multimode fiber optic cable.

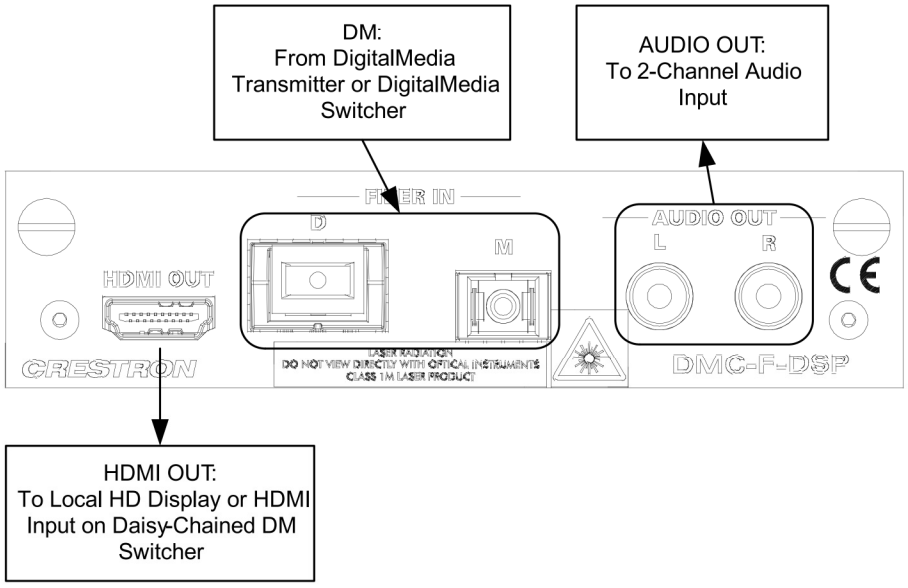
NOTE: For optimum performance, Crestron recommends Crestron DigitalMedia cable.

The DMC-F-DSP provides all of the features of the DMC-F with the addition of internal DSP processing to enable the simultaneous distribution of uncompressed 7.1 channel HD surround sound and 2-channel audio. The DMC-F-DSP is recommended for use with Blu-ray Disc players and other HD sources that output multi-channel surround sound audio via HDMI, allowing the multi-channel signal to reach the surround sound system without requiring any decoding, while also providing a 2-channel down-mix to feed a stereo zone or audio distribution system.

Additional connections on the card include both HDMI and stereo analog audio loop back outputs. The HDMI output simply passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output, which features programmable volume control, breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

The DMC-F-DSP may also be used with the DMCI DigitalMedia Card Interface to provide a DM fiber receiver solution that is perfect for installation in an equipment rack or AV cart, or as a portable display interface. As a DM receiver, and as a DM switcher input card, the DMC-F-DSP enables EDID signal detection and format management, CEC device control, and audio breakaway.

Hardware Hookup for DMC-F-DSP DM Fiber Input Card with Down-Mixing for DM Switchers



DMC-HD HDMI Input Card for DM Switchers

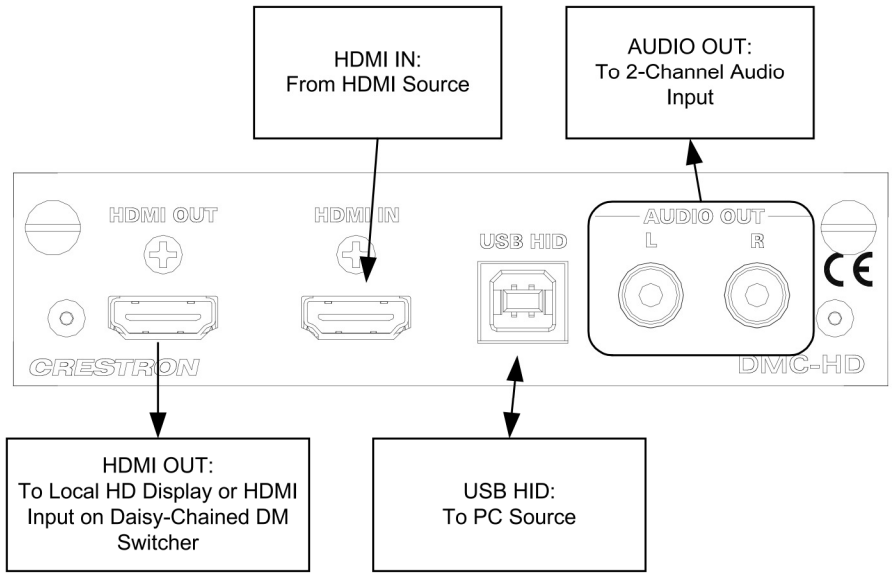
The DMC-HD is an input card for a DigitalMedia switcher, providing one HDMI input. The DMC-HD supports HDMI with deep color, handling sources with resolutions and frame rates up to 1080p60, HD lossless audio, and color depths up to 12-bit.

Additional connections on the card include an HDMI loop back output, a stereo analog audio loop back output, and a USB HID port. The HDMI output passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

NOTE: For applications requiring the simultaneous distribution of uncompressed multi-channel surround sound and 2-channel audio, use model DMC-HD-DSP.

The USB HID port allows a remote mouse/keyboard connected at the display location, to control a centralized source device (i.e. computer, media server, etc.) at the equipment rack.

Hardware Hookup for DMC- HD HDMI Input Card for DM Switchers



NOTE: Audio is present on the **AUDIO OUT** port when 2-channel audio is present on the HDMI input signal.

DMC-HD-DSP HDMI Input Card with DSP for DM Switchers

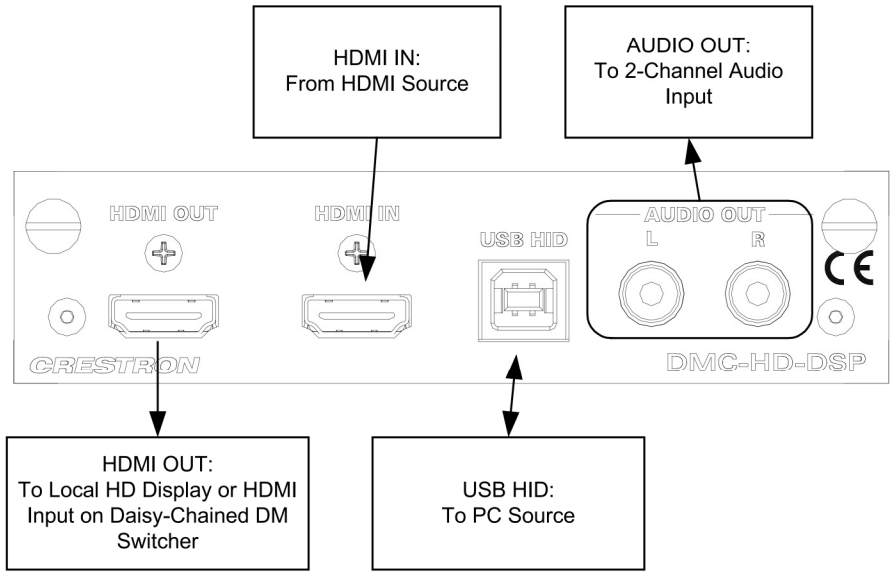
The DMC-HD-DSP is an input card for a DigitalMedia switcher, providing one HDMI input. The DMC-HD-DSP supports HDMI with deep color, handling sources with resolutions and frame rates up to 1080p60, HD lossless audio, and color depths up to 12-bit.

The DMC-HD-DSP provides all of the features of the DMC-HD with the addition of internal DSP processing to enable the simultaneous distribution of uncompressed 7.1 channel HD surround sound and 2-channel audio. The DMC-HD-DSP is recommended for use with Blu-ray Disc players and other HD sources that output multi-channel surround sound audio via HDMI, allowing the multi-channel signal to reach the surround sound system without requiring any decoding, while also providing a 2-channel down-mix to feed a stereo zone or audio distribution system.

Additional connections on the card include an HDMI loop back output, a stereo analog audio loop back output, and a USB HID port. The HDMI output passes the input signal through to feed a local device, or to feed a second DM switcher for output expansion purposes. The analog audio output breaks out the stereo audio signal from the HDMI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

The USB HID port allows a remote mouse/keyboard connected at the display location, to control a centralized source device (i.e. computer, media server, etc.) at the equipment rack.

Hardware Hookup for DMC- HD DMC-HD-DSP HDMI Input Card with DSP for DM Switchers



NOTE: The **AUDIO OUT** port contains a 2-channel downmix of the audio portion of the HDMI input signal.

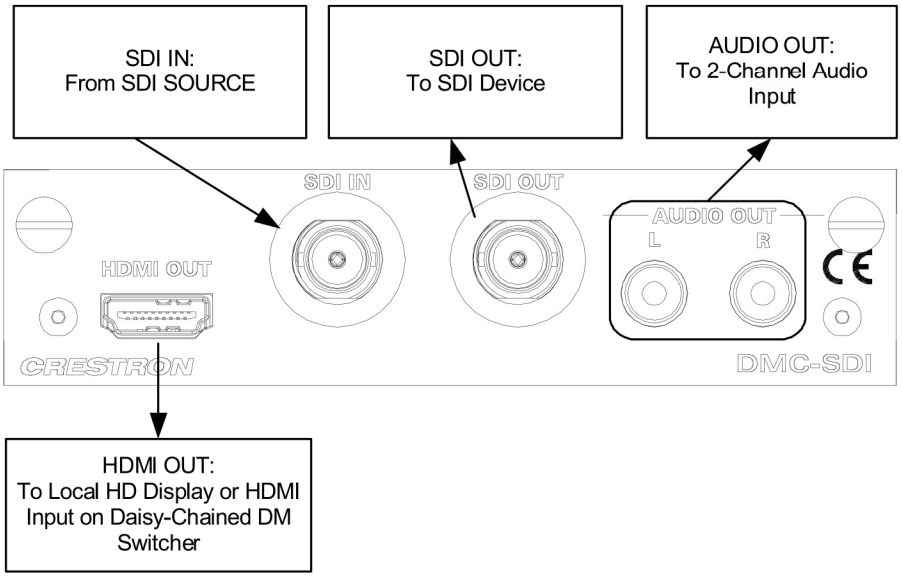
DMC-SDI SDI Input Card for DM Switchers

The DMC-SDI is an input card for a DigitalMedia switcher, providing one SDI input to support a variety of professional and commercial AV sources. The DMC-SDI supports SD-SDI, HD-SDI and 3G-SDI formats, handling high-definition video signals up to 1080p60, and up to eight channels of 24-bit digital audio - all through a single coaxial cable. An SDI loop-thru output is included for connection to a local monitor or other SDI device.

Additional connections on the card include an HDMI output and a stereo analog audio output. The HDMI output allows the converted SDI signal to be passed to a local device, or to a second DM switcher for output expansion purposes. The analog audio output, which features programmable volume control, breaks out a stereo audio signal from the SDI input and passes it through to feed a CNX-PAD8A, AAE, or other multi-room audio distribution system.

The DMC-SDI may also be used with the DMCI DigitalMedia Card Interface to create a problem-solving tool with many useful functions. For instance, it can be used to convert SDI video and audio to HDMI, or to extract an analog audio signal from an SDI signal.

Hardware Hookup for DMC-SDI SDI Input Card for DM Switchers



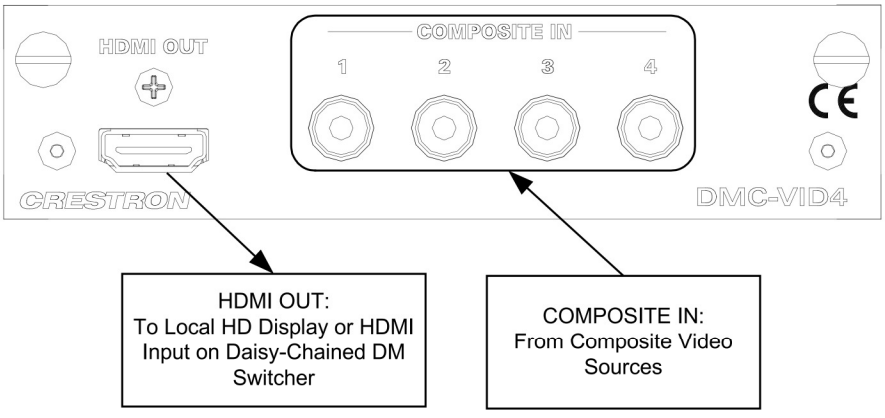
DMC-VID4 Security Camera Input Card for DM Switchers

The DMC-VID4 is an input card for a DigitalMedia switcher, providing four composite video inputs with built-in sequential switching and quad processing.

The DMC-VID4 allows up to four security cameras to be viewed individually or simultaneously in quad, dual, or full screen modes. When viewing full screen, the input may be selected manually or sequentially. The sequential switching function cycles automatically through each available input, displaying each source one at a time per a user-definable duration. In any mode, dynamic colored text overlay capability allows each window or source to be clearly identified.

A local HDMI output connection is also provided on the card, allowing the processed video signal to be fed to a local device, or to a second DM switcher for output expansion purposes.

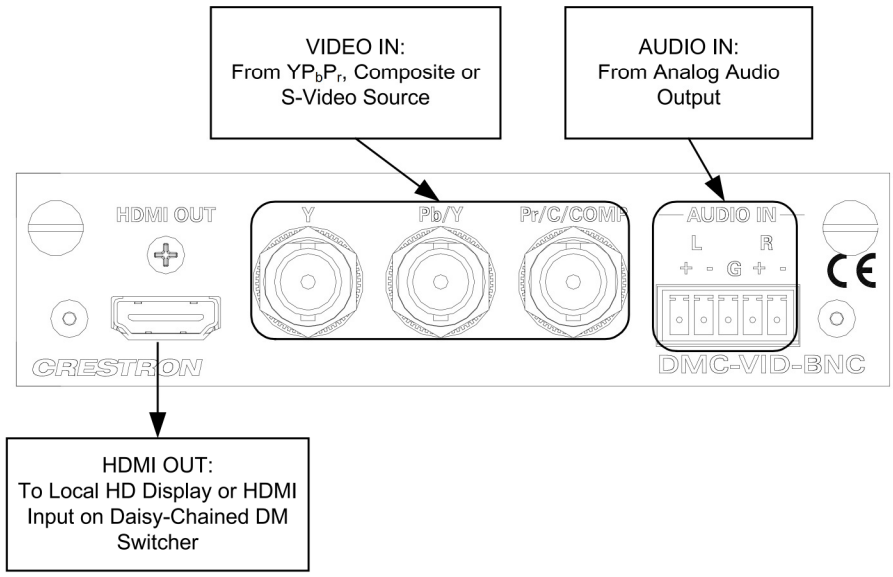
Hardware Hookup for DMC-VID4 Security Camera Input Card for DM Switchers



DMC-VID-BNC BNC Analog Video Input Card for DM Switchers

The DMC-VID-BNC is an input card for a DigitalMedia switcher, providing one analog video input and one balanced stereo analog audio input. The DMC-VID-BNC accepts component HDTV signals up to 1080p60, as well as standard definition NTSC/PAL composite and S-video. An HDMI loop back output connection is also provided, which passes the audio and video input signals through digitally to feed a local device, or to feed a second DM switcher for output expansion purposes.

Hardware Hookup for DMC-BNC BNC Analog Video Input Card for DM Switchers

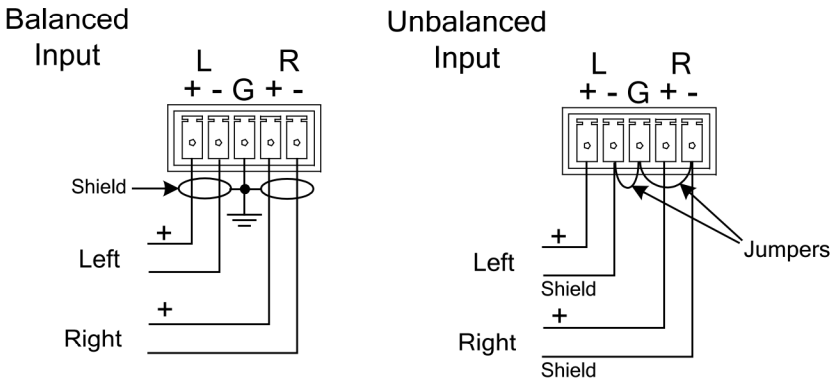


Balanced/unbalanced audio inputs are provided, utilizing five-pin terminal block connectors. For connection details, refer to the following table and diagrams.

Audio Connections

SIGNAL NAME	BALANCED AUDIO INPUT	UNBALANCED AUDIO INPUT
+	L +	L +
-	L -	L – signal return jumper to GND
G	Shield/Ground	Ground
+	R +	R +
-	R -	R – signal return jumper to GND

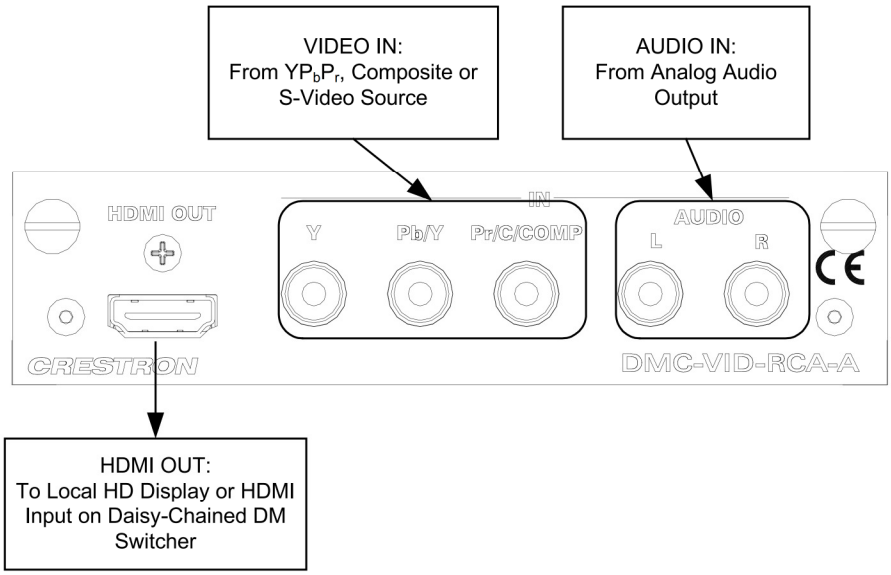
Typical Balanced/Unbalanced Inputs



DMC-VID-RCA-A RCA Analog Video Input Card with Analog Audio for DM Switchers

The DMC-VID-RCA-A is an input card for a DigitalMedia switcher, providing one analog video input and one stereo analog audio input. The DMC-VID-RCA-A accepts component HDTV signals up to 1080p, as well as standard definition NTSC/PAL composite and S-video. An HDMI loop back output connection is also provided, which passes the audio and video input signals through digitally to feed a local device, or to feed a second DM switcher for output expansion purposes.

Hardware Hookup for DMC-VID-RCA-A RCA Analog Video Input Card with Analog Audio for DM Switchers

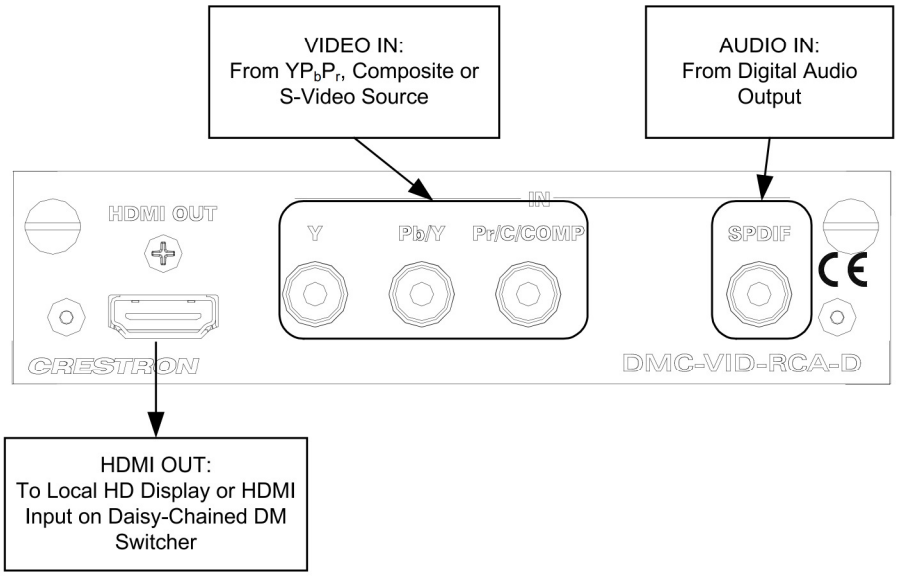


DMC-VID-RCA-D RCA Analog Video Input Card with Digital Audio for DM Switchers

The DMC-VID-RCA-D is an input card for a DigitalMedia switcher, providing one analog video input and one S/PDIF coaxial digital audio input. The DMC-VID-RCA-D accepts component HDTV signals up to 1080p, as well as standard definition NTSC/PAL composite and S-video. Its S/PDIF input supports 2-channel stereo and 5.1 surround-encoded digital audio sources up to 24-bit, 96 kHz.

An HDMI loop back output connection is also provided, which passes the audio and video input signals through digitally to feed a local device, or to feed a second DM switcher for output expansion purposes.

Hardware Hookup for DMC-VID-RCA-D RCA Analog Video Input Card with Digital Audio for DM Switchers



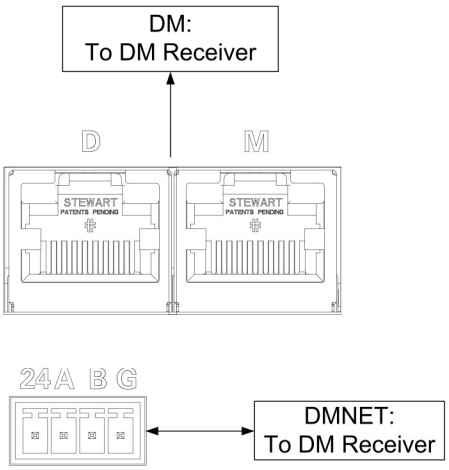
Output Connections

A variety of output configurations are available for the DM switchers. Refer to the following diagrams when making connections to DM output cards.

D & M Ports Using DM Cable

For cards equipped with DM cable connection (RJ-45) refer to the following diagram.

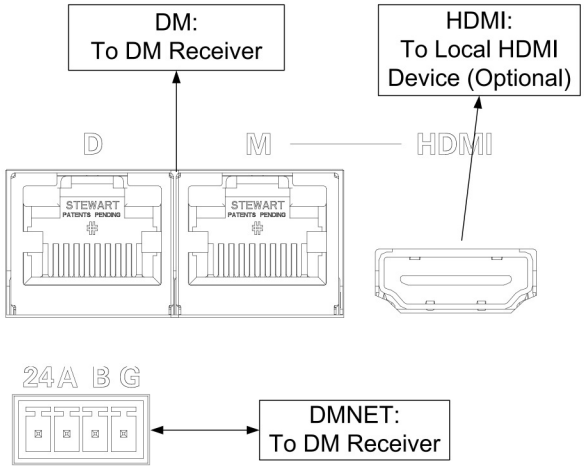
Hardware Hookup for DM Cable Outputs



D & M Ports Using DM Cable (with Optional HDMI Output)

For cards equipped with a DM cable connection (RJ-45) and an HDMI output, refer to the following diagram.

Hardware Hookup for DM Cable Connection with HDMI Output

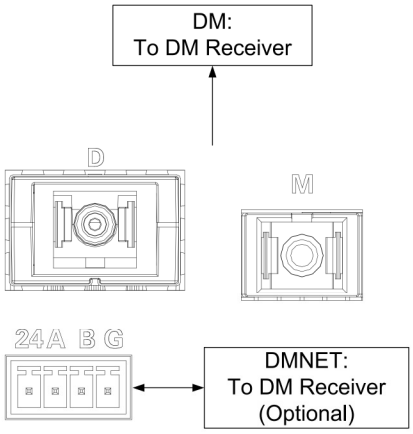


NOTE: The **DM** and **HDMI** ports can be connected simultaneously or individually.

D & M Ports Using DM Fiber

For cards equipped with DM fiber connections refer to the following diagram.

Hardware Hookup for DM Fiber Outputs

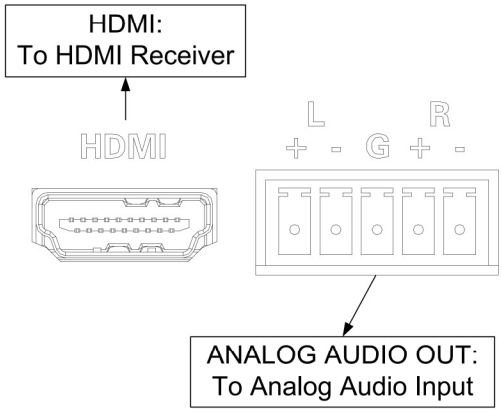


NOTE: When wiring the **24ABG** port, connect the **24** and **G** lines only. Do not connect the **A** and **B** lines.

HDMI Outputs

For cards equipped with HDMI outputs refer to the following diagram.

Hardware Hookup for HDMI Outputs



NOTE: The analog audio output will only function if it receives a stereo audio signal from a stereo source or a stereo downmix from a "-DSP" input card.

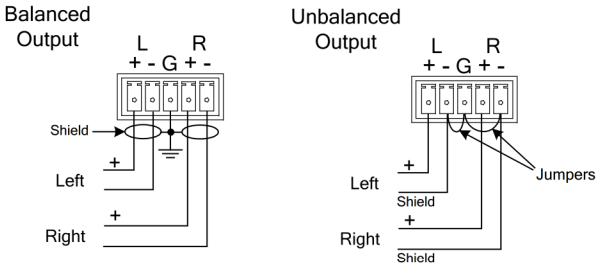
NOTE: If the audio from a DMC-RCA-D is routed to an HDMI output, audio will not be present on the audio output.

Balanced/unbalanced audio outputs are provided, utilizing five-pin terminal block connectors. For connection details, refer to the following table and diagrams.

Audio Connections

SIGNAL NAME	BALANCED AUDIO OUTPUT	UNBALANCED AUDIO OUTPUT
+	L +	L +
-	L -	L – signal return, jumper to GND
G	Shield/Ground	Ground
+	R +	R +
-	R -	R – signal return, jumper to GND

Typical Balanced/Unbalanced Inputs



Appendix B: Input Card Configuration

This appendix contains detailed instructions for using the DM switcher's front panel controls to configure DigitalMedia input cards that are installed in a DM switcher.

To view/change the configuration settings for an input card:

1. Open the Inputs section of Installer Tools as described on page 42.
2. Turn the selection knob to highlight the card to be configured and press the **ENTER** button.

   ⇒ For information on configuring the DMC-CAT DM CAT Input Card for DM Switchers, refer to "DMC-CAT" on page 86.

   ⇒ For information on configuring the DMC-CAT-DSP DM CAT Input Card with DSP for DM Switchers, refer to "DMC-CAT-DSP" on page 94.

   ⇒ For information on configuring the DMC-DVI DVI/RGB Input Card for DM Switchers, refer to "DMC-DVI" on page 102.

   ⇒ For information on configuring the DMC-F Fiber Input Card for DM Switchers, refer to "DMC-F" on page 110.

   ⇒ For information on configuring the DMC-F-DSP Fiber Input Card with DSP for DM Switchers, refer to "DMC-F-DSP" on page 116.

   ⇒ For information on configuring the DMC-HD HDMI Input Card for DM Switchers, refer to "DMC-HD" on page 122.

   ⇒ For information on configuring the DMC-HD-DSP HDMI Input Card with DSP for DM Switchers, refer to "DMC-HD-DSP" on page 130.

   ⇒ For information on configuring the DMC-SDI SDI Input Card for DM Switchers, refer to "DMC-SDI" on page 138.

   ⇒ For information on configuring the DMC-VID4 Security Camera Input Card for DM Switchers, refer to "DMC-VID4" on page 142.

   ⇒ For information on configuring the DMC-VID-BNC Analog Video Input Card with Analog Audio for DM Switchers, refer to "DMC-VID-BNC" on page 149.

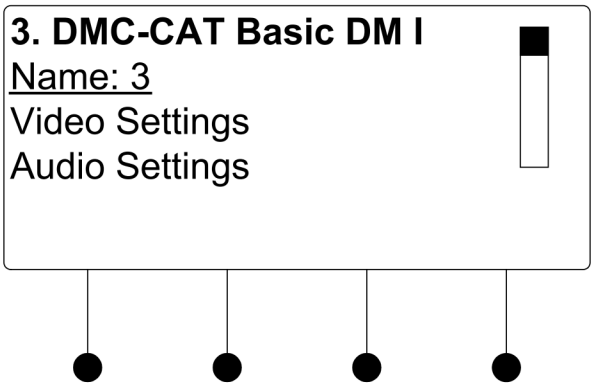
   ⇒ For information on configuring the DMC-VID-RCA-A RCA Analog Video Input Card with Analog Audio for DM Switchers, refer to "DMC-VID-RCA-A" on page 156.

   ⇒ For information on configuring the DMC-VID-RCA-D RCA Analog Video Input Card with Digital Audio for DM Switchers, refer to "DMC-VID-RCA-D" on page 163.

DMC-CAT

The front panel controls for the DMC-CAT allow the user to rename the input, adjust the picture, and view information on the incoming source and the outgoing HDMI signal.

DMC-CAT Controls



Using the DMC-CAT controls, the user can:

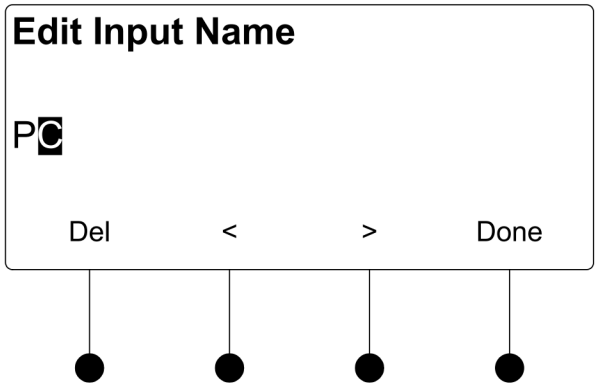
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level
- Select the cable type
- View EDID settings
- Perform an HDCP check to determine how many endpoints can be connected to the source
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

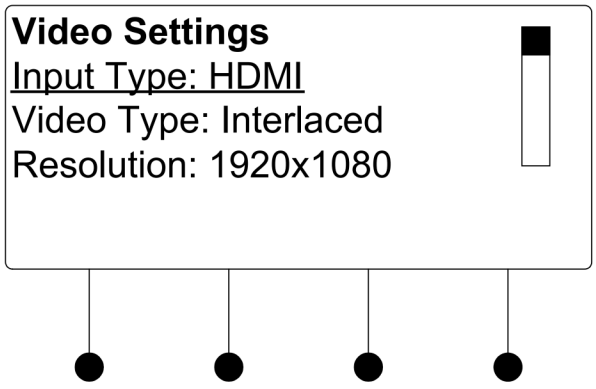
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-CAT can display information about the video portion of the incoming signal, adjust the picture, and automatically calibrate the source to the display. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



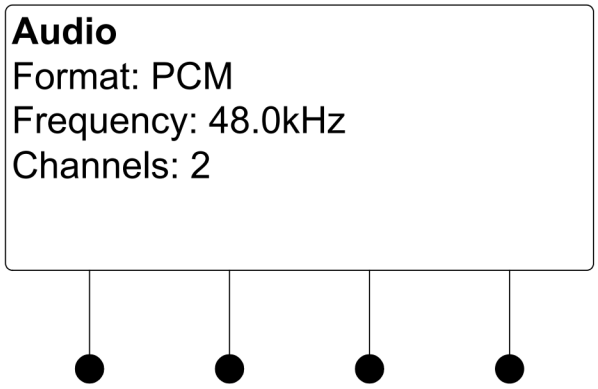
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-CAT can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



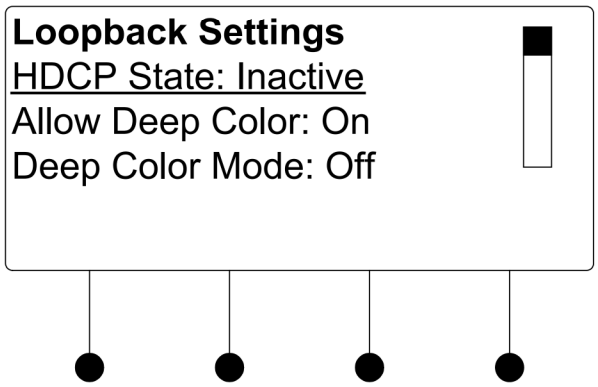
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-CAT can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-CAT. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

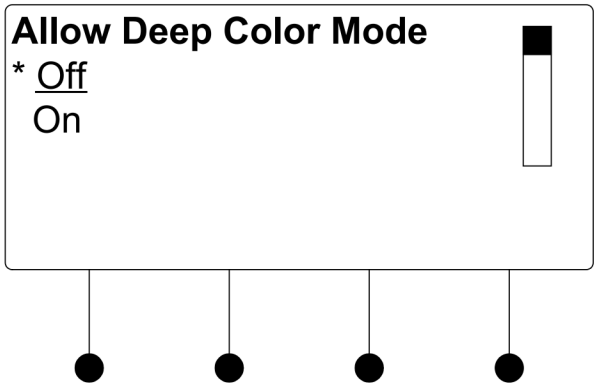
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

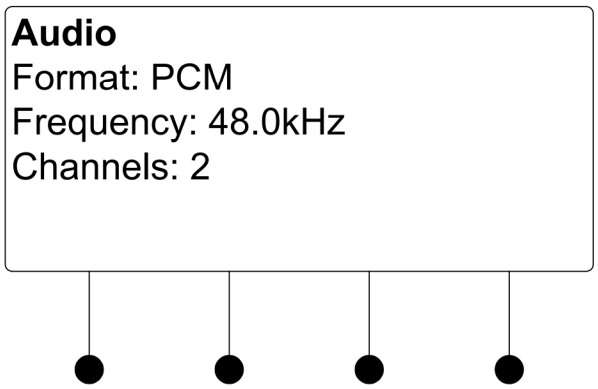


ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

b. To view audio details:

i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

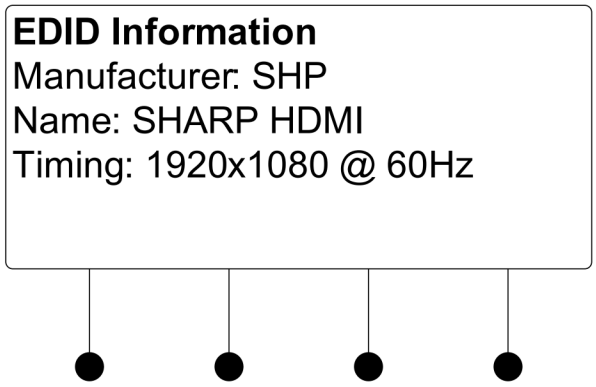


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

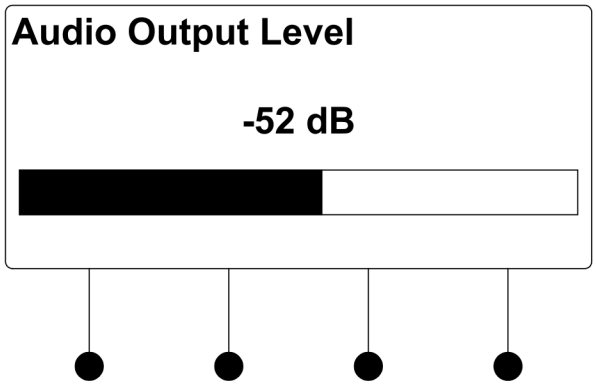
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



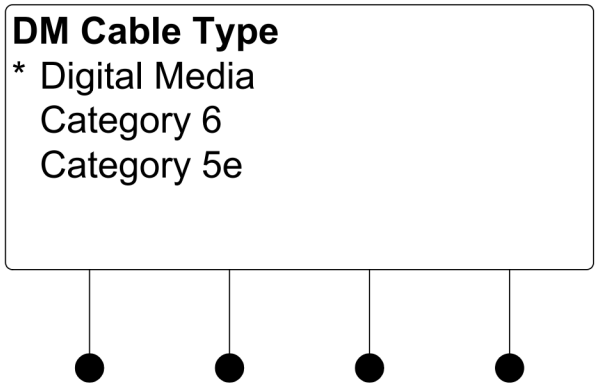
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

DM Cable Type

The card can be configured to use specifc types of cables for the DM input signal. To view or select a cable type:

1. Turn the selection knob to highlight **DM Cable Type** and press the **ENTER** button. The selected cable type is displayed with an asterisk (*).

DM Cable Type



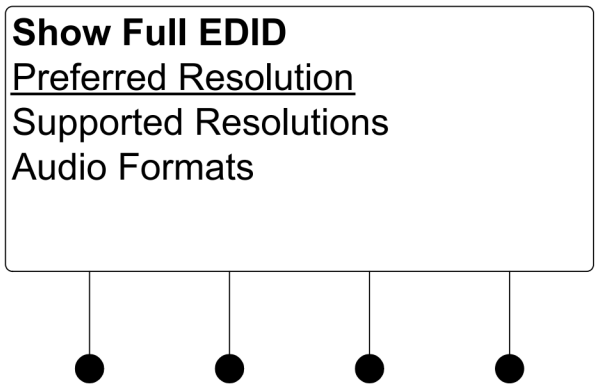
2. To select a different cable type, turn the selection knob to highlight the cable type to be used and press the **ENTER** button. An asterisk will appear next to the selected cable type.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-CAT can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



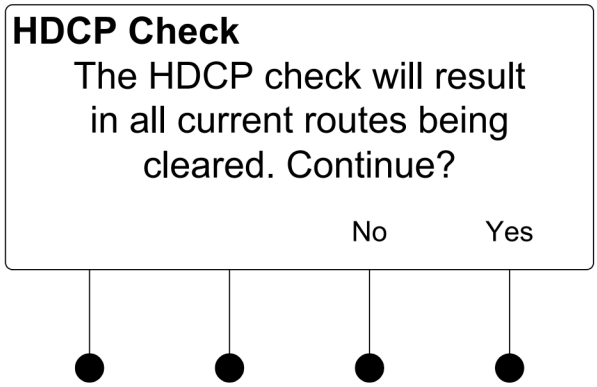
2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

HDCP Check

The switcher can test HDMI sources for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over HDMI using HDCP authentication. To run an HDCP check:

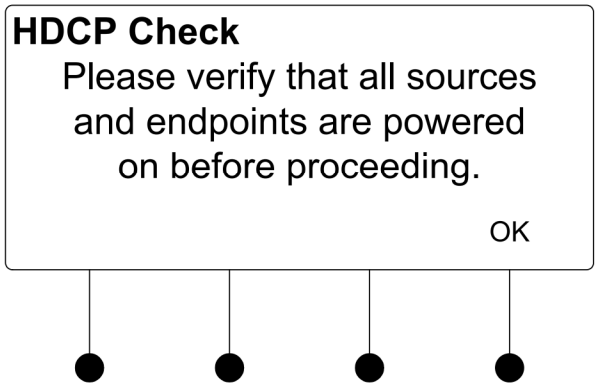
1. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



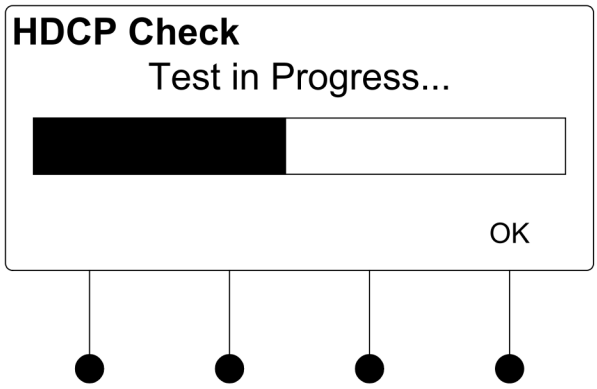
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



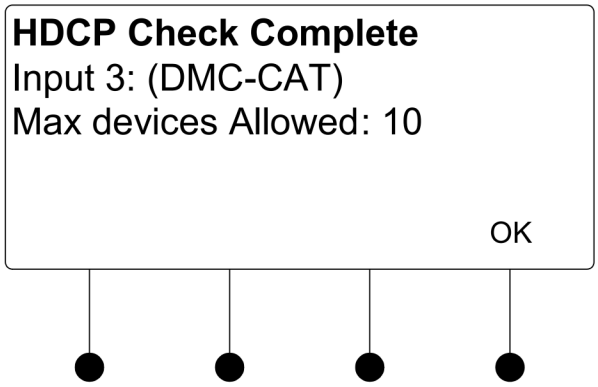
2. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to begin the HDCP check. A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed.

3. Press the soft button labeled **OK** to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0
- Red Level: 0
- Green Level: 0
- Blue Level: 0
- Coarse Phase: 0
- Fine Phase: 0
- X Position: 0
- Y Position 0

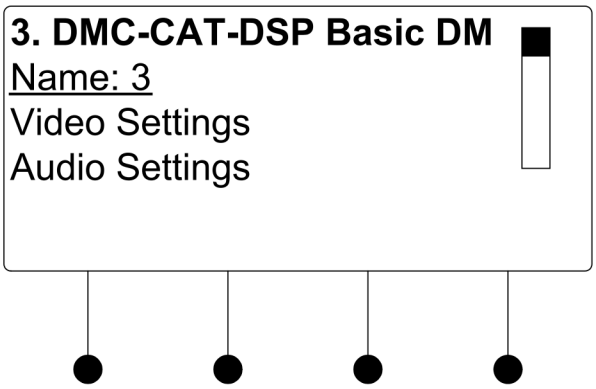
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-CAT-DSP

The front panel controls for the DMC-CAT-DSP allow the user to rename the input, adjust the picture, and view information on the incoming source and the outgoing HDMI signal.

DMC-CAT-DSP Controls



Using the DMC-CAT-DSP controls, the user can:

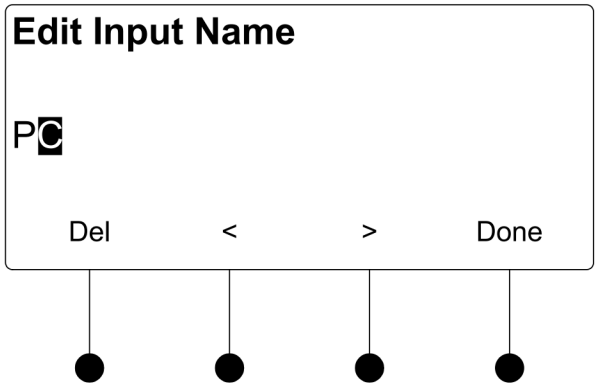
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level
- Select the cable type
- View EDID settings
- Perform an HDCP check to determine how many endpoints can be connected to the source
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

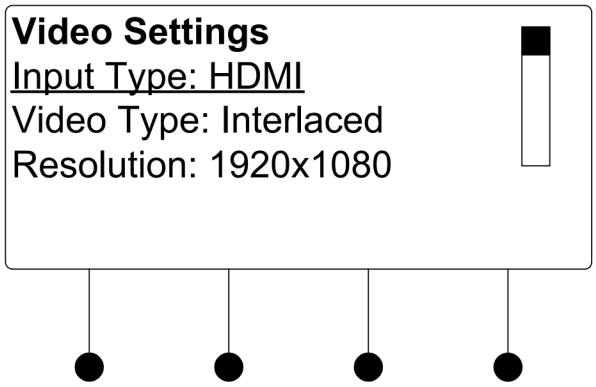
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-CAT-DSP can display information about the video portion of the incoming signal, adjust the picture, and automatically calibrate the source to the display. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



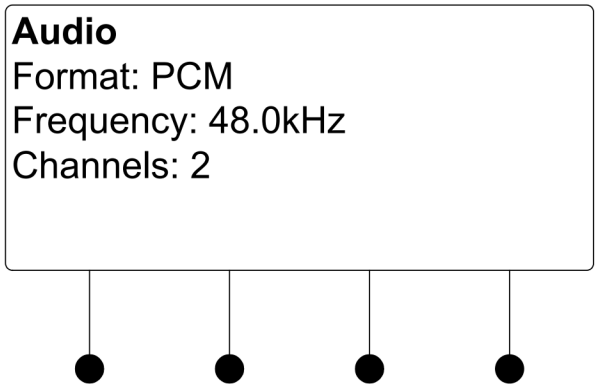
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-CAT-DSP can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



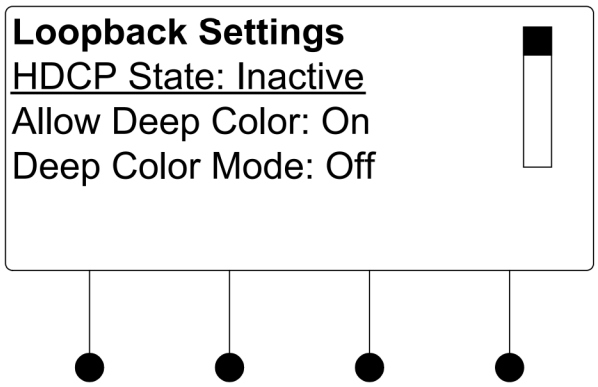
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-CAT-DSP can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-CAT-DSP. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

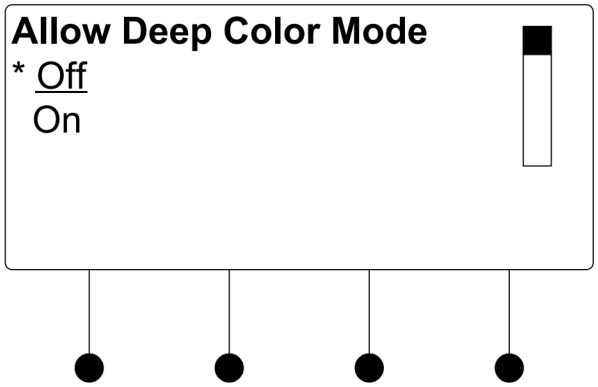
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

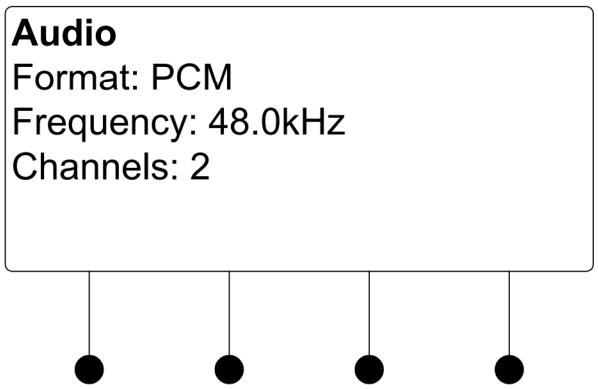


ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

b. To view audio details:

i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

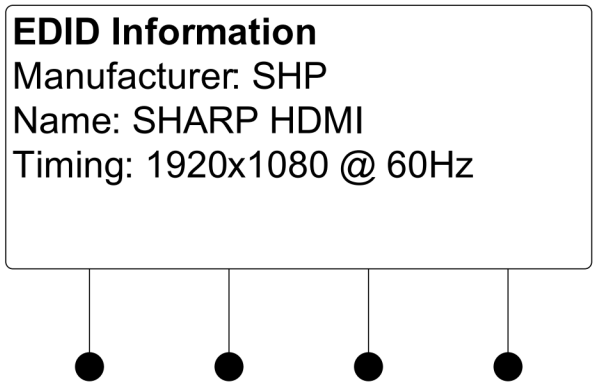


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

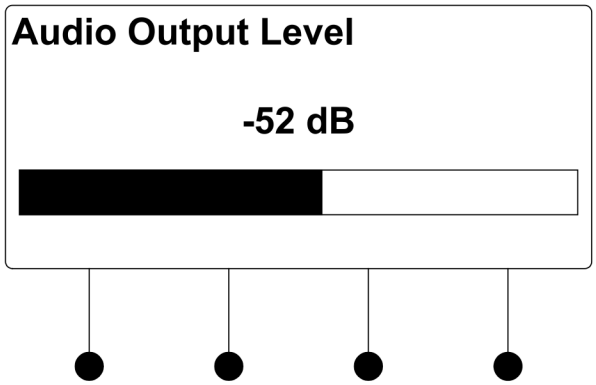
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



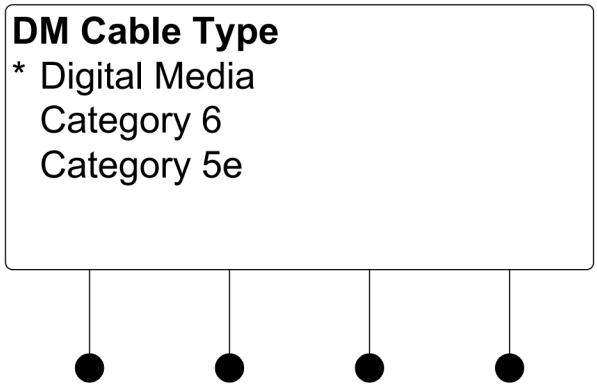
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

DM Cable Type

The card can be configured to use specifc types of cables for the DM input signal. To view or select a cable type:

1. Turn the selection knob to highlight **DM Cable Type** and press the **ENTER** button. The selected cable type is displayed with an asterisk (*).

DM Cable Type



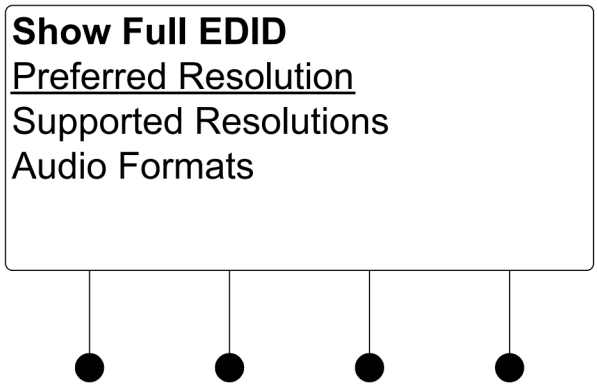
2. To select a different cable type, turn the selection knob to highlight the cable type to be used and press the **ENTER** button. An asterisk will appear next to the selected cable type.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-CAT-DSP can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



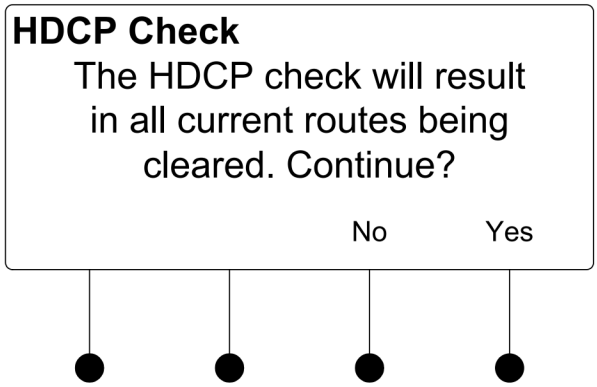
2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

HDCP Check

The switcher can test HDMI sources for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over HDMI using HDCP authentication. To run an HDCP check:

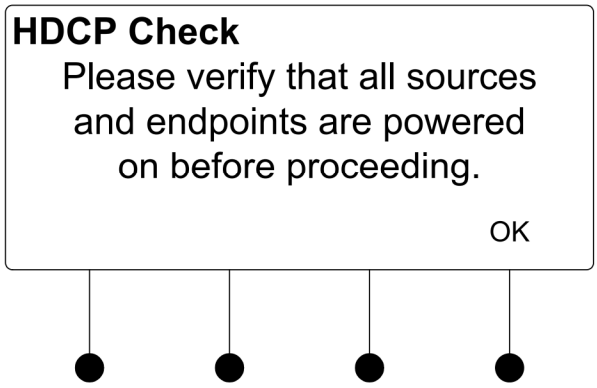
1. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



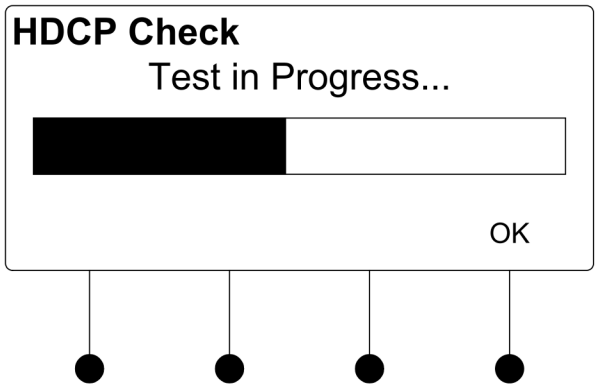
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



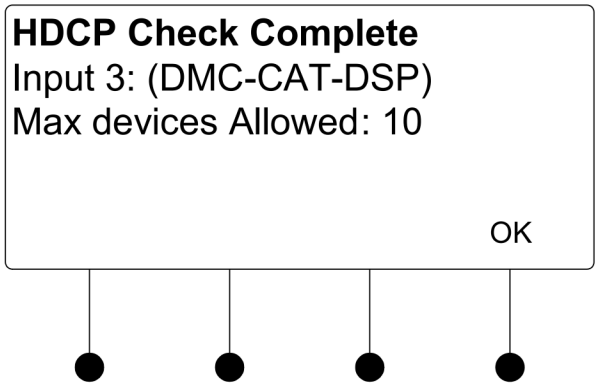
2. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to begin the HDCP check. A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed.

3. Press the soft button labeled **OK** to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0
- Red Level: 0
- Green Level: 0
- Blue Level: 0
- Coarse Phase: 0
- Fine Phase: 0
- X Position: 0
- Y Position 0

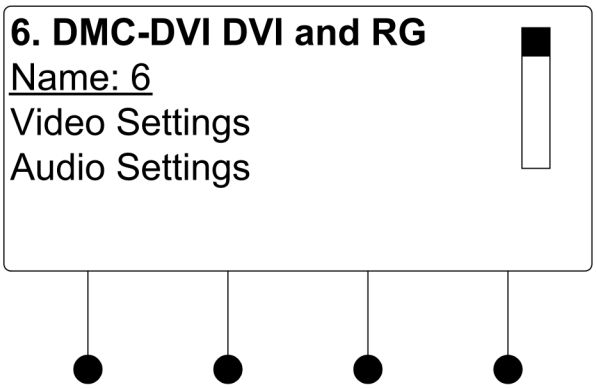
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-DVI

The front panel controls for the DMC-DVI allow the user to rename the input, adjust the picture, and view information on the incoming component video source and the outgoing HDMI signal.

DMC-DVI Controls



Using the DMC-DVI controls, the user can:

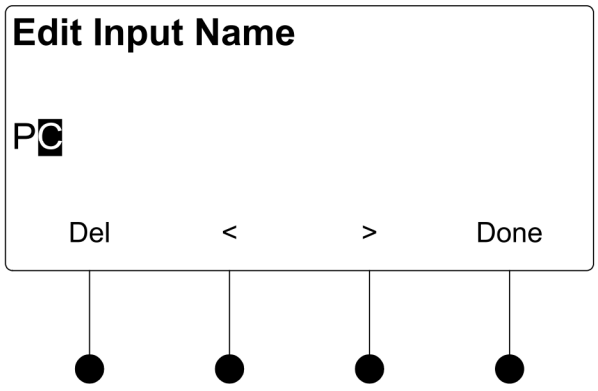
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Perform an HDCP check to determine how many endpoints can be connected to the source
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

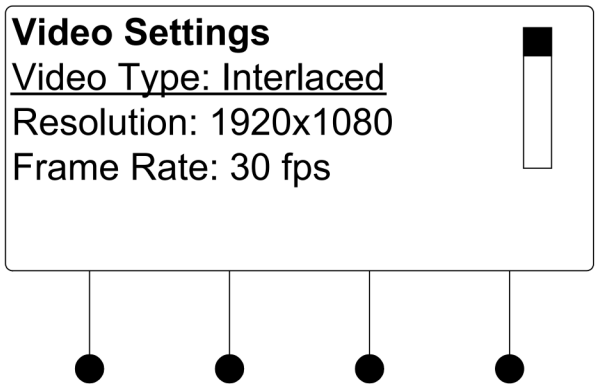
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-DVI can display information about the video portion of the incoming signal, adjust the picture, and automatically calibrate the source to the display. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



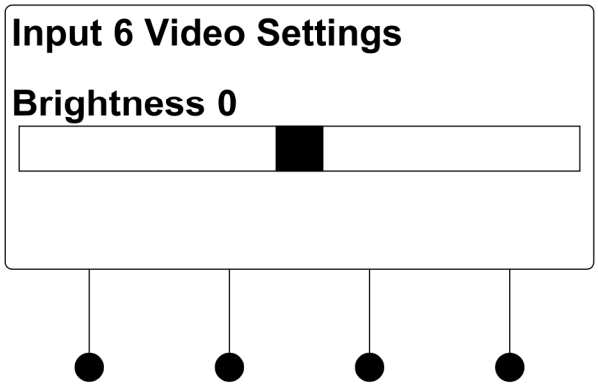
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. The picture settings can also be adjusted.

   Picture controls can be used to adjust the picture's brightness, contrast, saturation, and hue levels. To adjust the picture:

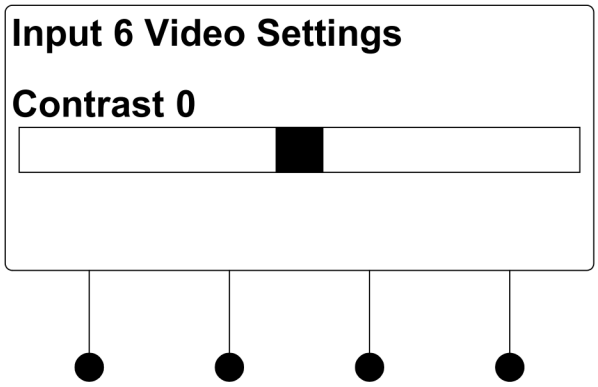
   a. Turn the selection knob to highlight **Picture Controls** and press the **ENTER** button.

   b. Turn the selection knob to highlight the picture control to be adjusted and press the **ENTER** button. Controls are available for brightness, contrast, saturation, and hue.

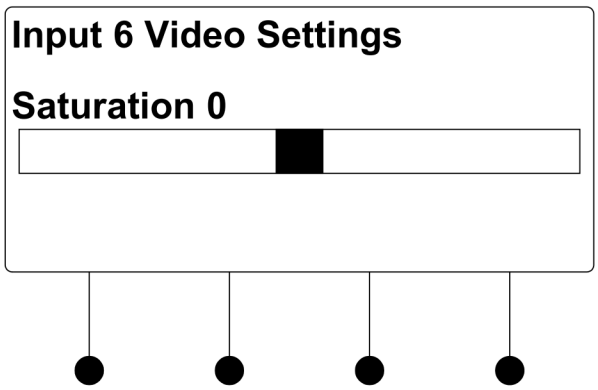
Brightness Control



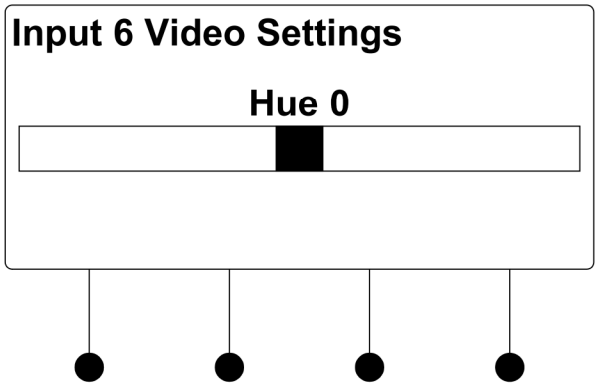
Contrast Control



Saturation Control



Hue Control



c. Turn the selection knob to display the desired level and press the **ENTER** button to save the setting and return to the list of picture controls.

d. Press the **MENU** button to return to the list of options for video settings.

4. Use the Auto-Calibrate function to resize the image and maximize use of the available screen size. To use the Auto-Calibrate function, turn the selection knob to highlight **Auto-Calibrate** and press the **ENTER** button.

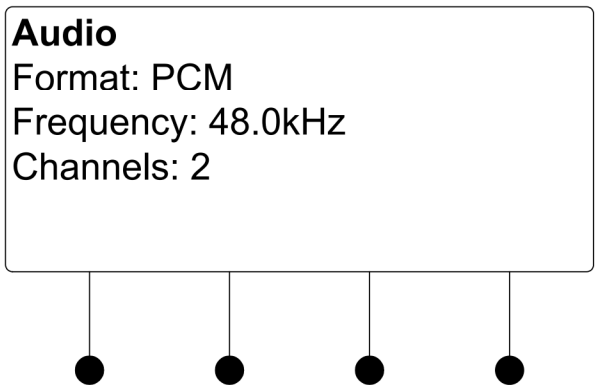
5. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-DVI can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



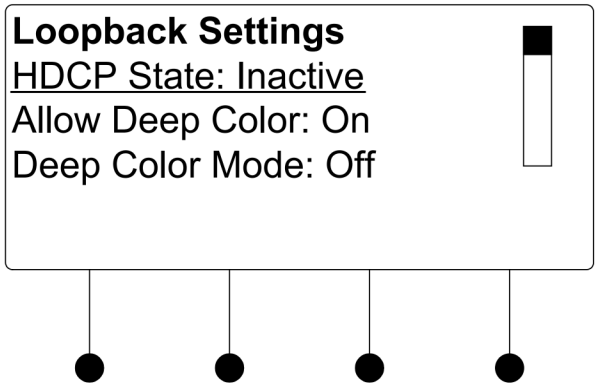
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-DVI can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-DVI. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings

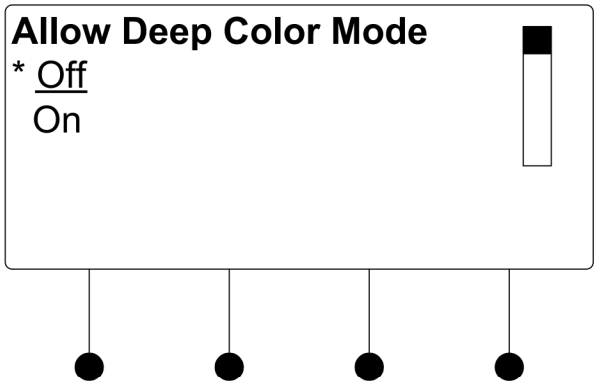


2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.

   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:

      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

      Allow Deep Color Mode

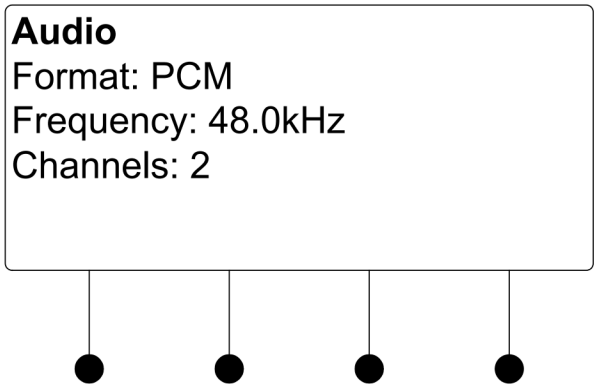
      

      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

   b. To view audio details:

      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

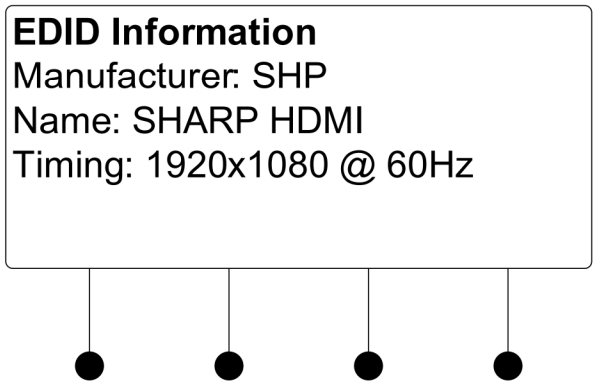


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

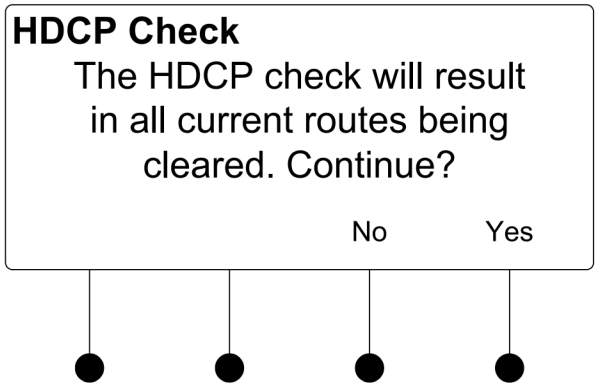
3. Press the **MENU** button to return to the list of options for the input card.

HDCP Check

The switcher can test DVI sources for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over DVI using HDCP authentication. To run an HDCP check:

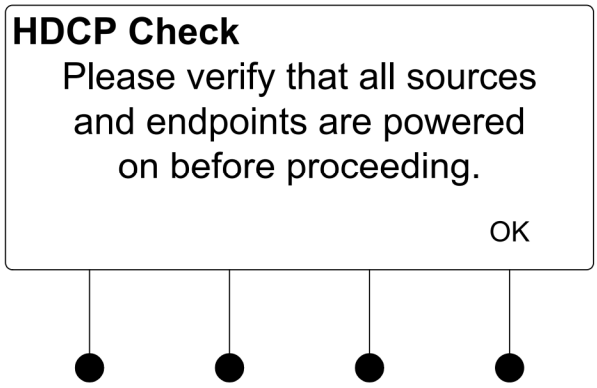
1. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



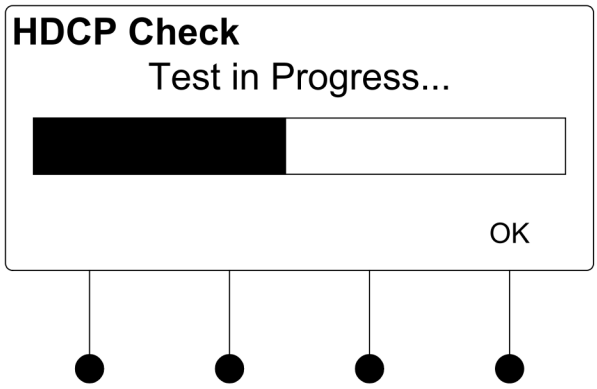
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



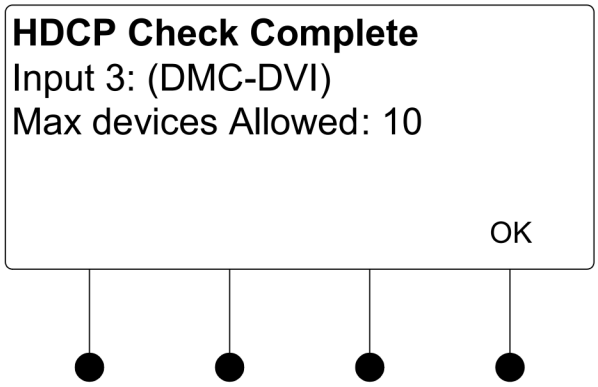
2. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to begin the HDCP check. A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed.

3. Press the soft button labeled **OK** to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0
- Red Level: 0
- Green Level: 0
- Blue Level: 0
- Coarse Phase: 0
- Fine Phase: 0
- X Position: 0
- Y Position 0

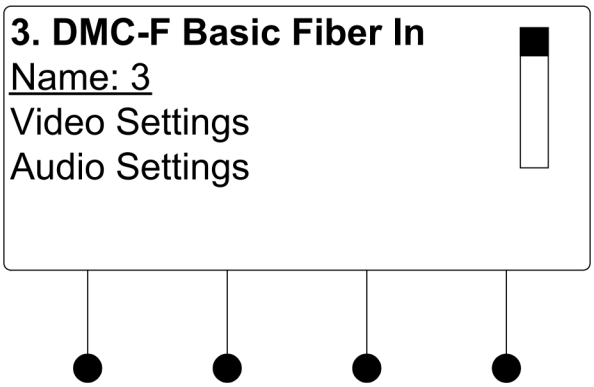
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-F

The front panel controls for the DMC-F allow the user to rename the input, adjust the picture, and view information on the incoming component video source and the outgoing HDMI signal.

DMC-F Controls



Using the DMC-F controls, the user can:

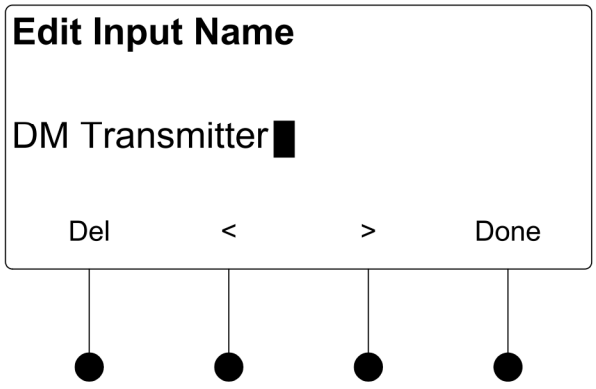
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level
- View EDID settings
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

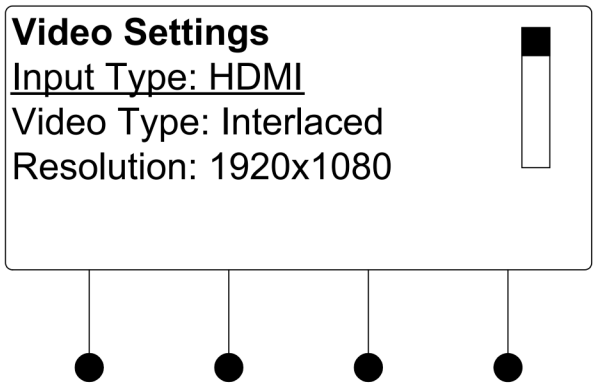
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-F can display information about the video portion of the incoming signal, adjust the picture, and automatically calibrate the source to the display. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



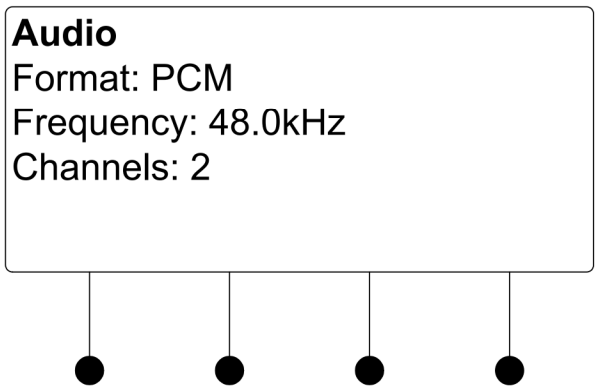
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-F can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



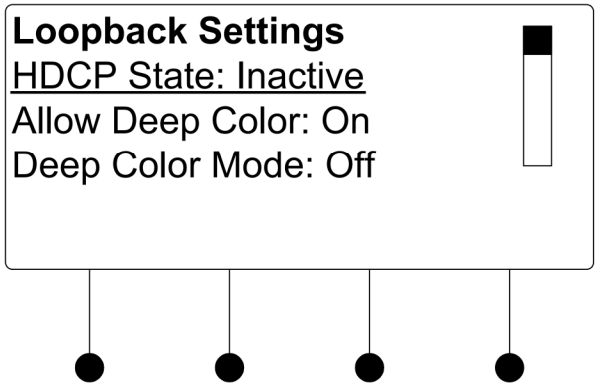
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-F can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-F. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

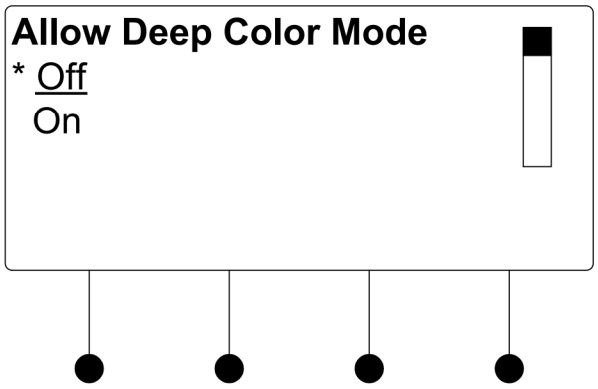
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



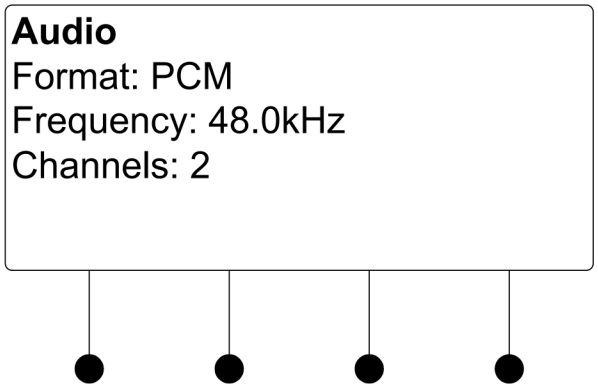
2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode



      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.
   b. To view audio details:
      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

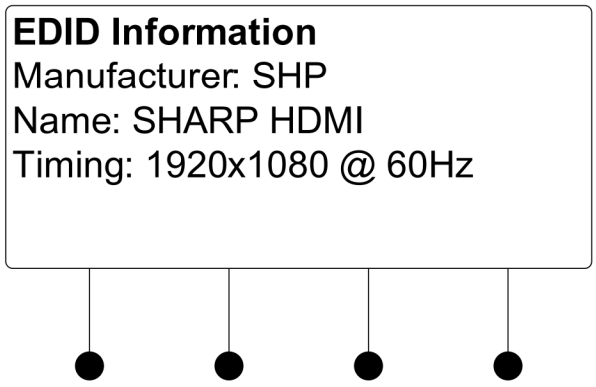


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

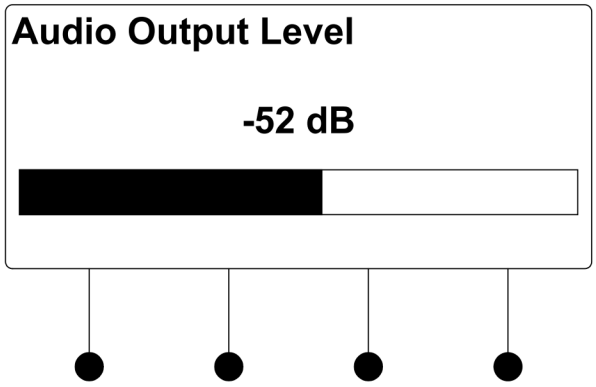
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



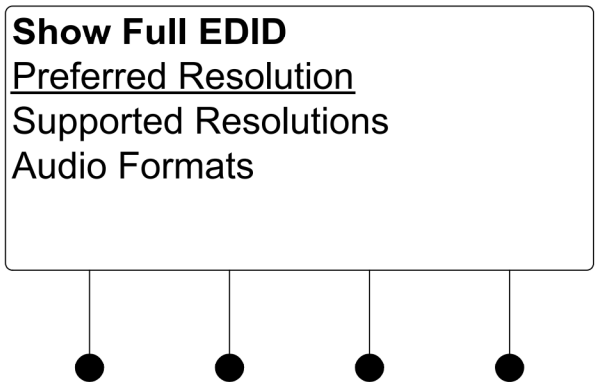
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-F can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0

- Red Level: 0
- Green Level: 0
- Blue Level: 0
- Coarse Phase: 0
- Fine Phase: 0
- X Position: 0
- Y Position 0

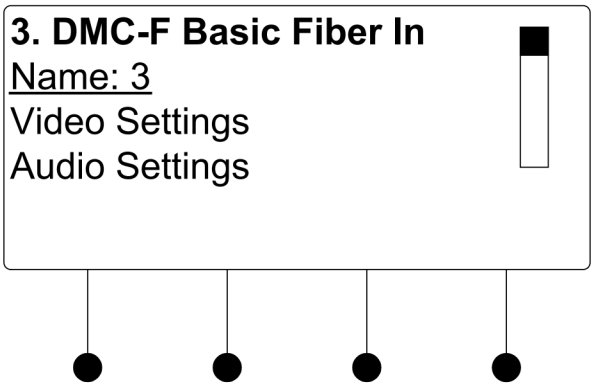
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-F-DSP

The front panel controls for the DMC-F-DSP allow the user to rename the input, adjust the picture, and view information on the incoming component video source and the outgoing HDMI signal.

DMC-F-DSP Controls



Using the DMC-F-DSP controls, the user can:

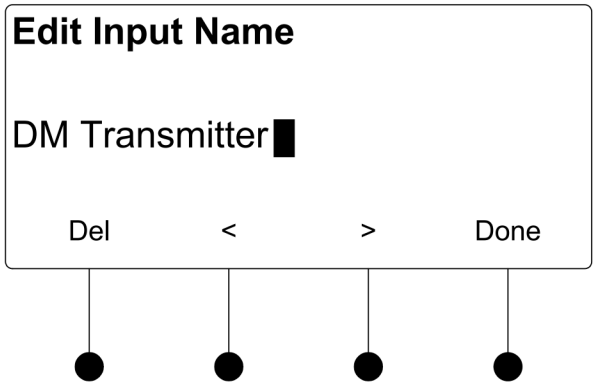
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level
- View EDID settings
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

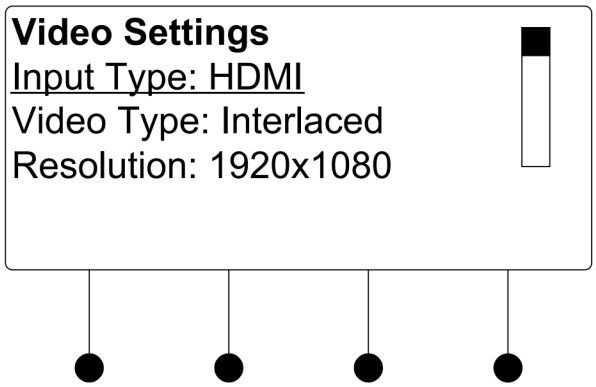
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-F-DSP can display information about the video portion of the incoming signal, adjust the picture, and automatically calibrate the source to the display. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



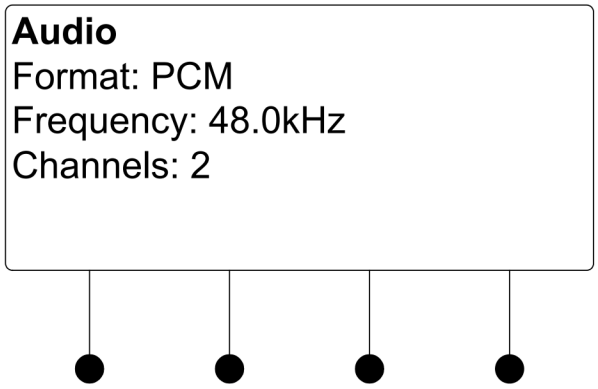
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-F-DSP can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



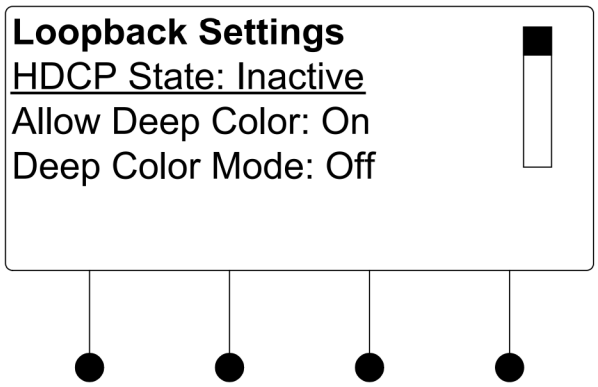
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-F-DSP can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-F-DSP. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

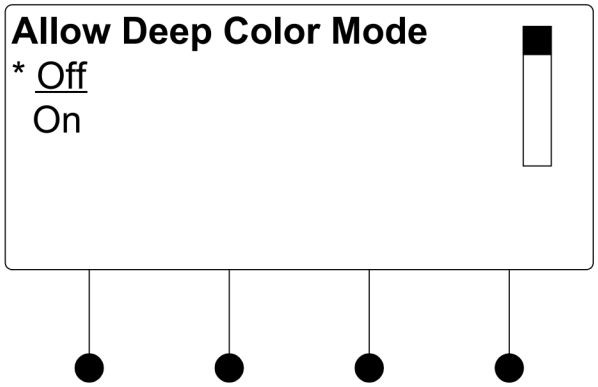
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

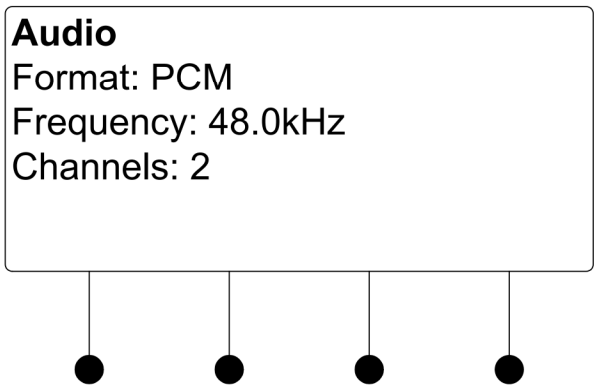


ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

b. To view audio details:

i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

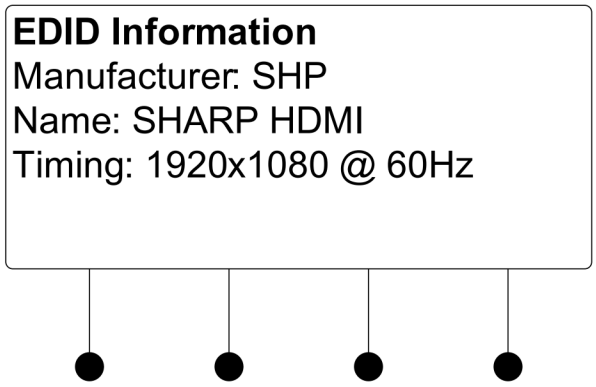


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

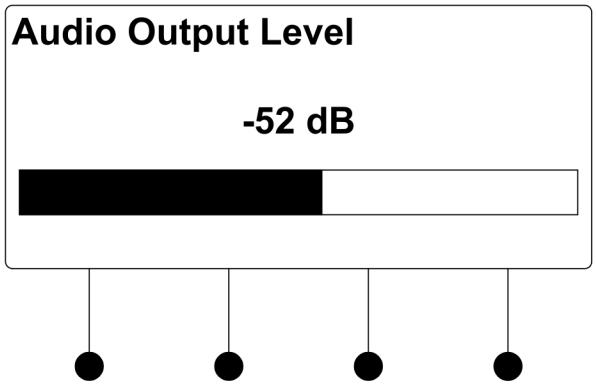
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



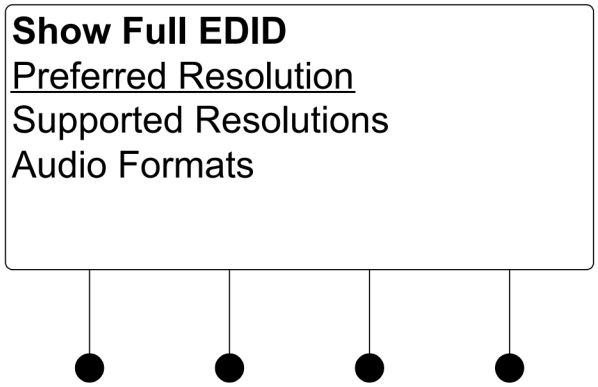
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-F-DSP can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0
- Red Level: 0
- Green Level: 0
- Blue Level: 0
- Coarse Phase: 0
- Fine Phase: 0
- X Position: 0
- Y Position 0

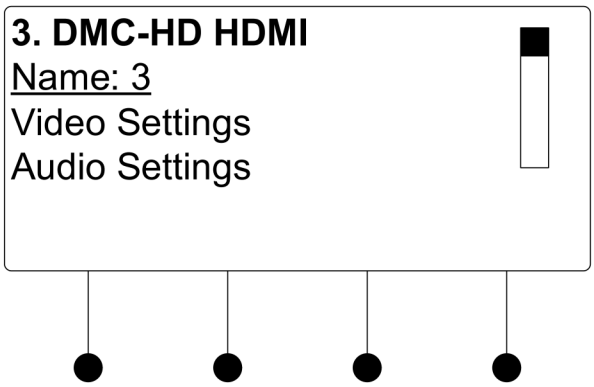
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-HD

The front panel controls for the DMC-HD allow the user to rename the input and view information on the incoming HDMI source and the outgoing HDMI signal.

DMC-HD Controls



Using the DMC-HD controls, the user can:

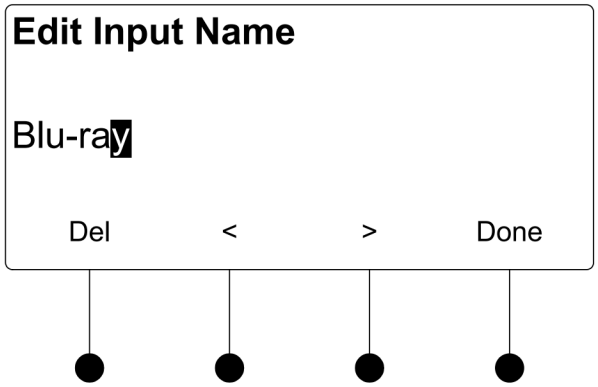
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level.
- View EDID settings.
- Perform an HDCP check to determine how many endpoints can be connected to the source.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

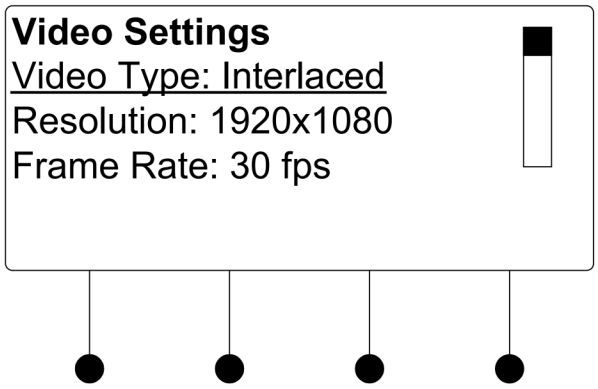
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-HD can display information about the video portion of the incoming signal. Available information includes video type, resolution, frame rate, aspect ratio, deep color setting, HDCP state, and the maximum amount of downstream devices. To view video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



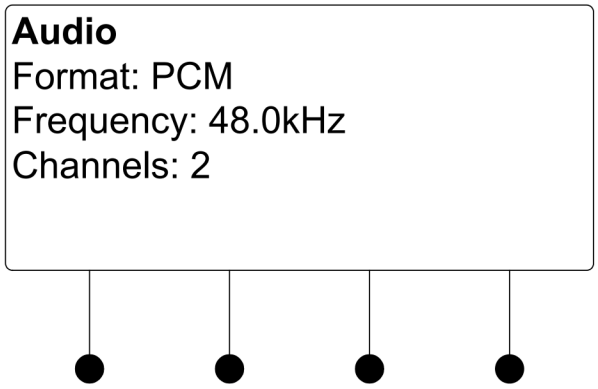
2. Turn the selection knob to view the available information.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-HD can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



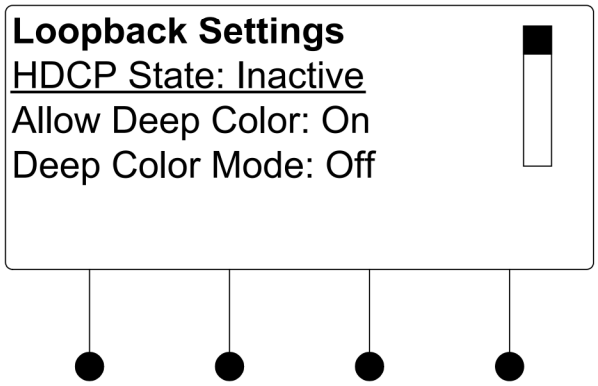
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-HD can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-HD. Available information includes HDCP state, deep color setting, audio details and EDID information. To view the loopback settings:

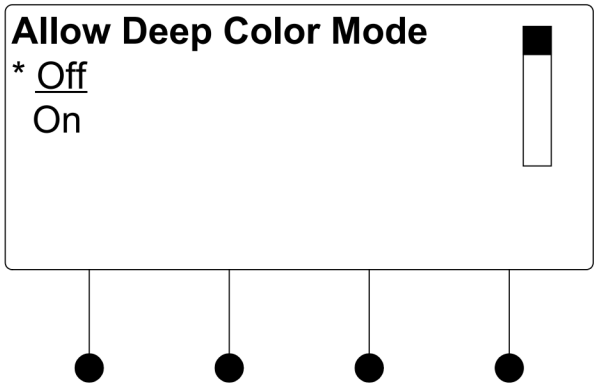
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

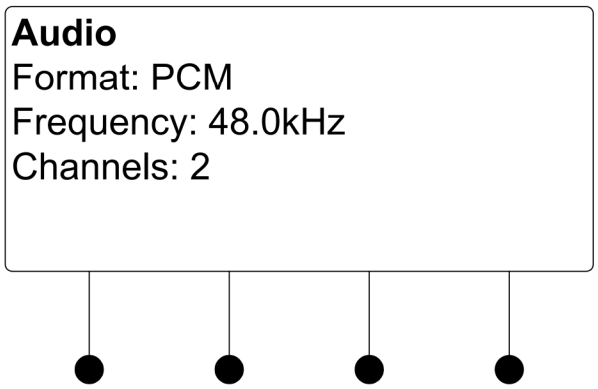


ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

b. To view audio details:

i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

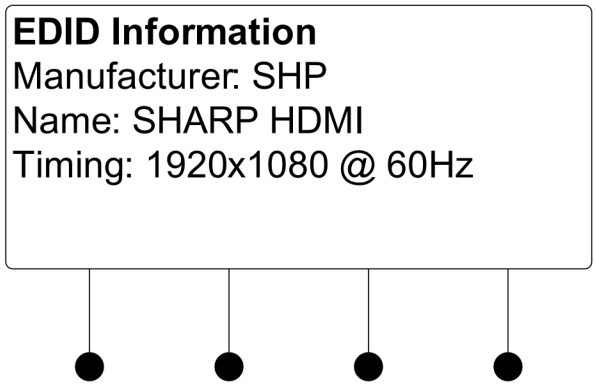


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

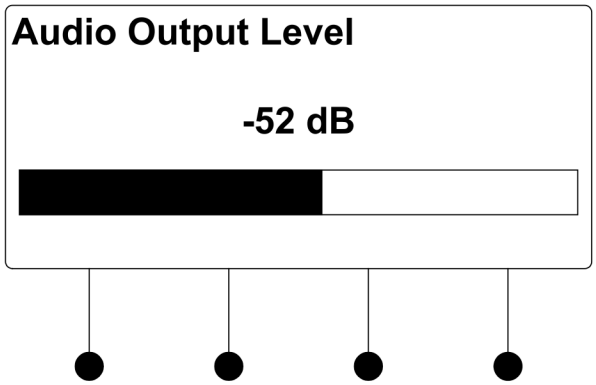
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



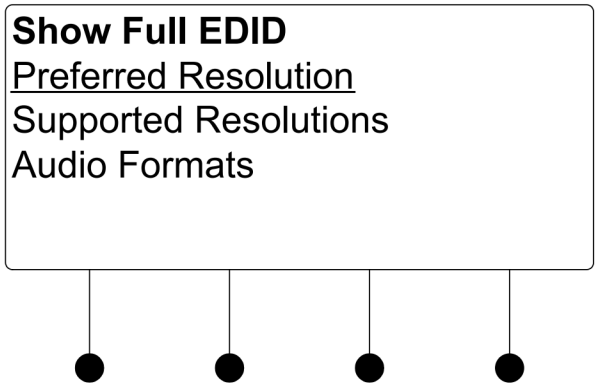
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-HD can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



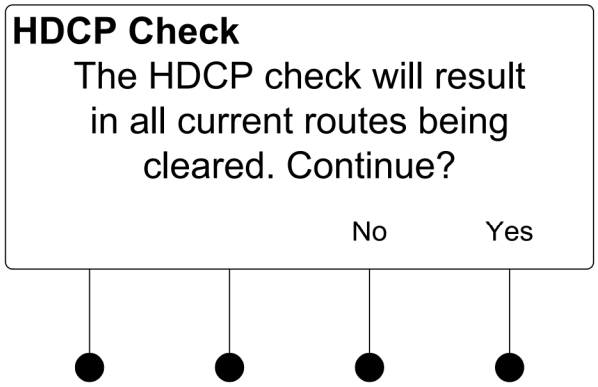
2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

HDCP Check

The switcher can test HDMI sources for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over HDMI using HDCP authentication. To run an HDCP check:

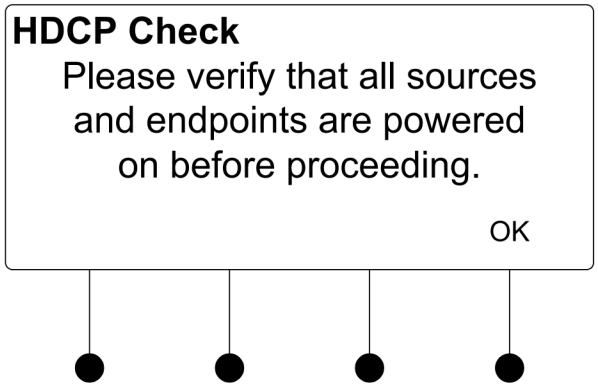
1. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



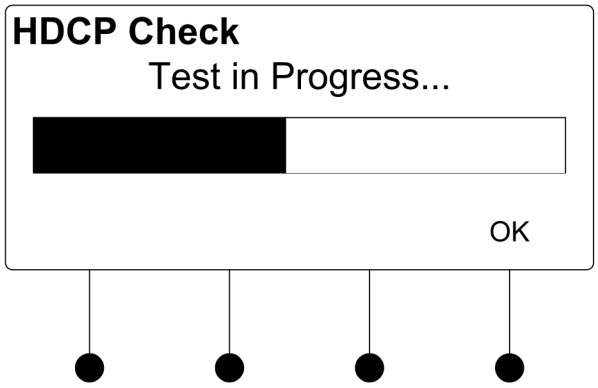
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



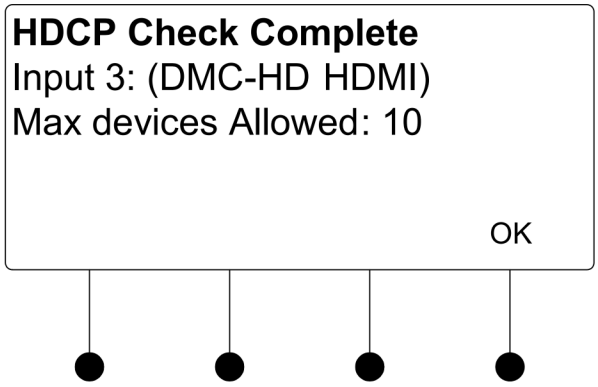
2. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to begin the HDCP check. A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed.

3. Press the soft button labeled **OK** to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- EDID Mode: Best Common
- Max Input Resolution: 165
- Video EDID Group: 65535
- Audio EDID Group: 65535
- Copy Sink EDID: 1
- Color Space Mode: Force RGB
- Max Output 1 Pixel Rate: 225
- Max Devices: 16
- Input: Enabled
- Stream Name: 1-16 (based on which stream)

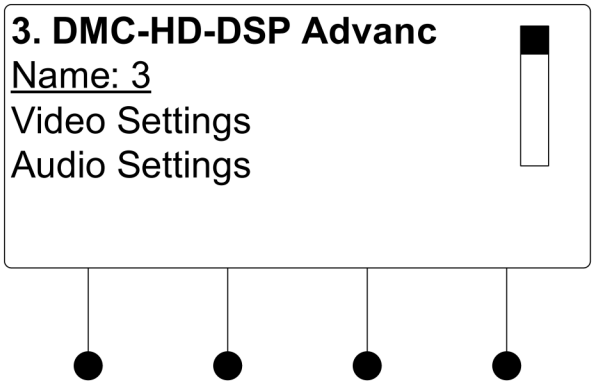
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-HD-DSP

The front panel controls for the DMC-HD-DSP allow the user to rename the input and view information on the incoming HDMI source and the outgoing HDMI signal.

DMC-HD-DSP Controls



Using the DMC-HD-DSP controls, the user can:

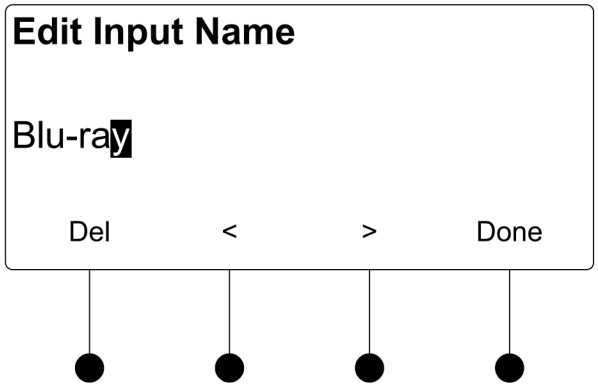
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level.
- View EDID settings.
- Perform an HDCP check to determine how many endpoints can be connected to the source.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

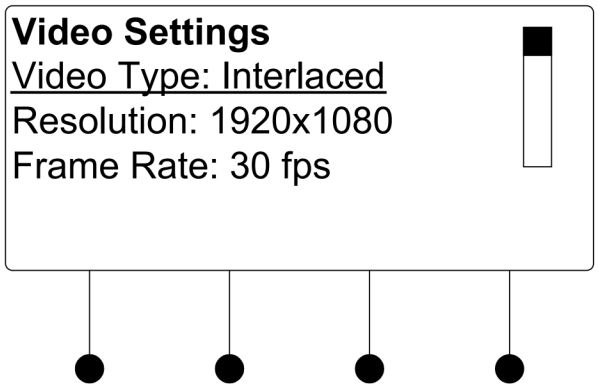
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-HD-DSP can display information about the video portion of the incoming signal. Available information includes video type, resolution, frame rate, aspect ratio, deep color setting, HDCP state, and the maximum amount of downstream devices. To view video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



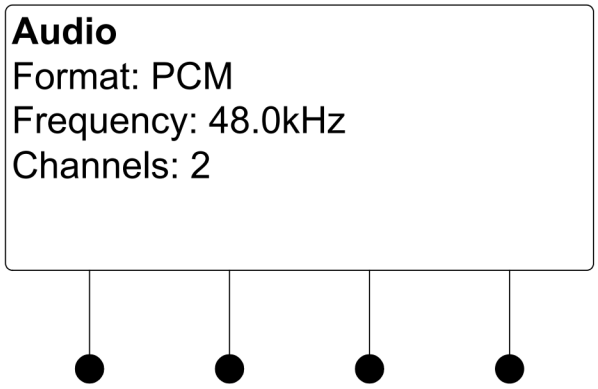
2. Turn the selection knob to view the available information.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-HD-DSP can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



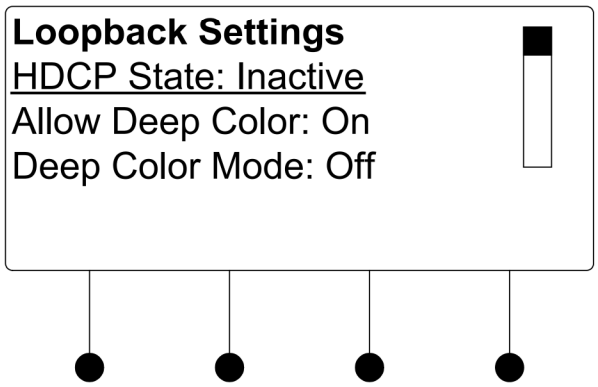
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-HD-DSP can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-HD-DSP. Available information includes HDCP state, deep color setting, audio details and EDID information. To view the loopback settings:

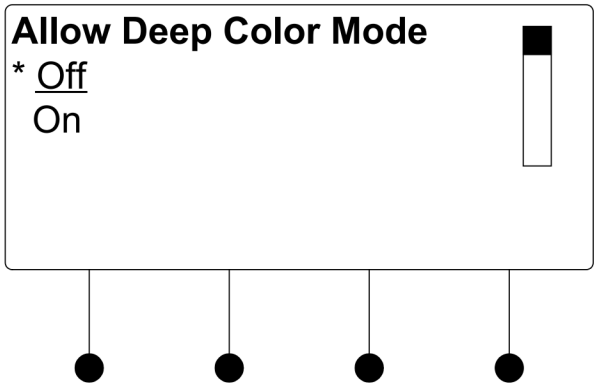
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

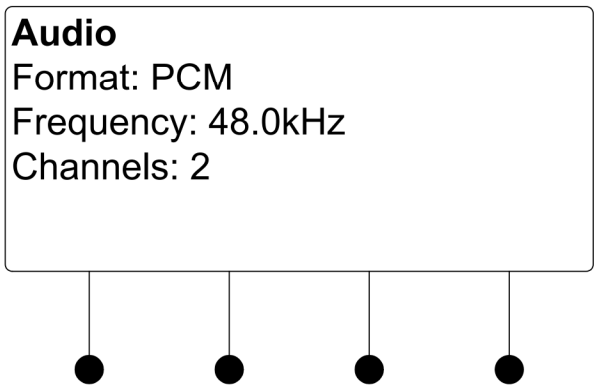


ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

b. To view audio details:

i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

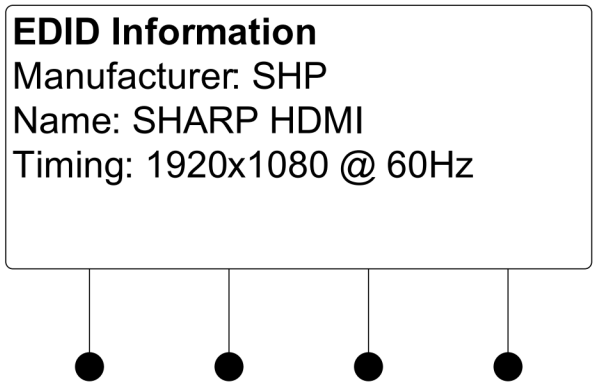


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

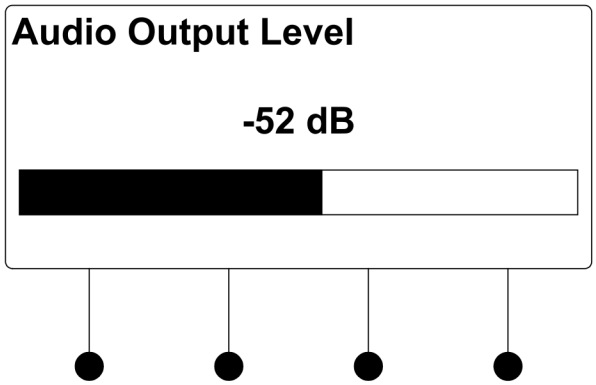
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio signal can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



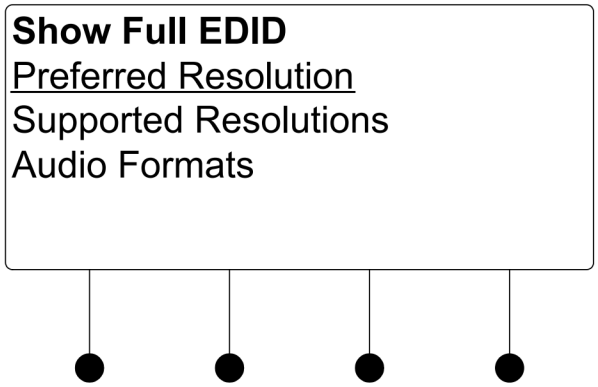
2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

Show Full EDID

The DMC-HD-DSP can display all EDID data for the source connected to the **HDMI IN** port. To view EDID information for the connected source:

1. Turn the selection knob to highlight **Show Full EDID** and press the **ENTER** button.

Show Full EDID



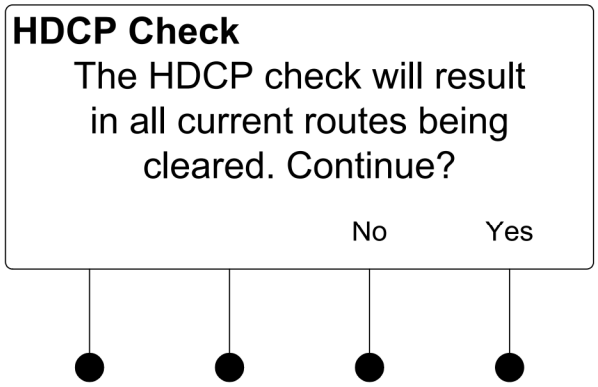
2. Turn the selection knob to highlight the data to be viewed and press the **ENTER** button.
3. Press the **MENU** button to return to list of available EDID data.
4. Press the **MENU** button to return to the list of options for the input card.

HDCP Check

The switcher can test HDMI sources for switching limitations due to HDCP keys. The number of HDCP keys specify the number of display devices that can be connected to a source over HDMI using HDCP authentication. To run an HDCP check:

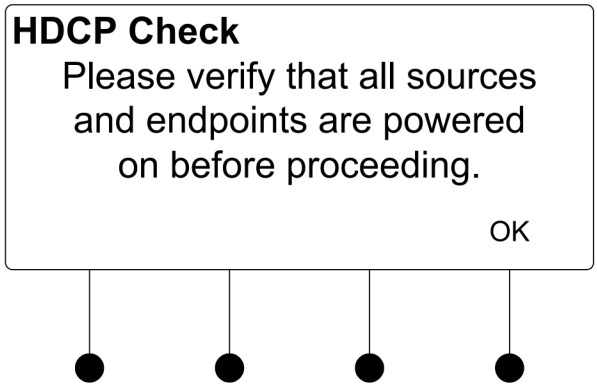
1. Turn the selection knob to highlight **HDCP Check** and press the **ENTER** button.

Confirmation for HDCP Check



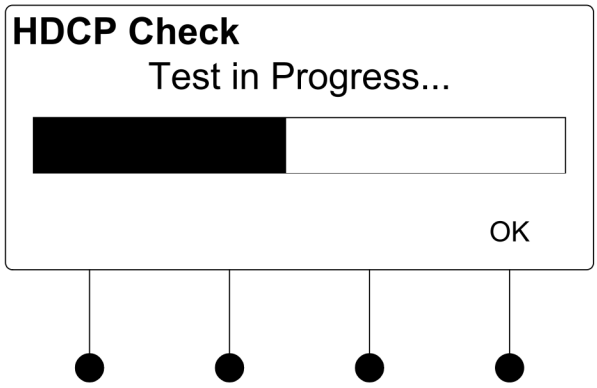
Running an HDCP check will disconnect any audio and video routes that are currently set. To proceed with the HDCP check, press the soft button labeled **Yes**. To cancel the HDCP check, press the soft button labeled **No**.

Instructions for HDCP Check



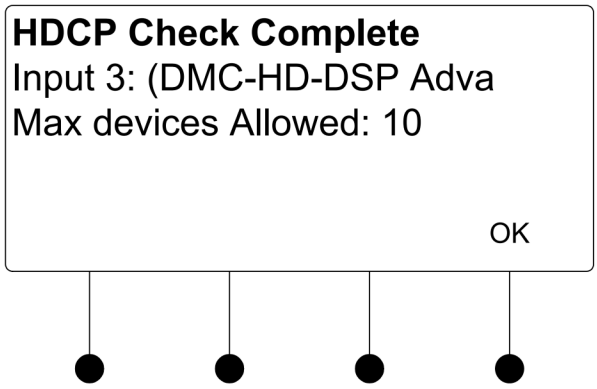
2. Verify that all source and display devices are powered on. Press the soft button labeled **OK** to begin the HDCP check. A progress bar will be displayed to show the progress of the HDCP check.

HDCP Check in Progress



When the check is complete the results will be displayed.

HDCP Check Results



If the number of displays in use exceeds the number of devices supported by the source, an error message will be displayed.

3. Press the soft button labeled **OK** to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- EDID Mode: Best Common
- Max Input Resolution: 165
- Video EDID Group: 65535
- Audio EDID Group: 65535
- Copy Sink EDID: 1
- Color Space Mode: 0 (Force RGB)
- Max Output 1 Pixel Rate: 225
- Max Devices: 16
- Input: Enabled
- Stream Name: 1-16 (based on which stream)

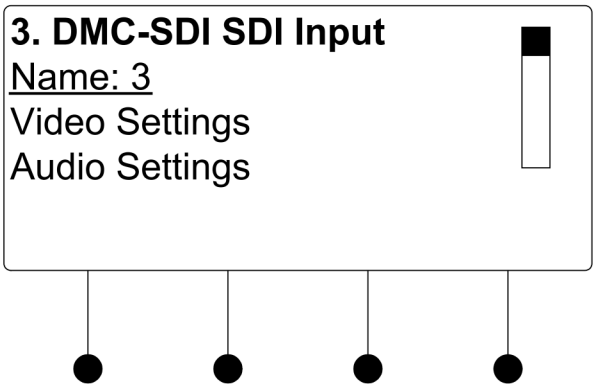
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-SDI

The front panel controls for the DMC-SDI allow the user to rename the input, adjust the picture, and view information on the incoming SDI source and the outgoing HDMI signal.

DMC-SDI Controls



Using the DMC-SDI controls, the user can:

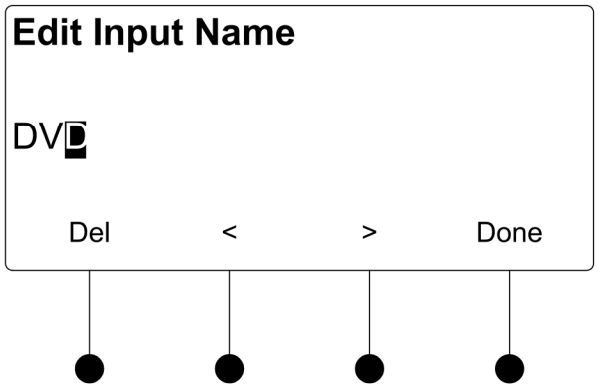
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Adjust the audio output level
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

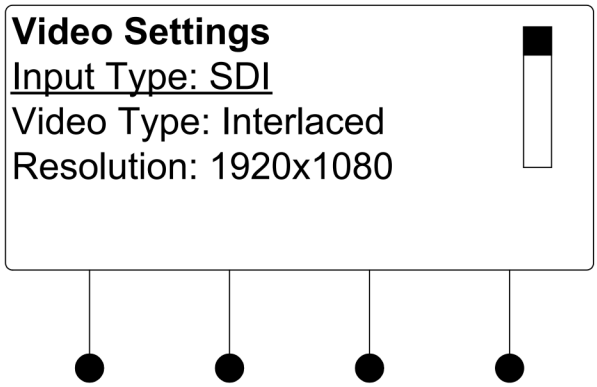
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-SDI can display information about the video portion of the incoming signal. To view the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



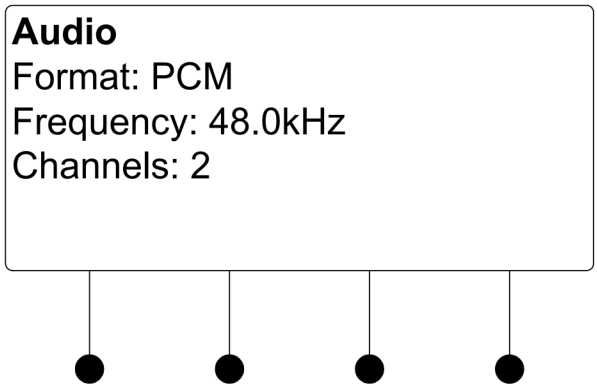
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-SDI can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



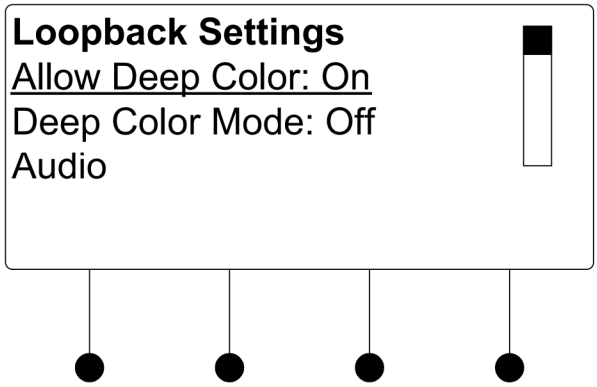
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-SDI can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-SDI. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

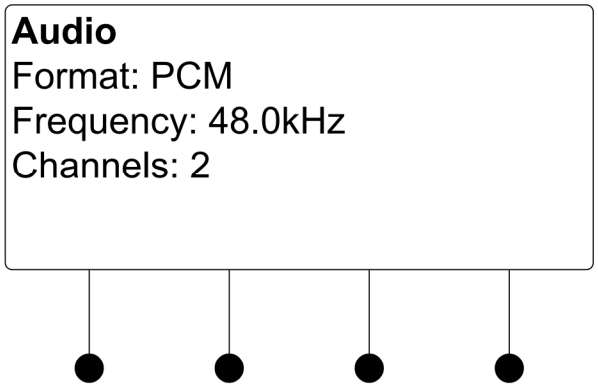
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



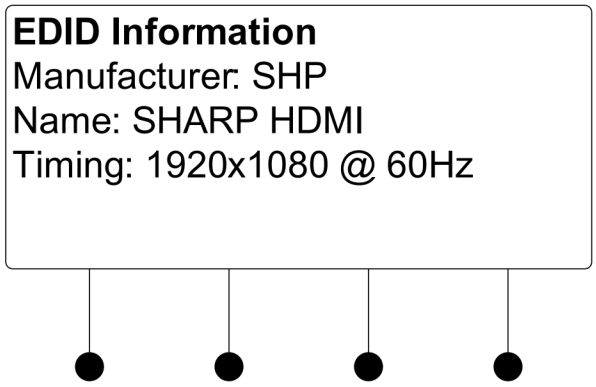
2. Turn the selection knob to view audio details or view EDID information.
   a. To view audio details:
      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details



      ii. Press the **MENU** button to return to the Loopback Settings.
   b. To view EDID information about the display device connected to the **HDMI OUT** port:
      i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

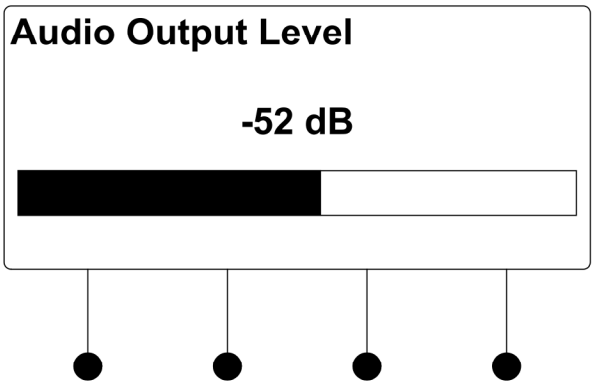
3. Press the **MENU** button to return to the list of options for the input card.

Audio Output Level

The output level of the audio output can be adjusted. To adjust the audio output level:

1. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button

Audio Output Level



2. Turn the selection knob to adjust the audio output level.
3. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled

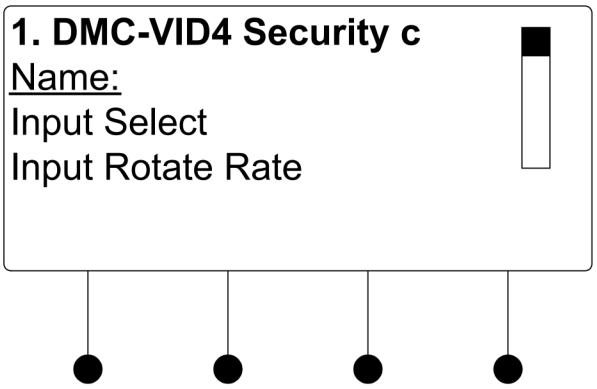
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-VID4

The front panel controls for the DMC-VID4 allow the user to rename the input and configure each of the inputs.

DMC-VID4 Controls



Using the DMC-VID4 controls, the user can:

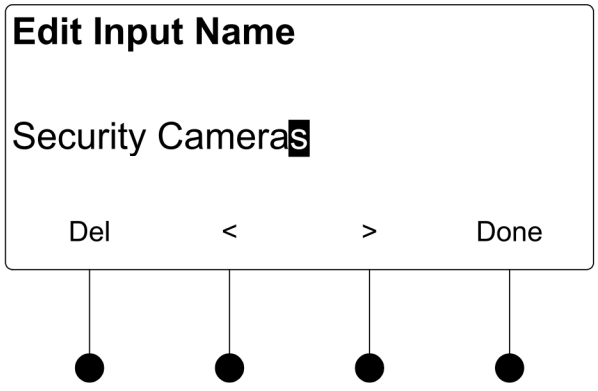
- Change the input name.
- Select the input to be viewed.
- Select the input rotate rate.
- Adjust the input signals.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

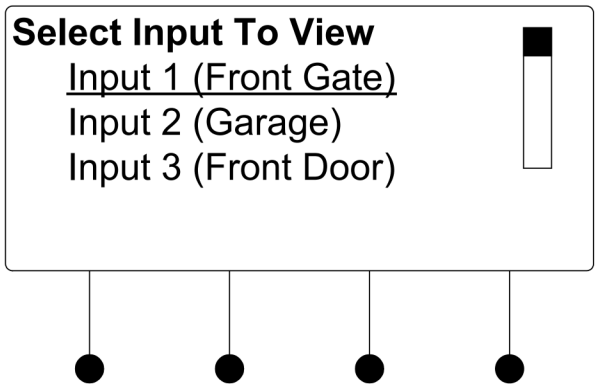
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Select Input

The DMC-VID4 can select video from any of the four inputs for viewing. The DMC-VID4 can also be set to show feeds from all four inputs simultaneously or switch between inputs at a specified rotate rate. To select an input to view:

1. Turn the selection knob to highlight **Input Select** and press the **ENTER** button.

Select Input to View



2. Turn the selection knob to highlight an input and press the **ENTER** button. The current selection is indicated with an asterisk (*).

   In addition to choosing an individual input, the user can select to view all of the inputs simultaneously (**All Inputs**) or have the display rotate between the inputs (**Rotate Inputs**). If **Rotate Inputs** is selected, the rotate rate must be selected as described in "Input Rotate Rate" below.

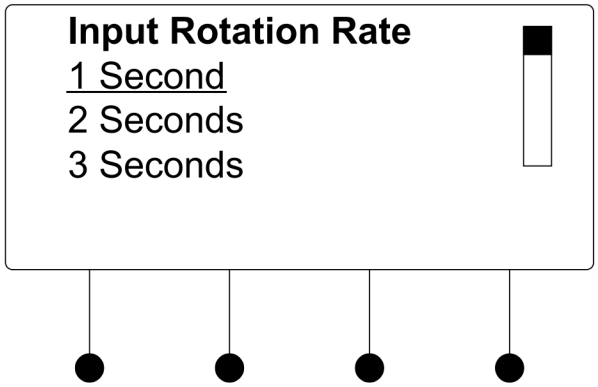
3. Press the **MENU** button to return to the list of options for the DMC-VID4.

Input Rotate Rate

If the DMC-VID4 is set to rotate the inputs that are displayed, the rotate rate between inputs must be set. To select a rotate rate:

1. Turn the selection knob to highlight **Input Rotate Rate** and press the **ENTER** button.

Input Rotate Rate



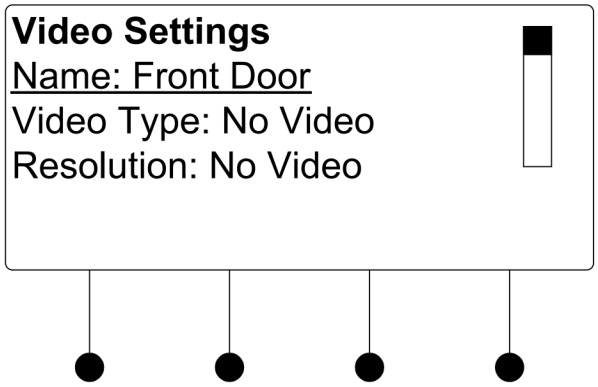
2. Turn the selection knob to highlight a rotate rate and press the **ENTER** button. Rotate rates from one to 60 seconds can be selected. The current selection is indicated with an asterisk (*).
3. Press the **MENU** button to return to the list of options for the DMC-VID4.

Video Input Settings

Each of the inputs on the DMC-VID4 can be configured and monitored. To configure or monitor a video input:

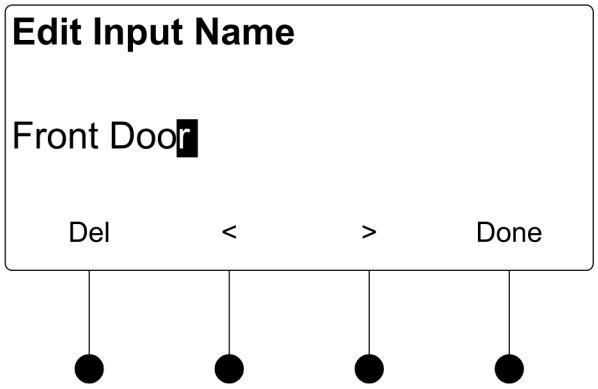
1. Turn the selection knob to highlight the video input to be configured or monitored (**Video Input 1 Settings** through **Video Input 4 Settings**) and press the **ENTER** button.

Video Settings



2. Turn the selection knob to view information on video type, resolution, frame rate and aspect ratio. The name of the selected video input and the picture controls for the selected video input can also be adjusted.
   a. The name of the video input can be set to provide a label for the image when it is displayed. To change the name assigned to the video input:
      i. Turn the selection knob to highlight **Name** and press the **ENTER** button.
      ii. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

Edit Input Name



iii. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

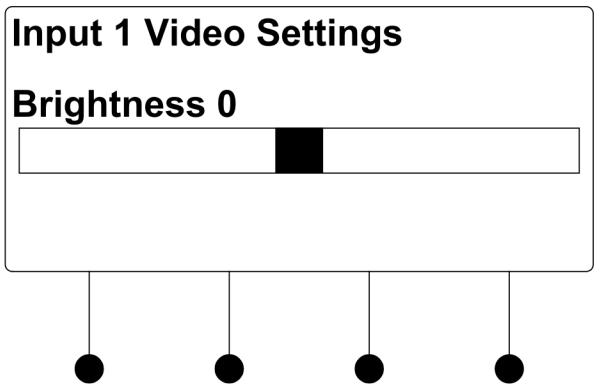
iv. After the new name has been entered, press **Done** to save the name and return to the list of selections for the video input.

b. Picture controls can be used to adjust the picture's brightness, contrast, saturation, and hue levels. To adjust the picture:

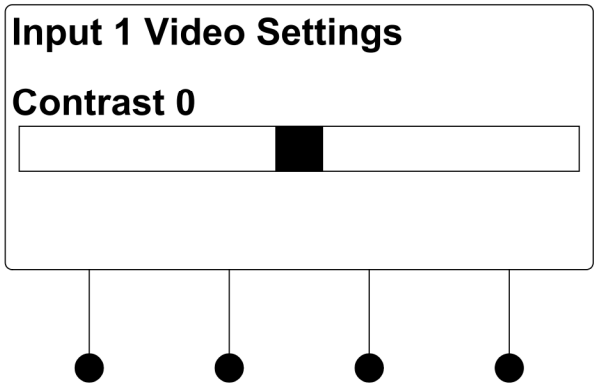
i. Turn the selection knob to highlight **Picture Controls** and press the **ENTER** button.

ii. Turn the selection knob to highlight the picture control to be adjusted and press the **ENTER** button. Controls are available for brightness, contrast, saturation, and hue.

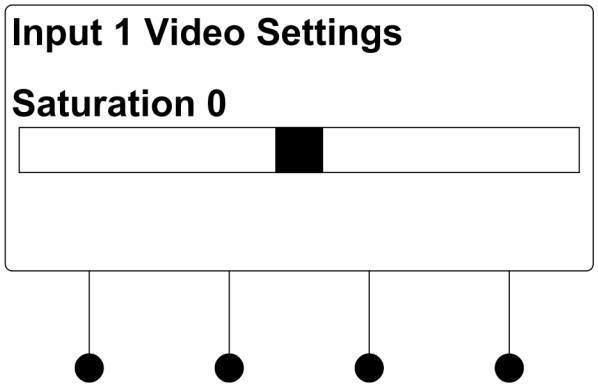
Brightness Control



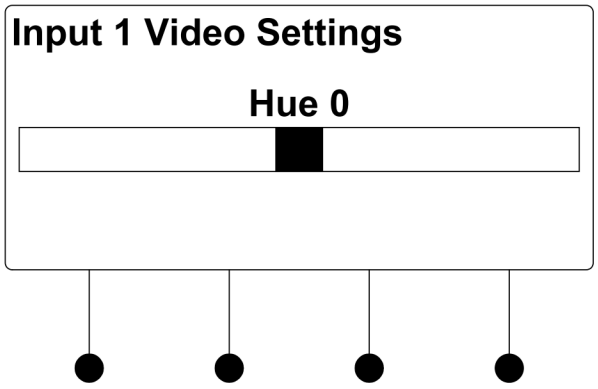
Contrast Control



Saturation Control



Hue Control



iii. Turn the selection knob to display the desired level and press the **ENTER** button to save the setting and return to the list of picture controls.

iv. Press the **MENU** button to return to the list of options for the video input.

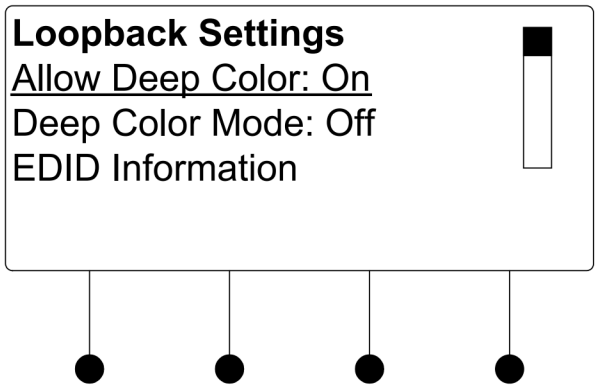
3. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-VID4 can display information about the device connected to the **HDMI OUT** port as well as information on the deep color setting of the signal passed to the **HDMI OUT** port on the DMC-VID4. To view the loopback settings:

1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

   Loopback Settings

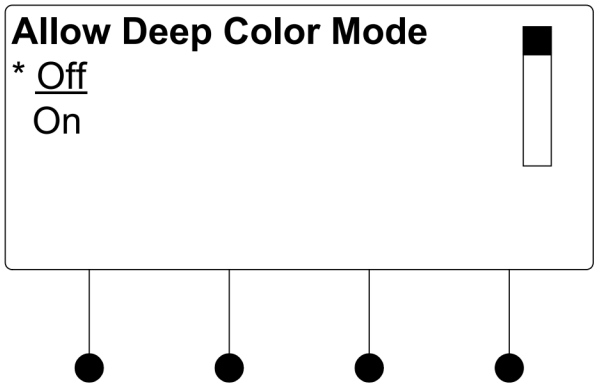
   

2. Turn the selection knob to view available information, enable/disable deep color, or view EDID information.

   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:

      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

      Allow Deep Color Mode

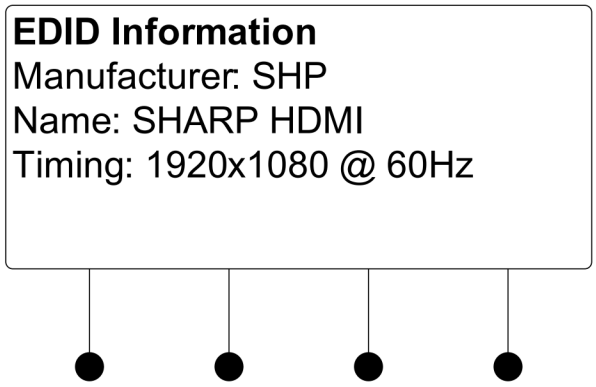
      

      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

   b. To view EDID information about the display device connected to the **HDMI OUT** port:

      i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

3. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Input Select: Input 1
- Rotate Rate: 3 seconds
- Image Display (Full or Quad): Full
- Image Format: NTSC
- Image Cycle (Enable/Disable): Disabled
- Text Overscan: 5
- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable for inputs 1-4: All inputs enabled
- Text Color for inputs 1-4: White
- Text Box Color for inputs 1-4: Black
- Text Position for inputs 1-4: Top Left
- Brightness level for inputs 1-4: 0
- Contrast level for inputs 1-4: 0
- Saturation level for inputs 1-4: 0
- Hue level for inputs 1-4: 0
- Input Names for inputs 1-4: Camera 1- Camera 4

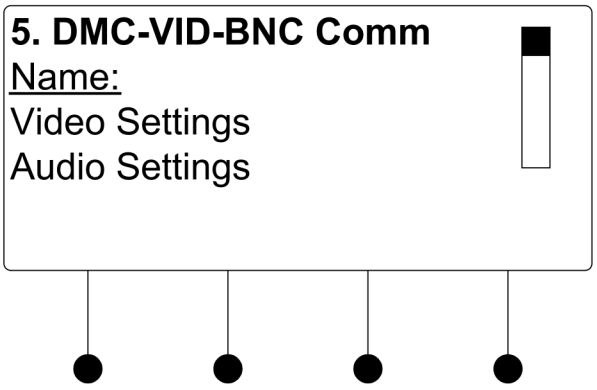
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-VID-BNC

The front panel controls for the DMC-VID-BNC allow the user to rename the input, adjust the picture, and view information on the incoming video source and the outgoing HDMI signal.

DMC-VID-BNC Controls



Using the DMC-VID-BNC controls, the user can:

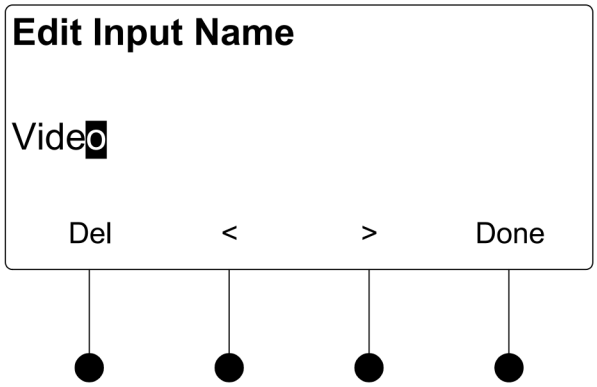
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

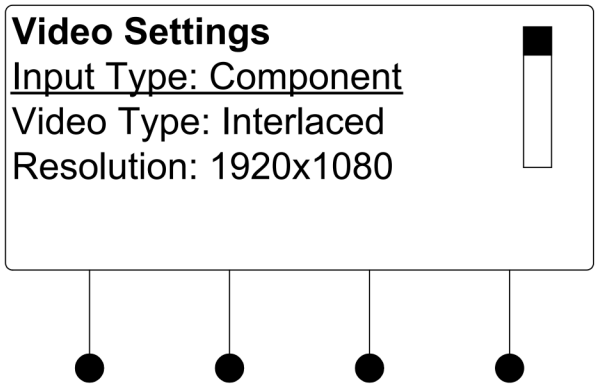
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-VID-BNC can display information about the video portion of the incoming signal and adjust the picture. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



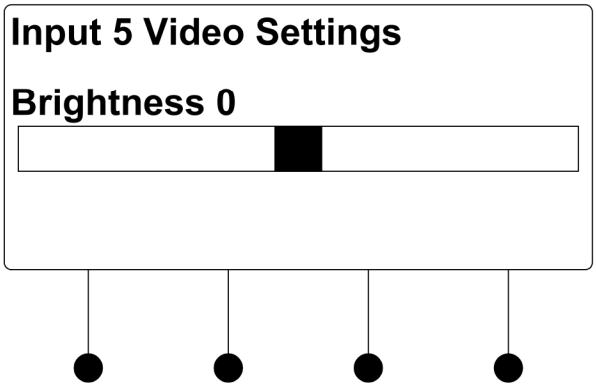
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. The picture settings can also be adjusted.

   Picture controls can be used to adjust the picture's brightness, contrast, saturation, and hue levels. To adjust the picture:

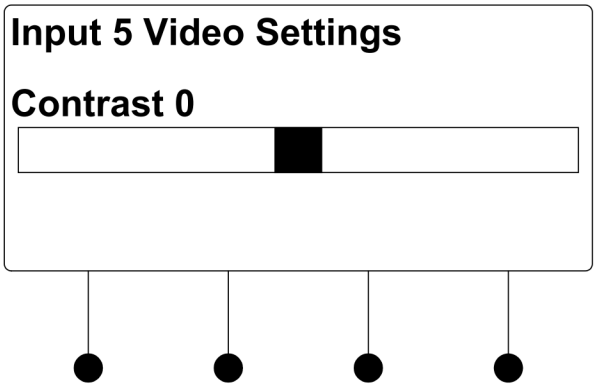
   a. Turn the selection knob to highlight **Picture Controls** and press the **ENTER** button.

   b. Turn the selection knob to highlight the picture control to be adjusted and press the **ENTER** button. Controls are available for brightness, contrast, saturation, and hue.

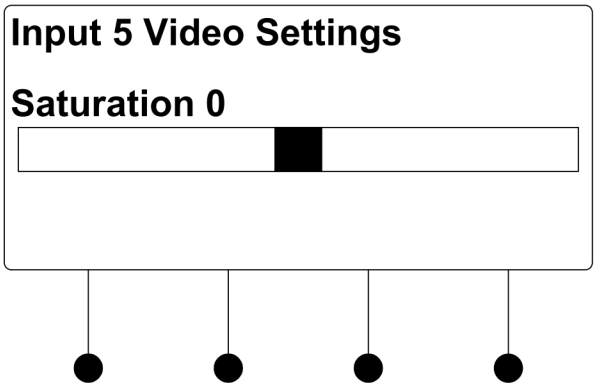
Brightness Control



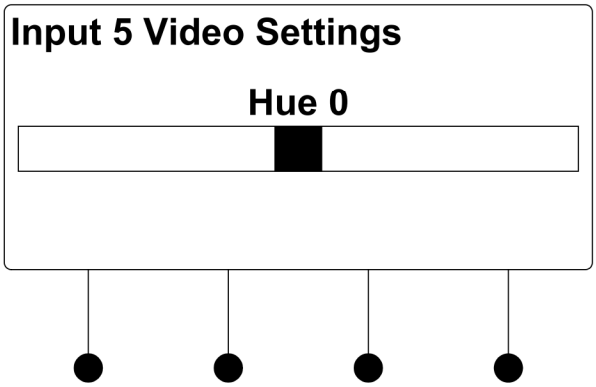
Contrast Control



Saturation Control



Hue Control



c. Turn the selection knob to display the desired level and press the **ENTER** button to save the setting and return to the list of picture controls.

d. Press the **MENU** button to return to the list of options for video settings.

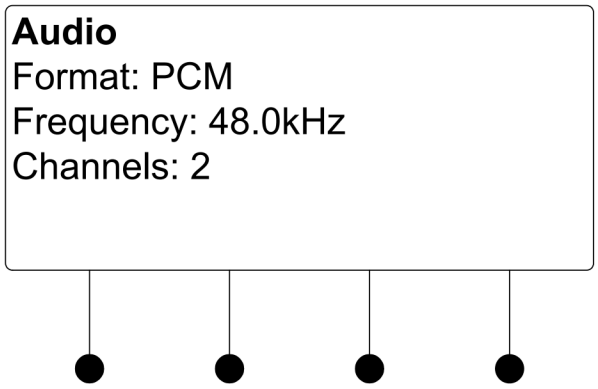
4. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-VID-BNC can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



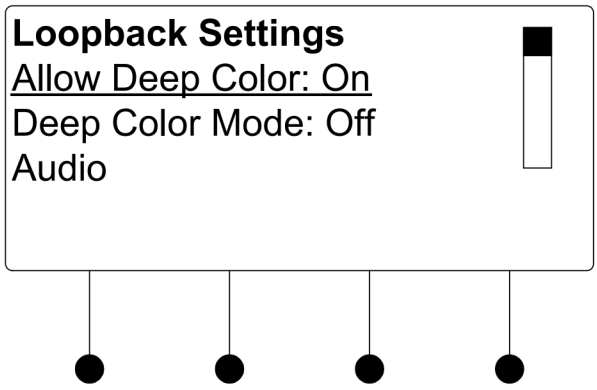
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-VID-BNC can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-VID-BNC. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

   Loopback Settings

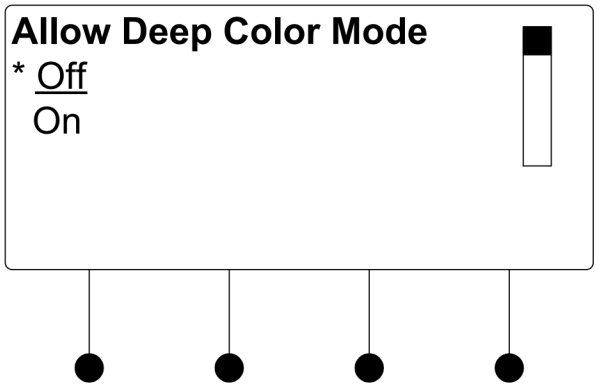
   

2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.

   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:

      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

      Allow Deep Color Mode

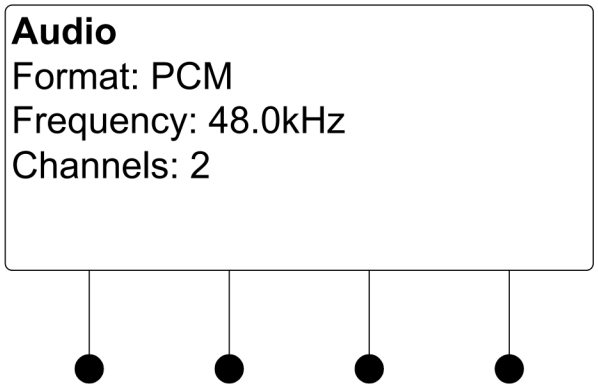
      

      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

   b. To view audio details:

      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

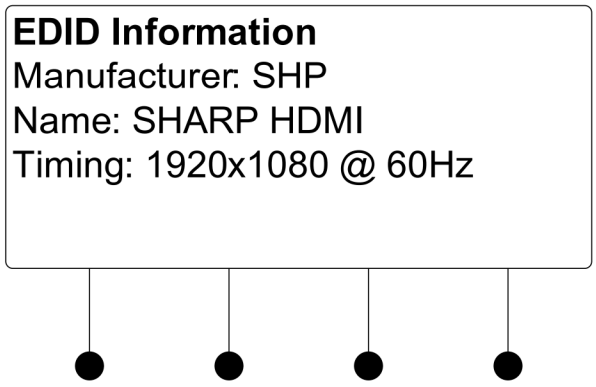


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

3. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0

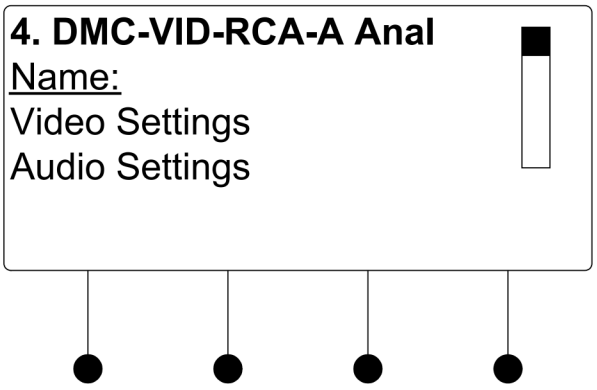
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-VID-RCA-A

The front panel controls for the DMC-RCA-A allow the user to rename the input, adjust the picture, and view information on the incoming component video source and the outgoing HDMI signal.

DMC- VID-RCA-A Controls



Using the DMC-VID-RCA-A controls, the user can:

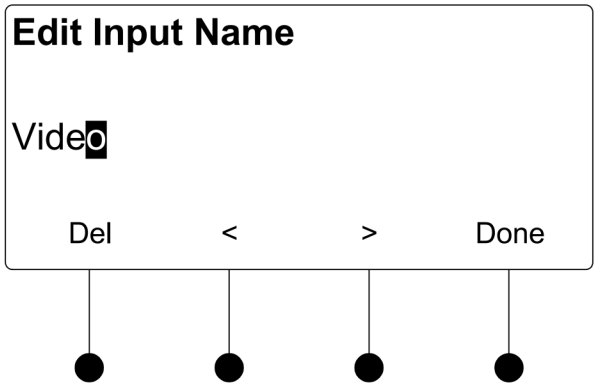
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

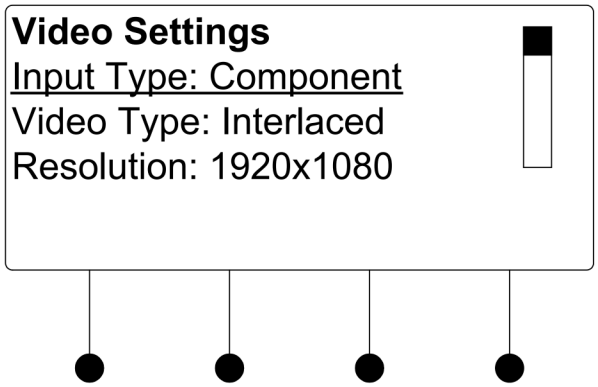
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-VID-RCA-A can display information about the video portion of the incoming signal and adjust the picture. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



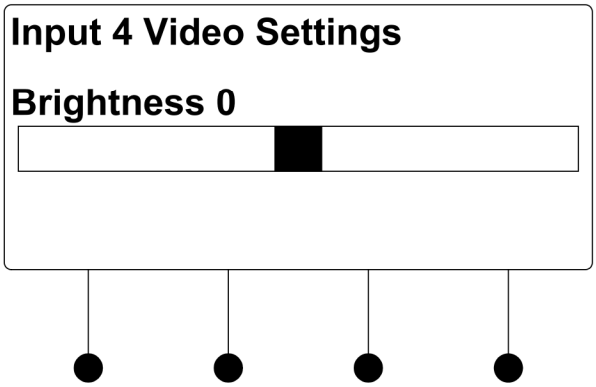
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. The picture settings can also be adjusted.

   Picture controls can be used to adjust the picture's brightness, contrast, saturation, and hue levels. To adjust the picture:

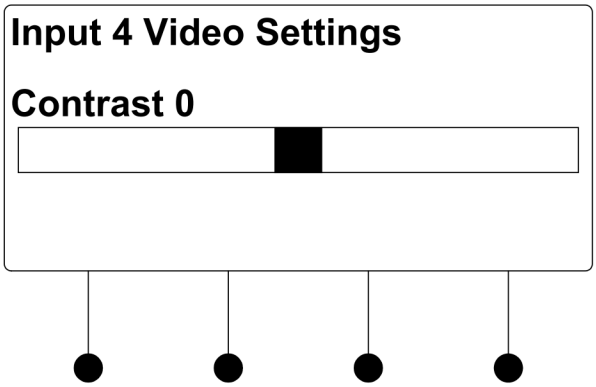
   a. Turn the selection knob to highlight **Picture Controls** and press the **ENTER** button.

   b. Turn the selection knob to highlight the picture control to be adjusted and press the **ENTER** button. Controls are available for brightness, contrast, saturation, and hue.

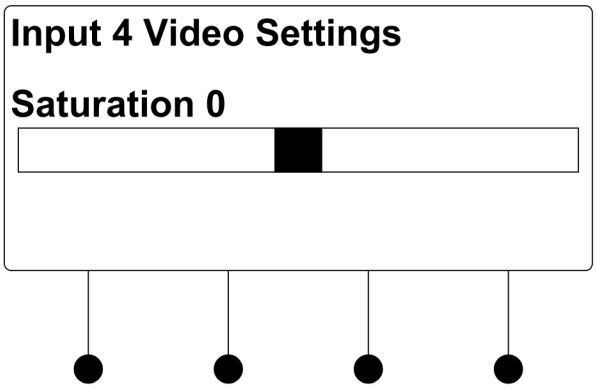
Brightness Control



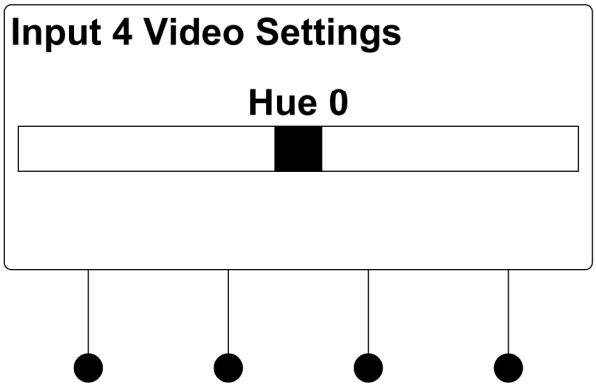
Contrast Control



Saturation Control



Hue Control



c. Turn the selection knob to display the desired level and press the **ENTER** button to save the setting and return to the list of picture controls.

d. Press the **MENU** button to return to the list of options for video settings.

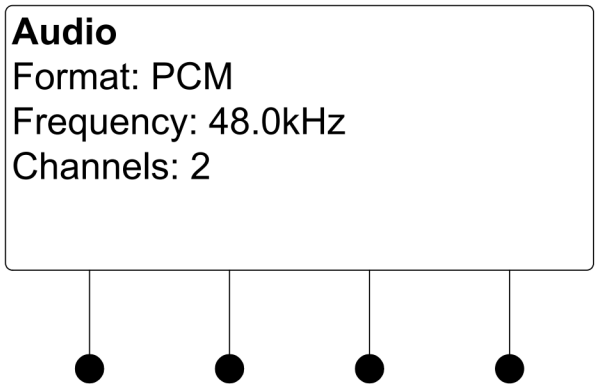
4. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-VID-RCA-A can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



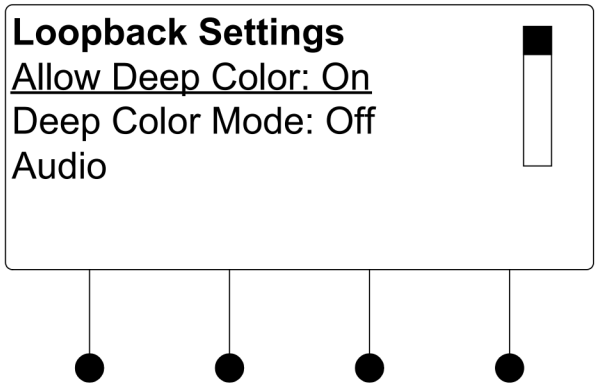
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-VID-RCA-A can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-VID-RCA-A. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings

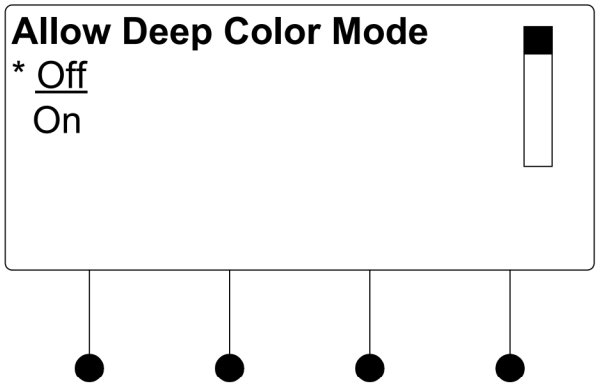


2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.

   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:

      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

      Allow Deep Color Mode

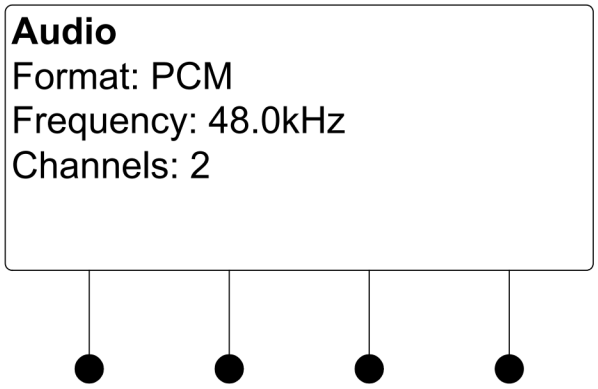
      

      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

   b. To view audio details:

      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

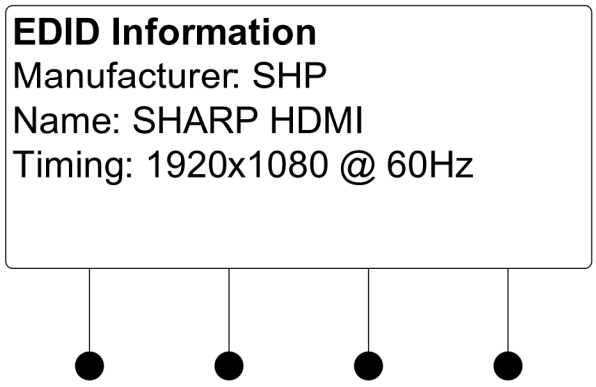


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

3. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0

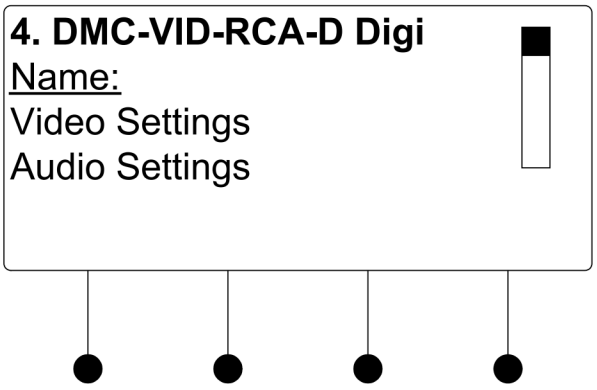
To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

DMC-VID-RCA-D

The front panel controls for the DMC-RCA-D allow the user to rename the input, adjust the picture, and view information on the incoming component video source and the outgoing HDMI signal.

DMC- VID-RCA-D Controls



Using the DMC-VID-RCA-D controls, the user can:

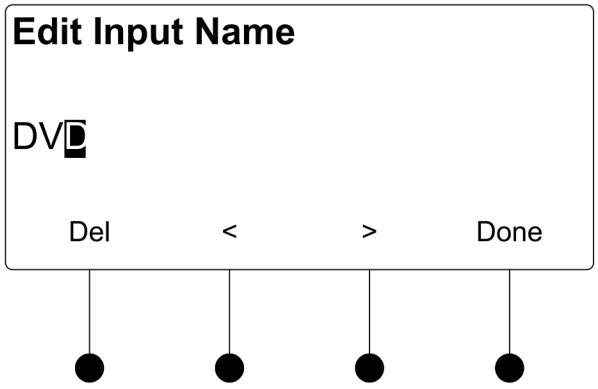
- Change the input name.
- View details on the video portion of the incoming signal
- View details on the audio portion of the incoming signal.
- View details on the signal delivered to the **HDMI OUT** (loopback) port.
- View details about the device connected to the **HDMI OUT** (loopback) port.
- Restore the default settings.

Name/Rename the Input

To name and/or rename the input:

1. Turn the selection knob to highlight **Name** and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel and return to the list of options for the input card, press the **MENU** button.

   Edit Input Name



2. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ➤ and ➤. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any input name is 32 characters.

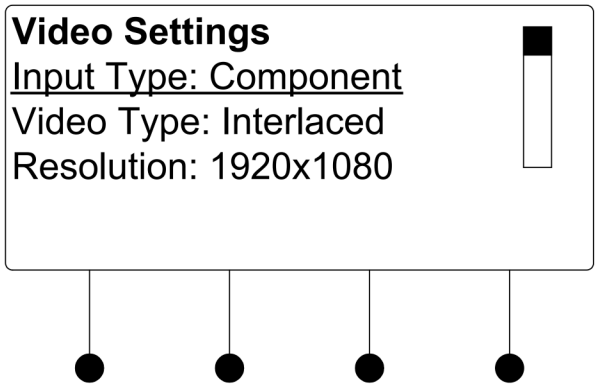
3. After the new name has been entered, press **Done** to save the name and return to the list of options for the input card.

Video Settings

The DMC-VID-RCA-D can display information about the video portion of the incoming signal and adjust the picture. To view and/or adjust the video settings:

1. Turn the selection knob to highlight **Video Settings** and press the **ENTER** button.

Video Settings



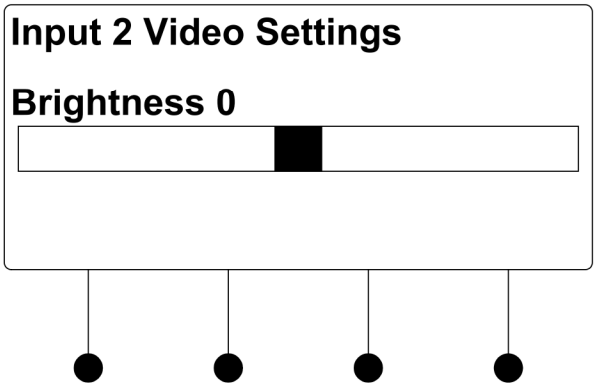
2. Turn the selection knob to view information on input type, video type, resolution, frame rate, and aspect ratio.
3. The picture settings can also be adjusted.

   Picture controls can be used to adjust the picture's brightness, contrast, saturation, and hue levels. To adjust the picture:

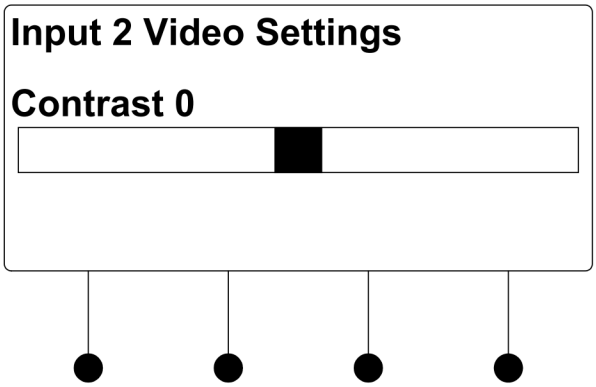
   a. Turn the selection knob to highlight **Picture Controls** and press the **ENTER** button.

   b. Turn the selection knob to highlight the picture control to be adjusted and press the **ENTER** button. Controls are available for brightness, contrast, saturation, and hue.

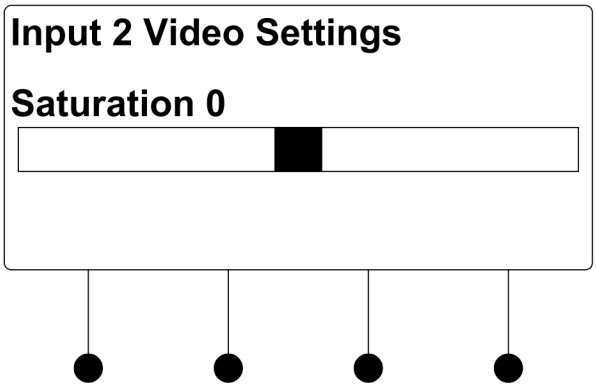
Brightness Control



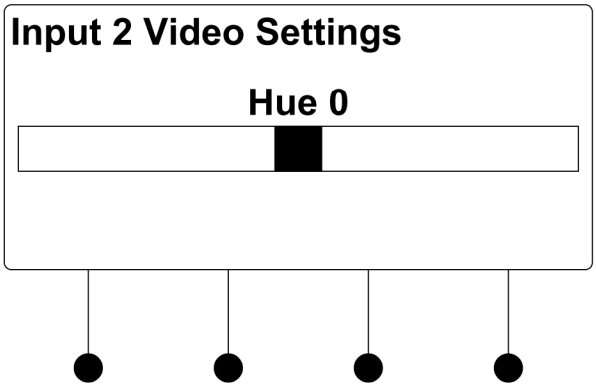
Contrast Control



Saturation Control



Hue Control



c. Turn the selection knob to display the desired level and press the **ENTER** button to save the setting and return to the list of picture controls.

d. Press the **MENU** button to return to the list of options for video settings.

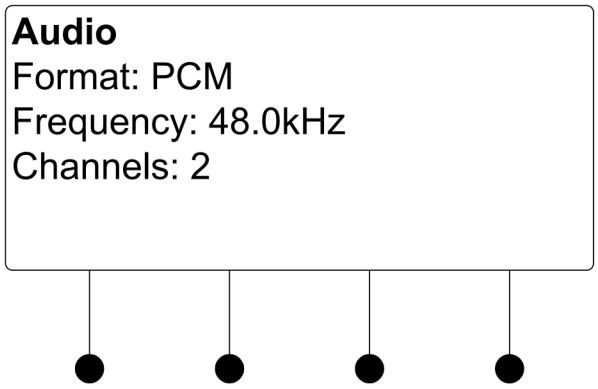
4. Press the **MENU** button to return to the list of options for the input card.

Audio Settings

The DMC-VID-RCA-D can display information about the audio portion of the incoming signal. Available information includes format, frequency, and channels. To view audio settings:

1. Turn the selection knob to highlight **Audio Settings** and press the **ENTER** button.

Audio Settings



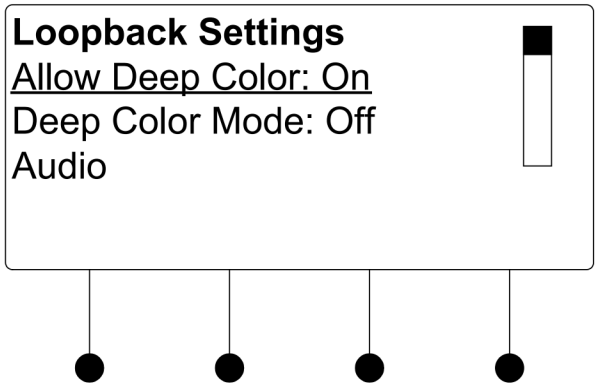
2. Press the **MENU** button to return to the list of options for the input card.

Loopback Settings

The DMC-VID-RCA-D can display information about the device connected to the **HDMI OUT** port as well as information about the signal passed to the **HDMI OUT** port on the DMC-RCA-D. Available information includes deep color setting, audio details and EDID information. To view the loopback settings:

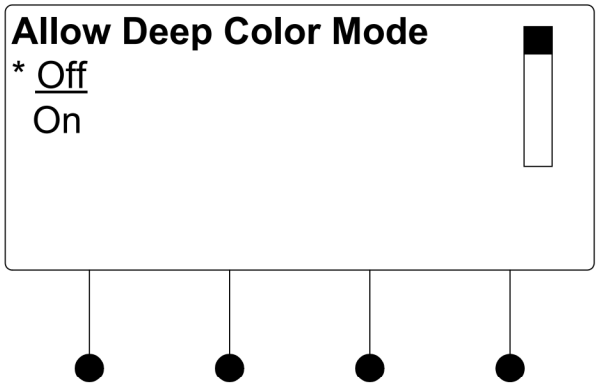
1. Turn the selection knob to highlight **Loopback Settings** and press the **ENTER** button.

Loopback Settings



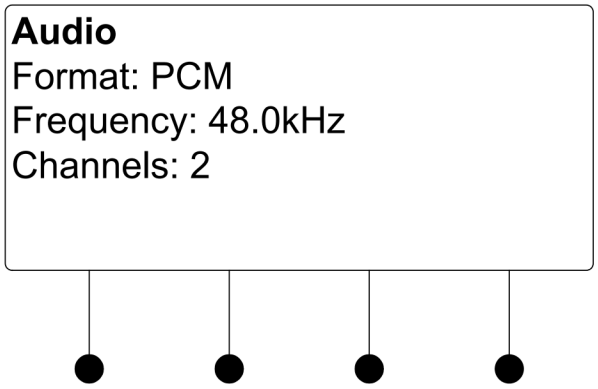
2. Turn the selection knob to view available information, enable/disable deep color, view audio details, or view EDID information.
   a. The loopback output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:
      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode



      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.
   b. To view audio details:
      i. Turn the selection knob to highlight **Audio** and press the **ENTER** button.

Audio Details

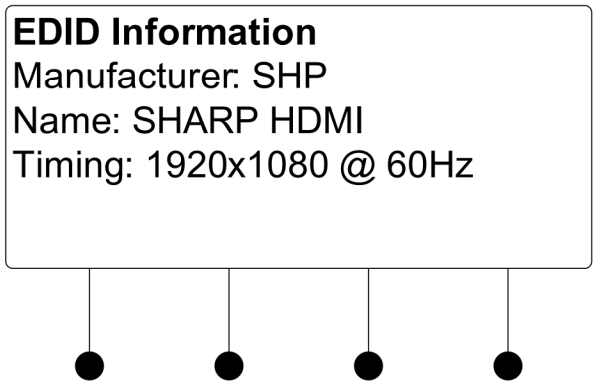


ii. Press the **MENU** button to return to the Loopback Settings.

c. To view EDID information about the display device connected to the **HDMI OUT** port:

i. Turn the selection knob to highlight **EDID Information** and press the **ENTER** button.

EDID Information



ii. Press the **MENU** button to return to the Loopback Settings.

3. Press the **MENU** button to return to the list of options for the input card.

Restore Defaults

Use the Restore Defaults function to reset the card to its factory settings. The card's factory settings are:

- Loopback Allow Deep Color: On
- Color Space Mode: Force RGB
- Enable/Disable input: Input enabled
- Brightness level: 0
- Contrast level: 0
- Saturation level: 0
- Hue level: 0

To restore the card's default settings:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default setting or press the soft button labeled **No** to cancel and return to the list of options for the input card.

Appendix C: Output Configuration

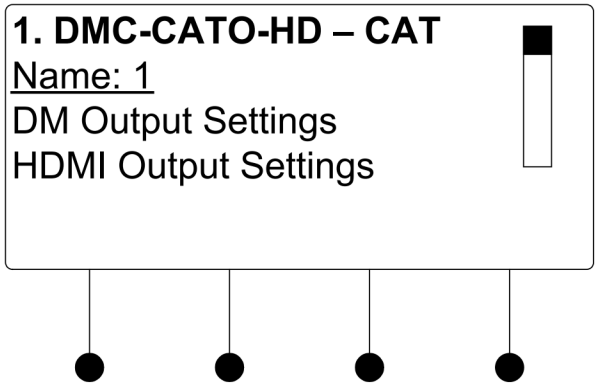
This appendix contains detailed instructions for using the DM switcher's front panel controls to configure the outputs on a DM switcher.

Select An Output

To view/change the configuration settings for an output:

1. Open the Outputs section of Installer Tools as described on page 43.
2. Turn the selection knob to highlight the output to be configured and press the **ENTER** button.
3. To edit or view the details of an output, turn the selection knob to highlight an output and press the **ENTER** button. A list of options is displayed. Turn the selection knob to highlight an option and press the **ENTER** button.

Output Settings for Output 1



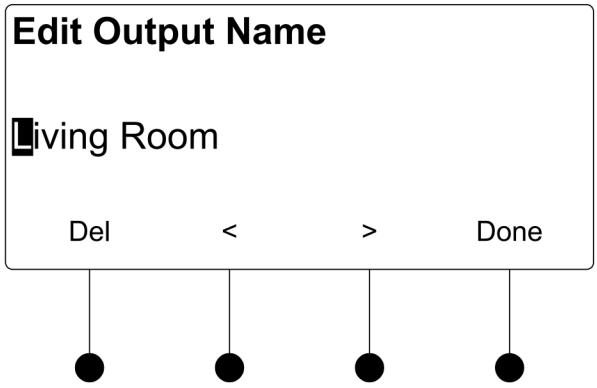
4. To return to the list of outputs, press the **MENU** button.

Name/Rename an Output

To name and/or rename an output:

1. Open the Outputs section and select an output as described above.
2. Turn the selection knob to highlight the name of the output to be named/renamed and press the **ENTER** button. A cursor will appear next to the current name and controls for changing the name will also be displayed. To cancel, press the **MENU** button.

Edit Output Name



3. Select letters (upper and lower-case), numbers, or other characters by turning the selection knob until the desired letter, number, or other character is displayed on the LCD. Move the cursor to another position by pressing the soft buttons labeled ⮜ and ⮞. To delete a character, press the soft button marked **Del**.

NOTE: The maximum length for any output name is 32 characters.

4. After the new name has been entered, press **Done** to save the name and return to the list of options for the output.

DM CAT Output Information (DM CAT-Equipped Outputs)

The DM output can provide information on the HDCP state, the deep color setting, the audio signal that is being passed through, EDID information, the selected DM cable type, and DM device depth. To view information on the DM CAT output:

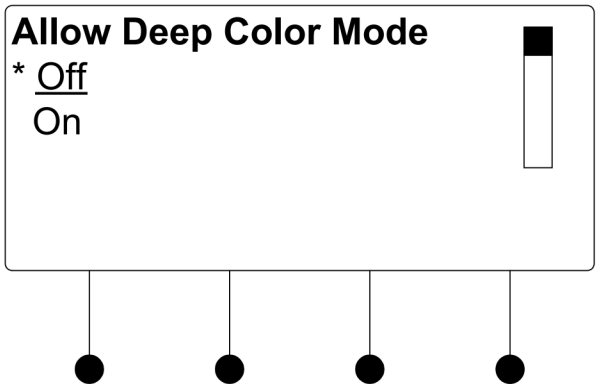
1. Open the Outputs section and select an output as described on page 170.

   Turn the selection knob to highlight **DM Output Settings** and press the **ENTER** button. A list of available data will be displayed. Some categories such as **Audio**, **EDID Device Information**, **Allow Deep Color**, **DM Cable Type** and **DM Device Depth**, will display detailed information when highlighted with the selection knob and selected by pressing the **ENTER** button.

   a. The output can be set to enable or disable the deep color feature of the carried video signal. To enable or disable deep color:

      i. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

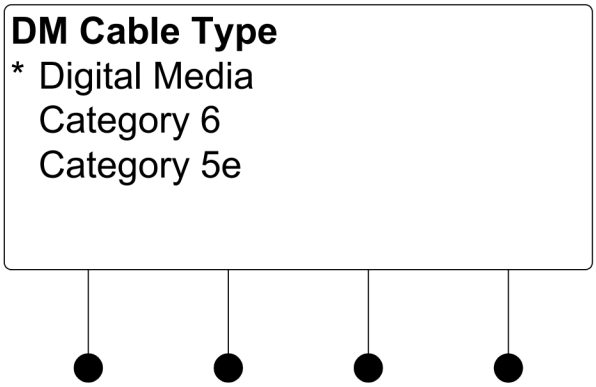
      Allow Deep Color Mode

      ii. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

   b. When **DM Cable Type** is selected, the type of DM cable used to connect the output can be displayed or changed.

DM Cable Type



The selected cable type is displayed with an asterisk (*). To select a different cable type:

i. Turn the selection knob to highlight the cable type to be used and press the **ENTER** button. An asterisk will appear next to the selected cable type.

ii. Press the **MENU** button to return to the list of available information.

2. To exit and return to the list of available functions, press the **MENU** button.

HDMI Output Information (HDMI-Equipped Outputs)

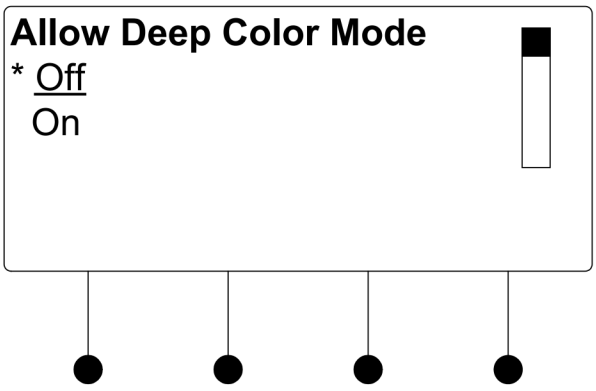
Cards equipped with HDMI outputs can provide information on the HDCP state, the deep color setting, and the audio signal that is being passed through. To view information on the HDMI output:

1. Open the Outputs section and select an output as described on page 170.
2. Turn the selection knob to highlight **HDMI Output Settings** and press the **ENTER** button. A list of available data will be displayed. Some categories such as **Audio** and **EDID Device Information** will display detailed information when highlighted with the selection knob and selected by pressing the **ENTER** button. **Allow Deep Color** can be used to determine whether deep color can be sent over the output while **Audio Output Level** sets the level of the analog audio output.

   - **Allow Deep Color:**

     a. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode

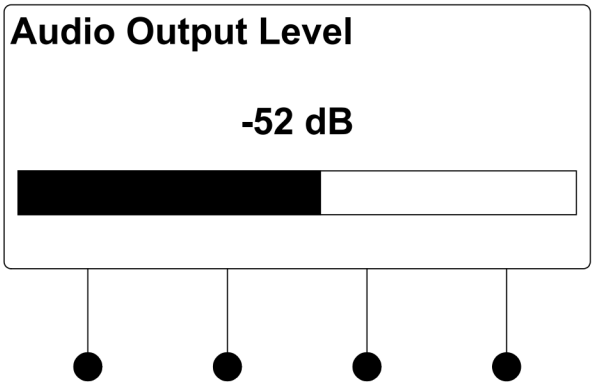


b. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

- **Audio Output Level:**

a. Turn the selection knob to highlight **Audio Output Level** and press the **ENTER** button.

Audio Output Level



b. Turn the selection knob to adjust the audio output level.

c. Press the **MENU** button to return to the list of options for the output card.

3. To exit and return to the list of available functions, press the **MENU** button.

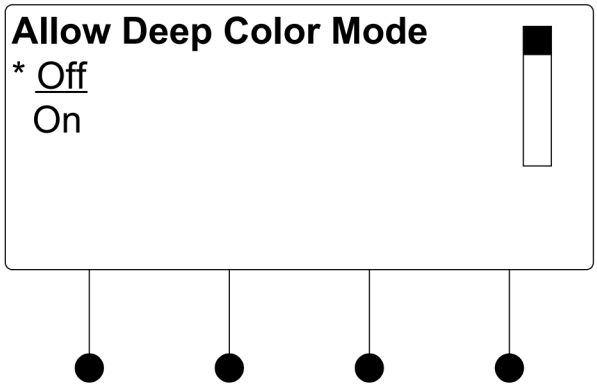
Fiber Output Information (DM Fiber-Equipped Outputs)

Cards equipped with DM fiber outputs can provide information on the HDCP state, the deep color setting, the audio signal that is being passed through, and EDID. To view information on the fiber output:

1. Open the Outputs section and select an output as described on page 170.
2. Turn the selection knob to highlight **Fiber Output Settings** and press the **ENTER** button. A list of available data will be displayed. Some categories such as **Audio** and **EDID Device Information** will display detailed information when highlighted with the selection knob and selected by pressing the **ENTER** button. **Allow Deep Color** can be used to determine whether deep color can be sent over the output. To enable or disable deep color:

   a. Turn the selection knob to highlight **Allow Deep Color** and press the **ENTER** button.

Allow Deep Color Mode



b. The current selection is indicated with an asterisk (*). Turn the selection knob to highlight **Off** or **On** and press the **ENTER** button.

3. To exit and return to the list of available functions, press the **MENU** button.

Restore Defaults

To restore the default settings of the output:

1. Turn the selection knob to highlight **Restore Defaults** and press the **ENTER** button.
2. Press the soft button labeled **Yes** to restore the default settings or press the soft button labeled **No** to cancel and return to the list of available functions.

   If **Yes** is chosen, the settings will be restored as follows:

   - Output 1 Deep Color Setting: 8 bit
   - Output 2 Deep Color Setting (HDMI outputs on HDMI-equipped cards): 12 bit
   - DM Cable Type (DM-equipped cards): DM Cable
   - Maximum Pixel Rate on Output 1: 165
   - Maximum Pixel Rate on Output 2 (HDMI output on outputs 1, 3, 5 and 7): 225
   - Stream Name: Reverts to number of output. (i.e. The name assigned to Stream 1 will be renamed “1”.)

Glossary

1080i

An HDTV standard that specifies an interlaced resolution of 1920 x 1080.

1080p

An HDTV standard that specifies a non-interlaced resolution of 1920 x 1080.

16:9

Sometimes expressed as 16 x 9 or 16 by 9 (known as 1.78:1 in the film world); the standard DTV wide-screen television screen size, or aspect ratio--16 arbitrary units wide by 9 arbitrary units high, as compared to a standard TV aspect ratio of 4:3. The phrase describes the shape of a TV set or program, not an actual inch measurement.

4:3

Standard "square" NTSC TV screen-size aspect ratio of 4 arbitrary units wide by 3 arbitrary units high; often expressed as 4x3 or 4 by 3. It was originally known as the Academy Ratio (as in Academy of Motion Picture Arts and Sciences, the film industry organization that awards the Oscars) prior to 1954 and the introduction of wide-screen aspect-ratio film formats; also known in the film world as 1.33:1.

480i

480 interlaced; a form of standard-definition digital television (SDTV) that approximates the quality of analog television but not considered high-definition television (HDTV). Even though the native resolution of DVDs is 480p, they are viewed at 480i on an NTSC analog television.

480p

480 progressive; form of standard-definition digital television (SDTV) comparable to VGA computer displays but not considered high-definition television (HDTV), though 480p is discernibly cleaner and slightly sharper than analog television. The native resolution of DVD is 480p, but that resolution can be seen only if a DVD player outputs a progressive-scan signal and the DTV has progressive-scan or component-video inputs; it is also known as EDTV.

720p

720 progressive; one of two currently used formats designated as high-definition television in the ATSC DTV standard, this technology comprises 720 vertical pixels and 1,280 horizontal pixels. The p stands for progressive, as opposed to interlaced, scanning, which is used in the other accepted HDTV standard, known as 1080i. Contrary to myth, 720p is not inferior to 1080i; 720p has fewer lines but also has the advantages of progressive scanning and a constant vertical resolution of 720 lines, making it better able to handle motion.

Anamorphic

Adopted from the film technique of shooting a wide-screen image on a square 35mm frame, it is the process of compressing wide-screen images to fit into the squarer standard 4:3 television signal. The images are then expanded for viewing in their original format on a wide-screen display device. Wide-screen or letterboxed DVDs that are not anamorphic have less detail when projected on a wide-screen monitor. In other words, a non-anamorphic wide-screen DVD is designed to be shown letterboxed on a standard "square" TV but appears with a black box all around the image

when shown on a larger 16:9 widescreen TV. To fill a 16:9 screen, a non-anamorphic DVD has to be blown up, resulting in loss of resolution and detail. Conversely, a DVD that is anamorphic, enhanced for 16:9, or enhanced for wide-screen delivers 33 percent more resolution than regular letterboxed transfers, is designed to be shown on a 16:9 TV, and does not need to be blown up. When one of these DVDs is shown on a "square" TV, it is often subject to anamorphic down-conversion artifacts unless the TV has a vertical compression feature.

Anamorphic down-conversion

Processing present in all DVD players that converts the image from an anamorphic DVD for display on a regular 4:3 TV. In the initial setup of a DVD player is a choice between a 16:9 or a 4:3 TV; the 4:3 options engage this processing, which often introduces artifacts such as jaggies and undulations during pans.

Aspect ratio

The ratio of width to height in a video picture or other graphic image. Standard U.S. TV broadcasts and computer monitors feature a 4:3 aspect ratio; HDTV has a much wider 16:9 ratio.

Authentication

Authentication ensures that digital data transmissions are delivered to the intended receiver. Authentication also assures the receiver of the integrity of the message and its source (where or whom it came from). The simplest form of authentication requires a username and a password to gain access to a particular account. But authentication protocols can also be based on secret-key encryption, such as DES, or on public-key systems using digital signatures.

Component video

The elements that make up a video signal, consisting of luminance and two separate chrominance signals, expressed either as Y R-Y B-Y or Y P_b P_r.

Deep Color

A color depth standard associated with high-definition TVs and video gear that include HDMI connections. The deep color standard supports 10-bit, 12-bit and 16-bit color bit depths, up from 8-bit, which is the current standard for consumer video. DigitalMedia supports all but the 16-bit color depth. All earlier versions of HDMI supported just 8-bit color. (Because video is based on three primary colors, you'll sometimes see deep color described as 30-bit, 36-bit and 48-bit.) A higher color bit depth enables finer gradations between different shades of the same color for smoother gradients and reduced color banding. Deep color gives TVs the potential to display billions rather than millions of colors, but in order to see that improvement, the entire video production chain has to use it (camera, editing, format, player, display).

DisplayPort

A digital display interface standard put forth by the Video Electronics Standards Association (VESA) that defines a new license-free, royalty-free, digital audio/video interconnect, intended to be used primarily between a computer and its display monitor, or a computer and a home-theater system.

Down-convert

In DTV, the conversion from a higher-resolution input signal number to a lower one. For example, some DTV receivers can be set to down-convert an HDTV 1080i signal to a standard 480i signal that any TV can display.

DRM

Digital Rights Management; a secure technology that enables the copyright owner of a piece of intellectual property (such as a music, video, or text file) to specify what a user can do with it. Typically, this is used to offer downloads that can't be played or burned to CD without paying for a license.

DTV/Digital television

Generic term that refers to all digital television formats, including high-definition television (HDTV) and standard-definition television (SDTV).

DVI (Digital Visual Interface)

A digital interface specification created by an industry consortium, the Digital Display Working Group. This universal standard for connecting flat-panel monitors is also used for data projectors, plasma displays, and digital TVs. Using a DVI connector and port, a digital signal sent to an analog device is converted into an analog signal (if the device is digital, such as a flat-panel monitor, no conversion is necessary). There are three different DVI configurations: DVI-A for analog signals, DVI-D for digital signals, and DVI-I (integrated) for both analog and digital signals.

EDID (Extended Display Identification Data).

The information transmitted from a display to a source announcing its resolution capabilities.

HDMI (High-Definition Multimedia Interface)

USB-like digital video connectivity standard designed as a successor to DVI; can transmit both digital audio and video signals; incorporates HDCP digital copy protection.

Interlaced scanning

Scan method used by the majority of televisions and the 1080i HDTV format. As opposed to progressive scanning in which the CRT's electron beam scans or "paints" all lines at once, interlaced scanning TVs paint odd-numbered lines in succession, then go back and fill in the remaining even-numbered lines. This method is more prone to artifacts and less stable than progressive.

KSV (Key Selection Vector)

A set of numbers transmitted between HDCP-protected sources and sinks (displays/receivers) during the authentication “handshake” to validate that the devices are authorized to receive the content. Some HDMI sources have limited buffer space to hold KSVs and as such, can only be routed to a few HDMI devices before their buffer overflows and content playback stops.

Progressive scan

A method of displaying images on a CRT monitor or a high-definition TV in which all the lines of a picture are drawn in one quick burst, from left to right and from top to bottom. Compare this to interlacing, in which every other line is displayed in two successive swoops to form a complete picture.

SDTV

Standard-definition television. Digital television format that includes 480-line resolution in both interlaced (480i) and progressively scanned (480p) formats; offers discernible improvement over conventional analog NTSC picture resolution, with less noise; similar to DVD or satellite TV quality but not considered high-definition television (HDTV).

Wide-screen

Image with an aspect ratio greater than 1.33:1 or a picture wider and narrower than a standard television image. Typically refers to TVs in the 16:9 aspect ratio.

Y P_b P_r

Luminance, two chrominance channels of blue minus luminance, red minus luminance. This technical shorthand for component video is also written as Y C_b C_r or Y R-Y B-Y.

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DMPS3-4K-150-C

3-Series® 4K DigitalMedia™ Presentation System 150

Supplemental Guide

Crestron Electronics, Inc.

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DMPS3-4K-150-C: 3-Series® 4K DigitalMedia™ Presentation System 150

Introduction

The Crestron® DMPS3-4K-150-C is an ultra high-definition presentation switcher that integrates a control system, multiformat switcher, 4K video scaler, mic preamp, and audio DSP. The DMPS3-4K-150-C provides out-of-the-box Crestron Connect It™ collaboration and also includes built-in .AV Framework™ technology.

This guide provides information about the following:

- Physical description of the front and rear panels of the DMPS3-4K-150-C
- .AV Framework technology, Crestron Connect It functionality, and 3-Series Control System® integration supported by the DMPS3-4K-150-C
- Configuration of some of the capabilities of the DMPS3-4K-150-C, for example, adjustable underscan
- Troubleshooting
- Pin assignments

For installation information, refer to the DMPS3-4K-150-C DO Guide (Doc. 7654) at www.crestron.com/manuals.

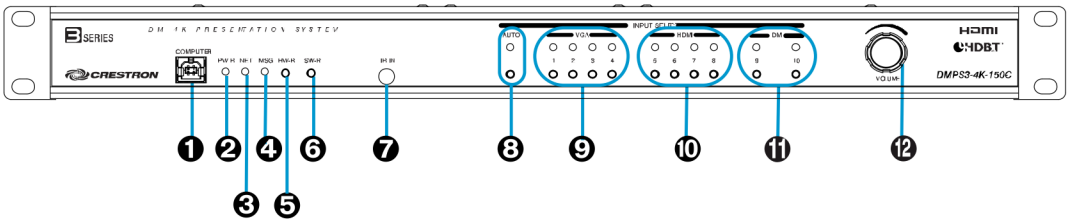
Physical Description

This section provides information about the connectors, controls, and indicators on the front and rear panels of the DMPS3-4K-150-C.

Front Panel

The following illustration shows the front panel of the DMPS3-4K-150-C.

DMPS3-4K-150-C Front Panel



❶ COMPUTER: USB Type B female;
USB computer console port;
For setup only

❷ PWR: Bicolor green/amber LED, indicates operating power supplied from ac line power, turns amber while booting and green when operating

❸ NET: Yellow LED, indicates Cresnet® bus activity

❹ MSG: Red LED, indicates internal control system has generated an error message

❺ HW-R: Recessed push button for hardware reset, reboots the control system

❻ SW-R: Recessed push button for software reset, restarts the software program

❼ IR IN: Infrared sensor;
IR Frequency: 36 to 38 kHz;
IR Formats: Crestron format, RC5;
Allows control from IR wireless remotes using the Crestron or RC-5 command sets

❽ AUTO INPUT SELECT: Push button and bicolor green/amber LED, selects automatic switching mode

❾ VGA INPUT SELECT 1-4: Push buttons for manual input selection and corresponding bicolor green/amber LEDs that indicate the current active input and signal presence at each corresponding VGA input

❿ HDMI INPUT SELECT 1-4: Push buttons for manual input selection and corresponding bicolor green/amber LEDs that indicate the current active input and signal presence at each corresponding HDMI® input

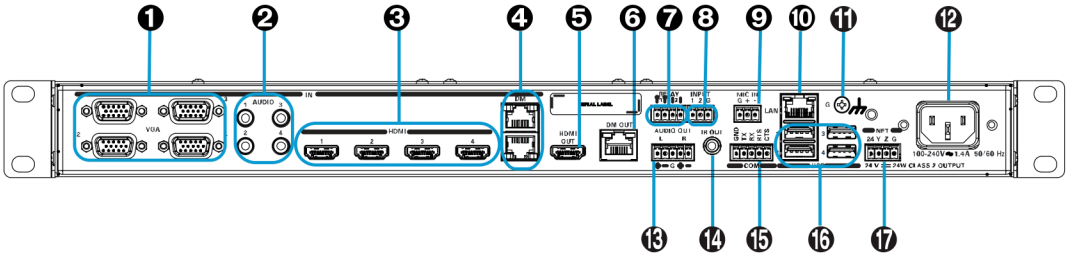
⓫ DM INPUT SELECT 1-2: Push buttons for manual input selection and corresponding bicolor green/amber LEDs that indicate the current active input and signal presence at each corresponding DM® input

⓬ VOLUME: Continuous turn rotary encoder, adjusts the analog audio output volume

Rear Panel

The following illustration shows the rear panel of the DMPS3-4K-150-C.

DMPS3-4K-150-C Rear Panel



❶ VGA IN 1-4: HD15 female;
Analog VGA/RGB/video inputs;
Signal Types: VGA, RGB, component, S-video, or composite;
Formats: RGBHV, RGBS, RGsB, YPbPr, Y/C, NTSC or PAL;
Input Level: 0.5 to 1.5 Vp-p with built-in DC restoration;
Input Impedance: 75 Ohms nominal;
Sync Detection: RGBHV, RGBS, RGsB, YPbPr;
Sync Input Level: 3 to 5 Vp-p;
Sync Input Impedance: 2.2k Ohms

NOTE: The VGA inputs can accept component, composite, and S-video signals using an appropriate adapter (not included). However, input sync detection is not provided for composite or S-video signal types.

❷ AUDIO IN 1-4: 3.5 mm TRS mini phone jacks;
Unbalanced stereo line-level analog audio inputs;
Input Impedance: 32k Ohms unbalanced;
Maximum Input Level: 2.8 Vrms unbalanced

NOTE: If an HDMI input is selected but no digital audio signal is detected, the corresponding analog audio input is activated (AUDIO 1 for HDMI 1, AUDIO 2 for HDMI 2, and so on). The analog audio inputs do not pass audio if the HDMI video input resolution is higher than 1920 x 1200.

❸ HDMI 1-4: 19-pin Type A HDMI female;
Digital video/audio inputs;
Signal Types: HDMI, DVI, or Dual-Mode DisplayPort

NOTE: The HDMI inputs require an appropriate adapter or interface cable to accommodate a DVI signal or Dual-Mode DisplayPort signal. The CBL-HD-DVI interface cable is sold separately.

❹ **DM IN 1-2:** 8-pin RJ-45 female, shielded;
DM 8G+® inputs, HDBaseT® standard compliant;
PoDM PSE (Power Sourcing Equipment) ports (HDBaseT PoE compatible);
Each connects to the DM 8G+ output of a DigitalMedia transmitter or other DM device or to an HDBaseT device via CAT5e, Crestron DM-CBL-8G, or Crestron DM-CBL-ULTRA cable;
Green LED indicates DM link status;
Solid amber LED indicates HDCP video;
Blinking amber LED indicates non-HDCP video

NOTE: Any wiring that is connected to a PoDM or HDBaseT PoE PSE port is for intrabuilding use only and should not be connected to a line that runs outside of the building in which the PSE is located.

❺ **HDMI OUT:** 19-pin Type A HDMI female;
Digital video/audio output;
Signal Types: HDMI, DVI

NOTE: The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal or Dual-Mode DisplayPort signal. The CBL-HD-DVI interface cable is sold separately.

❻ **DM OUT:** 8-pin RJ-45 female, shielded;
DM 8G+ output, HDBaseT standard compliant;
PoDM PSE (Power Sourcing Equipment) port (HDBaseT PoE compatible);
Connects to the DM 8G+ input of a DigitalMedia receiver or other DM device or to an HDBaseT device via CAT5e, Crestron DM-CBL-8G, or Crestron DM-CBL-ULTRA cable;
Green LED indicates DM link status;
Solid amber LED indicates HDCP video;
Blinking amber LED indicates non-HDCP video

❼ **RELAY 1-2:** 4-pin 3.5 mm detachable terminal block;
Comprises 2 normally open, isolated relays;
Rated 1 Amp, 30 volts ac/dc;
MOV arc suppression across contacts

❽ **INPUT 1-2:** 3-pin 3.5 mm detachable terminal block;
Comprises 2 programmable digital inputs;
Input Voltage Range: 0 to 24 Vdc, referenced to GND;
Logic Threshold: 2.5 Vdc nominal with 1 Volt hysteresis band;
Input Impedance: 10k Ohms at >5 volts, 1M Ohms at <5 volts;
Pull-up Resistor: 2.2k Ohms per input

❾ **MIC IN:** 3-pin 3.5 mm detachable terminal block;
Balanced microphone audio input;
Input Level: -60 to 0 dBV, 1 Vrms maximum;
Input Impedance: 6.5k Ohms balanced;
Phantom Power: 48 Vdc, software enabled/disabled

❿ **LAN:** 8-pin RJ45 female;
10BASE-T/100BASE-TX Ethernet port

⓫ **Ground (⏚):** 6-32 screw, chassis ground lug

⓬ **100-240 V~1.4 A 50/60 Hz:** IEC 60320 C14 mains power inlet;
Mates with removable power cord, included

⓭ AUDIO OUT: 5-pin 3.5 mm detachable terminal block;
Balanced/unbalanced stereo line-level audio output;
Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced;
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

⓮ IR OUT: 3.5 mm mini-phone jack;
IR/serial output port;
IR output up to 1.2 MHz;
1-way serial TTL/RS-232 (0-5 volts) up to 115.2k baud

⓯ COM: 5-pin 3.5 mm detachable terminal block;
Bidirectional RS-232 port;
Up to 115.2k baud, hardware and software handshaking support

⓰ USB 1-4: USB Type A female;
USB 2.0 host ports for TT-100 series Crestron Connect It cable caddies (sold separately);
Also enable firmware update via USB flash drive

⓱ NET: 4-pin 3.5 mm detachable terminal block;
Cresnet master port;
Available Cresnet Power: 24 watts

For pin assignment information, refer to the Appendix on page 14.

.AV Framework Technology

Built-in .AV Framework technology allows a fully functional DMPS3-4K-150-C presentation system without the need for additional programming. The .AV Framework setup and management tool allows simplified configuration of the DMPS3-4K-150-C.
For additional information, refer to the .AV Framework™ Software for DMPS3 Operations Guide (Doc. 7887) at www.crestron.com\manuals.

Crestron Connect It Functionality

The DMPS3-4K-150-C provides built-in Crestron Connect It functionality, allowing USB connections of up to four TT-100 series Crestron Connect It cable caddies (sold separately). The auto-switching inputs of the DMPS3-4K-150-C support individual HDMI, VGA, and analog audio connections at each cable caddy.

Integrated 3-Series Control System

The DMPS3-4K-150-C includes an integrated 3-Series Control System that allows programmable room control. The built-in control system enables the DMPS3-4K-150-C to provide customizable control of every AV device as well as room lighting, window shades, and projection screens. The control ports of the DMPS3-4K-150-C include one IR port, one RS-232 COM port, two relay ports, and two digital input ports. In addition, Cresnet and Ethernet ports are also provided.

Configuration

In addition to the .AV Framework setup and management tool, the DMPS3-4K-150-C can be configured using the web interface, which can be accessed from a web browser by entering the IP address or hostname of the DMPS3-4K-150-C. SIMPL Windows can also be used to configure the DMPS3-4K-150-C.

This section provides information about configuration of the following items using the web interface or SIMPL Windows:

- Adjustable underscan
- User-selectable output resolution
- Standby timeout
- Display mode
- EDID
- Connection to third-party HDBaseT equipment

Adjustable Underscan

If content does not fit properly on a display, adjustments to underscan may be desired. Adjustments can be made up to 7.5%. Adjusting the underscan reduces the image size by the specified percentage so that the entire video frame is displayed.

To adjust underscan, use the DMPS3-4K-150-C web interface or SIMPL Windows as discussed in the following sections.

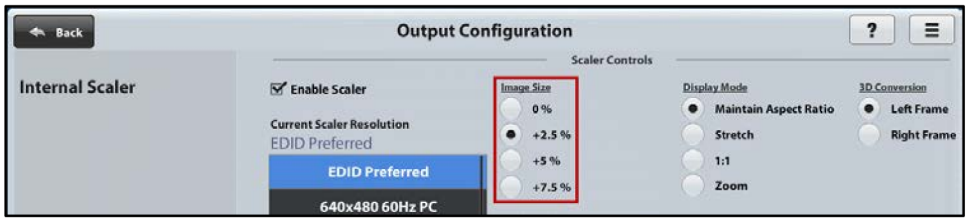
Configuration Using the Web Interface

An overview of the steps necessary to adjust the underscan setting is as follows:

NOTE: For detailed information, refer to the online help of the web interface.

1. On the Main Setup page, click the INTERNAL SCALER Settings button. The Output Configuration page for the internal scaler opens.
2. In the Image Size list, click the radio button that corresponds to the desired underscan setting.

Output Configuration Page for Internal Scaler—Image Size (Underscan) Configuration



Configuration Using SIMPL Windows

Using SIMPL Windows, adjust underscan in subslot 02 of the Outputs slot for the DMPS3-4K-150-C. Set the **<Scaler_Underscan_Mode>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

User-Selectable Output Resolution

The output resolution of the scaler is user selectable. To select the output resolution, use the web interface or SIMPL Windows as discussed in the following sections.

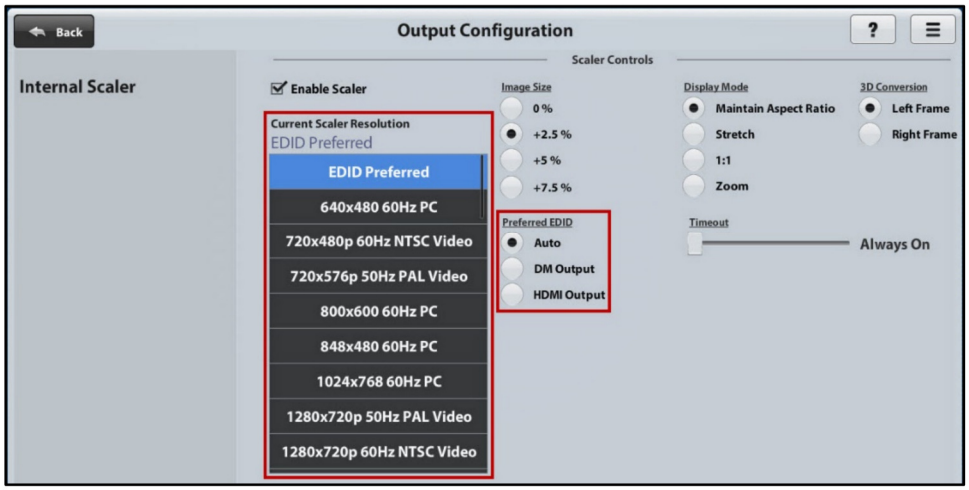
Configuration Using the Web Interface

An overview of the steps necessary to select the output resolution of the scaler is as follows:

NOTE: For detailed information, refer to the online help of the web interface.

1. On the Main Setup page, click the **INTERNAL SCALER Settings** button. The Output Configuration page for the internal scaler opens.
2. In the **Current Scaler Resolution** list, click the desired setting.
3. (Applicable only when **EDID Preferred** is selected in the **Current Scaler Resolution** list) In the **Preferred EDID** list, click the radio button that corresponds to the preferred EDID setting.

Output Configuration Page for Internal Scaler—Current Scaler Resolution Configuration



Configuration Using SIMPL Windows

Using SIMPL Windows, set the output resolution in subslot 02 of the Outputs slot for the DMPS3-4K-150-C. To do so, set the **<Scaler_User_Resolution_Index>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

Standby Timeout

Standby timeout sets the period of time after which the output will shut down if no video is detected on the input.

To configure Standby Timeout settings, use the web interface or SIMPL Windows as discussed in the following sections.

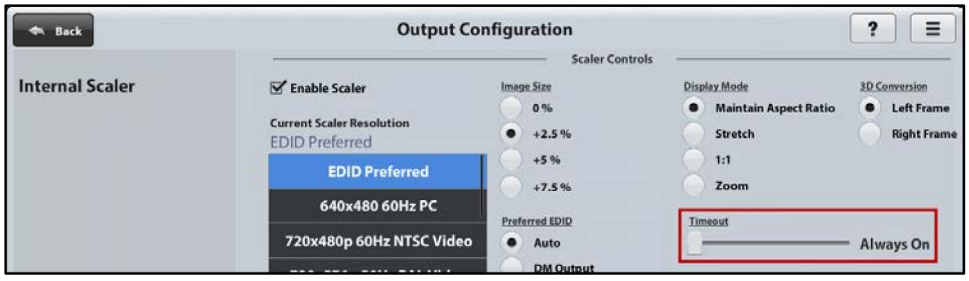
Configuration Using the Web Interface

An overview of the steps necessary to configure the Standby Timeout setting is as follows:

NOTE: For detailed information, refer to the online help of the web interface.

1. On the Main Setup page, click the **INTERNAL SCALER Settings** button. The Output Configuration page for the internal scaler opens.
2. Adjust the **Timeout** slider to the desired value.

Output Configuration Page for Internal Scaler—Timeout Configuration



Configuration Using SIMPL Windows

Using SIMPL Windows, set the standby timeout in subslot 02 of the Outputs slot for the DMPS3-4K-150-C. To do so, set the **<Scaler_Out_Standby_Timeout>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

Display Mode

The display mode of an image can be set to one of the following:

- Maintain aspect ratio
- Stretch to fit
- 1:1 pixel mapping
- Zoom

To configure Display Mode settings, use the web interface or SIMPL Windows as discussed in the following sections.

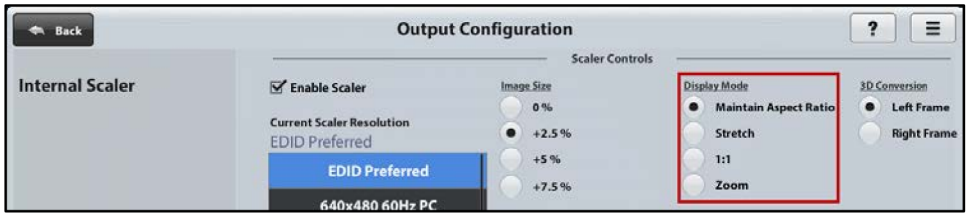
Configuration Using the Web Interface

An overview of the steps necessary to configure the display mode is as follows:

NOTE: For detailed information, refer to the online help of the web interface.

1. On the Main Setup page, click the INTERNAL SCALER Settings button. The Output Configuration page for the internal scaler opens.
2. In the Display Mode list, click the radio button that corresponds to the desired setting.

Output Configuration Page for Internal Scaler—Display Mode Configuration



Configuration Using SIMPL Windows

Using SIMPL Windows, set the display mode in subslot 02 of the Outputs slot for the DMPS3-4K-150-C. To do so, set the <Scaler_Display_Mode> analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

EDID

EDID (Extended Display Identification Data) configuration allows management of the EDID that is to be sent to the upstream device connected to a VGA, HDMI, or DM 8G+ input of the DMPS3-4K-150-C. If an EDID other than the default EDID is desired, use the web interface to configure the EDID. An overview of the steps necessary to configure the EDID is as follows:

NOTE: For detailed information, refer to the online help of the web interface.

1. On the Main Setup page, click the input whose EDID is to be configured. The Input Configuration page for the selected input opens.
2. Click the **Configure EDID** button. The EDID Setup page opens.
3. Configure the EDID as desired.

EDID Setup Page



Connection to Third-Party HDBaseT Equipment

The DMPS3-4K-150-C is HDBaseT certified, enabling direct connection to other HDBaseT certified equipment. Via DM 8G+ technology, the DMPS3-4K-150-C can be connected to a third-party HDBaseT transmitter or receiver device without requiring a DM 8G+ transmitter or receiver.

To add a third-party HDBaseT transmitter or receiver to the DMPS3-4K-150-C, use SIMPL Windows. An overview of the necessary steps for adding an HDBaseT transmitter or receiver follows.

NOTE: For detailed information, refer to the SIMPL Windows help file.

Adding a Third-Party HDBaseT Transmitter

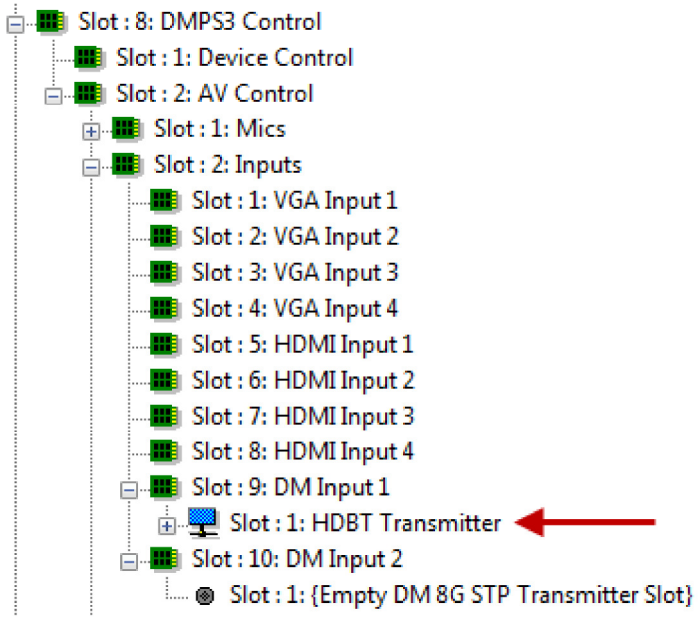
In the Configure View of SIMPL Windows, add a third-party HDBaseT transmitter to the DMPS3-4K-150-C by doing the following:

1. Follow the menu path:

   Slot:8:DMPS3 Control >> Slot:2:AV Control >> Slot:2:Inputs >> Slot:9:DM Input 1 or Slot:10:DM Input 2

2. Add the HDBaseT transmitter to an empty transmitter slot.

   Addition of HDBaseT Transmitter



Adding a Third-Party HDBaseT Receiver

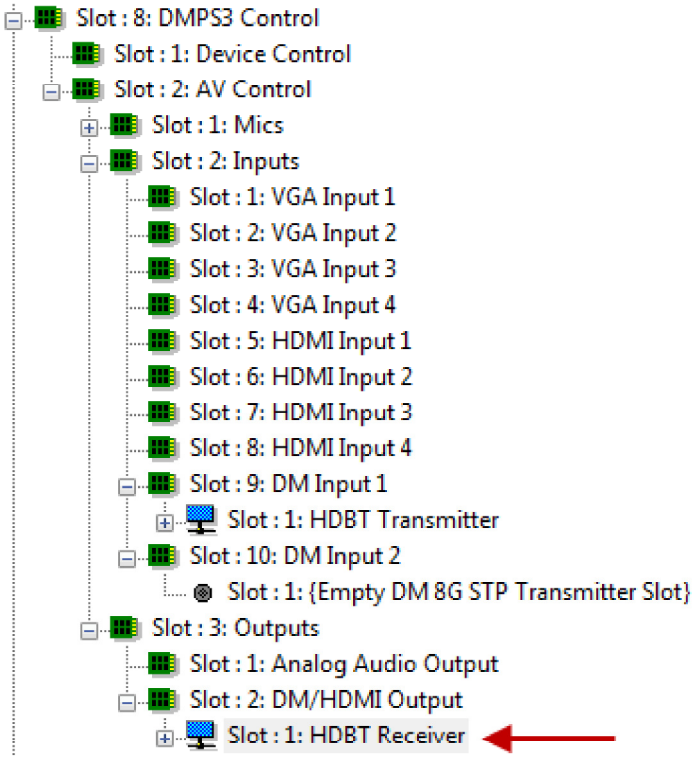
In the Configure View of SIMPL Windows, add a third-party HDBaseT receiver to the DMPS3-4K-150-C by doing the following:

1. Follow the menu path:

   Slot:8:DMPS3 Control >> Slot:2:AV Control >> Slot:3:Outputs >> Slot:2:DM/HDMI Output

2. Add the HDBaseT receiver to an empty receiver slot.

Addition of HDBaseT Receiver



Troubleshooting

The following table provides troubleshooting information. If further assistance is required, contact a Crestron customer service representative.

DMPS3-4K-150-C Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
The video is not being displayed but the audio may be heard.	The HDCP settings of one or more DigitalMedia devices in the signal path do not support the HDCP level of the source.	Ensure that the HDCP settings of all DigitalMedia devices in the signal path support the HDCP level of the source.
	The display does not support the HDCP level of the source.	Ensure that the display supports the HDCP level of the source.
The video is intermittent.	The HDMI cable connections are faulty.	Verify that each end of the cable is connected properly.
A message indicating that the resolution is unsupported appears on the display.	The scaler is not set to a resolution that the display can support.	Change the scaler resolution setting to a resolution that the display can support.
The DMPS3-4K-150-C cannot establish a link to the device that is connected to the DM IN or DM OUT port. The DM link status LED is off.	The cable connections are faulty.	Verify that each end of the cable is properly connected. If necessary, check the cable terminations.
Analog audio is not being heard from the device connected to the AUDIO OUT port of the DMPS3-4K-150-C.	The EDID is not set to 2-channel audio in the web interface.	Set the EDID to 2-channel audio.
	The analog audio output is not programmed properly in SIMPL Windows.	Ensure that the analog audio output is programmed properly.
	The volume is not set properly in web interface or in SIMPL Windows.	Verify that the volume is set properly.
	The mixer is not enabled on the selected input in the web interface.	Ensure that the mixer is enabled on the selected input.
The video flickers or drops when the DMPS3-4K-150-C is touched or when metal in the vicinity of the device is touched.	The DMPS3-4K-150-C is not properly grounded.	Ensure that the DMPS3-4K-150-C is properly grounded.

NOTE: If, for any reason, the factory default settings of the DMPS3-4K-150-C must be restored, do the following: From the **Tools** menu in the Crestron Toolbox application, select **Text Console** and enter the following command:

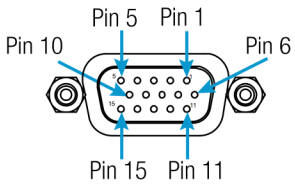
```
restore
```

Appendix: Pin Assignments

This section provides information about pin assignments and wiring for the following DMPS3-4K-150-C connectors:

- VGA IN
- DM IN and DM OUT
- AUDIO OUT
- LAN

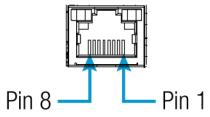
VGA IN Pin Assignments



PIN NUMBER	RGB	YPbPr	S-Video	Composite
1	R	Pr	C	
2	G	Y	Y	
3	B	Pb		COMP
5	GND	GND	GND	GND
6	RED_GND	Pr_GND	C_GND	
7	GRN_GND	Y_GND	Y_GND	
8	BLU_GND	Pb_GND		
13	H			
14	V			

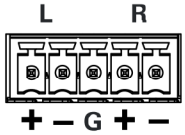
NOTE: For best video performance, ground connections should be kept separate. Do not connect ground wires to the connector shell. The connector shell is reserved for the cable shield.

DM IN and DM OUT Pin Assignments and Wiring



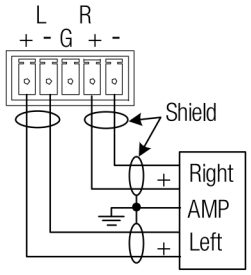
PIN NUMBER	WIRE COLOR	PIN NUMBER	WIRE COLOR
1	Orange/White	5	Blue/White
2	Orange	6	Green
3	Green/White	7	Brown/White
4	Blue	8	Brown

AUDIO OUT Pin Assignments and Wiring

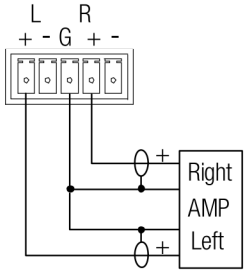


SIGNAL NAME	BALANCED AUDIO OUTPUT	UNBALANCED AUDIO OUTPUT
+	L+	L+ Out
–	L–	Open
G	Shield/Ground	Common Ground
+	R+	R+ Out
–	R–	Open

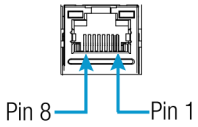
Balanced Output



Unbalanced Output



LAN Pin Assignments



PIN NUMBER	SIGNAL	PIN NUMBER	SIGNAL
1	TX+	5	N/C
2	TX–	6	RX–
3	RX+	7	N/C
4	N/C	8	N/C

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www.crestron.com



Supplemental Guide – DOC. 7724A
(2047535)
11.16
Specifications subject to
change without notice.

Crestron **DM-RMC-4K-100-C**

4K DigitalMedia 8G+™ Receiver & Room Controller 100

Operations & Installation Guide



CRESTRON®

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Disconnect power prior to connecting or disconnecting equipment.
- Do not install in direct sunlight.
- The apparatus must be installed in a way that the power cord can be removed either from the wall outlet or from the device itself in order to disconnect the mains power.
- Prevent foreign objects from entering the device.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT:

This device can be used with Class 2 output wiring.

Regulatory Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

As of the date of manufacture, the DM-RMC-4K-100-C has been tested and found to comply with specifications for CE marking.

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

CAN ICES-3(B)/NMB-3(B)

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The specific patents that cover Crestron products are listed at patents.crestron.com.

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4K DigitalMedia 8G+ Receiver & Room Controller 100: DM-RMC-4K-100-C

Introduction

The DM-RMC-4K-100-C provides a simple 1-box interface solution for a single display device as part of a complete Crestron® DigitalMedia™ system. It functions as a DM 8G+™ receiver and control interface, providing a single HDMI® output along with Ethernet, RS-232, and IR control ports. In addition to DM 8G+, it is also compatible with HDBaseT®, allowing it to be connected directly to any HDBaseT certified source. Its compact, low-profile design allows the DM-RMC-4K-100-C to be installed discreetly behind a flat panel display or above a ceiling mounted projector. It connects to the head end or source location using a single CAT5e or Crestron DM 8G® cable.[1]

Features and Functions

- DigitalMedia 8G+™ receiver and display controller
- DM 8G+ input supports up to 330 foot (100 meter) cable length[1]
- Connects to a DM® switcher or transmitter (each sold separately) over one CAT5e or Crestron DM 8G cable[1]
- HDBaseT certified, which enables direct connection to other HDBaseT certified equipment
- Provides one HDMI or DVI display output[2]
- Handles video resolutions up to 4K Ultra HD and 4K DCI[1]
- Handles 3D video and Deep Color

(Continued on following page)

1. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G™ cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546) at www.crestron.com/manuals. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.
2. The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cables are sold separately.

Features and Functions

(Continued)

- Handles Dolby® TrueHD, DTS-HD®, and uncompressed 7.1 linear PCM audio
- HDCP compliant
- Provides a 10BASE-T/100BASE-TX Ethernet LAN connection
- Enables device control via CEC, IR, RS-232, and Ethernet
- Compatible with USB-EXT-DM USB Extender Modules (sold separately)
- Allows quick, easy setup and diagnostics
- Low-profile surface mount design
- Powered via the DM connection or local power pack (included)[1]

4K Ultra HD

Using DM 8G+ technology, the DM-RMC-4K-100-C supports the transport of 4K Ultra HD and 4K DCI video signals. Support for 4K video ensures support for the latest generation of ultra high resolution computers and monitors with resolutions over 1080p and 2K.

DigitalMedia 8G+

DigitalMedia 8G+ provides a true 1-wire transport for moving high-definition video, audio, power, and Ethernet over low-cost twisted pair cable without compression or repeaters. Engineered for ultra high bandwidth and ultimate scalability, DM 8G+ handles uncompressed video beyond high definition with support for Full HD 1080p, 2K, 4K, 3D, Deep Color, and HDCP. Audio capabilities include support for high bitrate 7.1 audio formats such as Dolby TrueHD and DTS-HD Master Audio™ as well as uncompressed linear PCM. All signals are transported over one 8-conductor twisted pair cable (sold separately), supporting distances up to 330 feet (100 meters) using Crestron DM 8G cable or CAT5e.[2]

HDBaseT Certified

DigitalMedia 8G+ technology is designed using HDBaseT Alliance specifications, ensuring interoperability with other HDBaseT certified products. Via its DM 8G+ input, the DM-RMC-4K-100-C can be connected directly to an HDBaseT compliant source without requiring a DM transmitter. HDBaseT connectivity through the DM-RMC-4K-100-C converges uncompressed Full HD and 4K digital video, audio, Ethernet, power, and control signals through a single CAT5e or CAT6 cable over distances up to 330 feet (100 meters).[2]

1. Receiving Power over DM (PoDM) or Power over HDBaseT (PoH) requires connection to a switcher or other equipment that has a PoDM or PoH PSE (Power Sourcing Equipment) port. Any wiring that is connected to a PoDM or PoH PSE port is for intra-building use only and should not be connected to a line that runs outside of the building in which the PSE is located.
2. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546). DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.

Multimedia Display Interface

A single HDMI digital AV output port is provided on the DM-RMC-4K-100-C for connection to a display or other device. The HDMI output can also handle DVI signals using an appropriate adapter or interface cable.[1]

A single cable connects the DM-RMC-4K-100-C to a DM switcher or transmitter (each sold separately) or to an HDBaseT source, transporting video, audio, control, networking, and power signals through one RJ-45 connection.[2, 3] Multiple DM-RMC-4K-100-Cs may be installed to handle each display in a multiroom distribution system, all fed from a central DM switcher. Or, a single DM-RMC-4K-100-C can be fed straight from a DM 8G+ or HDBaseT transmitter, affording a simple solution for extending a computer or AV signal to a single display.

LAN Connectivity

Along with high-definition AV and control, DigitalMedia also integrates high-speed Ethernet networking for a total signal distribution solution. The DM-RMC-4K-100-C includes a 10BASE-T/100BASE-TX Ethernet port, providing a convenient LAN connection for a local network device.

Embedded Device Control

The DM-RMC-4K-100-C includes built-in RS-232, IR, and Ethernet control ports to allow programmable control of the display device connected to it. It can also provide an alternative to such conventional control methods by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to the control system, the DM-RMC-4K-100-C provides a gateway for controlling the display device through the HDMI connection, potentially eliminating the need for any dedicated control wires or IR emitters.

USB Signal Extension (Optional)

DigitalMedia allows for the routing of USB signals alongside video and audio. USB signal extension is enabled on the DM-RMC-4K-100-C by adding a USB-EXT-DM USB Extender Module (sold separately).

1. The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cables are sold separately.
2. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546). DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.
3. Receiving Power over DM (PoDM) or Power over HDBaseT (PoH) requires connection to a switcher or other equipment that has a PoDM or PoH PSE (Power Sourcing Equipment) port. Any wiring that is connected to a PoDM or PoH PSE port is for intra-building use only and should not be connected to a line that runs outside of the building in which the PSE is located.

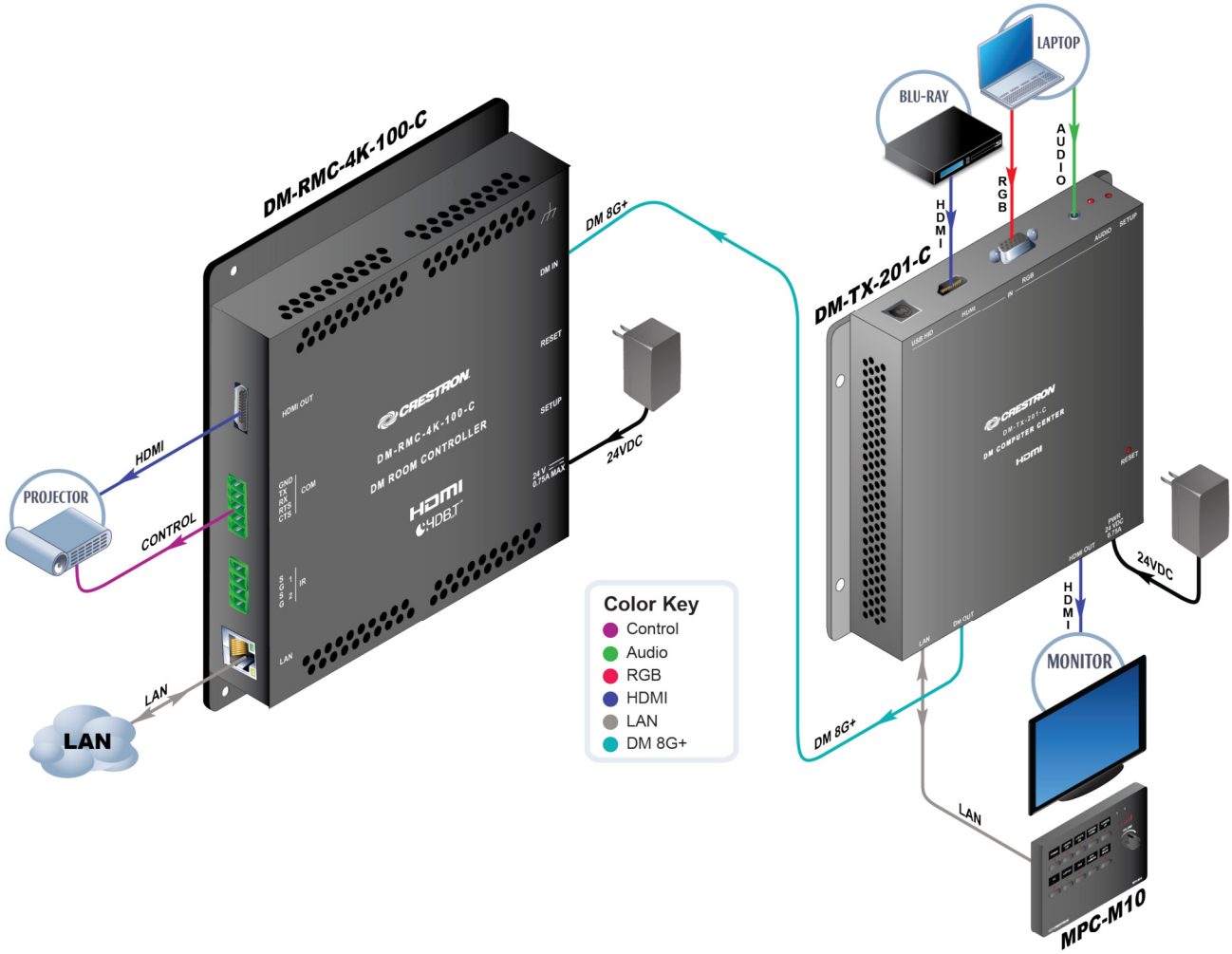
Low-Profile Installation

The DM-RMC-4K-100-C mounts conveniently on a wall, ceiling, or other flat surface. At just 1 inch (25 mm) deep, it fits easily behind a flat panel display or above a ceiling mounted projector. All connections and LED indicators are positioned on the sides, ensuring optimal access and visibility for a clean, serviceable installation. An array of indicators is provided for easy setup and troubleshooting.

Applications

The diagram below shows a DM-RMC-4K-100-C in a standalone application. In this application, the DM-RMC-4K-100-C is used with a DM 8G+ transmitter such as the DM-TX-201-C (sold separately) and is not used with a DM switcher.

DM-RMC-4K-100-C in a Standalone Application



Specifications

Specifications for the DM-RMC-4K-100-C are listed in the following table.

DM-RMC-4K-100-C Specifications

SPECIFICATION	DETAILS
Video	
Input Signal Types	DM 8G+ (DigitalMedia over one CAT5e twisted pair copper wire), HDBaseT[1]
Output Signal Types	HDMI, DVI[2]
Formats	DM 8G+, HDBaseT, and HDMI with Deep Color, 3D, and 4K; DVI; HDCP content protection support
Input Resolutions	
Progressive	640 x 480 @ 60 Hz 720 x 480 @ 60 Hz (480p) 720 x 576 @ 50 Hz (576p) 800 x 600 @ 60 Hz 848 x 480 @ 60 Hz 852 x 480 @ 60 Hz 854 x 480 @ 60 Hz 1024 x 768 @ 60 Hz 1024 x 852 @ 60 Hz 1024 x 1024 @ 60 Hz 1280 x 720 @ 50 Hz (720p50) 1280 x 720 @ 60 Hz (720p60) 1280 x 768 @ 60 Hz 1280 x 800 @ 60 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60 Hz 1360 x 768 @ 60 Hz 1365 x 1024 @ 60 Hz 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 1920 x 1080 @ 25 Hz (1080p25) 1920 x 1080 @ 50 Hz (1080p50) 1920 x 1080 @ 60 Hz (1080p60) 1920 x 1200 @ 60 Hz 2048 x 1080 @ 24 Hz 2048 x 1152 @ 60 Hz 2560 x 1440 @ 60 Hz 2560 x 1600 @ 60 Hz 3840 x 2160 @ 24 Hz 3840 x 2160 @ 25 Hz 3840 x 2160 @ 30 Hz 3840 x 2160 @ 50 Hz[3] 3840 x 2160 @ 60 Hz[3] 4096 x 2160 @ 24 Hz 4096 x 2160 @ 50 Hz[3] 4096 x 2160 @ 60 Hz[3] plus any other resolution allowed by HDMI up to 300 MHz pixel clock

(Continued on following page)

DM-RMC-4K-100-C Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Input Resolutions (Continued)	
Interlaced	720 x 480 @ 30 Hz (480i) 720 x 576 @ 25 Hz (576i) 1920 x 1080 @ 25 Hz (1080i25) 1920 x 1080 @ 30 Hz (1080i30) plus any other resolution allowed by HDMI up to 300 MHz pixel clock
Output Resolutions	Matched to input
Audio	
Input Signal Type	DM 8G+, HDBaseT
Output Signal Type	HDMI
Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, up to 8-channel PCM
Communications	
DigitalMedia	DM 8G+, HDCP management, EDID format management, CEC, PoDM, HDBaseT compliant
Ethernet	10BASE-T/100BASE-TX, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP
Power Requirements[4]	
Power Pack	0.75 A @ 24 Vdc; 100-240 Vac, 50/60 Hz power pack included
Power over DM (PoDM)	PoDM PD (Powered Device), capable of being powered by a PoDM PSE (Power Sourcing Equipment), conforms to IEEE 802.3af (802.3at Type 1) Class 3 (12.95 W)[5]
Power over HDBaseT (PoH)	PoH PD, capable of being powered by a PoH PSE, conforms to IEEE 802.3af (802.3at Type 1) Class 3 (12.95 W)[5]
Environmental	
Temperature	32º to 104ºF (0º to 40ºC)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	29 Btu/h
Enclosure	
Chassis	Metal, black finish, with two integral mounting flanges, vented top and bottom
Mounting	Freestanding, surface mount, or attach to a single rack rail

(Continued on following page)

DM-RMC-4K-100-C Specifications (Continued)

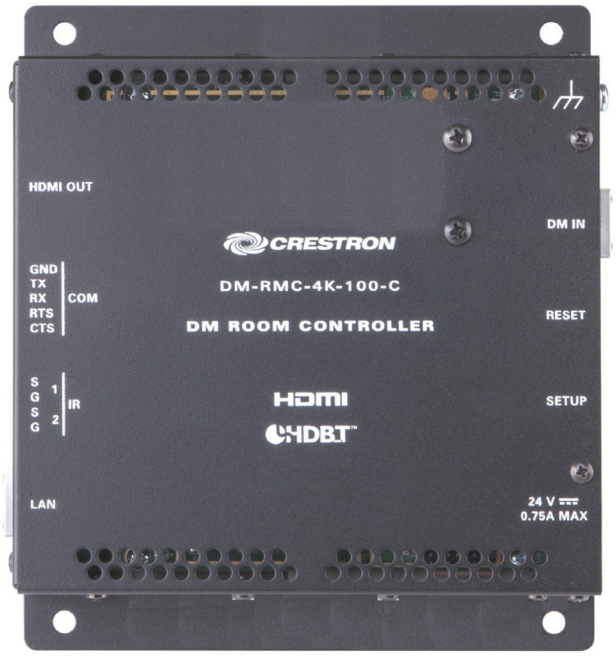
SPECIFICATION	DETAILS
Dimensions	
Height	6.09 in (155 mm)
Width	5.68 in (145 mm)
Depth	1.02 in (26 mm)
Weight	17 oz (468 g)
Included Accessory	Universal 24 Vdc power pack
Available Accessories	
CBL Series	Crestron Certified Interface Cables
CNSP-XX	Custom Serial Interface Cable
DM-8G-CONN	DigitalMedia 8G Cable Connector
DM-8G-CONN-WG	DigitalMedia 8G Cable Connector with Wire Guide
DM-8G-CRIMP	Crimping Tool for DM-8G-CONN
DM-8G-CRIMP-WG	Crimping Tool for DM-8G-CONN-WG
DM-CBL-8G	DigitalMedia 8G Cable
IRP2	IR Emitter Probe
MP-WP Series	Media Presentation Wall Plates
MPI-WP Series	Media Presentation Wall Plates – International Version
USB-EXT-DM-LOCAL	USB Extender Module for Host
USB-EXT-DM-REMOTE	USB Extender Module for Devices

1. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546). DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.
2. The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cables are sold separately.
3. 4K support at 50/60 Hz with 4:2:0 color sampling will be enabled through a future firmware update.
4. A power pack, Power over DM (PoDM), or Power over HDBaseT (PoH) can be used to power the DM-RMC-4K-100-C.
5. References to the IEEE 802.3af and 802.3at standards are used to demonstrate that PoDM and PoH technology is similar in function to PoE and follows the same essential specifications. The DM-RMC-4K-100-C cannot be powered over Ethernet, and its DM IN port should not be connected directly to an Ethernet network or device.

Physical Description

This section provides information on the connections, controls, and indicators available on the DM-RMC-4K-100-C.

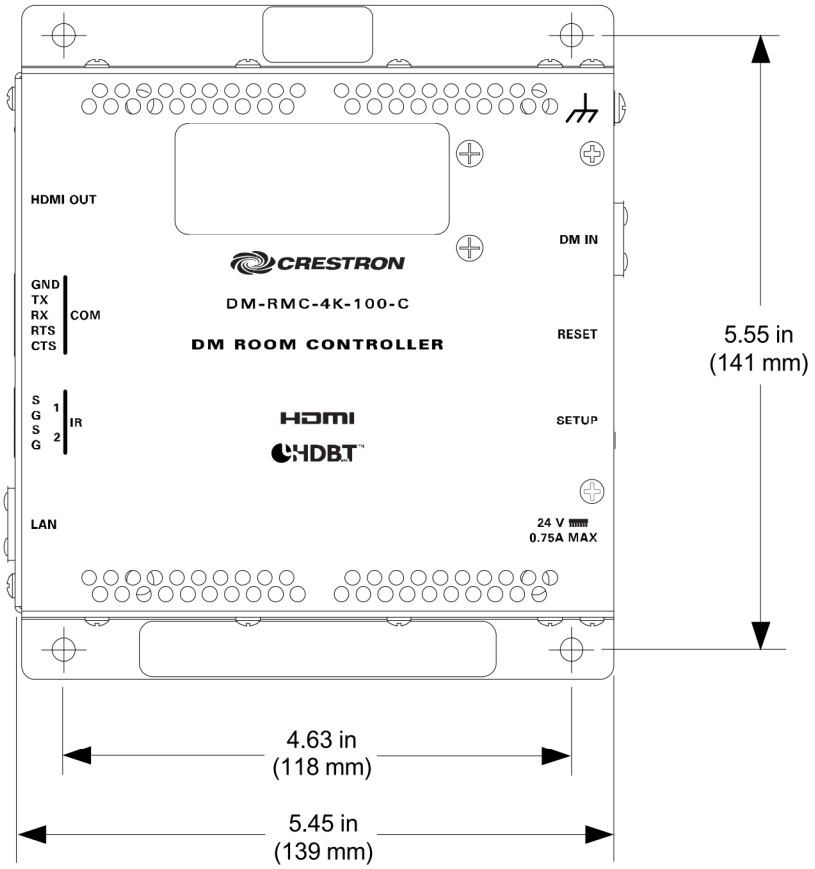
DM-RMC-4K-100-C Physical View (Front)



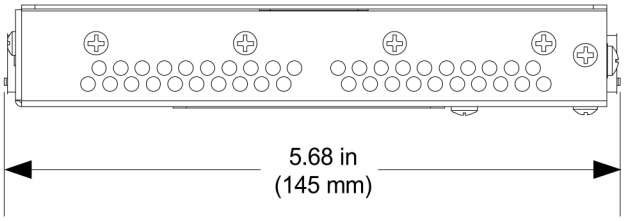
DM-RMC-4K-100-C Physical Views (Left and Right Side)



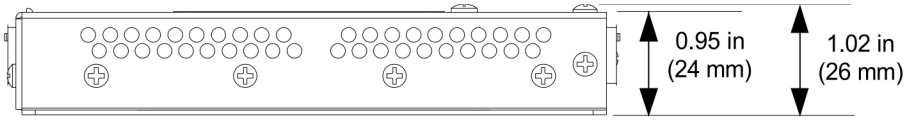
DM-RMC-4K-100-C Overall Dimensions (Front View)



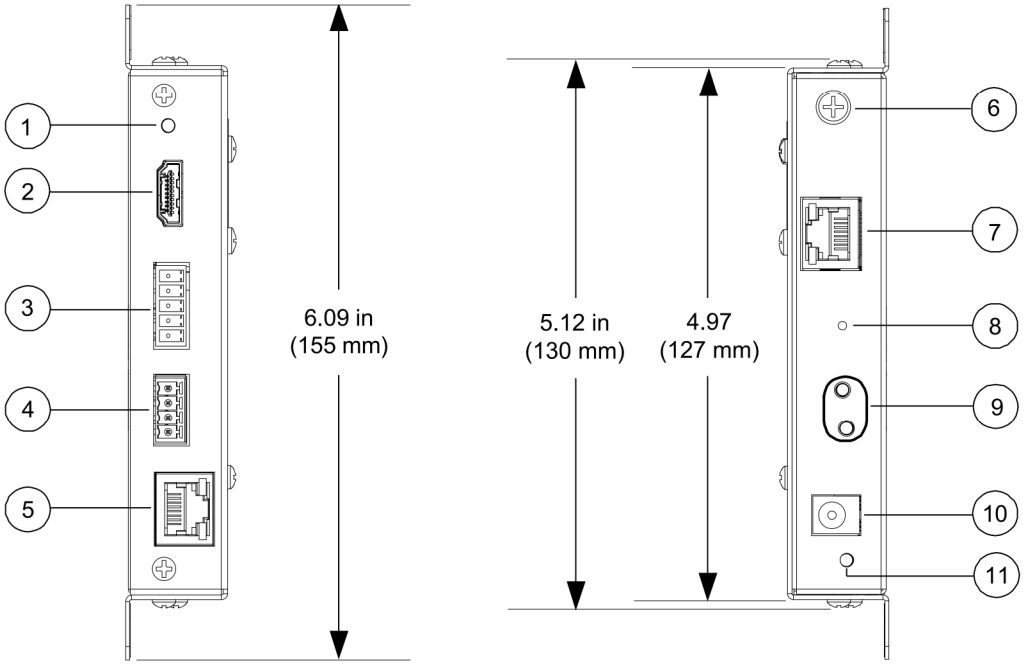
DM-RMC-4K-100-C Overall Dimensions (Top View)



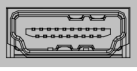
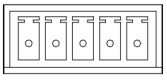
DM-RMC-4K-100-C Overall Dimensions (Bottom View)



DM-RMC-4K-100-C Overall Dimensions (Left and Right Side Views)

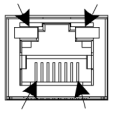
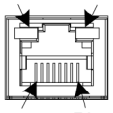


Connectors, Controls, and Indicators

#	CONNECTORS,[1] CONTROLS, AND INDICATORS	DESCRIPTION
1	HDMI OUT LED	(1) Green LED, indicates video signal presence at the HDMI output
2	HDMI OUT 	(1) 19-pin Type A HDMI female; HDMI digital video and audio output; Supports DVI[2]
3	COM 	(1) 5-pin 3.5 mm detachable terminal block, bidirectional RS-232 port; Up to 115.2 kBd, hardware and software handshaking support
4	IR (1-2) 	(1) 4-pin 3.5 mm detachable terminal block comprising two IR/serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 volts) up to 19200 baud[3]

(Continued on following page)

Connectors, Controls, and Indicators

#	CONNECTORS,[1] CONTROLS, AND INDICATORS	DESCRIPTION
5	LAN Green LED Amber LED  Pin 8 Pin 1	(1) 8-pin RJ-45 female, shielded, with two LED indicators; 10BASE-T/100BASE-TX Ethernet port; Green LED indicates Ethernet link status; Amber LED indicates Ethernet activity **PIN / SIGNAL / PIN / SIGNAL** 1 TX + 5 N/C 2 TX - 6 RX - 3 RX + 7 N/C 4 N/C 8 N/C
6		(1) 6-32 screw, chassis ground lug
7	DM IN[4] Green LED Amber LED  Pin 8 Pin 1	(1) 8-pin RJ-45 female, shielded, with two LED indicators; DM 8G+ input, HDBaseT compliant; PoDM and PoH PD (Powered Device) port; [5] Connects to the DM 8G+ output of a DM switcher, transmitter, or other DM device, or to an HDBaseT device via CAT5e or Crestron DM-CBL-8G cable; [6] Green LED indicates DM link status; Solid amber LED indicates HDCP video; Blinking amber LED indicates non-HDCP video
8	RESET	(1) Miniature recessed push button for hardware reset
9	SETUP (Button and LED)	(1) Miniature recessed push button for Ethernet setup and (1) red LED
10	24 V 0.75A MAX 	(1) 2.1 x 5.5 mm dc power connector; 24 Vdc power input; Power pack included
11	Power LED	(1) Green LED, indicates operating power supplied from local power pack, PoDM, or PoH

1. Interface connectors for the COM and IR ports are provided with the unit.
2. The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cables are sold separately.
3. Maximum string length for serial commands sent via the IR port should be no greater than 40 characters.

4. The DM IN port consists of one RJ-45 connector. Refer to the following table for the connector pinouts.

DM IN Connector Pinouts



PIN #	WIRE COLOR	PIN #	WIRE COLOR
1	Orange/White	5	Blue/White
2	Orange	6	Green
3	Green/White	7	Brown/White
4	Blue	8	Brown

5. Receiving Power over DM (PoDM) or Power over HDBaseT (PoH) requires connection to a switcher or other equipment that has a PoDM or PoH PSE (Power Sourcing Equipment) port. Any wiring that is connected to a PoDM or PoII PSE port is for intra-building use only and should not be connected to a line that runs outside of the building in which the PSE is located.
6. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546). DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.

Setup

Network Wiring

When wiring the DM network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.

  CAUTION: Failure to use Crestron power supplies could cause equipment damage or void the Crestron warranty.

- Provide sufficient power to the system.
- The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G™ cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. For complete system design guidelines, refer to the DigitalMedia Design Guide (Doc. 4546) at www.crestron.com/manuals. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment.

Maximum Cable Length

RESOLUTION	CABLE TYPE	
	DM-CBL-8G	CAT5E (OR BETTER) UTP OR STP
1080p60 Full HD 1920 x 1200 WUXGA 1600 x 1200 UXGA 2048 x 1080 2K DCI	330 feet (100 meters)	330 feet (100 meters)
2560 x 1440 WQHD 2560 x 1600 WQXGA 3840 x 2160 4K Ultra HD 4096 x 2160 4K DCI	230 feet (70 meters)	165 feet (50 meters)

The DM-RMC-4K-100-C also uses high-speed Ethernet for communications between the device and a control system, computer, media server, and other IP-based devices. For general information on connecting Ethernet devices in a Crestron system, refer to the Crestron e-Control® Reference Guide (Doc. 6052) at www.crestron.com/manuals. For information specifically related to Ethernet connectivity using DigitalMedia devices, refer to the Crestron IP Considerations Guide for the IT Professional (Doc. 4579) at www.crestron.com/manuals.

Identity Code

NOTE: The latest software can be downloaded at www.crestron.com/software.

The IP ID is set within the DM-RMC-4K-100-C IP table using Crestron Toolbox™. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple DM-RMC-4K-100-C devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Installation

The DM-RMC-4K-100-C mounts on a flat surface such as a wall or ceiling. The DM-RMC-4K-100-C can also be mounted on a rack rail.

Ventilation

The DM-RMC-4K-100-C should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

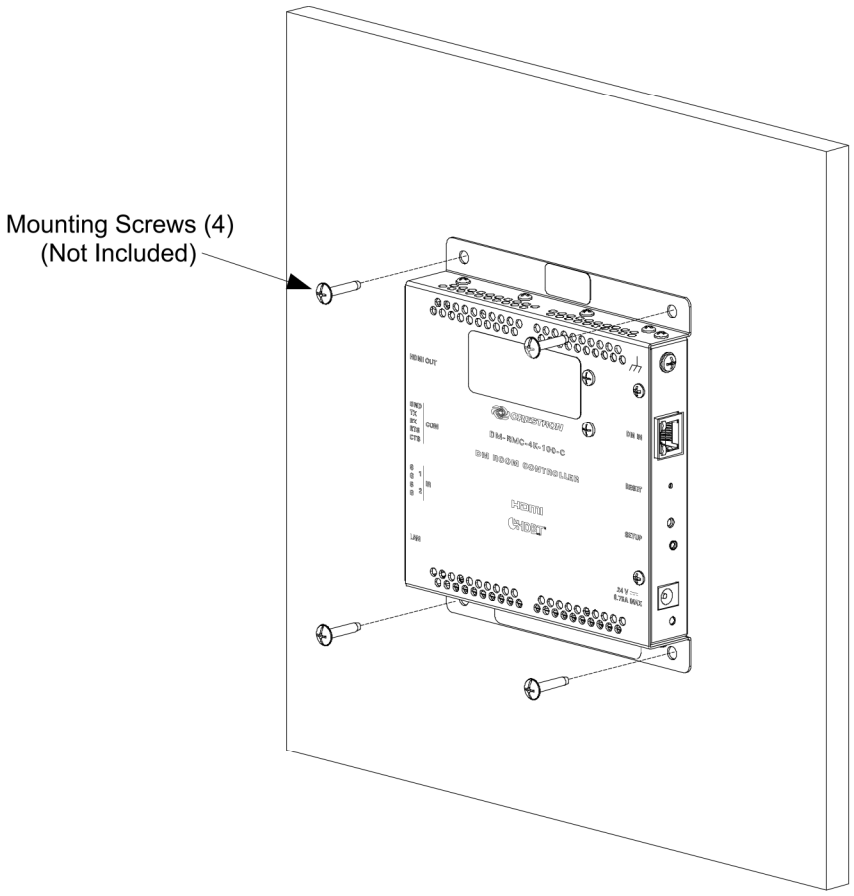
To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

Mounting on a Flat Surface

To mount the DM-RMC-4K-100-C on a flat surface such as a wall or ceiling, use four mounting screws (not included). The following illustration shows mounting of the DM-RMC-4K-100-C on a wall.

NOTE: To ensure optimum ventilation when mounted on a wall, position the DM-RMC-4K-100-C vertically so that the venting holes are positioned at the top and bottom of the unit.

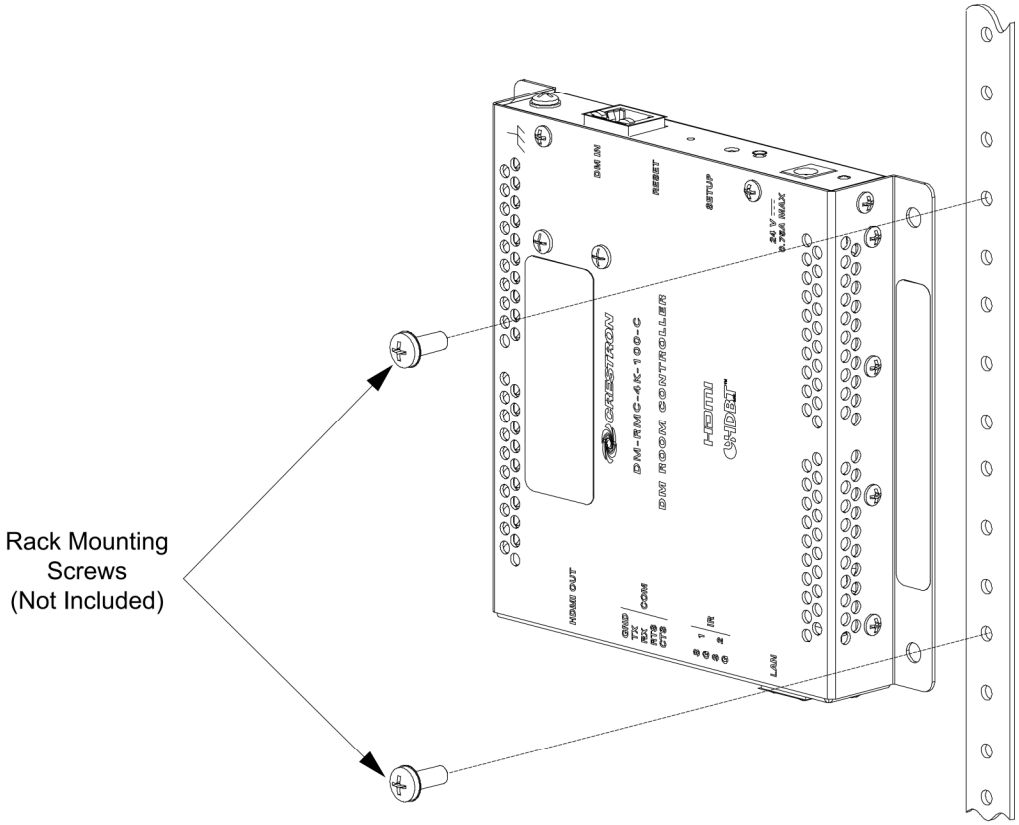
Mounting DM-RMC-4K-100-C on a Wall



Rack Mounting

To mount the DM-RMC-4K-100-C on the left or right rail of a rack, use two rack mounting screws (not included). The following illustration shows mounting of the DM-RMC-4K-100-C on the right rail of a rack.

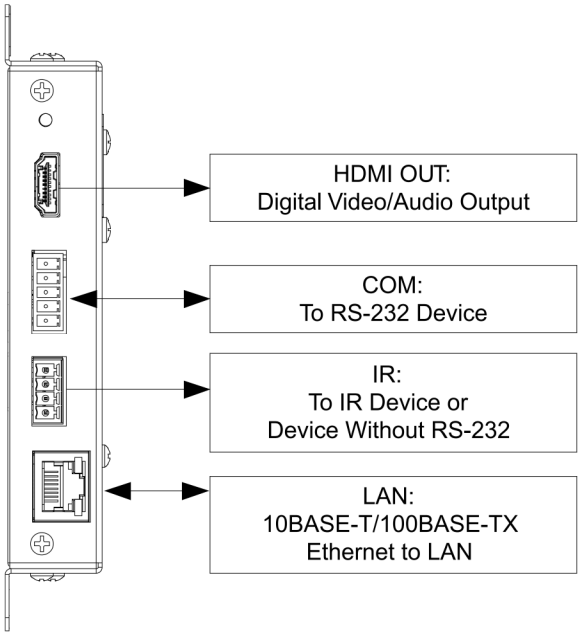
Mounting DM-RMC-4K-100-C on Rack Rail (Right Rack Rail Shown)



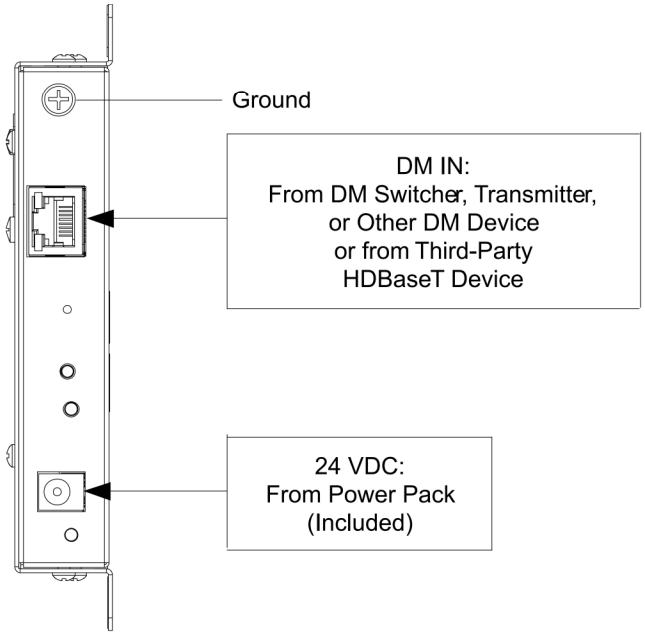
Hardware Hookup

Make the necessary connections as called out in the following illustrations. Refer to "Network Wiring" on page 13. Apply power after all connections have been made.

Hardware Connections for the DM-RMC-4K-100-C (Left Side)



Hardware Connections for the DM-RMC-4K-100-C (Right Side)



NOTE: Ensure that the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

NOTE: The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT is 330 feet (100 meters) for resolutions up to 1600 x 1200 and 1920 x 1200 (including 1080p60 and 2K) using DM-CBL-8G DigitalMedia 8G cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or third-party CAT5e (or better) UTP or STP. For higher resolutions (including 4K), the maximum wire length is 230 feet (70 meters) using DM-CBL-8G or 165 feet (50 meters) using DM-CBL, DM-CBL-D, or CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise, which may impact performance at resolutions above 1080p. Refer to the DigitalMedia Design Guide (Doc. 4546) for complete system design guidelines. DM 8G+ is compatible with HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment.

NOTE: The 24 Vdc power pack (included) is not required if Power over DM or Power over HDBaseT is used.

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, firmware) can be transferred to the device. In addition, the IP table of the device can be configured.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

Establishing Communication

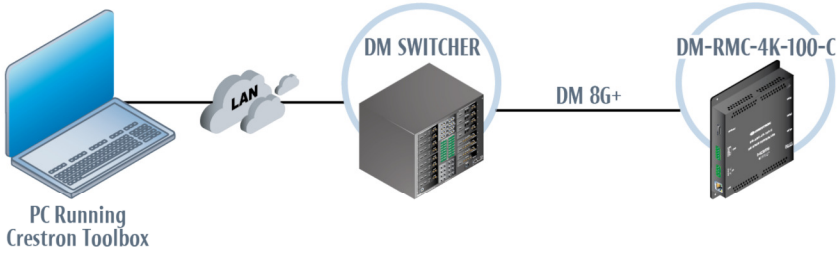
Use Crestron Toolbox for communicating with the DM-RMC-4K-100-C; refer to the Crestron Toolbox help file for details.

A PC running Crestron Toolbox communicates with the DM-RMC-4K-100-C in the following ways:

- Via a DM switcher using TCP/IP communication.
- Via the LAN port of the DM-RMC-4K-100-C using TCP/IP communication. This scenario is applicable only to a standalone configuration (a DM switcher is not used).

Via DM Switcher

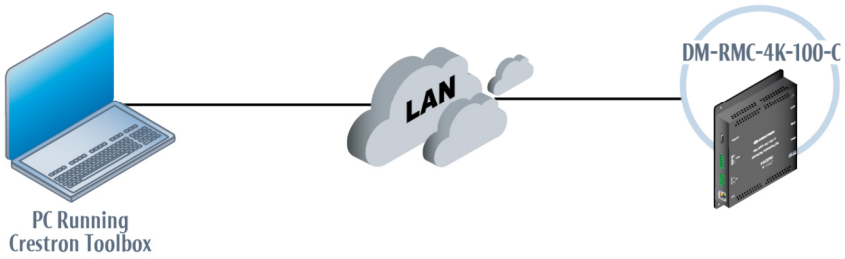
TCP/IP Communication via DM Switcher



To establish TCP/IP communication between the PC and the DM-RMC-4K-100-C via a DM switcher, communication between the PC and the DM switcher must be established as described in the DigitalMedia Switchers Operations Guide (Doc. 6755). The DM switcher then manages IP setup and firmware update of the DMC-RMC-4K-100-C.

Via LAN Port

TCP/IP Communication via LAN Port of DM-RMC-4K-100-C



To establish TCP/IP communication between the PC and the DM-RMC-4K-100-C via the LAN port of the DM-RMC-4K-100-C, do the following:

1. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-RMC-4K-100-C. The tool is available in Toolbox version 1.15.143 or later.

   NOTE: When the DM-RMC-4K-100-C is used in a standalone configuration (not used with a DM switcher), DHCP is enabled by default. If desired, a default IP address (192.168.1.243) can be assigned by holding down its **SETUP** button while applying power. This IP address overwrites any previous settings and remains until it is changed.

2. Use the Address Book in Crestron Toolbox to create an entry for the DM-RMC-4K-100-C using the TCP connection type, and enter the IP address of the DM-RMC-4K-100-C.
3. Display the DM-RMC-4K-100-C's **System Info** window (**Tools | System Info**); communications are confirmed when the device information is displayed.
4. (Optional) If additional changes to TCP/IP settings are desired, do the following:
   a. Assign an IP address, IP mask, and default router for the DM-RMC-4K-100-C via the Crestron Toolbox (**Functions | Ethernet Addressing**).
   b. Close the **System Info** window.
   c. In Crestron Toolbox, change the Address Book entry for the DM-RMC-4K-100-C so that it uses the IP address assigned in step 4a.
   d. Display the DM-RMC-4K-100-C's **System Info** window (**Tools | System Info**); communications are confirmed when the device information is displayed.

Firmware

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

To upgrade DM-RMC-4K-100-C firmware, do the following:

1. Using the Device Discovery Tool in Crestron Toolbox, find the IP address of the DM switcher (if the DM-RMC-4K-100-C is connected to a DM switcher) or the IP address of the DM-RMC-4K-100-C (if the DM-RMC-4K-100-C is being used in a standalone configuration).
2. Add the IP address found in step 1 to the Address Book in Toolbox.

3. Download the appropriate .puf file from the Crestron website to the PC.
4. Double-click the .puf file. The Package Update Tool opens and displays the Address Book.
5. From the list in the Address Book, select the DM switcher (if the DM-RMC-4K-100-C is connected to a switcher) or the DM-RMC-4K-100-C (if the DM-RMC-4K-100-C is used in a standalone configuration), and then click **OK.**

   Either of the following occurs:

   - If the DM switcher was selected, a DM device list is displayed that allows upgrading all DM devices connected to the switcher.
   - If the DM-RMC-4K-100-C was selected, a DM device list is displayed that allows upgrading of the DM-RMC-4K-100-C only.

   In the DM device lists that are displayed, the checkbox of any item that needs to be upgraded is automatically selected.
6. Click **Update.**
7. After the process is complete, click **Recheck** to verify the upgrade.

IP Table Configuration

If the DM-RMC-4K-100-C is used in a standalone configuration (without a DM switcher), use Crestron Toolbox to create the IP table entry of the DM-RMC-4K-100-C.

NOTE: If the DM-RMC-4K-100-C is connected to a DM switcher, the IP table entry of the DM-RMC-4K-100-C is created automatically.

1. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-RMC-4K-100-C.
2. Display the **System Info** window (**Tools | System Info**) and select the DM-RMC-4K-100-C entry from the Address Book.
3. Select **Functions | IP Table Setup**.
4. Add, modify, or delete entries in the IP table. The DM-RMC-4K-100-C can have only one IP table entry.
5. A defined IP table can be saved to a file or sent to the device.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

DM-RMC-4K-100-C Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Power LED does not illuminate.	Device is not receiving power.	If device is powered over DM, do the following: • Verify cable connection to the DM IN port. • Verify that device connected to the DM IN port can provide power to this device. If device is powered from power pack connected to dc power jack, verify power pack connections to the device and to the power outlet.
Green LED on DM IN port does not illuminate.	Device cannot establish a link to the device connected to the DM IN port.	Verify cable connection to the DM IN port.
HDMI OUT LED does not illuminate.	Device is not receiving video signal.	Ensure proper video signal is routed to device.
	Device connected to the HDMI OUT port has not sent the hotplug signal.	Power on device connected to the HDMI OUT port and ensure that it is switched to the correct input.
HDMI OUT LED is green but video on connected display is black.	HDCP is blanking the video output.	Verify that device connected to HDMI output supports HDCP.

(Continued on following page)

DM-RMC-4K-100-C Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
LAN LED does not illuminate green.	LAN network cable is not connected to the LAN port or to the 10BASE-T/ 100BASE-TX compatible device.	Verify LAN network cable connection to the LAN port and to the compatible network device.
	LAN network cable is not the proper type.	Verify that network cable complies with EIA/TIA 568 and the CAT5 specification.
	LAN network cable is not the proper length.	Verify that network cable is the proper length.
	10BASE-T/100BASE-TX compatible device is not receiving power.	Apply power to the network device.
Device loses functionality due to electrostatic discharge.	Device is improperly grounded.	Check that all ground connections have been made properly.

NOTE: For more advanced diagnostics, use the DMTool in Crestron Toolbox.

Reference Documents

All documents mentioned in this guide are available at www.crestron.com/manuals.

List of Related Reference Documents

DOCUMENT TITLE
DigitalMedia Design Guide
Crestron DigitalMedia Switchers Operations Guide
Crestron e-Control Reference Guide
Crestron IP Considerations Guide for the IT Professional

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the DM-RMC-4K-100-C, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

Crestron Electronic, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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Version 2, June 1991

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PREAMBLE

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Operations & Installation Guide – DOC. 7522C
(2036505)
07.14
Specifications subject to
change without notice.

HD-DA2-4K-E

1-to-2 4K HDMI® Distribution Amplifier

- *Splits one HDMI® source to two outputs*
- *Handles video resolutions up to 4K and Ultra HD*
- *Handles 3D video and Deep Color*
- *Handles Dolby® TrueHD, Dolby Atmos®, DTS-HD®, and uncompressed 7.1 linear PCM audio*
- *HDCP compliant*
- *Includes input and output sync indicators*
- *No programming or control system required*
- *Thin profile — less than one inch deep*
- *Surface, shelf, or single rack rail mountable*



The Crestron® HD-DA2-4K-E is a simple to use, high-performance distribution amplifier designed to split a single HDMI® signal to feed two separate displays, switchers, AV receivers, and other devices. It handles Full HD 1080p, Ultra HD, 2K, and 4K video signals with support for HDCP, 3D, Deep Color, and high-bitrate 7.1 audio. No programming or control system is required for operation.

For larger applications, please see the four-output HD-DA4-4K-E and the eight-output HD-DA8-4K-E.

SPECIFICATIONS

Video

Input Signal Types: HDMI® w/Deep Color, 3D, & 4K (DVI & Dual-Mode DisplayPort compatible [1])
Output Signal Types: HDMI w/Deep Color, 3D, & 4K (DVI compatible [1])

Maximum Resolutions:

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 4K DCI & 3840x2160 Ultra HD	24 Hz	4:4:4	30 bit
		30 Hz	4:4:4	24 bit
		30 Hz	4:2:2	36 bit
		60 Hz	4:2:0	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD1080p	60 Hz	4:4:4	36 bit
Interlaced	1920x1080 HD1080i	30 Hz	4:4:4	36 bit

NOTE: Common resolutions are shown; other custom resolutions are supported at pixel clock rates up to 300 MHz

Audio

Input Signal Types: HDMI (Dual-Mode DisplayPort compatible [1])
Output Signal Type: HDMI
Formats: Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, Dolby Atmos®, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, LPCM up to 8 channels

Communications

HDMI: HDCP & EDID (does not pass CEC)
EDID: Mode selectable for COPY 1ST or DEFAULT:

- COPY IST copies the EDID from the device connected to OUTPUT 1 and sends it to the source connected to the INPUT [2]
- DEFAULT = 720x480@60Hz, 1280x720@60Hz, 1920x1080@30Hz, 1920x1080@60Hz (preferred), and 2-channel linear PCM audio)

Connectors

INPUT: (1) 19-pin Type A HDMI female;
HDMI digital video/audio input;
Also supports DVI and Dual-Mode DisplayPort [1]

OUTPUT 1 – 2: (2) 19-pin Type A HDMI female;
HDMI digital video/audio outputs;
Also supports DVI [1]

SERVICE: (1) USB Type Mini-B jack;
For factory use only

24VDC 0.75A: (1) 2.1 x 5.5 mm DC power connector;
24 Volt DC power input;
PW-2407WU power pack included

Controls & Indicators

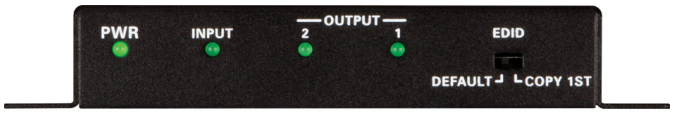
PWR: (1) Green LED, indicates operating power supplied via power pack
INPUT: (1) Green LED, indicates a video signal at the HDMI input
OUTPUT 1 – 2: (2) Green LEDs, indicate video signals at each corresponding HDMI output
EDID: (1) 2-position slide switch, selects EDID mode

Power Requirements

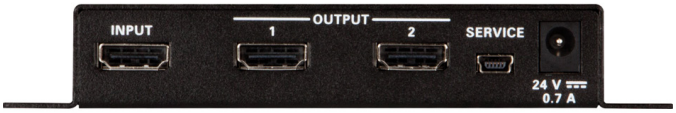
Power Pack: 0.75 Amps @ 24 Volts DC;
100-240 Volts AC, 50/60 Hz power pack, model PW-2407WU included

Power Consumption: 4 Watts typical

HD-DA2-4K-E 1-to-2 4K HDMI® Distribution Amplifier



HD-DA2-4K-E – Top View



HD-DA2-4K-E – Bottom View

Environmental

Temperature: 32° to 104° F (0° to 40° C)
Humidity: 10% to 90% RH (non-condensing)
Heat Dissipation: 13.6 BTU/hr

Enclosure

Chassis: Metal, black finish, with (2) integral mounting flanges
Mounting: Freestanding, surface mount, or attach to a single rack rail

Dimensions

Height: 4.06 in (104 mm)
Width: 5.68 in (145 mm)
Depth: 0.87 in (23 mm)

Weight

0.78 lb (0.35 kg):

MODELS & ACCESSORIES

Available Models

HD-DA2-4K-E: 1-to-2 4K HDMI® Distribution Amplifier

Included Accessories

PW-2407WU: Wall Mount Power Pack 24VDC, 0.75A, Universal (Qty. 1 included)

Available Accessories

CBL Series: Crestron® Certified Interface Cables

Notes:

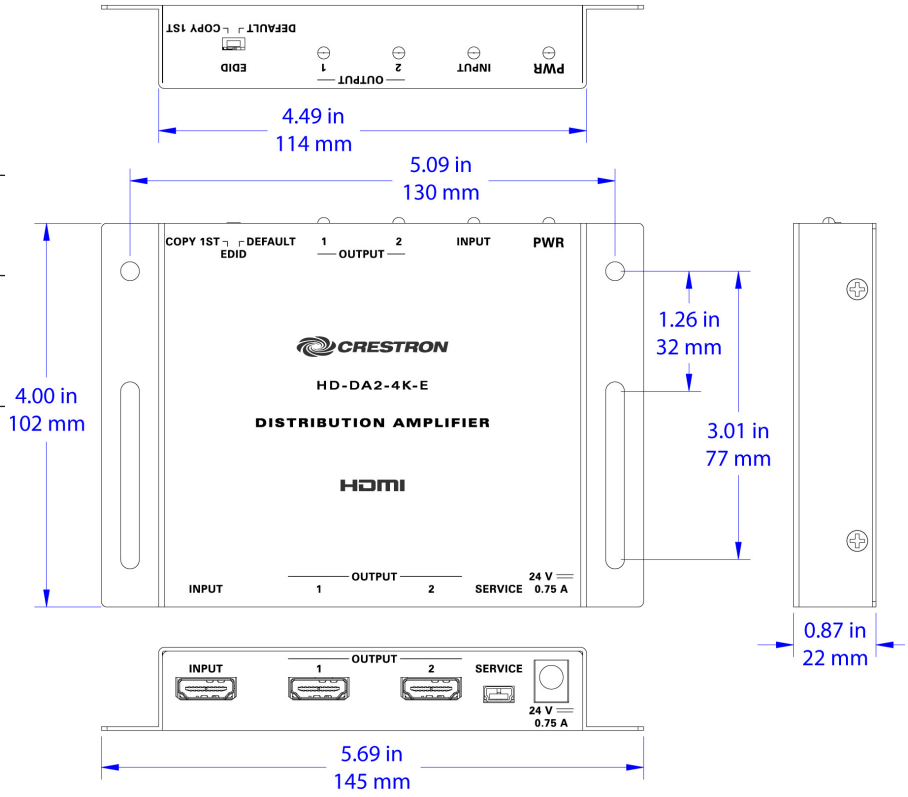
1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or Dual-Mode DisplayPort signal. CBL-HD-DVI interface cables are available separately.
2. Using the COPY 1ST mode, if the device connected to OUTPUT 1 is disconnected, the current EDID will be retained. Changing the device connected to OUTPUT 1 will not update the EDID at the INPUT until the EDID switch is moved to the DEFAULT position and then back to the COPY 1ST position.

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PRO3

3-Series Control System®

Supplemental Guide

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PRO3: 3-Series Control System®

Introduction

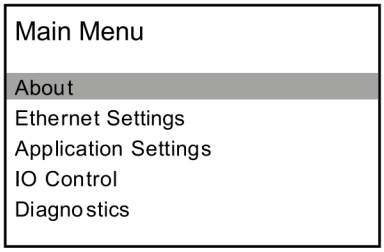
The PRO3's Nav Pad and LCD display can be used to configure and monitor the PRO3's operations.

Alternatively, Crestron Toolbox™ and the PRO3's built-in web interface can also be used. For details, refer to the Crestron Toolbox help file and the AV3/PRO3 DO Guide (Doc. 7721) at www.crestron.com/manuals.

Configuration

Press HOME to display the Main Menu, shown below.

Main Menu



The Main Menu is divided into seven sections:

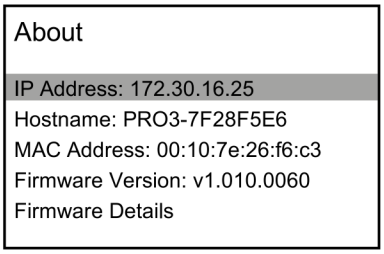
- About displays the controls system's IP address, hostname, MAC address, and firmware information.
- Ethernet Settings configures and displays the PRO3's Ethernet settings.
- Application Settings selects a program to register, run or stop, and provides information about the selected program.
- IO Control monitors and operates the PRO3's input and out ports.
- Diagnostics displays information about the connected devices, hardware configuration, and error logs.
- Reboot provides controls for rebooting the PRO3.
- Screen Setup configures the front panel display.

Press up or down on the Nav Pad to highlight the desired selection, and then press the center button of the Nav Pad to select it. Press HOME at any time to return to the Main Menu. Press BACK at any time to return to the previous screen.

About

Select **About** to display the **About** menu. The **About** menu displays the PRO3's IP address, hostname, MAC address and firmware details.

About Menu



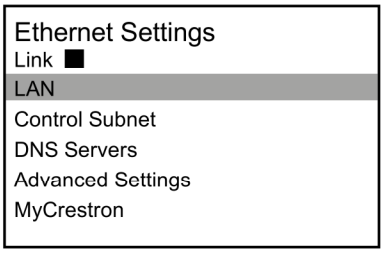
To view firmware details, press up or down on the Nav Pad to highlight **Firmware Details**, and then press the center button of the Nav Pad.

To cancel and return to the previous menu, press **BACK**.

Ethernet Settings

Select **Ethernet Settings** to display the **Ethernet Settings** menu. The **Ethernet Setings** menu displays the status of the Ethernet connection (**Link**, green indicates active) and provides options to view and configure settings for the LAN connection, the control subnet, DNS servers, ports, webserver, SSL, MyCrestron, and Ethernet Diagnostics. Press up or down on the Nav Pad to highlight the desired selection, and then press the center button of the Nav Pad to select it.

Ethernet Settings Menu

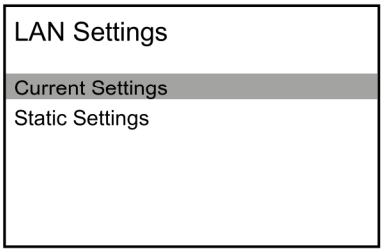


LAN

Select **LAN** from the **Ethernet Settings** menu to edit settings for the LAN connection. The **LAN Settings** menu is displayed.

If any changes are made, the PRO3 must be rebooted. For details on rebooting the PRO3, refer to "Reboot" on page 15.

LAN Settings Menu



Select **Current Settings** to view the current settings, or select **Static Settings** to manually change the settings.

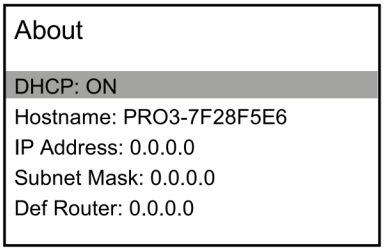
Current Settings

Selecting **Current Settings** displays the settings for DHCP operation, hostname, IP address, subnet mask, default router, and domain name.

Static Settings

Selecting **Static Settings** allows editing of the DHCP settings, host name, IP address, subnet mask, default router, and domain name.

Static Settings Screen

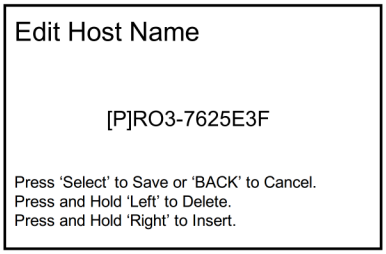


- **DHCP** changes the setting for DHCP operation. The PRO3 can obtain an IP address, a subnet mask, and the default router information from a DHCP server.

  To enable or disable DHCP, press up or down on the Nav Pad to highlight **DHCP: On** or **DHCP: Off**, and then press the center button of the Nav Pad. The setting toggles between **On** and **Off**. The default setting is **DHCP: On**.

- **HostName** shows the PRO3's hostname. Highlight the hostname, and then press the center button of the Nav Pad to change it.

  Edit Host Name Screen

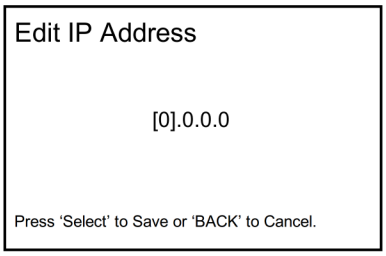
  

  - Use the left and right buttons on the Nav Pad to select a character to change.

- Use the up and down buttons on the Nav Pad to browse the list of possible characters.
- Press and hold the left button on the Nav Pad to delete a character.
- Press and hold the right button on the Nav Pad to insert a character.
- Press the center button of the Nav Pad to save the new hostname.
- Press BACK to cancel.

- IP Address shows the IP address 0.0.0.0. Highlight the IP address, and then press the center button of the Nav Pad to change it.

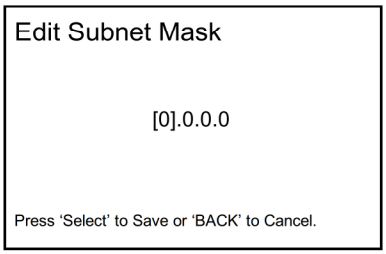
  Edit IP Address Screen

  1. Press up or down on the Nav Pad to set the first octet of the IP address.
  2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
  3. Set each octet until the correct IP address is displayed.
  4. To save the IP address and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press BACK.

- Subnet Mask shows the subnet mask address 0.0.0.0. Highlight the subnet mask, and then press the center button of the Nav Pad to change it.

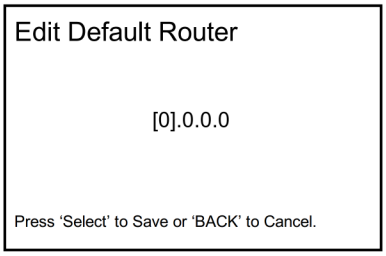
  Edit Subnet Mask Screen

  1. Press up or down on the Nav Pad to set the first octet of the subnet mask.
  2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
  3. Set each octet until the correct subnet mask is displayed.
  4. To save the subnet mask and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press BACK.

- **Def Router** shows the default router address 0.0.0.0. Highlight the default router, and then press the center button of the Nav Pad to change it.

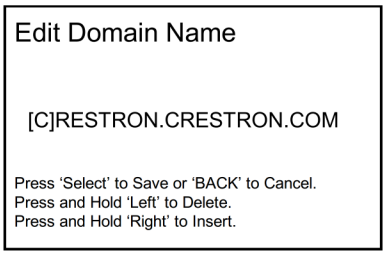
  Edit Default Router Screen

  1. Press up or down on the Nav Pad to set the first octet of the default router.
  2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
  3. Set each octet until the correct default router is displayed.
  4. To save the default router and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press **BACK**.

- **Domain** shows the domain name crestron.crestron.com. Highlight the default router, and then press the center button of the Nav Pad to change it.

  Edit Domain Name Screen

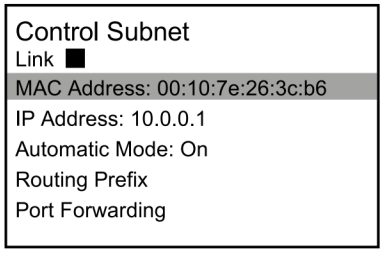
  1. Press up or down on the Nav Pad to set the first octet of the default router.
  2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
  3. Set each octet until the correct default router is displayed.
  4. To save the default router and return to the **LAN Static Settings** menu, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press **BACK**.

Control Subnet

Select **Control Subnet** from the **Ethernet Settings** menu to view and edit settings for the control subnet connection. The **Control Subnet** menu displays the status of the control subnet connection (**Link**, green indicates active) and provides information and configuration options for the MAC address (information only), IP address (information only), routing prefix (automatic or manually set), and port forwarding (information only). Press up or down on the Nav Pad to highlight the desired selection, and then press the center button of the Nav Pad to select it.

If any changes were made, the PRO3 must be rebooted. For details on rebooting the PRO3, refer to “Reboot” on page 15.

Control Subnet Menu



Select **Current Settings** to view the current settings or select **Static Settings** to manually change the settings.

Automatic Mode

Automatic mode determines if the control system will automatically configure a routing prefix or if a routing prefix is to be entered manually.

Press up or down on the Nav Pad to highlight **Automatic Mode: On**, and then press the center button of the Nav Pad. A new screen is displayed, prompting the user to enter a routing prefix. Refer to “Routing Prefix” below for details on setting the routing prefix.

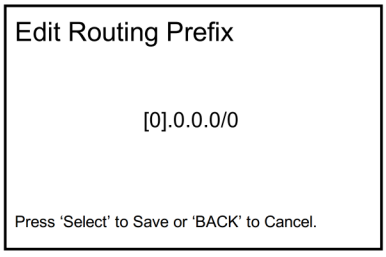
Automatic mode turns off when the routing prefix is saved. If Automatic mode is off and the center button of the Nav Pad is pressed, the mode turns on after a brief pause for the system to update.

Routing Prefix

Edit the routing prefix by pressing up or down on the Nav Pad to highlight **Routing Prefix**, and then press the center button of the Nav Pad. For details on using routing prefixes, refer to the “IP Considerations Guide for the IT Professional Design Guide”, (Doc. 4579) at www.crestron.com/manuals.

NOTE: If the Automatic mode is on, the routing prefix cannot be changed.

Edit Routing Prefix Screen



1. Press up or down on the Nav Pad to set the first octet of the routing prefix.
2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
3. Set each octet until the correct routing prefix is displayed.

4. To save the routing prefix and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press BACK.

Port Forwarding

Select **Port Forwarding** to view the list of ports dedicated to the control subnet. Highlight a port, and then press the center button of the Nav Pad to view details about that port in a new screen. Details include the external port number, internal port number, IP address or hostname, and protocol.

DNS Servers

Select **DNS Servers** to add or delete primary and secondary DNS servers.

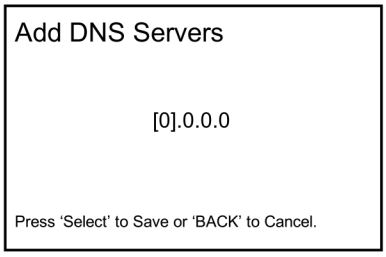
NOTE: If DHCP is in use, DNS servers are automatically added and can only be viewed. They cannot be deleted.

If any changes are made, the PRO3 must be rebooted. For details on rebooting the PRO3, refer to “Reboot” on page 15.

Add

Select **Add New** to add a DNS server.

Add DNS Servers Screen



1. Press up or down on the Nav Pad to set the first octet of the DNS server.
2. Press left or right on the Nav Pad to move the cursor between octets and select one for editing.
3. Set each octet until the correct default router is displayed.
4. To save the default router and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press BACK.

Delete

To delete a DNS server entry, perform the following:

1. Press up or down on the Nav Pad to highlight the DNS server to be deleted, and then press the center button of the Nav Pad.
2. Press the center button of the Nav Pad to delete the entry or press BACK to cancel.

Advanced Settings

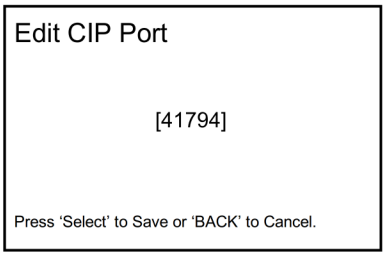
Select **Advanced Settings** to display and change the port numbers of regular and secure CIP, CTP, and Web ports. Web server and SSL functionality can be controlled as well.

Port Assignments

Perform the following to view or configure the regular and secure CIP, CTP, and web ports:

1. Press up or down on the Nav Pad to highlight the port to be adjusted, and then press the center button of the Nav Pad.

   Edit a Port Screen (CIP Port Shown)

2. Press up or down on the Nav Pad to display the port number to be used.
3. To save the port number and return to the previous screen, press the center button of the Nav Pad. To cancel the operation and return to the previous screen, press **BACK**.

NOTE: Changing the CIP Port to something other than 41794 disables access to the web-based setup program.

If any changes are made, the PRO3 must be rebooted. For details on rebooting the PRO3, refer to "Reboot" on page 15.

Web Server

The PRO3's built-in web server can be enabled or disabled using the front panel controls.

To enable or disable the web server, press up or down on the Nav Pad to highlight **Webserver: On** or **Webserver: Off**, and then press the center button of the Nav Pad. The setting toggles between **On** and **Off**. The default setting is **Webserver: On**.

NOTE: Setting the Webserver to **Off** disables access to the web-based setup program.

SSL Controls

The PRO3 can use SSL encryption for web services. For details on using SSL, refer to the 3-Series Control System Reference Guide (Doc. 7150) at www.crestron.com/manuals.

To enable and configure SSL, press up or down on the Nav Pad to highlight **SSL**, and then press the center button of the Nav Pad to view the possible settings.

- **Off** turns off the SSL capabilities of the PRO3. This is the default.
- **Self** sets up self-signing certificates.
- **CA** uses an authority to assign the SSL settings.

To view information about the SSL certificate, press up or down on the Nav Pad to highlight **SSL Cer**, and then press the center button of the Nav Pad. Information about the certificate is shown on the front panel display.

Start Program Status

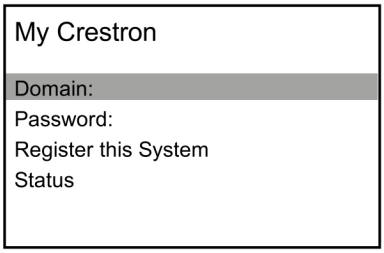
The PRO3 can be configured so that programs do not start until an Ethernet connection has been made and is fully operational. To configure this feature, press up or down on the Nav Pad to highlight **Start Program Status**, and then press the center button of the Nav Pad to switch between **On** and **Off**. When set to **On**, programs cannot start until an Ethernet connection has been made and is fully operational. When set to **Off**, there is no restriction to when a program can start.

MyCrestron

To use the PRO3 with the MyCrestron.com dynamic DNS service, perform the following procedure:

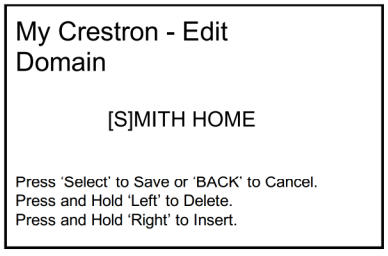
1. Use a PC with Internet Explorer to navigate to http://www.mycrestron.com, and register the system with Crestron®. Use the information provided from the MyCrestron website to complete the information on the "MyCrestron" screen shown in step 2.
2. On the PRO3, press up or down on the Nav Pad to highlight **MyCrestron**, and then press the center button of the Nav Pad. To configure the settings for the dynamic DNS server, follow the procedure below:

   My Crestron Screen

   a. Press up or down on the Nav Pad to highlight **Domain**, and then press the center button of the Nav Pad to enter the name that was chosen.

      My Crestron Edit Domain Screen

      i. Use the left and right buttons on the Nav Pad to select a character to change.

      ii. Use the up and down buttons on the Nav Pad to browse the list of possible characters.

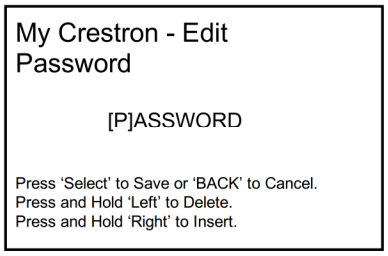
iii. Press and hold the left button on the Nav Pad to delete a character.

iv. Press and hold the right button on the Nav Pad to insert a character.

v. Press the center button of the Nav Pad to save the new domain name or press BACK to cancel.

b. Press up or down on the Nav Pad to highlight Password, and then press the center button of the Nav Pad to enter the password that was chosen.

My Crestron Edit Password Screen



i. Use the left and right buttons on the Nav Pad to select a character to change.

ii. Use the up and down buttons on the Nav Pad to browse the list of possible characters.

iii. Press and hold the left button on the Nav Pad to delete a character.

iv. Press and hold the right button on the Nav Pad to insert a character.

v. Press the center button of the Nav Pad to save the new hostname or press BACK to cancel.

Once the domain name and passwords are entered, the control system registers itself with MyCrestron every 5 minutes. To force an immediate registration, press up or down on the Nav Pad to highlight Register This System, and then press the center button on the Nav Pad.

To view the status of the connection to the MyCrestron.com service, press up or down on the Nav Pad to highlight Status, and then press the center button on the Nav Pad. The display shows the current IP address, the IP address when the system last checked, and when the system last registered successfully with the MyCrestron.com service.

Ethernet Diagnostics

Use the PRO3's built-in Ethernet diagnostic tools to perform various troubleshooting steps.

Tests can be run on the PRO3 to verify network connections. Use the up or down buttons on the Nav Pad to highlight the desired test, and then press the center button on the Nav Pad to start it.

Select Ping Def. Router to test the router connection. When the test is completed, the results are shown on the display.

To verify external communications, select Ping Crestron.com. When the test is completed, the results are shown on the display.

Select Who to display a list of devices that are connected to the control system via the Ethernet connection. These devices may be Crestron Ethernet devices, third party Ethernet

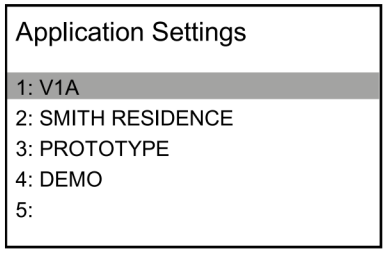
devices, and PCs (including any PC using Crestron Toolbox to connect to the processor over Ethernet).

NOTE: Changing the CIP Port to something other than 41794 results in disabling access to this setup program from a Web browser. In order to re-enable access, use Crestron Toolbox to connect to the control system, and set the CIP Port back to 41794.

Application Settings

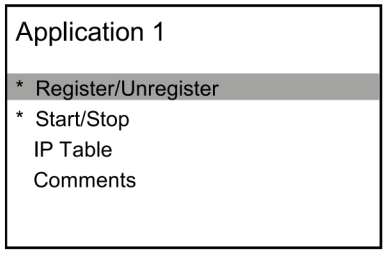
Select **Application Settings** to display the **Application Settings** menu.

Application Settings Menu



The **Application Settings** menu displays all of the programs that are loaded on the PRO3. Press up or down on the Nav Pad to highlight the desired program, and then press the center button of the Nav Pad to display controls for registering the program, starting or stopping the program, viewing the program's IP table, or viewing the program's comments.

Application 1 Screen



Register and Unregister Programs

Before a program can be started, it has to be registered. At startup, only the registered programs are started.

To register or unregister a program, press up or down on the Nav Pad to highlight **Register/Unregister**, and then press the center button of the Nav Pad. If the program is not registered, it becomes registered and an asterisk appears. If a program is already registered, it becomes unregistered and the asterisk disappears.

Start and Stop Programs

A program that is running can be stopped and a program that is not running can be started. To start or stop a program, press up or down on the Nav Pad to highlight **Start/Stop**, and then press the center button of the Nav Pad. If the program is not running, it starts and an asterisk appears. If a program is running, it is stopped and the asterisk disappears.

IP Table

The IP table of a running program can be viewed by pressing up or down on the Nav Pad to highlight **IP Table**, and then pressing the center button of the Nav Pad. Press **BACK** to return to the previous screen.

NOTE: If a program is not running, its IP table cannot be displayed.

Comments

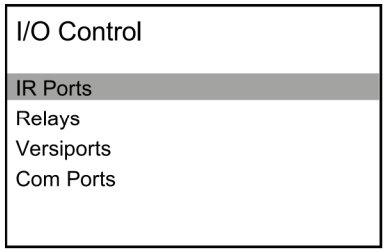
A running program's programmer comments can be viewed on the front panel display. To view comments, press up or down on the Nav Pad to highlight **Comments**, and then press the center button of the Nav Pad. Press **BACK** to return to the previous screen.

NOTE: If a program is not running, its comments cannot be displayed.

I/O Control

Select **I/O Control** to display the **I/O Control** menu.

I/O Control Menu

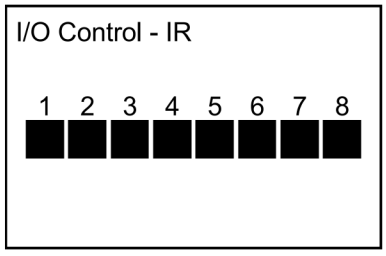


The **I/O Control** menu displays the different types of input and output ports on the PRO3. Press up or down on the Nav Pad to highlight the desired port type, and then press the center button of the Nav Pad to display information about the input or output port.

IR Ports

Select **IR Ports** to monitor the activity on the built-in infrared ports.

I/O Control - IR Screen

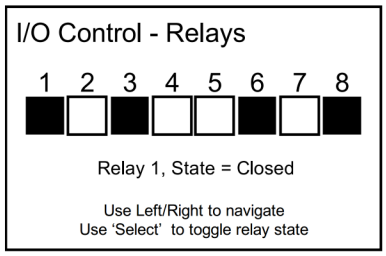


The port number's indicator turns green when there is activity on the corresponding infrared port.

Relays

Select **Relays** to monitor and control the status of the built-in relays.

I/O Control - Relays Screen

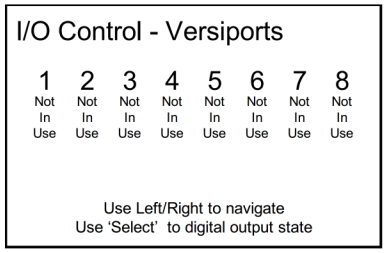


Closed relays are indicated in red while open relays are indicated in black. To toggle a relay between the open and closed states, press left or right on the Nav Pad to highlight the desired relay, and then press the center button of the Nav Pad to toggle its state.

Versiports

Select **Versiports** to view activity on the Versiports. When a port is in use, the port configuration (**Digital In**, **Digital Out**, or **Analog In**) is displayed for that port number. If the port is not in use, **Not In Use** is displayed.

I/O Control - Versiports Screen

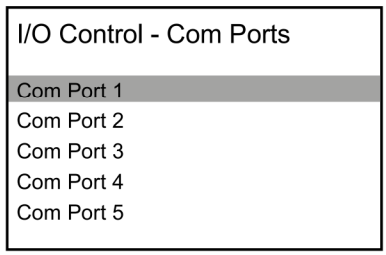


To edit the port configuration, select a port by pressing left or right on the Nav Pad to highlight the desired port, and then press the center button of the Nav Pad to toggle between the different configurations.

Com Ports

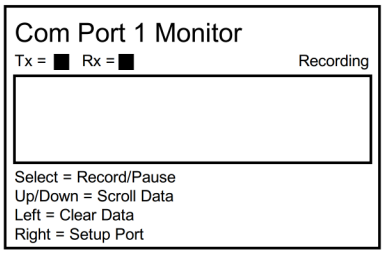
Select **Com Ports** to display the **I/O Control - Com Ports** menu.

I/O Control - Com Ports Menu



The **I/O Control - Com Ports** menu displays a list of the serial ports on the PRO3. Press up or down on the Nav Pad to highlight the desired serial port, and then press the center button of the Nav Pad to display com port's monitor screen.

Com Port 1 Monitor Screen

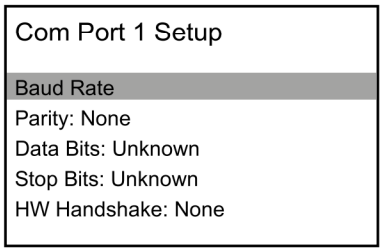


The monitor displays incoming and outgoing data. Transmitted data is displayed in red and received data is displayed in green.

Use the Nav Pad and the center button to perform the following actions:

- Press the center button of the Nav Pad to record transmitted and received data. Press the center button again to pause.
- Press up or down on the Nav Pad to scroll through transmitted and received data.
- Press left on the Nav Pad to clear data from the screen.
- Press right on the Nav Pad to configure the com port. The Com Port Setup menu is displayed.

  Com Port 1 Setup Menu

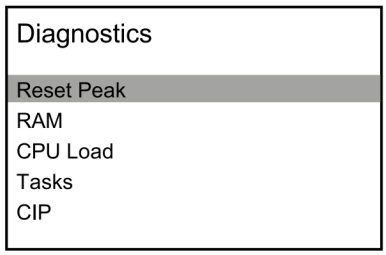
  

  1. Press up or down on the Nav Pad to highlight the parameter to be adjusted, and then press the center button on the Nav Pad to display the available settings.
  2. Press up or down on the Nav Pad to highlight the desired setting, and then press the center button of the Nav Pad to select it.
  3. Repeat steps 1 and 2 for every parameter to be adjusted.
  4. Press BACK to return to the previous screen.

Diagnostics

Select **Diagnostics** to display the **Diagnostics** menu.

Diagnostics Menu



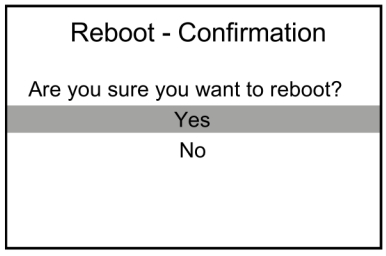
The **Diagnostics** menu is used to provide information about the control system, connected devices, hardware configuration, and error logs. Press up or down on the Nav Pad to highlight the desired information, and then press the center button of the Nav Pad to display details. Press **BACK** to return to the previous screen.

- Select **Reset Peak** to reset the peak values of RAM, tasks, and TX and RX values for CIP, TCP, and Cresnet®.
- Select **RAM** to display the total, current, and minimum RAM used by the PRO3.
- Select **CPU Load** to display the current and peak CPU loads, both numerically and by bar graph.
- Select **Tasks** to display the current and peak number of tasks performed by the PRO3.
- Select **CIP** to display statistics for CIP network traffic.
- Select **TCP** to display statistics for TCP network traffic.
- Select **Cresnet** to display statistics for Cresnet network traffic.
- Select **Show Cresnet Devices** to a list of Cresnet devices connected to the network.
- Select **Show Hardware Configuration** to display a list of card slots.
- Select **Show Message Log** to display events that are stored in the message log.
- Select **Show Last Reboot Message** to display the final message stored before the control system was reset last.

Reboot

Select **Reboot** to reboot the control system.

Reboot - Confirmation Screen

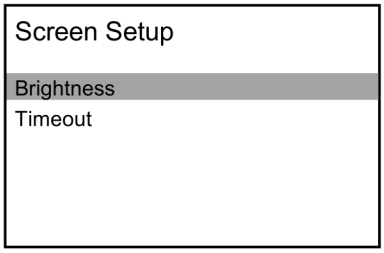


Press up or down on the Nav Pad to highlight Yes or No, and then press the center button of the Nav Pad.

Screen Setup

Select Screen Setup to adjust the front panel display's brightness and timeout settings.

Screen Setup Menu



The Screen Setup menu displays options for adjusting the brightness and timeout settings. Press up or down on the Nav Pad to highlight the parameter to be adjusted, and then press the center button of the Nav Pad to display controls for adjusting the selected option.

Brightness

Press up or down on the Nav Pad to adjust the brightness level, and then press BACK to return to the previous screen.

Timeout

Press up or down on the Nav Pad to highlight the desired timeout setting, and then press the center button of the Nav Pad to set it.

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www.crestron.com

Supplemental Guide – DOC. 7330D
(2033000)
06.15
Specifications subject to
change without notice.

Crestron **TSD-2020**
V-Panel™ 20” HD Touch Screen Display
Operations Guide



CRESTRON®

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product's enclosure t hat may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

THIS IS AN APPARATUS WITH CLASS I CONSTRUCTION. IT SHALL BE CONNECTED TO AN ELECTRICAL OUTLET WITH AN EARTHING GROUND TERMINAL.

IMPORTANT:

This device can be used with Class 2 output wiring.

The specific patents that cover Crestron products are listed at patents.crestron.com.

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V-Panel 20” HD Touch Screen Display: TSD-2020

Safety Precautions

The Crestron® TSD-2020 has been engineered and manufactured with safety as the highest priority. However, improper use can result in electric shock or fire. To ensure safety and prolong the service life of the TSD-2020, please read the following precautions carefully before using this product.

- Read instructions—All operating instructions must be read and understood before the product is used.
- Keep this manual in a safe place—These safety and operating instructions must be kept in a safe place for future reference.
- Observe warnings—All warnings on the product and in the instructions must be observed.
- Follow instructions—All operating instructions must be followed.
- Cleaning—Unplug the power cord from the ac outlet before cleaning the product. Use a dry cloth to clean the product. Do not use liquid cleaners or aerosol cleaners.
- Attachments—Do not use attachments which are not recommended by the manufacturer. Use of non-recommended attachments can result in accidents.
- Water and moisture—Do not use the product near water. Do not install the product in a place where water may splash onto it. Be careful of equipment which drains water such as air conditioners.
- Ventilation—The vents and other openings in the cabinet are designed for ventilation. Do not cover or block these vents and openings since insufficient ventilation can cause overheating and shorten the life of the product. Do not place the product on a sofa, rug or other similar surface since these can block ventilation openings. Do not place the product in an enclosed place such as a bookcase or rack unless proper ventilation is provided or the manufacturer’s instructions are followed.
- Power cord protection—The power cord must be routed properly to prevent it from being stepped on or having objects placed on it.

- The screen used in this product is made of glass. Therefore, it can break when the product is dropped or something is dropped on the product. If the screen breaks, be careful to avoid injury from broken glass.
- Overloading—Do not overload ac outlets or extension cords. Overloading can cause fire or electric shock.
- Avoid inserting objects and spilling liquids—Never insert an object into the product through the vents or openings. High voltage flows in the product and inserting an object can cause electric shock or short circuit internal parts.
- Servicing—Removing covers can expose high voltage and other dangerous conditions. Have all service performed by qualified service personnel.
- Repair—If any of the following conditions occur, unplug the power cord from the ac outlet and have a qualified service person perform any repairs.
  - ⇒ When the power cord or plug is damaged
  - ⇒ When a liquid was spilled on the product or when objects have fallen into the product
  - ⇒ When the product has been exposed to rain or water
  - ⇒ When the product does not operate properly
  - ⇒ When the product has been dropped or damaged
  - ⇒ When the product displays an abnormal condition—Any noticeable abnormality in the product indicates the product needs servicing.
- Replacement parts—In case the product needs replacement parts, make sure the service person uses replacement parts specified by the manufacturer or those with the same characteristics and performance as the original parts. Use of unauthorized parts can result in fire, electric shock or other danger.
- Safety checks—Upon completion of service or repair work, the service technician must perform safety checks to ensure the product is in proper operating condition.
- Wall mounting—When mounting the product on a wall, be sure to install the product according to the method recommended by the manufacturer.
- Heat sources—Keep the product away from heat sources such as radiators, heaters, stoves and other heat generating products (including amplifiers).
- Use of this product must not be accompanied by fatal risks or dangers that could lead directly to death, personal injury, severe physical damage or other loss, including nuclear reaction control in a nuclear facility, medical life support systems, and missile launch control in a weapon system.
- Do not touch the ac adapter or other parts of the product that might become hot after long periods of use. Doing so may result in low-temperature burns.
- Do not place this product on top of unstable objects or in unsafe places. Do not allow the product to receive strong shocks or to strongly vibrate.
- Use only the power cord and ac adapter supplied with the product.

- When handling the ac adapter, observe the following as incorrect handling may result in fire, electric shock or injury.
  - ⇒ Do not drop the ac adapter or subject it to impact.
  - ⇒ Never disassemble the ac adapter. It contains high voltage parts that are dangerous to touch.
  - ⇒ The ac adapter is for indoor use only. Do not use it outdoors.
  - ⇒ Do not use the supplied ac adapter with other devices.
- Do not damage the power cord or ac adapter. Do not place heavy objects on the cord, stretch it or over bend it. Also, do not add extension cords. Damage to the cord may result in fire or electric shock.
- Do not use the power cord with a power tap. Adding an extension cord may lead to fire as a result of overheating.
- Do not remove or insert the power plug with wet hands. Doing so could result in electric shock.
- Unplug the power cord when the product is not used for a long time.
- Do not attempt to repair the power cord if it is broken or malfunctioning. Refer the service to a qualified technician.
- For viewer health, observe the following:
  - ⇒ If using the product continuously, take a 10- to 15-minute break every hour to rest the eyes.
  - ⇒ Do not use the product in high contrast light conditions.
  - ⇒ Do not use the product in locations where the screen is subject to direct sunlight.

Operating Tips

For best results, observe the following operating tips.

- The TFT color LDC panel used in the TSD-2020 is made with the application of high precision technology. However, there may be minute points on the screen where pixels never light or are permanently lit. Also, if the screen is viewed from an acute angle, there may be uneven color or brightness. Please note these are not malfunctions but common phenomena associated with LCDs and will not affect the performance of the product.
- Do not display a still picture for a long period as this could cause residual damage.
- Never rub or tap the monitor with hard objects.
- This product and its accessories may be upgraded without advance notice.
- Continuous Operation Time and Warranty
  This product has been designed based on the assumption of 15 or fewer hours of use per day. Continuous use that exceeds 15 hours per day is not covered by the warranty.
- The ac outlet shall be installed near the equipment and shall be easily accessible.
- Do not touch the screen when starting the TSD-2020. If the screen is touched, the device may not function correctly. In this situation, turn off the TSD-2020, wait at least 5 seconds and then turn it on again.
- Do not operate the TSD-2020 with a hard or pointed object such as a fingernail, pencil or pen other than the included touch pen.
- Depending on the application used, the supplied touch pen may not function.
- If another USB device is connected to the computer to which the TSD-2020 is connected, do not operate the USB device during touch screen input. Otherwise, input may not function correctly.
- To avoid malfunction, keep all cables off the touch screen.
- If used in a room (or other location) with drastic temperature variation, the display quality of the TSD-2020 and the quality of touch screen performance may suffer.
- The LED backlight in this product has a limited lifetime. If the screen gets dark or does not turn on, it may be necessary to replace the LED backlight. This LED backlight is exclusive to this product and must be replaced by an authorized Crestron servicing dealer or service center.
- When performing touch actions, use the ball of the finger.
- When performing pen actions, use the included touch pen.
- Do not use the touch pen for any purpose other than touch screen operation.
- Do not press hard on the tip of the touch pen.
- If there is dirt or foreign matter on the tip of the touch pen, remove it. Failure to do so may damage the screen.

- Even when in *pen-only* mode, the TSD-2020 may respond to objects other than the included touch pen.
- When performing pen actions with the included touch pen, do not touch the screen with anything other than the hand that is holding the pen.

Resources

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron’s Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the TSD-2020, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

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Operations Guide – DOC. 7611A
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11.13
Specifications subject to
change without notice.

TSW-560/TSW-760/TSW-1060

5", 7", and 10.1" Touch Screens

Supplemental Guide

Crestron Electronics, Inc.

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The product warranty can be found at www.crestron.com/warranty.

The specific patents that cover Crestron products are listed at patents.crestron.com.

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TSW-560/TSW-760/TSW-1060: 5", 7", and 10.1" Touch Screens

Access the Setup Screens

The setup screens enable basic configuration prior to regular operation of the Crestron® TSW-560, TSW-760, and TSW-1060 touch screens. To display the main setup screen, touch the display screen while applying power to the touch screen.

The Crestron TSW-560, TSW-760, and TSW-1060 are functionally similar. For simplicity within this guide, the term “touch screen” is used except where noted.

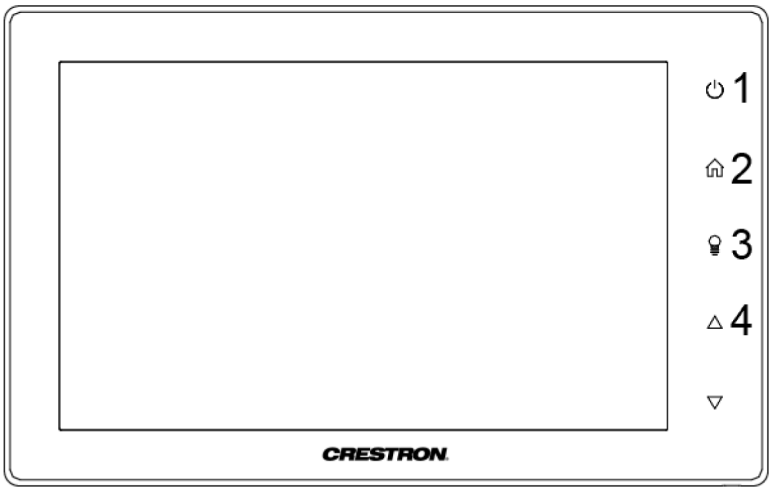
NOTE: The Crestron TSW-560P 5" portrait touch screen provides the same setup screens that are described in this guide, but their appearance and layout have been modified for portrait orientation.

NOTE: If no project has been loaded or if an invalid project has been loaded, the touch screen defaults to the main setup screen.

During regular operation of the touch screen, there are four ways to access the setup functions:

1. Place a button on the project main page, and assign the reserved join number (17242) that activates setup.
2. Tap the hard keys labeled below as 1, 2, 3, and 4 in sequence twice (tap 1, 2, 3, 4, 1, 2, 3, 4) within a 5-second period.
3. Place five fingers on the display and hold for 15 seconds.
4. Enter the IP address of the touch screen into a web browser.

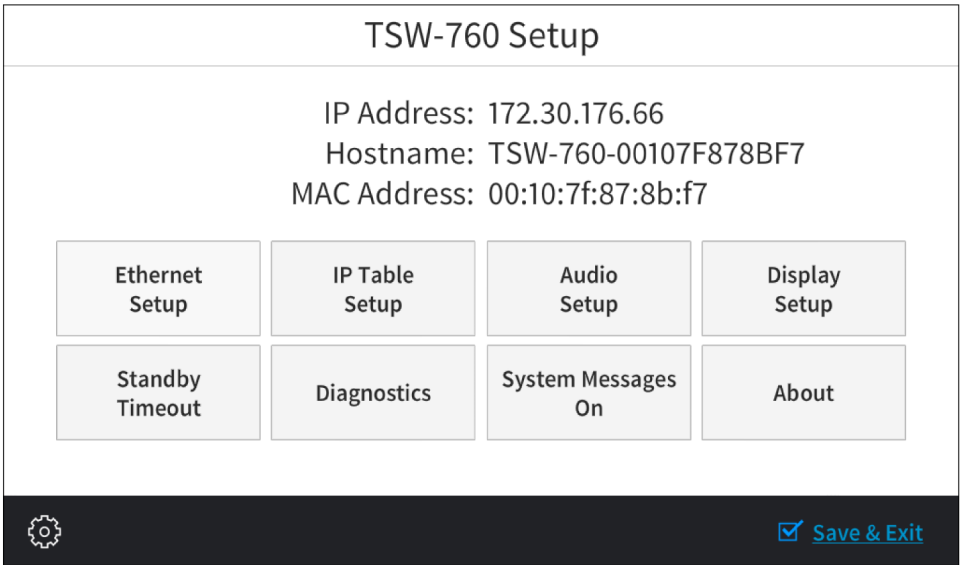
Touch Screen Hard Key Assignment



NOTE: The hard key button assignment for the TSW-560P differs from the illustration on the previous page. For more information, refer to "Access the Setup Screens" in the TSW-560P DO Guide (Doc. 7973A) at www.crestron.com/manuals.

The **TSW-560/760/1060 Setup** screen is displayed.

TSW 760 Setup Screen



The **TSW-560/760/1060 Setup** screen provides buttons for Ethernet setup, IP table setup, audio setup, display setup, standby timeout, and diagnostics. There is also a button to toggle system messages on or off, and an **About** button provides information about the touch screen. Additionally, the screen displays the IP address, the hostname, and the MAC address of the touch screen. The functions of each button are detailed in the following pages of this guide.

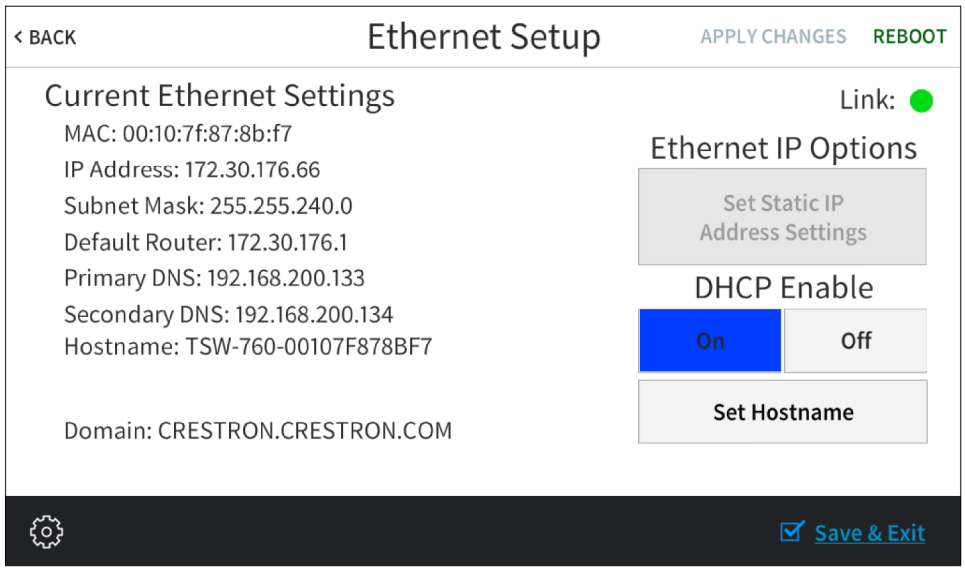
NOTE: The bottom toolbar is present on all of the setup screens. The toolbar provides a gear button ( ) that can be tapped to return to the **TSW-560/760/1060 Setup** screen and a **Save & Exit** button that can be tapped to save all settings, to exit the setup screens, and to return to the main project.

Configure the Touch Screen

Ethernet Setup

On the **TSW-560/760/1060 Setup** screen, tap **Ethernet Setup** to display the **Ethernet Setup** screen.

Ethernet Setup Screen



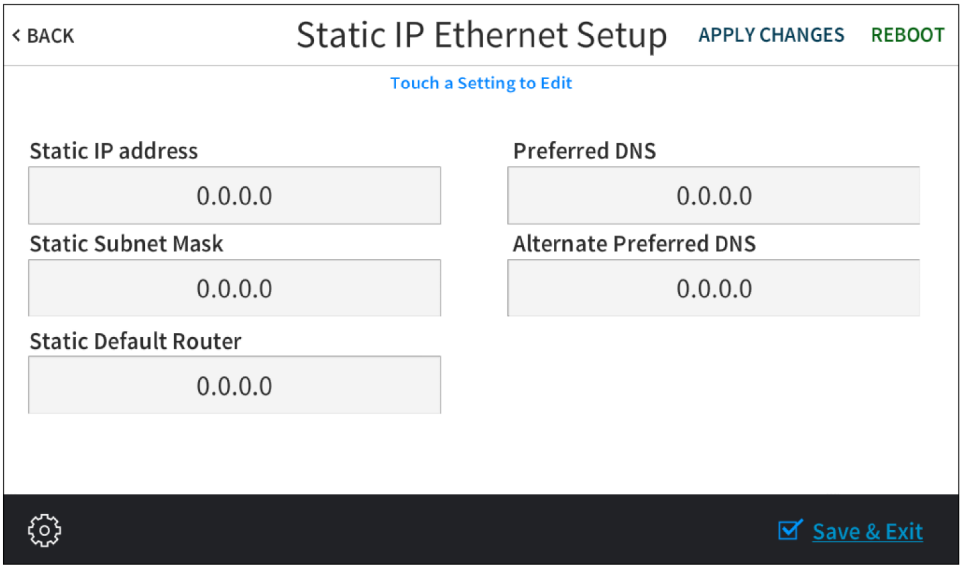
Use the **Ethernet Setup** screen to view the touch screen's MAC and IP addresses, subnet mask, default router, primary and secondary DNS, hostname, and domain. This screen also contains a **Link** indicator to show the status of the Ethernet connection. (Green indicates that the Ethernet connection is active.)

DHCP can be enabled or disabled by tapping **On** or **Off** under **DHCP Enable**. When DHCP is off, a **Set Static IP Address Settings** button provides access to controls that allow these settings to be edited.

To change to a static IP address, tap **Off** under **DHCP Enabled**, and then tap **Set Static IP Address Settings** to display the **Static IP Ethernet Setup** screen.

NOTE: DHCP is enabled by default.

Static IP Ethernet Setup Screen



To edit the static IP address, the static subnet mask, the static default router, the preferred DNS, or the alternate preferred DNS, tap the text field underneath the setting name. The on-screen numeric keypad (not shown) opens.

- Use the keypad to make the new entry.
- Tap the clear button ( ) in the text field to clear any previous entry.
- Tap the delete button ( ) to delete the last digit.
- Tap SAVE to save a new entry or tap < CANCEL to discard any changes. The display returns to the Ethernet Setup - Static IPs screen.

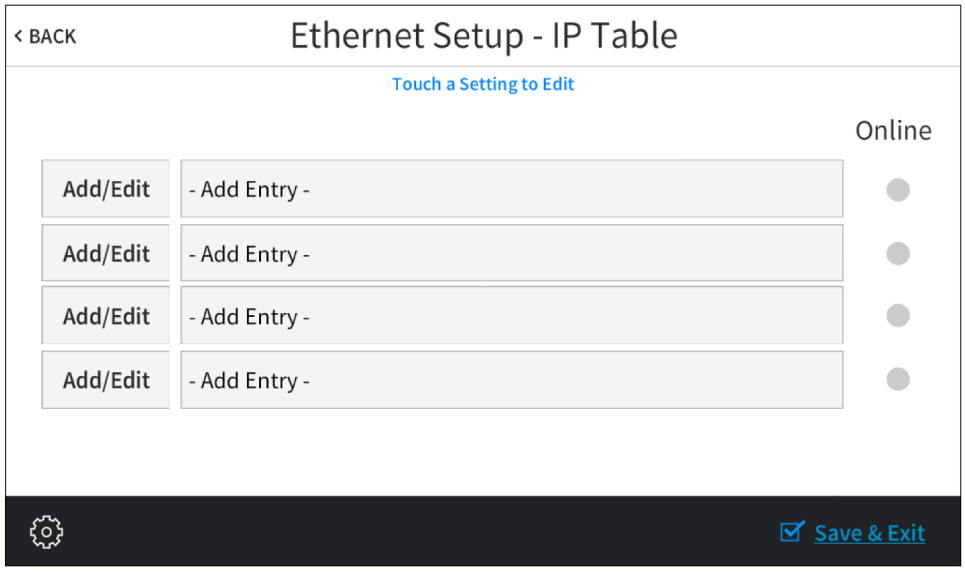
After new settings have been saved, tap Apply Changes on the Static IP Ethernet Setup screen to apply the new settings and to stay in setup mode. Tap Reboot to exit setup mode and to reboot the touch screen.

- If no changes are made, tap < BACK to return to the Ethernet Setup screen.
- Tap < BACK again to return to the TSW-560/760/1060 Setup screen.

IP Table Setup

On the **TSW-560/760/1060 Setup** screen, tap **IP Table Setup** to display the **Ethernet Setup - IP Table** screen.

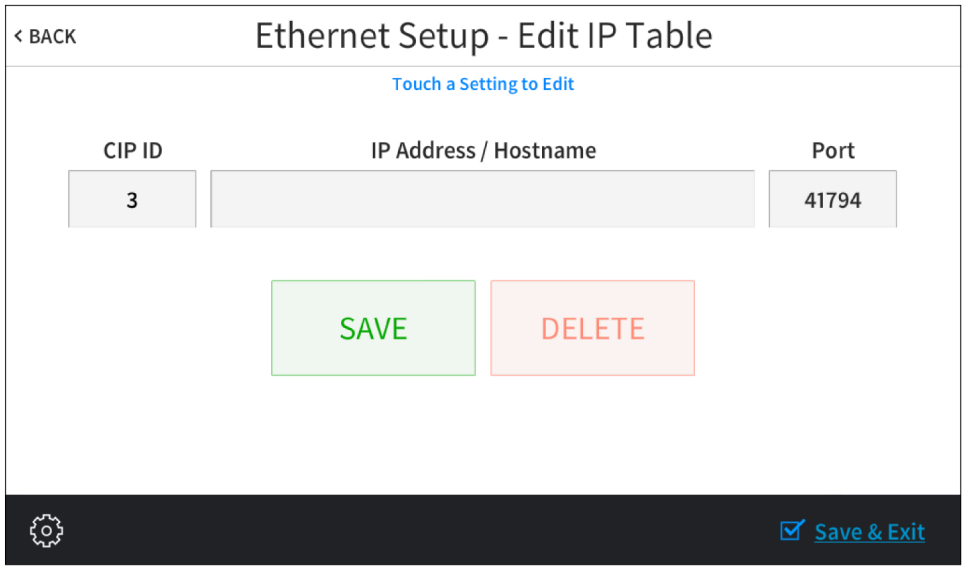
Ethernet Setup - IP Table Screen



Use the **Ethernet Setup - IP Table** screen to view and edit up to four IP table settings, each of which has an **Online** indicator. (Green indicates that the IP address is online.)

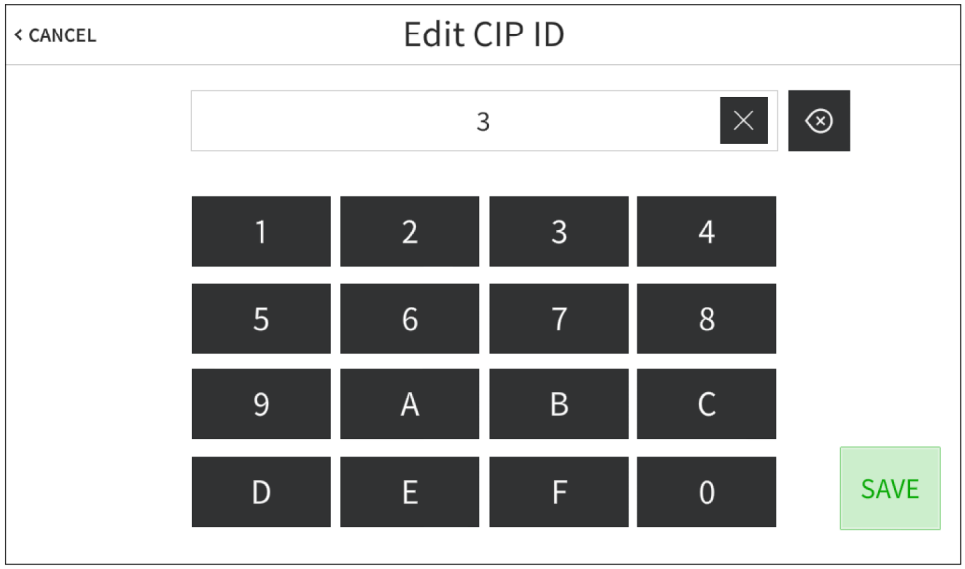
To add or edit an entry, tap the **Add/Edit** button to its left. The **Ethernet Setup - Edit IP Table** screen is displayed.

Ethernet Setup - Edit IP Table Entry Screen



Tap the text field below **CIP ID** to display the on-screen hex keypad.

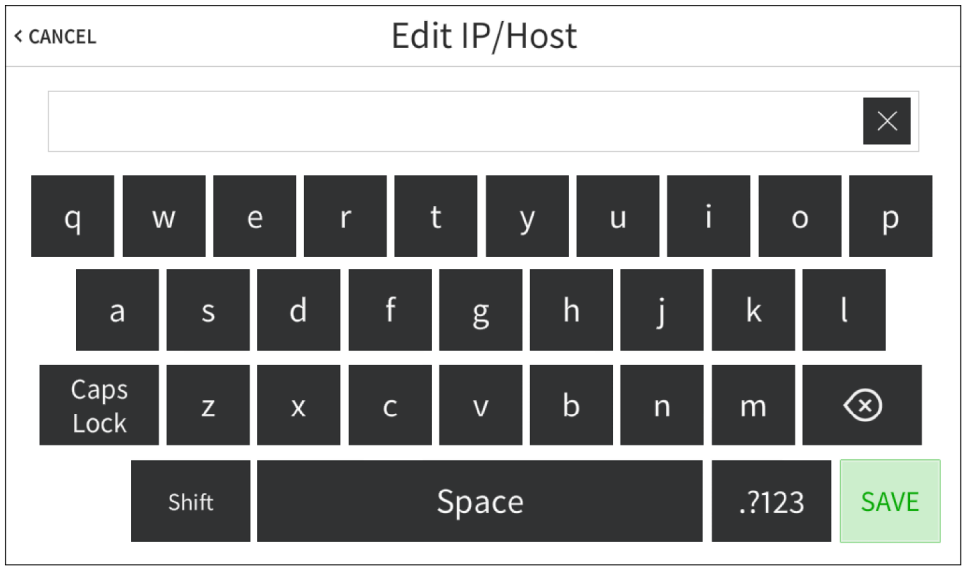
On-Screen Hex Keypad



- Use the keypad to make the new entry.
- Tap the clear button ( ) in the text field to clear any previous entry.
- Tap the delete button ( ) to delete the last digit.
- Tap **SAVE** to save a new entry or tap **< CANCEL** to discard any changes. The display returns to the **Ethernet Setup - IP Table** screen.

Tap the text field below **IP Address / Hostname** to display the on-screen keyboard.

On-Screen Keyboard



- Use the keyboard to make the new entry.
- Tap the clear button ( ) in the text field to clear any previous entry.
- Tap the delete button ( ) to delete the last digit.
- Tap SAVE to save a new entry or tap < CANCEL to discard any changes. The display returns to the Ethernet Setup - IP Table screen.

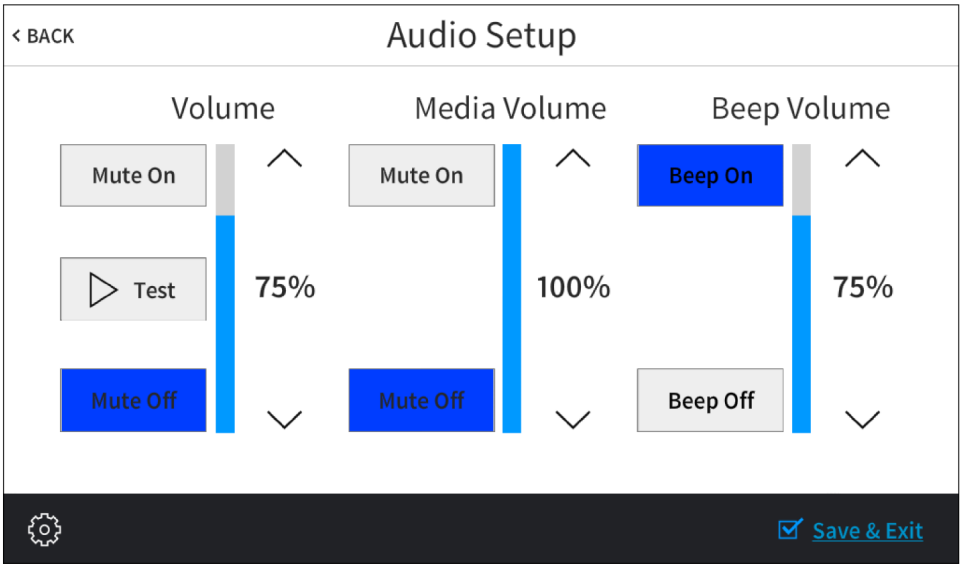
On the Ethernet Setup - IP Table screen, tap SAVE to save the current entry or DELETE to clear it.

- If no changes are made, tap < BACK to return to the Ethernet Setup screen.
- Tap < BACK again to return to the TSW-560/760/1060 Setup screen.

Audio Setup

On the TSW-560/760/1060 Setup screen, tap Audio Setup to display the Audio Setup screen.

Audio Setup Screen



Use the Audio Setup screen to control the volume, media volume, and beep volume settings for the touch screen:

NOTE: The Media Volume controls adjust the H.264 streaming media level in relation to the Volume controls.

- Volume: Tap the up and down arrows to raise or lower the master volume of the touch screen, from 0 to 100%. Tap Mute On or Mute Off to mute or unmute the master volume. Tap Test to play a test recording at the current volume level.
- Media Volume: Tap the up and down arrows to raise or lower the media volume of the touch screen, from 0 to 100%. Tap Mute On or Mute Off to mute or unmute the media volume.

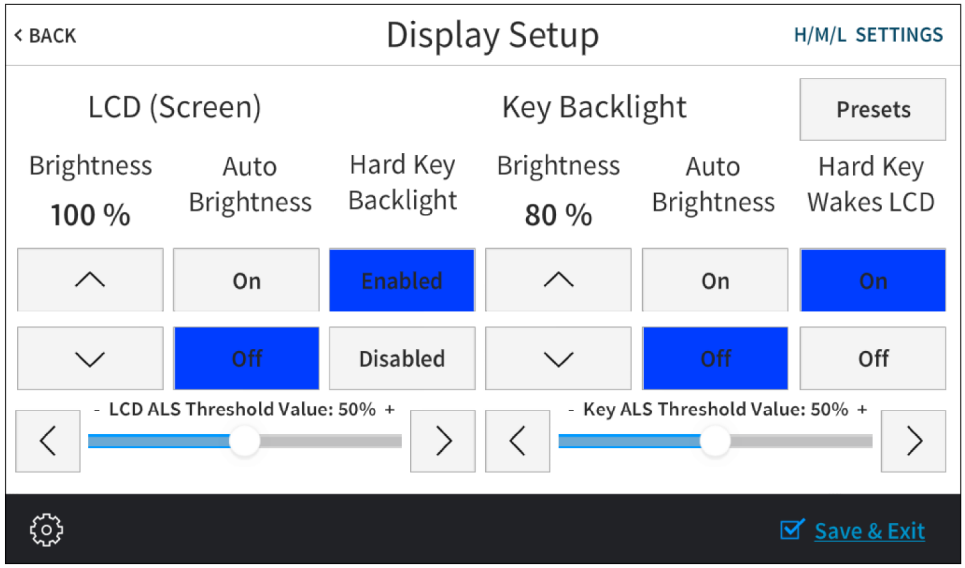
- **Beep Volume:** Tap the up and down arrows to raise or lower the beep volume of the touch screen, from 0 to 100%. Tap **Beep On** or **Beep Off** to turn the beep volume on or off.

Tap **< BACK** to return to the **TSW-560/760/1060 Setup** screen.

Display Setup

On the **TSW-560/760/1060 Setup** screen, tap **Display Setup** to display the **Display Setup** screen.

Display Setup Screen



Use the **Display Setup** screen to adjust the LCD display and the key backlight settings.

The following settings can be adjusted for the LCD (screen) display:

- Tap the up and down arrows under **Brightness** to raise or lower the brightness level of the LCD display, from 0 to 100%.
- Tap **On** or **Off** under **Auto Brightness** to enable or disable auto brightness on the display.
- Tap the left and right arrows to adjust the ALS (ambient light sensor) threshold value for switching between high and low auto-brightness presets, from 0 to 100%.

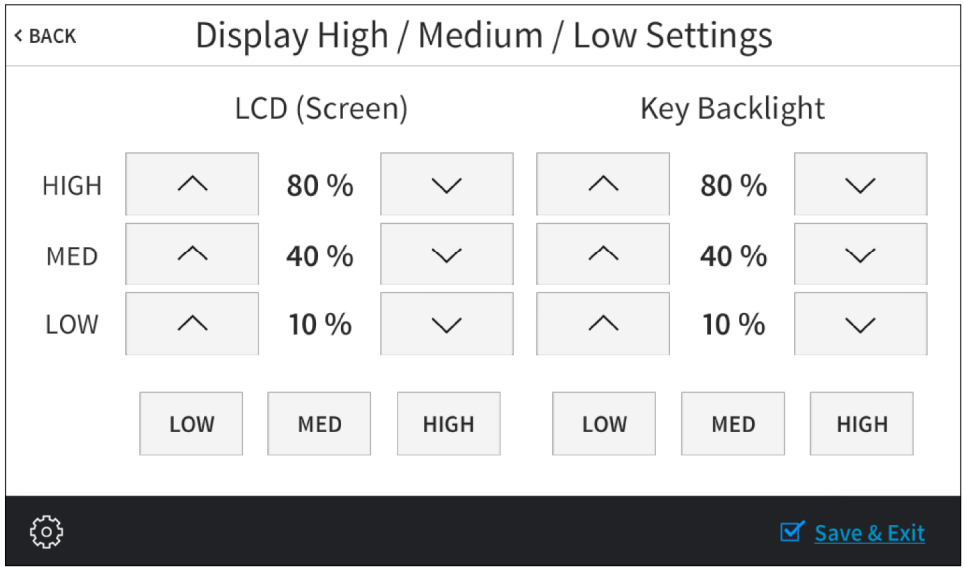
The following settings can be adjusted for the hard key backlight:

- Tap **Enabled** or **Disabled** under **Hard Key Backlight** to enable or disable the hard key backlight.
- Tap the up and down arrows under **Brightness** to raise or lower the brightness of the hard key backlight.
- Tap **On** or **Off** under **Auto Brightness** to enable or disable auto brightness for the backlight.
- Tap **On** or **Off** under **Hard Key Wakes LCD** to enable or disable waking the LCD display by tapping a hard key.

- Tap the left and right arrows to adjust the ALS (ambient light sensor) threshold value for switching between high and low auto-brightness presets, from 0 to 100%.

Tap **H/M/L Settings** to access the **Display High / Medium / Low Settings** screen, which can be used to adjust touch screen brightness values.

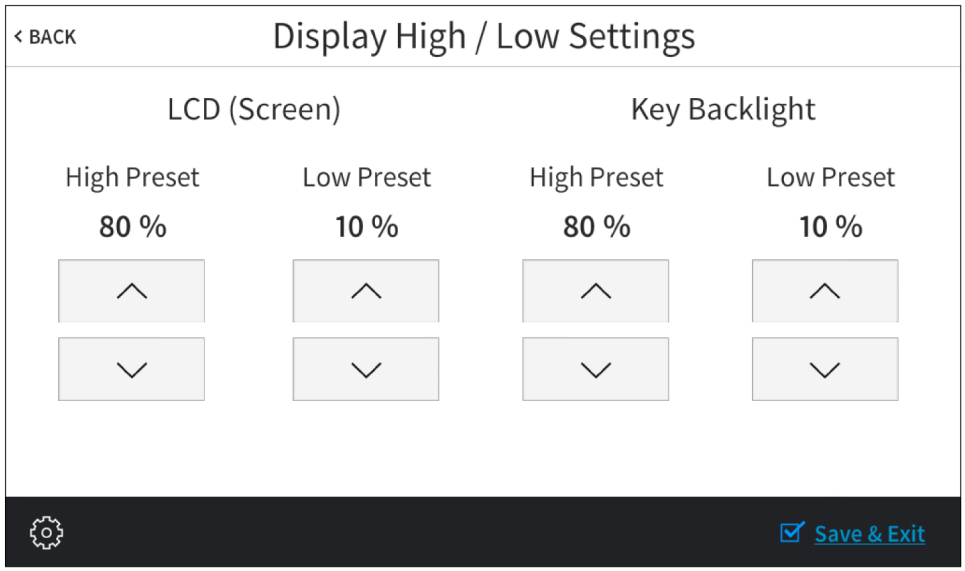
Display High / Medium / Low Settings Screen



- Tap the up and down arrows to raise or lower the values of the high, medium, and low brightness settings for the LCD display and the key backlight, from 0 to 100%.
- Tap **Low**, **Med**, or **High** to set the brightness level to low, medium, or high, respectively, for the LCD display and the key backlight.
- Tap **< BACK** to return to the **Display Setup** screen.

Tap **Presets** to access the **Display High / Low Settings** screen, which can be used to adjust touch screen auto-brightness threshold values.

Display High / Low Settings Screen

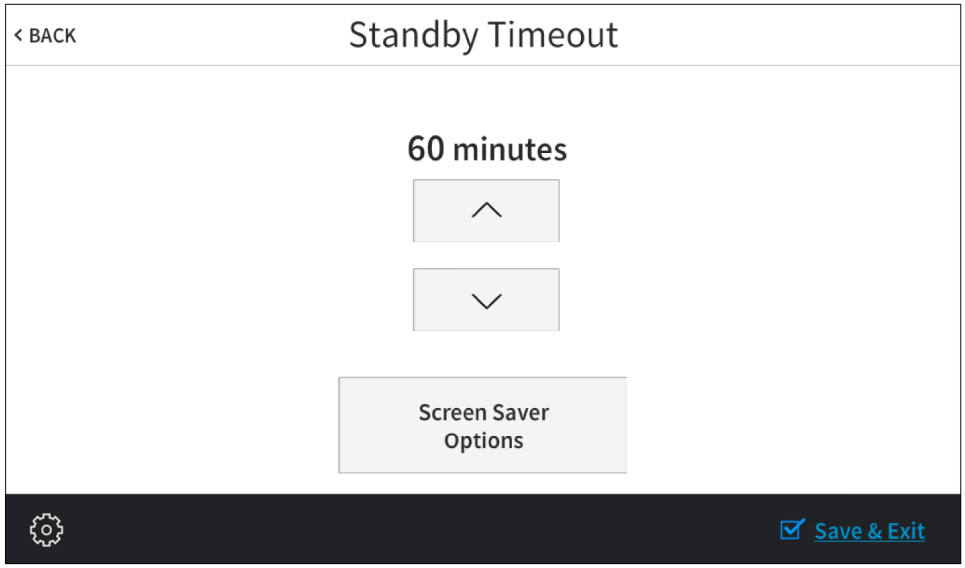


- Tap the up and down arrows to raise or lower the auto-brightness preset values for the LCD display and the key backlight, from 0 to 100%.
- Tap < BACK to return to the **Display Setup** screen.

Standby Timeout

On the **TSW-560/760/1060 Setup** screen, tap **Standby Timeout** to display the **Standby Timeout** screen.

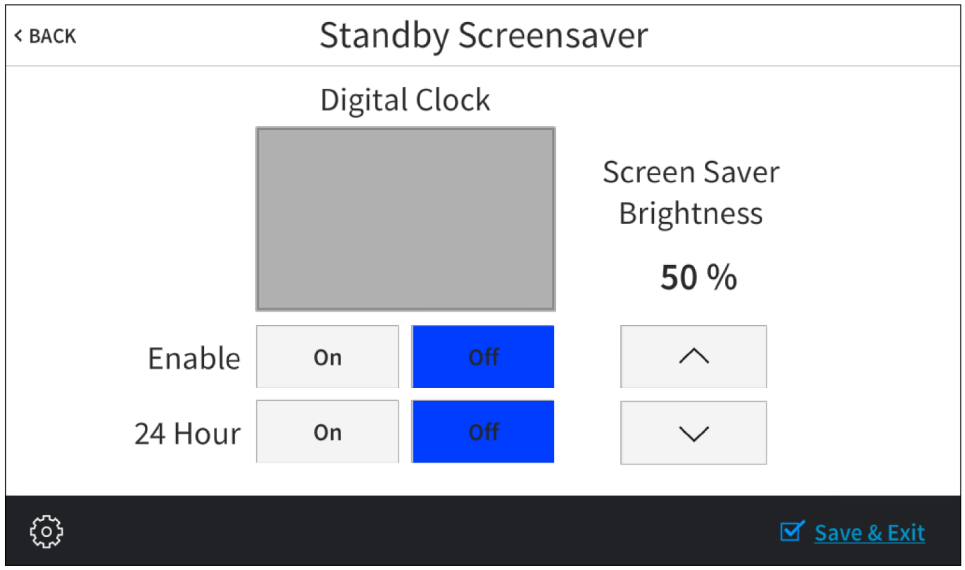
Standby Timeout Screen



Use the **Standby Timeout** screen to adjust the touch screen's standby timeout duration. Tap the up and down arrows to increase or decrease the standby timeout duration, from 0 to 120 minutes.

Tap **Screen Saver Options** to display the **Standby Screensaver** screen.

Standby Screensaver Screen



Use the **Standby - Screen Saver** screen to adjust settings for the digital clock screensaver, which can be displayed during standby timeout mode.

- Tap **On** or **Off** next to **Enabled** to enable or disable the digital clock screensaver during standby timeout.
- Tap **On** or **Off** next to **24 Hour** to enable or disable 24-hour time format for the digital clock.
- Tap the up and down arrows to increase or decrease the screen saver brightness value, from 0 to 100%.

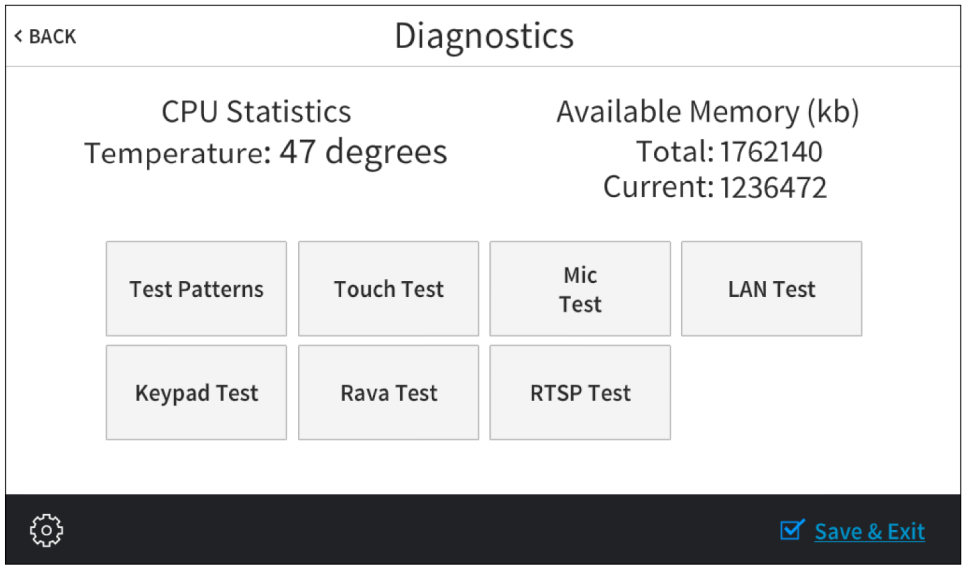
Tap **< BACK** to return to the **Standby Timeout** screen.

Tap **< BACK** again to return to the **TSW 560/760/1060 Setup** screen.

Diagnostics

On the **TSW-560/760/1060 Setup** screen, tap **Diagnostics** to display the **Diagnostics** screen.

Diagnostics Screen

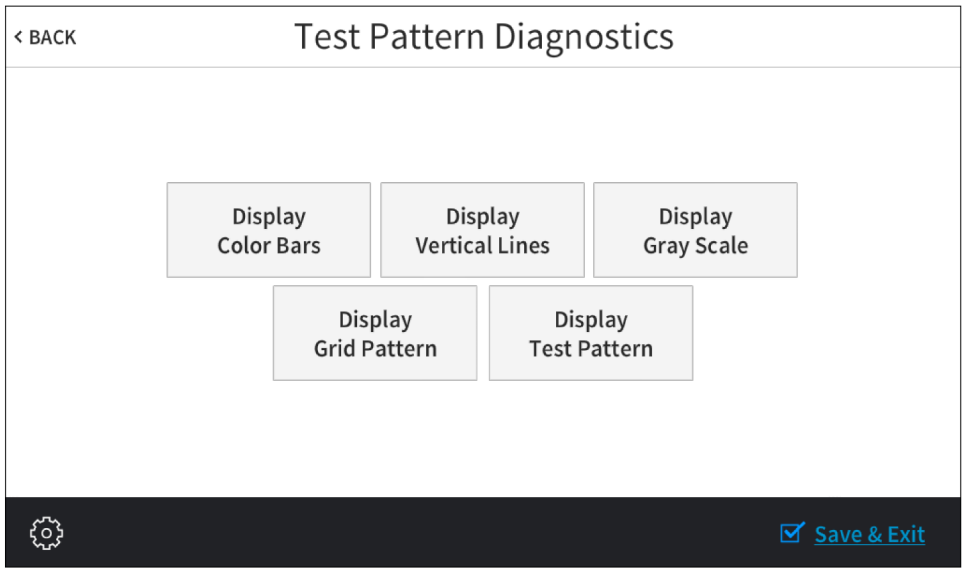


The **Diagnostics** screen displays the touch screen's CPU temperature and available memory, and it provides buttons to open various test screens. The test screens are explained in the sections that follow.

Test Patterns

On the **Diagnostics** screen, tap **Test Patterns** to display the **Test Pattern Diagnostics** screen.

Test Pattern Diagnostics Screen



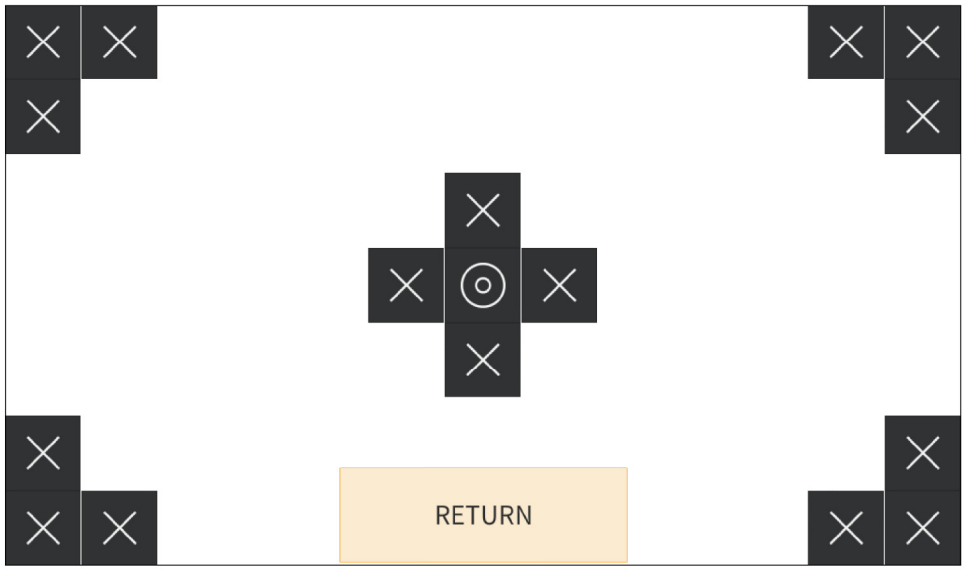
Use the **Test Pattern Diagnostics** screen to display any of the available test patterns. Tap one of the buttons on the screen to display its respective test pattern.

Tap **< BACK** to return to the **Diagnostics** screen.

Touch Test

On the **Diagnostics** screen, tap **Touch Test** to display the touch test screen.

Touch Test Screen



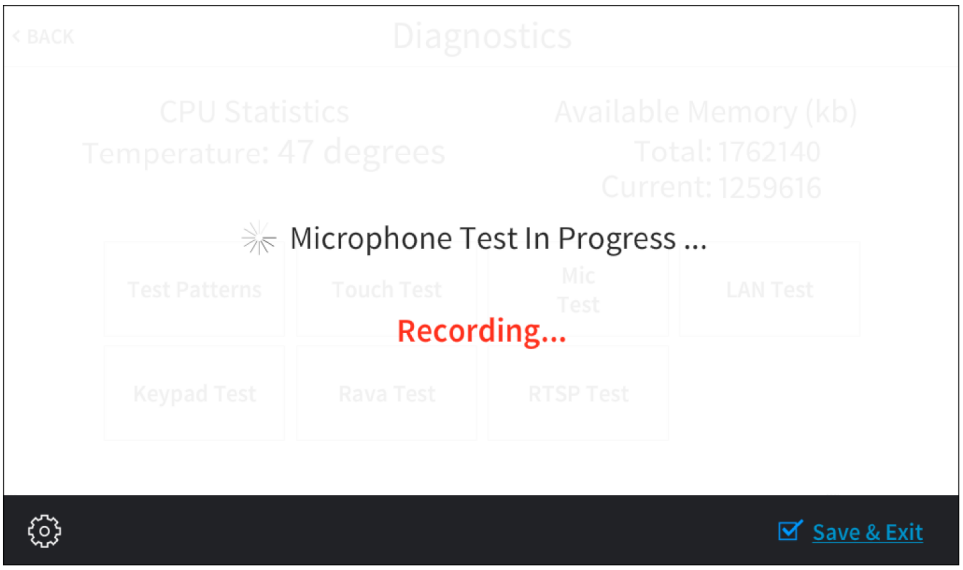
Use the touch test screen to test the touch functionality of the display. When a location button is tapped, its respective indicator lights on the screen.

Tap **RETURN** to return to the **Diagnostics** screen.

Mic Test

On the **Diagnostics** menu, tap **Mic Test** to begin a microphone test.

Mic Test Screen

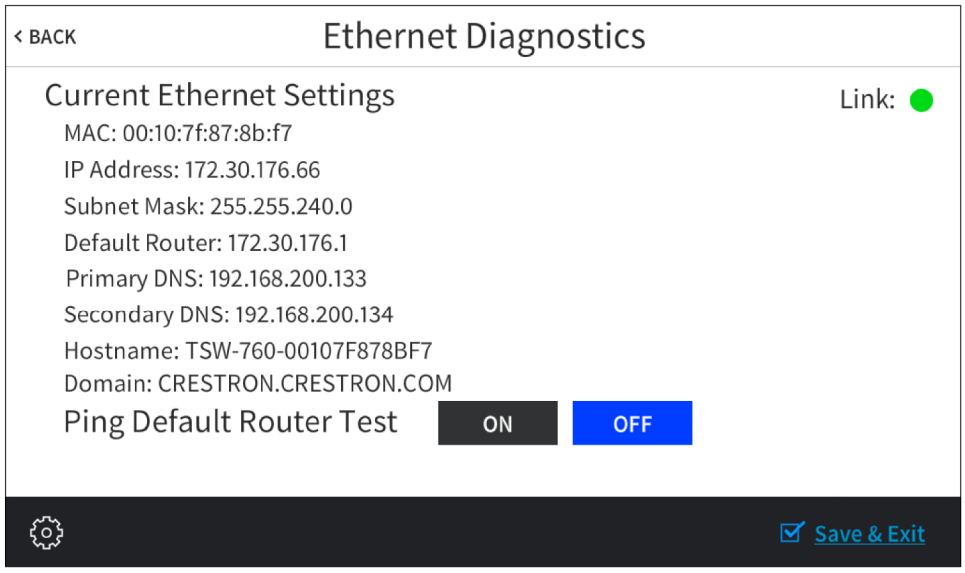


During a microphone test, the built-in microphones record sound for five seconds and then play the sound back to confirm that they are functioning. This test is performed twice: The first test records and plays sound back from the left microphone, and the second test records and plays sound back from the right microphone. When the second playback is finished, the display automatically returns to the **Diagnostics** screen.

LAN Test

On the **Diagnostics** screen, tap **LAN Test** to display the **Ethernet Diagnostics** screen.

Ethernet Diagnostics Screen



Use the **Ethernet Diagnostics** screen to view the touch screen's MAC and IP addresses, subnet mask, default router, primary and secondary DNS, hostname, and domain. This screen also contains a **Link** indicator to show the status of the Ethernet connection. (Green indicates that the Ethernet connection is active).

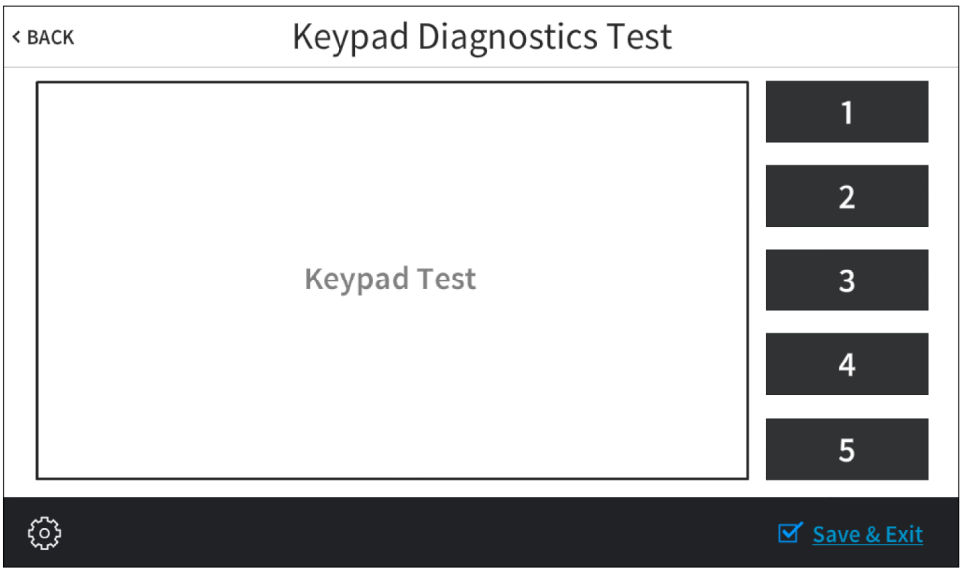
Additionally, this screen provides controls to test the connection to the default router. Tap **On** to begin the test, and tap **Off** to end the test.

Tap **< BACK** to return to the **Diagnostics** screen.

Keypad Test

On the **Diagnostics** screen, tap **Keypad Test** to display the **Keypad Diagnostics Test** screen.

Keypad Diagnostics Test Screen



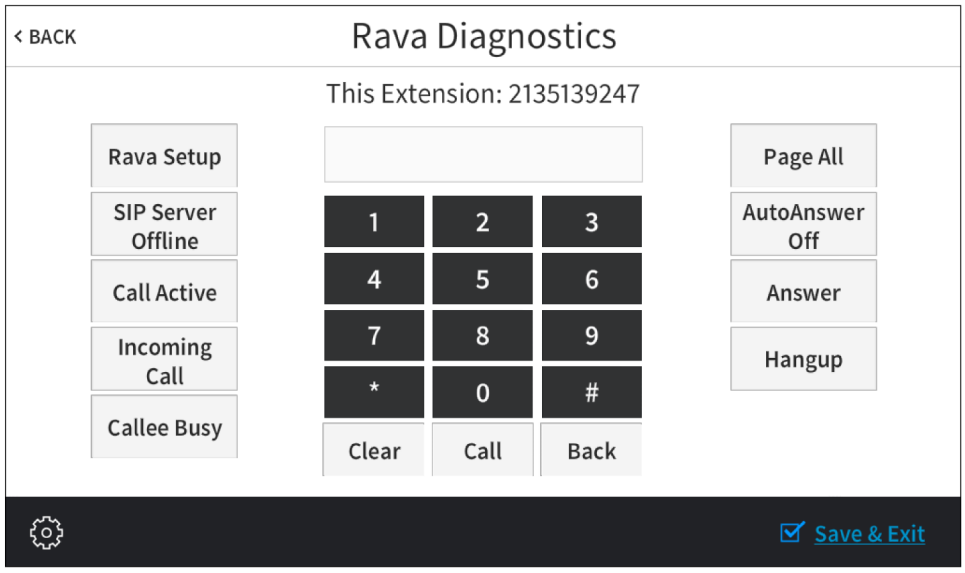
Use the **Keypad Diagnostics Test** screen to test the functionality of the five capacitive hard keys on the front of the touch screen. When one of the hard keys is tapped, its respective indicator lights on the screen.

Tap **< BACK** to return to the **Diagnostics** screen.

Rava Test

On the **Diagnostics** screen, tap **Rava Test** to display the **Rava Diagnostics** screen.

Rava Diagnostics Screen

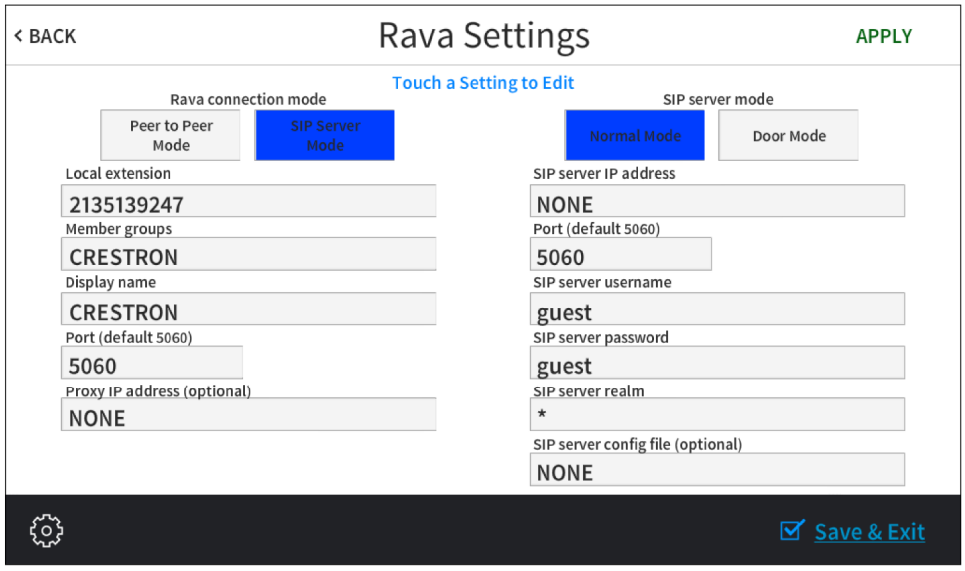


Use the **Rava Diagnostics** screen to test using the Rava® SIP Intercom with the touch screen. This screen can be used to call another touch screen that has Rava, to test and configure projects, and to adjust various Rava settings.

To place a call, dial the extension of the desired touch screen using the on-screen numeric keypad, and then tap **Call**. If the intercom works but the project does not, there is an issue with the project; if the intercom does not work, there is an issue with the settings.

Tap the **Rava Setup** button to open a second **Rava Settings** screen for Rava setup.

Rava Settings Screen



The **Rava Settings** screen provides controls to switch between **Peer to Peer Mode** and **SIP Server Mode**, and when set to the latter, controls to switch between **Normal Mode** and **Door Mode**. Touching the other fields on the screen opens the on-screen keyboard or on-screen numeric keypad as appropriate.

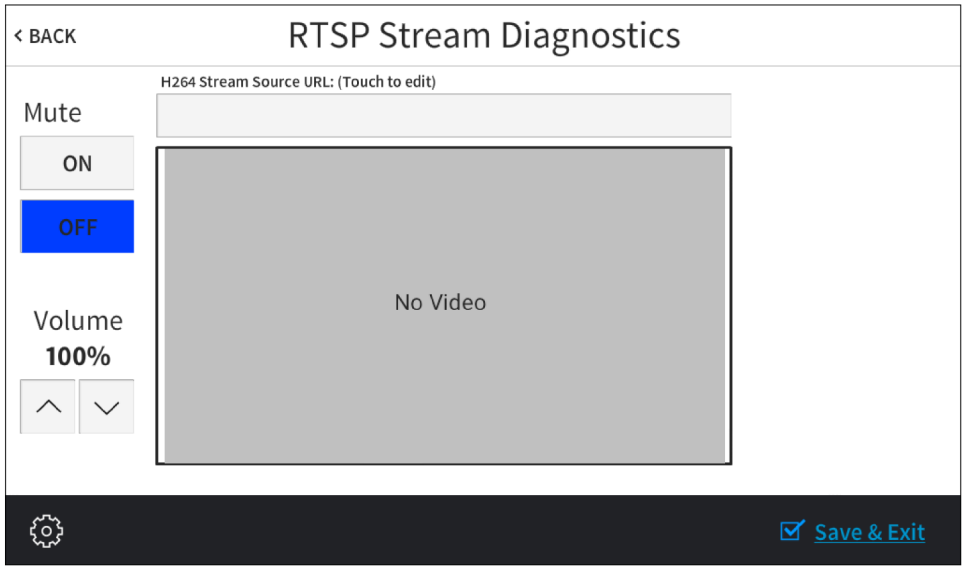
When all settings are entered, touch **Apply** to store them or **< BACK** to ignore any changes. Touching either option returns the display to the **Rava Diagnostics** screen.

Tap **< BACK** again to return to the **Diagnostics** screen.

RTSP Test

On the **Diagnostics** screen, tap **RTSP Test** to display the **RTSP Stream Diagnostics** screen.

RTSP Stream Diagnostics Screen



Use the **RTSP Stream Diagnostics** screen to test whether Real Time Streaming Protocol (RTSP) is functioning on the touch screen.

Tap the text field below **H264 Stream Source URL: (Touch to edit)** to open the on-screen keyboard (not shown). Enter the URL for an H.264 video stream source, and then tap **SAVE**. The video stream is displayed in the lower right portion of the **RTSP Stream Diagnostics** screen.

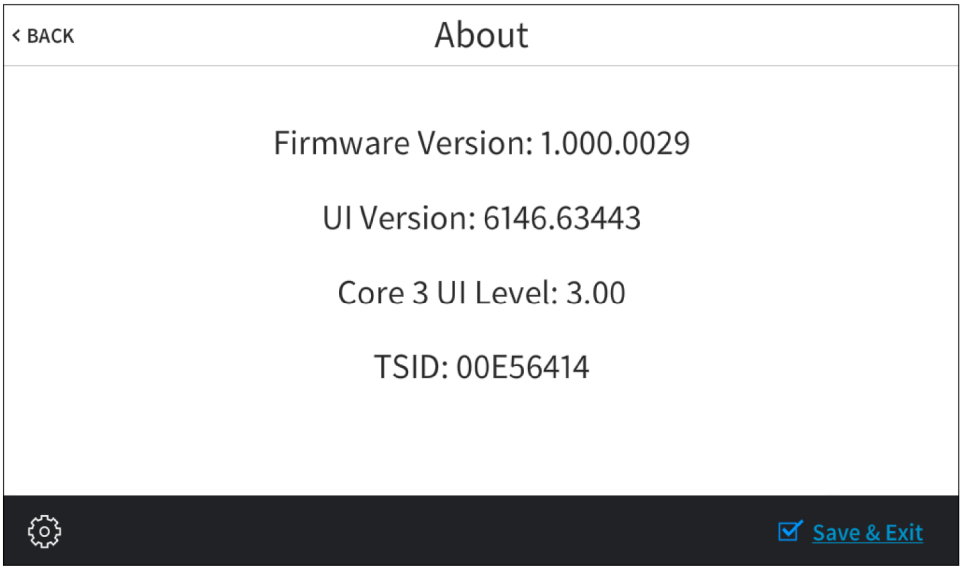
Tap the up and down arrows on the left side of the screen to raise or lower the volume of the video stream, from 0 to 100%, and tap **On** or **Off** under **Mute** to mute or unmute the volume of the video stream.

Tap **< BACK** to return to the **Diagnostics** screen.

About

On the TSW-560/760/1060 Setup screen, tap About to display the About screen.

About Screen



Use the About screen to view information about the touch screen, including the currently loaded firmware and the operating system versions.

Tap < BACK to return to the TSW-560/760/1060 Setup screen.

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Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

Supplemental Guide – DOC. 7927C
(2047265)
06.17
Specifications subject to
change without notice.

DCi Series – Analog Input Models

Operation Manual



DCi 8|600

DCi 8|300

DCi 4|1250

DCi 4|600

DCi 4|300

DCi 2|1250

DCi 2|600

DCi 2|300

Obtaining Other Language Versions: To obtain information in another language about the use of this product, please contact your local Crown Distributor. If you need assistance locating your local distributor, please contact Crown at 574-294-8000.

This manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance.

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred. To obtain the latest version of this manual, please visit the Crown website at www.crownaudio.com.

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Some models may be exported under the name Amcron®

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5040449 - 04/16

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Do not defeat the safety purpose of the Grounding-type plug. A polarized plug has two blades with one wider than the other and should not be used with this product. A grounding-type plug has two blades and a third grounding prong and is the proper plug for this product. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.



11. Only use attachments/accessories specified by the manufacturer.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Use the mains plug to disconnect the apparatus from the mains.
16. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.



17. DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.
18. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.



TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

WATCH FOR THESE SYMBOLS:



The lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



IMPORTANT



DriveCore Install Series amplifiers require Class 2 output wiring.

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.

FCC COMPLIANCE NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

DECLARATION OF CONFORMITY

Issued By: Harman International.
1718 W. Mishawaka Rd.
Elkhart, IN 46517 U.S.A.

European Representative's Name and Address:
David J. Budge
10 Harvest Close
Yateley, GU46 6YS
United Kingdom

Equipment Type: Commercial Audio Power Amplifiers
Family Name: DCi
Model Names: DCi 2|300, DCi 2|600, DCi 2|1250, DCi 4|300, DCi 4|600, DCi 4|1250, DCi 8|300, DCi 8|600

EMC Standards:

EN 55103-1:2009 EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions

EN 55103-1:2009 Magnetic Field Emissions-Annex A @ 10 cm and 20 cm

EN 61000-3-2:2006 Limits for Harmonic Current Emissions (equipment input current less than or equal to 16A

EN 61000-3-3:2008 Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply systems Rated Current less than or equal to 16A

EN 55022:2010 Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated & Conducted, Class B Limits

EN 55103-2:2009 EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity

EN 61000-4-2:2008 Ed 2.0 EMC Compatibility – Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity

EN 61000-4-3:2010 Ed 3.2 Radiated, Radio-Frequency, Electromagnetic Immunity (Environment E2, criteria A)

EN 61000-4-4:2007 Radiated, Radio-Frequency, EMC Immunity (Environment E2, Criteria A)

EN 61000-4-5:2006 Surge Immunity (Criteria B)

EN 61000-4-6:2006 Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A)

EN 61000-4-11:2004 Voltage Dips, Short Interruptions and Voltage Variation

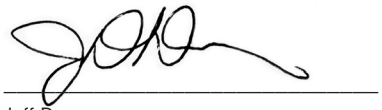
Safety Standard:

IEC 60065:2001 Ed 7 +A1:2005 +A2:2010 Safety Requirements – Audio, Video, and Similar Electronic Apparatus

CAN/CSA 60065-03 +A1 +A2 Safety Requirements – Audio, Video, and Similar Electronic Apparatus

UL Std No 60065-03 (2012) Safety Requirements – Audio, Video, and Similar Electronic Apparatus

I certify that the product identified above conforms to the requirements of the EMC Council Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.

Signed 

Jeff Denman
Sr. Director of Manufacturing

Date of Issue: October 1, 2013

Due to line current harmonics, we recommend that you contact your supply authority before connection.

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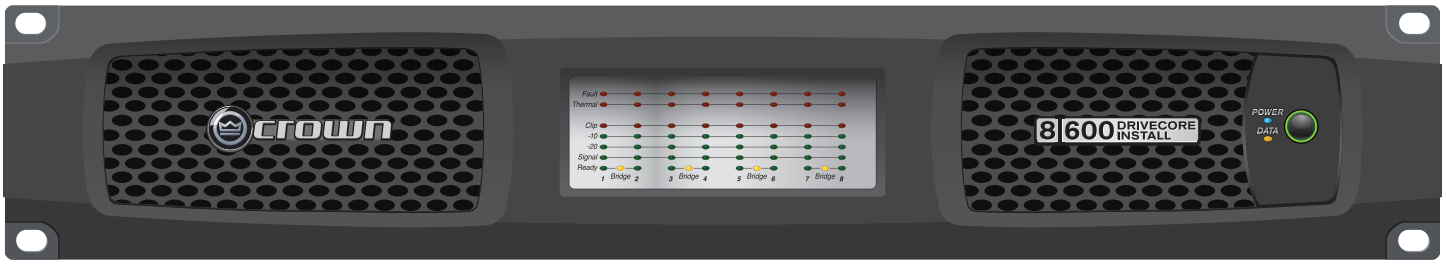
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Welcome



Thank you for purchasing a new Crown DriveCore install ™ Series installation amplifier, one in a complete line of high-performance amplifiers based on exclusive DriveCore™ technology. DCi Series amplifiers are designed, engineered and manufactured to the industry's highest quality standards, and provide system integrators with the advanced features and flexibility required for challenging 21st century installed sound applications. Versatile, compact and highly energy-efficient, DCi Series amplifiers continue the unbroken Crown tradition of leadership in professional and commercial power amplifier technology.

Features

- Exclusive DriveCore Technology – The patented DriveCore integrated circuit combines hundreds of discrete circuits into one chip for better performance, lower power consumption and improved reliability.
- Power Saving Modes – Power consumption in sleep mode is less than 1W.
- Auto Standby – Amplifier goes into Sleep mode after 30 minutes of no input signal.
- Remote Power Off – Sleep mode activated via AUX port.
- 70 V / 100 V Direct Drive – Each channel individually selectable for low-Z or high-Z operation.
- 100 V Direct Drive Capability – Higher voltage allows more speakers per output and reduced wiring costs.
- TLC Protection – Protects amplifier from excessive heat and maintains operation by intelligently applying gain reduction when necessary.
- Advanced Protection Circuits – Amplifier and loads are protected against shorted outputs, DC, mismatched loads, overheating, over- or under-voltage, and high frequency overload.
- Three Year, No-Fault Transferable Warranty – Your investment is fully protected.
- Complies with Green Edge by Harman – Environmentally friendly practices in design, manufacturing, and packaging complement energy-efficient operation.
- PFC Power Supply – the next generation power supply design guarantees minimum rated power delivered for drastically lower current draw.

How to Use This Manual

This manual provides you with the necessary basic information to safely and correctly set up and operate your amplifier. However, it does not cover every aspect of installation, setup, or operation that might occur under every condition. For additional information, please consult Crown's Amplifier Application Guide (available online at www. crownaudio.com), Crown Technical Support, your system installer, or the retailer where this amplifier was purchased.

Installation

Unpacking

Unpack your amplifier and inspect for any damage that may have occurred during transit. If damage is found, notify the shipping company immediately. Only you can initiate a claim for shipping damage, though Crown will be happy to help as needed. If the product arrived showing signs of damage, save the shipping carton for the shipper's inspection.

We also recommend that you save all packing materials for use if you ever need to transport the unit. Never ship the unit without the factory carton and packing materials.

Additional Materials

FOR INSTALLATION, YOU WILL NEED (not supplied):

- Input wiring cables
- Output wiring cables
- Flathead screwdriver
- Phillips screwdriver
- Rack for mounting amplifier (or a stable surface for stacking)

WARNING: Before you start to set up your amplifier, read and observe the Important Safety Instructions found at the beginning of this manual.

Install the Amplifier

CAUTION: Before you begin, make sure your amplifier is disconnected from the power source and that all level controls (see Page 14) are set to INF.

All DCi Series amplifiers are 3.5 in. (8.9 cm).high and 19 in. (48.3 cm) wide. All are 14.25 in. (36.2 cm) deep except the DCi8|600 and 4|1250 which is 17 in. (43.2 cm) deep. (See Figure 1)

Mount the unit in a standard 19-inch (48.3 cm) equipment rack (EIA RS-310B). You can also place a single amp on a solid, stable surface or stack multiple amps.

NOTE: Amplifiers should be supported at both the front and rear of the rack.

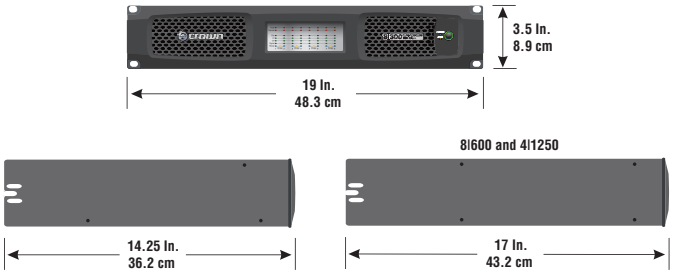


Figure 1

Ensure Proper Cooling

When using an equipment rack, mount units directly on top of each other. Close any open spaces in the rack with blank panels. (Open spaces will reduce cooling efficiency.) DO NOT block front or rear air vents.

The rack should be a minimum of two inches (5.1 cm) away from the amplifier, and the back of the rack should be a minimum of four inches (10.2 cm) from the amplifier back panel.

Air flow is front to back as illustrated in Figure 2.

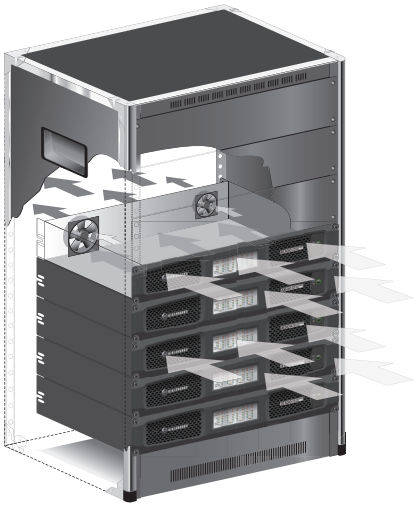


Figure 2

Set-up and System Configuration

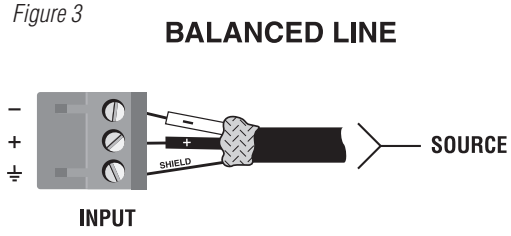
Wire Input Connectors

Crown recommends using pre-built or professionally wired balanced line (two-conductor plus shield). Balanced wiring provides better rejection of unwanted noise and hum; however, unbalanced line may also be used. For more information, refer to the Crown Amplifier Application Guide, available online at www.crownaudio.com.

Use 6-pin plug-in cable ends at the amp input connectors. A male connector is supplied for each input of your model of amplifier. Additional connectors are available from Crown (P/N 5024623).

Figure 3 shows connector pin assignments for balanced wiring and Figure 4 shows connector pin assignments for unbalanced wiring. Note that for bridged operation, only the connectors for odd-numbered channels (1,3,5,7) for each bridged pair need be wired. See Page 9 and 11.

Figure 3



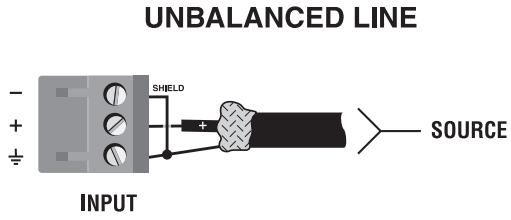


Figure 4

Wire Output Connectors

Crown has designed an output cover that does not need to be removed to connect the output wiring.

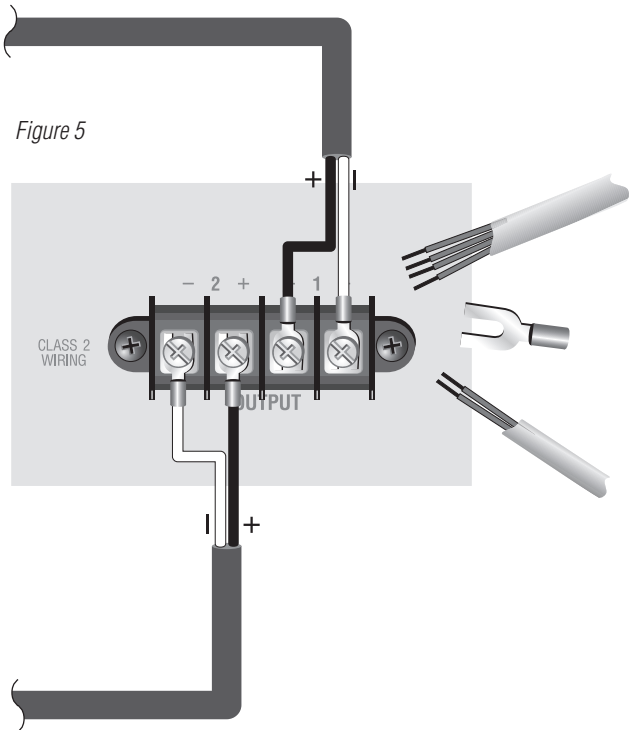
Crown recommends using the included spade connectors and two- or four-conductor, heavy gauge speaker wire. You may use terminal forks up to 10 AWG or bare wire for your output connectors (see Figure 5). For best results, Crown recommends Panduit part #PV10-6LF-L or equivalent terminal fork. For bare wire, it is highly recommended that output wiring is tinned. To reduce strain on input and output wiring, Crown recommends the use of horizontal lacer bars. For best results, Crown recommends Middle Atlantic part# LBP-4R90 or equivalent horizontal lacer bar.

To prevent the possibility of short-circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

For low-impedance loads, select the appropriate size of wire based on the distance from amplifier to speaker.

Distance	Wire Size
Up to 25 ft. (7.6m)	16 AWG
26-40 ft. (7.9-12.2m)	14 AWG
41-60 ft. (12.5-18.3m)	12 AWG
> 60 ft (18.3m)	10 AWG

Figure 5



CAUTION: Never use shielded cable for output wiring.

CAUTION: Never connect the speaker return to the chassis of the amplifier, or damage to the amplifier may result.

NOTE: Custom wiring should only be performed by qualified personnel. Class 2 output wiring is required.

Set-up and System Configuration

Connect Loudspeakers and Configure for Loudspeaker Load

Determine load impedances and power requirements

Before making any connections, carefully check and review the total impedance for loudspeaker systems to be connected to each amplifier output. If multiple loudspeakers are connected to one output (in series, parallel or series-parallel) for Lo-Z operation, be certain the total system impedance is within allowed specification for the output. When multiple loudspeakers are connected to one output for Hi-Z operation, be certain total tapped power is below the rated power output for the channel. For additional information, please consult Crown's Amplifier Application Guide (available online at www. crownaudio.com).

Note: Illustrations and some text references are for channel pair 1 - 2 only. Connections and settings are identical for channels 3 – 4 on four-channel models and for channels 5 – 6 and 7 – 8 on eight-channel models. Each channel pair may be configured independently on multichannel models.

Dual Mode Low-Z (8, 4 or 2 Ohm)

Typical input and output wiring, along with Attenuator and Mode DIP Switch settings are shown in Figure 6. Make sure DIP Switches are in the default OFF (down) position.

INPUTS: Connect the input with wiring in place for each channel. If the same signal is to drive both outputs of a channel pair ("mono"), the signal must be split externally and applied to both inputs.

OUTPUTS: Maintain proper polarity (+/–) on output connectors. Connect the Channel 1 speaker's positive (+) lead to amplifier Channel 1 positive terminal; repeat for negative (–). Repeat Channel 2 wiring as for Channel 1, and for any subsequent channel pairs on multichannel models. Refer to Page 7 for output connector terminal assignments.

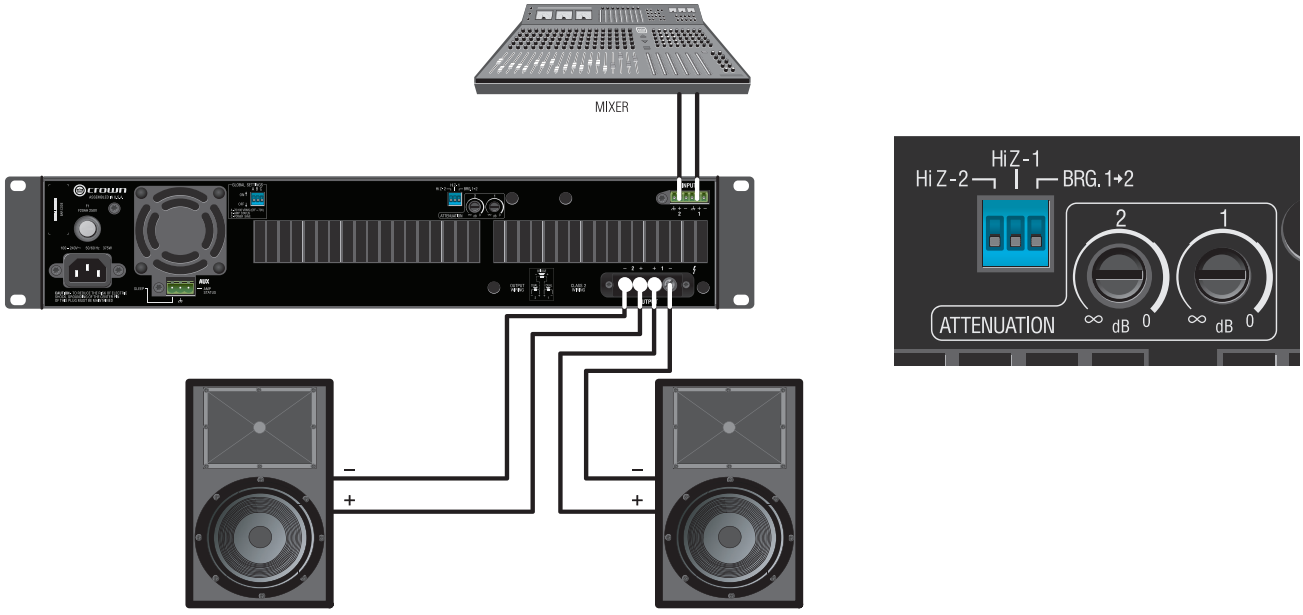


Figure 6 System Wiring Dual Mode

Always route the input and output wires in separate bundles.

Set-up and System Configuration

Bridge Mode (16, 8, or 4 Ohm)

Typical input and output wiring, along with Attenuator and Mode DIP Switch settings are shown in Figure 7. Make sure the "Hi-Z" selector switches are in the OFF (down) position and the Bridge (BRG) switch is in the ON (up) position. NOTE: Only the Hi-Z selector switches assigned to odd-numbered channels (1,3,5,7) are active in Bridge mode; switches assigned to even-numbered channels (2,4,6,8) are disabled.

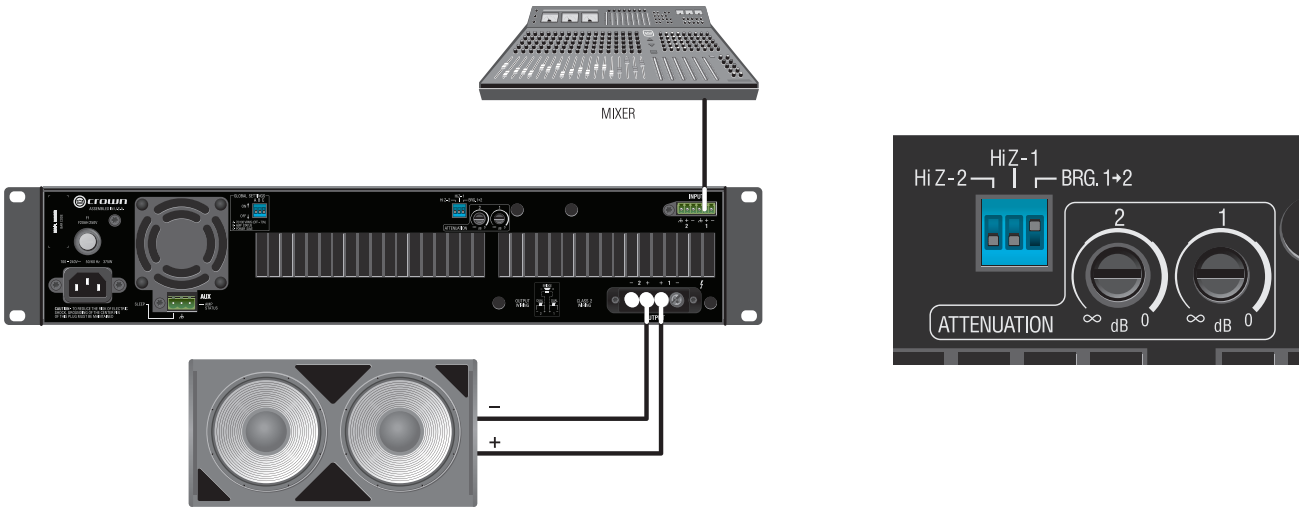


Figure 7 System Wiring Bridge Mode

Always route the input and output wires in separate bundles.

Set-up and System Configuration

Dual Mode Hi-Z (70V/100V)

Typical input and output wiring, along with Attenuator and Mode DIP Switch settings are shown in Figure 8. Make sure the "Hi-Z" selector switches are in the ON (up) position and the Bridge (BRG) switch is in the OFF (down) position. A 35Hz high pass filter is selected automatically when the amplifier channel is in Hi-Z or Bridged Hi-Z mode. The filter can be changed to 70Hz, please contact your local Crown service center for detailed instruction for this modification. Remember, DCi amplifiers allow each channels Hi-Z or Low-Z mode of operation to be selected independently, while 70V/100V selection is global.

NOTE: For 70V systems, be sure that Global DIP Switch A is in the OFF position. For 100V systems, be sure that Global DIP Switch A is in the ON position.

INPUTS: Connect the input with wiring in place for each channel. If the same signal is to drive both outputs of a channel pair ("mono"), the signal must be split externally and applied to both inputs.

OUTPUTS: Connect the outputs as shown to a Hi-Z (70V / 100V) loudspeaker system.

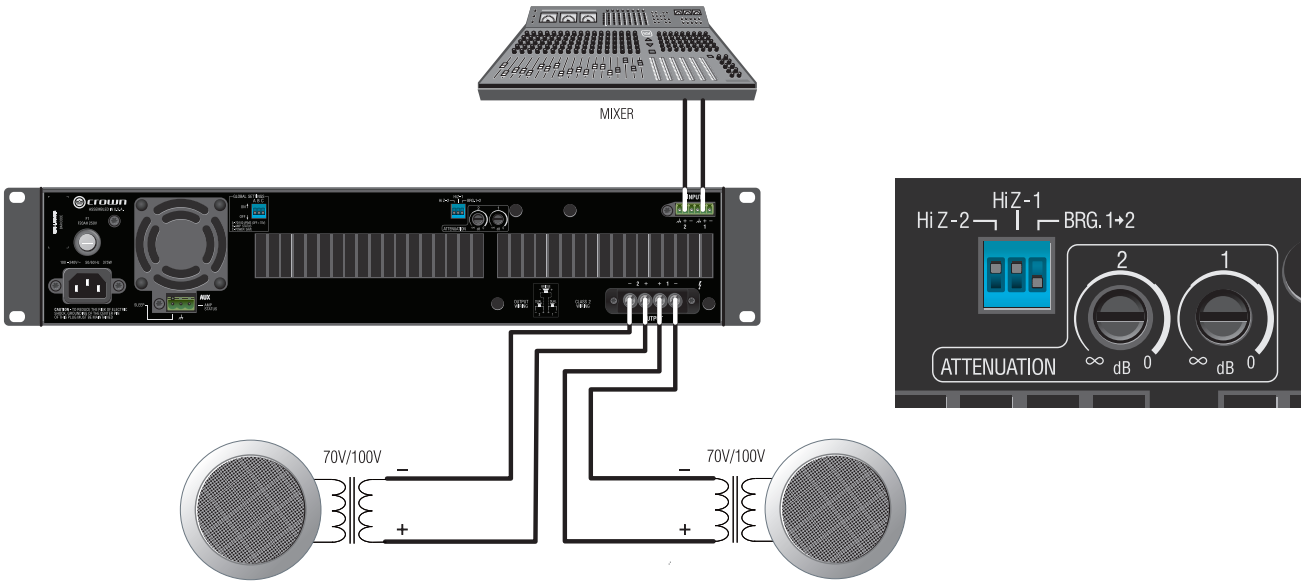


Figure 8 System Wiring for 70V/100V Operation

Always route the input and output wires in separate bundles.

Set-up and System Configuration

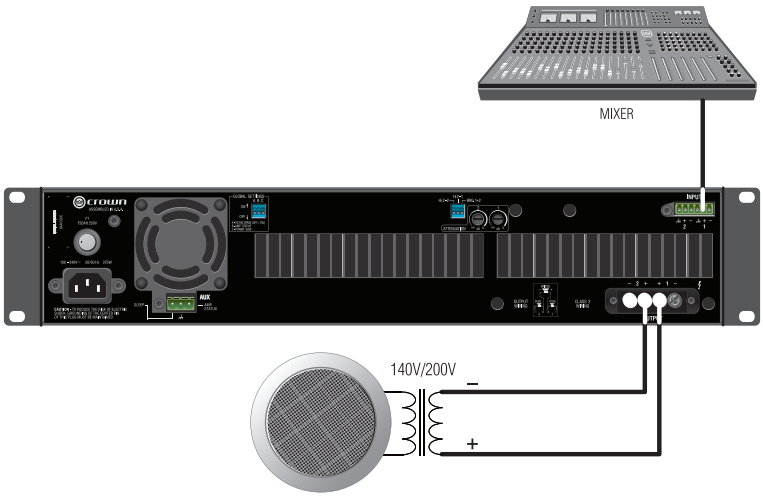
Bridge Mode Hi-Z (140V/200V)

Typical input and output wiring, along with Attenuator and Mode DIP Switch settings are shown in Figure 9. Make sure the "Hi-Z" selector switch for the connected input channel is in the ON (up) position and the Bridge (BRG) switch for the channel pair also is in the ON (up) position. A 35Hz high pass filter is selected automatically when the amplifier channel is in Hi-Z or Bridged Hi-Z mode. The filter can be changed to 70Hz, please contact your local Crown service center for detailed instruction for this modification. NOTE: Only the Hi-Z selector switches assigned to odd-numbered channels (1,3,5,7) are active in Bridge mode; switches assigned to even-numbered channels (2,4,6,8) are disabled.

INPUTS: Connect the input to the odd-numbered channels (1,3,5,7) only. Even-numbered inputs are disabled when the Bridge DIP Switch is ON.

OUTPUTS: Connect the speaker across the positive terminals of each channel pair. Do not use the negative terminals of the channel pair when the pair is being operated in Bridge-Mono mode.

NOTE: For global selection of 70V (140V bridged) or 100V (200V bridged) operation, refer to Page 14.



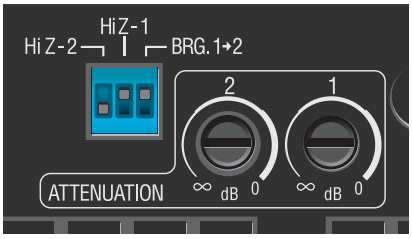


Figure 9 System Wiring for 70V/100V Operation

Always route the input and output wires in separate bundles.

Set-up and System Configuration

Connect to AC Mains

Connect your amplifier to the AC mains power source (power outlet) using the supplied AC power cord set. First, connect the IEC end of the cord set to the IEC connector on the amplifier; then, plug the other end of the cord set to the AC mains.

WARNING: The third prong of this connector (ground) is an important safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

Make certain the AC mains voltage and current ratings are sufficient to deliver full power to all amplifiers. If the AC line voltage varies out of an acceptable range, the amplifier's power supply turns off and the blue Power LED flashes. The amplifier will turn back on when the AC line voltage returns to safe operating levels.

DriveCore Install Amplifiers utilize a universal power supply. The AC voltage requirements are 100VAC - 240VAC, 50/60Hz (+/-10%). If the voltage exceeds these requirements, then the Power LED will flash and the amplifier will stop passing audio until the voltage is within the requirements.

Startup Procedure

When first turning on your amplifier:

1. Turn down the level of your audio source.
2. Turn down the level controls of the amplifier to INF Page 14.
3. Turn on the "Power" switch. The Power indicator should light.
4. Turn up the level of your audio source to an optimum level. Ensure that at no point in the signal chain is the signal being clipped in any way.
5. Turn up the level controls on the amplifier to the desired loudness or power level.

IMPORTANT: Before making any wiring or installation changes, turn off the amplifier and disconnect the power cord.

For help with determining your system's optimum gain structure (signal levels) please refer to the Crown Amplifier Application Guide, available online at www.crownaudio.com.

Precautions

Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

1. Configure the amplifier for proper operation, including input and output wiring hookup. Improper wiring can result in serious operating difficulties. For information on wiring and configuration, please consult Page 7 of this manual. For advanced setup techniques, consult Crown's Amplifier Application Guide available online at www.crownaudio.com.
2. Use care when making connections, selecting signal sources and controlling the output level. The load you save may be your own!
3. Do not short the ground lead of an output cable to the input signal ground. This may form a ground loop and cause oscillations.
4. **Never connect the output to a power supply, battery or power main. Electrical shock may result.**
5. Tampering with the circuitry or making unauthorized circuit changes may be hazardous and invalidate all agency listings.
6. Do not operate the amplifier with the RED Clip LEDs constantly flashing.
7. Do not overdrive the mixer, which will cause clipped signal to be sent to the amplifier. Such signals will be reproduced with extreme accuracy, and loudspeaker damage may result.
8. Do not operate the amplifier with less than the rated load impedance. Due to the amplifier's output protection, such a configuration may result in premature clipping and speaker damage.

Remember: Crown is not liable for damage that results from overdriving other system components.

Front Panel Features

Indicators:

Fault Indicator (red): Flashes when the amplifier output channel has stopped operating. (See Page 16 Troubleshooting.)

Thermal Indicator (red): Illuminates when the channel reaches 80 degrees Celsius, indicating the onset of protection compression.

Clip Indicator (red): Illuminates when any of the following conditions are present: Onset of audible clipping, clipped signal detected at input, clipped signal detected at output, engagement of TLC protection circuit.

Level and Signal Indicators (green): Three LEDs indicate signal presence and level as follows: -10 = 10 dB below rated output -20 = 20 dB below rated output Signal = -40dBU input level

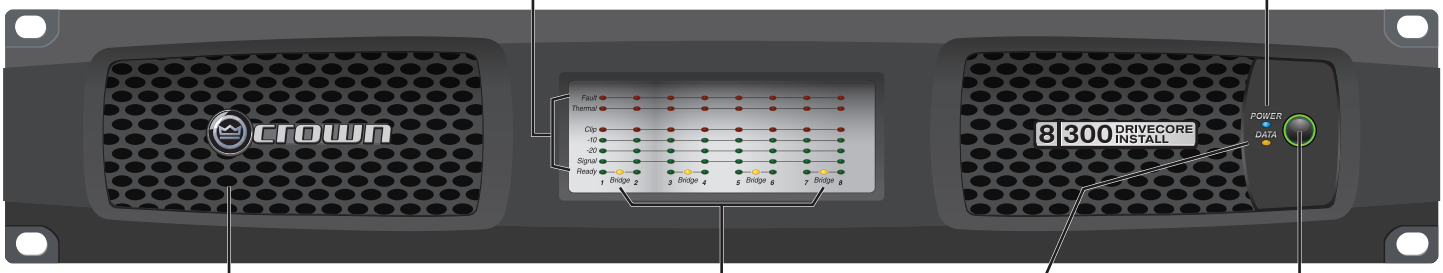
Ready Indicator (green): When this indicator is activated, the amplifier is ready to pass audio.

Power Indicator (blue)

Illuminates when the amplifier is ON and acceptable AC line voltage is present.

Blinks when AC line voltage is outside ±10% range.

Flashes for 4 seconds if Power button pressed when amplifier is in sleep mode. (page 16)



Cooling Vent Grille

Provides cooling air flow. Do not block or cover these vents.

Bridge Mode Indicator (yellow)

Illuminates when when Bridge Mode is activated for the channel pair, only odd number channel will be active

Data Indicator (yellow)

Illuminates when data present on the network. (Not used in analog input versions.)

Power Button

Power Ring Indicator (Green) - Illuminates when the amplifier is plugged into a wall outlet with acceptable power.

Note: Eight channel model shown. Indications per channel pair are identical for 2 and 4 channel models.

Back Panel Features

Power Fuse

F20AH 250V, replace with same type fuse. LittelFuse 314 Series. DCi8|600 & 4|1250 incorporate the use of a resetable breaker instead of fuse.

Global Setting DIP Switches

Settings for 70/100 VRMS (Hi-Z operation) operation mode, AMP STATUS and POWER SAVE. These DIP switches affect all output channels. (Refer to Page 14)

Channel Pair DIP Switches

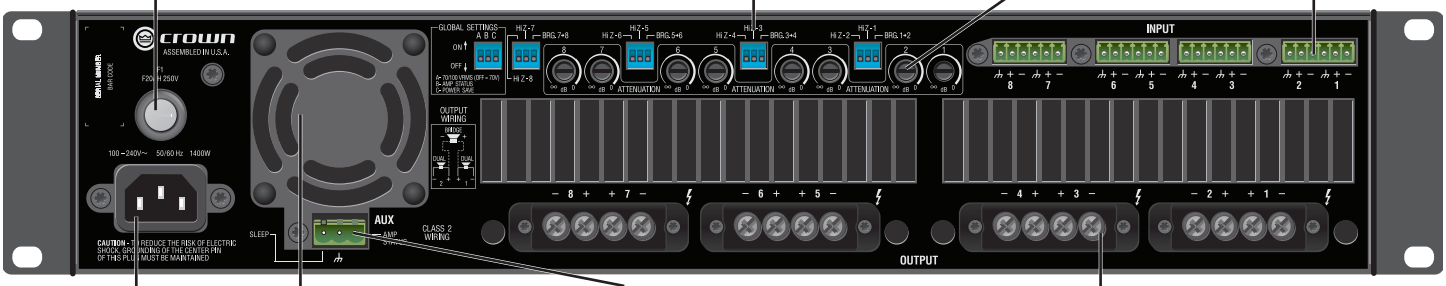
One block of three DIP Switches for each channel pair. Allows selection of Lo-Z or Hi-Z operation per channel and bridging of designated channel pairs. (Refer to Page 14)

Input Attenuators

One 21-position detented porentiometer per channel. Logarithmic audio taper. Attenuation range -95 dB to 0 dB

Input Connectors

One 6-pin plug-in connector per input. High impedance balanced. (Refer to Page 7)



AC Power Inlet:

Standard IEC type 320 inlet for detachable connector 100 - 240 V~. The DCi8|600 and 4|1250 utilize a 20A IEC connector. All other models use a 15A connector.

Cooling Fan Outlet

Outlets for cooling air flow. Do not block or cover these outlets.

Auxiliary Connector

3-pin plug-in type connector, Enables SLEEP mode and monitoring of AMP STATUS unless the amplifier is in any of these conditions: OFF, SLEEP, or FAULT. (see Page 14)

Output Connectors

One four-pole touch-proof terminal strip per channel pair. Accepts up to 10 AWG wire or terminal forks.

Note: This image reflects the DCi 8|300 back panel

Global Settings

70/100 VRMS (switch A)

This switch selects either 70 or 100 VRMS operation for all outputs currently selected for Hi-Z mode. (See the section below, Hi-Z.) Default position is 70 V (OFF). In 70 V and 100 V mode, a voltage limiter circuit is enabled. NOTE: When bridged Hi-Z mode is implemented, selected voltages are doubled to 140V or 200V.

Amplifier Status (switch B)

The Amplifier Status works with life safety or supervisory monitoring and control systems where notification of an amplifier fault is necessary. The Amplifier Status produces a signal ("heartbeat") when the amplifier is operating within standard working parameters. If the amplifier enters a fault or thermal condition, the Amplifier Status signal will terminate. This feature is always on and available when the amplifier is ready to deliver audio in selected mode through the AMP STATUS line on the AUX port.

The Amplifier Status signal is selectable:

- ON – the microcontroller will send a 2 Hz pulse to the "AMP STATUS" AUX port line.
- OFF – the microcontroller will send a logic high level to the "AMP STATUS" AUX port line.

The voltage output of the Aux Port is 5VDC at 0.9 milliamps. This TTL or similar signal can then be connected to an interface to indicate the amplifier status to a supervisory control system.

Amp status can be used in a variety of life safety applications

Power Save (switch C)

The Power Save switch enables the Auto-Standby function. In OFF position, the Auto Standby feature is disabled; amplifier power on/off is controlled by the front panel switch or the AUX port ground closure.

In the ON position, Auto Standby is enabled. If the amplifier input does not see signal for 30 minutes, the amplifier will power down to consume less than 1W of power. When -40dBu of input signal is applied, then the amplifier will power up for activation. The power up sequence will take approximately 4 - 5 seconds.

Per Channel Settings

Note: The following text and illustrations refer to one channel pair, channels 1 and 2. Settings and functions are identical for other channels pairs (3/4, 5/6, 7/8) in multichannel models.

Hi-Z

Each channel of the channel pair is individually selectable for Lo-Z or Hi-Z operation. When Hi-Z operation is selected (ON, up) a 35Hz high pass filter is selected automatically. The filter can be changed to 70Hz. Contact your local Crown service center for detailed instruction for this change. When a channel pair is configured for bridged Hi-Z mode, only switches assigned to the odd-numbered channels (1,3,5,7) are active; switches for the even-numbered channels (2,4,6,8) are disabled.

Channel Attenuators

Each channel is supplied with a logrithmic 21-position detented input attenuator. Use a flat-blade screwdriver to set input level. Attenuation is from -95 dB (full counter-clockwise) to 0 dB (full clockwise).

Position	0	1	2	3	4	5	6	7	8	9	10
Typical Attenuation	0	0.1	3	6	8	9.5	11	12.5	14	15.5	16.5

Position	11	12	13	14	15	16	17	18	19	20
Typical Attenuation	17.5	19	20.5	22.5	24.5	27.5	32	42	90	95

Protection System

Thermal Indicator

If the amplifier becomes too hot for safe operation, the channel that is generating too much heat will be shut down until the temperature drops below the thermal limit. The front-panel thermal indicator will illuminate at 80 degrees Celsius, indicating the onset of compression affecting the audio signal. The amplifier will continue to run in this state until either the temperature is reduced to a safe operating range, or if the temperature continues to rise, the channel will shut off to protect itself above 98 degrees Celsius.

Fault

The amplifier will enter a Fault state if the amplifier senses an unsafe condition. This protection is for both internal and external faults. It is critical to check all wiring to and from the amplifier to ensure the fault is not caused by external conditions. If wiring is verified as correct and the fault condition persists, see Page 29 for servicing information.

Auto Insertion High-Pass Filters

A 35 Hz high-pass filter is inserted automatically when a channel is selected for Hi-Z operation. The filter can be changed to a 70Hz high pass filter. Please contact Crown Service Department for further information.

AC Under/Over Voltage Protection

If the AC line voltage drops below 10% or rises above 10% of the nominal operating voltage of the amplifier, the amplifier's power supply turns off and the blue Power LED flashes. The amplifier will turn back on when the AC line voltage returns to safe operating levels.

Fuse

A fuse (F1) located near the IEC power inlet protects the amplifier from excessive AC current draw. The fuse is field replaceable. Replace with same type fuse; LittelFuse 314 Series F20AH 250V. The 8|600 and 4|1250 utilize a resettable breaker instead of a fuse. Please contact Crown Service department for more information.

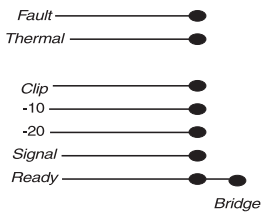
Fan-cooled Chassis

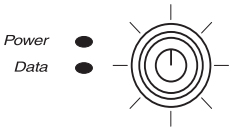
DCi Series amplifiers are cooled by quiet, variable speed fans. The fans will pull air from the front of the amplifier to the rear of the amplifier.

Universal Switching Power Supply

The DCi Series incorporates a new switching power supply designed for extremely high efficiency and high output power. The supply includes Power Factor Correction (PFC), a Series Resonant Converter (SRC) and accepts AC supply voltages from 100 V~ to 240 V~. Microprocessor controlled diagnostic and control capabilities both optimize performance, and enhance long-term reliability.

Troubleshooting

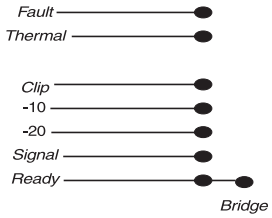




CONDITION: Power indicator is off. Mains indicator is on.

POSSIBLE REASON

- The amplifier's Power switch is off.

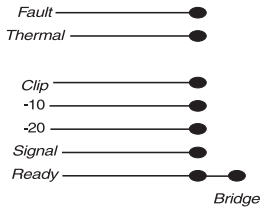


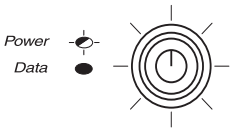


CONDITION: Power indicator is off. Mains indicator is off.

POSSIBLE REASON

- The power supply fuse has tripped.
- The amplifier has lost AC Power.
- The amplifier is not plugged in to the power receptacle.

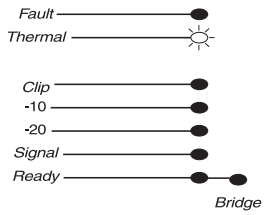


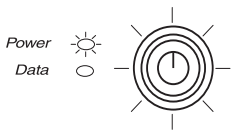


CONDITION: Power indicator is flashing.

POSSIBLE REASON:

- The AC line voltage has dropped below 10% or has risen above 10% of the nominal line voltage of the power supply.
- When the Amp is in Sleep Mode as set by the AUX Port, the amplifier will not power up until the ground closure on the AUX Port is released. When the power button is pushed in this condition, the Power Indicator will flash for 2 – 3 seconds.

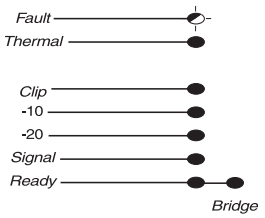


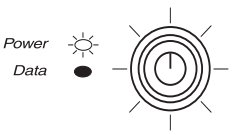


CONDITION: Thermal indicator is on.

POSSIBLE REASON:

- The amplifier is becoming too hot for safe operation. Allow amplifier to cool. Check for loads less than 2 ohms, and for excessive input levels. Check for proper ventilation and proper mode-switch setting.

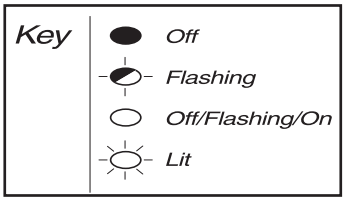




CONDITION: Fault indicator is flashing.

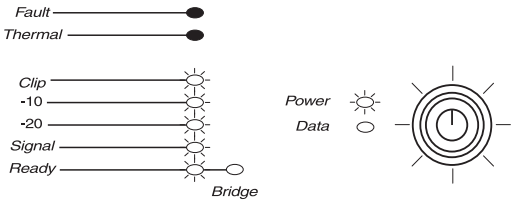
POSSIBLE REASON:

- There are a number of conditions that result in the Fault indicator flashing: temperature above 98C, DC/LF protection is engaged, HF detect, output short circuit detected. These conditions should all be checked and attempted to be resolved before the amp is shipped back for service.



"Off/Flashing/On" above means that the LED can be off, or flashing, or on.

Troubleshooting

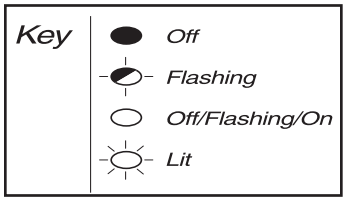


CONDITION: Distorted sound.

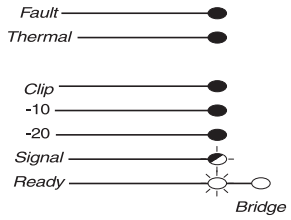
POSSIBLE REASON:

- Load is wired incorrectly or Stereo/Bridge mode switch is set incorrectly. Check both.
- Input is overloaded by a signal level that is too high. Turn down your amplifier level controls, or turn down the input signal, until the clip light goes out.

Note: If the signal sounds distorted even though the Clip LED is off, the input signal may be distorted before it reaches the amplifier input. Check gain staging and output levels of the mixer or preamp.



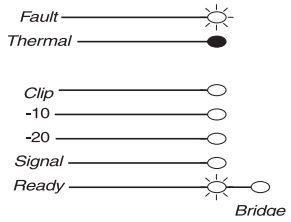
"Off/Flashing/On" above means that the LED can be off, or flashing, or on.



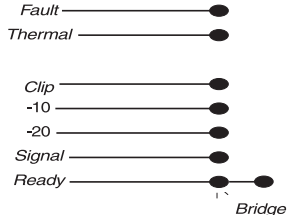
CONDITION: No sound, even though the amp has power. Power LED is on without flashing and the amp is receiving an input signal. Signal indicator is flashing.

POSSIBLE REASON:

- Speakers not connected.
- Open circuit due to speaker failure.

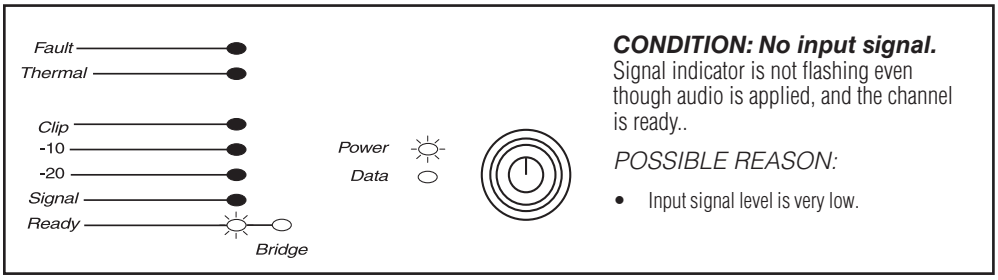


- Based on the front panel LEDs, determine which channel has a short. Remove the associated input connector to ensure that no voltage will be present on the output. Remove the shorted load (and possibly attached cables) and have it checked by a qualified technician. If the shorted condition remains after the load is removed, the unit should be sent into a qualified service center.



- Ready LED is off. Channel has been set to Sleep mode via the Aux port or Power Save mode.

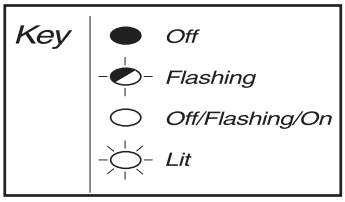
Troubleshooting



CONDITION: No input signal.
Signal indicator is not flashing even though audio is applied, and the channel is ready..

POSSIBLE REASON:

- Input signal level is very low.



"Off/Flashing/On" above means that the LED can be off, or flashing, or on.



CONDITION: Bridge LED is lit.

POSSIBLE REASON:

- Amplifier is in bridge-mono mode.

DCi Specifications

Dual-Mode - All Channels Driven

DCi Model	Channels	2 Ohms	4 Ohms	8 Ohms	16 Ohms	70Vrms	100Vrms
2|300	2	150W	300W	300W	150W	300W	300W
2|600	2	300W	600W	600W	300W	600W	600W
4|300	4	150W	300W	300W	150W	300W	300W
4|600	4	300W	600W	600W	300W	600W	600W
8|300	8	150W	300W	300W	150W	300W	300W
8|600	8	300W	600W	600W	300W	600W	600W
2|1250	2	1250W	1250W	1250W	625W	1250W	1250W
4|1250	4	1250W	1250W	1250W	625W	1250W	1250W

Minimum Guaranteed Power (20 Hz - 20 kHz)

Bridge Mono Mode - All Channels Driven

DCi Model	4 Ohm	8 Ohms	16 Ohm	140Vrms	200Vrms
2|300	300W	600W	600W	600W	600W
2|600	600W	1200W	1200W	1200W	1200W
4|300	300W	600W	600W	600W	600W
4|600	600W	1200W	300W	1200W	1200W
8|300	300W	600W	600W	600W	600W
8|600	600W	1200W	1200W	1200W	1200W
2|1250	2500W	2500W	2500W	2500W	2500W
4|1250	2500W	2500W	2500W	2500W	2500W

Minimum Guaranteed Power (20 Hz - 20 kHz)

DCi Specifications

Input Sensitivity

DCi Model	8 Ohm	70V	100V
2|300	1.0V	1.4V	2.0V
2|600	1.4V	1.4V	2.0V
4|300	1.0V	1.4V	2.0V
4|600	1.4V	1.4V	2.0V
8|300	1.0V	1.4V	2.0V
8|600	1.4V	1.4V	2.0V
2|1250	2.0V	1.4V	2.0V
4|1250	2.0V	1.4V	2.0V

Dimensions

DCi Model	Width	Height	Depth
2|300	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
2|600	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
4|300	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
4|600	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
8|300	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
8|600	19 in. (48.3 cm)	3.5 in. (8.9 cm)	17 in. (43.2 cm)
2|1250	19 in. (48.3 cm)	3.5 in. (8.9 cm)	14.25 in. (36.2 cm)
4|1250	19 in. (48.3 cm)	3.5 in. (8.9 cm)	17 in. (43.2 cm)

DCi Specifications

Performance Specifications

	2|300	2|600	4|300	4|600	8|300	8|600	2|1250	4|1250
Voltage Gain (at maximum level setting) 4/8 Ohm, 70V and 100V Operation	34dB							
Frequency Response (8 Ohms, 20 Hz - 20 kHz)	±0.25dB							
Signal to Noise Ratio (ref. rated power, (8 Ohms, 20 Hz - 20 kHz)	>108 dB							
Total Harmonic Distortion (at full rated power, from 20 Hz - 20 kHz)	0.35%							
Intermodulation Distortion (60Hz and 7 kHz at 4:1, from - 30dB to full rated Power)	≤0.35%							
Damping Factor (20 Hz to 100 Hz)	>1000							
Crosstalk (below rated power, 20 Hz to 1 kHz)	>80 dB							
Common Mode Rejection (20 Hz to 1 kHz, typical)	>70 dB							
DC Output Offset (with inputs shorted)	±10mV							
Input Impedance (Nominally balanced, nominally unbalanced)	10 kOhms, 5 kOhms							
Maximum Input Level Before Compression	+20dBU							
Maximum Input Level Before Clipping	+26dBU							
Required AC Mains (±10%)	100V - 240V~ 50/60Hz							
Cooling	Continuously variable speed forced air, front-to-back airflow							
Load Impedance Stereo/Dual Mode	2 - 16 Ohms; 70Vrms and 100Vrms							
Load Impedance Bridge Mono	4 - 16 Ohms; 140Vrms and 200Vrms							
Maximum Fan Noise (re dB SPL @ 1M)	45	45	45	45	47	47	47	47
Weight	18.8 lbs (8.53kg)	18.8 lbs (8.53kg)	20.1 lbs (9.12kg)	20.1 lbs (9.12kg)	23.5 lbs (10.66kg)	30 lbs (13.60kg)	20.1 lbs (9.12kg)	30 lbs (13.60kg)
IEC Power Connector	15A IEC	15A IEC	15A IEC	15A IEC	15A IEC	20A IEC	15A IEC	20A IEC

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 2|300 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.6	70	239	60	0.4	70	240	60
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	1.0	80	273	69	0.6	83	283	71
	8 ohms	1.4	86	294	74	0.8	88	300	76
	16 ohms	1.4	80	274	69	0.8	84	287	72
	140V (32.67 ohms)	1.3	78	265	67	0.8	80	273	69
	200V (66.67 ohms)	1.3	78	267	67	0.8	80	274	69
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	1.8	107	364	92	1.0	102	348	88
	8 ohms	2.8	126	430	108	1.5	117	400	101
	16 ohms	2.7	108	367	93	1.4	101	345	87
	70V (32.67 ohms)	2.6	101	345	87	1.4	95	323	81
	100V (66.67 ohms)	2.6	99	338	85	1.4	94	321	81

DCI 2|300 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.6	70	238	60	0.4	70	238	60
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	1.0	77	262	66	0.6	79	269	68
	4 ohms	1.4	84	287	72	0.8	84	288	73
	8 ohms	1.4	79	271	68	0.8	81	277	70
	70V (16.33 ohms)	1.3	79	268	68	0.8	80	273	69
	100V (33.33 ohms)	1.4	81	275	69	0.8	81	277	70
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	1.8	99	338	85	1.0	96	329	83
	4 ohms	2.9	118	403	102	1.5	111	380	96
	8 ohms	2.6	102	347	87	1.4	96	327	83
	70V (16.33 ohms)	2.8	104	356	90	1.3	93	317	80
	100V (33.33 ohms)	2.6	105	358	90	1.4	98	336	85

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 2l600 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.6	70	239	60	0.4	73	249	63
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	1.5	93	318	80	0.8	97	330	83
	4 ohms	2.2	109	372	94	1.2	104	355	89
	8 ohms	2.1	101	345	87	1.1	94	320	81
	70V (16.33 ohms)	2.1	98	334	84	1.1	92	313	79
	100V (33.33 ohms)	2.1	92	316	80	1.1	90	308	78
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	2.9	143	487	123	1.5	138	472	119
	4 ohms	4.8	174	592	149	2.6	171	585	147
	8 ohms	4.5	143	487	123	2.4	138	470	119
	70V (16.33 ohms)	4.5	143	488	123	2.4	135	462	116
	100V (33.33 ohms)	4.5	130	442	112	2.3	125	425	107

DCI 2l600 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.6	72	246	62	0.4	70	240	60
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	1.5	93	318	80	0.8	91	310	78
	4 ohms	2.2	106	362	91	1.2	99	339	85
	8 ohms	2.1	95	324	82	1.1	90	307	77
	70V (16.33 ohms)	2.1	94	320	81	1.1	89	304	77
	100V (33.33 ohms)	2.1	93	318	80	1.1	87	297	75
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	2.9	133	454	114	1.5	126	430	108
	4 ohms	4.7	156	533	134	2.4	147	502	126
	8 ohms	4.5	131	448	113	2.4	125	427	108
	70V (16.33 ohms)	4.5	132	450	113	2.4	123	421	106
	100V (33.33 ohms)	4.5	127	435	110	2.4	121	413	104

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 2|1250 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.8	96	329	83	0.5	91	311	78
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	4.1	175	598	151	2.1	141	483	122
	8 ohms	4.2	142	485	122	2.2	127	434	109
	16 ohms	4.1	155	529	133	2.0	105	360	91
	140V (8 ohms)	3.9	143	486	123	2.1	141	481	121
	200V (16 ohms)	3.6	111	378	95	2.1	132	451	114
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	9.6	276	943	238	5.0	233	796	201
	8 ohms	9.8	218	743	187	4.8	211	719	181
	16 ohms	9.5	204	696	176	4.9	209	715	180
	140V (8 ohms)	9.1	224	763	192	4.6	200	682	172
	200V (16 ohms)	8.7	160	546	138	4.7	208	711	179

DCI 2|1250 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	0.8	97	330	83	0.5	91	311	78
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	6.2	198	675	170	3.0	182	621	157
	4 ohms	5.1	143	489	123	2.5	138	469	118
	8 ohms	4.2	106	361	91	2.3	154	526	133
	70V (4 ohms)	4.1	132	450	113	2.1	126	430	108
	100V (8 ohms)	3.8	122	418	105	2.1	143	487	123
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	11.4	275	938	237	6.4	314	1072	270
	4 ohms	10.4	220	750	189	5.2	235	802	202
	8 ohms	9.4	221	754	190	4.6	179	611	154
	70V (4 ohms)	9.0	260	886	223	4.6	197	672	169
	100V (8 ohms)	8.7	196	669	169	4.5	176	602	152

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 4|300 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	119	405	102	0.6	121	414	104
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	1.0	221	755	190	1.0	139	475	120
	8 ohms	1.4	298	1018	257	1.4	153	523	132
	16 ohms	1.4	300	1023	258	1.4	145	495	125
	140V (32.67 ohms)	1.3	289	987	249	1.3	137	467	118
	200V (66.67 ohms)	1.3	291	994	250	1.3	141	480	121
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	3.5	199	681	172	1.8	190	649	164
	8 ohms	5.3	225	768	194	2.8	222	759	191
	16 ohms	5.1	201	685	173	2.7	190	647	163
	140V (32.67 ohms)	4.9	179	612	154	2.5	170	582	147
	200V (66.67 ohms)	5.0	185	633	160	2.5	174	594	150

DCI 4|300 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	118	401	101	0.6	119	408	103
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	1.9	141	480	121	1.0	136	465	117
	4 ohms	2.6	156	532	134	1.4	149	507	128
	8 ohms	2.6	149	509	128	1.4	142	484	122
	70V (16.33 ohms)	2.5	143	489	123	1.3	139	475	120
	100V (33.33 ohms)	2.5	149	507	128	1.3	142	485	122
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	3.4	194	661	167	1.8	184	629	159
	4 ohms	5.5	219	749	189	2.9	211	719	181
	8 ohms	5.0	191	653	165	2.6	181	618	156
	70V (16.33 ohms)	4.9	183	624	157	2.6	177	604	152
	100V (33.33 ohms)	5.0	197	673	170	2.6	191	652	164

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 4l600 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	117	400	101	0.6	118	404	102
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	2.9	185	631	159	1.5	173	592	149
	8 ohms	4.4	207	708	178	2.2	196	670	169
	16 ohms	4.0	183	625	158	2.1	175	596	150
	140V (16 ohms)	3.9	179	609	154	2.1	173	592	149
	200V (33.33 ohms)	3.9	167	571	144	2.1	163	556	140
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	5.7	278	949	239	3.0	269	918	231
	8 ohms	9.6	344	1174	296	4.9	322	1099	277
	16 ohms	9.0	292	996	251	4.6	235	802	202
	140V (16 ohms)	9.0	289	988	249	4.6	259	884	223
	200V (33.33 ohms)	8.8	260	886	223	4.5	231	790	199

DCI 4l600 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.0	118	402	101	0.6	120	410	103
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	3.0	182	622	157	1.5	168	575	145
	4 ohms	4.3	200	682	172	2.2	191	652	164
	8 ohms	4.0	174	595	150	2.2	168	573	144
	70V (16.33 ohms)	4.0	175	596	150	2.1	168	573	144
	100V (33.33 ohms)	4.0	169	578	146	2.1	162	554	140
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	5.6	264	902	227	2.9	249	849	214
	4 ohms	9.4	316	1079	272	4.8	287	980	247
	8 ohms	8.9	266	907	229	4.6	240	820	207
	70V (16.33 ohms)	8.8	268	916	231	4.6	240	820	207
	100V (33.33 ohms)	8.8	256	872	220	4.6	231	789	199

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 4|1250 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.5	178	607	153	0.9	180	615	155
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	8.2	287	980	247	4.1	281	961	242
	8 ohms	7.8	254	866	218	4.0	232	791	200
	16 ohms	8.0	262	896	226	4.1	224	766	193
	140V (8 ohms)	7.7	266	908	229	4.0	234	799	201
	200V (16 ohms)	7.8	256	874	220	3.9	255	871	220
1/3 Power Pink Noise Typical of program material at extreme clip	4 ohms	18.0	528	1802	454	9.4	497	1697	428
	8 ohms	17.9	416	1419	358	9.5	362	1237	312
	16 ohms	17.6	401	1367	345	8.9	308	1052	265
	140V (8 ohms)	17.1	375	1278	322	8.7	364	1242	313
	200V (16 ohms)	17.0	366	1250	315	8.8	313	1067	269

DCI 4|1250- Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.5	178	607	153	0.9	180	615	155
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	10.4	363	1237	312	4.4	259	884	223
	4 ohms	9.0	253	862	217	4.4	257	878	221
	8 ohms	8.4	268	913	230	4.3	244	832	210
	70V (4 ohms)	7.2	204	695	175	4.0	238	811	205
	100V 8 ohms)	7.9	216	738	186	3.8	216	738	186
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	20.6	531	1813	457	9.9	458	1564	394
	4 ohms	19.5	497	1697	428	9.8	393	1342	338
	8 ohms	18.0	421	1436	362	9.1	331	1130	285
	70V (4 ohms)	16.6	384	1311	331	8.6	337	1150	290
	100V (8 ohms)	17.0	377	1286	324	8.7	313	1069	270

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 8|300 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.9	221	755	190	1.0	216	739	186
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	3.5	273	932	235	1.9	248	847	213
	8 ohms	4.9	292	998	252	2.6	276	943	238
	16 ohms	4.8	267	910	229	2.6	259	885	223
	140V (32.67 ohms)	4.7	262	893	225	2.5	242	824	208
	200V (66.67 ohms)	4.6	254	867	219	2.5	252	858	216
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	6.7	381	1300	328	3.4	341	1165	294
	4 ohms	10.4	436	1488	375	5.4	401	1369	345
	8 ohms	9.8	374	1277	322	5.1	337	1152	290
	70V (16.33 ohms)	9.4	335	1142	288	4.9	291	995	251
	100V (33.33 ohms)	9.6	347	1185	299	4.7	297	1013	255

DCI 8|300 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.8	214	731	184	1.0	216	738	186
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	3.3	223	762	192	1.9	243	831	210
	4 ohms	5.0	288	982	248	2.7	279	951	240
	8 ohms	4.9	270	920	232	2.5	263	896	226
	70V (16.33 ohms)	4.8	267	911	230	2.5	262	895	226
	100V (33.33 ohms)	4.8	274	936	236	2.6	272	927	234
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	5.7	263	897	226	3.4	331	1131	285
	4 ohms	10.3	417	1423	359	5.3	392	1337	337
	8 ohms	10.0	372	1269	320	5.0	341	1165	294
	70V (16.33 ohms)	9.9	366	1250	315	5.0	346	1180	297
	100V (33.33 ohms)	10.0	395	1348	340	5.1	361	1233	311

AC Power Draw and Thermal Dissipation

AC Power Draw and Thermal Dissipation:
Pink noise 12dB crest factor, bandwidth limited 22Hz to 22kHz.
Typical line impedance used.
Data based on all channels driven.

DCI 8l600 - Bridge									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.8	210	718	181	1.0	211	721	182
1/8 Power Pink Noise Typical of program material just at clip	4 ohms	5.5	328	1118	282	2.8	318	1084	273
	8 ohms	8.2	332	1132	285	4.2	305	1042	263
	16 ohms	8.1	303	1032	260	3.8	266	909	229
	140V (32.67 ohms)	7.4	279	952	240	3.8	270	923	233
	200V (66.67 ohms)	7.3	262	895	226	3.8	253	862	217
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	10.5	451	1538	388	5.4	437	1493	376
	4 ohms	17.7	516	1760	444	9.0	440	1503	379
	8 ohms	17.3	425	1449	365	8.8	374	1278	322
	70V (16.33 ohms)	16.9	412	1408	355	8.6	368	1255	316
	100V (33.33 ohms)	16.7	369	1258	317	8.5	311	1061	267

DCI 8l600 - Dual									
		120 V~ 60 Hz				230 V~ 50 Hz			
Condition	Load	Line Current (amps)	Power Dissipated as Heat			Line Current (amps)	Power Dissipated as Heat		
			watts	BTU	kcal/hr		watts	BTU	kcal/hr
At Idle Awake	N/A	1.9	215	733	185	1.0	207	705	178
1/8 Power Pink Noise Typical of program material just at clip	2 ohms	5.8	333	1136	286	2.9	325	1110	280
	4 ohms	8.5	356	1214	306	4.3	336	1147	289
	8 ohms	8.2	311	1061	267	4.2	290	990	250
	70V (16.33 ohms)	7.5	283	964	243	3.9	287	979	247
	100V (33.33 ohms)	7.8	281	959	242	4.0	267	912	230
1/3 Power Pink Noise Typical of program material at extreme clip	2 ohms	11.0	466	1589	401	5.7	486	1658	418
	4 ohms	19.0	587	2004	505	9.6	558	1906	481
	8 ohms	17.5	448	1529	385	8.8	388	1324	334
	70V (16.33 ohms)	17.1	441	1504	379	8.6	379	1294	326
	100V (33.33 ohms)	16.6	381	1301	328	8.5	344	1173	296

Service

Crown amplifiers are quality units that rarely require servicing. Before returning your unit for service, please contact Crown Technical Support to verify the need for servicing.

This unit has very sophisticated circuitry which should only be serviced by a fully trained technician. This is one reason why each unit bears the following label:



CAUTION: To prevent electric shock, do not remove covers. No user serviceable parts inside. Refer servicing to a qualified technician.

Complete the Crown Audio Factory Service Information form, in the back of this manual, when returning a Crown product to the factory or authorized service center. The form must be included with your product inside the box or in a packing slip envelope securely attached to the outside of the shipping carton. Do not send this form separately.

International and Canada Service

Service may be obtained from an authorized service center. (Contact your local Crown/Amcron representative or our office for a list of authorized service centers.) To obtain service, simply present the bill of sale as proof of purchase along with the defective unit to an authorized service center. They will handle the necessary paperwork and repair. Remember to transport your unit in the original factory pack

US Service

Service may be obtained in one of two ways: from an authorized service center or from the factory. You may choose either. It is important that you have your copy of the bill of sale as your proof of purchase.

Service at a US Service Center

This method usually saves the most time and effort. Simply present your bill of sale along with the defective unit to an authorized service center to obtain service. They will handle the necessary paperwork and repair. Remember to transport the unit in the original factory pack. A list of authorized service centers in your area can be obtained from Crown Factory Service, or online from http://www.crownaudio.com/support/servcent.htm.

Factory Service

Crown accepts no responsibility for non-serviceable product that is sent to us for factory repair. Contact Crown Customer Service to verify the product is still serviceable prior to returning for factory service.

For more information, please contact us directly.

A Service Return Authorization (SRA) is required for product being sent to the factory for repair. An SRA can be completed online at http://www.crownaudio.com/rma.html. If you do not have access to the web, please call Crown's Customer Service at 574.294.8200 or 800.342.6939 extension 4907 in North America, Puerto Rico and the Virgin Islands only.

For warranty service, we will pay for ground shipping both ways in the United States. Contact Crown Customer Service to obtain prepaid shipping labels prior to sending the unit. Or, if you prefer, you may prepay the cost of shipping, and Crown will reimburse you. Send copies of the shipping receipts to Crown to receive reimbursement.

Your repaired unit will be returned via UPS ground. Please contact us if other arrangements are required.

Factory Service Shipping Instructions:

1. Service Return Authorization (SRA) is required for product being sent to the factory for service. Please complete the SRA by going to www.crownaudio.com/support/factserv.htm. If you do not have access to our website, call 1.800.342.6939, extension 4907 and we'll create the SRA for you.
2. See packing instructions that follow.
3. Ship product to:
   CROWN AUDIO FACTORY SERVICE
   1718 W MISHAWKA RD.
   ELKHART, IN 46517

Service

4. Use a bold black marker and write the SRA number on three sides of the box.
5. Record the SRA number for future reference. The SRA number can be used to check the repair status.

Packing Instructions

Important: These instructions must be followed. If they are not followed, Crown Audio, Inc. assumes no responsibility for damaged goods and/or accessories that are sent with your unit.

1. Fill out and include the Crown Audio Factory Service Information sheet in the back of this manual.
2. Do not ship any accessories (manuals, cords, hardware, etc.) with your unit. These items are not needed to service your product. We will not be responsible for these items.
3. When shipping your Crown product, it is important that it has adequate protection. We recommend you use the original pack material when returning the product for repair. If you do not have the original box, please call Crown at 1-800-342-6939 or 1-574-294-8210 and order new pack material. (Do not ship your unit in a wood or metal cabinet.)
4. If you provide your own shipping pack, the minimum recommended requirements for materials are as follows:
   a. 275 P.S.I. burst test, Double-Wall carton that allows for 2-inch solid Styrofoam on all six sides of unit or 3 inches of plastic bubble wrap on all six sides of unit.
   b. Securely seal the package with an adequate carton sealing tape.
   c. DO NOT USE LIGHT BOXES OR "PEANUTS". DAMAGE CAUSED BY POOR PACKAGING WILL NOT BE COVERED UNDER WARRANTY.

Enclose the completed Crown Audio Factory Service Information form (or securely attach it to the outside of carton) and re-seal the shipping pack with a sturdy carton sealing tape.

Payment of Non-Warranty Repairs

Payment on out-of-warranty repairs must be received within 30 days of the repair date. Units unclaimed after 30 days become the property of Crown Audio Inc.

If you have any questions, please contact Crown Factory Service.

Crown Factory Service
1718 W. Mishawaka Rd.,
Elkhart, Indiana 46517 U.S.A.

Telephone:
574-294-8200
800-342-6939 (North America, Puerto Rico, and Virgin Islands only)

Facsimile:
574-294-8301 (Technical Support)
574-294-8124 (Factory Service)

Web site:
http://www.crownaudio.com

Warranty



SUMMARY OF WARRANTY

Crown International, 1718 West Mishawaka Road, Elkhart, Indiana 46517-4095 U.S.A. warrants to you, the ORIGINAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW Crown product, for a period of three (3) years from the date of purchase by the original purchaser (the "warranty period") that the new Crown product is free of defects in materials and workmanship. We further warrant the new Crown product regardless of the reason for failure, except as excluded in this Warranty.

**Warranty is only valid within the United States of America. For information on Warranty outside of the U.S.A., please contact your local distributor.*

ITEMS EXCLUDED FROM THIS CROWN WARRANTY

This Crown Warranty is in effect only for failure of a new Crown product which occurred within the Warranty Period. It does not cover any product which has been damaged because of any intentional misuse, accident, negligence, or loss which is covered under any of your insurance contracts. This Crown Warranty also does not extend to the new Crown product if the serial number has been defaced, altered, or removed.

WHAT THE WARRANTOR WILL DO

We will remedy any defect, regardless of the reason for failure (except as excluded), by repair, replacement, or refund. We may not elect refund unless you agree, or unless we are unable to provide replacement, and repair is not practical or cannot be timely made. If a refund is elected, then you must make the defective or malfunctioning product available to us free and clear of all liens or other encumbrances. The refund will be equal to the actual purchase price, not including interest, insurance, closing costs, and other finance charges less a reasonable depreciation on the product from the date of original purchase. Warranty work can only be performed at our authorized service centers or at the factory. Warranty work for some products can only be performed at our factory. We will remedy the defect and ship the product from the service center or our factory within a reasonable time after receipt of the defective product at our authorized service center or our factory. All expenses in remedying the defect, including surface shipping costs in the United States, will be borne by us. (You must bear the expense of shipping the product between any foreign country and the port of entry in the United States including the return shipment, and all taxes, duties, and other customs fees for such foreign shipments.)

HOW TO OBTAIN WARRANTY SERVICE

You must notify us of your need for warranty service within the warranty period. All components must be shipped in a factory pack, which, if needed, may be obtained from us free of charge. Corrective action will be taken within a reasonable time of the date of receipt of the defective product by us or our authorized service center. If the repairs made by us or our authorized service center are not satisfactory, notify us or our authorized service center immediately.

DISCLAIMER OF CONSEQUENTIAL AND INCIDENTAL DAMAGES

YOU ARE NOT ENTITLED TO RECOVER FROM US ANY INCIDENTAL DAMAGES RESULTING FROM ANY DEFECT IN THE NEW CROWN PRODUCT. THIS INCLUDES ANY DAMAGE TO ANOTHER PRODUCT OR PRODUCTS RESULTING FROM SUCH A DEFECT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

WARRANTY ALTERATIONS

No person has the authority to enlarge, amend, or modify this Crown Warranty. This Crown Warranty is not extended by the length of time which you are deprived of the use of the new Crown product. Repairs and replacement parts provided under the terms of this Crown Warranty shall carry only the unexpired portion of this Crown Warranty.

DESIGN CHANGES

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

LEGAL REMEDIES OF PURCHASER

THIS CROWN WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. No action to enforce this Crown Warranty shall be commenced after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS.
03/13

Crown Audio Factory Service Information

Shipping Address: Crown Audio Factory Service, 1718 W. Mishawaka Rd., Elkhart, IN 46517

PLEASE PRINT CLEARLY

SRA #:_____ (If sending product to Crown factory service.)

Model:_____ Serial Number: _____ Purchase Date:_____

PRODUCT RETURN INFORMATION

Individual or Business Name: _____

Phone #: _____ Fax #:_____ E-Mail:_____

Street Address (please, no P.O. Boxes): _____

City: _____ State/Prov:_____ Postal Code: _____ Country:_____

Nature of problem: _____

_____

_____

_____

_____

Other equipment in your system: _____

If warranty is expired, please provide method of payment. Proof of purchase may be required to validate warranty.

PAYMENT OPTIONS

☐ I have open account payment terms. Purchase order required. PO#: _____ ☐ COD

☐ Credit Card (Information below is required; however if you do not want to provide this information at this time, we will contact you when your unit is repaired for the information.)

Credit card information:

Type of credit card: ☐ MasterCard ☐ Visa ☐ American Express ☐ Discover

Type of credit card account: ☐ Personal/Consumer ☐ Business/Corporate

Card # _____ Exp. date:_____ *Card ID #:_____

*Card ID # is located on the back of the card following the credit card #, in the signature area. On American Express, it may be located on the front of the card. This number is required to process the charge to your account. If you do not want to provide it at this time, we will call you to obtain this number when the repair of your unit is complete.

Name on credit card: _____

Billing address of credit card: _____

_____

_____

PRODUCT REGISTRATION

Crown Audio, Inc.
1718 W. Mishawaka Rd.
Elkhart, IN 46517-9439
Phone: 574-294-8000
Fax: 574-294-8329
www.crownaudio.com

Warranty is only valid within the country in which the product is purchased.

When this form is used to register your product, it may be mailed or faxed.

Crown Audio, Inc.
1718 W Mishawaka Rd
Elkhart IN 46517

Fax: 574-294-8329

Please note that some information is required. Incomplete registrations will not be processed. * Indicates required information.

OWNER'S INFORMATION – PLEASE PRINT

* First name:_____ Middle initial:_____ * Last name:_____

Company: _____

* Mailing address:_____

* City: _____ * State:_____ * Zip Code:_____

* Country: _____ E-mail address:_____

* Phone # (include area code): _____ Fax #:_____

PRODUCT INFORMATION

* MODEL e.g. IT8000, CDi1000, PCC16	* SERIAL # e.g. 800000000	* PURCHASE DATE mo/day/yr
_____	_____	____/____/____
_____	_____	____/____/____
_____	_____	____/____/____
_____	_____	____/____/____

Product purchased from: *(Business/Individual) _____ Country:_____

Comments: _____

_____

_____

CUT ON THIS LINE


crown®
by HARMAN

English P50~P97

ELMO

DOCUMENT CAMERA

P100

INSTRUCTION MANUAL

Please read this instruction manual carefully before using this product and keep it for future reference.

IMPORTANT SAFEGUARDS

■ Read Instructions – All the safety and operating instructions should be read before the appliance is operated.

■ Retain Instructions – The safety and operating instructions should be retained for future reference.

■ Heed Warnings – All warnings on the product and in the operating instructions should be adhered to.

■ Follow Instructions – All operating and use instructions should be followed.

■ Cleaning – Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

■ Attachments – Do not use attachments not recommended by the product manufacturer as they may cause hazards.

■ Water and Moisture – Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

■ Placement – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

■ Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

■ Power Sources – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home consult your appliance dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

■ Grounding or Polarization – This product may be equipped with either a polarized 2-wire AC line plug (a plug having one blade wider than the other) or a 3-wire grounding type plug, a plug having a third (grounding) pin. The 2-wire polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

■ Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

■ Lightning – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

■ Overloading – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

■ A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.



■ Object and Liquid Entry – Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

■ Servicing – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

■ Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance - this indicates a need for service.

■ Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

■ Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

■ Heat – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

■ This product includes a Fluorescent Lamps component that contains mercury. Please consult your state and local regarding proper disposal or recycling, and do not place in the trash.





SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. This marking is located at the bottom of product.



SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

THIS IS A CLASS A PRODUCT.
IN A DOMESTIC ENVIRONMENT THIS PRODUCT MAY CAUSE RADIO INTERFERENCE IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

WARNING : Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. ***Wash hands after handling.***

FOR UNITED STATES USERS:

INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

USER-INSTALLER CAUTION:

Your authority to operate this FCC verified equipment could be voided if you make changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC rules.

BEFORE YOU USE

- The power cord applicable to the local power specifications is attached. Be sure to use the power cord applicable to your local power specification.
- Do not leave this product under direct sunlight or by heaters, or this product may be discolored, deformed, or damaged.
- Do not place this product in any humid, dusty, windy or vibrating location. Use this product in the following environmental conditions:
  Temperature: 5°C~40°C (41°F~104°F)
  Humidity: 30%~85% (No condensation)
- In handling (including setting up and storing) or carrying the camera, be meticulously careful not to give an impact on the camera head.
- To prevent dropping and falling, observe the following:
  - Use the camera on a stable stand, desk or table. Never put the camera on any shaky stand or inclined or instable place.
  - Before using, lay out the power cord, the AC adapter cable and the video cable not to be pulled, and wire them accordingly.
- Use a soft, dry cloth for cleaning. Do not use any volatile solvent, such as thinner or benzine.
- Do not directly point the camera lens into the sun, or the camera may be damaged.
- Caring for the batteries:
  - If this product is not used for a long time, take out the batteries from the wireless remote control.
  - Do not use rechargeable Ni-Cd batteries.
  - Do not use new and old batteries, or batteries of different types together.
  - Do not try to recharge or short-circuit the batteries.
- Luminescent and Black Spots
  This camera has a CMOS area image sensor and a color LC panel, which are composed of many pixels. Some of these pixels may not operate normally. As a result, a luminescent spot or a black spot may appear on the output screen. However, this is a phenomenon unique to the CMOS area image sensor and color LC panel and therefore this phenomenon is not faulty.
- Do not press the LC panel strongly or with a sharp-pointed object, or it would cause break or failure to the color LC panel.
- Transfer the data in an SD card to a PC or other data storage means for backup purpose. Note with care that the data in the SD card could be lost due to failure or repair of this product.

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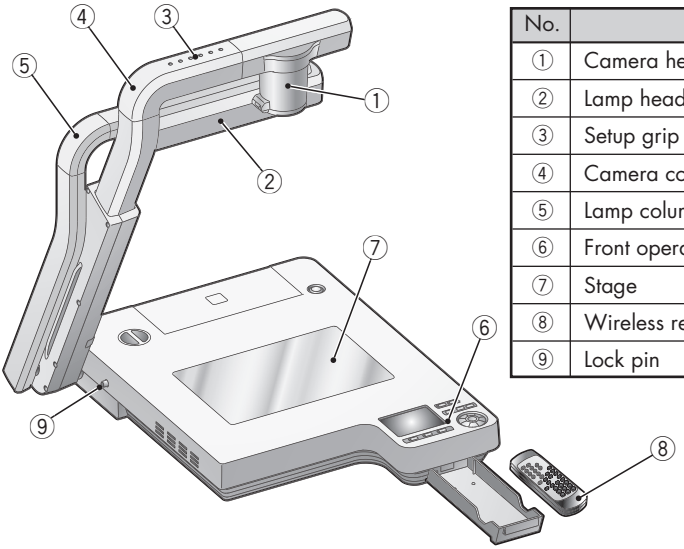
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1 PART NAMES AND FUNCTIONS

Name of Each Part

■ Appearance

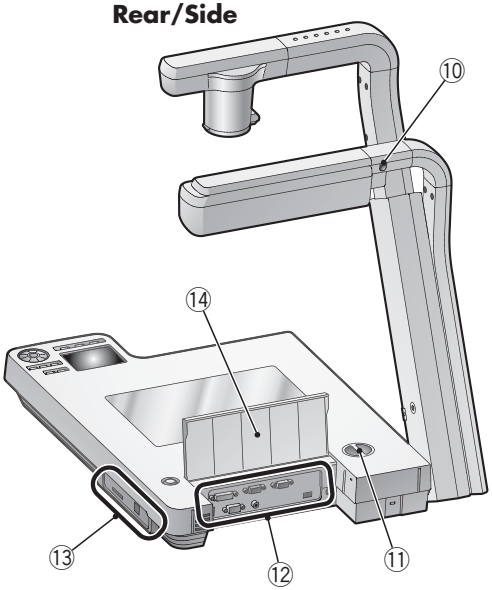
Front



Front

No.	Name
①	Camera head
②	Lamp head
③	Setup grip
④	Camera column
⑤	Lamp column
⑥	Front operating panel P.60
⑦	Stage
⑧	Wireless remote control P.66
⑨	Lock pin

Rear/Side

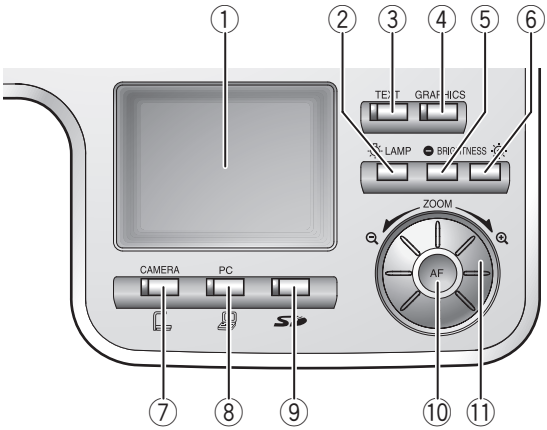


Rear/side

No.	Name
⑩	Infrared sensor The infrared sensor is also available on the front side.
⑪	Safety lock knob P.69
⑫	Rear panel P.61
⑬	Side panel P.62
⑭	Cord cover Open this cover when connecting/disconnecting a cord. *When carrying this product, do not hold this cord cover.*

Functions

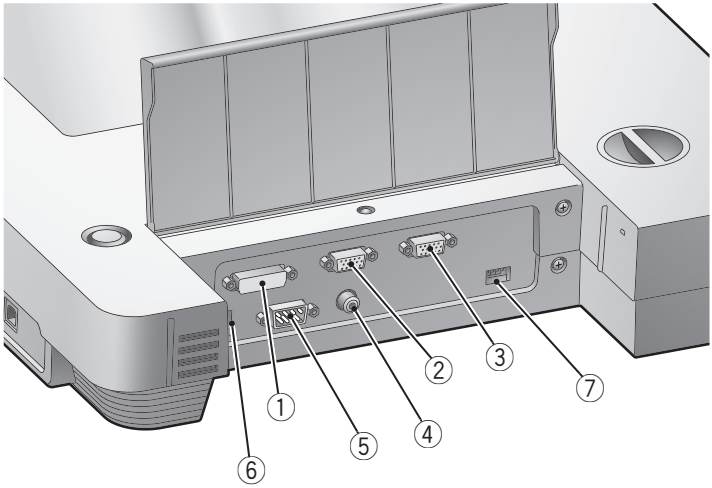
■ Front Operating Panel

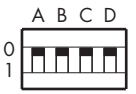


* Hereinafter the menu items to be displayed/selected on the monitor or projection screen are referred to as "OSD (On-Screen Display)".

	Name		Function
①	LCD panel		To display the output image and the OSD
②	LAMP (Lamp)		To switch the illumination P.81
③	TEXT (Text mode)		To make B&W images of letters or lines sharp in contrast. Use this button to display materials such as documents.
④	GRAPHICS (Color document)		To display color objects such as figures and photos
⑤	BRIGHTNESS (Brightness)	(Light)	To lighten the camera image P.87
⑥		(Dark)	To darken the camera image P.87
⑦	CAMERA (Camera)		To switch the output image to the camera image P.83
⑧	PC (RGB IN video)		To switch the output image to the RGB IN image P.83
⑨	SD (SD mode)		To switch the output image mode to the SD mode P.83
⑩	AF (Auto Focus)		To focus the camera automatically P.85
⑪	ZOOM (Zoom)		To operate the zoom function by turning the dial P.82

■ Rear Panel



	Name	Function	Image whose display is selectable with image select button
①	DVI OUT (DVI Output Terminal)	To output digital video signal to the projector, the PC monitor or other DVI input device P.71	Camera image SD mode
②	RGB OUT (Analog RGB Output Terminal)	To output analog video signal to the projector, the PC monitor or other RGB input device P.71	Camera image [RGB IN] image SD mode
③	RGB IN (Analog RGB Input Terminal)	Input image is output from the analog RGB output terminal or the video out terminal when RGB IN ( ) is selected with image select button P.72	
④	VIDEO OUT (Composite Video Output Terminal)	To output image from the RCA pin-jack terminal to the NTSC/PAL-system monitor (e.g., TV monitor) P.72	Camera image [RGB IN] image SD mode ∗
⑤	RS-232C (RS-232C Terminal)	To control the main unit from a PC through the RS-232C cable P.89	
⑥	12VDC IN (Power Socket)	Socket for the AC adapter	
⑦	(DIP Switch)  Display of Rear Panel	To execute the following switching: [A] and [B] keys: Switch the resolution of the DVI and analog RGB output [C] key: Switches the VIDEO output type [D] key: Switches the VIDEO screen size	

Settings	[A] key	[B] key
SXGA	0	0
XGA	1	0
720p	0	1
(SXGA)	1	1

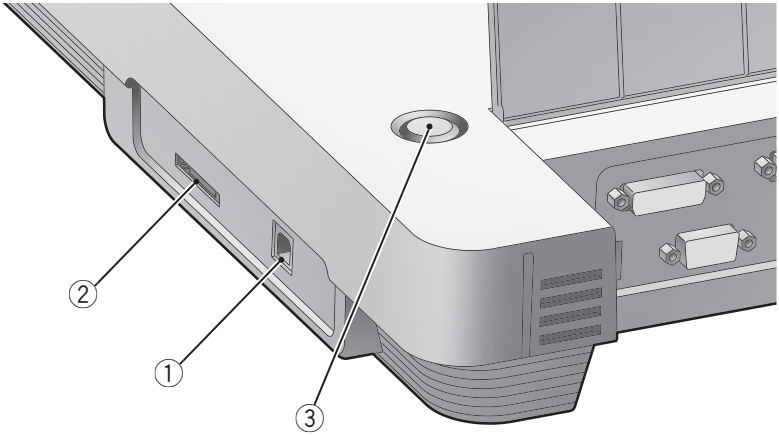
Settings	[C] key
NTSC	0
PAL	1

Settings	[D] key
Over scan	0
Under scan	1

When switching the DIP switch key settings, be sure to turn OFF the power supply to the main unit.

∗ [Video Out] → [Camera & SD] on the OSD skips [RGB IN] image.

■ Side Panel

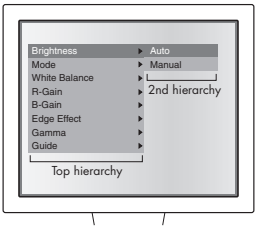


	Name	Function
①	USB (Compliant with 2.0)	To enable the image transfer or the main unit control by using the utility software on the supplied CD-ROM when the camera is connected to the PC P.71
②	SD (SD Card Slot)	To insert an SD card To remove the SD card, push it in once P.75
③	Main Switch	To turn ON/OFF the power supply

OSD (On-Screen Display)

The menu items displayed/selected on the monitor or the projection screen are referred to as "OSD (On-Screen Display)".
When the **[MENU]** button on the wireless remote control is pressed, the OSD menu appears on the monitor screen. (When this **[MENU]** button is pressed again, the OSD menu disappears.)
Move to the item to be set by pressing the **[▲ ▼ ◀ ▶]** direction buttons on the wireless remote control, and press the **[ENTER]** button to fix the setting. When the **[◀]** direction button is pressed, the OSD menu hierarchy is traced back. When the same button is pressed on the first hierarchy, the OSD menu disappears.

Sample image of the top and 2nd hierarchies



■ Camera Mode (Menu when camera image is in display)

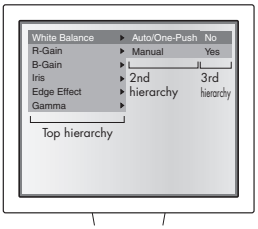
Name		Function
Top hierarchy	**2nd hierarchy**	
Brightness (Brightness)	Auto ✔	To vary the degree of brightness automatically according to the object P.87
	Manual	To fix the image brightness to any level P.87
Mode (Mode)	Text3	Text1, Text2 and Text3 are used to display B&W characters and documents sharply. The larger the number affixed to Text is, the larger the effect is. Graphics is used to display color figures and photographs cleanly. Only when Graphics is selected, Edge Effect and Gamma can be set.
	Text2	
	Text1 ✔	
	Graphics	
White Balance (White Balance)	Auto ✔	To set the white balance to automatic following
	One-Push	To set the white balance to fix
	Manual	To adjust the red intensity and the blue intensity manually
R-Gain	(Displayed in level bar form)	To adjust the red intensity when the white balance is set to manual
B-Gain	(Displayed in level bar form)	To adjust the blue intensity when the white balance is set to manual
Edge Effect (Edge Effect)	3	This can be set only when the mode is set to Graphics. Edge enhancement is provided to the image to make it sharp. The larger this number is, the larger the effect is
	2	
	1 ✔	
	Off	
Gamma (Gamma)	High	To set the gamma curve when the mode is set to Graphics The grayscale can be varied as you like.
	Normal ✔	
	low	
USB Mode (USB Mode Select)	Mass Storage (Transfer)	To transfer the data from an SD card into the USB-connected PC P.79
	Application (Application) ✔	To control the main unit from the USB-connected PC or transfer image into the PC P.78
Guide (Guide)	On ✔	To set whether the operation status of the main unit should be displayed.
	Off	
Video Out (Video Output Set)	All Mode (All mode) ✔	To output the [VIDEO OUT] terminal signal according to all video switching
	Camera & SD (Image of Camera & SD only)	To limit the switching of the [VIDEO OUT] terminal output to the camera video and the SD mode
Call (Setup call)	Default	To reset to the default factory-setting (Excluding USB Mode and Flickerless)

Name		Function
Top hierarchy	2nd hierarchy	
Flickerless (Flicker compensation)	60Hz	To reducer fluorescent lamp flicker due to power supply frequency
	50Hz	

* [✔] indicates the factory default settings. The factory default settings of Flickerless vary according to the destination. The settings of USB Mode and Flickerless retain the last set state.

OSD (On-Screen Display) (Continued)

Sample image of the 1st, 2nd and 3rd hierarchies



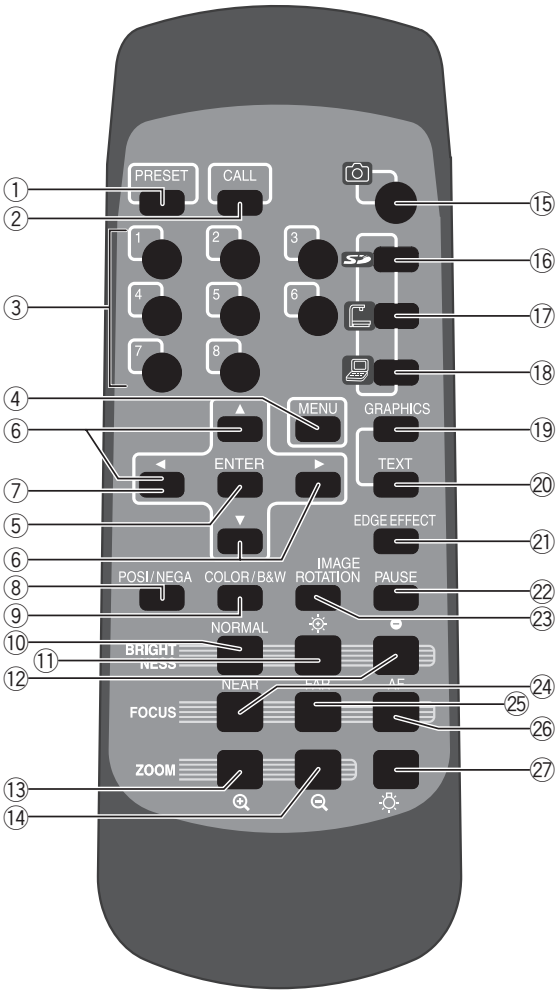
■ SD Mode (Menu when image stored in an SD card is in display)

Name			Function
Top hierarchy	2nd hierarchy	3rd hierarchy	
Delete (Delete) P.77	Current (Selected Image)	No	To cancel the delete
		Yes	To delete the image in display on the full screen or the image selected from the split screen. Locked image can not be deleted.
	All (All images)	No	To cancel the delete
		Yes	To delete all images
Lock (Lock)	Current (Selected image)		To lock the image in display on the full screen or the image selected from the split screen. Can set the image not to be deleted or select image for slide-show. On the split screen, a green frame appears on the locked image.
	All (All Images)		To lock all image files. Can select the delete-protected image or the image to be displayed on the slide show
Unlock (Lock Release)	Current (Selected Image)		To release the lock of the image in display on the full screen or the image selected from the split screen
	All (All Images)		To release the lock of all image files
Format Media (Initialize) P.77	Format (Initialize)	No	To cancel the format
		Yes	To format the SD card *Since all records in the SD card will be cleared, use this function carefully.*

Name			Function
Top hierarchy	2nd hierarchy	3rd hierarchy	
Slide Show Settings (Slide Show Set) P.77	Interval (Interval of Image Feed)	3 Sec ✔	To set the interval of slide show until displaying the next image from 3 to 30 sec
		5 Sec	
		10 Sec	
		15 Sec	
		30 Sec	
	Effect (Effect of Image Feed)	Left to right	To slide from left to right
		LT to RB	To slide diagonally from left top to right bottom
		RT to LB	To slide diagonally from right top to left bottom
		None ✔	To show no visual effect
	Select (Object File)	All ✔	To set the slide-show objects to all displayable images in an SD card
		Locked Only	To set the slide-show objects only to the locked image files
	Order (Order of Image Feed)	Forward ✔	To give slide show in order of file name serial No. from the smallest to the largest
		Backward	To give slide show in order of file name serial No. from the largest to the smallest
	Repeat (Repeat)	Off ✔	To set whether the slide show should be played repeatedly or not
		On	
Start Slide Show (Slide Show Start)			To start the slide show P.77
Display (Display)	Single		To set the number of the images in an SD card to be displayed on the split screen
	3×3 ✔		
	4×4		

* [✔] indicates the factory settings.

Wireless Remote Control



	Name	Function
①	PRESET (State Save)	To save the current setting state of the unit Use this function together with the memory No. P.88
②	CALL (State Call)	To call the setting state Use this function together with the memory No. P.88
③	(Memory No.)	To indicate the memory No.

	Name		Function
④	(OSD Operation)	MENU (Menu)	To display/cancel the OSD P.63
⑤		ENTER (Input)	To fix the OSD item P.63
⑥		▲ ▼ ◀ ▶ (Directions)	To select the OSD item, and scroll the LCD monitor when the digital zoom is used P.63
⑦		◀ (Menu Cancel)	To cancel the OSD from the screen when the top OSD item is resumed P.63
⑧	POSI/NEGA (Posi/Nega)		To switch the posi/nega of the camera image
⑨	COLOR/B&W (Color/Black and White)		To switch the Color/Black and White of the camera image Use this function to make the black-and-white document easy-to-read
⑩	BRIGHTNESS (Brightness adjustment)	NORMAL (Normal)	To return the automatic brightness adjustment level to the standard level P.87
⑪		(Bright)	To brighten the camera image P.87
⑫		(Dark)	To darken the camera image P.87
⑬	ZOOM (Zoom)	(Telescopic)	To zoom in P.82
⑭		(Wide-angle)	To zoom out P.82
⑮	(Image Save)		To save the image in an SD card
⑯	(SD mode)		To switch the output image mode to the SD mode P.83
⑰	(CAMERA)		To switch the output image to the camera image P.83
⑱	(PC)		To switch the output image to the RGB IN image P.83
⑲	GRAPHICS (Color documents)		To switch the mode to Graphics To display color objects, such as figures and photos
⑳	Text (Text Mode)		To switch the mode to Text1 To sharpen the image with black-and-white characters and lines Use this function to shoot the document or the like
㉑	EDGE EFFECT (Edge Enhancement)		To switch the 1/2/3/OFF of the edge enhancement The edge effect is applied to the image for sharpening This function is enabled when the mode is set to Graphics
㉒	PAUSE (Pause)		To pause the camera image. When this button is pressed again, the moving image is restored *The paused image cannot be processed in any other way.*
㉓	IMAGE ROTATION (Image Turn)		To turn the camera image by 180°
㉔	FOCUS (Focus)	NEAR	To move the focus near P.86
㉕		FAR	To move the focus far P.86
㉖		AF (Auto Focus)	To focus the camera automatically P.85
㉗	(Lamp)		To switch ON/OFF the lighting P.81

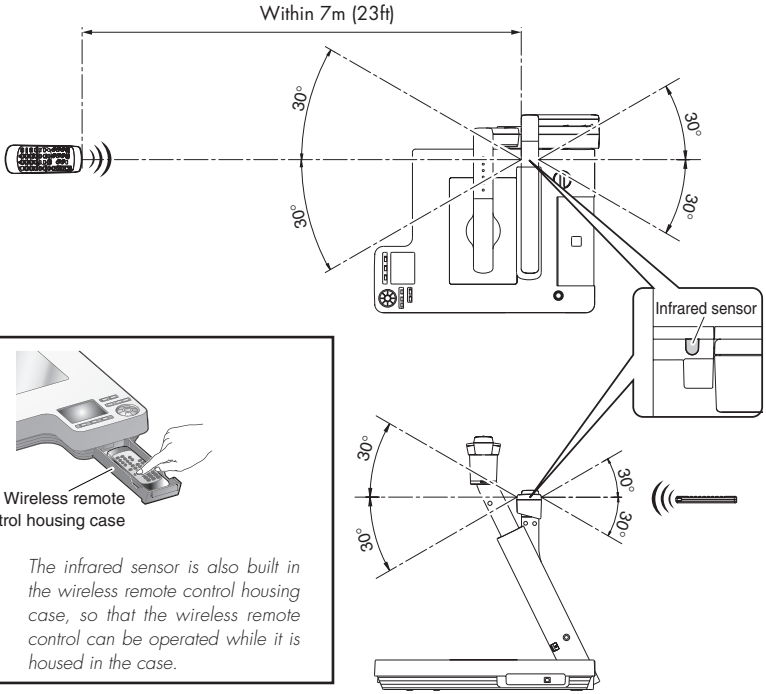
■ Receivable Range

Point the infrared emitting part of the wireless remote control at the infrared sensor of the main unit, and press the button for desired function.
The receiving range may be reduced when the main unit is placed in direct sunlight, near an inverter fluorescent lamp or in any other unfavorable surroundings.
Depending on the conditions of fluorescent lamps, etc., the sensor may fail to receive the infrared light. In such case, relocate the main unit, or take other countermeasures.

• Receivable range

Distance: Approx. 7m (23ft) or less from the front of the infrared sensor

Angle: Approx. 30° or less to the rightward, leftward, upward and downward, respectively, from the infrared sensor



The infrared sensor is also built in the wireless remote control housing case, so that the wireless remote control can be operated while it is housed in the case.

■ Battery Change

Remove the battery case cover on the rear side by pressing down the [▼ OPEN] mark part in the direction as indicated by the arrow.
Install 2 batteries (Type R03, AAA) in the battery case in the direction as indicated.

Install the batteries with the correct polarity.

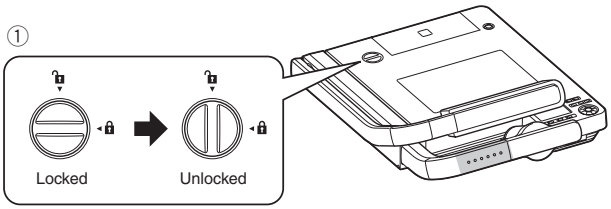
Although the battery life depends on the operating conditions and battery type, the batteries are recommended to be changed once a year.

The supplied batteries are only for use in initially confirming the operation of this product. Therefore, it is not guaranteed that these batteries remain alive for the validated period.

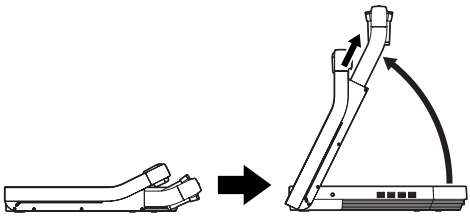
2 SETTING UP

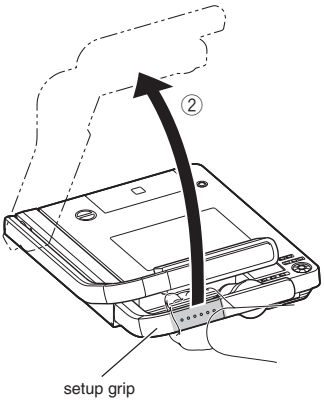
Setting Up

(1) Release the lock by turning the security lock.



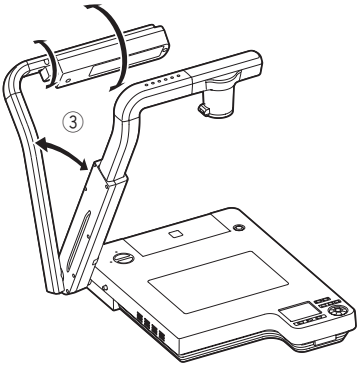
(2) As shown in the right figure, hold the setup grip and raise the camera column. At this time, the camera head slides up in conjunction with the rise of the camera column. The lamp column also rises together.



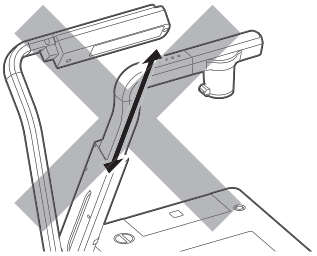


(3) If necessary, move the lamp column and the lamp head to an appropriate position as shown in the right figure.

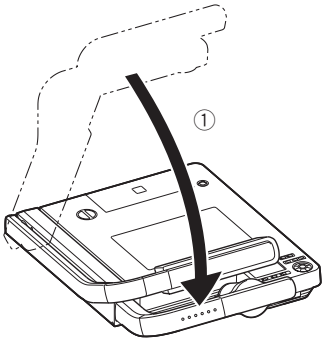
When using a glossy paper, the document could reflect the illumination to disable normal display. In this case, adjust the lamp position to a position in which such reflection can be avoided.



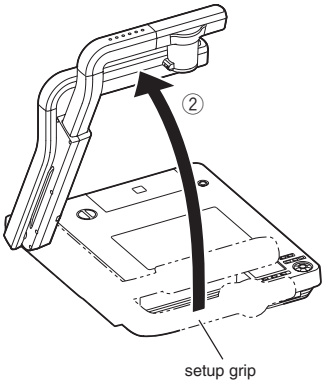
If the camera column is pulled or pushed forcedly, the camera might be pushed out of position by a function not to break mechanical parts, and the camera image might be displaced from the display center. In this case, initialize the camera position as follows:



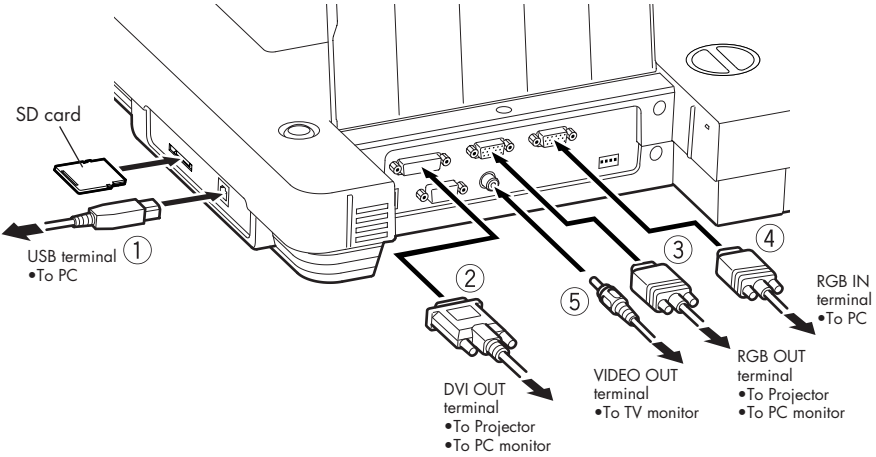
(1) Fold the camera column on the stage. When the camera column is folded in the storage position, the camera position is initialized.



(2) Then, raise the camera column.



Connecting of Video Cables



To protect this product and the peripheral units to be connected to this product, be sure to turn OFF the power supply to all units beforehand.

When plugging in/out the connection cable, hold the plug part of the cable.

① Connecting to the PC with a USB cable

Connect a USB cable to the [USB] terminal on the side panel.

The USB cable compliant with USB2.0 is recommended.

If you plug into a USB cable with power on, PC may not recognize this product.

Depending on the USB environment used by the PC or the influence of peripheral units, the video transfer could be disturbed.

This does not guarantee the normal operation in any environment.

② Connecting to the unit having the DVI input terminal

Connect the DVI cable to the [DVI OUT] terminal on the rear panel.

③ Connecting to the unit having the analog RGB input terminal

Connect the analog RGB cable to the [RGB OUT] terminal on the rear panel.

The display position may be displaced from the center of the screen. In such case, adjust the horizontal and vertical positions manually from the connected device.

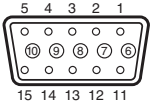
Vertical stripes may appear on the LCD projector screen or the monitor screen. This phenomenon can be mitigated by adjusting the dot clock manually from the connected device.

④ Connecting to the unit having the analog RGB output terminal

Connect the analog RGB cable to the [RGB IN] terminal on the rear panel.

• Specifications of the analog RGB input terminal of this product

Signal allocation



DSUB 15P shrink terminal (Female)

Video signal : Analog 0.7V(p-p) 75Ω terminated

Horizontal synchronized signal : TTL level (Positive/negative polarity)

Vertical synchronized signal : TTL level (Positive/negative polarity)

Pin assignment

Pin No.	Name	Pin No.	Name	Pin No.	Name
1	Video signal (Red)	6	GND (Red)	11	GND
2	Video signal (Green)	7	GND (Green)	12	N.C
3	Video signal (Blue)	8	GND (Blue)	13	Horizontal synchronized signal
4	N.C	9	N.C	14	Vertical synchronized signal
5	GND	10	GND	15	N.C

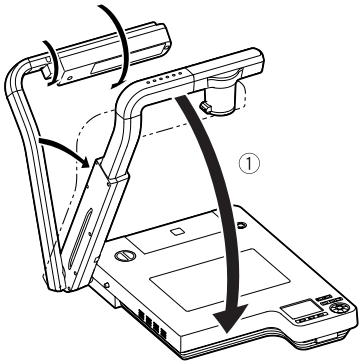
⑤ Connecting to the unit having the composite video input terminal

Connect the video cable with RCA pin plug to the [VIDEO OUT] terminal on the rear panel.

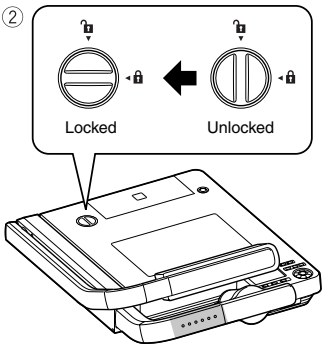
3 STORING

Storing

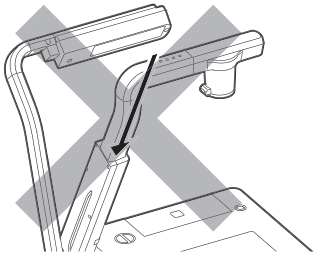
(1) Return the lamp to the original position. Then, hold the setup grip of the camera column and fold the camera column. At this time, the camera head slides down and the lamp column also folds.



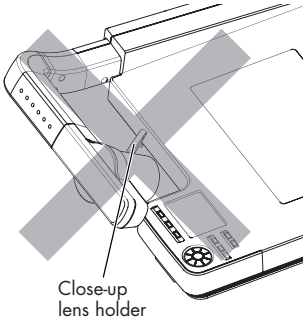
(2) Lock the camera column and the lamp column by turning the security lock.



Do not force down the camera column and the lamp column when folding them.



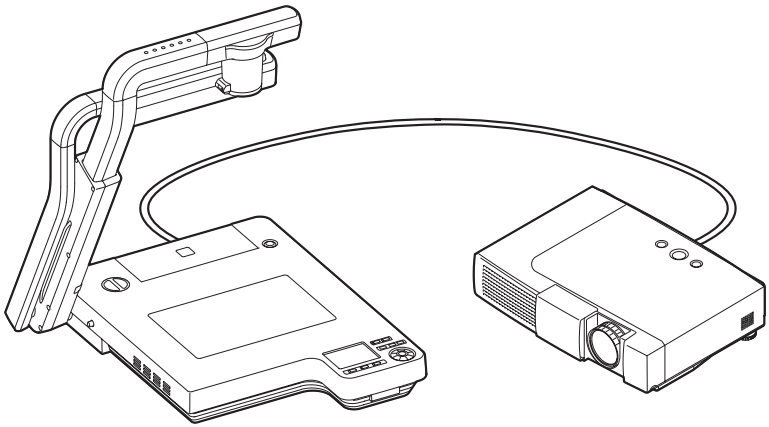
Do not fold the camera column when the close-up lens holder remains open, or the close-up lens could be damaged.



4 OPERATION PROCEDURE

When connecting this product and the peripheral units, be sure to turn OFF the power supply to all units beforehand.

Presentation by Using Documents, Films, etc.



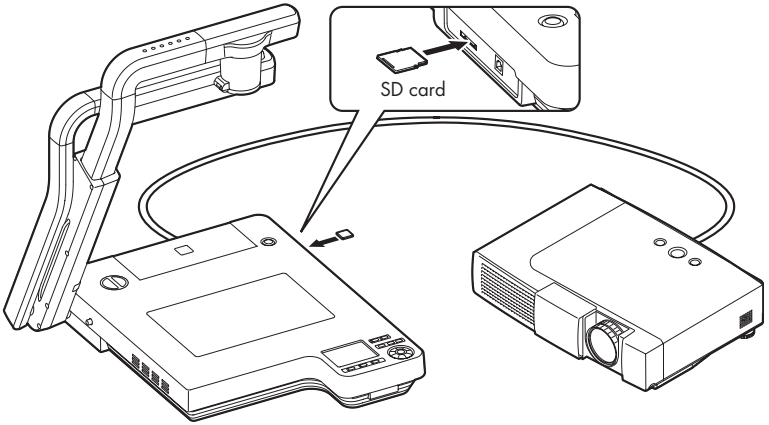
① Setting the main unit
Set the main unit as show in the above figure, connect the main unit to the projector or the PC monitor, and then turn ON the power supply.

② Adjusting the size
Place an object on the stage, and adjust the position of the object with the zoom dial **[ZOOM]** on the front operating panel or the zoom button (**[⊕]**, **[⊖]**) on the wireless remote control so that the part of the object to be viewed can fit the screen size. P.82

③ Adjusting the focus
Press the **[AF]** button on the front operating panel or wireless remote control to focus the camera on the object. P.85

④ Adjusting the brightness
Press the **[BRIGHTNESS • ☼ ⊖]** button on the front operating panel or wireless remote control to adjust the brightness of the image by the lens iris. P.87
When the illumination is switched by pressing the **[☼ LAMP]** button, the light distribution according to the material can be achieved. P.81

Presentation using optional SD card (Option)



- *Before starting the operation, insert an optional SD card (Option) into the SD card slot on the side panel. Push it again to remove the SD card.*
- *When loading or unloading the SD card or the power is tuned off, be sure to select the camera image by pressing the camera button* ***[ ]*** *on the front operation panel or wireless remote control and confirm that the output image has been turned to the camera image beforehand. Otherwise, the SD card contents could be broken or failure could be caused to the camera.*
- *The SD card is composed of parts vulnerable to static electricity. Therefore, due to the impact of static electricity, the SD card could malfunction or its contents could be destroyed. When handling the SD card, take care to avoid static electricity.*
- *The image data viewable on this camera is limited to the image data saved in this camera and the image data converted on the conversion software attached to this camera.*
- *If the data of the system that is not compatible with this product, a black or gray image will be displayed.*
- *If the image conversion to the image in the SD card is tried without inserting the SD card, a black image will be displayed.*
- *After using the SD card, do not leave it inside this product but be sure to remove it.*
- *As an SD card, Panasonic 256MB or 512MB is recommended.*
  The resolutions of the image to be stored are 1280 × 1024 (SXGA output), 1280 × 720 (HDTV output) and 1280 × 960 (XGA output).
  This product can store images up to 2048 pcs.
- *ELMO is not liable for any damage caused by the loss of the data in the SD card or passive damage.*

Presentation using optional SD card (Option) (Continued)

■ Saving the Image

(1) Press the **[ ]** button on the front operating panel or wireless remote control to switch the image mode to the Camera mode.

(2) Press the **[ ]** button on the wireless remote control.

(3) When the **[ ]** mark lights up on the screen, the image saving starts. When this mark goes out, the image saving is completed.

Be sure to try shooting and confirm the normal saving of the image beforehand. If the image should be unable to be saved normally due to some problem with this camera or the SD card, we are not liable to compensate for such failure.

The [ ] mark on the screen is displayed only when the [Guide] menu is set to ON.

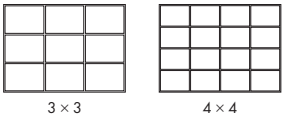
When the SD card is write-protected, the image cannot be saved in the SD card.

When the capacity of the SD card becomes full and no more images can be saved, the [ ] mark does not light up. Then, delete unnecessary images or use a new SD card.

When the SD card is in the read/write mode, do not remove the SD card, or failure could occur with this product.

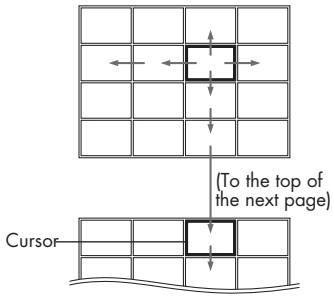
■ Displaying the image

(1) When the **[ ]** button on the operating panel or the wireless remote control is pressed to switch the mode to the SD mode, the images saved on the SD card are displayed on the split-screen. The number of divisions can be changed by changing the OSD [Display] setting, which is 3×3 by default.



(2) Move the selection frame (cursor) of the recorded image to the desired image by using the direction buttons **[▲ ▼ ◀ ▶]** on the wireless remote control, and press the **[ENTER]** button on the wireless remote control to display the selected image on the full-screen.

- When the images are displayed on the split screen (3×3, 4×4)
  Move the selection frame (cursor) of the recorded image to the desired image by using the direction buttons **[▲ ▼ ◀ ▶]** on the wireless remote control, and press the **[ENTER]** button on the wireless remote control to display the selected image on the full-screen. When the direction button **[▼]** is held down, the selection frame (cursor) keeps downward movement as shown in the right figure.



- When the images are displayed on the full-screen
  When the direction button **[▶]** or **[▼]** on the wireless remote control is pressed, the next image is displayed. When the direction button **[◀]** or **[▲]**is pressed, the previous image is displayed again.
  The image displayed on the full-screen can be zoomed in/out by using the zoom dial on the front operating panel or the zoom button on the wireless remote control. When the image is zoomed in, the displayed part of the image can be scrolled by using the direction buttons **[▲ ▼ ◀ ▶]**.

■ Deleting the Image

(1) Press the **[SD]** button on the front operating panel or wireless remote control to display the images stored in the SD card in the full screen display mode or the divided screen display mode.

(2) Select the image to be deleted by using the direction buttons **[▲ ▼ ◀ ▶]** on the wireless remote control.

(3) Press the **[MENU]** button on the wireless remote control, and select the [Delete] menu of the OSD. To delete only the selected image, select [Current]. To delete all images, select [All].

When [Yes] is selected by pressing the **[ENTER]** button on the wireless remote control, the deletion is executed. (To cancel the deletion, select [No].)

■ Slide show

(1) Press the **[SD]** button on the front operating panel or wireless remote control, and switch the output image mode to the SD mode.

(2) Display the OSD by pressing the **[MENU]** button on the wireless remote control. When the **[START SLIDE SHOW]** menu is selected, the slide show starts.

(3) The direction buttons on the wireless remote control are disabled by selecting the **[ENTER]** button.

- [Effect] (visual effect), [Interval] (display interval) and [Repeat] (repetition) can be set from the [Slide Show Settings] menu of the OSD.

■ Formatting the SD card

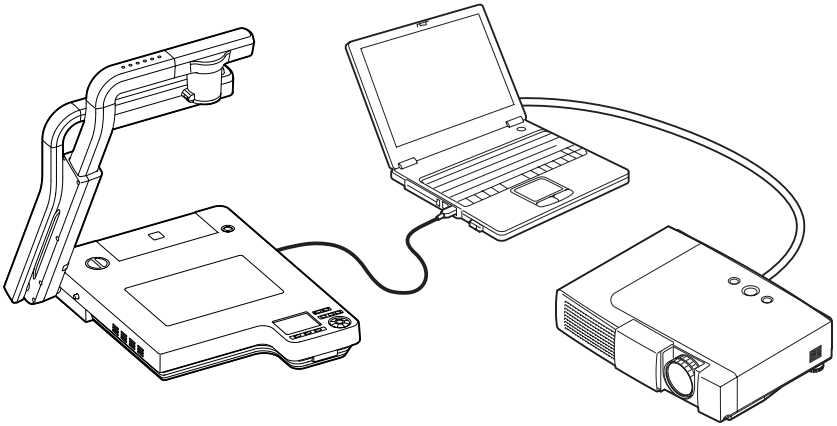
When the SD card is formatted, insert the SD card into this product, and execute formatting.

(1) Press the **[SD]** button on the front operating panel or wireless remote control, and switch the output image mode to the SD mode.

(2) Display the OSD by pressing the **[MENU]** button on the wireless remote control, and select [Format Media].

(3) Now, [Format] starts.

Presentation using the supplied software with the USB-connected PC



Set [USB Mode] to [Application] on the OSD.

"Utility Software" is available from the supplied CD-ROM supplied from us.
"Utility Software" contains PC link software "Image Mate for Presentation" and TWAIN driver "ELMO TWAIN DS" (VHN) to allow the following operation:

- Transfer of moving/still images to the PC
- Operation of this product from the PC

A PC that Microsoft Windows2000 (SP4 or newer) or XP (SP2 or newer) has been installed is recommended.
For details, refer to the "Utility Software" Installation Manual and the help folder with the software.

When the front operating panel or the wireless remote control is in operation, do not connect/ disconnect the USB cable, or malfunction will be caused to this product.

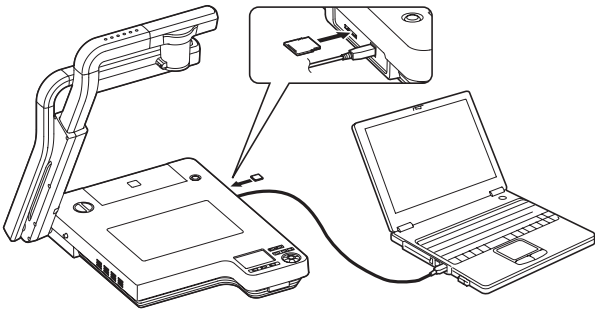
The USB cable compliant with USB2.0 is recommended.

When this camera is connected with the PC with a USB cable, the camera image frame rate lowers.

Depending on the USB environment used by the PC or the influence of peripheral units, the video transfer could be disturbed.

This does not guarantee the normal operation in any environment.

Transferring the images from the SD card into the USB-connected PC



Set [USB Mode] to [Mass Storage] on the OSD.

When this product is USB-connected to the PC, image data in the SD card can be transferred into the PC. The Operating System (OS) of the connected PC should be Microsoft Windows 2000(SP4 or newer)/XP(SP2 or newer).

(1) Turn ON the power supply to this product and to the PC.

(2) Connect this product to the PC with the supplied USB cable.

When this product is connected to the PC for the first time, the required drivers are installed automatically due to the plug-and-play function of Windows. For the second time and thereafter, the drivers are no longer installed.

(3) This product is recognized as a removable disk. The image data in an SD card can be viewed by using the viewer software of the PC.

• The image data are stored in JPEG format in the following folders:

```
My Computer
└── Removable disk
    └── DCIM
        └── 100_ELMO
            ├── IMAG0001.JPG
            └── IMAG0002.JPG
                :
```

An SD card set in this product cannot be formatted or written, deleted, locked, and unlocked with image data from the PC.

The image data cannot be recorded with the correct date and time.

When the front operating panel or wireless remote control is in operation, do not connect/ disconnect the USB cable, or malfunction will be caused to this product.

Do not switch [USB Mode] on the OSD when this product is in USB-connection.

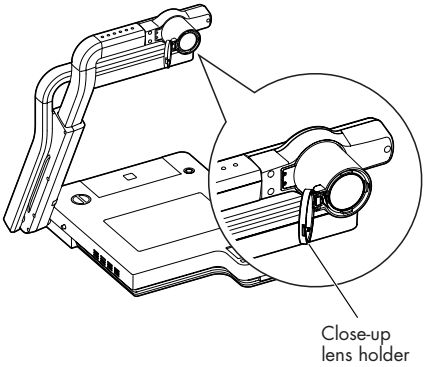
The USB cable compliant with USB2.0 is recommended.

When this camera is connected with the PC with a USB cable, the camera image frame rate lowers.

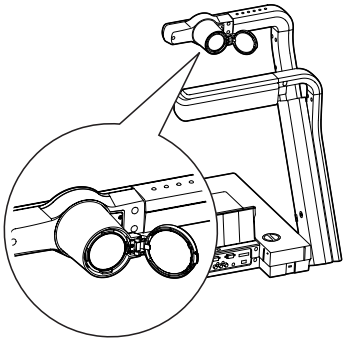
Depending on the USB environment used by the PC or the influence of peripheral units, the video transfer could be disturbed.

This does not guarantee the normal operation in any environment.

Shooting off the stage



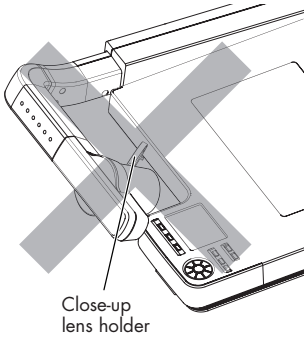
<Forward shooting>



<Backward shooting>

When the camera head is set in the horizontal direction, walls, distant views, etc. can be shot. When the object is distant, open the close-up lens holder.

Do not fold the camera column when the close-up lens holder remains open, or the close-up lens could be damaged.



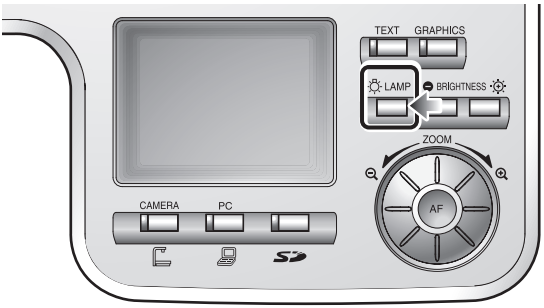
When the camera head is set horizontally for shooting ahead of this camera, the image can be rotated automatically by 180°.

Shooting area when the close-up lens holder is opened:
TELE (Telescopic): 500mm – ∞ from the zoom lens
WIDE (Wide-angle): 100mm – ∞ from the zoom lens

5 VARIOUS FUNCTIONS AND OPERATIONS

Lighting

Front operating panel



Wireless remote control



This camera is equipped with material illumination for presenting materials, such as printed matter, and base illumination for transparent materials, such as slide films and negative films.

When the **[LAMP]** button on the front operating panel or wireless remote control is pressed, the fluorescent lamp lights up in 1 – 3 seconds.

- Each time the **[LAMP]** button is pressed, the material illumination lights up → the base illumination lights up → both illuminations go out in this order.

Both the material illumination and the base illumination cannot be extinguished together.

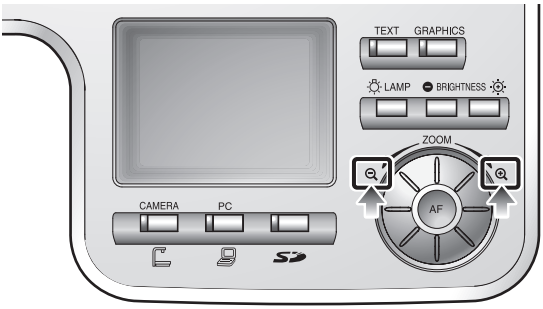
The illumination lamp helps obtain sharp display with good color rendering when it is used for a material surface with low brightness or for a three-dimensional object.

Wireless remote control

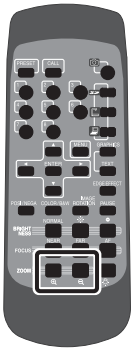


Zoom

Front operating panel

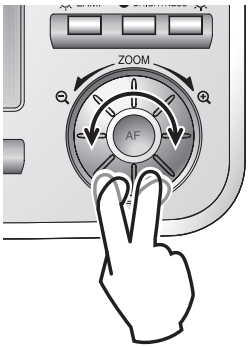


Wireless remote control



When the zoom dial **[🔍+ , 🔍−]** on the front operating panel is turned or the zoom button **[🔍+ , 🔍−]** on the wireless remote control is pressed, the document display range can be adjusted.
According to the zoom dial turning angle, the zooming speed varies in 3 steps (3-step speed change).

Front operating panel



- **Zoom magnification in the Camera mode**
  When the optical zoom is maximized (about 16×), the digital zoom is activated and the image can be zoomed in further up to 4× (about 64× combined with the optical zoom).

Within the digital zoom range, the image quality is degraded.

Within the digital zoom range, the zoom speed is locked.

When the digital zoom is use, the LCD monitor can be scrolled by using the direction button [▲ ▼ ◀ ▶] on the wireless remote control.

When the image is in transmission through the USB cable, the digital zoom speed get slow.

Wireless remote control

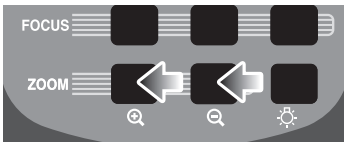
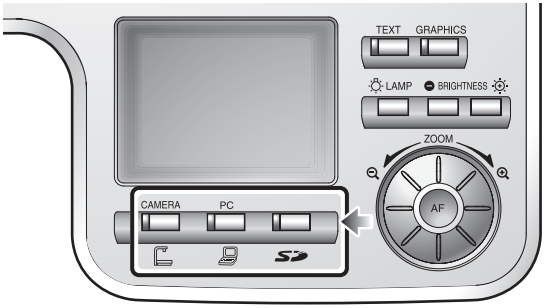
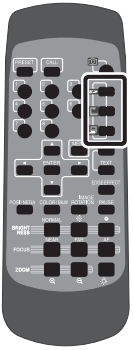


Image Selection

Front operating panel

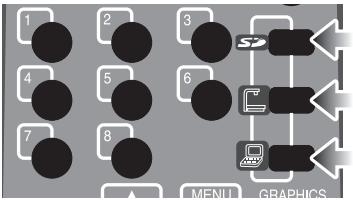


Wireless remote control



Each time the **[ ]**, **[ ]** button and **[SD]** button on the front operating panel or wireless remote control are pressed, the image is switched among the camera image, the image inputted in the analog RGB input terminal [RGB IN] and the image stored in the SD card.
When the PC or other unit is connected to the analog RGB input terminal [RGB IN], the output image can be switched without spending time and labor exchanging the connection cables.

Wireless remote control



The image from the DVI output terminal [DVI OUT] cannot be switched to [RGB IN] image. P.61

The display mode of the image from the video output terminal [VIDEO OUT] cannot be switched when [Video Out] is set to [Camera & SD] on the OSD.

If the image mode switching is tried to the SD mode when an SD card is not in this product, the screen will turn black.

By setting [Guide] to [On] on the OSD, the setting contents are displayed on the screen.

■ Input image signal that can be output from the video output terminal [VIDEO OUT] into the analog RGB input terminal [RGB IN]

Signal	Frequency			Resolution (Number of lines)		Polarity of synchronized signal (P: Positive, N: Negative)
	Horizontal	Vertical	Pixel clock			
Mode name	kHz	Hz	MHz	Horizontal	Vertical	HS/VS
VGA1	37.861	84.889	31.500	640	350	P / N
VGA2	37.861	85.080	31.500	640	400	N / P
VGA3	37.927	85.039	35.500	720	400	N / P
VGA@60Hz	31.469	59.941	25.175	640	480	N / N
VGA@72Hz	37.861	72.809	31.500	640	480	N / N
VGA@75Hz	37.500	75.000	31.500	640	480	N / N
VGA@85Hz	43.269	85.008	36.000	640	480	N / N
SVGA@56Hz	35.156	56.250	36.000	800	600	P / P
SVGA@60Hz	37.879	60.317	40.000	800	600	P / P
SVGA@72Hz	48.077	72.188	50.000	800	600	P / P
SVGA@75Hz	46.875	75.000	49.500	800	600	P / P
SVGA@85Hz	53.674	85.061	56.250	800	600	P / P
XGA@60Hz	48.363	60.004	65.000	1024	768	N / N
XGA@70Hz	56.476	70.069	75.000	1024	768	N / N
XGA@75Hz	60.023	75.029	78.750	1024	768	P / P
XGA@85Hz	68.677	84.997	94.500	1024	768	P / P
SXGA1	67.500	75.000	108.000	1152	864	P / P
SXGA2	60.000	60.000	108.000	1280	960	P / P
SXGA3	85.938	85.003	148.500	1280	960	P / P
SXGA@60Hz	63.981	60.020	108.000	1280	1024	P / P
SXGA@75Hz	79.976	75.025	135.000	1280	1024	P / P
SXGA@85Hz	91.146	85.024	157.500	1280	1024	P / P
UXGA@60Hz	75.000	60.000	162.000	1600	1200	P / P
UXGA@65Hz	81.250	65.000	175.500	1600	1200	P / P
UXGA@70Hz	87.500	70.000	189.000	1600	1200	P / P
UXGA@75Hz	93.750	75.000	202.500	1600	1200	P / P
UXGA@85Hz	106.250	85.000	229.500	1600	1200	P / P
Mac 13	35.000	66.667	30.240	640	480	N / N
Mac 16	49.725	74.550	57.283	832	624	N / N
Mac 19	60.241	74.927	80.000	1024	768	N / N
Mac 21	68.681	75.062	100.000	1152	870	N / N
PC98	24.825	56.420	21.052	640	400	N / N

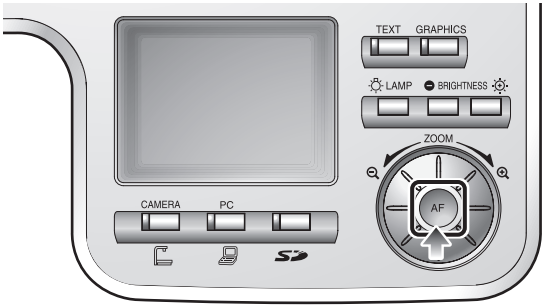
This product may not accommodate any signal other than those listed in the above table.

Depending on the input signal, the image may not be outputted in full size.

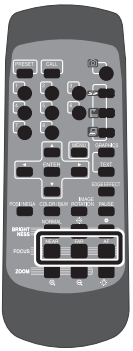
This product does not accommodate such synchronized signal as composite and SyncOnGreen.

Focus

Front operating panel

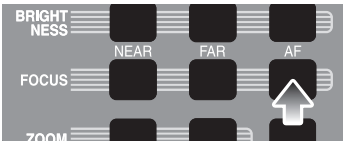


Wireless remote control



The focus on the object is adjusted.

Wireless remote control



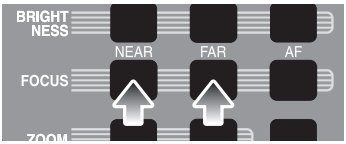
■ Auto Focus

When the **[AF]** button on the front operating panel or wireless remote control is pressed, the camera is focused automatically. This product is of one-shot auto focus type. That is, once the camera is focused, the auto focus operation is released, and then focus position is maintained.

The objects listed below may not be brought into focus in the auto focus. In such case, use the manual focus mode.

- *Objects having little contrast*
- *Objects with fine repeated patterns, such as lateral stripes and cross stripes*
- *Objects glittering or reflecting strong light*
- *Objects with bright background or excessive contrast*
- *Objects that are entirely dark*
- *Objects located near and far away at the same time*
- *Objects in motion*

Wireless remote control



If the manual focus button [FOCUS • NEAR] or [FOCUS • FAR] on the wireless remote control is pressed when the auto focus is in operation, the auto focus operation will be cancelled.

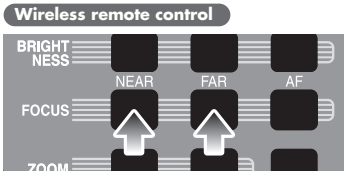
Limit of focus adjustment:

- *With close-up lens*
  TELE (Telescopic) : 250 – 410mm (9.8 – 16.1 in) from close-up lens
  WIDE (Wide-angle) : 85 – 410 mm (3.3 – 16.1 in) from close-up lens
- *Without close-up lens*
  TELE (Telescopic) : 500mm – ∞ (19.7 in – ∞) from zoom lens
  WIDE (Wide-angle) : 100mm – ∞ (3.9 in – ∞) from zoom lens

■ Manual Focus

When the focus button **[FOCUS • NEAR]** or **[FOCUS • FAR]** on the wireless remote control is pressed, the height on which the camera is focused changes.

This function is used for focusing the camera on any portion of a 3D object or the like.

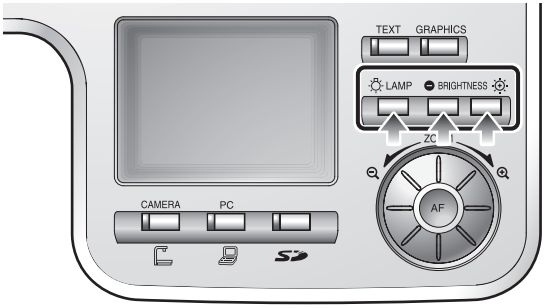


Limit of focus adjustment:

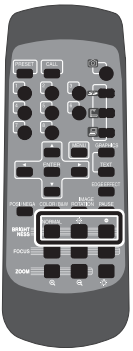
- *With close-up lens*
  TELE (Telescopic) : 250 – 410mm (9.8 – 16.1 in) from close-up lens
  WIDE (Wide-angle) : 85 – 410 mm (3.3 – 16.1 in) from close-up lens
- *Without close-up lens*
  TELE (Telescopic) : 500mm – ∞ (19.7 in – ∞) from zoom lens
  WIDE (Wide-angle) : 100mm – ∞ (3.9 in – ∞) from zoom lens

Brightness Adjustment

Front operating panel



Wireless remote control



When the **[BRIGHTNESS • ☼ ⊖]** button on the front operating panel or wireless remote control is pressed, brightness of the image is adjusted through the adjustment of the lens iris. Two adjustment modes are available for this adjustment. Each mode is set by the [BRIGHTNESS] item of the OSD.

Wireless remote control



■ Auto Brightness Adjustment

([Brightness] is set to [Auto] on the OSD.)

It is so set that the brightness to be tracked automatically can be adjusted.

When the **[☼]** button and **[⊖]** button on the front operating panel are pressed together or **[NORMAL]** is selected in **[BRIGHTNESS]** on the wireless remote control, the current settings are reset to the default settings.

■ Manual Brightness Adjustment

([Brightness] is set to [Manual] on the OSD.)

It is set so that the brightness can be locked to any level.

The default setting is [Auto] (Auto Brightness Adjustment).

In the Manual Brightness Adjustment, the brightness is locked and the change in the object brightness is not tracked.

When adjusting the brightness in the manual mode, pressing the [BRIGHTNESS ☼ ⊖] buttons on the front operation panel together or pressing the [NORMAL] button on the wireless remote control does nor work.

When [Guide] is set to [On] on the OSD, the setting contents are displayed on the screen.

State Presetting

The setting position of this product can be saved/called. Up to 8 positions can be saved. The presets that can be saved are as follows:

- Current zoom field angle (Optical zoom range)
- Brightness status
- White Balance state
- R-Gain (When the white balance is set to Manual)
- B-Gain (When the white balance is set to Manual)
- Edge Effect settings (When Graphics mode is selected)
- Gamma value settings (When Graphics mode is selected)
- Lighting ON/OFF
- Color/B&W selection settings
- Image Rotation state
- Mode settings
- Posi/Nega settings

The saved state can be retained even if the power supply is turned OFF.

Rotated position cannot be saved to "Power On" setting. (Memory No.8 on remote control)

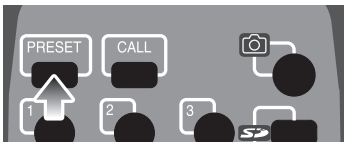
Wireless remote control



■ Presetting

When the **[PRESET]** button on the wireless remote control is pressed and then "within 4 seconds", the memory number button on the wireless remote control is pressed, the present camera using status is memorized in the selected memory number.
When the **[PRESET]** button on the wireless remote control is pressed and then the memory number **[8]** button on the wireless remote control is pressed, the contents of this setting are called when the power is turned on the next time.

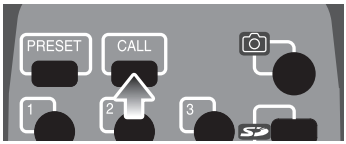
Wireless remote control



■ Calling

When the **[CALL]** button on the wireless remote control is pressed and then "within 4 seconds", the memory number button on the wireless remote control is pressed, the settings of the selected memory number are called. When [Call] → [Default] on the OSD are selected, the factory-set settings are called.

Wireless remote control



6 RS-232C SPECIFICATIONS

This product can be controlled from a PC connected to this product through the RS-232C terminal [RS-232C].

Setting Up

① Connect this product to a PC with an RS-232C cable.

When using an RS-232C cable available on the market, make sure that pin connections are the same as below.

To protect this product and the PC, be sure to turn OFF the power supply to all units before starting the connection work.

② Start the PC, and set the communication mode of the RS-232C to the communication mode of this product.

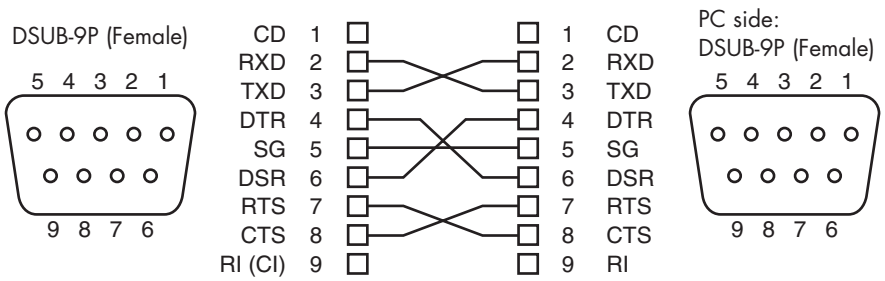
For the information how to set the communication mode of the RS-232C, refer to the instruction manual of the PC.

③ Start the PC program to operate this product.

④ Control through the RS-232C will start.

For communication control, be sure to take the above steps for settings.

Cable Connection



Data Format Specification

This command is executed in the form of 1-command/1-packet. The next command is not accepted until the previous processing is completed.

- The communication command always starts with STX (Start of Text), and ends with ETX (End of Text).
- If the communication format of command name is wrong, NAK (Negative Acknowledge) will be sent from this product as a result of failing to receive correctly.
- When communication format is received correctly, this product sends ACK (Normal Acknowledge).

■ Operation Command (PC → This product)

Each operation command is executed in ASCII code, and transmitted in a set of 7 bytes as follows:

(PC)	STX	Command	Parameter	Data	ETX
(This product)	→	ACK			

■ Response Data Format (This product → PC)

All response data is transmitted as ASCII code, corresponding to the parameters in the operation command table.

- Status 0

STX	Lighting	Input selection	Posi/ Nega	Color/ B&W	Camera Mode /SD Mode	Display	Pause	Flickerless	ETX

- Status 2

STX	Iris mode	Gamma selection	Image rotation	Edge effect	White balance	Text	Monitor output	USB Mode	ETX

- ROM Ver0 (MASTER)

STX	V 56H	H 48H	N 4EH	＊＊H	＊＊H	＊＊H	ETX

- ROM Ver1 (SLAVE)

STX	V 56H	H 48H	N 4EH	＊＊H	＊＊H	＊＊H	ETX

- ROM Ver2 (LENS)

STX	V 56H	H 48H	N 4EH	＊＊H	＊＊H	＊＊H	ETX

- ROM Ver3 (MAIN) . . . Upper 6 bytes

STX	＊＊H	＊＊H	＊＊H	＊＊H	＊＊H	＊＊H	ETX

- ROM Ver4 (MAIN) . . . Lower 4 bytes

STX	＊＊H	＊＊H	＊＊H	＊＊H	20H	20H	ETX

Transmission Specifications

- Full duplex start-stop sync. mode
- Start bit : 1 bit
- Data bit : 8 bits
- Stop bit : 1 bit
- Parity bit : None
- X parameter : None
- Baud rate (Communication speed) : 9600bps

UART Communication Format

Commands, parameters and data are all transmitted in ASCII code.

Function	Command	Parameter	Data	Contents
Auto Focus	AF	0	■■	To perform the one-shot auto focus
Focus adjustment	FO	+ (Near)	■■	To adjust the focus
		– (Far)		
		0 (Stop)		
Zoom adjustment	ZO	+ (Tele)	■■	To adjust the zoom
		– (Wide)		
		0 (Stop)		
Iris adjustment	IR	+ (Open)	■■	To adjust the iris
		– (Close)		
		0 (Stop)		
		1 (Auto)		
		2 (Manual)		
Lighting selection	PL	0 (OFF)	■■	To turn ON/OFF the lighting
		1 (BASE)		
		2 (UPPER)		
Display mode selection	AV	0 (Camera)	■■	To switch the display mode
		1 (RGB IN)		
		2 (SD)		
Video output selection	MO	0 (All Mode)	■■	To switch the video output
		1 (Camera & SD)		
Direction	KE	0 (Menu)	■■	To scroll in the direction indicated by arrow when the digital zoom is in operation To select and determine an image on the split screen
		1 (Enter)		
		2 (→)		
		3 (←)		
		4 (↑)		
		5 (↓)		
Pause	FZ	0 (OFF)	■■	To freeze the image
		1 (ON)		
Guide	GU	0 (OFF)	■■	To set whether the main unit operation state should be displayed on the screen or not
		1 (ON)		
Display	DP	0 (Single)	■■	To select whether the images in the SD card mode should be displayed on the split screen or not
		1 (3×3)		
		2 (4×4)		
Slide show	SS	0 (Stop)	■■	To start/stop the slide show
		1 (Start)		

Function	Command	Parameter	Data	Contents
Slide-show image feed effect	SE	0 (Left to right)	■■	To set the visual effect of the slide show
		1 (LT to RB)		
		2 (RT to LB)		
		3 (None)		
Slide-show object file	ST	0 (All)	■■	As a slide show target, select all images stored on the SD card or only the locked image files
		1 (Locked)		
Slide-show feed order	SO	0 (FWD)	■■	To set whether the slide show should be proceeded in the ascending order or in the descending order
		1 (BWD)		
Slide-show image feed interval	SI	0 (3s)	■■	To set the interval of the image switching in the slide show
		1 (5s)		
		2 (10s)		
		3 (15s)		
		4 (30s)		
Slide-show repeat	SR	0 (OFF)	■■	To proceed the slide show repeatedly
		1 (ON)		
File delete	DE	0 (Current)	■■	To delete an image file in the SD card
		1 (All)		
File lock	SL	0 (Current)	■■	To lock an image file in the SD card
		1 (All)		
File unlock	SU	0 (Current)	■■	To unlock the locked image file in the SD card
		1 (All)		
Format	SF	0	■■	To format the SD card
Image save	CA	0	■■	To save the image in the SD card
USB mode	UM	0 (Mass Storage)	■■	To switch the USB mode
		1 (Application)		
Gamma setting	GM	0 (High)	■■	To set the gamma value of the image
		1 (Normal)		
		2 (Low)		
Flickerless	FL	0 (60Hz)	■■	To set the flickerless
		1 (50Hz)		

Function	Command	Parameter	Data	Contents
Image rotation	RO	0 (0°)	■■	To turn the image
		1 (180°)		
Edge effect	AP	0 (OFF)	■■	To set the edge enhancement
		1 (Low)		
		2 (Mid)		
		3 (High)		
White balance	AW	0 (Manual)	■■	To switch the white balance mode
		1 (Auto)		
		2 (One Push)		
		3 (R_Up)		
		4 (R_Down)		
		5 (B_Up)		
		6 (B_Down)		
Text	CT	0 (GRAPHICS)	■■	To set the contrast
		1 (TEXT1)		
		2 (TEXT2)		
		3 (TEXT3)		
Posi/Nega	NP	0 (Posi)	■■	To set the Posi/Nega
		1 (Nega)		
Color/B&W	CB	0 (Color)	■■	To set the Color/B&W
		1 (B&W)		
Local lockout	LL	0 (OFF)	■■	To invalidate the operation of the front operating panel and wireless remote control
		1 (ON)		
Default	DF	0	■■	To reset to the default settings
Status request	QS	0	■■	To inquire about the unit state
		2		
ROM version	QR	0	■■	To inquire about the ROM version
		1		
		2		
		3		
		4		
ACK check	SA	0 (OFF)	■■	To switch the ACK check mode
		1 (ON)		
CR addition	SC	0 (OFF)	■■	To switch the CR addition settings
		1 (ON)		

For "■■" in the data column, transmit the SPACE [20H] twice.

Connection

If the RS-232C cable is not connected correctly between this product and the PC, no acknowledgement is transmitted.
Connect the RS-232C cable correctly, and fix it firmly with the connector set screws before starting the operation.

7 TROUBLESHOOTING

Symptoms and Confirmation

Check the following items. If any abnormality is found, consult the seller from whom you have purchased this product or our branch/office near your location.

Symptom	Check this item
No image is displayed on the TV monitor.	• The cable is not connected correctly to the video-in terminal of the monitor. • The power cord is disconnected from the wall AC outlet. • The plug is disconnected from the power cord receptacle of this presenter. • The power switch is not ON. • Zoom is set at the TELE side, displaying only the white/black part of the document. • The power switch is turned ON immediately after it is turned OFF. In this case, this product may not start immediately. Wait for several seconds after turning OFF the power switch, and then turn it ON.
The image is out of focus.	• The document (object) is too close to the lens. • Zoom is at the TELE side after focusing at a wide angle (at the WIDE side). Focus on the point of max. at the TELE side. • In the auto focus, focusing is difficult in some cases.
The lamp does not light up quickly.	• For the protection purpose, the lamp is arranged to light up after preheating for 2 seconds. This is not a fault.
The video output image is disarrayed.	• The video output is set to the PAL system. If this product, set to the PAL system, is connected to the monitor specially designed for the NTSC system, the video image may not be outputted normally but be disarrayed or in black and white. In such case, switch the system of the video output by referring to "DIP Switch" at P. 61.
The image is too dark.	• The intensity of the lighting is not sufficient. Press the **[☼]** button on the front operating panel or wireless remote control to turn ON the lamp. • The iris is adjusted to the CLOSE side. Adjust the iris to the OPEN side.
The image is striped.	• This may be interference fringes between dots of printed matter and TV scanning lines or CMOS pixels. This may be mitigated by changing the projection range. • When using an LCD projector, vertical stripes may appear on the screen. This may be mitigated by manually adjusting the dot clock frequency on the projector side.
The brightness tone is out of order.	• This may be mitigated by switching gamma settings.
The material (object) does not come to the center of the display	• Initialize the camera position by referring to P. 70.

Replacement of Lighting Lamp (Fluorescent Lamp)

The lighting lamps (fluorescent lamps) are expendables. When any of them begins to shimmer or dim, replace it.

For the replacement of the lamp, consult the dealer from whom you have purchased this product or our branch/office near your location.

8 SPECIFICATIONS

■ General

Item	Specifications		
Power source	12VDC (AC adapter: 100 ~ 240VAC)		
Power consumption	30W (AC adapter included)		
Outside dimensions	457×562×138mm (18.0×22.1×5.4 in) (When folded)		
	457×519×587mm (18.0×20.4×23.1 in) (When set up)		
Weight	Approx. 8.5kg (18.7 lbs) (Main body only)		
Input selection	Main body / External one system		
Output terminal	DVI output	DVI-D 24P connector, female	×1
	RGB output	Mini DSUB 15P connector, female	×1
	Composite video output	RCA pin jack / 75Ω unbalanced (NTSC/PAL)	×1
Input terminal	RGB input	Mini DSUB 15P connector, female	×1
Ext. control terminal	RS-232C	Dsub 9P connector, male	×1
	USB (2.0 compliant)	Type B receptacle	×1
Memory interface	SD card slot		×1

■ Main Camera

Item	Specifications	
Lens	f = 4.9 ~ 78.4mm (16-time zoom), F = 2.7	
Shooting speed	30 frames/sec	
Shooting area	SXGA 405×324mm (15.9×12.8 in) max. 30×24mm (1.2×0.9 in) min. HDTV 405×224mm (15.9×8.8 in) max. 30×17mm (1.2×0.7 in) min. XGA 405×303mm (15.9×11.9 in) max. 30×23mm (1.2×0.9 in) min.	
Limit of focus adjustment	With close-up lens: TELE side : 250 ~ 410mm (9.8 ~ 16.1 in) from close-up lens WIDE side : 85 ~ 410mm (3.3 ~ 16.1 in) from close-up lens Without close-up lens: TELE side : 500mm ~ ∞ (19.7 in ~ ∞) from zoom lens WIDE side : 100mm ~ ∞ (3.9 in ~ ∞) from zoom lens	
Optical zoom	16×	
Digital zoom	4×	
Focus	Auto/Manual	
Iris	Auto (Level adjustable) / Manual	
Image pick-up element	1/3″ 1.3M CMOS	
Total picture elements	Horizontal 1312, Vertical 1032 ... Approx. 1,350,000 pixels	
Effective picture elements	SXGA Horizontal 1280, Vertical 1024 HDTV Horizontal 1280, Vertical 720 XGA Horizontal 1280, Vertical 960	
Synchronizing system	Internal	
Resolution	Analog RGB output: Horizontal 800TV lines or more Vertical 800TV lines or more Video output: Horizontal 450TV lines or more	
DVI output	TMDS data signal 0.5 (Vp-p) 50Ω (Terminated)	SXGA: Horizontal frequency 63.98kHz; Vertical frequency 60.02Hz (1280×1024 at 60Hz); Compliant with VESA HDTV: Horizontal frequency 44.7kHz; Vertical frequency 60Hz (1280×720 at 60Hz); Compliant with HDTV XGA: Horizontal frequency 48.363kHz; Vertical frequency 60.004Hz (1024×768at 60Hz); Compliant with VESA
Analog RGB output	0.7 (Vp-p) 75Ω unbalanced, Synchronized signal: SXGA Positive polarity HDTV Negative polarity XGA Negative polarity	
Composite video output	Compliant with NTSC/PAL	
White balance	Full auto / One-push / Manual	
Video output selection	Provided (NTSC/PAL)	
Posi/Nega conversion	Provided	
Color/B&W selection	Provided	
Image rotation	Provided (0°/180°, Automatic rotation by 180° for forward shooting)	
Text mode	Text1 / Text2 / Text3 / GRAPHICS	
Gamma setting	Provided (GRAPHICS mode only)	
Edge enhancement	Provided (GRAPHICS mode only)	
Pause	Provided	
Image recording	Provided (SD card)	
Split display	Provided (SD card image / 9-splits / 16-splits)	
Slide show	Provided (SD card image)	

■ Lighting

Item	Specifications
Lighting	High frequency lighting mode, twin fluorescent lamp, Type 9 (Model: FPL9EX-N)
Base illumination	Cold-cathode tube

■ Supplied Accessories

Name	Quantity
Power adapter	1
Power cord (1.5m)	1
Video cable (RCA pin connector) (3m)	1
Analog RGB cable (DSUB 15P connector) (2m)	1
DVI cable (2m)	1
Infrared wireless remote control	1
Batteries (Type R03, AAA)	2
Instruction Manual for P100	1
Warranty Card for P100	1
USB cable (1.8m)	1
Utility Software Installation Manual	1
Utility Software CD-ROM	1

For the RCA pin, use a pin plug compliant with EIAJ RC-6703.

The above specifications are subject to change without notice.

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SD : SD logo is a trademark.

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Pro L1100U/L1200U/L1300U/L1405U/L1500U/ L1505U User's Guide

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Pro L1100U/L1200U/L1300U/L1405U/L1500U/L1505U User's Guide

Welcome to the Pro L1100U/L1200U/L1300U/L1405U/L1500U/L1505U *User's Guide*.

For a printable PDF copy of this guide, click here.

Introduction to Your Projector

Refer to these sections to learn more about your projector and this manual.

Projector Features
Notations Used in the Documentation
Where to Go for Additional Information
Projector Part Locations

Projector Features

The Pro L1100U, L1200U, L1300U, L1405U, L1500U, and L1505U projectors include these special features:

Bright, high-resolution projection system

- Pro L1100U: Up to 6000 lumens of brightness (white light output and color light output)

  Pro L1200U: Up to 7000 lumens of brightness (white light output and color light output)

  Pro L1300U/L1405U: Up to 8000 lumens of brightness (white light output and color light output)

  Pro L1500U/L1505U: Up to 12000 lumens of brightness (white light output and color light output)

  Note: Color brightness (color light output) and white brightness (white light output) will vary depending on usage conditions. Color light output measured in accordance with IDMS 15.4; white light output measured in accordance with ISO 21118.

- Native resolution of 1920 × 1200 pixels (WUXGA)

Flexible connectivity

- Wired and wireless (optional) network support for projection, monitoring, and control via remote network computer
- Variety of connection methods for a computer or video device including HDMI, BNC, DVI-D, SDI (Pro L1405U/L1500U/L1505U), and HDBaseT
- Ports for connecting an external monitor and external speakers

Easy-to-use setup and operation features

- Interchangeable bayonet lens options available
- Project images side by side from two separate input sources

- Create one large seamless display when projecting from multiple projectors using Edge Blending
- Epson's Instant Off and Direct Power On features for quick setup and shut down
- Support for Crestron RoomView network monitoring systems
- Network message broadcast system to project timely messages to all networked projectors (Windows only)

Product Box Contents
Additional Components
Additional Projector Software and Manuals
Optional Equipment and Replacement Parts
Warranty and Registration Information

Parent topic: Introduction to Your Projector

Related concepts

Projector Part Locations
Projector Connections
Using Multiple Projectors
Crestron RoomView Support

Related references

Optional Equipment and Replacement Parts

Related tasks

Projecting Two Images Simultaneously

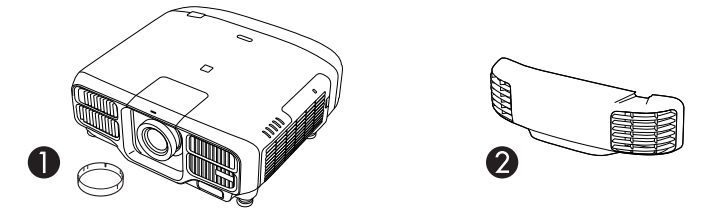
Related topics

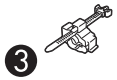
Using the Projector on a Network

Product Box Contents

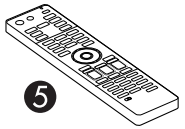
Save all the packaging in case you need to ship the projector. Always use the original packaging (or equivalent) when shipping.

Make sure your projector box included all of these parts:

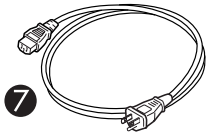


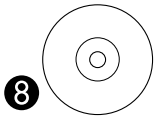


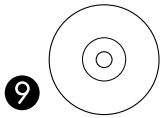












1 Projector with standard zoom lens and lens cap*
2 Cable cover
3 Cable clip (Pro L1405U/L1500U/L1505U)
4 Lens connector cap
5 Remote control
6 Remote control batteries (two AA alkaline)
7 Power cord
8 Projector documentation CD
9 Projector software CD

* Lens and lens cap not included with the Pro L1100UNL/L1200UNL/L1300UNL/L1405UNL/L1500UNL/L1505UNL

Parent topic: Projector Features

Related concepts

Projector Connections

Additional Components

Depending on how you plan to use the projector, you may need to obtain additional components.

Note: To connect a Mac that does not include a compatible video output port, you need to obtain an adapter that allows you to connect to an input port on the projector. Contact Apple for compatible adapter options. To connect a smartphone or tablet, you may need to obtain an adapter that allows you to connect to the projector. This allows you to mirror your smartphone or tablet screens, watch movies, and more. Contact your device manufacturer for compatible adapter options.

Unless listed as available from Epson in this table, see your local computer or electronics dealer for purchase information.

Signal or connection type	Additional component necessary
Component video	Component-to-BNC or D-sub, 15-pin, component-to-VGA video cable or adapter Available for purchase from Epson or an authorized Epson reseller.
HDMI	HDMI cable Available for purchase from Epson or an authorized Epson reseller. You also need a splitter that supports HDMI signals (commerically available).
MHL	MHL-compatible device or device with an integrated MHL connector, MHL cable, or HDMI cable and MHL adapter compatible with your device Available for purchase from Epson or an authorized Epson reseller.
3D	Three compatible HDMI cables, a splitter that supports 3D signals, and a silver screen (recommended gain: 2.3 to 2.7) You can purchase HDMI cables from Epson or an authorized Epson reseller. **Note:** If your video source is a 3D Blu-ray disc, you also need a Blu-ray player that supports 3D playback. See your local computer or electronics dealer for purchase information.

Signal or connection type	Additional component necessary
Audio from certain ports	Commercially available audio cable compatible with your device
VGA	VGA computer cable Available for purchase from Epson or an authorized Epson reseller. If you want to connect the projector using a splitter, you also need a splitter that supports VGA signals (commercially available) and a second VGA computer cable.
BNC	VGA-to-5-BNC cable or adapter Available for purchase from Epson or an authorized Epson reseller.
DVI-D	Compatible DVI-D cable
HDBaseT	Compatible 100Base-TX LAN cable
SDI (Pro L1405U/L1500U/L1505U)	Compatible BNC video cable

Parent topic: Projector Features

Related concepts

Projector Connections

Additional Projector Software and Manuals

After connecting and setting up the projector, install the projector software from the included software CD, or download the software and manuals as necessary.

You can install the projector software programs listed here and view their manuals for instructions on using them.

Note: If you still need help after checking this manual and the sources listed here, you can use the Epson PrivateLine Support service to get help fast. For details, see "Where to Get Help".

Projector software	Manual	Description
EasyMP Monitor (Windows only)	*EasyMP Monitor Operation Guide*	Lets you monitor and control your projector through the network. You can download the latest software and documentation from the Epson web site. Go to epson.com/support (U.S.) or epson.ca/support (Canada) and select your projector.
EasyMP Multi PC Projection	*EasyMP Multi PC Projection Operation Guide*	Lets you hold interactive meetings by projecting the computer screens of users over a network.
EasyMP Network Updater (Windows only)	*EasyMP Network Updater Operation Guide*	Lets you update firmware for a projector over a wired LAN. You can download the latest software and documentation from the Epson web site. Go to epson.com/support (U.S.) or epson.ca/support (Canada) and select your projector.
Epson iProjection app	Instructions are included with the app	Lets you project from an iOS or Android device if your projector is connected to a network that includes a wireless access point. Visit epson.com/projectorapp (U.S.) or epson.ca/projectorapp (Canada) for more information.

Parent topic: Projector Features

Optional Equipment and Replacement Parts

You can purchase screens, other optional accessories, and replacement parts from an Epson authorized reseller. To find the nearest reseller, call 800-GO-EPSON (800-463-7766). Or you can purchase online at epsonstore.com (U.S. sales) or epson.ca (Canadian sales).

Epson offers the following optional accessories and replacement parts for your projector:

Option or part	Part number
Air filter (ELPAF51)	V13H134A51
Quick Wireless Connection USB key (ELPAP09)	V12H005M09

Option or part	Part number
Wireless LAN module (ELPAP10)	V12H731P02
HDBaseT Transmitter (ELPHD01)	V12H547020
Replacement remote control	158279900
Remote control cable set (ELPKC28)	V12H005C28
Epson DC-11 document camera (ELPDC11)	V12H377020
Epson DC-13 document camera (ELPDC13)	V12H757020
Epson DC-20 document camera (ELPDC20)	V12H500020
Epson DC-21 document camera (ELPDC21)	V12H758020
Wireless IR mouse receiver for remote control (ELPST16)	V12H007T16
Passive 3D glasses (adult; ELPGS02A)	V12H541A20
Passive 3D glasses (children; ELPGS02B)	V12H541B20
Low ceiling mount (ELPMB47)	V12H802010
High ceiling mount (ELPMB48)	V12H803010
Component-to-VGA video cable	ELPKC19
VGA video cable 10 feet (3.0 m) length	F3H982-10
HDMI audio video cable 3 feet (0.9 m) length	AV22300-03
HDMI audio video cable 6 feet (1.8 m) length	AV22300-06
Ultra short throw zoom lens (ELPLX01; Pro L1100U/L1200U/L1300U/L1405U only)	V12H004X01
Short throw zoom lens #1 (ELPLU03)	V12H004U03
Short throw zoom lens #2 (ELPLU04)	V12H004U04
Wide throw zoom lens #1 (ELPLW05)	V12H004W05
Wide throw zoom lens #2 (ELPLW06)	V12H004W06
Middle throw zoom lens #1[1] (ELPLM08; Pro L1100U/L1200U/L1300U/L1405U only)	V12H004M08
Middle throw zoom lens #2[2] (ELPLM09)	V12H004M09
Middle throw zoom lens #3 (ELPLM10)	V12H004M0A

Option or part	Part number
Middle throw zoom lens #4 (ELPLM11)	V12H004M0B
Long throw zoom lens (ELPLL08)	V12H004L08

[1] Standard zoom lens for Pro L1100U/L1200U/L1300U/L1405U.

[2] Standard zoom lens for Pro L1500U/L1505U.

Note: The following lenses are also supported: ELPLU02, ELPLR04, ELPLW04, ELPLS04, ELPLM06, ELPLM07, ELPLL07.

Parent topic: Projector Features

Warranty and Registration Information

Your projector comes with a basic warranty that lets you project with confidence. For details, see the warranty that came with your projector.

In addition, Epson offers free Extra Care Road Service. In the unlikely event of an equipment failure, you won't have to wait for your unit to be repaired. Instead, Epson will ship you a replacement unit anywhere in the United States, Canada, or Puerto Rico. See the Extra Care Road Service brochure for details.

Register your product online using the projector CD or at this site: epson.com/webreg.

Registering also lets you receive special updates on new accessories, products, and services.

Parent topic: Projector Features

Notations Used in the Documentation

Follow the guidelines in these notations as you read your documentation:

- **Warnings** must be followed carefully to avoid bodily injury.
- **Cautions** must be observed to avoid damage to your equipment.
- **Notes** contain important information about your projector.
- **Tips** contain additional projection information.

Parent topic: Introduction to Your Projector

Where to Go for Additional Information

Need quick help on using your projector? Here's where to look for help:

- Built-in help system

  Press the **Home** button on the remote control or projector, select **Help**, and press **Enter** to get quick solutions to common problems.

- epson.com/support (U.S) or epson.ca/support (Canada)

  View FAQs (frequently asked questions) and e-mail your questions to Epson technical support 24 hours a day.

- If you still need help after checking this manual and any other sources listed here, you can use the Epson PrivateLine Support service to get help fast. For details, see "Where to Get Help".

Parent topic: Introduction to Your Projector

Related tasks

Using the Projector Help Displays

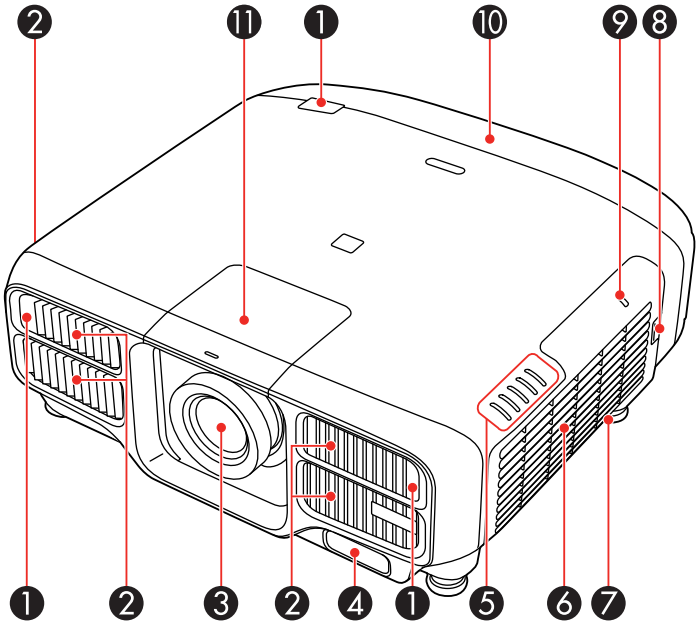
Projector Part Locations

Check the projector part illustrations to learn about the parts on your projector.

Projector Parts - Front/Top
Projector Parts - Rear
Projector Parts - Interface Ports
Projector Parts - Base
Projector Parts - Control Panel
Projector Parts - Remote Control

Parent topic: Introduction to Your Projector

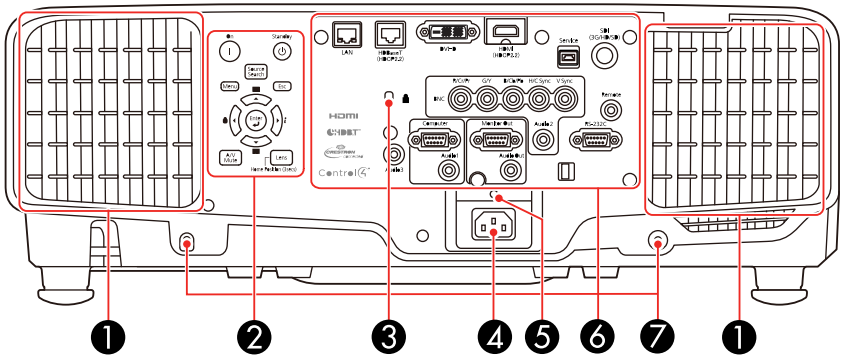
Projector Parts - Front/Top



1 Remote receiver
2 Air intake vents
3 Projection lens
4 Built-in camera
5 Projector status lights
6 Air filter cover/intake vent
7 Speaker (Pro L1100U/L1200U/L1300U)
8 Air filter cover latch
9 Wireless LAN module indicator light
10 Cable cover
11 Lens replacement cover

Parent topic: Projector Part Locations

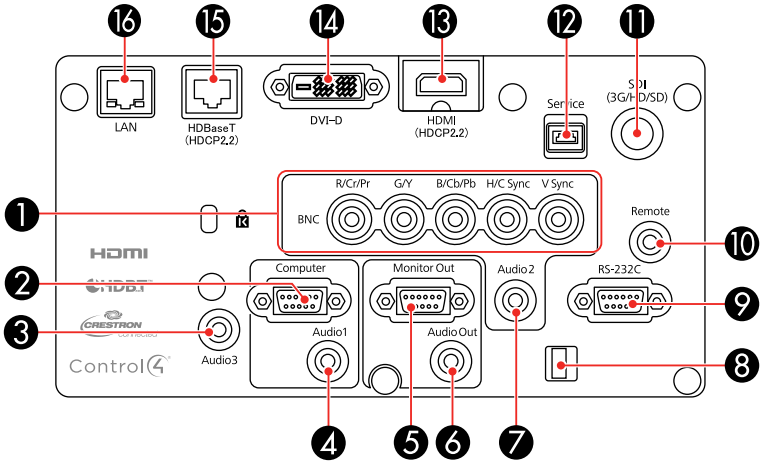
Projector Parts - Rear



1 Air exhaust vents
2 Control panel
3 Kensington security slot
4 AC input
5 Cable clip slot
6 Interface ports
7 Cable cover screw holes

Parent topic: Projector Part Locations

Projector Parts - Interface Ports

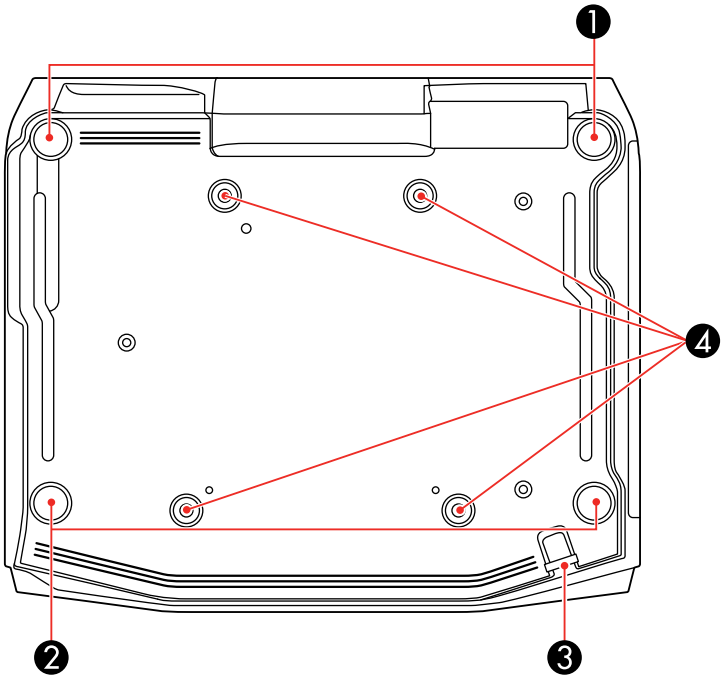


1 **BNC** ports
2 **Computer** port
3 **Audio3** port
4 **Audio1** port
5 **Monitor Out** port
6 **Audio Out** port
7 **Audio2** port
8 Cable clip slot
9 **RS-232C** port
10 **Remote** port
11 **SDI** port (Pro L1405U/L1500U/L1505U)
12 **Service** port
13 **HDMI** port
14 **DVI-D** port
15 **HDBaseT** port

16 Network **LAN** port

Parent topic: Projector Part Locations

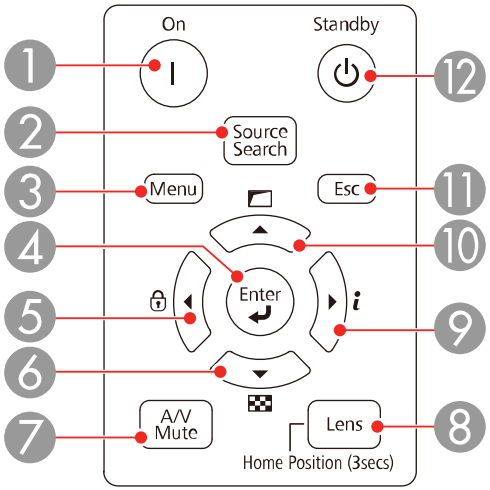
Projector Parts - Base



1 Front adjustable feet
2 Rear feet
3 Security cable attachment point
4 Mounting bracket holes

Parent topic: Projector Part Locations

Projector Parts - Control Panel



1 **On** button (turns on the projector)

2 **Source Search** button (searches for connected sources)

3 **Menu** button (accesses projector menu system)

4 **Enter** button (selects options)

5 Left arrow button and displays the Control Panel Lock screen

6 Down arrow button and displays a test pattern

7 **A/V Mute** button (turns the video and audio on or off)

8 **Lens** button (displays the lens shift, zoom, focus, and distortion adjustment screens; hold for 3 seconds to return the lens to the home position)

9 Right arrow button and displays the Info menu

10 Up arrow button and displays screen adjustment options

11 **Esc** button (cancels/exits functions)

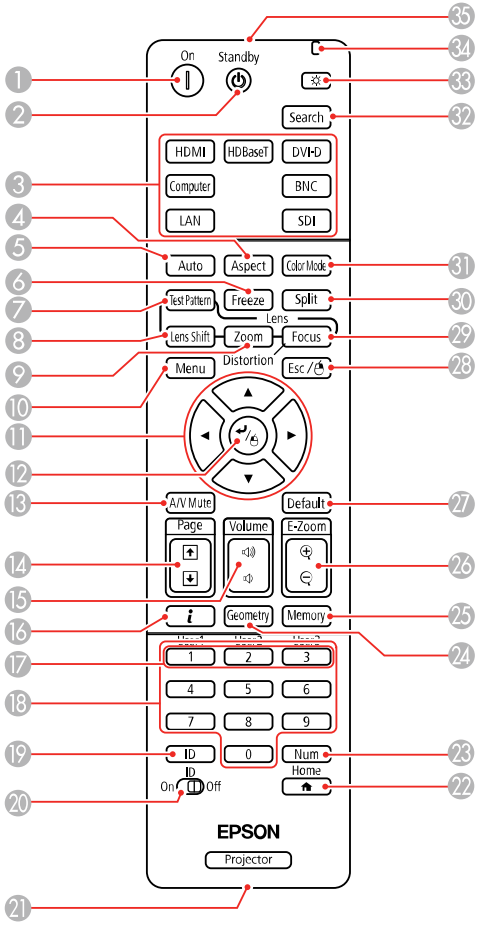
12 **Standby** button (turns off the projector)

Parent topic: Projector Part Locations

Related references

Projector Parts - Remote Control

Projector Parts - Remote Control



1 **On** button (turns on the projector)

2 **Standby** button (turns off the projector)

3 Source buttons (select an image source)

4 **Aspect** button (selects the image aspect ratio)

5 **Auto** button (automatically adjusts computer images)

6 **Freeze** button (stops video action)

7 **Test Pattern** button (displays a test pattern)

8 **Lens Shift** button (adjusts the image position)

9 **Zoom** button (changes the image size)

10 **Menu** button (accesses projector menu system)

11 Arrow buttons (move through on-screen options and move pointer)

12 Enter button (selects options and left mouse button)

13 **A/V Mute** button (turns the video and audio on or off)

14 **Page** up and down buttons (scroll through image files when projecting from a computer over a network connection)

15 **Volume** up and down buttons (adjust speaker volume)

16 **i** button (displays the Info menu)

17 **User1**, **User2**, and **User3** buttons (open menu assigned by user)

18 Numeric buttons (enter numbers)

19 **ID** button (hold down and use numeric keys to select projector to control)

20 **ID** switch (control one or all projectors)

21 Remote port (connects to a remote control cable)

22 **Home** button (displays the Home screen)

23 **Num** button (hold down and use numeric keys to enter numbers)

24 **Geometry** button (corrects image distortion)

25 **Memory** button (saves and applies presets)

26 **E-Zoom +/–** buttons (zoom into and out of the image)

27 **Default** button (resets settings to their default values in the projector menu system)

28 **Esc** button (cancels/exits functions and right mouse button)

29 **Focus** button (adjusts the image focus)

30 **Split** button (splits the screen between two inputs)

31 **Color Mode** button (selects display modes)

32 **Search** button (searches for connected sources)

33 Light button (lights up the remote control buttons temporarily)

34 Indicator light (lights up when the remote control is in use)

35 Remote control signal emitter (emits remote control signals)

Parent topic: Projector Part Locations

Setting Up the Projector

Follow the instructions in these sections to set up your projector for use.

Projector Placement
Projector Connections
Attaching and Removing a Lens
Attaching and Removing the Cable Cover
Attaching and Removing the Cable Clip
Installing Batteries in the Remote Control

Projector Placement

You can place the projector on almost any flat surface to project an image.

You can also install the projector in a ceiling mount if you want to use it in a fixed location.

Keep these considerations in mind as you select a projector location:

- Place the projector on a sturdy, level surface or install it using a compatible mount.
- Leave plenty of space around and under the projector for ventilation, and do not place it on top of or next to anything that could block the vents.
- Position the projector within reach of a grounded electrical outlet or extension cord.

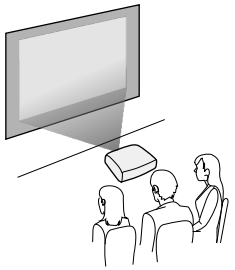
Projector Setup and Installation Options
Projection Distance

Parent topic: Setting Up the Projector

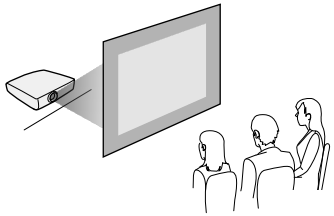
Projector Setup and Installation Options

You can set up or install your projector in the following ways:

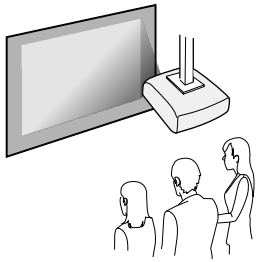
Front



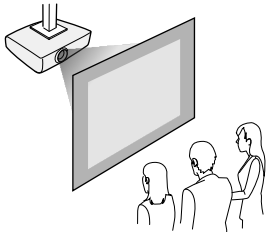
Rear



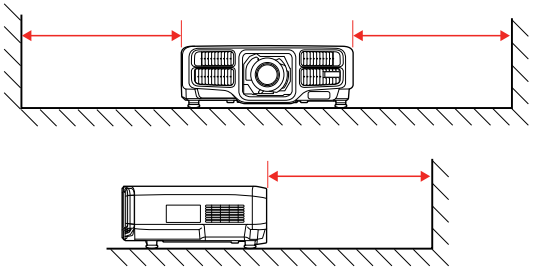
Front ceiling



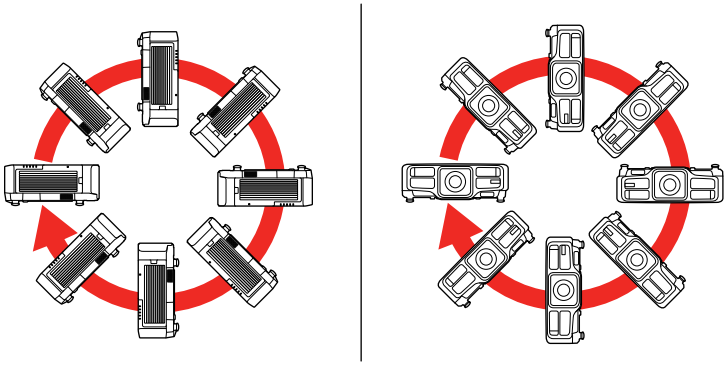
Rear ceiling



Note: Be sure to leave at least 20 inches (50 cm) of space in front of the air exhaust and intake vents and, when setting up multiple projectors, 20 inches (50 cm) of space between the projectors.



You can mount the projector to the ceiling at any horizontal or vertical angle.



If you project from the ceiling or from the rear, select the correct **Projection** setting and, if necessary, turn on the **Inv Direction Button** setting and adjust the **OSD Rotation** setting.

Parent topic: Projector Placement

Related references

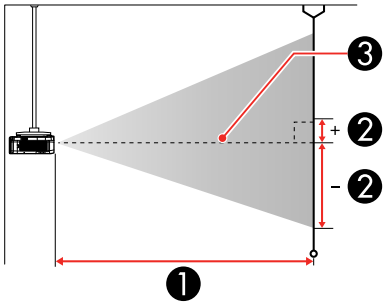
Projector Setup Settings - Extended Menu

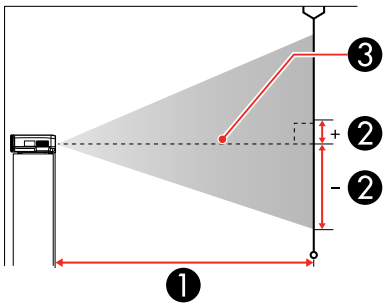
Projection Distance

The distance at which you place the projector from the screen determines the approximate size of the image. The image size increases the farther the projector is from the screen, but can vary depending on the zoom factor, aspect ratio, and other settings.

Use the tables here to determine approximately how far to place the projector from the screen based on the size of the projected image. (Conversion figures may have been rounded up or down.)

You can also use the projector Throw Distance Calculator at epson.com/support (U.S.) or epson.ca/support (Canada).





1 Projection distance

2 Distance from the center of the lens to the base of the image (varies depending on vertical lens shift)

3 Center of lens

Pro L1100U/L1200U/L1300U/L1405U (Standard Zoom Lens)

16:10 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
50 inches	60 to 98 inches (153 to 248 cm)	–31.2 to 4.7 inches (–79 to 12 cm)
60 inches	73 to 117 inches (185 to 298 cm)	–37.4 to 5.6 inches (–95 to 14 cm)
80 inches	98 to 157 inches (248 to 399 cm)	–49.9 to 7.5 inches (–127 to 19 cm)
100 inches	123 to 197 inches (311 to 500 cm)	–62.4 to 9.4 inches (–158 to 24 cm)
120 inches	147 to 237 inches (374 to 601 cm)	–74.8 to 11.2 inches (–190 to 29 cm)
150 inches	185 to 296 inches (469 to 753 cm)	–93.7 to 14.2 inches (–238 to 36 cm)
200 inches	247 to 396 inches (627 to 1005 cm)	–124.7 to 18.7 inches (–317 to 48 cm)
250 inches	309 to 495 inches (785 to 1258 cm)	–155.9 to 23.2 inches (–396 to 59 cm)
300 inches	371 to 595 inches (943 to 1510 cm)	–187.1 to 28.1 inches (–475 to 71 cm)

16:9 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
49 inches	61 to 98 inches (154 to 250 cm)	–30.1 to 6.0 inches (–76 to 15 cm)
50 inches	62 to 100 inches (157 to 255 cm)	–30.7 to 6.3 inches (–78 to 16 cm)
60 inches	75 to 121 inches (190 to 307 cm)	–36.8 to 7.4 inches (–94 to 19 cm)
80 inches	100 to 162 inches (255 to 411 cm)	–49.1 to 9.9 inches (–125 to 25 cm)
100 inches	126 to 203 inches (320 to 514 cm)	–61.4 to 12.3 inches (–156 to 31 cm)
120 inches	152 to 243 inches (385 to 618 cm)	–73.6 to 14.8 inches (–187 to 38 cm)
150 inches	190 to 305 inches (482 to 774 cm)	–92 to 18.5 inches (–234 to 47 cm)
200 inches	254 to 407 inches (645 to 1033 cm)	–122.7 to 24.7 inches (–312 to 63 cm)
250 inches	318 to 509 inches (807 to 1293 cm)	–153.5 to 30.7 inches (–390 to 78 cm)
290 inches	369 to 591 inches (937 to 1500 cm)	–178 to 35.8 inches (–452 to 91 cm)

4:3 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
45 inches	61 to 99 inches (156 to 253 cm)	–31.8 to 4.8 inches (–81 to 12 cm)
50 inches	68 to 111 inches (174 to 281 cm)	–35.4 to 5.1 inches (–90 to 13 cm)
60 inches	83 to 133 inches (210 to 338 cm)	–42.4 to 6.4 inches (–108 to 16 cm)
80 inches	111 to 178 inches (281 to 453 cm)	–56.5 to 8.5 inches (–143 to 22 cm)
100 inches	139 to 223 inches (353 to 567 cm)	–70.6 to 10.6 inches (–179 to 27 cm)
120 inches	167 to 268 inches (424 to 681 cm)	–84.7 to 12.7 inches (–215 to 32 cm)
150 inches	209 to 336 inches (532 to 853 cm)	–105.9 to 15.9 inches (–269 to 40 cm)
200 inches	280 to 448 inches (711 to 1139 cm)	–141.2 to 21.2 inches (–359 to 54 cm)
250 inches	350 to 561 inches (890 to 1424 cm)	–176.4 to 26.4 inches (–448 to 67 cm)
265 inches	371 to 595 inches (943 to 1510 cm)	–187.1 to 28.1 inches (–475 to 71 cm)

Pro L1500U/L1505U (Standard Zoom Lens)

16:10 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
60 inches	78 to 128 inches (199 to 326 cm)	–35 to 3.2 inches (–89 to 8 cm)
80 inches	105 to 172 inches (268 to 438 cm)	–46.7 to 4.3 inches (–119 to 11 cm)
100 inches	133 to 216 inches (337 to 549 cm)	–58.3 to 5.3 inches (–148 to 14 cm)
120 inches	160 to 260 inches (406 to 661 cm)	–70.0 to 6.4 inches (–178 to 16 cm)
150 inches	200 to 326 inches (509 to 828 cm)	–87.4 to 7.9 inches (–222 to 20 cm)
200 inches	269 to 436 inches (682 to 1106 cm)	–116.7 to 10.7 inches (–296 to 27 cm)
250 inches	337 to 545 inches (855 to 1385 cm)	–145.7 to 13.4 inches (–370 to 34 cm)
500 inches	676 to 1093 inches (1717 to 2777 cm)	–291.7 to 26.7 inches (–741 to 68 cm)

16:9 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
59 inches	79 to 130 inches (201 to 330 cm)	–33.8 to 4.8 inches (–86 to 12 cm)

16:9 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
60 inches	80 to 132 inches (205 to 336 cm)	–34.3 to 5.1 inches (–87 to 13 cm)
80 inches	108 to 177 inches (276 to 450 cm)	–45.8 to 6.6 inches (–116 to 17 cm)
100 inches	136 to 222 inches (347 to 565 cm)	–57.2 to 8.2 inches (–145 to 21 cm)
120 inches	164 to 267 inches (417 to 679 cm)	–68.7 to 9.8 inches (–174 to 25 cm)
150 inches	206 to 336 inches (524 to 851 cm)	–85.8 to 12.3 inches (–218 to 31 cm)
200 inches	276 to 448 inches (701 to 1137 cm)	–114.5 to 16.4 inches (–291 to 42 cm)
250 inches	346 to 560 inches (879 to 1423 cm)	–142.9 to 20.5 inches (–363 to 52 cm)
486 inches	675 to 1092 inches (1716 to 2775 cm)	–278.1 to 39.9 inches (–706 to 101 cm)

4:3 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
53 inches	78 to 128 inches (199 to 326 cm)	–35 to 3.2 inches (–89 to 8 cm)

4:3 Aspect Ratio Image or Screen		
Screen or image size	**Projection distance (1)** **Wide to Tele (Minimum to Maximum)**	**Vertical lens shift (2)** **Top to bottom**
60 inches	89 to 146 inches (226 to 370 cm)	–39.8 to 3.5 inches (–101 to 9 cm)
80 inches	120 to 195 inches (304 to 497 cm)	–52.8 to 4.8 inches (–134 to 12 cm)
100 inches	151 to 245 inches (383 to 623 cm)	–66.0 to 6.0 inches (–168 to 15 cm)
120 inches	181 to 295 inches (461 to 749 cm)	–79.2 to 7.2 inches (–201 to 18 cm)
150 inches	227 to 369 inches (578 to 938 cm)	–99.1 to 9.1 inches (–252 to 23 cm)
200 inches	304 to 493 inches (773 to 1253 cm)	–132.1 to 12.1 inches (–335 to 31 cm)
250 inches	381 to 618 inches (969 to 1569 cm)	–165 to 15.0 inches (–419 to 38 cm)
441 inches	675 to 1092 inches (1715 to 2773 cm)	–291.2 to 26.6 inches (–740 to 68 cm)

Parent topic: Projector Placement

Projector Connections

See these sections to connect the projector to a variety of projection sources.

Caution: If you will use the projector at altitudes above 4921 feet (1500 m), turn on **High Altitude Mode** to ensure the projector's internal temperature is regulated properly.

Connecting to Video Sources

Connecting to Computer Sources
Connecting to an HDBaseT Transmitter
Connecting to an External Computer Monitor
Connecting to External Speakers

Parent topic: Setting Up the Projector

Related references

Projector Setup Settings - Extended Menu
Product Box Contents

Connecting to Video Sources

Follow the instructions in these sections to connect video devices to the projector.

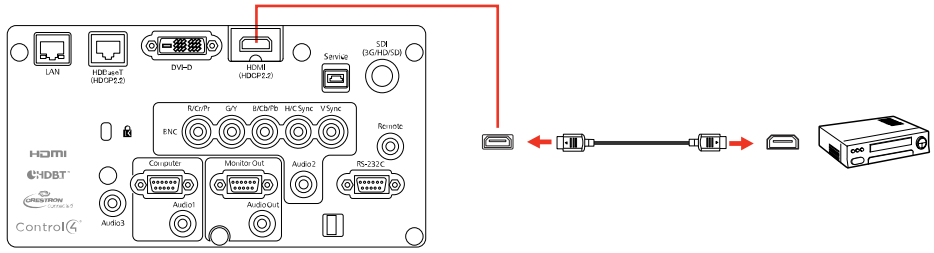
Connecting to an HDMI Video Source
Connecting to a Component-to-BNC Video Source
Connecting to a Component Video Source
Connecting to an SDI Video Source
Connecting to a Video Source for Sound

Parent topic: Projector Connections

Connecting to an HDMI Video Source

If your video source has an HDMI port, you can connect it to the projector using an optional HDMI cable. The HDMI connection provides the best image quality.

1. Connect the HDMI cable to your video source's HDMI output port.
2. Connect the other end to the projector's **HDMI** port.



Note: The projector converts the digital audio signal sent from your video source into a mono analog signal for the internal speaker or a stereo analog signal if you are connecting to external speakers.

Note: If you have problems hearing audio through the HDMI connection, you can use the **Audio3** port instead to play sound. Connect one end of an optional 3.5 mm stereo mini-jack audio cable to the projector's **Audio3** port and the other end to your computer's audio out port. Then select **Audio3** for the **HDMI Audio Output** setting in the Extended menu.

Parent topic: Connecting to Video Sources

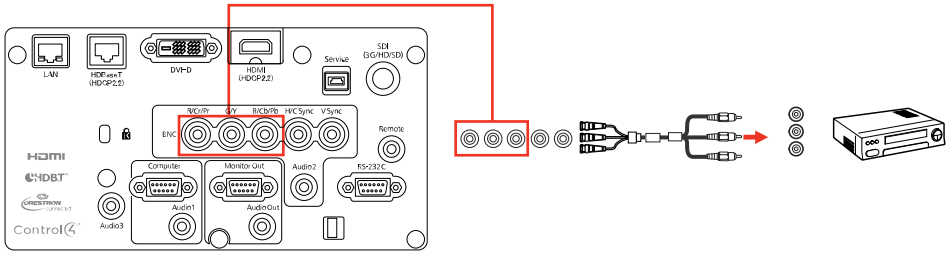
Related references

Projector Setup Settings - Extended Menu

Connecting to a Component-to-BNC Video Source

If your video source has component video ports, you can connect it to the projector using an optional component-to-BNC video cable. Depending on your component ports, you may need to use an adapter cable along with a component video cable.

1. Connect the component connectors to your video source's color-coded component video output ports, usually labeled **Y**, **Pb**, **Pr** or **Y**, **Cb**, **Cr**. If you are using an adapter, connect these connectors to your component video cable.
2. Connect the BNC connectors to the projector's **R/Cr/Pr**, **G/Y**, **B/Cb/Pb** ports.

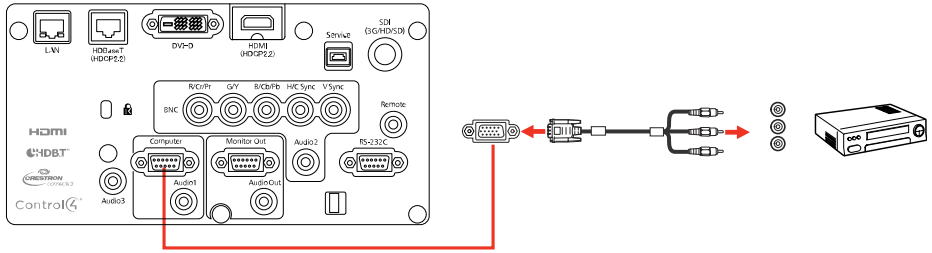


Parent topic: Connecting to Video Sources

Connecting to a Component Video Source

If your video source has component video ports, you can connect it to the projector using an optional component-to-VGA video cable. Depending on your component ports, you may need to use an adapter cable along with a component video cable.

1. Connect the component connectors to your video source's color-coded component video output ports, usually labeled **Y**, **Pb**, **Pr** or **Y**, **Cb**, **Cr**. If you are using an adapter, connect these connectors to your component video cable.
2. Connect the VGA connector to a **Computer** port on the projector.



3. Tighten the screws on the VGA connector.

If your image colors appear incorrect, you may need to change the **Input Signal** setting in the projector's Signal menu.

Parent topic: Connecting to Video Sources

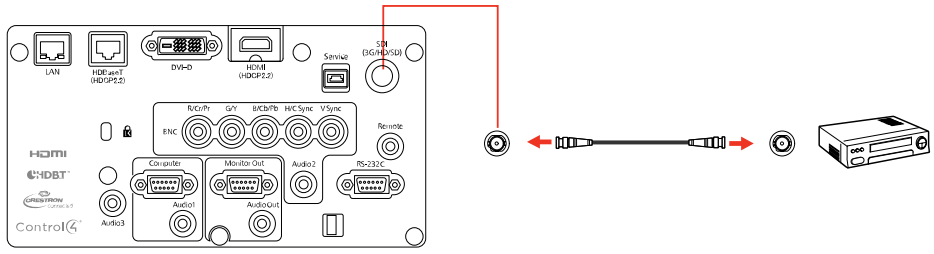
Related references

Input Signal Settings - Signal Menu

Connecting to an SDI Video Source

If your video source has an SDI port, you can connect it to the projector using an optional BNC video cable (Pro L1405U/L1500U/L1505U).

1. Connect the BNC video cable to your video source's SDI output port.
2. Connect the other end to the projector's **SDI** port.



Parent topic: Connecting to Video Sources

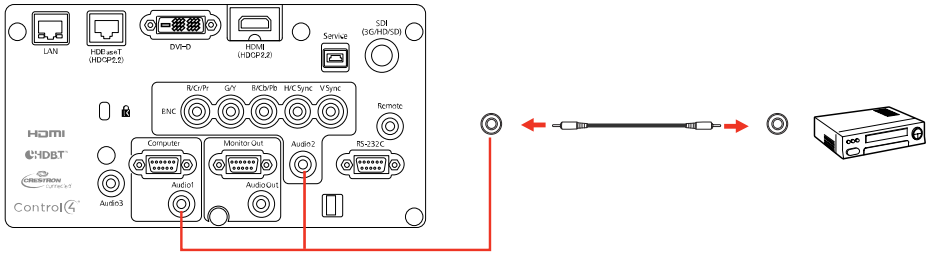
Connecting to a Video Source for Sound

You can play sound through the projector's speaker system if your video source has audio output ports (Pro L1100U/L1200U/L1300U). Just connect an optional stereo mini-jack audio cable as described here.

Note: If your projector does not have an internal speaker system (Pro L1405U/L1500U/L1505U), you can play sound by connecting external speakers to the projector.

Note: If you connected your video source to the projector using an HDMI cable, the audio signal is transferred with the video signal; you do not need an additional cable for sound. If you connected your video source to the projector's **SDI** port (Pro L1405U/L1500U/L1505U), audio output is not supported.

1. Connect the audio cable to your video source's audio-out ports.
2. Connect the other end of the cable to the projector's **Audio** port that corresponds to the **Computer** or **BNC** port you are using for video.



Parent topic: Connecting to Video Sources

Related tasks

Connecting to External Speakers

Connecting to Computer Sources

Follow the instructions in these sections to connect a computer to the projector.

Connecting to a Computer for VGA Video
Connecting to a Computer for HDMI Video and Audio
Connecting to a Computer for DVI-D Video
Connecting to a Computer for 5 BNC Video

Connecting to a Computer for Sound

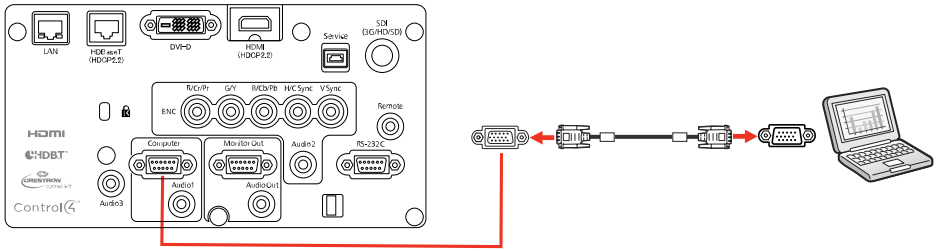
Parent topic: Projector Connections

Connecting to a Computer for VGA Video

You can connect the projector to your computer using a VGA computer cable.

Note: To connect a Mac that includes only a Mini DisplayPort, Thunderbolt port, or Mini-DVI port for video output, you need to obtain an adapter that allows you to connect to the projector's VGA video port. Contact Apple for compatible adapter options.

1. If necessary, disconnect your computer's monitor cable.
2. Connect the VGA computer cable to your computer's monitor port.
3. Connect the other end to a **Computer** port on the projector.



4. Tighten the screws on the VGA connector.

Parent topic: Connecting to Computer Sources

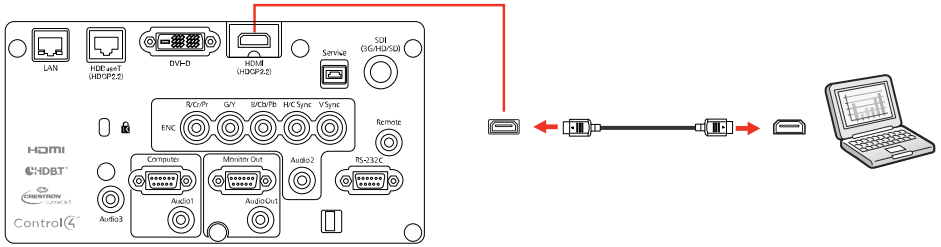
Connecting to a Computer for HDMI Video and Audio

If your computer has an HDMI port, you can connect it to the projector using an optional HDMI cable.

Note: To connect a Mac that includes only a Mini DisplayPort, Thunderbolt port, or Mini-DVI port for video output, you need to obtain an adapter that allows you to connect to the projector's **HDMI** port. Contact Apple for compatible adapter options. Older Mac computers (2009 and earlier) may not support audio through the **HDMI** port.

1. Connect the HDMI cable to your computer's HDMI output port.

2. Connect the other end to the projector's **HDMI** port.



Note: The projector converts the digital audio signal sent from your computer into a mono analog signal for the internal speaker or a stereo analog signal if you are connecting to external speakers.

Note: If you have problems hearing audio through the HDMI connection, you can use the **Audio3** port instead to play sound. Connect one end of an optional 3.5 mm stereo mini-jack audio cable to the projector's **Audio3** port and the other end to your computer's audio out port. Then select **Audio3** for the **HDMI Audio Output** setting in the Extended menu.

Parent topic: Connecting to Computer Sources

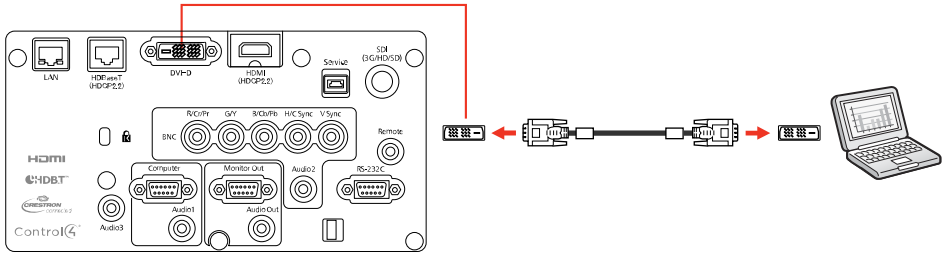
Related references

Projector Setup Settings - Extended Menu

Connecting to a Computer for DVI-D Video

If your computer has a DVI-D connector, you can connect it to the projector using an optional DVI-D cable.

1. Connect the DVI-D cable to your computer's DVI-D connector.
2. Connect the other end to the projector's **DVI-D** connector.

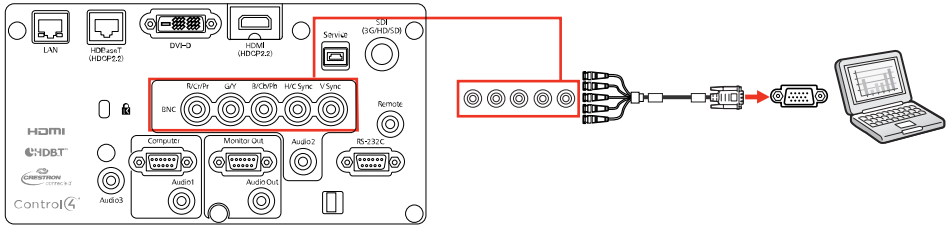


Parent topic: Connecting to Computer Sources

Connecting to a Computer for 5 BNC Video

You can connect the projector to your computer using an optional VGA-to-5-BNC cable.

1. Connect the VGA connector to your computer's monitor port.
2. Connect the 5 BNC connectors to the projector's **BNC** ports.



Parent topic: Connecting to Computer Sources

Connecting to a Computer for Sound

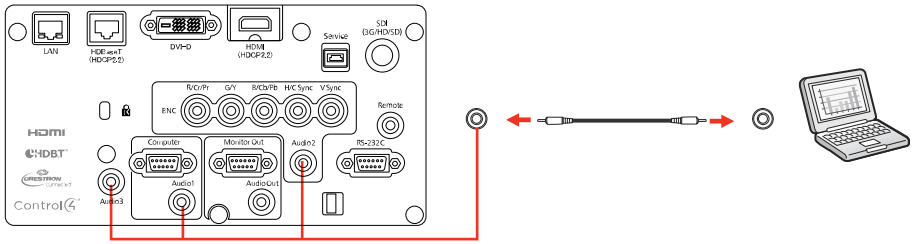
If your computer presentation includes sound and you did not connect it to the projector's **HDMI** port, you can still play sound through the projector's speaker system (Pro L1100U/L1200U/L1300U). Just connect an optional 3.5 mm stereo mini-jack audio cable as described here.

Note: If your projector does not have an internal speaker system (Pro L1405U/L1500U/L1505U), you can play sound by connecting external speakers to the projector.

1. Connect the audio cable to your laptop's headphone or audio-out jack, or your desktop's speaker or audio-out port.

2. Connect the other end to the **Audio** port that corresponds to the **Computer** or **BNC** port you are using.

   Note: If you are projecting video through the projector's **DVI-D** port, connect the end of your audio cable to the **Audio3** port.



Parent topic: Connecting to Computer Sources

Related tasks

Connecting to External Speakers

Connecting to an HDBaseT Transmitter

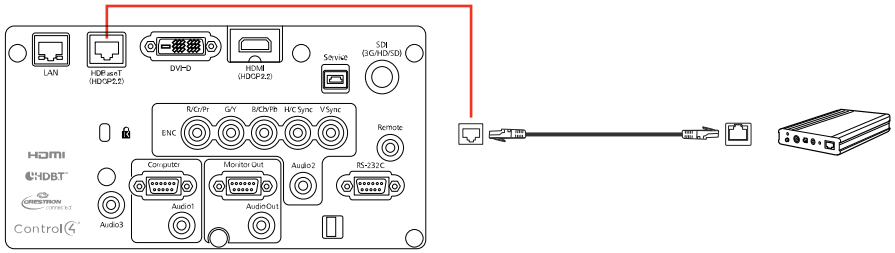
To send an HDMI or RS-232C signal over a long distance, you can connect the projector to an optional HDBaseT transmitter using a 100Base-TX network cable. This is useful when you want to send a signal to or control the projector from a remote location, such as in a hall or event site, since you can use a network cable up to 328 feet (100 m) in length. To ensure proper data transmission, use a Category 5e STP cable or better.

1. Turn off the projector and HDBaseT transmitter.

   Note: Make sure the projector and HDBaseT transmitter are turned off when connecting or disconnecting a network cable between the two devices.

2. Connect one end of the network cable to the **HDBaseT** port on the transmitter.

3. Connect the other end to the projector's **HDBaseT** port.



Note: See the documentation that came with the HDBaseT transmitter for instructions on connecting it to your video device or computer.

4. Turn on the projector and HDBaseT transmitter.

Note: To enable communication from the Ethernet and serial ports on the transmitter, select **On** as the **Control Communications** setting in the projector's Extended menu. Turning on this setting disables the projector's **LAN**, **RS-232C**, and **Remote** ports. If you connected an Extron XTP transmitter or switcher to the projector's **HDBaseT** port, select **On** as the **Extron XTP** setting in the projector's Extended menu.

Parent topic: Projector Connections

Related references

Projector Setup Settings - Extended Menu

Connecting to an External Computer Monitor

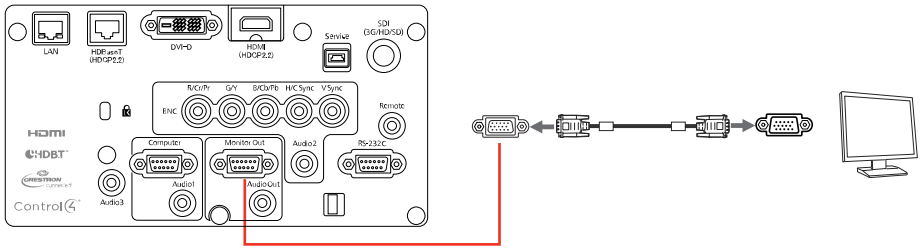
If you connected a computer to the projector's **Computer** or **BNC** port, you can also connect an external monitor to the projector. This lets you see your presentation on the external monitor even when the projected image is not visible.

If you want to output images to an external monitor when the projector is turned off, you need to select **Communication On** as the **Standby Mode** setting and **Always On** as the **A/V Output** setting in the projector's Extended menu.

Note: Monitors that use a refresh rate less than 60 Hz may not be able to display images correctly.

1. Make sure your computer is connected to the projector's **Computer** or **BNC** port.

2. Connect the external monitor's cable to your projector's **Monitor Out** port.



Note: If you do not see an image on the external monitor, you may need to change the **Monitor Out** setting in the Extended menu.

Parent topic: Projector Connections

Related references

Projector Setup Settings - Extended Menu

Connecting to External Speakers

To enhance the sound from your presentation, you can connect the projector to external self-powered speakers. You can control the volume using the projector's remote control.

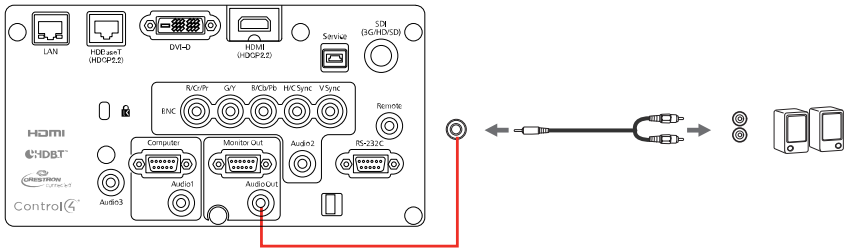
You can also connect the projector to an amplifier with speakers.

If you want to output audio from the external speakers when the projector is turned off, you need to select **Communication On** for the **Standby Mode** setting and **Always On** for the **A/V Output** setting in the projector's Extended menu.

Note: The projector's built-in speaker system (Pro L1100U/L11200U/L1300U) is disabled when you connect external speakers.

1. Make sure your computer or video source is connected to the projector with both audio and video cables as necessary.
2. Locate the appropriate cable to connect your external speakers, such as a stereo mini-jack-to-pin-jack cable, or another type of cable or adapter.
3. Connect one end of the cable to your external speakers as necessary.

4. Connect the stereo mini-jack end of the cable to your projector's **Audio Out** port.



Parent topic: Projector Connections

Related references

Projector Setup Settings - Extended Menu

Attaching and Removing a Lens

Follow the instructions in these sections to attach or remove a compatible lens.

Attaching a Lens

Removing a Lens

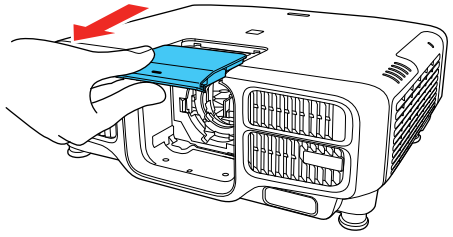
Parent topic: Setting Up the Projector

Attaching a Lens

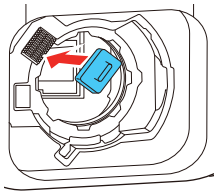
You can attach a compatible lens to the projector.

Caution: Unplug the power cord from the projector before attaching the lens. Avoid touching the lens with your bare hands to prevent fingerprints on or damage to the lens surface.

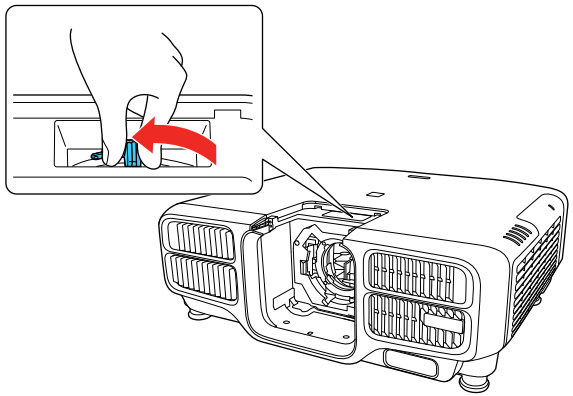
1. Pull the lens cover off of the projector.



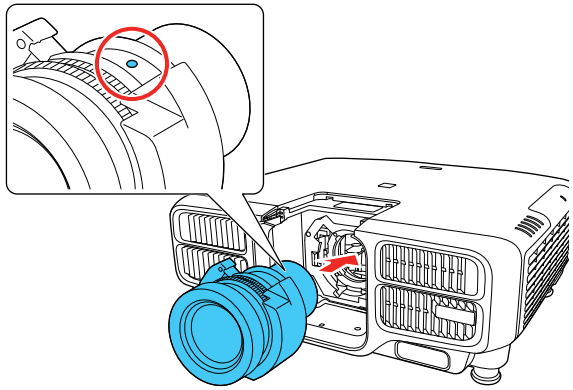
2. When using one of the following lenses, attach the lens connector cap: ELPLS04, ELPLU02, ELPLR04, ELPLW04, ELPLM06, ELPLM07, or ELPLL07.



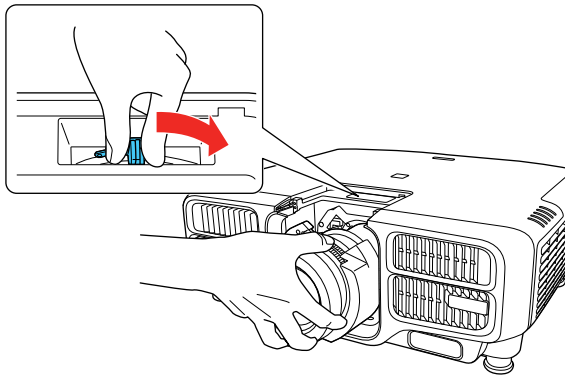
3. Slide the lock lever to the **Release** position (as shown) until you hear it click.



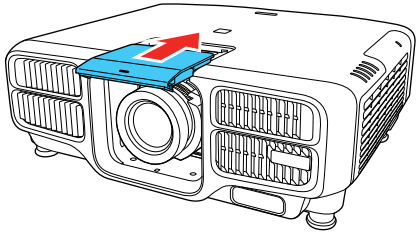
4. Insert the lens straight into the projector's lens socket with the white dot facing up.



5. Hold the lens firmly and slide the lock lever to the **Lock** position (as shown) until it locks.



6. Replace the lens cover.



7. If prompted, select **Yes** to calibrate the lens.

   Note: Lens calibration helps the projector to correctly acquire the lens position and adjustment range, and can take up to 100 seconds to complete. When calibration is finished, the lens returns to the same position it was in before calibration. (ELPX01 returns to the standard position.)

8. When using one of the following lenses, select the lens type in the **Extended** menu: ELPLS04, ELPLU02, ELPLR04, ELPLW04, ELPLM06, ELPLM07, or ELPLL07.

Parent topic: Attaching and Removing a Lens

Related tasks

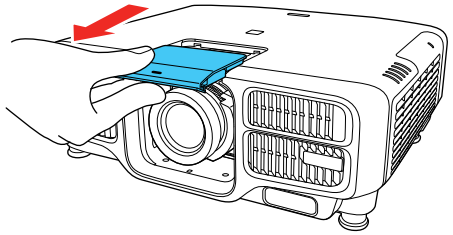
Setting the Lens Type

Removing a Lens

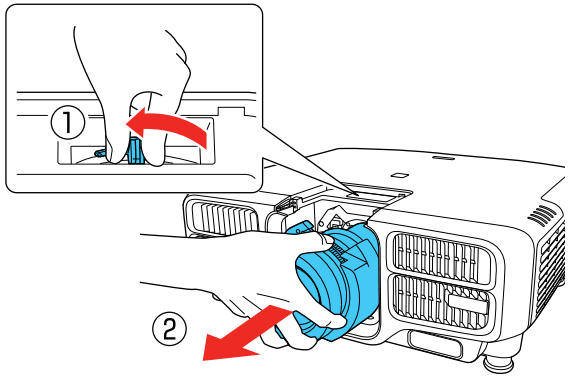
You can remove a lens to replace it with a different lens.

Caution: Remove the lens only when necessary and make sure the front of the projector is not facing up when you remove the lens. This prevents dirt or dust from entering the projector and lowering the projection quality. Avoid touching the lens with your bare hands to prevent fingerprints on or damage to the lens surface.

1. Center the lens using the **Lens Shift** (remote) or **Lens** (control panel) button.
2. Turn off the projector and unplug the power cord.
3. Pull the lens cover off of the projector.



4. Hold the lens firmly as you slide the lock lever to the **Release** position (as shown) until you hear it click.



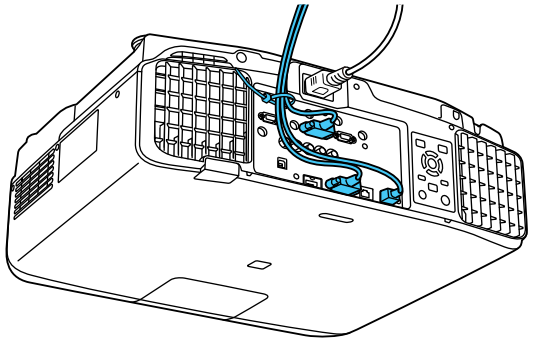
5. Gently pull the lens straight out of the projector.

Parent topic: Attaching and Removing a Lens

Attaching and Removing the Cable Cover

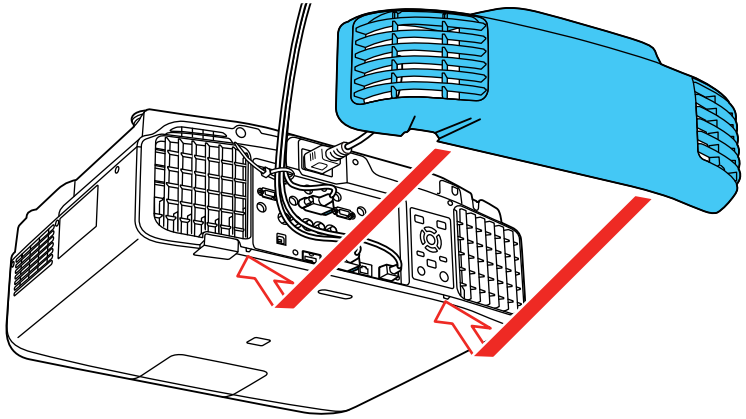
You can attach the cable cover that came with your projector to hide the attached cables from view.

1. Bundle the cables together using a band or other fastener (not provided).

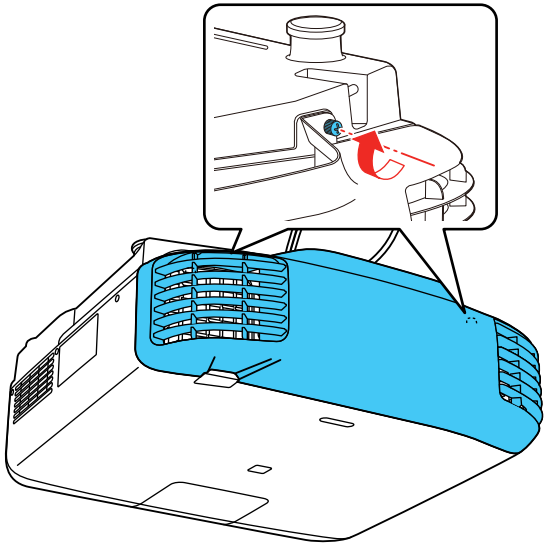


Caution: Do not bundle the power cord to the other cables. Otherwise, a fire may occur.

2. Place the cable cover on the projector as shown, guiding the cables through the notch on the base of the cable cover.



3. Tighten both cable cover screws.



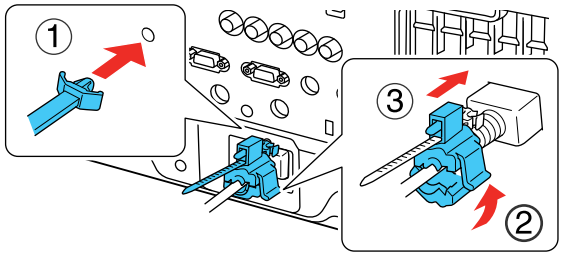
To remove the cover, loosen both screws and pull the cover off of the projector.

Parent topic: Setting Up the Projector

Attaching and Removing the Cable Clip

You can install the cable clip that came with your projector to provide additional support to the power cable (Pro L1405U/L1500U/L1505U).

1. Connect the power cable to the projector.
2. Insert the end of the cable clip anchor into the cable clip slot near the power inlet.



3. Place the open cable clip around the power cable, but don't lock it into place.
4. Slide the cable clip onto the anchor and lock the clip onto the power connector as shown.

To remove the cable clip, open the clip and disconnect the power cable. Then pinch the sides of the cable clip anchor and carefully remove it from the cable clip slot.

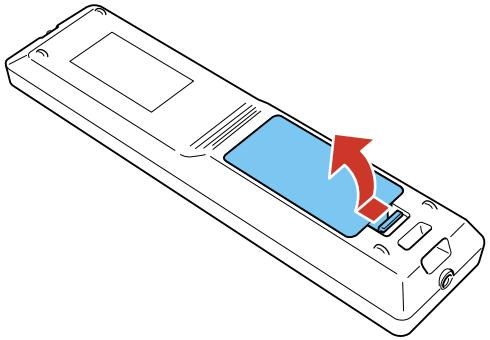
Parent topic: Setting Up the Projector

Installing Batteries in the Remote Control

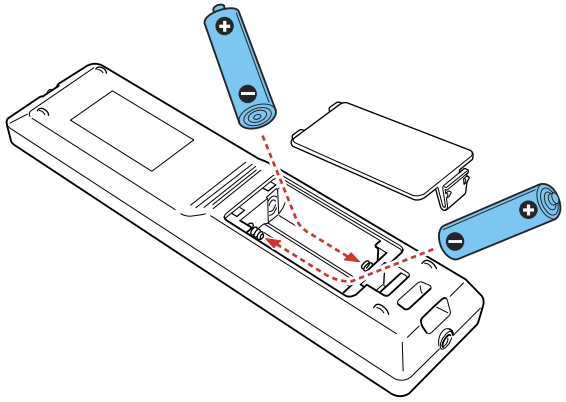
The remote control uses the two AA batteries that came with the projector.

Caution: Use only the type of batteries specified in this manual. Do not install batteries of different types, or mix new and old batteries.

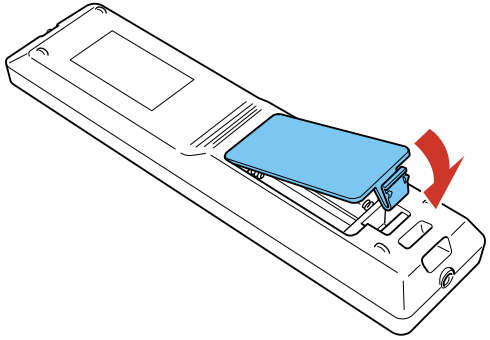
1. Remove the battery cover.



2. Insert the batteries with the **+** and **–** ends facing as shown.



3. Replace the battery cover and press it down until it clicks into place.



Warning: Dispose of used batteries according to local regulations. Do not expose batteries to heat or flame. Keep batteries out of the reach of children; they are choking hazards and are very dangerous if swallowed.

Parent topic: Setting Up the Projector

Using the Projector on a Network

Follow the instructions in these sections to set up your projector for use on a network.

Wired Network Projection
Wireless Network Projection
Setting Up Projector Network E-Mail Alerts
Selecting Other Network Settings
Controlling a Networked Projector Using a Web Browser
Crestron RoomView Support

Wired Network Projection

You can project through a wired network. To do this, you connect the projector to your network, and then set up your projector and computer for network projection.

After connecting and setting up the projector as described here, install the network software from the included CD or download the software and manuals as necessary.

Note: If your projector is connected via a LAN cable to a network that includes a wireless access point, you can connect to the projector wirelessly through the access point using the Epson network software.

Connecting to a Wired Network
Selecting Wired Network Settings

Parent topic: Using the Projector on a Network

Related references

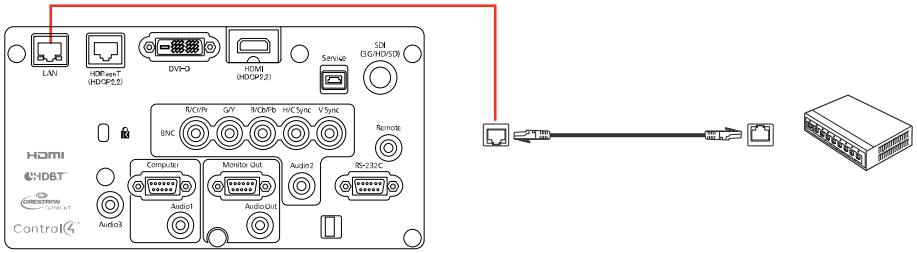
Additional Projector Software and Manuals

Connecting to a Wired Network

To connect the projector to a wired local area network (LAN), use a 100Base-TX or 10Base-T network cable. To ensure proper data transmission, use a Category 5 shielded cable or better.

1. Connect one end of the network cable to your network hub, switch, or router.

2. Connect the other end of the cable to the projector's **LAN** port.



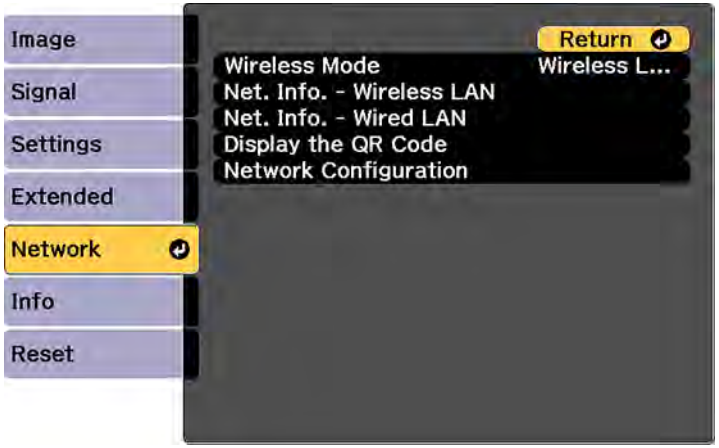
Parent topic: Wired Network Projection

Selecting Wired Network Settings

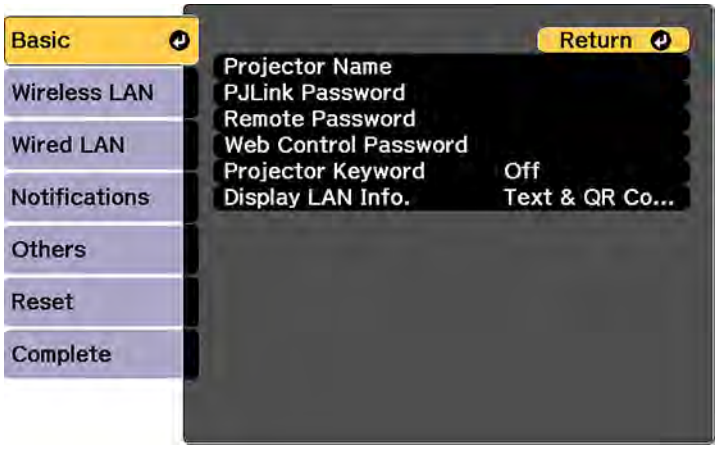
Before you can project from computers on your network, you must select the network settings for the projector using its menu system.

Note: Make sure you already connected the projector to your wired network using the **LAN** port.

1. Turn on the projector.
2. Press the **Menu** button.
3. Select the **Network** menu and press **Enter**.



4. Select **Network Configuration** and press **Enter**.
5. Select the **Basic** menu and press **Enter**.

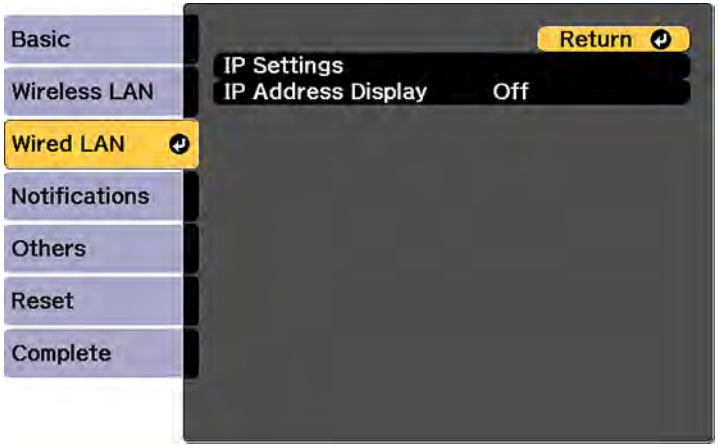


6. Select the following basic options as necessary:
   - **Projector Name** lets you enter a name up to 16 alphanumeric characters long to identify the projector over the network.
   - **PJLink Password** lets you enter a password up to 32 alphanumeric characters long for using the PJLink protocol for projector control.
   - **Remote Password** lets you enter a password up to 8 alphanumeric characters long for accessing the Remote or Basic Control screen in Epson Web Control. (Default user name is **EPSONREMOTE**; default password is **guest**.)
   - **Web Control Password** lets you enter a password up to 8 alphanumeric characters long for accessing Epson Web Control. (Default user name is **EPSONWEB**; default password is **admin**.)
   - **Projector Keyword** lets you turn on a security password to prevent access to the projector by anyone not in the room with it. You must enter a displayed, randomized keyword from a computer using the EasyMP Multi PC Projection software to access the projector.

- **Display LAN Info** lets you select how the projector displays network information. You can select an option to display a QR code that lets you quickly connect your iOS or Android devices using the Epson iProjection app.

Note: Use the displayed keyboard to enter the name, passwords, and keyword. Press the arrow buttons on the remote control to highlight characters and press **Enter** to select them.

7. Select the **Wired LAN** menu and press **Enter**.



8. Select your IP Settings as necessary:
   - If your network assigns addresses automatically, turn on the **DHCP** setting.
   - If you must set addresses manually, turn off **DHCP** and enter the projector's **IP Address**, **Subnet Mask**, and **Gateway Address** as needed.

   Note: To highlight the numbers you want from the displayed keyboard, press the arrow buttons on the remote control. To select a highlighted number, press **Enter**.

9. To prevent display of the IP address on the standby screen, turn off **IP Address Display**.
10. When you finish selecting settings, select **Complete** and follow the on-screen instructions to save your settings and exit the menus.

Parent topic: Wired Network Projection

Wireless Network Projection

You can project over a wireless network. To do this, you must set up your projector and computer for wireless projection.

Note: The Epson 802.11b/g/n wireless LAN module is not included with your projector and is optional.

There are two ways to connect to your projector wirelessly:

- Using the optional Quick Wireless Connection USB Key (Windows only); your computer does not need to be connected to a wireless network or use additional network software to connect with this option
- Configuring the connection manually using the projector's Network menus

After setting up the projector as described here, install the network software from the included CD or download the software and manuals as necessary.

Note: If your projector is connected via a LAN cable to a network that includes a wireless access point, you can connect to the projector wirelessly through the access point using the Epson network software.

Installing the Wireless LAN Module
Using Quick Wireless Connection (Windows Only)
Selecting Wireless Network Settings Manually
Selecting Wireless Network Settings in OS X
Selecting Wireless Network Settings in Windows

Parent topic: Using the Projector on a Network

Related references

Additional Projector Software and Manuals
Optional Equipment and Replacement Parts

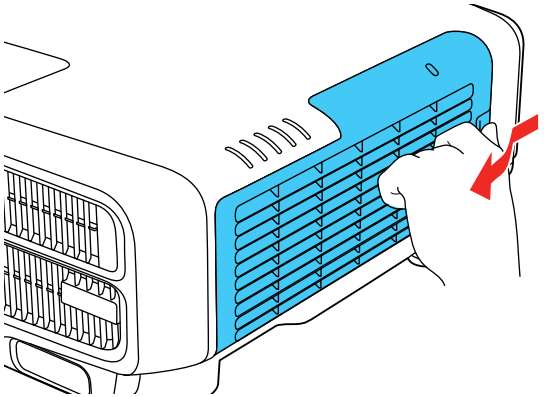
Installing the Wireless LAN Module

To use the projector over a wireless network, install the optional Epson 802.11b/g/n wireless LAN module. Do not install any other type of wireless LAN module.

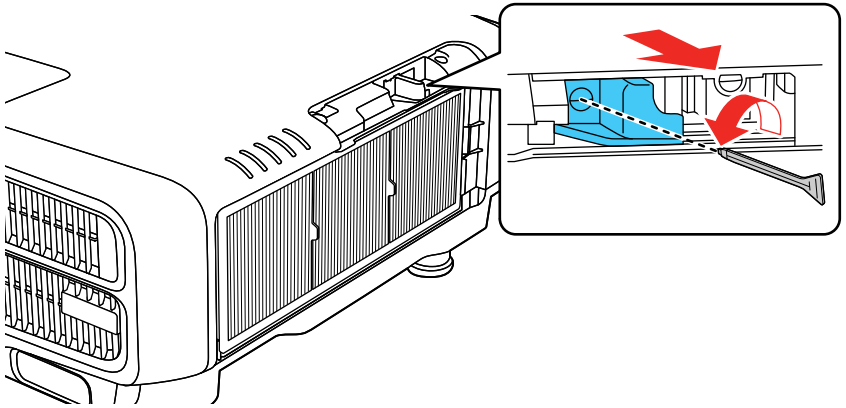
Caution: Never remove the module while its indicator light is green or flashing, or while you are projecting wirelessly. You may damage the module or lose data.

1. Turn off the projector and unplug the power cord.

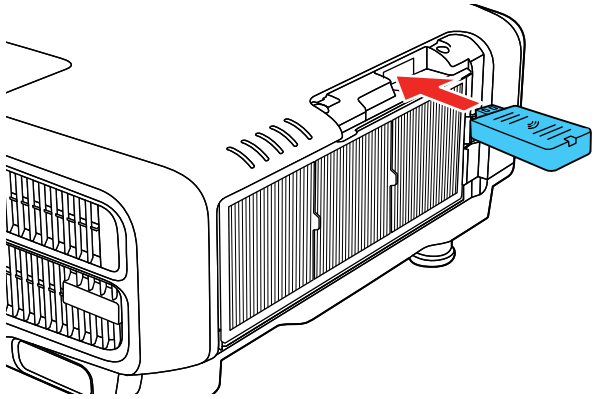
2. Slide the air filter cover latch and open the air filter cover.



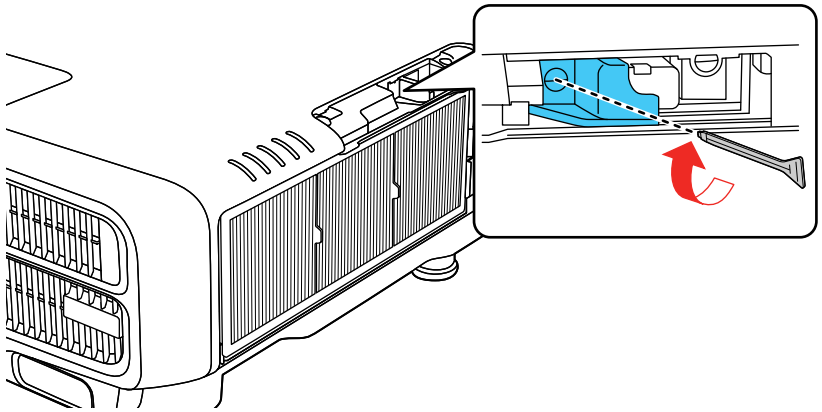
3. Remove the screw securing the wireless LAN module stopper, then remove the stopper.



4. Insert the wireless LAN module into the port.



5. Replace the wireless LAN module stopper and secure it using the screw you removed.



6. Close the air filter cover.
7. Plug in and turn on the projector.

Parent topic: Wireless Network Projection

Related references

Optional Equipment and Replacement Parts

Using Quick Wireless Connection (Windows Only)

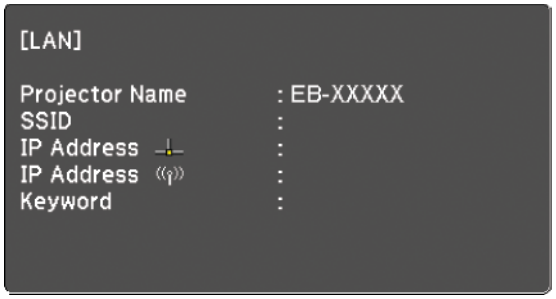
You can use the Quick Wireless Connection USB key to quickly connect your computer to the projector wirelessly. Then you can project your presentation and remove the key when you are done.

Note: The Quick Wireless Connection USB key is not included with your projector and is optional.

Note: Make sure the wireless LAN module is installed. The wireless LAN module is not included with your projector and is optional.

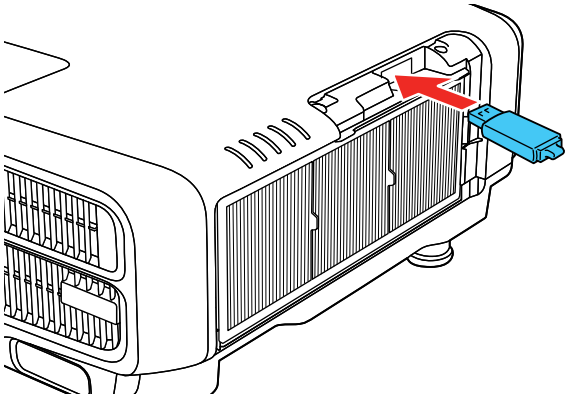
1. Turn on the projector.
2. Press the **LAN** button on the remote control.

   You see a screen like this:



3. Verify that an SSID and IP address are displayed, then remove the wireless LAN module from the projector if necessary.

4. Insert the Quick Wireless Connection USB key into the same port used for the wireless LAN module.



You see a projected message that the network information update is complete.

5. Remove the USB key.
6. Reinsert the wireless LAN module into the projector.
7. Connect the USB key to a USB port on your computer or laptop.

   Note: In Windows Vista, if you see the AutoPlay window, select **Run LaunchQWRD.exe**, then select **Allow** on the next screen.

8. Follow the on-screen instructions to install the Quick Wireless Connection driver.

   Note: If you see a Windows Firewall message, click **Yes** to disable the firewall for this application.

   After a few minutes, your computer image is displayed by the projector. If it does not appear, press the **LAN** button on your remote control or restart your computer.
9. Run your presentation as necessary.
10. When you finish projecting wirelessly, select the **Safely Remove Hardware** option in the Windows taskbar, then remove the USB key from your computer.

    Note: You may need to restart your computer to reactivate your wireless LAN connection.

Parent topic: Wireless Network Projection

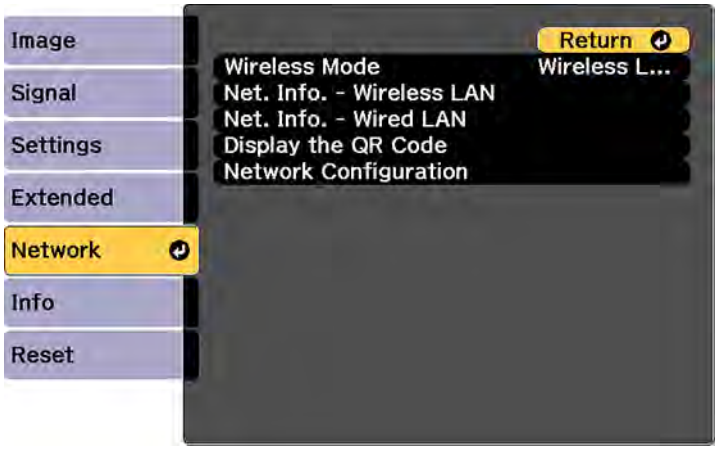
Related references

Optional Equipment and Replacement Parts

Selecting Wireless Network Settings Manually

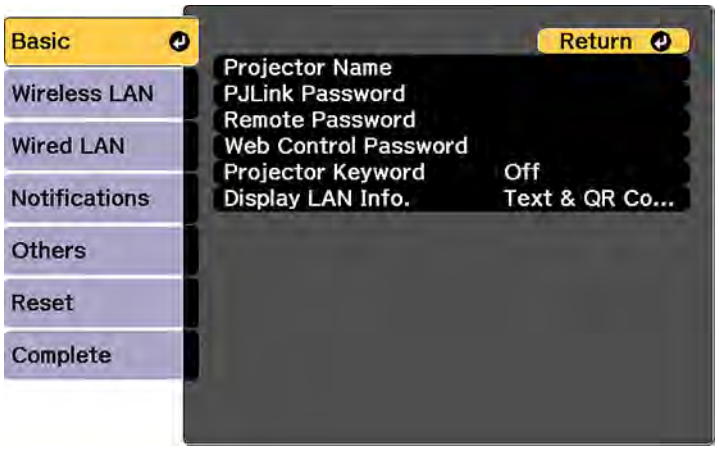
Before you can project from your wireless network, you must select the network settings for the projector using its menu system.

1. Turn on the projector.
2. Press the **Menu** button.
3. Select the **Network** menu and press **Enter**.



4. Make sure the **Wireless Mode** setting is set to **Wireless LAN On**.
5. Select **Network Configuration** and press **Enter**.

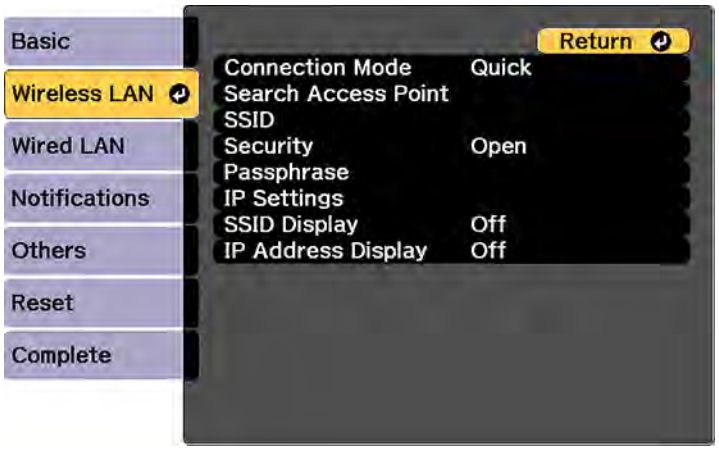
6. Select the **Basic** menu and press **Enter**.



7. Select the following basic options as necessary:
   - **Projector Name** lets you enter a name up to 16 alphanumeric characters long to identify the projector over the network.
   - **PJLink Password** lets you enter a password up to 32 alphanumeric characters long for using the PJLink protocol for projector control.
   - **Remote Password** lets you enter a password up to 8 alphanumeric characters long for accessing the Remote or Basic Control screen in the Epson Web Control. (Default user name is **EPSONREMOTE**; default password is **guest**.)
   - **Web Control Password** lets you enter a password up to 8 alphanumeric characters long for accessing the projector over the web. (Default user name is **EPSONWEB**; default password is **admin**.)
   - **Projector Keyword** lets you turn on a security password to prevent access to the projector by anyone not in the room with it. You must enter a displayed, randomized keyword from a computer using the EasyMP Multi PC Projection software to access the projector.
   - **Display LAN Info** lets you select how the projector displays network information. You can select an option to display a QR code that lets you quickly connect your iOS or Android devices using the Epson iProjection app.

   Note: Use the displayed keyboard to enter the name, passwords and keyword. Press the arrow buttons on the remote control to highlight characters and press **Enter** to select them.

8. Select the **Wireless LAN** menu and press **Enter**.



9. Select the settings on the **Wireless LAN** menu as necessary for your network.
10. When you finish selecting settings, select **Complete** and follow the on-screen instructions to save your settings and exit the menus.

After you complete the wireless settings for your projector, you need to select the wireless network on your computer, or iOS or Android device.

Wireless LAN Menu Settings

Parent topic: Wireless Network Projection

Wireless LAN Menu Settings

Setting	Options	Description
Connection Mode	**Quick** **Advanced**	Selects the type of wireless connection: **Quick**: lets you quickly connect to one computer or use the optional Quick Wireless Connection USB key to connect **Advanced**: lets you connect to multiple computers via a wireless network access point (infrastructure mode)
Search Access Point	**To Search View**	Search for available wireless network access points in **Advanced** connection mode
SSID	Up 32 alphanumeric characters	Sets the SSID (network name) of the wireless LAN system the projector is connecting to
Security	**Open** **WPA2-PSK** **WPA/WPA2-PSK**	Selects the type of wireless security used in the wireless network
Passphrase	Between 8 to 63 alphanumeric characters	Enter a paraphrase for the wireless network
Channel	**1ch** **6ch** **11ch**	In **Quick** connection mode, selects the frequency band (channel) used by the wireless LAN
IP Settings	—	Turns on DHCP if your network assigns addresses automatically; set to **Off** to manually enter the network's **IP Address**, **Subnet Mask**, and **Gateway Address**

Setting	Options	Description
SSID Display	**On** **Off**	Selects whether to display the SSID on the network standby screen
IP Address Display	**On** **Off**	Selects whether to display the IP address on the network standby screen

Parent topic: Selecting Wireless Network Settings Manually

Selecting Wireless Network Settings in OS X

Before connecting to the projector, select the correct wireless network in OS X.

1. Click the AirPort icon on the menu bar at the top of the screen.
2. Make sure AirPort is turned on, then do one of the following:
   - If your projector is set up on an existing network (Advanced mode), select the network name (SSID).
   - If your projector is configured for Quick mode, select the projector's SSID.

Parent topic: Wireless Network Projection

Selecting Wireless Network Settings in Windows

Before connecting to the projector, select the correct wireless network on your computer.

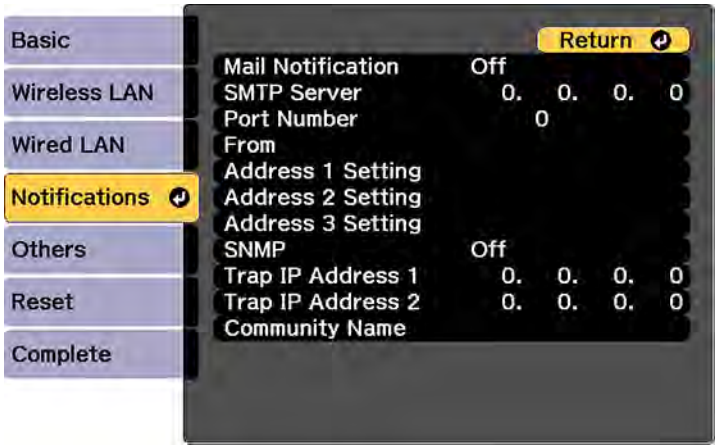
1. To access your wireless utility software, access the Desktop and double-click the network icon on the Windows taskbar.
2. Do one of the following:
   - If your projector is set up on an existing network (Advanced mode), select the network name (SSID).
   - If your projector is configured for Quick mode, select the projector's SSID.
3. Click **Connect**.

Parent topic: Wireless Network Projection

Setting Up Projector Network E-Mail Alerts

You can set up the projector to send you an e-mail alert over the network if there is a problem with the projector.

1. Press the **Menu** button.
2. Select the **Network** menu and press **Enter**.
3. Select **Network Configuration** and press **Enter**.
4. Select the **Notifications** menu and press **Enter**.



5. Turn on **Mail Notification**.
6. Enter the IP address for the **SMTP Server** setting.

   Note: To enter the IP address using the numeric keys on the remote control, press and hold the **Num** button. Do not use these addresses: 127.x.x.x or 224.0.0.0 through 255.255.255.255 (where x is a number from 0 to 255).

7. Select a number for the SMTP server **Port Number** setting, from 1 to 65535 (default is 25).
8. Choose an **Address** field, enter the e-mail address, and select the alerts you want to receive there. Repeat for up to three addresses. Your e-mail address can be up to 32 alphanumeric characters long.

9. When you finish selecting settings, select **Complete** and follow the on-screen instructions to save your settings and exit the menus.

Note: If a critical problem causes a projector to shut down, you may not receive an e-mail alert.

Network Projector E-mail Alert Messages

Parent topic: Using the Projector on a Network

Network Projector E-mail Alert Messages

When a problem occurs with a networked projector, and you selected to receive e-mail alerts, you receive an e-mail containing the following information:

- **Epson Projector** on the subject line
- The name of the projector experiencing a problem
- The IP address of the affected projector
- Detailed information about the problem

Note: If a critical problem causes a projector to shut down, you may not receive an e-mail alert.

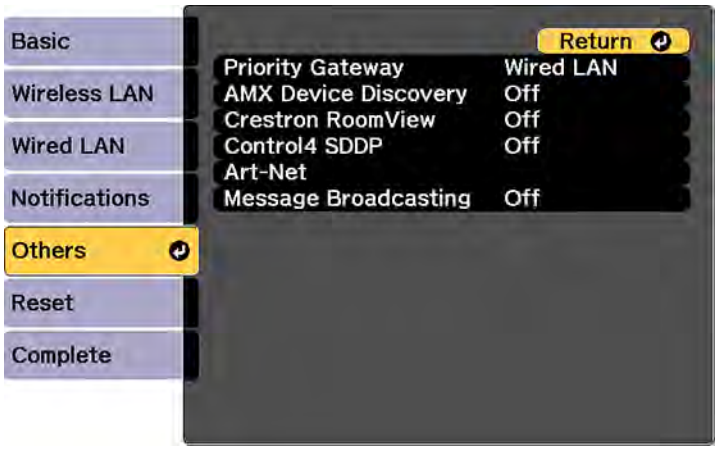
Parent topic: Setting Up Projector Network E-Mail Alerts

Selecting Other Network Settings

You can select optional network settings on the Others menu.

1. Press the **Menu** button.
2. Select the **Network** menu and press **Enter**.
3. Select **Network Configuration** and press **Enter**.

4. Select the **Others** menu and press **Enter**.



5. If available, select the **Priority Gateway** setting for your network.
6. If your network environment uses an AMX controller, turn on the **AMX Device Discovery** setting to allow the projector to be detected.
7. If your network environment uses a Crestron RoomView controller, turn on the **Crestron RoomView** setting to allow the projector to be detected.

   Note: Enabling Crestron RoomView disables the Epson Message Broadcast feature in the EasyMP Monitor software.

8. If your network environment uses a Control4 or Control4 SDDP controller, turn on the **Control4 SDDP** setting to allow the projector to be detected.
9. If you want to control the projector using Art-Net (an Ethernet communication protocol based on TCP/IP), turn on the **Art-Net** setting (Pro L1405U/L1500U/L1505U).
10. If you want this projector to receive broadcasted messages over the network, turn on the **Message Broadcasting** setting. Administrators can broadcast messages over the network using the Message Broadcasting plug-in for EasyMP Monitor (Windows only).
11. When you finish selecting settings, select **Complete** and follow the on-screen instructions to save your settings and exit the menus.

Parent topic: Using the Projector on a Network

Controlling a Networked Projector Using a Web Browser

Once you have connected your projector to your network, you can select projector settings and control projection using a compatible web browser. This lets you access the projector remotely.

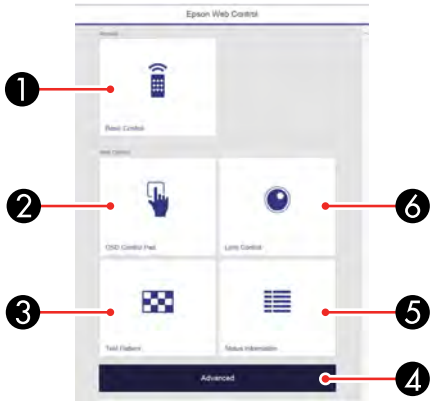
Note: The web setup and control features support Microsoft Internet Explorer 9.0 or later, and Safari on networks that do not use a proxy server for connection. You cannot select all of the projector menu settings or control all projector functions using a web browser.

Note: If you set Standby Mode to **Communication On**, you can use a web browser to select settings and control projection even if the projector is in standby mode.

1. Make sure the projector is turned on.
2. Start your web browser on a computer or device connected to the network.
3. Type the projector's IP address into the browser's address box and press the computer's **Enter** key.

   Note: You may need to log in before you see the Web Control screen. If you see a log in window, enter your user name and password. (The default user name is **EPSONWEB** and the default password is **admin**.)

   You see the Web Control screen.



1 Select **Basic Control** to control the projector remotely.

2 Select **OSD Control Pad** to change the projector's menu settings.

3 Select **Test Pattern** to display a test pattern

4 Select **Advanced** to open the advanced menu screen.

5 Select **Status Information** to view the projector's status.

6 Select **Lens Control** to adjust the lens (focus, zoom, and lens shift).

4. Select the option corresponding to the projector function you want to control.

Web Control Options

Parent topic: Using the Projector on a Network

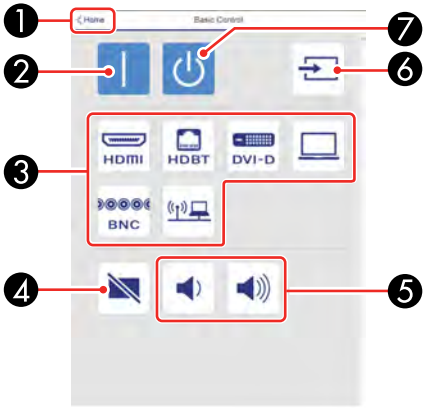
Related references

Projector Setup Settings - Extended Menu

Web Control Options

Basic Control

Note: If the Remote Password is set to **On**, you need to enter your user name and password. (The default username is **EPSONREMOTE** and the default password is **guest**).



1 Returns to the Home screen

2 Turns on the projector

3 Input source selection controls

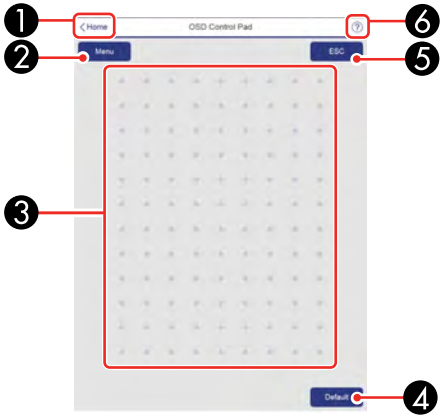
4 **A/V Mute** button control

5 **Volume** button controls

6 Searches for sources

7 Turns off the projector

OSD Control Pad



1 Returns to the Home screen

2 Displays the projector's setting menus

3 Use your finger or mouse to navigate the menus

4 Returns settings to their default values

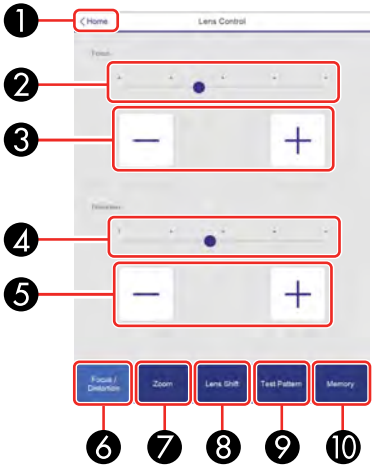
5 Returns to the previous menu

6 Displays help topics

Note: You cannot change some settings using Epson Web Control.

Lens Control

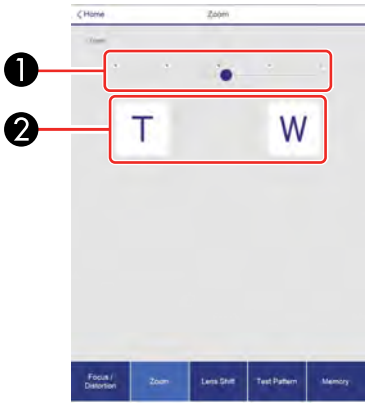
Focus/Distortion screen



1	Returns to the Home screen
2	Focus adjustment slider
3	Focus adjustment buttons
4	Distortion adjustment slider (not available for ELPLU02)
5	Distortion adjustment buttons (not available for ELPLU02)
6	Displays the Focus/Distortion screen
7	Displays the Zoom screen
8	Displays the Lens Shift screen
9	Displays the Test Pattern screen
10	Displays the Memory screen

Zoom screen

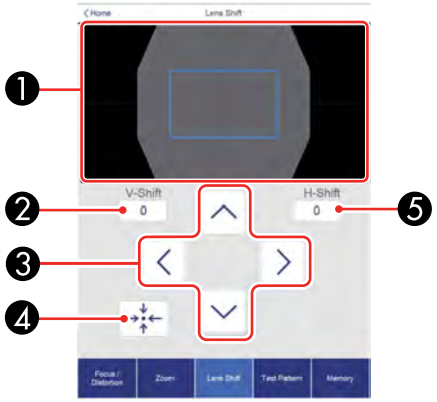
Note: Zoom is not available for ELPLX01 and ELPLR04.



1 Zoom adjustment slider

2 Zoom adjustment buttons

Lens Shift screen



1 The blue square displays the current image position and the red square displays the new image position

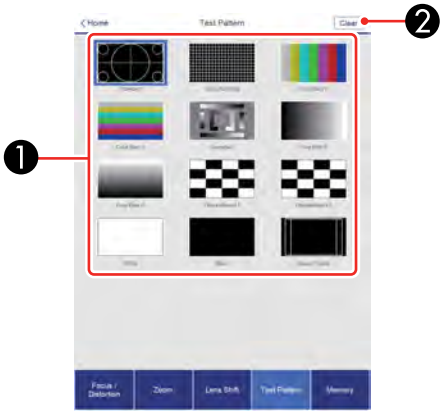
2 Displays the vertical image position; select to change the value

3 Moves the image position up, down, left, or right

4 Moves the lens to the home position

5 Displays the horizontal image position; select to change the value

Test Pattern screen



1 Displays available test patterns; select to project a test pattern

2 Turns off test pattern display

Memory screen



1 Overwrites your current settings with saved settings

2 Saves your current settings to memory

3 Displays a list of saved memories

4 Erases a saved memory

5 Renames a saved memory

Status Information



1 Returns to the Home screen

2 Displays a list of monitored settings

3 Displays the setting status

4 Select to view different status information

Parent topic: Controlling a Networked Projector Using a Web Browser

Crestron RoomView Support

If you are using the Crestron RoomView network monitoring and control system, you can set up your projector for use on the system. Crestron RoomView lets you control and monitor your projector using a web browser.

Note: You cannot use the Epson Web Control feature or the Message Broadcasting plug-in for EasyMP Monitor when you use Crestron RoomView.

For additional information on Crestron RoomView, contact Crestron.

Setting Up Crestron RoomView Support
Controlling a Networked Projector Using Crestron RoomView

Parent topic: Using the Projector on a Network

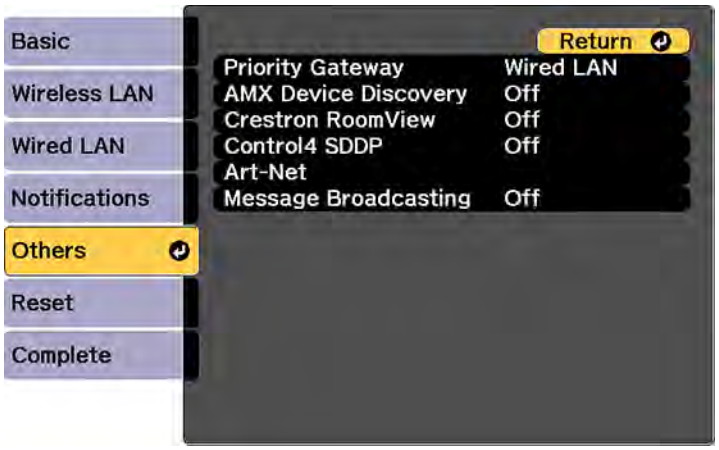
Setting Up Crestron RoomView Support

To set up your projector for monitoring and control using a Crestron RoomView system, make sure your computer and projector are connected to the network.

Note: If you want to use the Crestron RoomView system when the projector is turned off, you need to adjust the **Standby Mode** settings in the Extended menu.

1. Press the **Menu** button.
2. Select the **Network** menu and press **Enter**.
3. Select **Network Configuration** and press **Enter**.

4. Select the **Others** menu and press **Enter**.



5. Set the **Crestron RoomView** setting to **On** to allow the projector to be detected.

   Note: Enabling Crestron RoomView disables the Epson Message Broadcasting feature in the EasyMP Monitor software.

6. When you finish selecting settings, select **Complete** and follow the on-screen instructions to save your settings and exit the menus.
7. Turn off the projector, then turn it on again to enable the setting.

Parent topic: Crestron RoomView Support

Related references

Projector Setup Settings - Extended Menu

Controlling a Networked Projector Using Crestron RoomView

Once you have set up your projector to use Crestron RoomView, you can control and monitor projection using a compatible web browser.

1. Start your web browser on a computer connected to the network.
2. Type the projector's IP address into the browser's address box and press the computer's **Enter** key.

You see this screen:



3. Select the input source that you want to control in the Sources List box. You can scroll through available sources using the up and down arrows in the box.
4. To control projection remotely, click the on-screen buttons that correspond to the projector's remote control buttons. You can scroll through button options at the bottom of the screen.

   Note: These on-screen buttons do not directly correspond to the projector's remote control buttons:

   - **OK** acts as the **Enter** button
   - **Menu** displays the projector's menu

5. To view information about the projector, click the **Info** tab.
6. To change projector, Crestron, and password settings, click the **Tools** tab, select settings on the displayed screen, and click **Send**.
7. When you finish selecting settings, click **Exit** to exit the program.

Parent topic: Crestron RoomView Support

Using Basic Projector Features

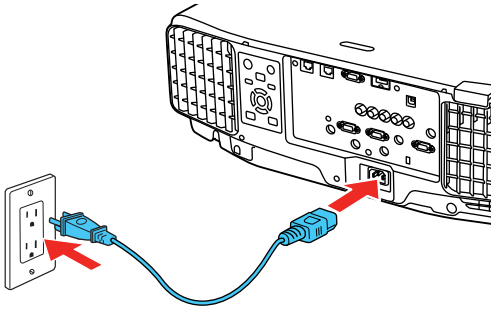
Follow the instructions in these sections to use your projector's basic features.

Turning On the Projector
Turning Off the Projector
Selecting the Language for the Projector Menus
Resizing the Image with the Zoom Button
Focusing the Image Using the Focus Button
Setting the Lens Type
Setting the Screen Type
Adjusting the Image Position Using Lens Shift
Adjusting the Image Position Using Screen Position
Displaying a Test Pattern
Adjusting the Image Height
Image Shape
Selecting an Image Source
Remote Control Operation
Projection Modes
Image Aspect Ratio
Color Mode
Adjusting the Brightness
Turning On Automatic Luminance Adjustment
Controlling the Volume with the Volume Buttons
Setting the Date and Time

Turning On the Projector

Turn on the computer or video equipment you want to use before you turn on the projector so it can display the image source.

1. Connect the power cord to the projector's power inlet.



2. Plug the power cord into an electrical outlet.

   The projector's On/Standby light turns blue. This indicates that the projector is receiving power.

   Note: With **Direct Power On** turned on, the projector turns on as soon as you plug it in.

3. Press the **On** button on the projector or remote control to turn on the projector.

   The projector beeps and the Status light flashes blue as the projector warms up. After about 30 seconds, the Status light stops flashing and turns blue.

   Warning: Never look into the projector lens when the laser is on. This can damage your eyes and is especially dangerous for children and pets.

   Caution: Make sure no objects are blocking the light from the projector lens. Objects blocking the lens for an extended time can melt and light that is reflected back into the lens can cause the projector to malfunction.

   Note: If the **Auto Source Search** setting in the Extended menu is enabled, the projector automatically detects the input signal when you turn it on.

If you do not see a projected image right away, try the following:

- Make sure the lens cap is off.
- Turn on the connected computer or video device.
- Insert a DVD or other video media and press the play button, if necessary.

- Press the **Source Search** button on the projector or the **Search** button on the remote control to detect the video source.
- If the Home screen is displayed, select the source you want to project.

Using the Home Screen

Parent topic: Using Basic Projector Features

Related references

Projector Setup Settings - Extended Menu

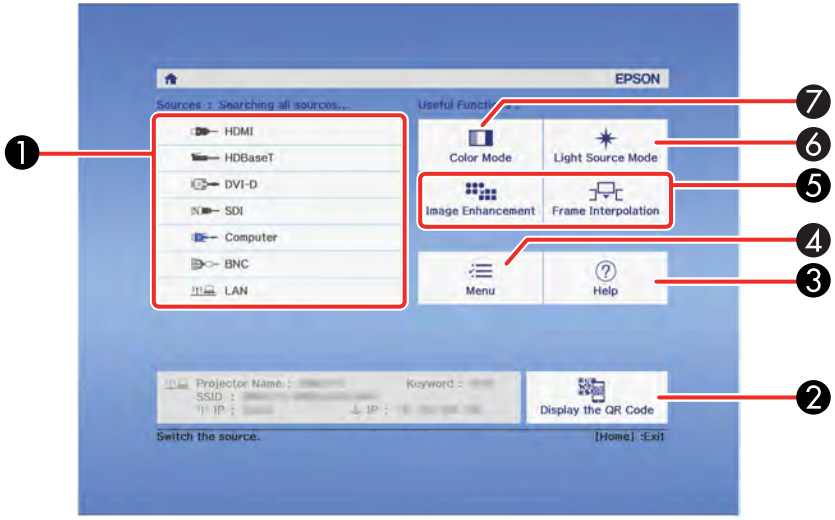
Related tasks

Turning Off the Projector

Using the Home Screen

You can select input sources and other frequently used options from the Home screen.

1. To display the Home screen, do one of the following:
   - Press the **Home** button on the remote control.
   - Turn on the projector with the **Home Screen Auto Disp** setting enabled.
   - Turn on the projector when no signal is received from the selected input source.
2. Press the arrow buttons on the remote control or control panel to navigate the screen, and press **Enter** to select an option.



1 Select the video source you want to project
2 Display the QR code
3 Display the Help screen
4 Display the projector's menus
5 Select customizable menu options
6 Select to change the Light Source Mode
7 Select to change the Color Mode

Note: You can select the customizable menu options using the **Custom Function 1** and **Custom Function 2** settings in the Extended menu.

3. Press the **Home** button to hide the Home screen.

Parent topic: Turning On the Projector

Related references

Projector Setup Settings - Extended Menu

Turning Off the Projector

Before turning off the projector, shut down any computer connected to it so you can see the computer display during shutdown.

Note: Turn off this product when not in use to prolong the life of the projector. Laser life will vary depending upon mode selected, environmental conditions, and usage. Brightness decreases over time.

Note: When using the A/V Mute feature, the laser is still on. To turn off the laser, turn off the projector.

1. Press the **Standby** button on the projector or remote control.

The projector displays a shutdown confirmation screen.



2. Press the **Standby** button on the projector or remote control again. (To leave it on, press any other button.)

   The projector beeps twice, the laser turns off, and the Status light turns off.

   Note: With Epson's Instant Off technology, there is no cool-down period so you can pack up the projector for transport right away (if necessary).

3. To transport or store the projector, make sure the Status light is off, then unplug the power cord.

Note: If you use the projector continuously for more than 24 hours, or regularly turn it off by shutting off the power outlet, schedule periodic **Light Source Calibration** events from the Extended menu.

Parent topic: Using Basic Projector Features

Related references

Projector Setup Settings - Extended Menu

Related tasks

Turning On the Projector

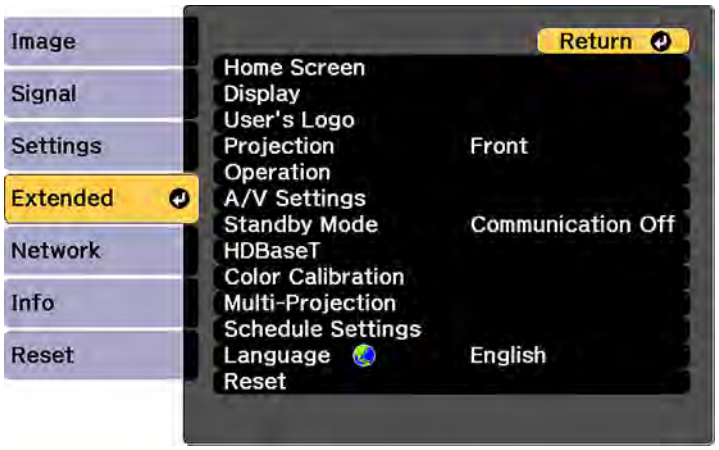
Saving a Scheduled Event

Selecting the Language for the Projector Menus

If you want to view the projector's menus and messages in another language, you can change the Language setting.

1. Turn on the projector.
2. Press the **Menu** button.

3. Select the **Extended** menu and press **Enter**.



4. Select the **Language** setting and press **Enter**.
5. Select the language you want to use and press **Enter**.
6. Press **Menu** or **Esc** to exit the menus.

Parent topic: Using Basic Projector Features

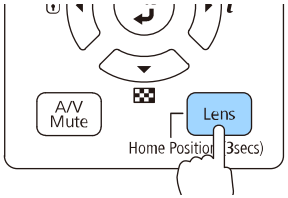
Resizing the Image with the Zoom Button

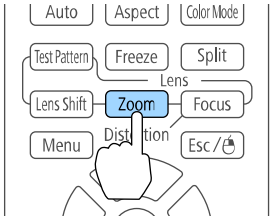
You can adjust the size of the image using the zoom buttons.

Note: Wait 20 minutes after turning on the projector before setting the focus, zoom, and lens shift for maximum accuracy.

1. Turn on the projector and display an image.

2. Press the **Lens** button on the control panel repeatedly until the zoom adjustment screen appears, or press the **Zoom** button on the remote control.





3. Press and hold the arrow buttons on the projector's control panel or remote control to resize the image.
4. Press the **Esc** button when finished.

Parent topic: Using Basic Projector Features

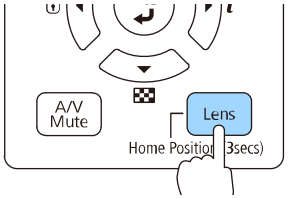
Focusing the Image Using the Focus Button

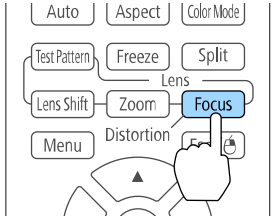
You can adjust the sharpness of the projected image using the focus buttons.

Note: Wait 20 minutes after turning on the projector before setting the focus, zoom, and lens shift for maximum accuracy. If you installed any of the following lenses, see the section on focusing with a short throw lens instead: ELPLX01, ELPLU03, ELPLU04, ELPLW05, or ELPLU02.

1. Turn on the projector and display an image.

2. Press the **Lens** button on the control panel repeatedly until the focus adjustment screen appears, or press the **Focus** button on the remote control.





3. Press and hold the arrow buttons on the projector's control panel or remote control to adjust the focus.
4. Press the **Esc** button when finished.

Focusing the Image with an Optional Short Throw Lens

Parent topic: Using Basic Projector Features

Related tasks

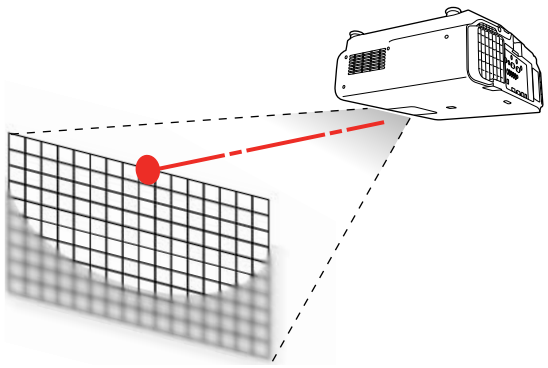
Focusing the Image with an Optional Short Throw Lens

Focusing the Image with an Optional Short Throw Lens

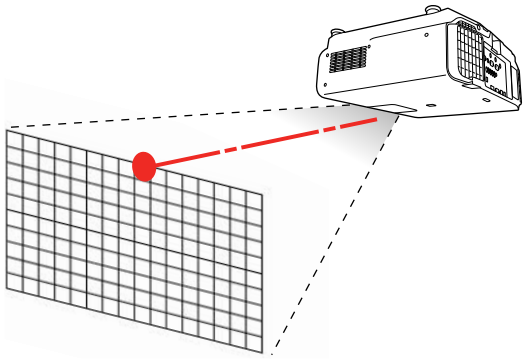
If you installed an optional short throw lens (ELPLX01/ELPLU03/ELPLU04/ELPLW05/ELPLU02), you may need to focus on the center of your screen and then correct any distortion in the surrounding area.

1. Turn on the projector and display an image.
2. Press the **Focus** button on the remote control or press the **Lens** button on the control panel repeatedly until the focus adjustment screen appears.

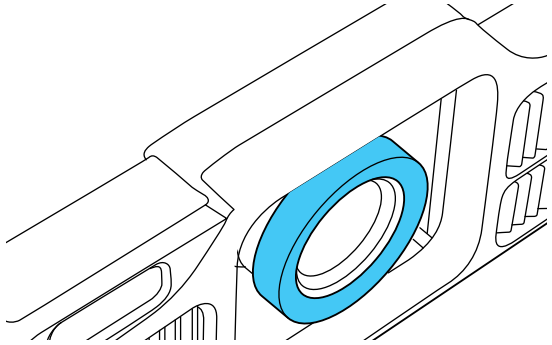
3. Press the left or right arrow buttons until the center of the image is focused.



4. Press the **Focus** button on the remote control or press the **Lens** button on the control panel repeatedly until the distortion adjustment screen appears.
5. Press the left or right arrow buttons until the edges of the image are also focused.



Note: If you installed the optional ELPLU02 short throw lens and you see a message prompting you to manually adjust the image distortion, manually rotate the distortion ring counterclockwise. Adjust the focus and then rotate the distortion ring to correct image distortion.



Parent topic: Focusing the Image Using the Focus Button

Setting the Lens Type

After installing one of the following lenses, you need to select the model number for the lens: ELPLS04, ELPLU02, ELPLR04, ELPLW04, ELPLM06, ELPLM07, or ELPLL07.

1. Turn on the projector and display an image.
2. Press the **Menu** button.
3. Select the **Extended** menu and press **Enter**.
4. Select **Operation** > **Advanced** > **Lens Type**.
5. Select your lens model number and press **Enter**.
6. Press the **Menu** button to exit.

Parent topic: Using Basic Projector Features

Setting the Screen Type

You can use the Screen Type setting to match the aspect ratio of the displayed image to the screen you are using.

1. Turn on the projector and display an image.
2. Press the **Menu** button.

3. Select the **Extended** menu and press **Enter**.
4. Select **Display** > **Screen** > **Screen Type**.

   You see this screen:



5. Select your screen's aspect ratio and press **Enter**.
6. Press the **Menu** button to exit.
7. Adjust the aspect ratio for the projected image, if necessary.

Parent topic: Using Basic Projector Features

Related concepts

Image Aspect Ratio

Adjusting the Image Position Using Lens Shift

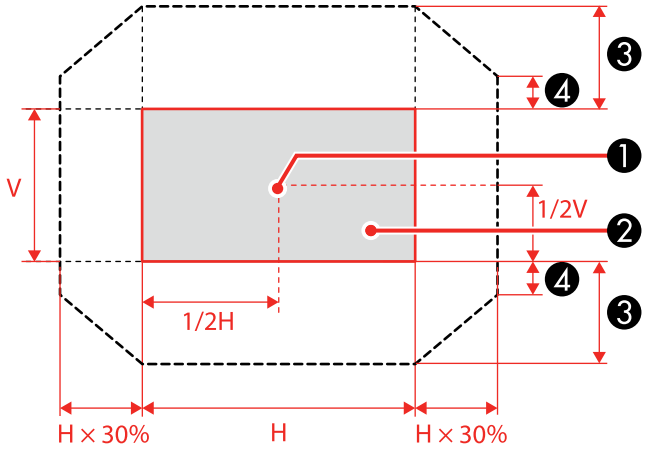
If you cannot install the projector directly in front of the screen, you can adjust the position of the projected image using the lens shift feature.

Note: Wait 20 minutes after turning on the projector before setting the focus, zoom, and lens shift for maximum accuracy. Lens shift is not supported for the ELPLR04 lens.

1. Turn on the projector and display an image.

2. Press the **Lens Shift** button on the remote control or the **Lens** button on the control panel.
3. Press the arrow buttons to adjust the position of the projected image as necessary.

Pro L1100U/L1200U/L1300U/L1405U - ELPLU03, ELPLU04, ELPLW05, ELPLW06, ELPLM08, ELPLM09, ELPLM10, ELPLM11, or ELPLL08 lens



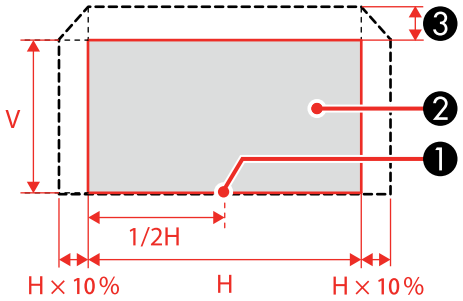
1 Center of lens

2 Projected image when lens shift is set to the home position

3 Maximum range: V × 67%; maximum range when performing screen matching: V × 44% (ELPLU03), V ×51% (ELPLM09)

4 Maximum range when the lens is shifted horizontally all the way: V × 19%; maximum range when performing screen matching: V × 64% (ELPLU03)

Pro L1100U/L1200U/L1300U/L1405U - ELPLX01 lens



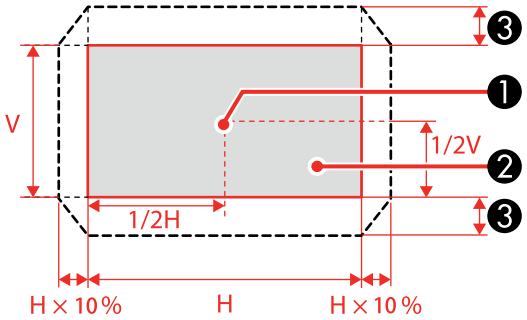
1 Center of lens

2 Projected image when lens shift is set to the home position

3 Maximum range: V × 17%

Note: You cannot move the image upward when the lens is shifted horizontally all the way.

Pro L1500U/L1505U - ELPLU03 or ELPLW05 lens



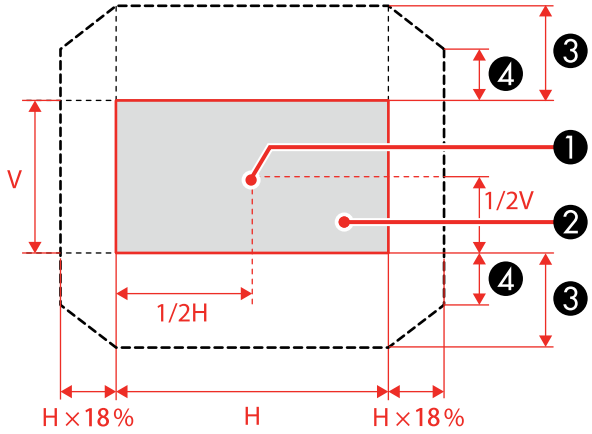
1 Center of lens

2 Projected image when lens shift is set to the home position

3 Maximum range: V × 24%; maximum range when performing screen matching: V × 11% (ELPLU03)

Note: You cannot move the image upward when the lens is shifted horizontally all the way.

Pro L1500U/L1505U - ELPLU04, ELPLW06, ELPLM09, ELPLM10, ELPLM11, or ELPLL08 lens



1 Center of lens

2 Projected image when lens shift is set to the home position

3 Maximum range: V × 60%; maximum range when performing screen matching: V × 40% (ELPLU04)

4 Maximum range when the lens is shifted horizontally all the way: V × 31%

4. When you are finished, press the **Esc** button on the control panel or remote control.

Note: When adjusting the image height, position the image lower than where you want it to be and then move it up. This will help prevent the image from moving down after adjustment. The image is clearest when the lens is at the home position. To move the lens to the home position, press and hold the **Lens Shift** button on the remote control or the **Lens** button on the control panel for at least three seconds.

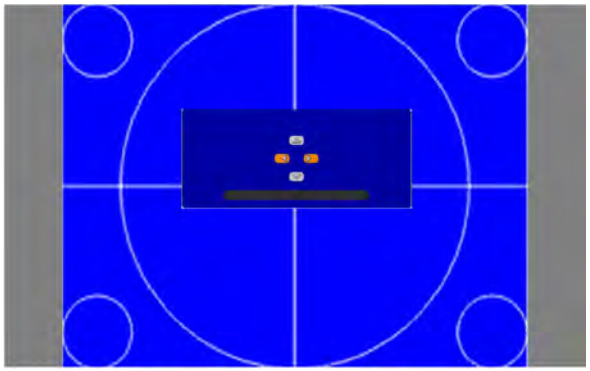
Parent topic: Using Basic Projector Features

Adjusting the Image Position Using Screen Position

You can adjust the image position if there are margins between the edge of the image and the projected screen frame.

Note: You cannot adjust the screen position if the Screen Type is set to **16:10**.

1. Turn on the projector and display an image.
2. Press the **Menu** button.
3. Select the **Extended** menu and press **Enter**.
4. Select **Display** > **Screen** > **Screen Position**.
5. Use the arrow buttons on the remote control or projector to adjust the position of the image.



6. When you are finished, press the **Menu** button.

Parent topic: Using Basic Projector Features

Related tasks

Setting the Screen Type

Displaying a Test Pattern

You can display a test pattern to adjust the projected image without connecting a computer or video device.

Note: The test pattern's shape is determined by the Screen Type setting. Be sure to set the correct screen type before adjusting with the test pattern.

1. Turn on the projector.
2. Press the **Test Pattern** button on the remote control or the down arrow button on the control panel.

3. Press the left or right arrow buttons on the remote control or press **Enter** on the control panel to cycle through the available test patterns.
4. Adjust the image as necessary.
5. Press the **Esc** to clear the test pattern.

Available Test Pattern Image Adjustments

Parent topic: Using Basic Projector Features

Related tasks

Setting the Screen Type

Available Test Pattern Image Adjustments

You can adjust the following settings while the test pattern is displayed.

Menu	Settings
Image	**Color Mode**
	White Balance
	Advanced • **Gamma**[1] • **RGBCMY**
Signal	**Auto Setup**
Settings	**Geometry Correction**
	Brightness Settings
Extended	**Display**[2]
	Color Calibration
	Multi-Projection[3]

[1] Except for custom **Gamma** settings

[2] Except for the **Screen**, **Panel Alignment**, and **Color Uniformity** settings

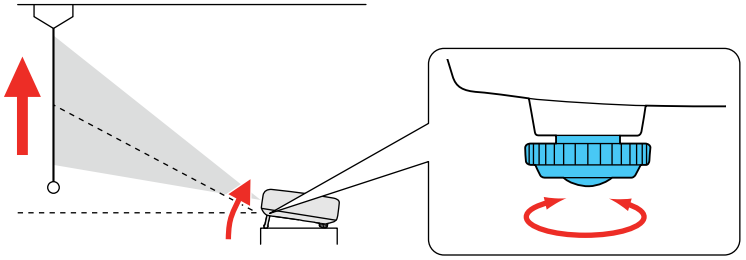
[3] Except for the **Black Level**, **Scale**, **Color Uniformity**, and **Color Adjustment** settings

Parent topic: Displaying a Test Pattern

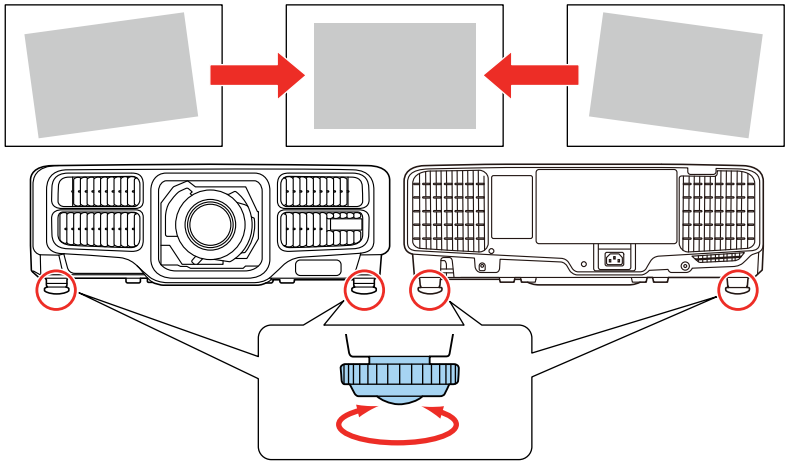
Adjusting the Image Height

If you are projecting from a table or other flat surface, and the image is too high or low, you can adjust the image height using the projector's adjustable feet.

1. Turn on the projector and display an image.
2. To adjust the image height, rotate the front foot to extend or retract it.



3. If the image is tilted, rotate the rear feet to adjust their height.



If the projected image is unevenly rectangular, you need to adjust the image shape.

Parent topic: Using Basic Projector Features

Related concepts

Image Shape

Image Shape

You can project an evenly rectangular image by placing the projector directly in front of the center of the screen and keeping it level. If you place the projector at an angle to the screen, or tilted up or down, or off to the side, you may need to correct the image shape for the best display quality.

Correcting Image Shape with H/V Keystone

Correcting Image Shape with Quick Corner

Correcting Image Shape with Curved Surface

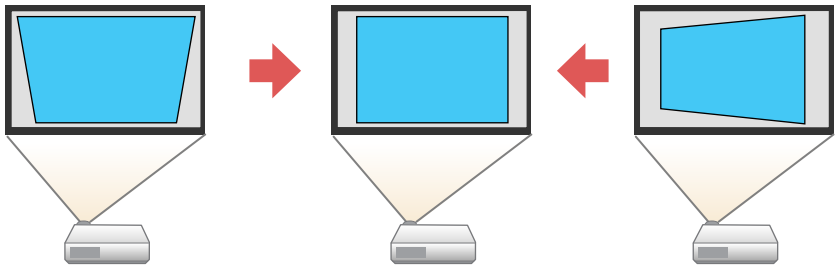
Correcting Image Shape with Corner Wall

Correcting Image Shape with Point Correction

Parent topic: Using Basic Projector Features

Correcting Image Shape with H/V Keystone

You can use the projector's H/V Keystone setting to correct the shape of an image that is unevenly rectangular on the sides.



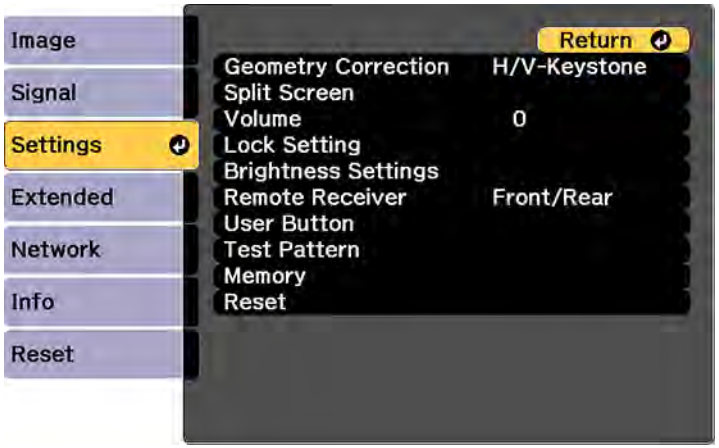
Note: You cannot combine H/V Keystone correction with other image adjustment methods.

1. Turn on the projector and display an image.

   Note: You can display a pattern to aid in adjusting the projected image using the Settings menu.

Note: You can also display a pattern to aid in adjusting the projected image using the **Test Pattern** button on the remote control.

2. Press the **Menu** button.
3. Select the **Settings** menu and press **Enter**.



4. Select the **Geometry Correction** setting and press **Enter**.

   Note: You can also access the geometric adjustment screen by pressing the **Geometry** button on the remote control or the up arrow button on the control panel.

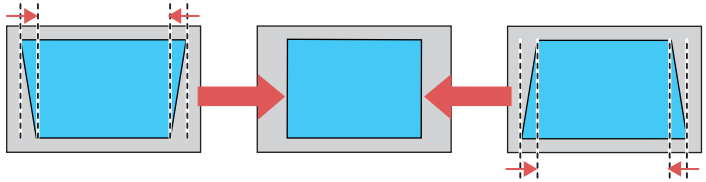
5. Select the **H/V-Keystone** setting and press **Enter**. Then press **Enter** again.

   You see the H/V-Keystone adjustment screen:

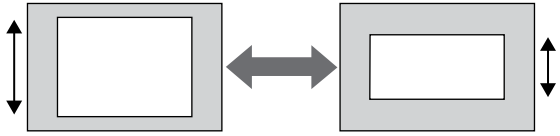


6. Use the arrow buttons on the projector or the remote control to select between vertical and horizontal keystone correction and to adjust the image shape as necessary.

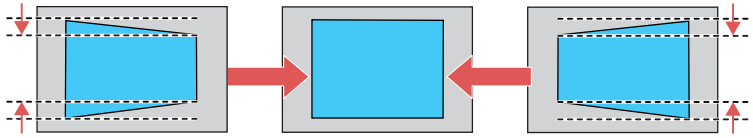
V-Keystone



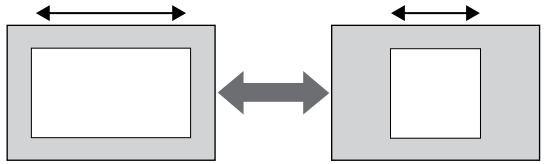
V-Balance



H-Keystone



H-Balance



7. When you are finished, press **Esc**.

   After correction, your image is slightly smaller.

Parent topic: Image Shape

Related references

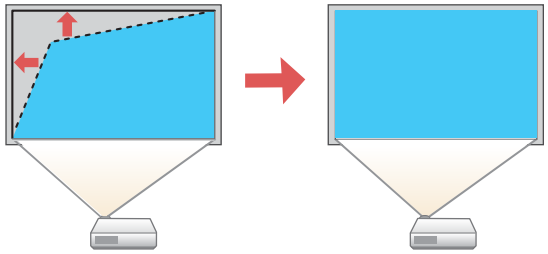
Projector Feature Settings - Settings Menu

Related tasks

Displaying a Test Pattern

Correcting Image Shape with Quick Corner

You can use the projector's Quick Corner setting to correct the shape and size of an image that is unevenly rectangular on all sides.



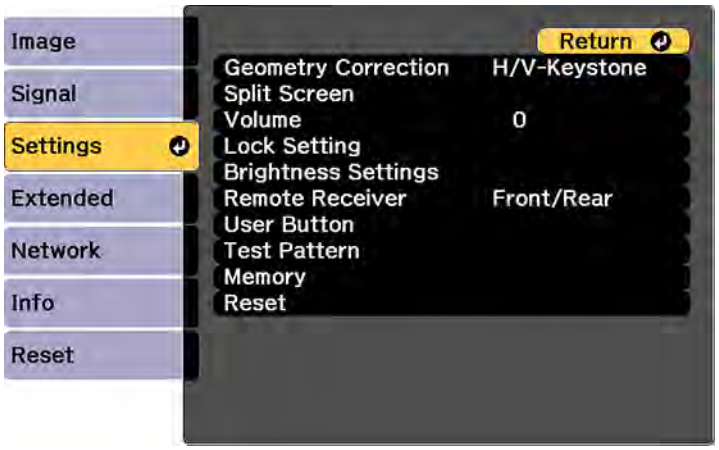
1. Turn on the projector and display an image.

   Note: You can display a pattern to aid in adjusting the projected image using the Settings menu.

   Note: You can also display a pattern to aid in adjusting the projected image using the **Test Pattern** button on the remote control.

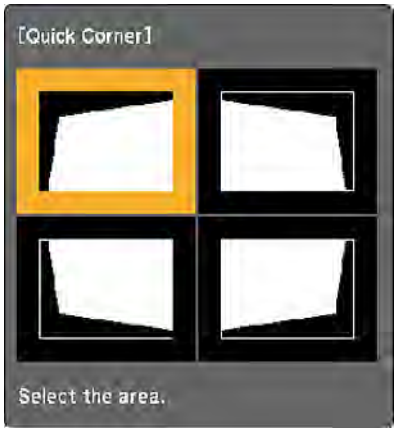
2. Press the **Menu** button.

3. Select the **Settings** menu and press **Enter**.



4. Select the **Geometry Correction** setting and press **Enter**.
5. Select the **Quick Corner** setting and press **Enter**. Then press **Enter** again.

   You see the Quick Corner adjustment screen:



Note: To reset your adjustments, press and hold the **Esc** button for at least 2 seconds to display a reset screen. Then select **Yes**.

6. Use the arrow buttons on the projector or the remote control to select the corner of the image you want to adjust. Then press **Enter**.
7. Press the arrow buttons to adjust the image shape as necessary.
8. When you are finished, press **Esc**.

Parent topic: Image Shape

Related references

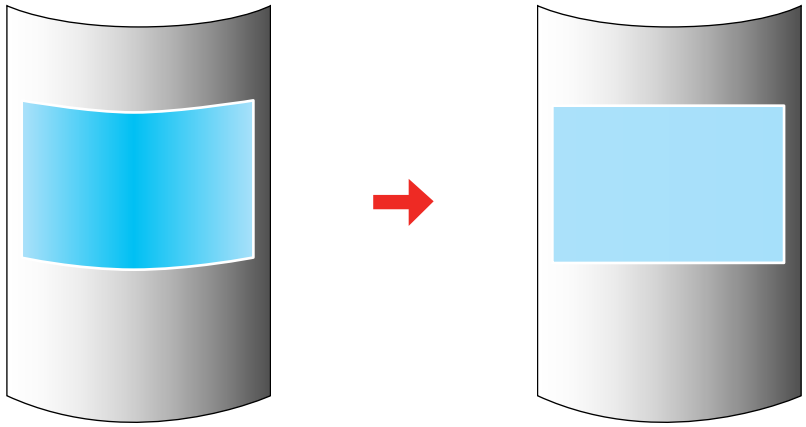
Projector Feature Settings - Settings Menu

Related tasks

Displaying a Test Pattern

Correcting Image Shape with Curved Surface

You can use the projector's Curved Surface setting to adjust the shape of an image projected on a curved surface.



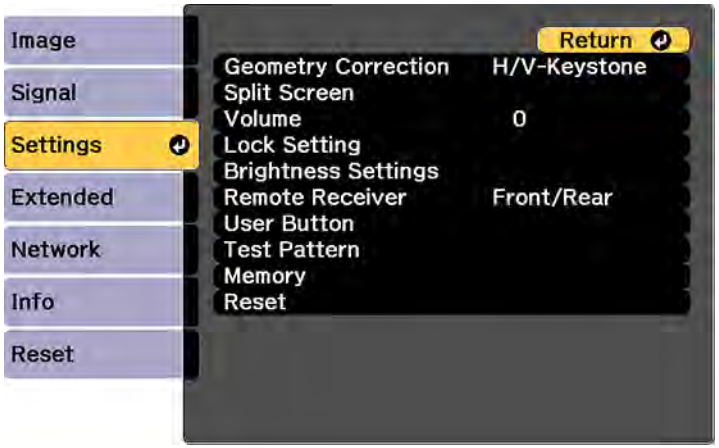
Note: For the best results, project from the front of the screen onto a surface with a uniform arc radius and with the lens in the home position.The image may not be evenly focused throughout even after performing the steps here. If you see a 4K Enhancement message, select **Yes** to disable the 4K Enhancement feature.

1. Turn on the projector and display an image.

   Note: You can display a pattern to aid in adjusting the projected image using the Settings menu.

Note: You can also display a pattern to aid in adjusting the projected image using the **Test Pattern** button on the remote control.

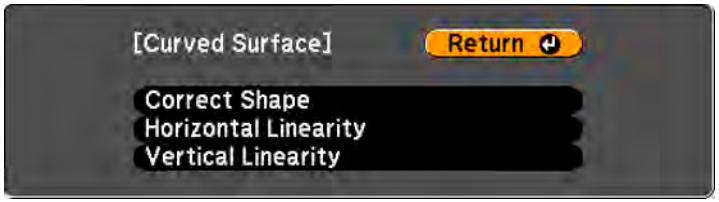
2. Press the **Menu** button.
3. Select the **Settings** menu and press **Enter**.



4. Select the **Geometry Correction** setting and press **Enter**.
5. Select the **Curved Surface** setting and press **Enter**.

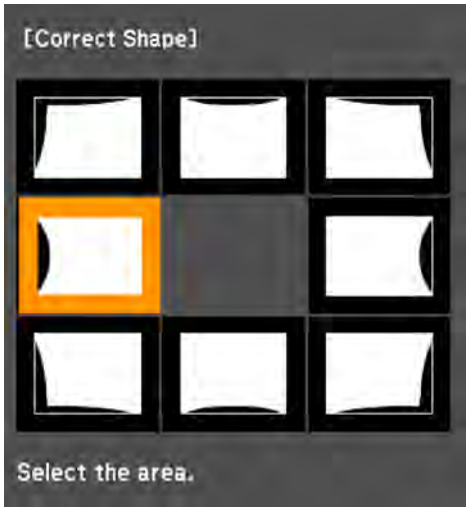
Note: If you see a confirmation message, press **Enter**.

You see this screen:



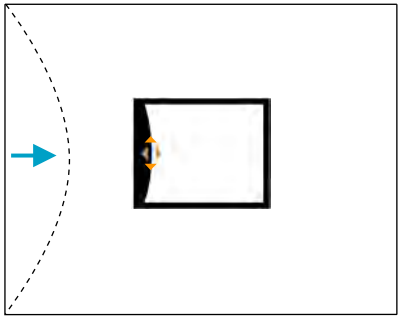
6. Select the **Correct Shape** setting and press **Enter**.

7. Use the arrow buttons on the projector or the remote control to select the area you want to adjust. Then press **Enter**.



Note: To reset your adjustments, press and hold the **Esc** button for at least 2 seconds to display a reset screen. Then select **Yes**.

8. Use the arrow buttons on the projector to adjust the image shape.

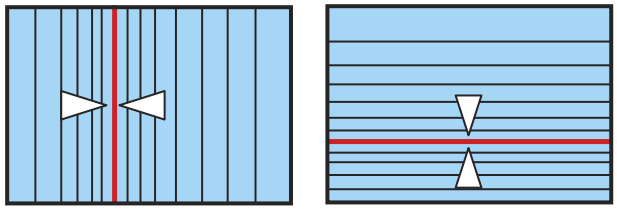


Note: If the adjustment triangle turns gray, you cannot adjust the shape any further in that direction.

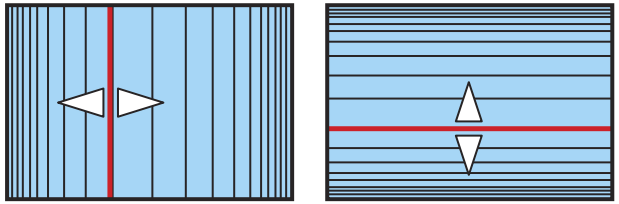
9. Press the **Esc** button to return to the Curved Surface menu screen.
10. Repeat the previous three steps as necessary to adjust other image areas.

    If the image expands or contracts, continue with the next step to adjust the linearity.
11. Select one of the following from the Curved Surface menu screen:
    - **Horizontal Linearity**: Adjusts horizontal expansion or contraction.
    - **Vertical Linearity**: Adjusts vertical expansion or contraction.
12. Select a displayed line to use as a baseline and press **Enter**.

    The selected baseline flashes red and white.
13. Adjust the linearity by doing one of the following:
    - Press the left arrow button to contract the distance between the lines closest to the baseline.



    - Press the right arrow button to expand the distance between the lines closest to the baseline.



14. When you are finished, press the **Menu** button.

Note: If necessary, you can adjust the image tilt using the **Quick Corner** setting, then fine-tune your adjustments using the **Point Correction** setting.

Parent topic: Image Shape

Related references

Projector Feature Settings - Settings Menu

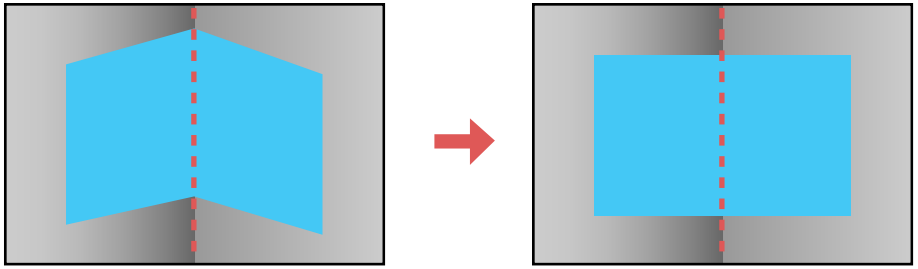
Related tasks

Displaying a Test Pattern

Correcting Image Shape with Point Correction

Correcting Image Shape with Corner Wall

You can use the projector's Corner Wall setting to adjust the shape of an image projected on a surface with right angles, such as a rectangular pillar or the corner of a room.



Note: For the best results, project from the front of the screen onto a right-angled surface and with the lens in the home position. The image may not be evenly focused throughout even after performing the steps here. If you see a 4K Enhancement message, select **Yes** to disable the 4K Enhancement feature. Corner Wall is not supported for the ELPLX01 lens.

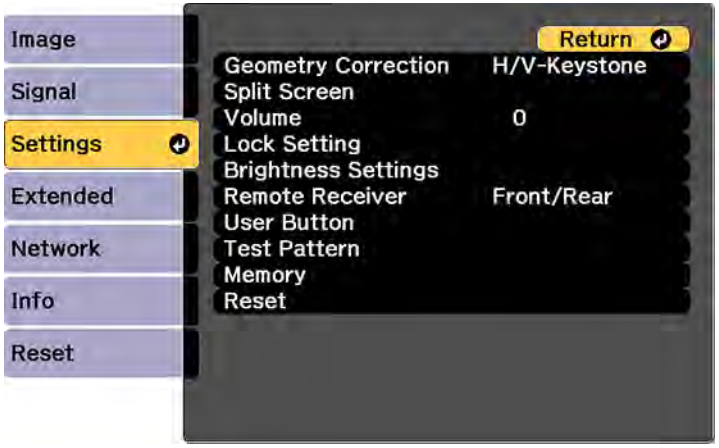
1. Turn on the projector and display an image.

   Note: You can display a pattern to aid in adjusting the projected image using the Settings menu.

   Note: You can also display a pattern to aid in adjusting the projected image using the **Test Pattern** button on the remote control.

2. Press the **Menu** button.

3. Select the **Settings** menu and press **Enter**.



4. Select the **Geometry Correction** setting and press **Enter**.
5. Select the **Corner Wall** setting and press **Enter**.

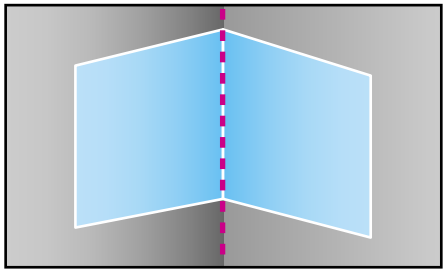
   Note: If you see a confirmation message, press **Enter**.

   You see this screen:

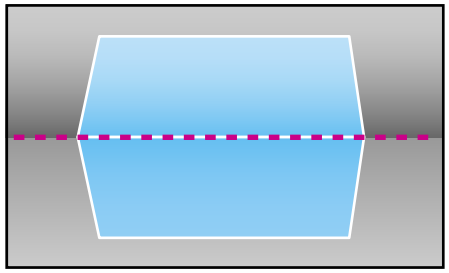


6. Select the **Corner Type** setting and press **Enter**.

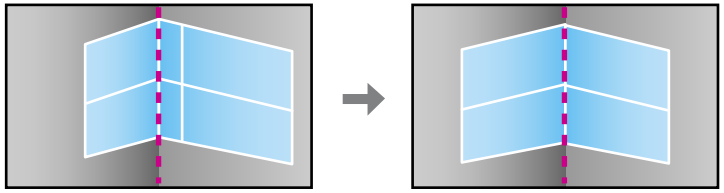
7. Select one of the following:
   - **Horizontal Corner** when the surfaces line up horizontally



   - **Vertical Corner** when the surfaces line up vertically

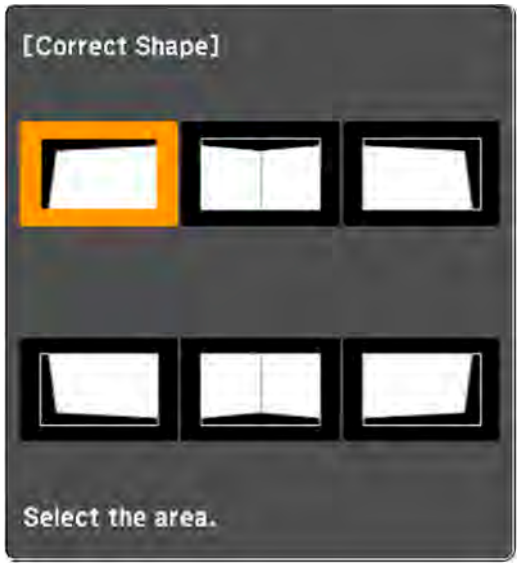


8. Press the **Esc** button to return to the Corner Wall menu screen.
9. Select the **Correct Shape** setting and press **Enter**.
10. Adjust the projector's position and use lens shift to center the image over the point where the two surfaces meet. (The rest of these steps show Horizontal Corner as the selected Corner Type but the steps are the same for Vertical Corner.)

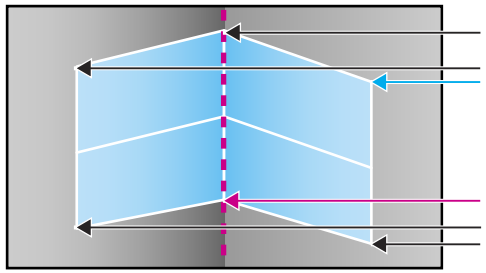


Note: You can press **Enter** to show or hide the image and grid to check the results.

11. Use the arrow buttons on the projector or the remote control to select the area you want to adjust. Then press **Enter**.



- For horizontal corners, adjust the top area using the lowest point (indicated by the blue arrow) as your reference. Adjust the lower area using the highest point (indicated by the pink arrow) as your reference.

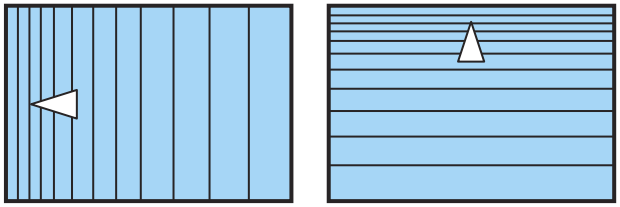


- For vertical corners, adjust the left and right areas using the points nearest the center of the image as your reference points.

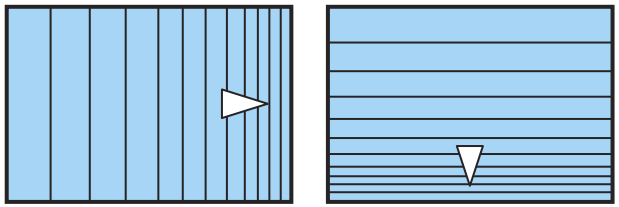
Note: To reset your adjustments, press and hold the **Esc** button for at least 2 seconds to display a reset screen. Then select **Yes**.

12. Press and hold the arrow buttons on the projector or remote control to adjust the image shape.
13. Repeat the previous two steps as necessary to adjust other image areas.

    If the image expands or contracts, continue with the next step to adjust the linearity.
14. Press the **Esc** button to return to the Corner Wall screen.
15. Select the **Linearity** setting and press **Enter**.
16. Adjust the linearity by doing the following as necessary:
    - Press and hold the left arrow button to contract the distance between the lines closest to the left or top of the image.



    - Press and hold the right arrow button to contract the distance between the lines closest to the right or bottom of the image.



17. When you are finished, press the **Menu** button.

Note: If necessary, you can adjust the image tilt using the **Quick Corner** setting, then fine-tune your adjustments using the **Point Correction** setting.

Parent topic: Image Shape

Related references

Projector Feature Settings - Settings Menu

Related tasks

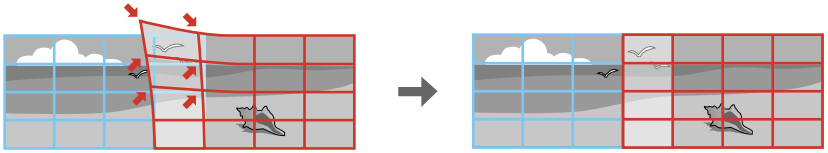
Displaying a Test Pattern

Correcting Image Shape with Quick Corner

Correcting Image Shape with Point Correction

Correcting Image Shape with Point Correction

You can use the projector's Point Correction feature to fine-tune the image shape using points on a grid. This is useful for adjusting overlapping areas in multiple projected images that do not line up correctly.



Note: You can move the points on the grid between 0.5 to 32 pixels in any direction. If you see a 4K Enhancement message, select **Yes** to disable the 4K Enhancement feature.

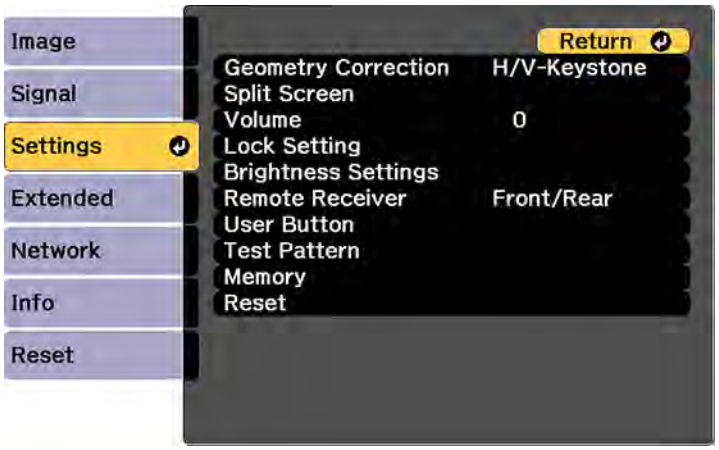
1. Turn on the projector and display an image.

   Note: You can display a pattern to aid in adjusting the projected image using the Settings menu.

   Note: You can also display a pattern to aid in adjusting the projected image using the **Test Pattern** button on the remote control.

2. Press the **Menu** button.

3. Select the **Settings** menu and press **Enter**.



4. Select the **Geometry Correction** setting and press **Enter**.
5. Select the **Point Correction** setting and press **Enter**.

   Note: If you see a confirmation message, press **Enter**.

   You see this screen:

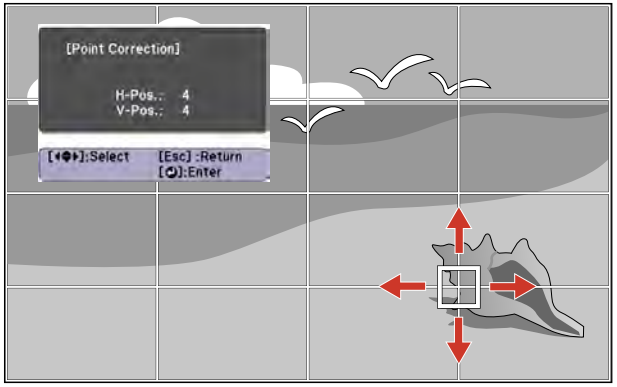


6. Select the **Point Correction** setting and press **Enter**.
7. Select the number of grid lines to display and press **Enter**.

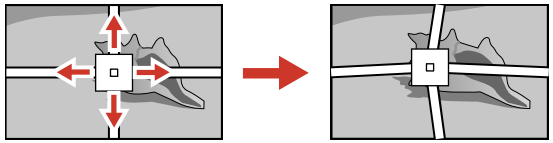
   Note: If you need to change the color of the grid lines, select the **Pattern Color** setting and select a suitable color.

8. Use the arrow buttons on the projector or remote control to move to the point on the grid that you want to adjust. Then press **Enter**.

   The box changes from a single line to a double-lined square.



9. Use the arrow buttons to correct the image shape in all necessary directions.



   Note: You can press **Enter** to show or hide the image and grid to check the results.

10. Press **Esc** to return to the previous screen and select another point to correct, if necessary.
11. When you are finished, press the **Menu** button.

    Note: If necessary, you can fine-tune your image adjustments using the **Corner Wall** setting.

Parent topic: Image Shape

Related references

Projector Feature Settings - Settings Menu

Related tasks

Displaying a Test Pattern

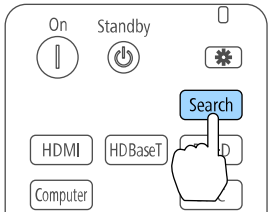
Correcting Image Shape with Quick Corner

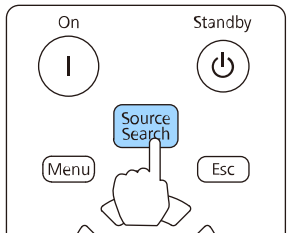
Selecting an Image Source

If you connected multiple image sources to the projector, such as a computer and DVD player, you may want to switch from one image source to the other.

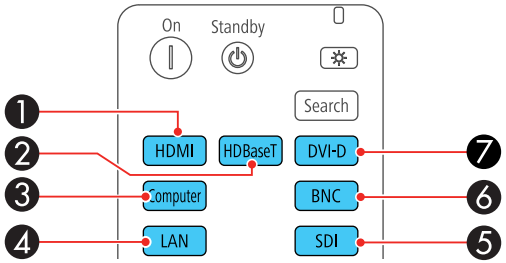
Note: If the **Auto Source Search** setting in the Extended menu is enabled, the projector automatically switches to another detected image source if the signal to the current image source is lost.

1. Make sure the connected image source you want to use is turned on.
2. For video image sources, insert a DVD or other video media and press its play button, if necessary.
3. Do one of the following:
   - Press the **Search** button on the remote control or the **Source Search** button on the projector until you see the image from the source you want.



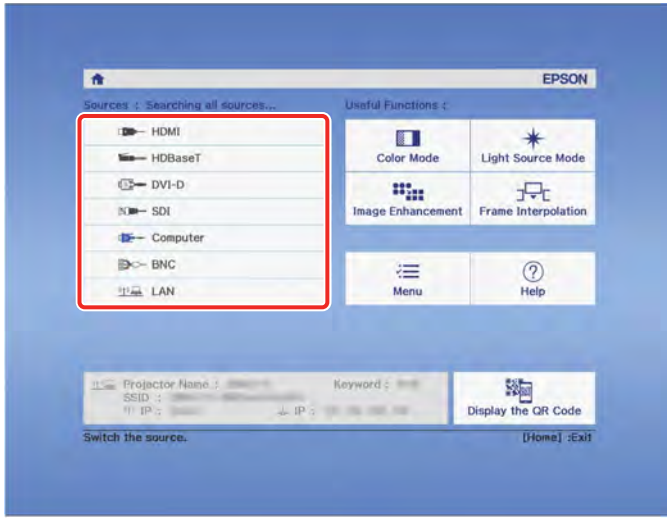


- Press the button for the source you want on the remote control.



1 HDMI port source
2 HDBaseT port source
3 Computer port source
4 Network port source
5 SDI port source (Pro L1405U/L1500U/L1505U)
6 BNC port source
7 DVI-D port source

- Press the **Home** button on the remote control and select your image source.



Parent topic: Using Basic Projector Features

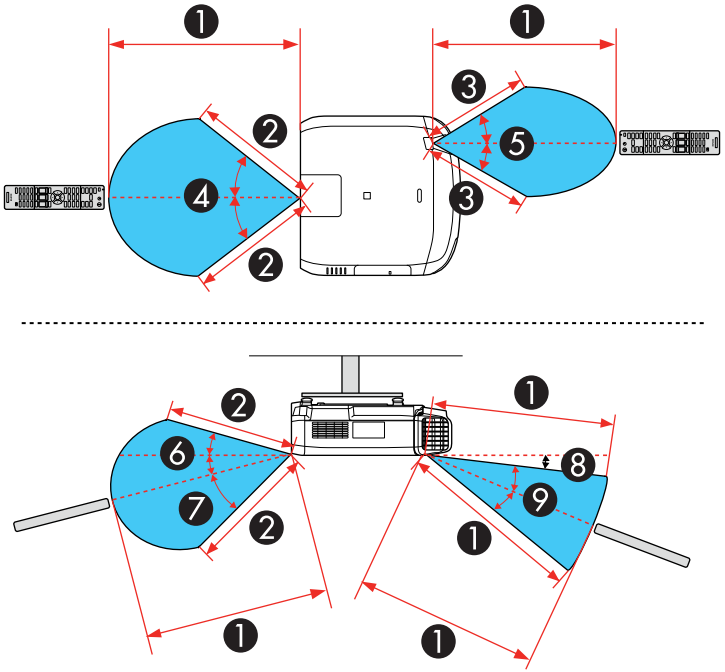
Related references

Projector Setup Settings - Extended Menu

Remote Control Operation

The remote control lets you control the projector from almost anywhere in the room, up to 98.4 feet (30 m) away. You can point it at the front or rear of the projector.

Make sure that you aim the remote control at the projector's receivers within the angles listed here.



1 98.4 feet (30 m)

2 82.0 feet (25 m)

3 65.6 feet (20 m)

4 ±60°

5 ±30°

6 ±15°

7 30°

7 10°

8 ±20°

Note: Avoid using the remote control in conditions with bright fluorescent lights or in direct sunlight, or the projector may not respond to commands. If you will not use the remote control for a long time, remove the batteries.

Parent topic: Using Basic Projector Features

Related tasks

Replacing the Remote Control Batteries

Projection Modes

Depending on how you positioned the projector, you may need to change the projection mode so your images project correctly.

- **Front** (default setting) lets you project from a table in front of the screen.
- **Front/Ceiling** flips the image over top-to-bottom to project upside-down from a ceiling or wall mount.
- **Rear** flips the image horizontally to project from behind a translucent screen.
- **Rear/Ceiling** flips the image over top-to-bottom and horizontally to project from the ceiling and behind a translucent screen.

Note: To view 3D images, you must project onto the front of a silver screen designed for passive 3D images.

Changing the Projection Mode Using the Remote Control

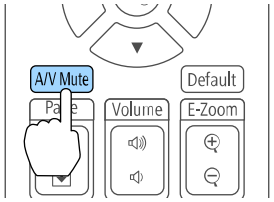
Changing the Projection Mode Using the Menus

Parent topic: Using Basic Projector Features

Changing the Projection Mode Using the Remote Control

You can change the projection mode to flip the image over top-to-bottom.

1. Turn on the projector and display an image.
2. Hold down the **A/V Mute** button on the remote control for five seconds.



The image disappears briefly and reappears flipped top-to-bottom.

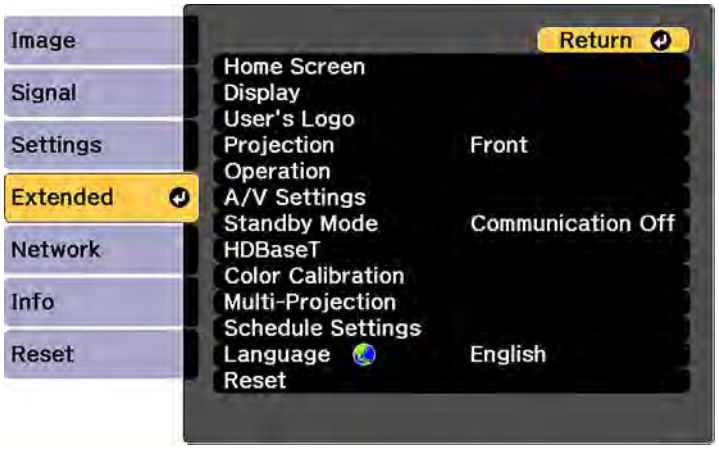
3. To change projection back to the original mode, hold down the **A/V Mute** button for five seconds again.

Parent topic: Projection Modes

Changing the Projection Mode Using the Menus

You can change the projection mode to flip the image over top-to-bottom and/or left-to-right using the projector menus.

1. Turn on the projector and display an image.
2. Press the **Menu** button.
3. Select the **Extended** menu and press **Enter**.



4. Select the **Projection** setting and press **Enter**.
5. Select a projection mode and press **Enter**.
6. Press **Menu** or **Esc** to exit the menus.

Parent topic: Projection Modes

Image Aspect Ratio

The projector can display images in different width-to-height ratios called aspect ratios. Normally the input signal from your video source determines the image's aspect ratio. However, for certain images you can change the aspect ratio to fit your screen by pressing a button on the remote control.

If you always want to use a particular aspect ratio for a certain video input source, you can select it using the projector's menus.

Changing the Image Aspect Ratio

Available Image Aspect Ratios

Parent topic: Using Basic Projector Features

Related references

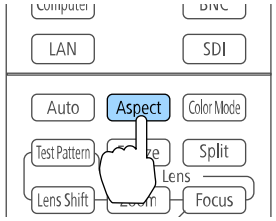
Image Quality Settings - Image Menu

Changing the Image Aspect Ratio

You can change the aspect ratio of the displayed image to resize it.

Note: Set the **Screen Type** setting in the projector's Extended menu before changing the aspect ratio.

1. Turn on the projector and switch to the image source you want to use.
2. Press the **Aspect** button on the remote control.



The shape and size of the displayed image changes, and the name of the aspect ratio appears briefly on the screen.

3. To cycle through the available aspect ratios for your input signal, press the **Aspect** button repeatedly.

Note: If you are projecting from a computer and parts of the image are cut-off, set the **Resolution** setting to **Wide** or **Normal** in the Signal menu.

Parent topic: Image Aspect Ratio

Related references

Input Signal Settings - Signal Menu

Related tasks

Setting the Screen Type

Available Image Aspect Ratios

You can select the following image aspect ratios, depending on the selected Screen Type setting and the input signal from your image source.

Note: Black bands and cropped or stretched images may project in certain aspect ratios, depending on the aspect ratio and resolution of your input signal.

Screen Type setting	Available aspect ratios
4:3	Auto, Normal, 4:3, 6:9, Native*
16:9	Auto, Normal, Full, H-Zoom, V-Zoom, Native
16:10	Auto, Normal, 16:9, Full, H-Zoom, V-Zoom, Native

*Available only when projecting computer images, or from sources connected to the **HDMI** or **HDBaseT** port

Aspect ratio setting	Description
Auto	Automatically sets the aspect ratio according to the input signal.
Normal	Displays images in the same aspect ratio of the input signal.
4:3	Displays images at a 4:3 aspect ratio.
16:9	Displays images at a 16:9 aspect ratio.
Full	Displays images using the full size of the projection area, but does not maintain the aspect ratio.
H-Zoom **V-Zoom**	Displays images using the full width (H-Zoom) or full height (V-Zoom) of the projection area and maintains the aspect ratio of the image. Areas that exceed the edges of the projected screen are not projected.

Aspect ratio setting	Description
Native	Displays images as is (aspect ratio and resolution are maintained). Areas that exceed the edges of the projected screen are not projected.

Parent topic: Image Aspect Ratio

Related tasks

Setting the Screen Type

Color Mode

The projector offers different Color Modes to provide optimum brightness, contrast, and color for a variety of viewing environments and image types. You can select a mode designed to match your image and environment, or experiment with the available modes.

If you always want to use a particular color mode for a certain video input source, you can select it using the projector menus.

Changing the Color Mode

Available Color Modes

Parent topic: Using Basic Projector Features

Related references

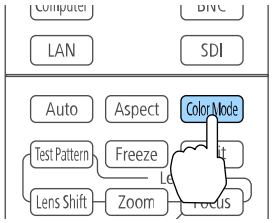
Image Quality Settings - Image Menu

Changing the Color Mode

You can change the projector's Color Mode using the remote control to optimize the image for your viewing environment.

1. Turn on the projector and switch to the image source you want to use.
2. If you are projecting from a DVD player or other video source, insert a disc or other video media and press the play button, if necessary.

3. Press the **Color Mode** button on the remote control to change the Color Mode.



The image appearance changes and the name of the Color Mode appears briefly on the screen.

4. To cycle through all the available Color Modes for your input signal, press the **Color Mode** button repeatedly.

Parent topic: Color Mode

Available Color Modes

You can set the projector to use these Color Modes, depending on the input source you are using:

Color Mode	Description
Dynamic	Best for projecting in a bright room
Presentation	Best for color presentations in a bright room
Cinema	Best for movies projected in a dark room
sRGB	Best for standard sRGB computer displays
DICOM SIM*	Best for projecting X-ray photographs and other medical images
Multi-Projection	Best for projecting from multiple projectors (reduces the color tone difference between images)

* Available only when inputting RGB signals

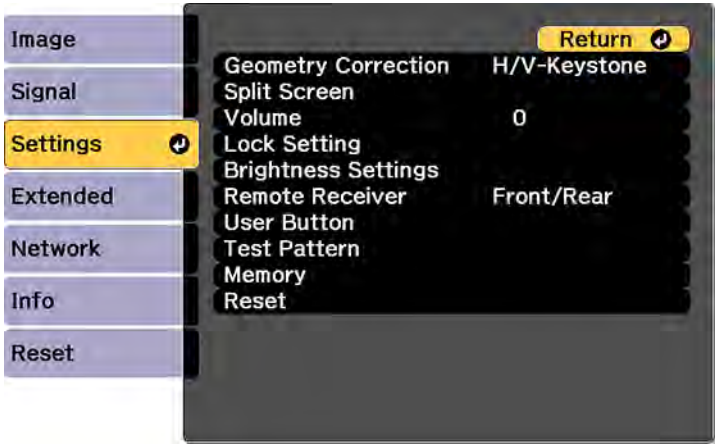
Note: The **DICOM SIM** Color Mode is for reference purposes only and should not be used to make medical diagnoses.

Parent topic: Color Mode

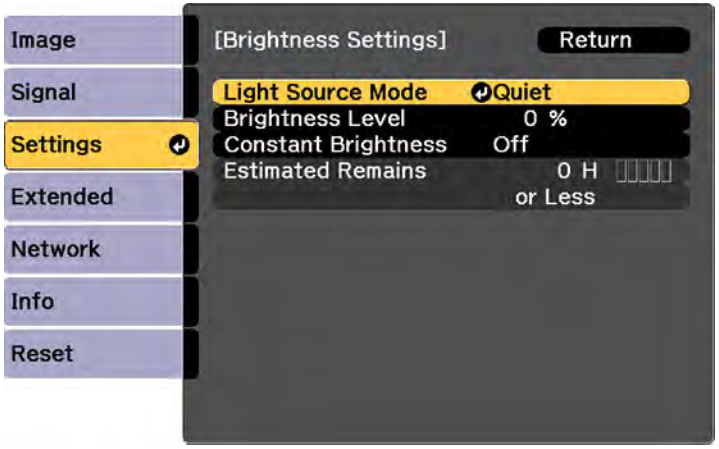
Adjusting the Brightness

You can adjust the brightness of your projector's light source.

1. Turn on the projector and switch to the image source you want to use.
2. Press the **Menu** button.
3. Select the **Settings** menu and press **Enter**.



4. Select the **Brightness Settings** setting and press **Enter**.



5. Select the **Light Source Mode** setting and press **Enter**.
6. Select one of the following options:
   - **Normal**: Sets brightness to maximum level (ideal for conference rooms, auditoriums, and lecture halls)
   - **Quiet**: Sets brightness to 70% and reduces fan noise (ideal for libraries, theaters, museums, and art galleries)
   - **Extended**: Sets brightness to 70% and extends the life expectancy of the light source (ideal for darker environments with ambient light, such as museums and art galleries, where a reduced maintenance cycle is desired)
   - **Custom**: Allows you to select a custom brightness level between 30 to 70%
7. If you selected **Custom**, select **Brightness Level** from the Brightness Settings screen and use the left and right arrow buttons to select the brightness. To maintain consistent brightness, turn on the **Constant Brightness** setting.

   Note: If you turn on **Constant Brightness**, you cannot change the **Light Source Mode** and **Brightness Level** settings. If you turn off **Constant Brightness**, the **Brightness Level** setting changes according to the status of the light source.

8. Press **Menu** or **Esc** to exit the menus.

Note: If you use the projector continuously for more than 24 hours, or regularly turn it off by shutting off the power outlet, schedule periodic **Light Source Calibration** events from the Extended menu. Otherwise, the **Constant Brightness** setting may not work properly.

Constant Brightness Usage Hours

Parent topic: Using Basic Projector Features

Related references

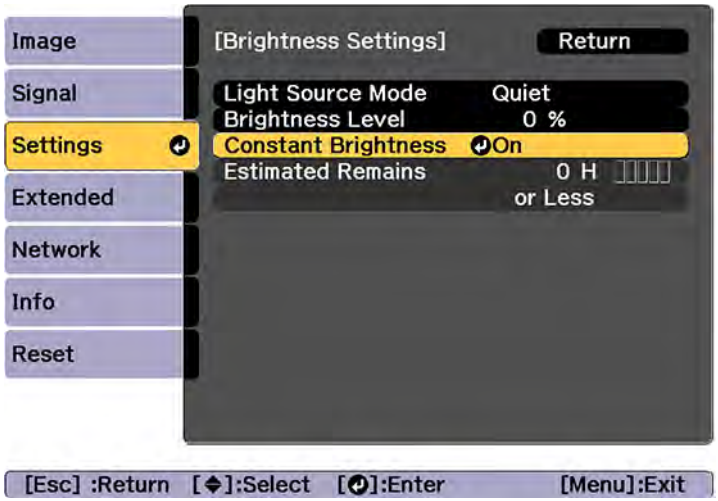
Projector Setup Settings - Extended Menu

Related tasks

Saving a Scheduled Event

Constant Brightness Usage Hours

If you turn on the **Constant Brightness** setting, the number of hours the projector can maintain constant brightness is displayed as the **Estimated Remains** setting.

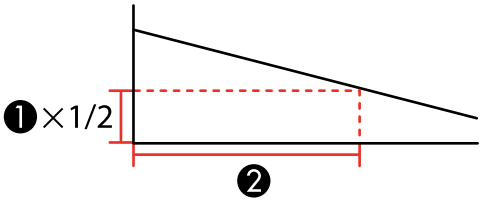


Display level	Estimated remaining hours
	10000 or more hours
	8000 to 9999 hours
	6000 to 7999 hours
	4000 to 5999 hours
	2000 to 3999 hours
	0 to 1999 hours

Light source life span

The estimated life span of the light source varies depending on the **Brightness Level** setting and whether the **Constant Brightness** setting is on or off.

Constant Brightness off

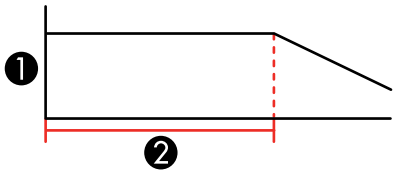


1 Brightness level

2 Time before the brightness of the light source is reduced by half (approximate)

Brightness Level setting	Hours
100%	20000 hours
90%	21000 hours
80%	24000 hours
70%	30000 hours
60%	37000 hours
50%	47000 hours
40%	61000 hours
30%	71000 hours

Constant Brightness on



1 Brightness level

2 Time the projector can maintain constant brightness (approximate)

Brightness Level setting	Hours
90%	6000 hours
80%	10000 hours
70%	19000 hours
60%	29000 hours
50%	41000 hours
40%	56000 hours
30%	78000 hours

Note: The light source usage hours vary depending upon environmental conditions and usage. The hours listed here are an approximate and are not guaranteed. After 20000 hours of use, you may need to replace parts in the projector. If **Constant Brightness** is turned on, and you have exceeded the usage hours listed here, you may not be able to select a high **Brightness Level** setting.

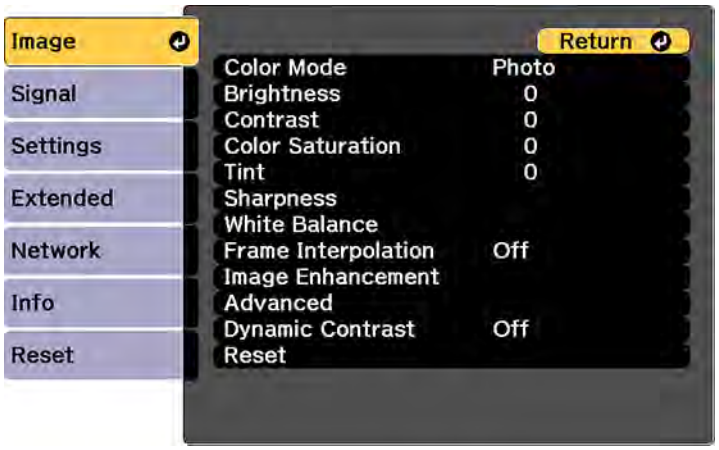
Parent topic: Adjusting the Brightness

Turning On Automatic Luminance Adjustment

In the **Dynamic** and **Cinema** color modes, you can turn on the **Dynamic Contrast** setting to automatically optimize the image luminance. This improves the image contrast based on the brightness of the content you project.

1. Turn on the projector and switch to the image source you want to use.
2. Press the **Menu** button.

3. Select the **Image** menu and press **Enter**.



4. Select the **Dynamic Contrast** setting, choose one of the following options, and press **Enter**:
   - **High Speed** to adjust brightness as soon as the scene changes.
   - **Normal** to adjust brightness at the standard speed.
5. Press **Menu** or **Esc** to exit the menus.

Parent topic: Using Basic Projector Features

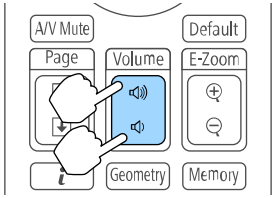
Controlling the Volume with the Volume Buttons

You can use the **Volume** buttons on the remote control to adjust the volume as you project a presentation with audio. The volume buttons control the projector's internal speaker system (Pro L1100U/L11200U/L1300U) or any external speakers you connected to the projector.

You must adjust the volume separately for each connected input source.

1. Turn on the projector and start a presentation that includes audio.

2. To lower or raise the volume, press the **Volume** buttons on the remote control.



A volume gauge appears on the screen.

3. To set the volume to a specific level for an input source, use the projector menus.

Parent topic: Using Basic Projector Features

Related references

Projector Feature Settings - Settings Menu

Related tasks

Connecting to External Speakers

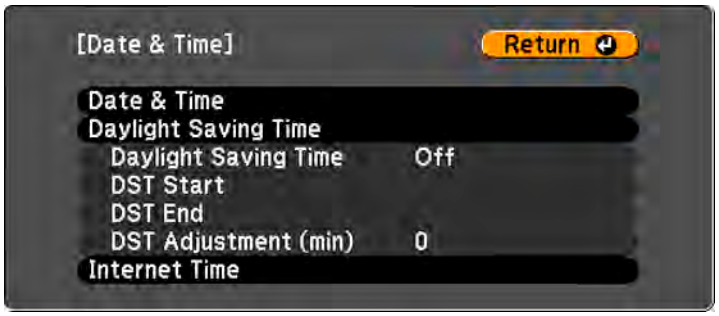
Setting the Date and Time

You can set the date and time for the projector.

Note: If the **Schedule Protection** setting in the Password Protection screen is enabled, you cannot change the date and time settings.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Operation** setting and press **Enter**.
4. Select the **Date & Time** setting and press **Enter**.

You see a screen like this:



5. Select your date and time settings. Then select **Set** and press **Enter** to confirm your changes.
6. When you are finished, press the **Menu** button to exit.

Date and Time Settings

Parent topic: Using Basic Projector Features

Related concepts

Password Security Types

Date and Time Settings

Settings	Options	Description
Date & Time	**Date** **Time** **Time Difference (UTC)**	Adjusts the projector's date and time settings **Date** and **Time**: sets the date and time **Time Difference (UTC)**: sets the time difference from Coordinated Universal Time

Settings	Options	Description
Daylight Saving Time	**Daylight Saving Time** **DST Start** **DST End** **DST Adjustment (min)**	Adjusts the daylight saving time settings **Daylight Saving Time**: enables or disables daylight saving time **DST Start** and **DST End**: sets the date and time to start or end daylight saving time **DST Adjustment (min)**: sets the difference between standard and daylight saving time
Internet Time	**Internet Time** **Internet Time Server**	Automatically adjusts the time through an Internet connection **Internet Time**: turn on this setting to update the date and time automatically through an Internet time server **Internet Time Server**: sets the IP address for the Internet time server

Parent topic: Setting the Date and Time

Adjusting Projector Features

Follow the instructions in these sections to use your projector's feature adjustments.

Shutting Off the Picture and Sound Temporarily
Stopping Video Action Temporarily
Zooming Into and Out of Images
Projector Security Features
Projecting Two Images Simultaneously
Using Advanced Image Adjustment Features
Using Multiple Projectors
Enabling Protocol Emulation
Viewing 3D Images
Saving Settings to Memory and Using Saved Settings
Saving a Scheduled Event
Copying Menu Settings Between Projectors

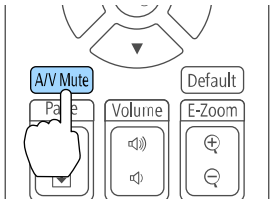
Shutting Off the Picture and Sound Temporarily

You can temporarily turn off the projected picture and sound if you want to redirect your audience's attention during a presentation. Any sound or video action continues to run, however, so you cannot resume projection at the point that you stopped it.

If you want to display an image such as a company logo or picture when the presentation is stopped, you can set up this feature using the projector's menus.

Note: If the picture and sound are off for more than 2 hours, the power automatically turns off. You can disable the **A/V Mute Timer** setting in the Extended Menu to turn off this feature.

1. Press the **A/V Mute** button on the remote control to temporarily stop projection and mute any sound.



2. To turn the picture and sound back on, press the **A/V Mute** button again.

Note:

- To fade the image in and out when you use A/V Mute, turn on the **Fade-out** and/or **Fade-in** settings in the Extended menu.
- If you selected **A/V Mute** for the **A/V Mute Release** setting in the Extended menu, you can still control the projector while A/V Mute is enabled.

Parent topic: Adjusting Projector Features

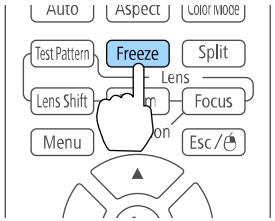
Related references

Projector Setup Settings - Extended Menu

Stopping Video Action Temporarily

You can temporarily stop the action in a video or computer presentation and keep the current image on the screen. Any sound or video action continues to run, however, so you cannot resume projection at the point that you stopped it.

1. Press the **Freeze** button on the remote control to stop the video action.

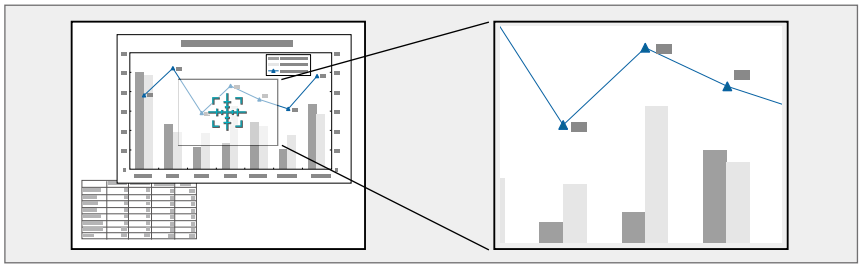


2. To restart the video action in progress, press **Freeze** again.

Parent topic: Adjusting Projector Features

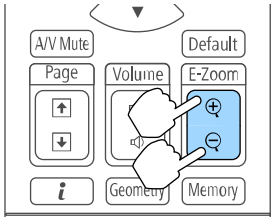
Zooming Into and Out of Images

You can draw attention to parts of a presentation by zooming into a portion of the image and enlarging it on the screen.



Note: This feature is unavailable if the **Scale** setting in the Signal menu is enabled. If you see a 4K Enhancement message, select **Yes** to disable the 4K Enhancement feature.

1. Press the **E-Zoom +** button on the remote control.



   You see a crosshair on the screen indicating the center of the zoom area.

2. Use the following buttons on the remote control to adjust the zoomed image:
   - Use the arrow buttons to position the crosshair in the image area you want to zoom into.
   - Press the **E-Zoom +** button repeatedly to zoom into the image area, enlarging it as necessary. Press and hold the **E-Zoom +** button to zoom in more quickly.
   - To pan around the zoomed image area, use the arrow buttons.
   - To zoom out of the image, press the **E-Zoom –** button as necessary.
   - To return to the original image size, press **Esc**.

Parent topic: Adjusting Projector Features

Related references

Input Signal Settings - Signal Menu

Projector Security Features

You can secure your projector to deter theft or prevent unintended use by setting up the following security features:

- Password security to prevent the projector from being turned on, and prevent changes to the startup screen and other settings.
- Button lock security to block operation of the projector using the buttons on the control panel or remote control.
- Security cabling to physically cable the projector in place.

Password Security Types

Locking the Projector's Buttons

Locking the Remote Control Buttons

Installing a Security Cable

Parent topic: Adjusting Projector Features

Password Security Types

You can set up these types of password security using one shared password:

- **Power On Protection** password prevents anyone from using the projector without first entering a password.
- **User's Logo Protection** password prevents anyone from changing the custom screen the projector can display when it turns on or when you use the A/V Mute feature. The presence of the custom screen discourages theft by identifying the projector’s owner.
- **Network Protection** password prevents anyone from changing the network settings in the projector menus.
- **Schedule Protection** password prevents anyone from changing the projector's time or schedule settings.

Setting a Password

Selecting Password Security Types

Entering a Password to Use the Projector

Saving a User's Logo Image to Display

Parent topic: Projector Security Features

Setting a Password

To use password security, you must set a password.

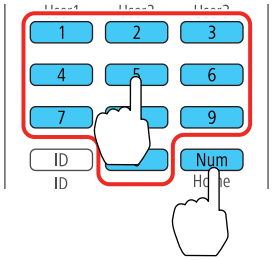
1. Hold down the **Freeze** button on the remote control for about five seconds or until you see this menu.



2. Press the down arrow to select **Password** and press **Enter**.

   You see the prompt "Change the password?".

3. Select **Yes** and press **Enter**.
4. Press and hold down the **Num** button on the remote control and use the numeric buttons to set a four-digit password.



   The password displays as **** as you enter it. Then you see the confirmation prompt.

5. Enter the password again.

   You see the message "Password accepted."

6. Press **Esc** to return to the menu.

7. Make a note of the password and keep it in a safe place in case you forget it.

Parent topic: Password Security Types

Selecting Password Security Types

After setting a password, you see this menu, allowing you to select the password security types you want to use.



If you do not see this menu, hold down the **Freeze** button on the remote control for about five seconds or until the menu appears.

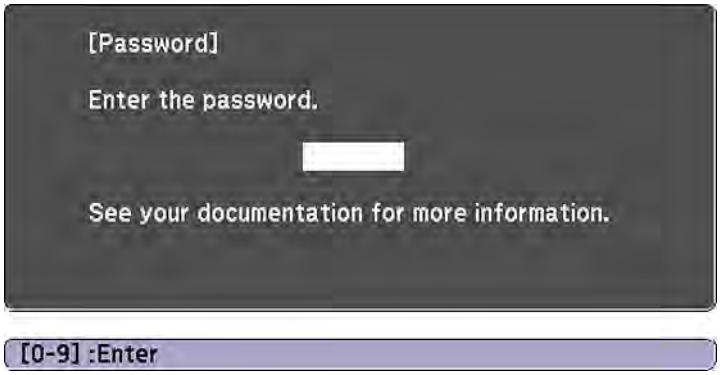
1. To prevent unauthorized use of the projector, select **Power On Protection**, press **Enter**, select **On**, press **Enter** again, and press **Esc**.
2. To prevent changes to the User's Logo screen or related display settings, select **User's Logo Protection**, press **Enter**, select **On**, press **Enter** again, and press **Esc**.
3. To prevent changes to network settings, select **Network Protection**, press **Enter**, select **On**, press **Enter** again, and press **Esc**.
4. To prevent changes to the projector's time or schedule settings, select **Schedule Protection**, press **Enter**, select **On**, press **Enter** again, and press **Esc**.

Note: Be sure to keep the remote control in a safe place; if you lose it, you will not be able to enter the password required to use the projector.

Parent topic: Password Security Types

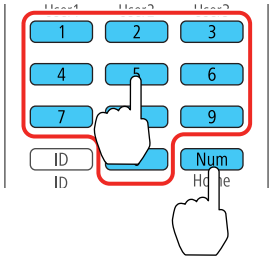
Entering a Password to Use the Projector

If a password is set up and a **Power On Protection** password is enabled, you see a prompt to enter a password whenever you turn on the projector.



You must enter the correct password to use the projector.

1. Press and hold down the **Num** button on the remote control while you enter the password using the numeric buttons.



Note: The default password is **0000**.

The password screen closes.

2. If the password is incorrect, the following may happen:
   - You see a "wrong password" message and a prompt to try again. Enter the correct password to proceed.

- If you enter an incorrect password several times in succession, the projector displays a request code and a message to contact Epson Support. Do not attempt to enter the password again. When you contact Epson Support, provide the displayed request code and proof of ownership for assistance in unlocking the projector.

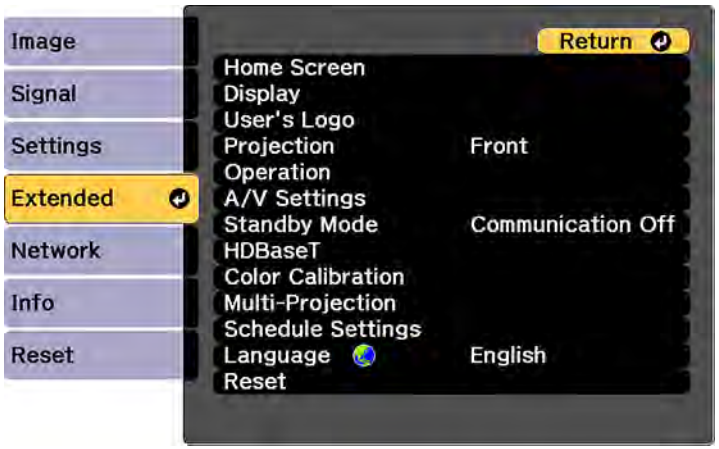
Parent topic: Password Security Types

Saving a User's Logo Image to Display

You can transfer an image to the projector and then display it whenever the projector turns on. You can also display the image when the projector is not receiving an input signal or when you temporarily stop projection (using the A/V Mute feature). This transferred image is called the User's Logo screen.

The image you select as the User's Logo can be a photo, graphic, or company logo, which is useful in identifying the projector's owner to help deter theft. You can prevent changes to the User's Logo by setting up password protection for it.

1. Display the image you want to project as the User's Logo.
2. Press the **Menu** button, select the **Extended** menu, and press **Enter**.



3. Select the **User's Logo** setting and press **Enter**.

   You see a prompt asking if you want to use the displayed image as a user's logo.
4. Select **Yes** and press **Enter**.

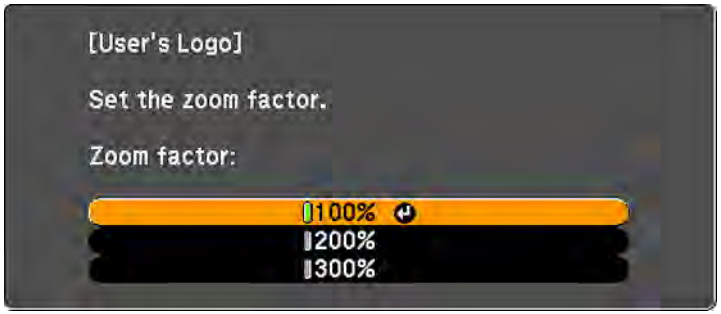
   You see a selection box overlaying your image.

5. Use the arrow buttons on the remote control or control panel to surround the image area you want to use as the User's Logo and press **Enter**.

   You see a prompt asking if you want to select this image area.

6. Select **Yes** and press **Enter**. (If you want to change the selected area, select **No**, press **Enter**, and repeat the last step.)

   You see the User's Logo zoom factor menu.



7. Select a zoom percentage and press **Enter**.

   You see a prompt asking if you want to save the image as the User's Logo.

8. Select **Yes** and press **Enter**.

   You see a completion message.

9. Press **Esc** to exit the message screen.
10. Select the **Extended** menu and press **Enter**.
11. Select **Display** and press **Enter**.
12. Select when you want to display the User's Logo screen:
    - To display it whenever there is no input signal, select **Display Background** and set it to **Logo**.
    - To display it whenever you turn the projector on, select **Startup Screen** and set it to **On**.

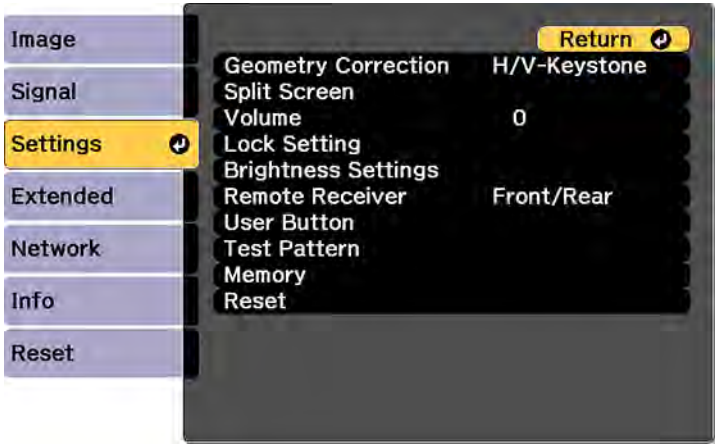
To prevent anyone from changing the User's Logo settings without first entering a password, set a password and enable User's Logo security.

Parent topic: Password Security Types

Locking the Projector's Buttons

You can lock the buttons on the projector's control panel to prevent anyone from using the projector. You can lock all the buttons or all the buttons except the power button.

1. Press the **Menu** button.
2. Select the **Settings** menu and press **Enter**.



3. Select **Lock Setting** and press **Enter**.
4. Select the **Control Panel Lock** setting and press **Enter**.

   Note: You can also press the left arrow button on the control panel to display the Control Panel Lock screen.

5. Select one of these lock types and press **Enter**:
   - To lock all of the projector's buttons, select **Full Lock**.
   - To lock all buttons except the power button, select **Partial Lock**.

   You see a confirmation prompt.
6. Select **Yes** and press **Enter**.

Unlocking the Projector's Buttons

Parent topic: Projector Security Features

Related references

Projector Parts - Control Panel

Unlocking the Projector's Buttons

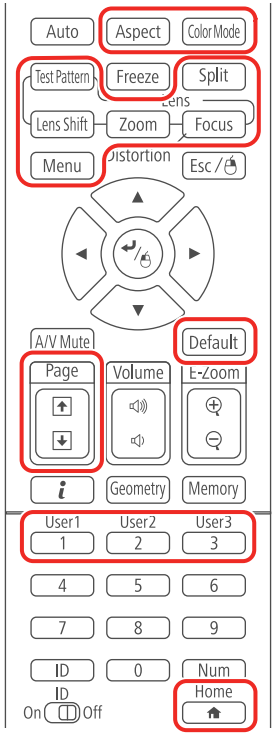
If the projector's buttons have been locked, hold the **Enter** button on the projector's control panel for seven seconds to unlock them.

Parent topic: Locking the Projector's Buttons

Locking the Remote Control Buttons

You can lock some of the buttons on the remote control.

- To lock the remote control buttons related to lens operation, turn on the **Lens Lock** setting in the Settings menu.
- To lock the remote control buttons shown here, press and hold the **Home** button for approximately 5 seconds. (To unlock the buttons, press and hold the **Home** button again for approximately 5 seconds.)



Note: If you lock the remote control buttons, you can still reset the **Remote Receiver** setting in the Settings menu to the default settings.

Parent topic: Projector Security Features

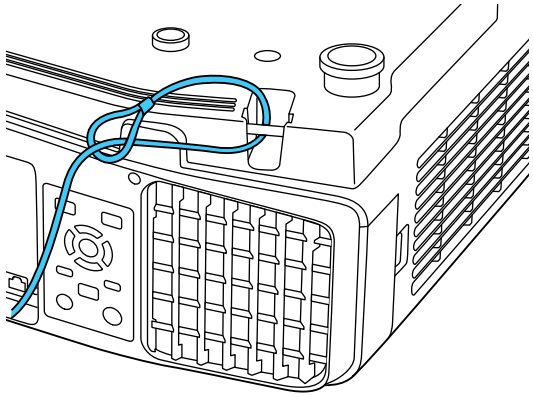
Related references

Projector Feature Settings - Settings Menu

Installing a Security Cable

You can install two types of security cables on the projector to deter theft.

- Use the security slot on the projector to attach a Kensington lock. See your local computer or electronics dealer for purchase information.
- Use the security cable attachment point on the projector to attach a wire cable and secure it to a room fixture or heavy furniture.



Note: Do not pass drop-prevention cables through the security cable attachment point when mounting the projector on a wall or ceiling.

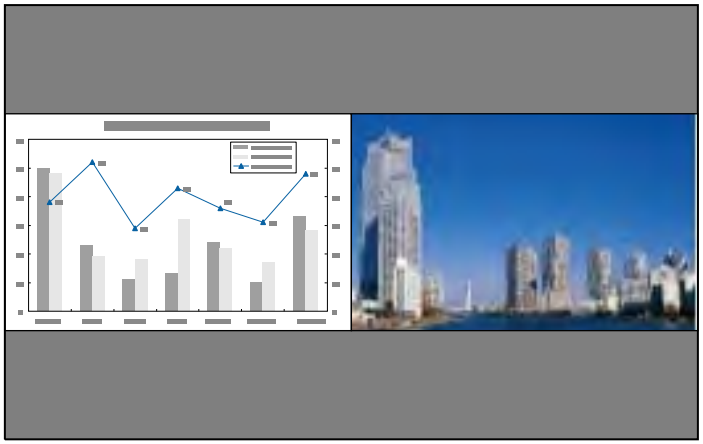
Parent topic: Projector Security Features

Related references

Projector Parts - Rear

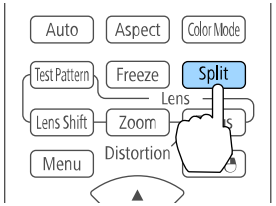
Projecting Two Images Simultaneously

You can use the split screen feature to simultaneously project two images from different image sources next to each other. You can control the split screen feature using the remote control or the projector menus.



Note: While you use the split screen feature, other projector features may not be available and some settings may be automatically applied to both images.

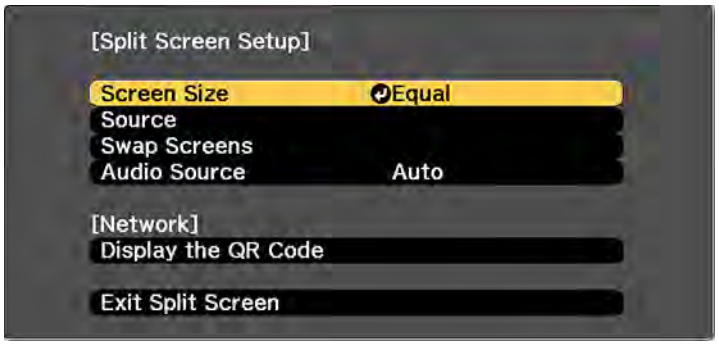
1. Press the **Split** button on the remote control.



   The currently selected input source moves to the left side of the screen.

2. Press the **Menu** button.

You see this screen:



3. To select an input source for the other image, select the **Source** setting, press **Enter**, select the input source, select **Execute**, and press **Enter**. (You can also change image sources, if necessary.)
4. To switch the images, select the **Swap Screens** setting and press **Enter**.
5. To change the image sizes, select the **Screen Size** setting, press **Enter**, select a sizing option, press **Enter**, and press **Menu** to exit.

   Note: Depending on the video input signals, the images may not appear at the same size even if you choose the **Equal** setting.

6. To choose the audio you want to hear, select the **Audio Source** setting, press **Enter**, select an audio option, press **Enter**, and press **Menu** to exit.

   Note: Select **Auto** to hear audio from the largest screen or the left screen.

7. To exit the split screen feature, press the **Split** or **Esc** button.

Input Sources for Split Screen Projection

Parent topic: Adjusting Projector Features

Input Sources for Split Screen Projection

You can choose from the input source combinations listed here for split screen projection.

Note: Input signals exceeding WUXGA are not supported. If you see a 4K Enhancement message, select **Yes** to disable the 4K Enhancement feature.

Left Screen	Right Screen						
	HDMI	HDBaseT	DVI-D	SDI*	Computer	BNC	LAN
HDMI	—	✓	✓	✓	✓	✓✓	✓
HDBaseT	✓	—	✓	✓	✓	✓	✓
DVI-D	✓	✓	—	✓	✓	✓	✓
SDI*	✓	✓	✓	—	—	—	—
Computer	✓	✓	✓	—	—	—	—
BNC	✓	✓	✓	—	—	—	—
LAN	✓	✓	✓	—	—	—	—

* Pro L1405U/L1500U/L1505U only

Parent topic: Projecting Two Images Simultaneously

Using Advanced Image Adjustment Features

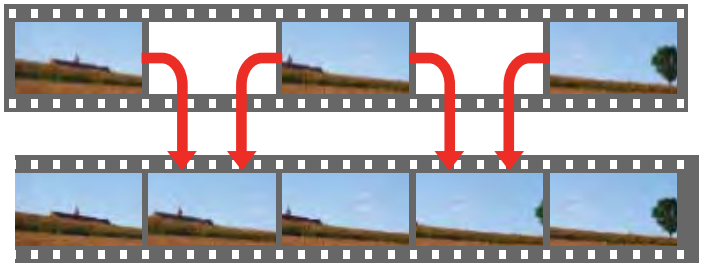
Follow the instructions in these section to use your projector's advanced image adjustments.

Using Frame Interpolation
Using 4K Enhancement
Creating Image Presets
Using MPEG Noise Reduction
Adjusting Scaled Resolution Images (Super-resolution)
Adjusting Detail Enhancement
Adjusting the Color Convergence (Panel Alignment)
Adjusting the Color Tone (Color Uniformity)

Parent topic: Adjusting Projector Features

Using Frame Interpolation

You can use the projector's Frame Interpolation feature to smooth fast-moving video by comparing consecutive image frames and inserting an intermediate image frame between them.

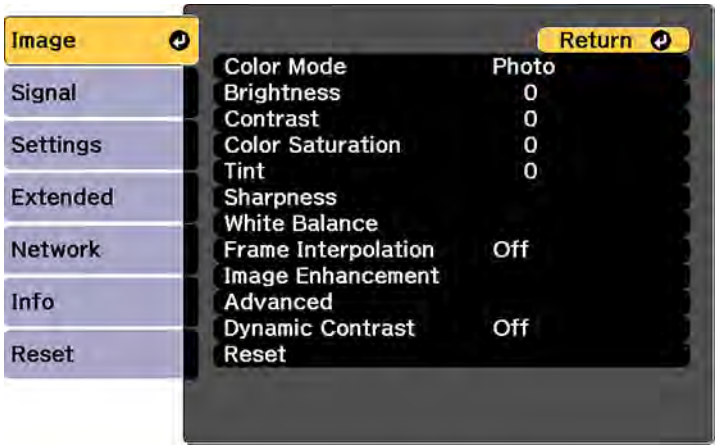


You cannot use this feature if any of the following conditions are true:

- You are using the E-Zoom feature
- The image signal exceeds WUXGA
- You turned on the **4K Enhancement**, **Edge Blending**, or **Scale** settings
- You selected **Fast 1** or **Fast 2** for the **Image Processing** setting

1. Press the **Menu** button.

   You see a screen like this:



2. Select the **Frame Interpolation** setting and press **Enter**.

   You see a screen like this:



3. Select the level of interpolation and press **Enter**.
4. When you are finished, press the **Menu** button.

Note: If your resulting images contain noise, turn off the **Frame Interpolation** setting.

Parent topic: Using Advanced Image Adjustment Features

Related references

Image Quality Settings - Image Menu

Projector Feature Settings - Settings Menu

Projector Setup Settings - Extended Menu

Related tasks

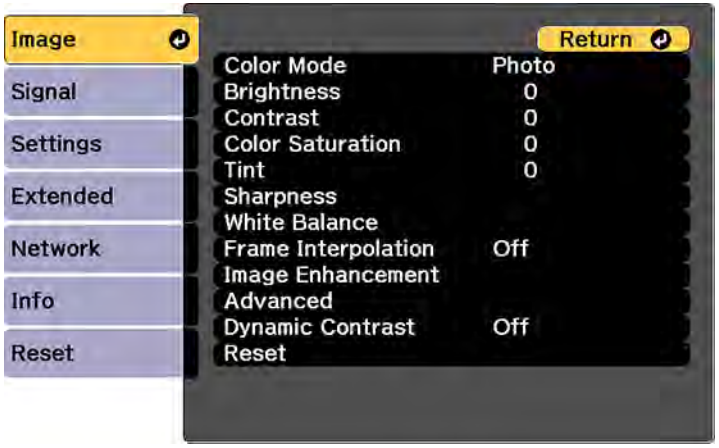
Zooming Into and Out of Images

Using 4K Enhancement

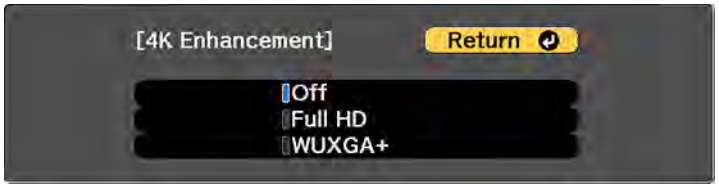
Using the projector's 4K Enhancement Technology, you can receive 4K (3840 × 2160) signals and project ultra high-definition images. This technology shifts each pixel diagonally by 0.5 pixels to double the image resolution.

1. Press the **Menu** button.

You see a screen like this:



2. Select the **Image Enhancement** setting and press **Enter**.
3. Select the **4K Enhancement** setting and press **Enter**.



4. Select one of the following options and press **Enter**:
   - **Off** to disable 4K enhancement when projecting from computers or multiple projectors
   - **Full HD** to enhance a signal with a resolution of 1080i/1080p/WUXGA or higher
   - **WUXGA+** to enhance a signal with a resolution exceeding WUXGA; when projecting a high-resolution movie, select **WUXGA+** along with an appropriate **Image Preset Mode** setting

   Note: If you select **Full HD** or **WUXGA+**, the following adjustment settings are canceled: **Edge Blending**, **Scale**, **Curved Surface**, **Point Correction**, and **Corner Wall**.

5. Press **Menu** or **Esc** to exit the menus.

Parent topic: Using Advanced Image Adjustment Features

Related references

Projector Feature Settings - Settings Menu

Projector Setup Settings - Extended Menu

Creating Image Presets

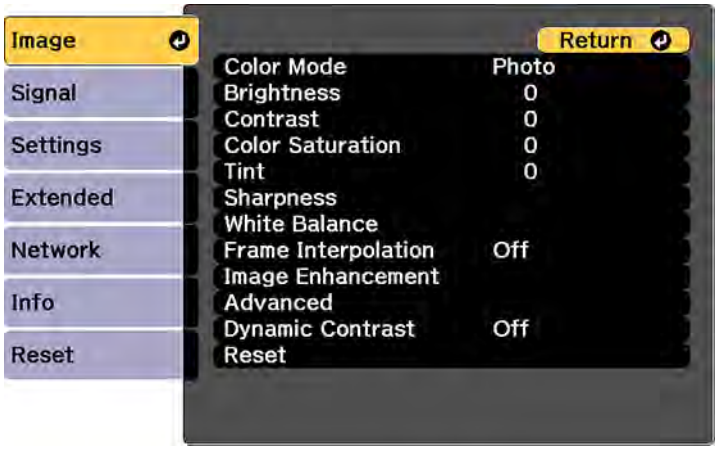
You can quickly optimize your projected image by selecting image adjustment settings and saving them as a preset you can reuse later.

You can save the following settings in a preset:

- Noise Reduction
- MPEG Noise Reduction
- Super-resolution
- Detail Enhancement

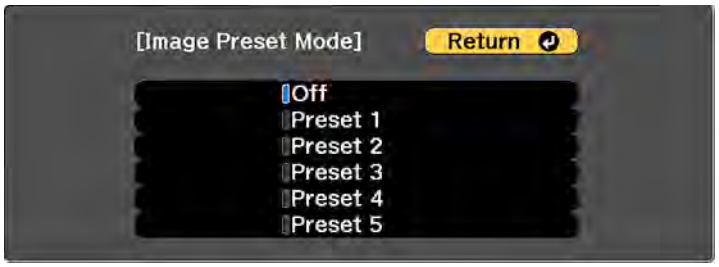
1. Press the **Menu** button.

   You see a screen like this:



2. Select the **Image Enhancement** setting and press **Enter**.

3. Select the **Image Preset Mode** setting and press **Enter**.



4. Select one of the presets.
5. Fine-tune each setting individually and press **Enter**.

   Note: If you select a previously used preset, your new adjustments overwrite the old ones.

6. Press **Menu** or **Esc** to exit the menus.

Parent topic: Using Advanced Image Adjustment Features

Related references

Image Quality Settings - Image Menu

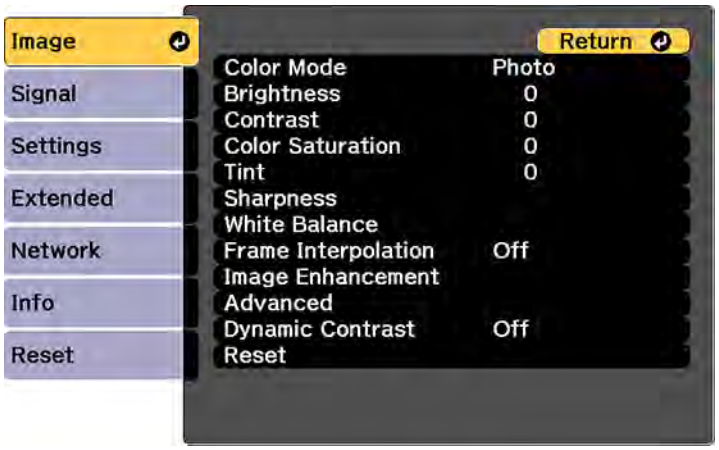
Using MPEG Noise Reduction

If you are projecting MPEG movies, you can reduce dots and block noise using the **MPEG Noise Reduction** setting.

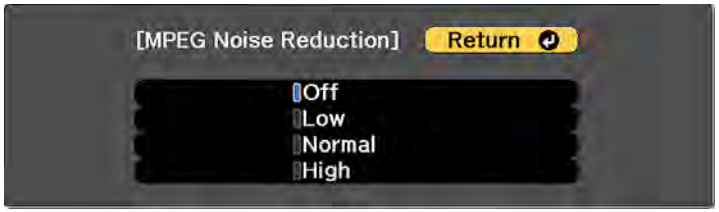
Note: If you enable the **4K Enhancement** setting, or the resolution of your input signal exceeds WUXGA, this setting is disabled.

1. Press the **Menu** button.

You see a screen like this:



2. Select the **Image Enhancement** setting and press **Enter**.
3. Select the **MPEG Noise Reduction** setting and press **Enter**.



4. Select the level of noise reduction and press **Enter**.
5. Press **Menu** or **Esc** to exit the menus.

Parent topic: Using Advanced Image Adjustment Features

Related tasks

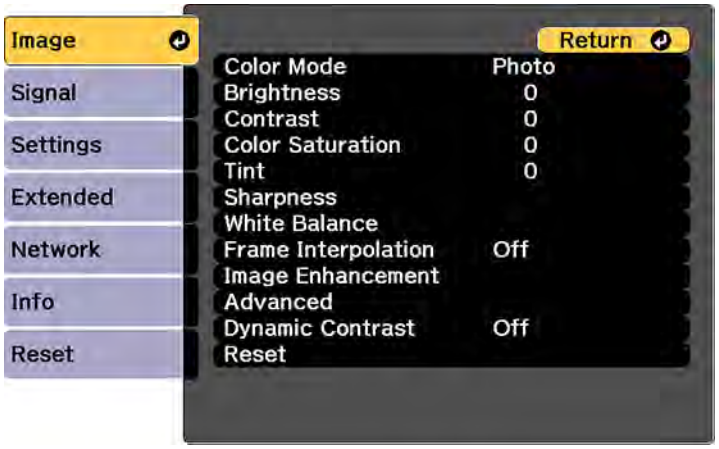
Using 4K Enhancement

Adjusting Scaled Resolution Images (Super-resolution)

You can sharpen blurry, low-resolution images that had their resolution scaled up for projection using the **Super-resolution** setting.

1. Turn on the projector and switch to the image source you want to use.
2. Press the **Menu** button.

   You see a screen like this:



3. Select the **Image Enhancement** setting and press **Enter**.
4. Select the **Super-resolution** setting and press **Enter**.



5. Adjust each of the following options as necessary:
   - **Fine Line Adjust** to enhance fine details such as hair and fabric patterns
   - **Soft Focus Detail** to enhance the outline, background, and main parts of an image

   Note: Higher values increase the intensity of the effect.

6. Press **Menu** or **Esc** to exit the menus.

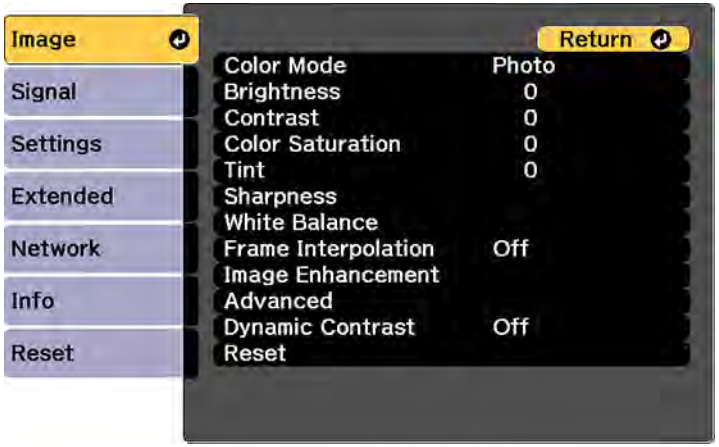
Parent topic: Using Advanced Image Adjustment Features

Adjusting Detail Enhancement

You can enhance the contrast in detailed areas of an image to create a more textured look.

1. Turn on the projector and switch to the image source you want to use.
2. Press the **Menu** button.

   You see a screen like this:



3. Select the **Image Enhancement** setting and press **Enter**.
4. Select the **Detail Enhancement** setting and press **Enter**.



5. Adjust each of the following options as necessary:
   - **Strength** to enhance the image contrast
   - **Range** to increase the enhanced area of the image

   Note: Higher values increase the intensity of the effect.

6. Press **Menu** or **Esc** to exit the menus.

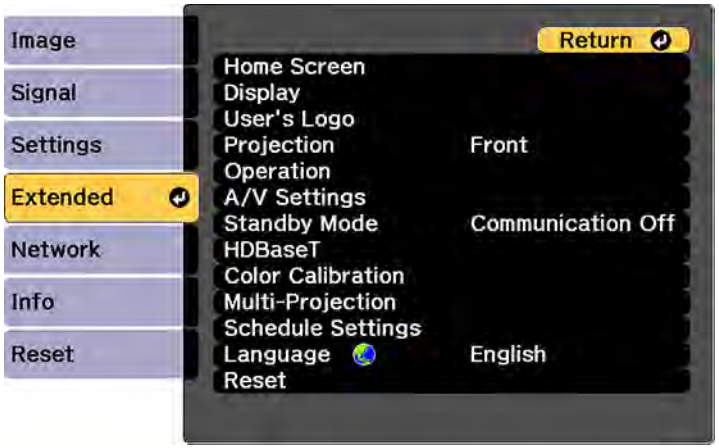
Parent topic: Using Advanced Image Adjustment Features

Adjusting the Color Convergence (Panel Alignment)

You can use the Panel Alignment feature to manually adjust the color convergence (the alignment of the red, green and blue colors) in the projected image.

Note: Allow your projector to warm up for at least 10 to 15 minutes and make sure the image is in focus before you use the Panel Alignment feature. The projected image size should be at least 60 inches (152 cm) diagonally and the projection surface should not be colored or textured; otherwise the adjustment grids are difficult to align.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.



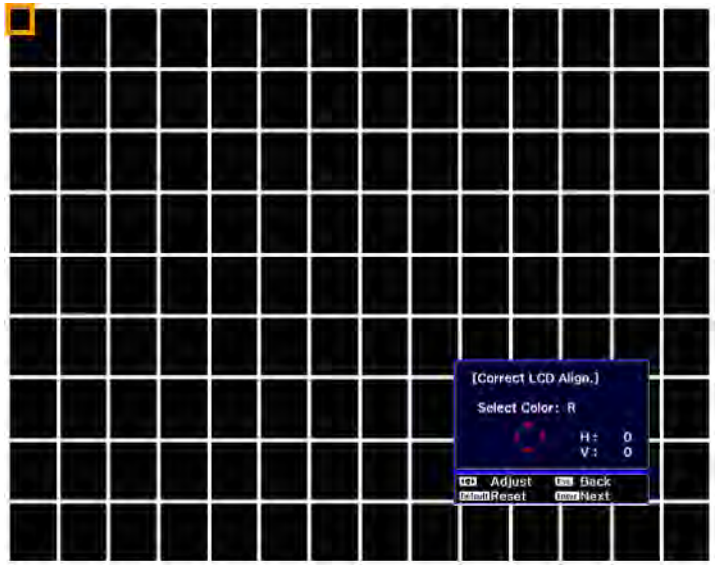
3. Select the **Display** setting and press **Enter**.
4. Select the **Panel Alignment** setting and press **Enter**.
5. Press **Enter** and select **On**.
6. Press **Esc**.
7. Select the **Select Color** setting and choose one of the following:
   - **R** to adjust the red color convergence

- **B** to adjust the blue color convergence

Note: You can adjust only the red or blue color convergence; you cannot adjust the standard green color panel.

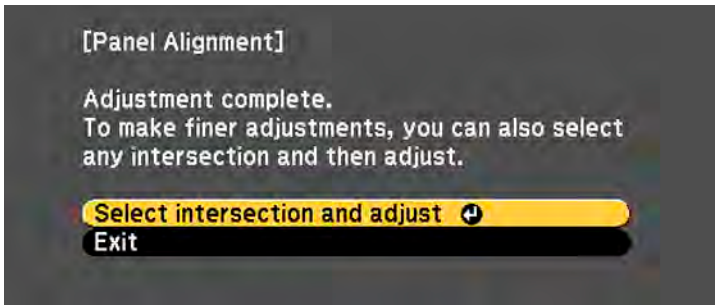
8. Select the **Pattern Color** setting and press **Enter**.
9. Select the pattern you want to use and press **Esc**.
10. Select **Start Adjustments** and press **Enter** twice.

    You see this screen:



11. Use the arrow buttons on the remote control to adjust the color alignment in the corner of the screen highlighted by the orange box.
12. Press the **Enter** button to move to the next corner of the screen.
13. When you are finished adjusting each corner of the screen, press **Enter**.

You see this screen:



14. Do one of the following:
    - If your projector's panel alignment is now correct, select **Exit** and press **Enter** to return to the Panel Alignment menu.
    - If your projector needs additional panel alignment, select **Select intersection and adjust** and press **Enter**. Use the arrow keys on the remote control to highlight the corner of any box on the screen that is misaligned and press **Enter** to adjust the color convergence. Repeat this step as necessary.

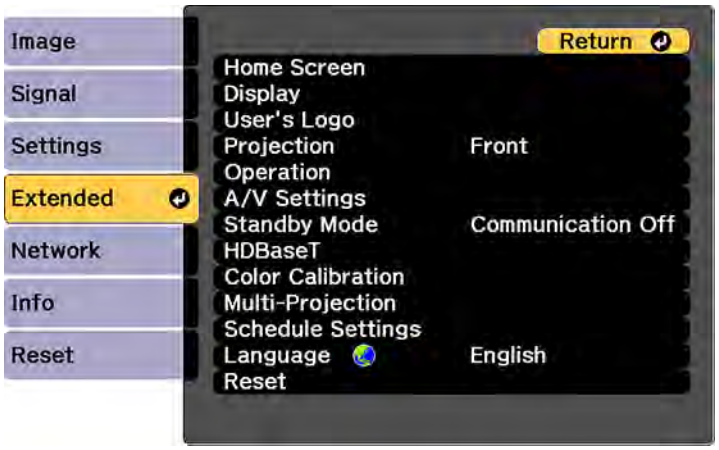
Parent topic: Using Advanced Image Adjustment Features

Adjusting the Color Tone (Color Uniformity)

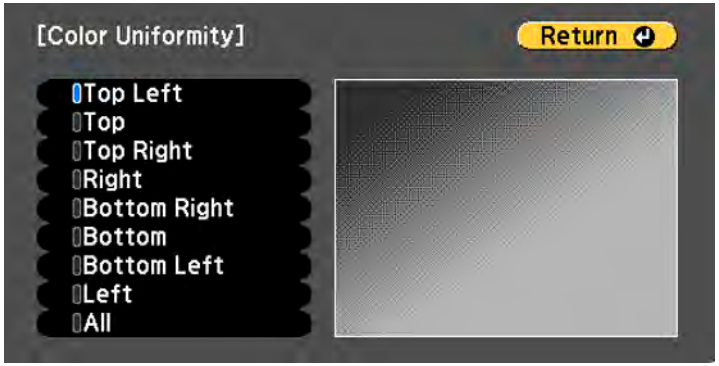
You can use the Color Uniformity feature to manually adjust the color tone balance in the projected image.

1. Press the **Menu** button.

2. Select the **Extended** menu and press **Enter**.



3. Select the **Display** setting and press **Enter**.
4. Select the **Color Uniformity** setting and press **Enter**.
5. Press **Enter** and select **On**.
6. Press **Esc**.
7. Select the **Adjustment Level** setting and press **Enter**.
8. Press the right and left arrow buttons to adjust the level, then press **Esc**.
9. Select the **Start Adjustments** setting and press **Enter**.



10. Select the area of the screen that you want to adjust and press **Enter**.
11. Select the color (**Red**, **Green**, or **Blue**) you want to adjust, and use the left arrow button to weaken the color tone and the right arrow button to strengthen the color tone.
12. Press **Esc**.
13. Repeat steps 10 and 11 for each area you want to adjust.
14. When you are finished, press the **Menu** button.

Parent topic: Using Advanced Image Adjustment Features

Using Multiple Projectors

You can combine the projected images from two or more projectors to create one large image. Follow the instructions in these sections to setup and project from multiple projectors.

Multiple Projector Adjustment Overview
Projector Identification System for Multiple Projector Control
Tiling Images into One Image
Blending the Image Edges
Adjusting the Black Level
Matching Tint and Brightness (Screen Matching)
Scaling an Image

Parent topic: Adjusting Projector Features

Multiple Projector Adjustment Overview

If you are combining images from multiple projectors on a network, you can assign one projector as the "master" and automatically adjust all the images to match the "master" image. If the projectors are not connected to a network, you can match each projector's images manually.

Note: Make sure all networked projectors are connected using LAN cables and have been assigned an IP address. Also disable Sleep Mode on each projector so they do not turn off during adjustment.

1. Turn on all the projectors.
2. To select a master projector for automatic adjustment, select **Custom** for the **Light Source Mode** setting and set the **Brightness Level** setting to the maximum value for all projectors. The projector with the darkest projected image is the master projector.

3. Do one of the following:
   - For automatic adjustment, set an ID for the master projector and the remote control.
   - For manual adjustment, set an ID for each projector and the remote control.
4. Adjust each projector's physical position and angle to the screen.
5. Do one of the following:
   - For automatic adjustment, configure tiling automatically.
   - For manual adjustment, configure tiling manually.
6. Adjust the image aspect ratio for each projector.
7. Adjust the position of the image for each projector using lens shift.
8. Adjust the zoom and focus for each projector.
9. Adjust small differences in the images using the **Point Correction** setting.
10. Adjust the edges of the images using the **Edge Blending** and **Black Level** settings.
11. Adjust the brightness and tint of the images using the **Screen Matching** setting.
12. Select sections of the images using the **Scale** setting.

Parent topic: Using Multiple Projectors

Related concepts

Wired Network Projection
Projector Identification System for Multiple Projector Control
Projector Placement
Image Aspect Ratio

Related references

Projector Feature Settings - Settings Menu

Related tasks

Turning On the Projector
Adjusting the Image Position Using Lens Shift
Adjusting the Image Position Using Screen Position
Resizing the Image with the Zoom Button
Focusing the Image Using the Focus Button
Correcting Image Shape with Point Correction
Blending the Image Edges

Adjusting the Black Level
Scaling an Image

Related topics

Tiling Images into One Image
Matching Tint and Brightness (Screen Matching)

Projector Identification System for Multiple Projector Control

You can operate multiple projectors using one remote control for more elaborate presentations. To do this, you assign an identification number to each projector and to the remote control. Then you can operate all the projectors at once or individually.

You can also match the colors displayed by any projectors you plan to use near each other.

Caution: Leave at least 20 inches (50 cm) of space between the projectors to prevent them from overheating.

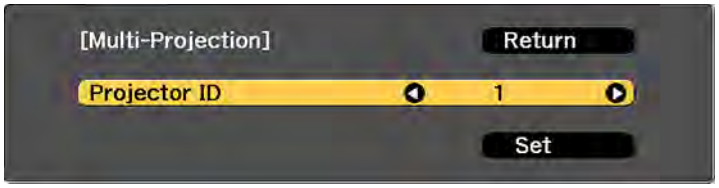
Setting the Projector ID
Setting the Remote Control ID

Parent topic: Using Multiple Projectors

Setting the Projector ID

If you want to control multiple projectors from a remote control, give each projector a unique ID.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Multi-Projection** setting and press **Enter**.
4. Select **Projector ID** and press **Enter**.



5. Press the left or right arrow buttons on the remote control to select the identification number you want to use for the projector. Then select **Set** and press **Enter**.

Repeat these steps for all the other projectors you want to operate from one remote control.

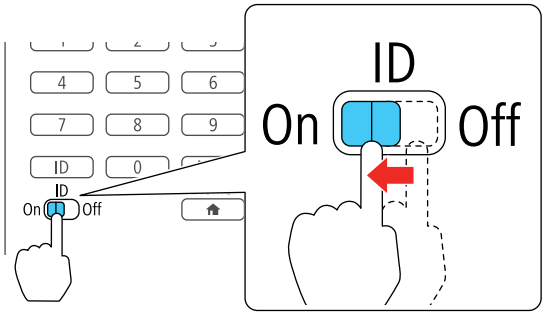
Note: If you don't know the projector's ID, hold down the **ID** button and press the **Home** button to temporarily display the projector's ID on the screen.

Parent topic: Projector Identification System for Multiple Projector Control

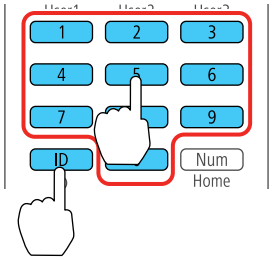
Setting the Remote Control ID

The remote control's ID is set to **0** by default so it can operate any compatible projector. If you want to set the remote control to operate only a particular projector, you need to set the remote control's ID to match the projector's ID.

1. Turn on the projector you want the remote control to operate with exclusively.
2. Set the remote control **ID** switch to **On**.



3. Hold down the **ID** button on the remote control while you press the numeric button that matches the projector's ID. Then release the buttons.

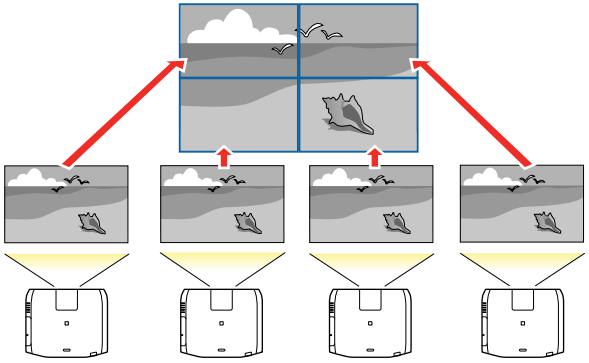


Note: If you don't know the projector's ID, hold down the **ID** button and press the **Home** button to temporarily display the projector's ID on the screen. If the batteries are left out of the remote control for an extended period, the remote control ID returns to its default setting.

Parent topic: Projector Identification System for Multiple Projector Control

Tiling Images into One Image

You can project the same image from up to nine projectors to create one large image using the Tiling feature.



Note: Before tiling, make sure the displayed images from your projectors are rectangular, correctly sized, and focused.

Configuring Tiling Automatically
Configuring Tiling Manually

Parent topic: Using Multiple Projectors

Related tasks
Multiple Projector Adjustment Overview

Configuring Tiling Automatically

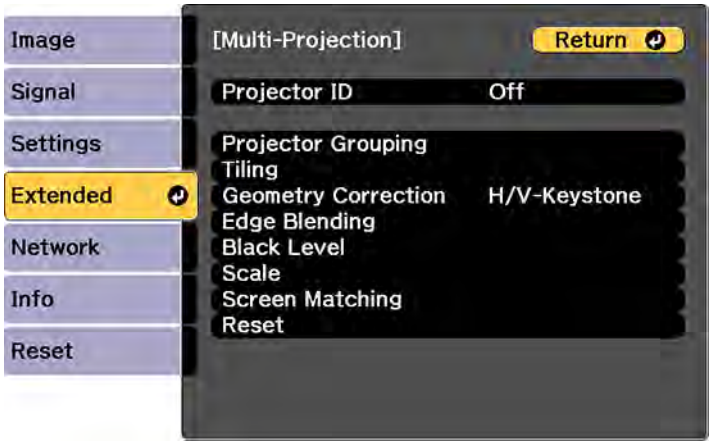
If your projectors are on a network and you have identified a master projector, you can configure tiling automatically.

1. Turn on the projector.

   Note: Make sure nothing is blocking the built-in camera on the front of the projector.

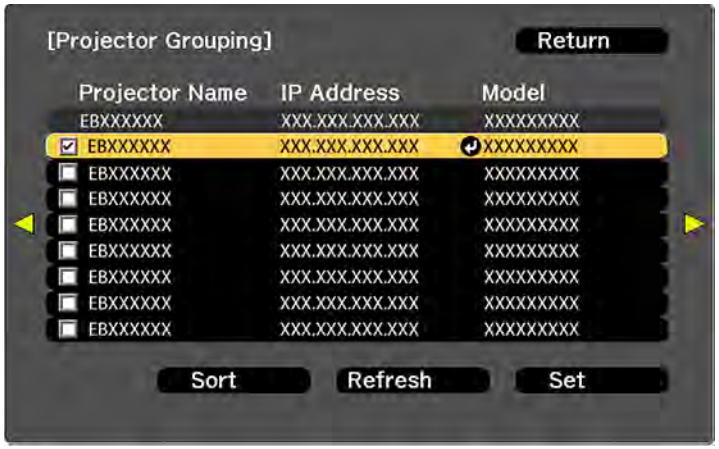
2. Press the **Menu** button.
3. Select the **Extended** menu and press **Enter**.
4. Select **Multi-Projection** and press **Enter**.

   You see this screen:

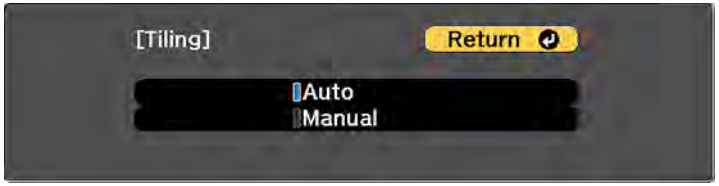


5. Select **Projector Grouping** and press **Enter**.

   You see a screen like this:



6. Press the up or down arrow buttons to highlight a projector and press **Enter** to place a checkmark next to each projector you want to use for tiling. Then select **Set** and press **Enter**.
7. Select **Tiling** and press **Enter**.
8. Select **Tiling** again and press **Enter**.



9. Select **Auto** and press **Esc**.
10. Select **Location Setup** and press **Enter**.

    The projected images are positioned automatically.
11. When you see the message to assign projector IDs, select **Yes**.

    When setup is complete, you see a screen like this:



Note: If any of the images are not positioned correctly, select **Manual** in step 9 to locate the image manually.

12. Select the input signal to display an image.

After performing the steps here, adjust the images for any gaps and differences in color.

Note: Do not change any of the projector names or IP addresses, or the images will not be adjusted automatically.

Parent topic: Tiling Images into One Image

Related references

Projector Parts - Front/Top

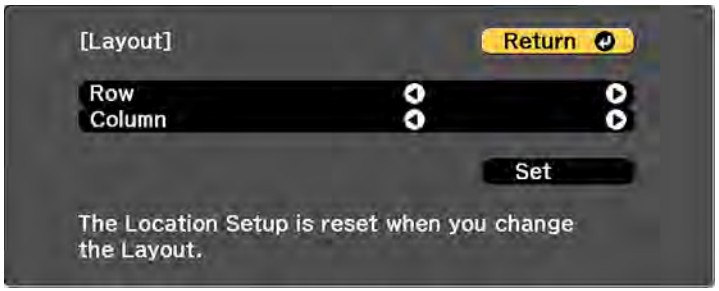
Related tasks

Configuring Tiling Manually

Configuring Tiling Manually

If your projectors are not on a network or you were unsuccessful tiling the images automatically, you can configure tiling manually.

1. Turn on the projector.
2. Press the **Menu** button.
3. Select the **Extended** menu and press **Enter**.
4. Select **Multi-Projection** > **Tiling** > **Layout**.

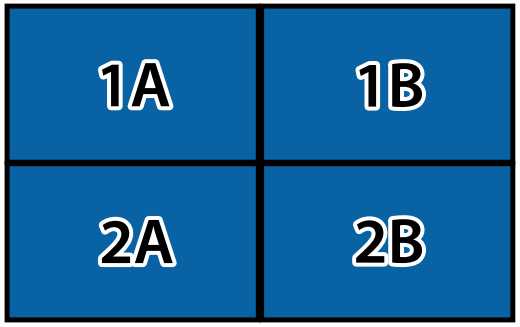


5. Select the number of rows and columns you are setting up as the **Row** and **Column** settings. Then select **Set** and press **Enter**.
6. Repeat the previous steps with each projector you are setting up before continuing with the next step.

7. Select **Location Setup** and press **Enter**.



8. Select the position of each projected image as follows:
   - **Row Order** to layout the screens from top to bottom in sequential order, starting with **1** at the top
   - **Column Order** to layout the screens from left to right, starting with **A** on the left



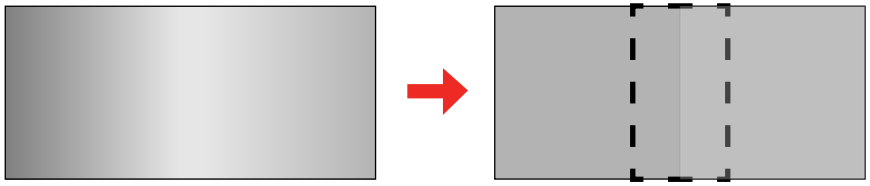
9. Repeat the previous step with each projector you are setting up before continuing with the next step.
10. Select the input signal to display an image.

After performing the steps here, adjust the images for any gaps and differences in color.

Parent topic: Tiling Images into One Image

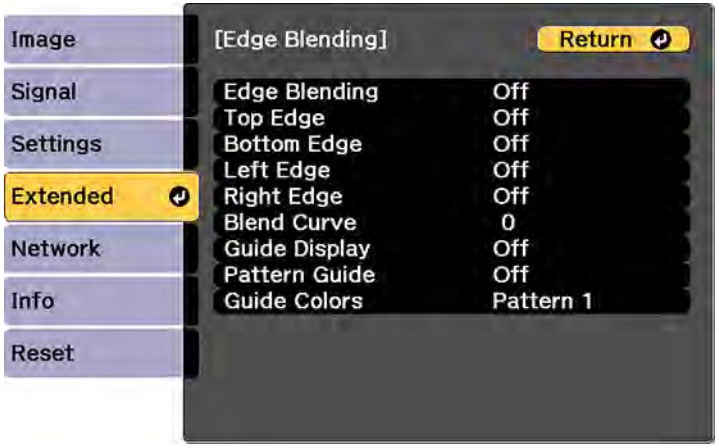
Blending the Image Edges

You can use the projector's Edge Blending feature to create a seamless image from multiple projectors.



1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Multi-Projection** setting and press **Enter**.
4. Select the **Edge Blending** setting and press **Enter**.

   You see this screen:



5. Turn on the **Edge Blending**, **Guide Display**, and **Pattern Guide** settings.

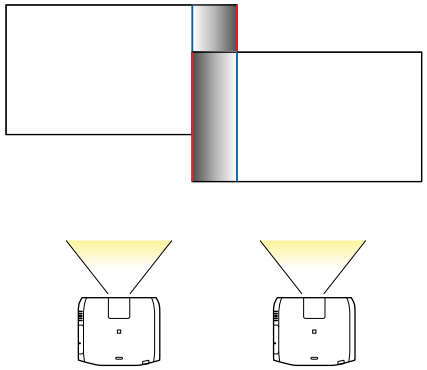
   Note: If the projected guide is unclear, try changing the **Guide Colors** setting.

6. Select the edge you want to blend and press **Enter**.

You see a screen like this:



7. Select the **Blending** setting and select **On**.
8. Select the **Blend Start Position** setting and adjust the point where edge blending begins.
9. Select the **Blend Range** setting and select the width of the blended area so that the displayed guides are at the edges of the overlapping area between the two images.

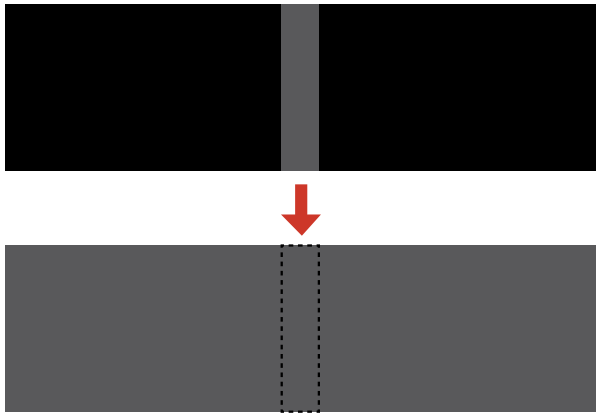


10. Press **Esc** to go back to the previous screen.
11. Select the **Blend Curve** setting and select a gradient for the shaded area.
12. When the edges are blended, turn off the **Guide Display** and **Pattern Guide** settings to check the final settings.
13. When you are finished, press the **Menu** button.

Parent topic: Using Multiple Projectors

Adjusting the Black Level

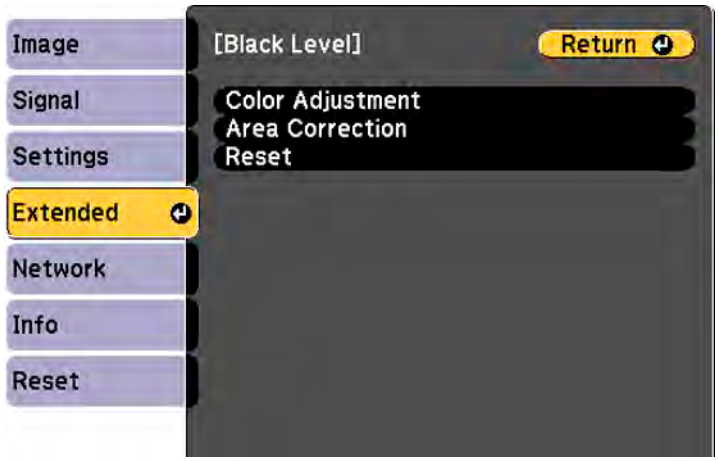
When two images overlap, the overlapping area can appear differently from the areas that do not overlap. You can use the projector's Black Level setting to make the difference less noticeable.



Note: You may not be able to adjust the black levels correctly if the **Geometry Correction** settings are set too high. The brightness and tone of the overlapping areas may differ from the rest of the image even after adjusting the black level.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Multi-Projection** setting and press **Enter**.
4. Select the **Black Level** setting and press **Enter**.

You see this screen:

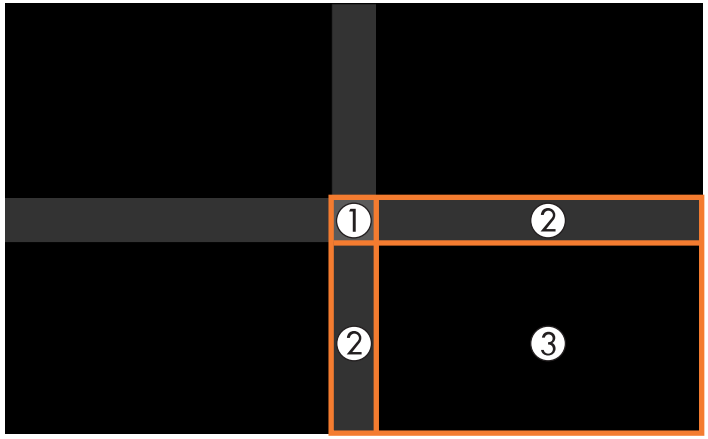


5. Select the **Color Adjustment** setting and press **Enter**.

   You see a screen based on the **Top Edge**, **Bottom Edge**, **Right Edge**, and **Left Edge** settings you selected for the **Edge Blending** setting.

   Note: The **Color Adjustment** setting is automatically adjusted when selecting **Start Auto Adjustment** in the Screen Matching screen.

6. Select the area you want to adjust and press **Enter**.



Note: The area you selected is displayed in orange. Adjust overlapping areas starting with the brightest areas first. For example, adjust area 2 to match area 1, then adjust area 3 to match area 2.

7. Adjust the brightness and tone of the areas that do not overlap to match the areas that overlap using the displayed adjustment sliders.

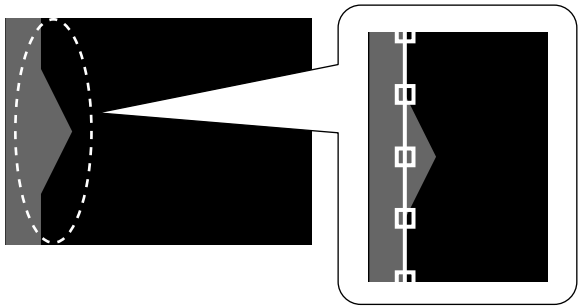


8. Repeat the previous two steps as needed until all areas match.
9. If the tone of some areas do not match, you can adjust them using the **Area Correction** setting. Continue with the next step. Otherwise, go to step 19.
10. Press the **Esc** button to return to the Black Level screen.
11. Select the **Area Correction** setting and press **Enter**.
12. Select the **Start Adjustments** setting and press **Enter**.

You see a screen with boundary lines indicating areas that are overlapping. The boundary lines are based on the **Top Edge**, **Bottom Edge**, **Right Edge**, and **Left Edge** settings you selected for the **Edge Blending** setting.

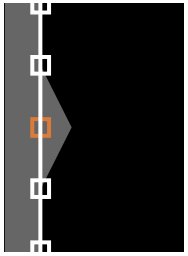
13. Use the arrow buttons to select a boundary line and press **Enter**.

    You see a screen like this displaying the points you can use to set the adjustment range:

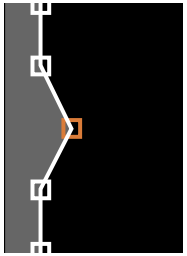


14. Use the arrow buttons to adjust the boundary line position and press the **Enter** button.
15. Use the arrow buttons to select an adjustment point and press the **Enter** button.

    The selected point turns orange.



16. Use the arrow buttons to move the point.



17. To move another point, press the **Esc** button and repeat the previous two steps.
18. To move another boundary line, press the **Esc** button repeatedly until you can select a boundary line.
19. When you are finished, press the **Menu** button.

Note: Changing the **Top Edge**, **Bottom Edge**, **Right Edge**, or **Left Edge** settings resets the **Black Level** setting to its default value.

Parent topic: Using Multiple Projectors

Related references

Projector Setup Settings - Extended Menu

Matching Tint and Brightness (Screen Matching)

You can adjust the tint and brightness of multiple projectors so they match better. You can also schedule automatic adjustments to the tint and brightness.

Note: Wait 20 minutes after turning on the projector before using the Screen Matching feature and darken the room for maximum accuracy. Brightness decreases over time, so you may need to perform Screen Matching again to correct large differences in brightness.

Matching the Screens Automatically

Matching the Screens Manually

Parent topic: Using Multiple Projectors

Related tasks

Saving a Scheduled Event

Matching the Screens Automatically

You can automatically correct the brightness and tint for multiple projectors based on the brightness and tint settings you selected for the master projector.

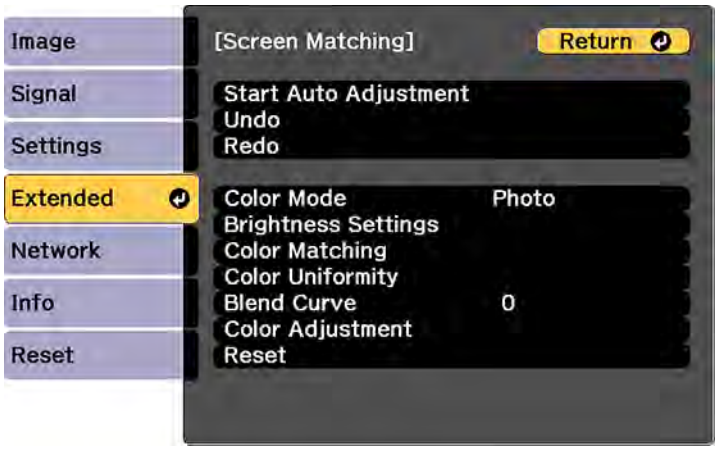
Before you start, make sure of the following:

- Select **Multi-Projection** for the **Color Mode** setting and adjust the **Brightness**, **Contrast**, **Color Saturation**, **Tint**, **White Balance**, and **Advanced** settings in the Image menu, as necessary, on the master projector.
- You are projecting on a matte white diffusion screen that is flat and even.
- The projected image is between 80 to 200 inches (203 to 508 cm) and is rectangular after tiling.
- All the projectors are connected to a network and the **Location Setup** setting has been configured.
- Nothing is blocking the built-in camera on the front of each projector.

Note: Auto adjustment is not available for the following lenses: ELPLX01, ELPLR04, ELPLM11, ELPLM07, ELPLL08, ELPLL07 (Pro L1100U/L1200U/L1300U/L1405U) and ELPLR04, ELPLL08, ELPLL07 (Pro L1500U/L1505U). After auto adjustment, the movement range for lens shift is reduced.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Multi-Projection** setting and press **Enter**.
4. Select the **Screen Matching** setting and press **Enter**.

5. Select **Start Auto Adjustment** press **Enter**.



When adjustment starts, you see an adjustment pattern. Adjustment is complete when you see a displayed image.

After automatic adjustment, the **Color Uniformity** and **Color Matching** settings are returned to their default values.

Parent topic: Matching Tint and Brightness (Screen Matching)

Related concepts

Color Mode

Related references

Image Quality Settings - Image Menu

Projector Parts - Front/Top

Related tasks

Multiple Projector Adjustment Overview

Configuring Tiling Automatically

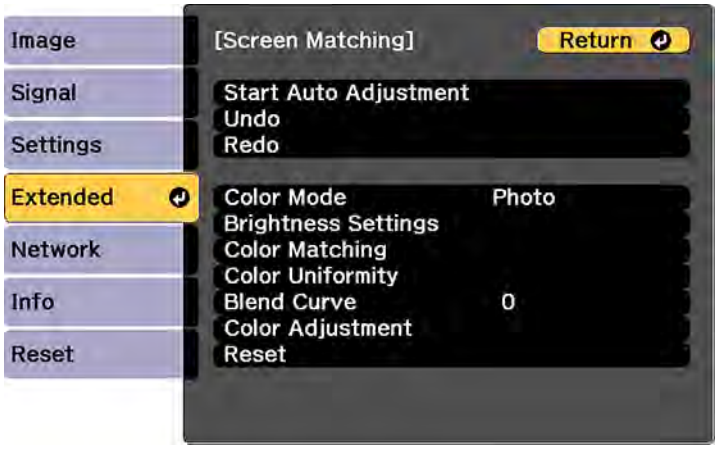
Matching the Screens Manually

You can manually correct the brightness and tint for multiple projectors.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.

3. Select the **Multi-Projection** setting and press **Enter**.
4. Select the **Screen Matching** setting and press **Enter**.

   You see this screen:



5. Select the **Color Matching** setting and press **Enter**.

   You see this screen:



6. Press the left or right arrow buttons to select a value for the **Adjustment Level** setting.

   Note: There are eight adjustment levels ranging from white to black and you can adjust each level individually.

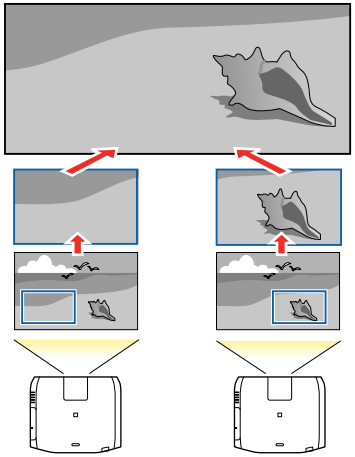
7. Press the left or right arrow buttons to adjust the color tone for the **Red**, **Green**, and **Blue** settings.
8. Press the left or right arrow buttons to adjust the **Brightness** setting.

9. Repeat the previous three steps as necessary to adjust each adjustment level.

Parent topic: Matching Tint and Brightness (Screen Matching)

Scaling an Image

You can project the same image from multiple projectors and use the Scale feature to crop and combine them into one large image.

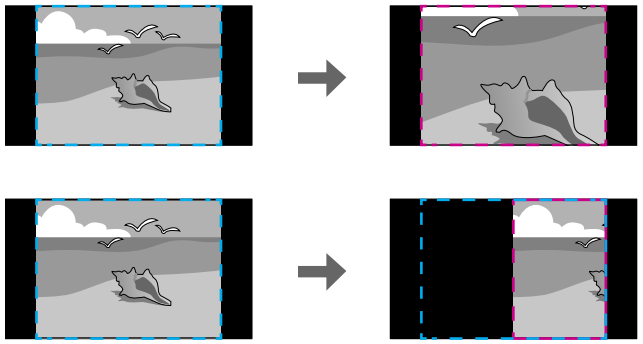


1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Multi-Projection** setting and press **Enter**.
4. Select the **Scale** setting and press **Enter**.

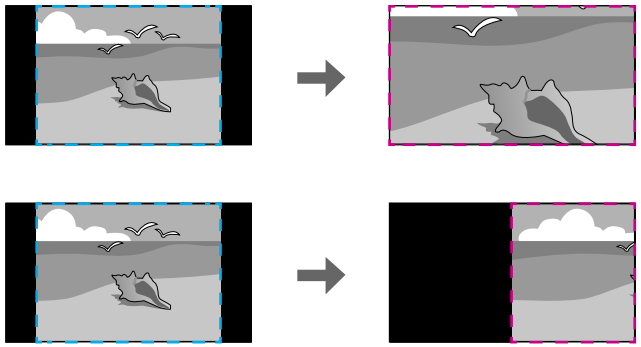
You see this screen:



5. Select one of the following as the **Scale** setting:
   - **Auto** to automatically adjust the clipped areas according to the **Edge Blending** and **Tiling** settings you selected
   - **Manual** to adjust the clipped areas manually
6. Select the **Scale Mode** setting and select one of these options:
   - **Zoom Display** to maintain the image aspect ratio as you scale the image



- **Full Display** to adjust the image to the projector's screen size as you scale the image



7. If you selected **Auto** as the Scale setting, you can skip the remaining steps. If you selected **Manual**, adjust each of the following options as necessary:
   - **–** or **+** to scale the image horizontally and vertically at the same time
   - **Scale Vertically** to scale the image vertically only
   - **Scale Horizontally** to scale the image horizontally only
8. Select the **Clip Adjustment** setting and use the arrow buttons to adjust the coordinates and size of each image as you view the screen.
9. When you are finished, press the **Menu** button.

Parent topic: Using Multiple Projectors

Enabling Protocol Emulation

You can use protocol emulation to control your projector with the same RS-232 control codes as those used by the manufacturers of other projectors. This lets you control a group of projectors from a common controller.

1. Make sure the projector is turned on.
2. Connect a controller to the RS-232C port on the projector.
3. Do one of the following:
   - Press and hold the **Test Pattern** button on the remote control for at least five seconds.
   - Select the **Extended** menu, highlight the **Standby Mode** setting, and hold down the right arrow button on the remote control or projector control panel for at least five seconds.

You see the Protocol Emulation screen.

4. Select one of the following and press **Enter**:
   - **Type P** for Panasonic projectors
   - **Type M** for Mitsubishi projectors
   - **Type N** for NEC projectors
   - **Type S** for Sony projectors
5. Turn the projector off and on again to enable the control code you selected.

Parent topic: Adjusting Projector Features

Viewing 3D Images

You can use two projectors to project and view passive 3D images.

The following optional items are required:

- Polarizer
- Passive 3D glasses
- A mount to stack the projectors
- Silver screen designed for passive 3D images

See the instructions supplied with the optional equipment for setup and use.

Parent topic: Adjusting Projector Features

Related references

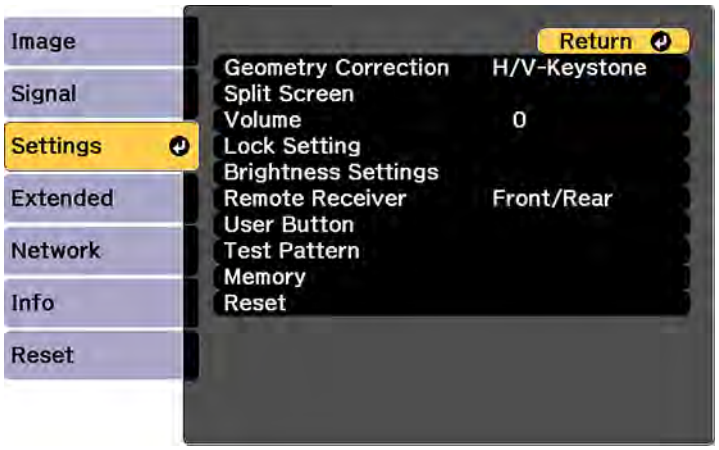
Optional Equipment and Replacement Parts

Saving Settings to Memory and Using Saved Settings

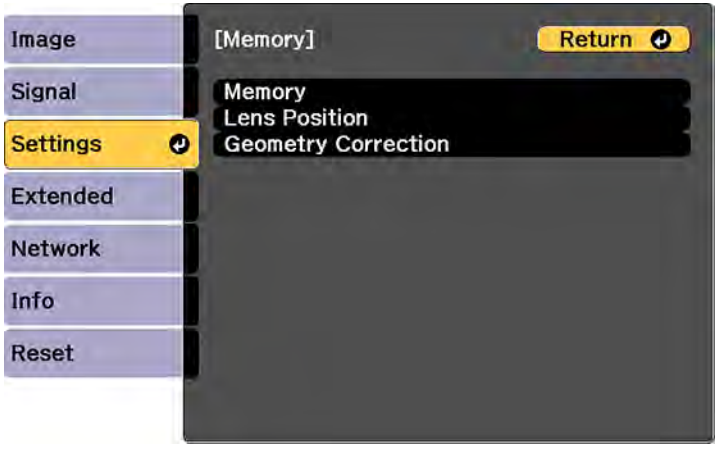
You can save customized settings and then select the saved settings whenever you want to use them.

1. Turn on the projector and display an image.
2. Press the **Menu** button.

3. Select the **Settings** menu and press **Enter**.



4. Select the **Memory** setting and press **Enter**.



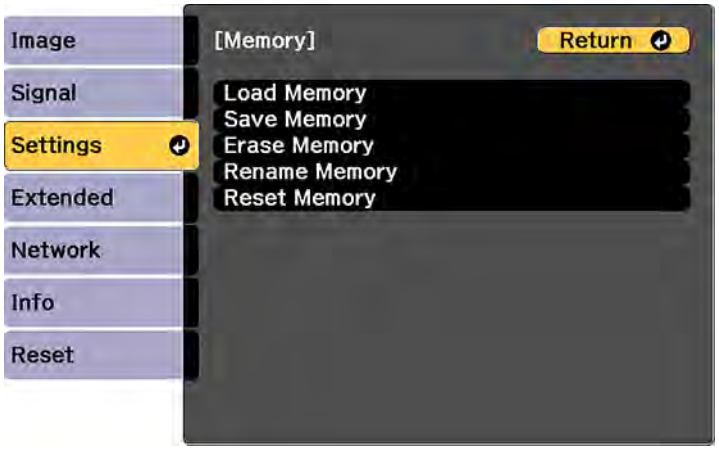
Note: You can also access this screen by pressing the **Memory** button on the remote control.

5. Select one of the following options:
   - **Memory**: Saves or loads various settings; you can save up to 10 different memories

Note: The following settings are saved: all settings from the Image menu, the **Scale** setting from the Signal menu, and the **Edge Blending**, **Black Level**, and **Color Matching** settings from the Extended menu.

- **Lens Position**: Saves or loads settings related to the lens such as the lens shift, focus, zoom, and distortion adjustment settings; you can save up to 10 different memories
- **Geometry Correction**: Saves or loads any adjustments made in the **Geometry Correction** setting in the Settings menu; you can save up to 3 different memories

You see this screen:



6. Select one of the following options:
   - **Load Memory**: Overwrites your current settings with saved settings
   - **Save Memory**: Saves your current settings to memory

     Note: A memory name that has already been used is indicated by a blue mark. Saving over a previously saved memory overwrites the settings with your current settings.

   - **Erase Memory**: Erases the selected memory settings
   - **Rename Memory**: Renames a saved memory
   - **Reset Memory**: Resets the name and settings of a saved memory

Note: To reset all saved memories of all types, select **Reset All Memories** in the Reset menu.

7. Press **Menu** or **Esc** to exit.

Parent topic: Adjusting Projector Features

Saving a Scheduled Event

You can select projector commands you want to perform and schedule them as an event.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Schedule Settings** setting and press **Enter**.

   The Schedule Settings screen appears.
4. Select the **Schedule** menu and press **Enter**.
5. Select **Add New** and press **Enter**.
6. In the Event Settings section, select the events you want to have occur. (Select **No Change** for events that you do not want to occur.)

   Note: You cannot schedule an event to occur at the following times: five minutes before or after a Color Calibration event, or five minutes before or 30 minutes after a Screen Matching event. Light Source Calibration events do not start if the projector is used continuously for more than 24 hours, or regularly turned off by shutting off the power outlet. Set **Light Source Calibration** events to occur only after 100 hours of usage.
7. In the Date/Time Settings section, set the date and time for the scheduled events to occur.
8. When you are finished, select **Save** and press **Enter**.
9. To schedule more events, repeat the previous steps as necessary.
10. Select **Setup complete** and select **Yes** to save your changes.

Viewing Scheduled Events

Editing a Scheduled Event

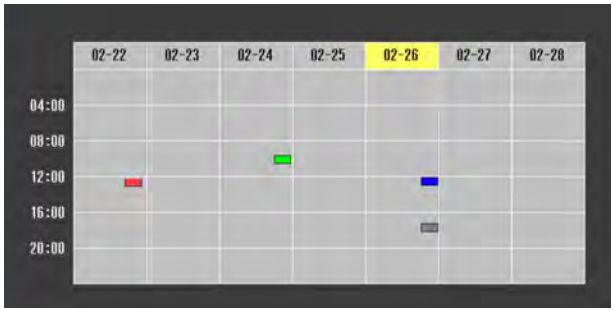
Parent topic: Adjusting Projector Features

Viewing Scheduled Events

You can view any currently scheduled events.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Schedule Settings** setting and press **Enter**.

   You see a screen like this:



The colored boxes in the calendar indicate the following about the scheduled events:

- One-time event
- Reoccurring event
- Communication is on/off
- Event is invalid

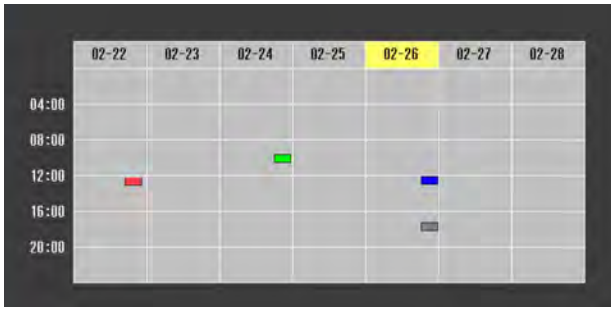
Parent topic: Saving a Scheduled Event

Editing a Scheduled Event

You can edit any currently scheduled event.

1. Press the **Menu** button.
2. Select the **Extended** menu and press **Enter**.
3. Select the **Schedule Settings** setting and press **Enter**.

You see a screen like this:



4. Press the left or right arrow buttons to highlight the date on the calendar containing the scheduled event you want to edit.
5. Press the up or down arrow buttons to highlight the event you want to edit, and press **Esc**.
6. Select one of the following:
   - **On/Disabled**: Enable or disable the selected event.
   - **Edit**: Edit the settings for the selected event.
   - **Clear**: Delete the selected event.
   - **Add New**: Add a new scheduled event.
7. When you are finished, select **Return** and press **Enter**.
8. Select **Setup complete** and select **Yes** to save your changes.

   Note: To delete all scheduled events, select **Schedule Reset** and select **Yes**.

Parent topic: Saving a Scheduled Event

Copying Menu Settings Between Projectors

After you select menu settings for your projector, you can transfer them to another projector of the same model.

Note: Copy the projector's settings before you adjust the projected image using the projector's Geometry Correction settings. Any saved User's Logo setting on the projector will transfer to the other projector.

Caution: If the copy process fails due to a power failure, communication error, or for any other reason, Epson will not be responsible for any repair costs incurred.

The following settings will not transfer between projectors:

- Info menu items
- Network menu settings other than those in the Mail and Others menus
- Network menu settings other than those in the Notifications and Others menus

Note: In addition to the methods covered this section, you can also copy and transfer settings to multiple projectors over a network using the EasyMP Network Updater software. See the *EasyMP Network Updater Operation Guide* for instructions. You can download the latest software and documentation from the Epson web site.

Saving Settings to a USB Flash Drive
Transferring Settings From a USB Flash Drive
Saving Settings to a Computer
Transferring Settings From a Computer

Parent topic: Adjusting Projector Features

Related references
Projector Information Display - Info Menu
Projector Network Settings - Network Menu
Additional Projector Software and Manuals

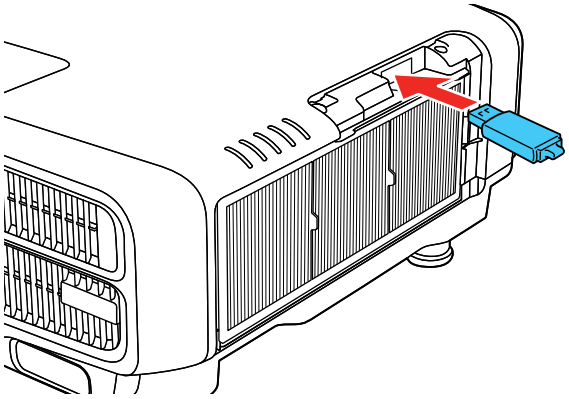
Saving Settings to a USB Flash Drive

You can save the projector settings you want to transfer to a USB flash drive.

Note: Use an empty flash drive. If the drive contains other files, the transfer may not complete correctly.

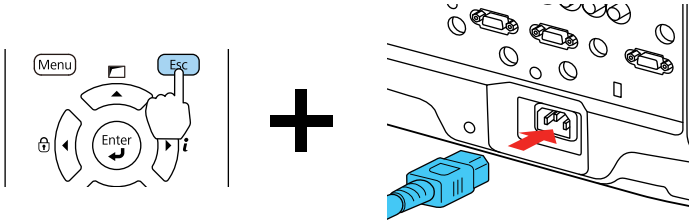
1. Turn off the projector and unplug the power cord from the projector's power inlet.

2. Insert the flash drive into the wireless LAN module port.



Note: Connect the flash drive directly to the projector. Do not use a hub or your settings may not be saved correctly.

3. Press and hold the **Esc** button on the control panel or remote control as you connect the power cord to the projector's power inlet.



4. When the On/Standby and Status lights are blue, and the Laser and Temp lights are orange, release the **Esc** button.

   The lights flash to indicate that settings are transferring to the flash drive. When the lights stop flashing, the On/Standby light turns blue and the projector enters standby mode.

   Caution: Do not unplug the power cord or remove the flash drive while the lights are flashing. This could damage the projector.

5. Once the projector enters standby mode, remove the flash drive.

Parent topic: Copying Menu Settings Between Projectors

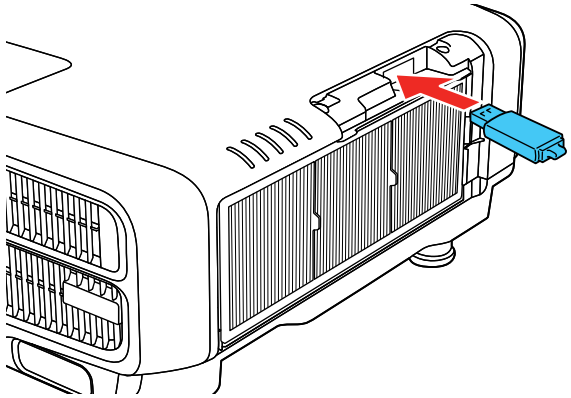
Transferring Settings From a USB Flash Drive

After saving projector settings to a USB flash drive, you can transfer them to another projector of the same model.

Note: Make sure the USB flash drive contains only a single settings transfer from another projector of the same model. The settings are contained in a file called **pjconfdata.bin**. If the drive contains other files, the transfer may not complete correctly.

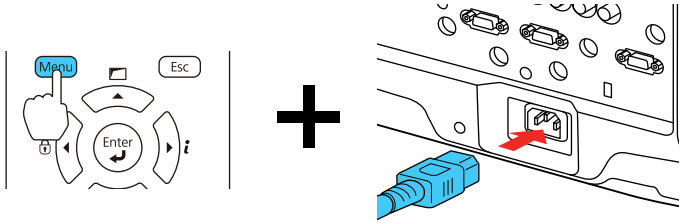
Do not adjust image settings on a projector until after you transfer settings to it. Otherwise, you may have to repeat your adjustments.

1. Turn off the projector and unplug the power cord from the projector's power inlet.
2. Insert the flash drive into the wireless LAN module port.



Note: Connect the flash drive directly to the projector. Do not use a hub or your settings may not be saved correctly.

3. Press and hold the **Menu** button on the control panel or remote control as you connect the power cord to the projector's power inlet.



4. When the On/Standby and Status lights are blue, and the Laser and Temp lights are orange, release the **Menu** button.

   The lights flash to indicate that settings are transferring to the projector. When the lights stop flashing, the On/Standby light turns blue and the projector enters standby mode.

   Caution: Do not unplug the power cord or remove the flash drive while the lights are flashing. This could damage the projector.

5. Once the projector enters standby mode, remove the flash drive.

Parent topic: Copying Menu Settings Between Projectors

Saving Settings to a Computer

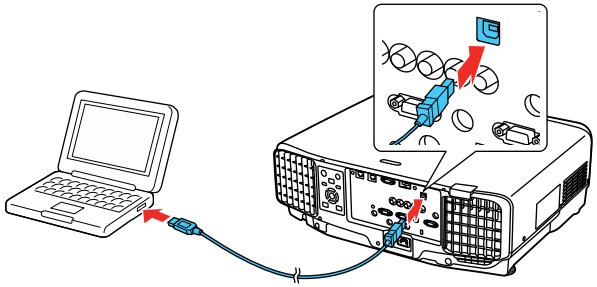
You can save the projector settings you want to transfer to a computer.

Your computer must be running one of the following operating systems:

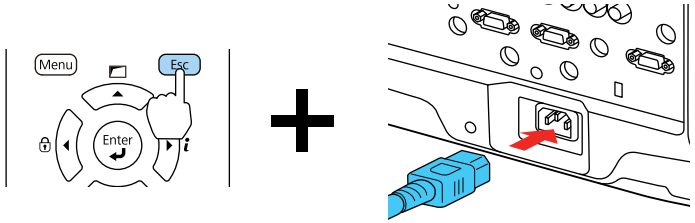
- Windows Vista
- Windows 7
- Windows 8.x
- Windows 10
- OS X 10.5.8
- OS X 10.6.x
- OS X 10.7.x
- OS X 10.8.x

- OS X 10.9.x
- OS X 10.10.x
- OS X 10.11.x

1. Turn off the projector and unplug the power cord from the projector's power inlet.
2. Connect a USB cable to your projector's **Service** port.



3. Connect the other end to any available USB port on your computer.
4. Press and hold the **Esc** button on the control panel or remote control as you connect the power cord to the projector's power inlet.



5. When the On/Standby and Status lights are blue, and the Laser and Temp lights are orange, release the **Esc** button.

   The projector shows up as a removable disk on your computer.
6. Open the removable disk and copy the **pjconfdata.bin** file to your computer.

7. Once the file has copied, do one of the following:
   - **Windows:** Open the **My Computer**, **Computer**, or **Windows Explorer** utility. Right-click the name of your projector (listed as a removable disk) and select **Eject**.
   - **OS X:** Drag the removable disk icon for your projector from the desktop into the trash.

   The projector enters standby mode.

Parent topic: Copying Menu Settings Between Projectors

Transferring Settings From a Computer

After saving projector settings to a computer, you can transfer them to another projector of the same model.

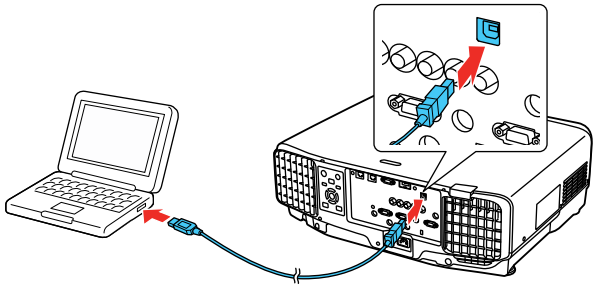
Your computer must be running one of the following operating systems:

- Windows Vista
- Windows 7
- Windows 8.x
- Windows 10
- OS X 10.5.8
- OS X 10.6.x
- OS X 10.7.x
- OS X 10.8.x
- OS X 10.9.x
- OS X 10.10.x
- OS X 10.11.x

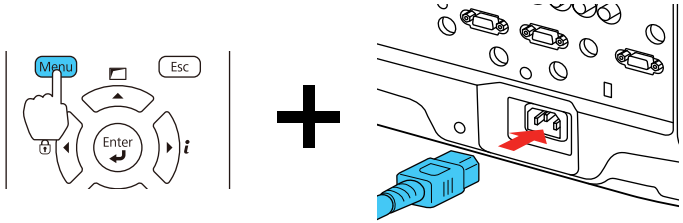
Do not adjust image settings on a projector until after you transfer settings to it. Otherwise, you may have to repeat your adjustments.

1. Turn off the projector and unplug the power cord from the projector's power inlet.

2. Connect a USB cable to your projector's port.



3. Connect the other end to any available USB port on your computer.
4. Press and hold the **Menu** button on the control panel or remote control as you connect the power cord to the projector's power inlet.



5. When the On/Standby and Status lights are blue, and the Laser and Temp lights are orange, release the **Menu** button.

   The projector shows up as a removable disk on your computer.
6. Copy the **pjconfdata.bin** file from your computer to the removable disk.

   Note: Do not copy any other files to the removable disk.

7. Once the file has copied, do one of the following:
   - **Windows:** Open the **My Computer**, **Computer**, or **Windows Explorer** utility. Right-click the name of your projector (listed as a removable disk) and select **Eject**.
   - **OS X:** Drag the removable disk icon for your projector from the desktop into the trash.

All the lights start flashing to indicate that the projector's settings are being updated. When the lights stop flashing, the On/Standby light turns blue and the projector enters standby mode.

Caution: Do not unplug the power cord while the lights are flashing. This could damage the projector.

Parent topic: Copying Menu Settings Between Projectors

Adjusting the Menu Settings

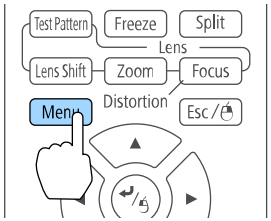
Follow the instructions in these sections to access the projector menu system and change projector settings.

Using the Projector's Menus
Image Quality Settings - Image Menu
Input Signal Settings - Signal Menu
Projector Feature Settings - Settings Menu
Projector Setup Settings - Extended Menu
Projector Network Settings - Network Menu
Projector Information Display - Info Menu
Projector Reset Options - Reset Menu

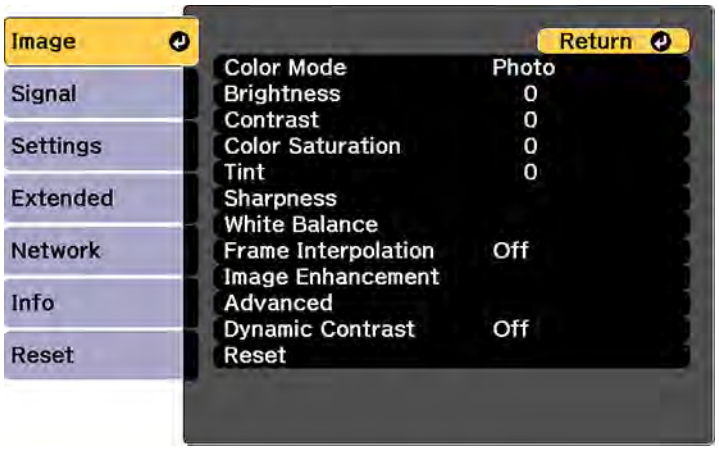
Using the Projector's Menus

You can use the projector's menus to adjust the settings that control how your projector works. The projector displays the menus on the screen.

1. Press the **Menu** button on the control panel or remote control.



You see the menu screen displaying the Image menu settings.



2. Press the up or down arrow button to move through the menus listed on the left. The settings for each menu are displayed on the right.

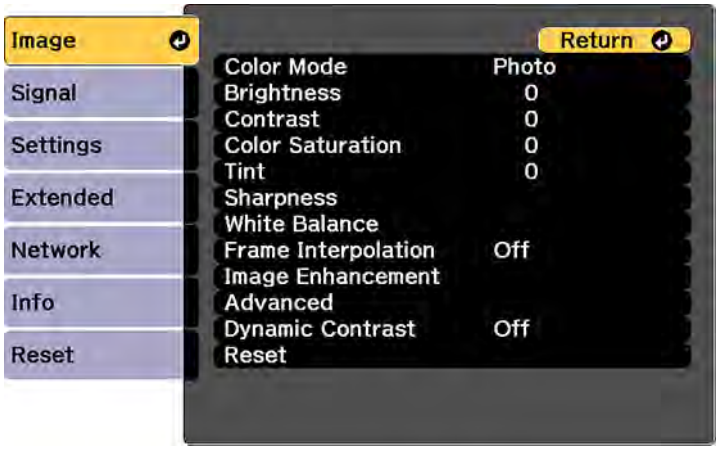
   Note: The available settings depend on the current input source.

3. To change settings in the displayed menu, press **Enter**.
4. Press the up or down arrow button to move through the settings.
5. Change the settings using the buttons listed on the bottom of the menu screens.
6. To return all the menu settings to their default values, select **Reset**.
7. When you finish changing settings on a menu, press **Esc**.
8. Press **Menu** or **Esc** to exit the menus.

Parent topic: Adjusting the Menu Settings

Image Quality Settings - Image Menu

Settings on the Image menu let you adjust the quality of your image for the input source you are currently using. The available settings depend on the currently selected input source.



To change settings for an input source, make sure the source is connected and select that source.

Setting	Options	Description
Color Mode	See the list of available Color Modes	Adjusts the vividness of image colors for various image types and environments
Brightness	Varying levels available	Lightens or darkens the overall image
Contrast	Varying levels available	Adjusts the difference between light and dark areas of the image
Color Saturation	Varying levels available	Adjusts the intensity of the image colors
Tint	Varying levels available	Adjusts the balance of green to magenta tones in the image

Setting	Options	Description
Sharpness	**Standard** **Thin Line Enhancement** **Thick Line Enhancement**	Adjusts the sharpness of image details **Standard**: adjusts the overall image sharpness **Thin Line Enhancement**: enhances fine details such as hair and fabric patterns **Thick Line Enhancement**: enhances the outline, background, and main parts of an image to make them more clear
White Balance	**Color Temp.** **G-M Correction** **Customized**	Adjusts the overall tint of the image **Color Temp.**: sets the color tone based on color temperature **G-M Correction**: higher values tint the image blue and lower values tint the image red **Customized**: lets you adjust the offset and gain of each color R (red), G (green), and B (blue) individually
Frame Interpolation	**Off** **Low** **Normal** **High**	Smooths fast moving video by comparing consecutive frames and inserting an intermediate frame between them

Setting	Options	Description
Image Enhancement	**4K Enhancement**	Accepts 4K signals and enhances the output of 1080p signals
	Image Preset Mode	Selects the image enhancement settings saved in advance
	Noise Reduction	Reduces flickering in analog images
	MPEG Noise Reduction	Reduces the noise or artifacts seen in MPEG video
	Super resolution	Sharpens blurred images resulting from increasing resolution
	Detail enhancement	Enhances details to create clear outlines **Range**: higher settings increase the affected area around the outline **Strength**: higher settings create a stronger effect
Advanced	**Gamma**	Adjusts the gamma levels of the image. Select **Customized** to adjust the gamma while viewing the image or a graph.
	RGBCMY	Adjusts the hue, saturation, and brightness for each color
	Deinterlacing	Sets whether to convert interlaced-to-progressive signals for certain video image types **Off**: for fast-moving video images **Video**: for most video images **Film/Auto**: for movies, computer graphics, and animation

Setting	Options	Description
Dynamic Contrast	**Off** **Normal** **High Speed**	Adjusts the luminance of the image to improve contrast by tracking changes in image brightness **Normal**: for standard brightness adjustment **High Speed**: to adjust brightness as soon as the scene changes

Note: The **Brightness** setting does not affect laser brightness. To change the laser brightness, use the **Brightness Settings** in the Settings menu.

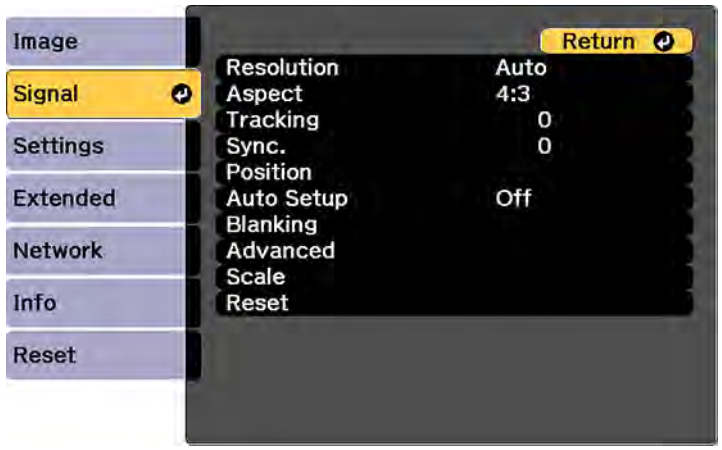
Parent topic: Adjusting the Menu Settings

Related references

Available Color Modes

Input Signal Settings - Signal Menu

Normally the projector detects and optimizes the input signal settings automatically. If you need to customize the settings, you can use the Signal menu. The available settings depend on the currently selected input source.



Note: You can restore the default settings of the **Position**, **Tracking**, and **Sync** settings by pressing the **Auto** button on the remote control.

To change settings for an input source, make sure the source is connected and select that source.

Setting	Options	Description
Resolution	**Auto** **Normal** **Wide** **Manual**	Sets the input signal resolution from an analog RGB computer connection **Auto**: detects the resolution automatically **Normal**: for 4:3 or 5:4 screens **Wide**: for widescreen **Manual**: allows you to specify a resolution
Aspect	See the list of available aspect ratios	Sets the aspect ratio (width-to-height ratio) for the selected input source
Tracking	Varying levels available	Adjusts signal to eliminate vertical stripes in images from an analog RGB computer connection
Sync.	Varying levels available	Adjusts signal to eliminate fuzziness or flickering in images from an analog RGB computer connection
Position	Up, down, left, right	Adjusts the image location on the screen
Auto Setup	**On** **Off**	Automatically optimizes image quality from an analog RGB computer connection (when On)
Blanking	Up, down, left, right	Hides an area of the projected image that you select using the arrow buttons

Setting	Options	Description
Advanced	**Video Range**	Sets the video range to match the setting of the device connected to the **HDMI**, **DVI-D**, **HDBaseT**, or **SDI** (L1405U/L1500U/L1505U) input ports
	Input Signal	Specifies the signal type from input sources connected to computer ports **Auto**: detects signals automatically **RGB**: corrects color for computer/RGB video inputs **Component**: corrects color for component video inputs
	Image Processing	Adjusts how images are processed **Fast**: to display images quicker **Fine**: to display images in higher quality
Scale	Various scale options	When using multiple projectors to project one image, adjusts the scale of the image displayed by each projector

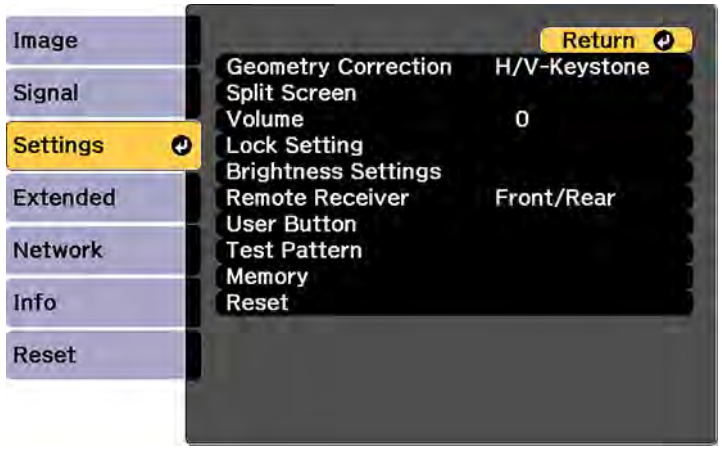
Parent topic: Adjusting the Menu Settings

Related references

Available Image Aspect Ratios

Projector Feature Settings - Settings Menu

Options on the Settings menu let you customize various projector features.



Setting	Options	Description
Geometry Correction	**H/V-Keystone** **Quick Corner** **Curved Surface** **Corner Wall** **Point Correction** **Memory**	Adjusts the projected image shape **H/V Keystone**: lets you manually correct the angles of the horizontal and vertical sides **Quick Corner**: select to adjust the position of the four corners **Curved Surface**: select to adjust the image when projecting on a curved surface **Corner Wall**: select to adjust the image when projecting on a surface with a right angle **Point Correction**: select to display a grid and finely adjust the image position **Memory**: select to save adjustment value of the geometric correction and load it when needed
Split Screen	—	Divides the viewing area horizontally and displays two images side-by-side; while in Split Screen mode, press **Menu** to display the Split Screen options or **Esc** to cancel split screen display
Volume	Varying levels available	Adjusts the volume of the projector’s speaker system

Setting	Options	Description
Lock Setting	**Control Panel Lock** **Lens Lock**	Controls projector button locking to secure the projector **Control Panel Lock**: • **Full Lock**: locks all buttons • **Partial Lock**: locks all buttons except the power button • **Off**: no buttons locked **Lens Lock**: locks the focus, zoom, and lens shift settings

Setting	Options	Description
Brightness Settings	**Light Source Mode** **Brightness Level** **Constant Brightness** **Estimated Remains**	Selects the brightness mode of the projector **Light Source Mode**: sets the brightness for the light source • **Normal**: maximum brightness • **Quiet**: 70% brightness with reduced fan noise • **Extended**: 70% brightness and extends the life expectancy of the light source • **Custom**: select a custom brightness level **Brightness Level**: select the **Custom** brightness level you want[1] **Constant Brightness**: maintains a constant brightness; enabling this setting prevents you from changing the **Light Source Mode** and **Brightness Level** settings[1] **Estimated Remains**: displays how long the projector can maintain constant brightness[2]
Remote Receiver	**Front/Rear** **Front** **Rear** **Off**	Limits reception of remote control signals by the selected receiver; **Off** turns off all receivers
User Button	**User1** **User2** **User3**	Assigns a menu option to the **User1**, **User2**, and **User3** buttons on the remote control for one-touch access

Setting	Options	Description
Test Pattern	—	Displays a test pattern to assist in adjusting the image; press the left or right arrow buttons on the remote control or **Enter** on the control panel to cycle through the available test patterns, or **Esc** to cancel pattern display
Memory	**Load Memory** **Save Memory** **Erase Memory** **Rename Memory**	Save customized sets of settings to memory

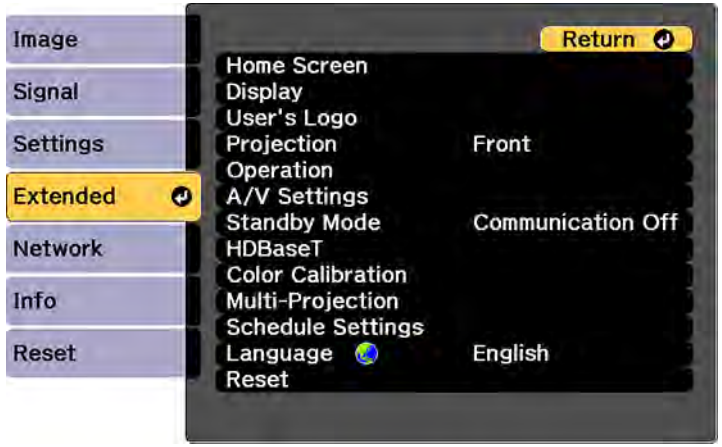
[1] Available only when the **Light Source Mode** setting is set to **Custom**.

[2] Available only when the **Light Source Mode** setting is set to **Custom** and the **Constant Bright** setting is set to **On**.

Parent topic: Adjusting the Menu Settings

Projector Setup Settings - Extended Menu

Settings on the Extended menu let you customize various projector setup features that control its operation.



Setting	Options	Description
Home Screen	—	Adjust settings on the Home Screen
Display	—	See the **Display** settings table in this topic
User's Logo	—	Creates a screen that the projector displays to identify itself and enhance security
Projection	**Front** **Front/Ceiling** **Rear** **Rear Ceiling**	Selects the way the projector faces the screen so the image is oriented correctly
Operation	—	See the **Operation** settings table in this topic
A/V Settings	**A/V Output** **Monitor Out** **Audio Settings**	Selects various audio and video output settings **A/V Output**: select to output audio and video to an external device when the projector is in standby mode (Standby Mode must be turned on to use this setting) **Monitor Out**: select the image source to output to an external device when the projector is in standby mode; when set to **Auto**, selects output from the **Computer** or **BNC** port depending on which was used when the projector went into standby mode **Audio Settings**: selects audio source to output

Setting	Options	Description
Standby Mode	**Communication On** **Communication Off**	Enable this setting to allow the following operations to occur when the projector is in standby mode: • Monitor and control the projector over a network • Output audio and video to an external device (A/V Output must be set to **Always On**) • Communication from the **HDBaseT** port (Control Communications must be set to **On**)
HDBaseT	**Control Communications** **Extron XTP**	Selects the communication settings for connections to an HDBaseT transmitter or switcher **Control Communications**: enables or disables communication from the Ethernet and serial ports on the transmitter; turning on this setting disables the projector's **LAN**, **RS-232C**, and **Remote** ports (**Extron XTP** must be turned off to use this setting) **Extron XTP**: set to **On** when you connect an Extron XTP transmitter or switcher to the HDBaseT ports

Setting	Options	Description
Color Calibration	**Start Auto Adjustment** **Undo** **Redo** **Color Uniformity**	Automatically detects color deterioration and adjusts the color tone **Start Auto Adjustment**: automatically adjusts the color tone for the whole image **Undo** and **Redo**: undoes or redoes the auto adjustment **Color Uniformity**: adjusts the color tone balance for the whole image

Setting	Options	Description
Multi-Projection	**Projector ID** **Projector Grouping** **Tiling** **Geometry Correction** **Edge Blending** **Black Level** **Scale** **Screen Matching**	Select various options when projecting from multiple projectors **Projector ID**: sets the projector to a particular ID number which allows you to use a remote control to individually control projectors **Projector Grouping**: lets you select the projectors being used to project one image **Tiling**: sets the number of split screens and the position of each image **Geometry Correction**: corrects image distortion **Edge Blending**: blends the border between multiple images to create a seamless screen **Black Level**: adjusts the brightness and tone differences in overlapping images **Scale**: adjusts the scale of the images **Screen Matching**: adjusts the tint and brightness of the images
Schedule Settings	Various scheduling options	Lets you schedule various projector tasks
Language	Various languages available	Selects the language for projector menu and message displays (not changed by **Reset** option)

Display settings

Setting	Description
Menu Position	Selects the position of the projector menu displayed on the screen
Message Position	Selects the position of messages displayed on the screen
Messages	Controls whether messages are displayed on the screen
Display Background	Selects the screen color or logo to display when no signal is received
Startup Screen	Controls whether a special screen appears when the projector starts up
Standby Confirmation	Displays a confirmation message after pressing the **Standby** button on the remote control
Air Filter Notice	Displays a message when a clog in the air filter is detected
Screen	Sets the aspect ratio and position of the projected image according to the type of screen being used
Panel Alignment	Corrects color misalignment in the projected image
Color Uniformity	Adjusts the color tone balance
OSD Rotation	Rotates the menu display 90°

Operation settings

Setting	Description
Direct Power On	Turns on the projector when you plug it in
Sleep Mode	Automatically places the projector in standby mode after an interval of inactivity
Sleep Mode Timer	Sets the time before the projector automatically turns off (Sleep Mode must be turned on)
High Altitude Mode	Regulates the projector's operating temperature at altitudes above 4921 feet (1500 m)
Auto Source Search	Automatically select an input source
Auto Power On	If **Computer** or **BNC** is selected, the projector turns on when an input signal is detected from those ports

Setting	Description
A/V Mute Settings	Adjusts the A/V Mute settings **Fade-in**: sets the number of seconds for a fade-in transition effect when displaying an image **Fade-out**: sets the number of seconds for a fade-out transition effect when hiding an image **A/V Mute Timer**: turns off the projector automatically if A/V Mute is enabled and 2 hours of inactivity has passed **A/V Mute Release**: select **A/V Mute** if you want to use only the **A/V Mute** button to turn off A/V mute, or select **Any Button** to use any button to turn it off
Advanced	See the next table in this topic
Date & Time	Adjusts the projector's time and date settings
Lens Calibration	Displays information about the lens currently in use

Advanced settings

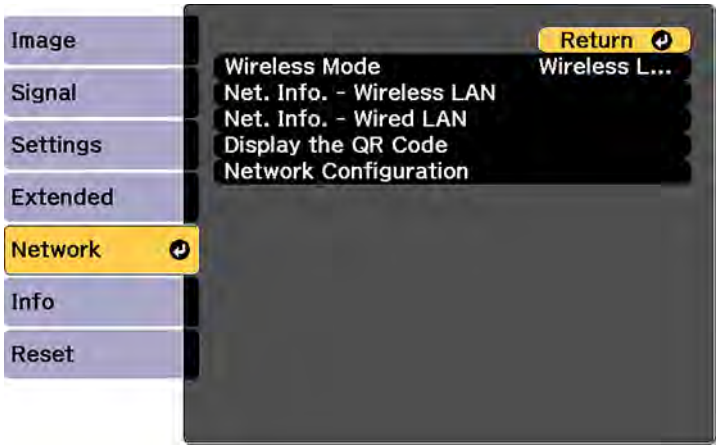
Setting	Description
BNC Sync Termination	Sets the termination for the signal from the BNC port (set to off unless you need analog termination, such as for switchers)
Remote Control Type	Select **Normal** to use the remote control that came with the projector, or **Simple** to use a different Epson projector remote control and disable the remote control that came with the projector
Beep	Controls the beep that sounds when you turn the projector on or off
Indicators	Select **Off** to turn off projector lights, except warning lights
Instant Off	Select **Enabled** to place the projector in standby mode after turning it off, or **Disabled** to place the projector in standby mode approximately 75 seconds after turning it off
Inv Direction Button	Enable this setting if you installed the projector on a ceiling and want to invert the direction of the arrow buttons on the control panel

Setting	Description
HDMI DDC Buffer	If you are projecting using an HDMI extension cable and the image is not displayed correctly, enabling this setting may improve image quality
DVI-D DDC Buffer	If you are projecting using a DVI extension cable and the image is not displayed correctly, enabling this setting may improve image quality
Lens Type	Select the model number for the attached lens when using the following lenses: ELPLS04, ELPLU02, ELPLR04, ELPLW04, ELPLM06, ELPLM07, ELPLL07

Parent topic: Adjusting the Menu Settings

Projector Network Settings - Network Menu

Settings on the Network menu let you view network information and set up the projector for monitoring and control over a network.



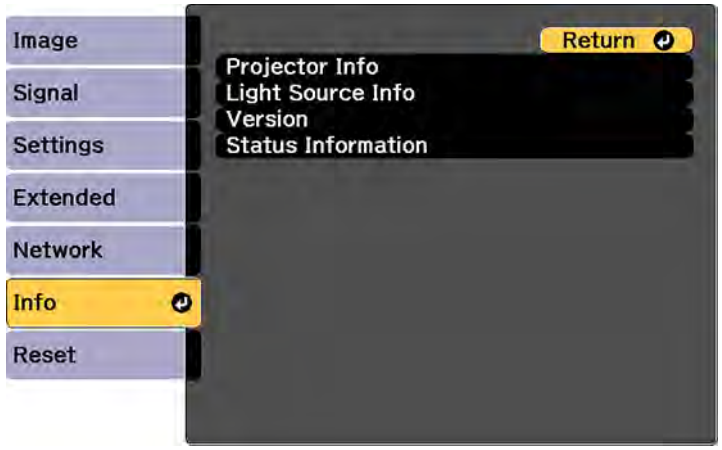
Setting	Options	Description
Wireless Mode	**Wireless LAN On** **Off**	Enable or disable wireless communication

Setting	Options	Description
Net. Info - Wireless LAN	**Connection mode** **Wireless LAN Sys.** **Antenna level** **Projector Name** **SSID** **DHCP** **IP Address** **Subnet Mask** **Gateway Address** **MAC Address** **Region Code**	Displays wireless network status and details
Net. Info - Wired LAN	**Projector Name** **DHCP** **IP Address** **Subnet Mask** **Gateway Address** **MAC Address**	Displays wired network status and details
Display the QR Code	—	Displays the QR Code
Network Configuration	Accesses additional network menus	Configures your network settings

Parent topic: Adjusting the Menu Settings

Projector Information Display - Info Menu

You can display information about the projector and input sources by viewing the Info menu. However, you cannot change any settings in the menu.



Note: The total operating timer does not register any hours until you have used the projector for at least 10 hours. Available settings depend on the current input source.

Setting	Options	Description
Projector Info	**Total Op. Time**	Displays the number of hours the projector has been used in its operating life
	Operation Hours	Displays the number of hours the projector has been used since it was turned on
	Source	Displays the name of the port to which the current input source is connected
	Input Signal	Displays the input signal setting of the current input source
	Resolution	Displays the resolution of the current input source
	Refresh Rate	Displays the refresh rate of the current input source
	Sync Info	Displays information that may be needed by a service technician
	Status	Displays information about projector problems that may be needed by a service technician
	Serial Number	Displays the projector's serial number
	Lens Type	Displays the model number of the installed lens
	Event ID	Displays the Event ID number corresponding to a specific projector problem; see the list of Event ID codes
	HDBaseT Signal Level	Displays the image signal information from the HDBaseT port

Setting	Options	Description
Light Source Info	**Light Source Hours**	Displays the number of operating hours for each of the projector's **Light Source Mode** settings
	Estimated Remains	If the **Constant Brightness** setting is enabled, displays the remaining number of hours the projector can maintain constant brightness
Version	**Main** **Video2**	Displays the projector's firmware information
Status Information	—	Displays basic status information

Event ID Code List

Parent topic: Adjusting the Menu Settings

Event ID Code List

If the **Event ID** option on the Info menu displays a code number, check this list of Event ID codes for the solution to the projector problem associated with the code.

Event ID code	Cause and solution
0432	Turn the projector off and then on again.
0435	
0434	Unstable network communication. Check the network communication status, wait a few moments, and try connecting to the network again.
0482	
0484	
0485	
0433	Cannot display the transferred images. Restart the network software.
0481	Communication with computer was disconnected. Restart the network software.
0483 04FE	The network software quit unexpectedly. Check the network communication status, then turn the projector off and then on again.

Event ID code	Cause and solution
0479 04FF	A projector system error has occurred. Turn the projector off and then on again.
0891	Cannot find an access point with the same SSID. Set your computer, access point, and projector to the same SSID.
0892	The WPA/WPA2 authentication type does not match. Make sure the wireless network security settings are correct.
0893	The TKIP/AES encryption type does not match. Make sure the wireless network security settings are correct.
0894	Communication with unauthorized access point was disconnected. Contact your network administrator.
0898	Failed to acquire DHCP. Make sure the DHCP server is operating correctly. If you are not using DHCP, turn off the **DHCP** setting in the Network menus.
0899	Communication error. Turn the projector off and then on again.

Parent topic: Projector Information Display - Info Menu

Projector Reset Options - Reset Menu

You can reset most of the projector settings to their default values using the **Reset All Config** option on the Reset menu.

You can also reset the saved names and settings in the Save Memory list using the **Reset All Memories** option.



You cannot reset the following settings using the **Reset All Config** option:

- Input Signal
- User's Logo
- Language
- Network menu items
- Date & Time
- Panel Alignment
- Color Uniformity
- Memory
- Color Matching
- Lens Calibration
- Color Calibration
- Projector Grouping
- Screen Matching

Parent topic: Adjusting the Menu Settings

Maintaining and Transporting the Projector

Follow the instructions in these sections to maintain your projector and transport it from place to place.

Projector Maintenance
Transporting the Projector

Projector Maintenance

Your projector needs little maintenance to keep working at its best.

You may need to clean the lens periodically, and clean the air filter and air vents to prevent the projector from overheating due to blocked ventilation.

The only parts you should replace are the air filter and remote control batteries. If any other part needs replacing, contact Epson or an authorized Epson servicer.

This projector uses a sealed laser light source which does not need servicing and cannot be replaced.

Warning: Before cleaning any part of the projector, turn it off and unplug the power cord. Never open any cover on the projector, except as specifically explained in this manual. Dangerous electrical voltages in the projector can injure you severely.

Warning: Do not try to service this product yourself, except as specifically explained in this manual. Refer all other servicing to qualified servicers.

Cleaning the Lens
Cleaning the Projector Case
Air Filter and Vent Maintenance
Replacing the Remote Control Batteries

Parent topic: Maintaining and Transporting the Projector

Cleaning the Lens

Clean the projector's lens periodically, or whenever you notice dust or smudges on the surface.

- To remove dust or smudges, gently wipe the lens with lens-cleaning paper.

- To remove stubborn smudges, moisten a soft, lint-free cloth with lens cleaner and gently wipe the lens. Do not spray any liquid directly on the lens.

  Warning: Do not use a lens cleaner that contains flammable gas. The high heat generated by the projector may cause a fire.

  Caution: Do not use glass cleaner or any harsh materials to clean the lens and do not subject the lens to any impacts; you may damage it. Do not use canned air, or the gases may leave a residue. Avoid touching the lens with your bare hands to prevent fingerprints on or damage to the lens surface.

Parent topic: Projector Maintenance

Cleaning the Projector Case

Before cleaning the projector case, turn off the projector and unplug the power cord.

- To remove dust or dirt, use a soft, dry, lint-free cloth.
- To remove stubborn dirt, use a soft cloth moistened with water and mild soap. Do not spray liquid directly on the projector.

  Caution: Do not use wax, alcohol, benzine, paint thinner, or other chemicals to clean the projector case. These can damage the case. Do not use canned air, or the gases may leave a residue.

Parent topic: Projector Maintenance

Air Filter and Vent Maintenance

Regular filter maintenance is important to maintaining your projector. Your Epson projector is designed with an easily accessible, user-replaceable filter to protect your projector and make regular maintenance simple. Filter maintenance intervals will depend on the environment.

If regular maintenance is not performed, your Epson projector will notify you when the temperature inside the projector has reached a high level. Do not wait until this warning appears to maintain your projector filter as prolonged exposure to high temperatures may reduce the life of your projector or laser.

Damage due to the failure to properly maintain the projector or its filter may not be covered by the projector's Limited Warranty.

Cleaning the Air Filter
Replacing the Air Filter

Parent topic: Projector Maintenance

Related references

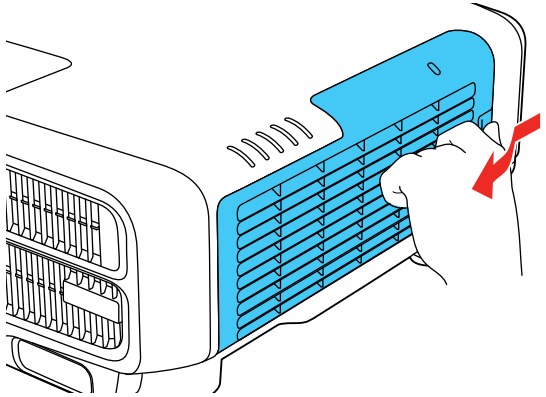
Projector Light Status

Cleaning the Air Filter

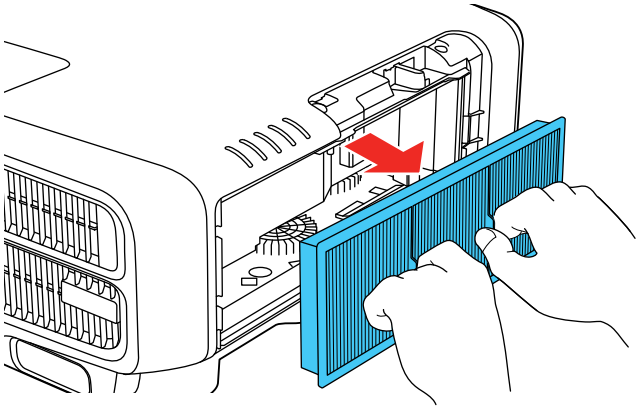
You need to clean the projector's air filter in the following situations:

- The filter or vents get dusty.
- You see a message telling you to clean it.
- The projector's Filter light flashes orange.

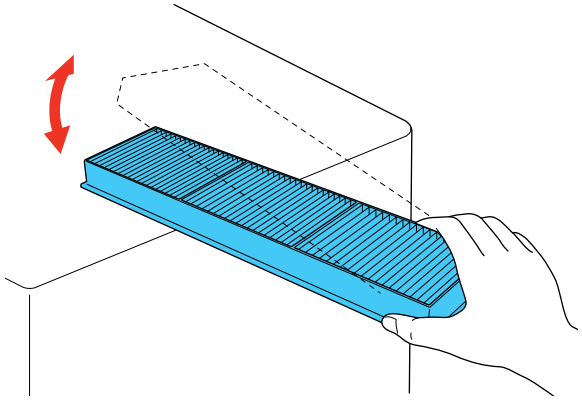
1. Turn off the projector, wait for the projector to beep, and unplug the power cord.
2. Slide the air filter cover latch and open the air filter cover.



3. Pull the air filter out of the projector.

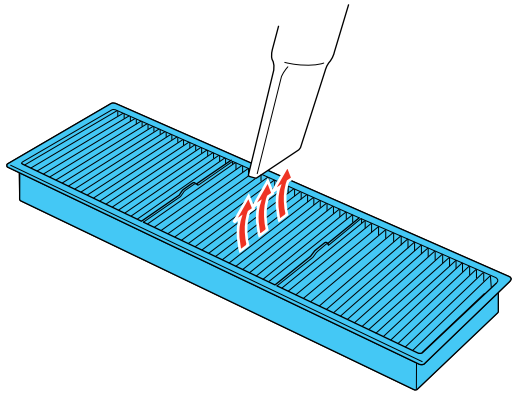


4. Tap each side of the air filter 4 to 5 times to shake off any excess dust.



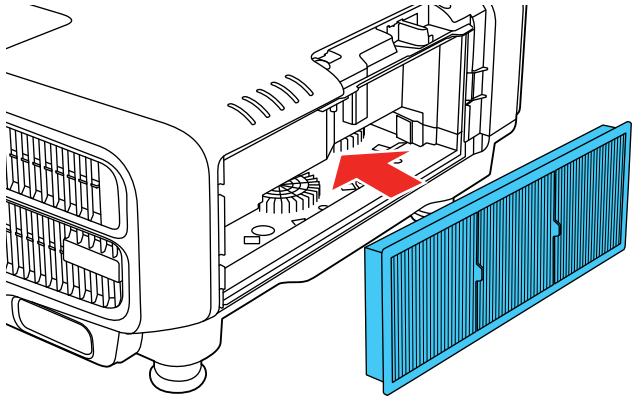
Caution: Do not use excessive force when tapping the air filter, or it may crack and become unusable. Do not rinse the air filter in water, or use any detergent or solvent to clean it. Do not use canned air; the gases may leave a residue, or push dust and debris into the projector's optics or other sensitive areas.

5. Vacuum the front of the air filter (the side with the tabs) to remove any remaining dust.

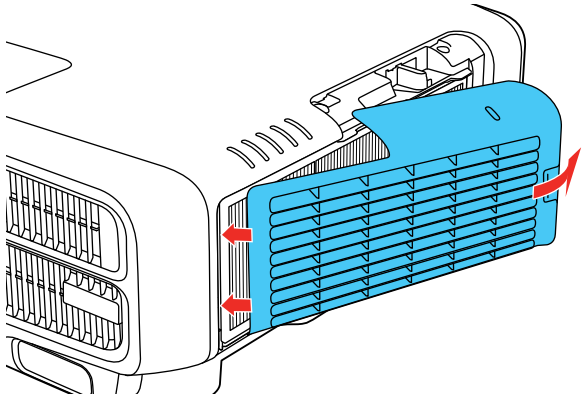


Note: If dust is difficult to remove or the air filter is damaged, replace the air filter.

6. Place the air filter back in the projector as shown and push gently until it clicks into place.



7. Attach the air filter cover as shown, and press it gently until it clicks into place.



Parent topic: Air Filter and Vent Maintenance

Related references

Projector Light Status

Replacing the Air Filter

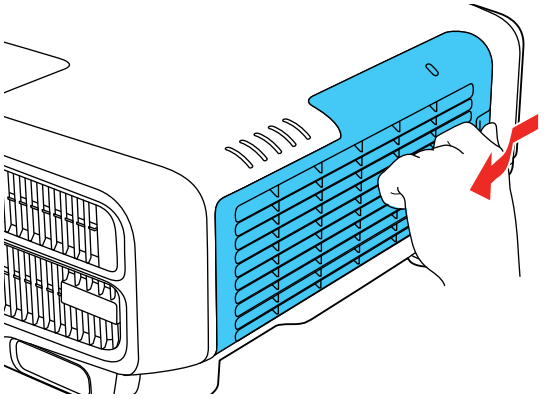
You need to replace the air filter in the following situations:

- After cleaning the air filter, you see a message telling you to clean or replace it
- The air filter is torn or damaged

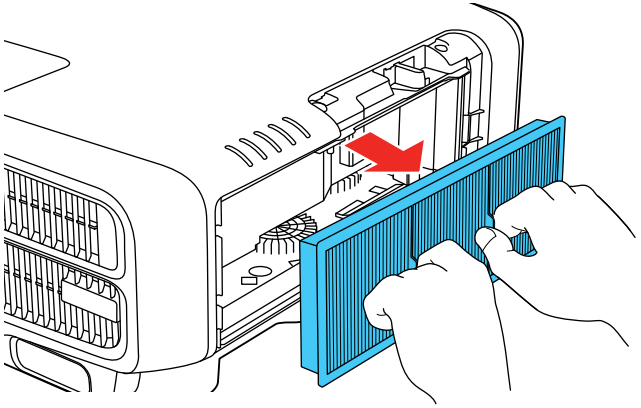
You can replace the air filter while the projector is mounted to the ceiling or placed on a table.

1. Turn off the projector, wait for the projector to beep, and unplug the power cord.

2. Slide the air filter cover latch and open the air filter cover.

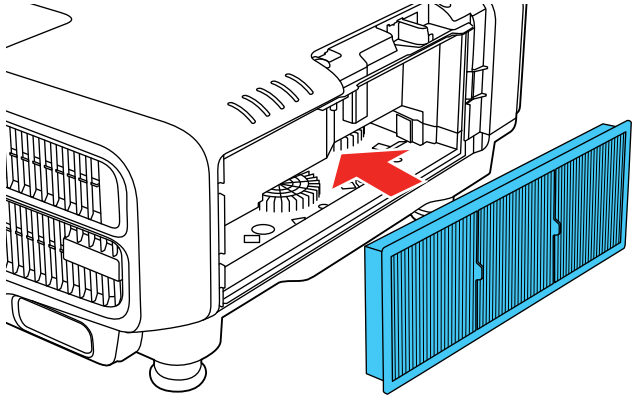


3. Pull the air filter out of the projector.

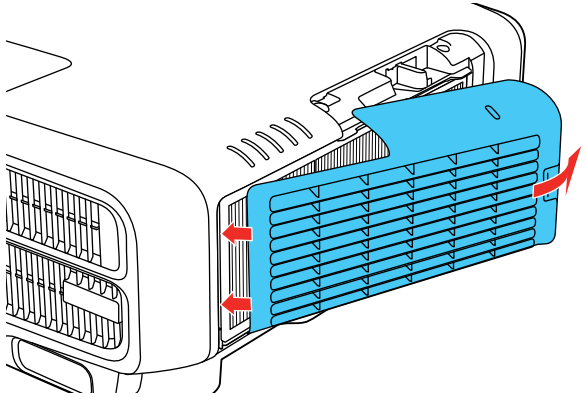


Note: Air filters contain polypropylene. Dispose of used air filters according to local regulations.

4. Place the new air filter in the projector as shown and push gently until it clicks into place.



5. Attach the air filter cover as shown, and press it gently until it clicks into place.



Parent topic: Air Filter and Vent Maintenance

Related references

Projector Light Status

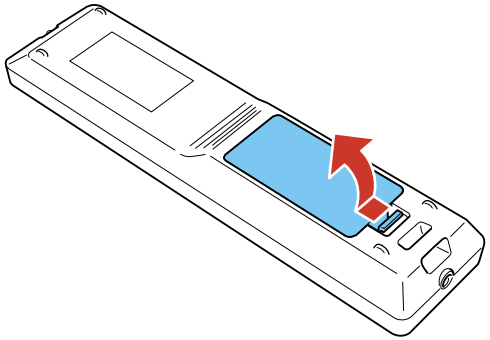
Optional Equipment and Replacement Parts

Replacing the Remote Control Batteries

The remote control uses two AA manganese or alkaline batteries. Replace the batteries as soon as they run out.

Caution: Use only the type of batteries specified in this manual. Do not install batteries of different types, or mix new and old batteries.

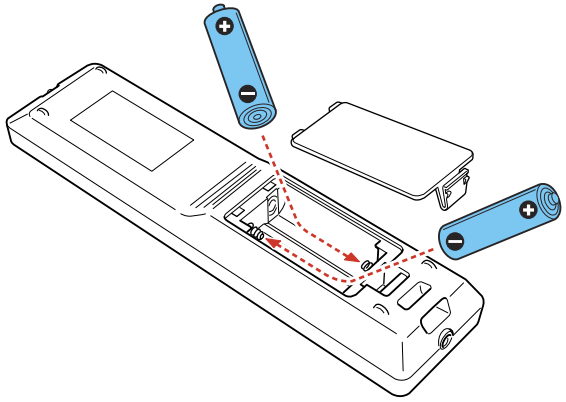
1. Remove the battery cover as shown.



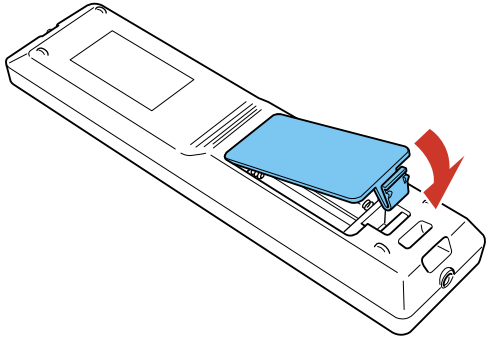
2. Remove the old batteries.

   Warning: If the battery fluid has leaked, wipe it away with a soft cloth and avoid getting the fluid on your hands. If it gets on your hands, wash them immediately to avoid injury.

3. Insert the batteries with the **+** and **–** ends facing as shown.



4. Replace the battery cover and press it down until it clicks into place.



Warning: Dispose of used batteries according to local regulations. Do not expose batteries to heat or flame. Keep batteries out of the reach of children; they are choking hazards and are very dangerous if swallowed.

Parent topic: Projector Maintenance

Transporting the Projector

The projector contains precision parts, some of which are glass. Follow the guidelines here to transport, ship, or store the projector safely.

Caution: Use two or more people to unpack or lift the projector.

1. Remove any equipment connected to the projector.
2. Do one of the following:
   - If you are using the standard zoom lens, keep it installed on the projector. Move the lens to the home position and attach the protective lens pad that was included with the projector.
   - If you are using an optional lens, remove it from the projector.
   - If the projector did not come with a lens, attach the cover that was included with the projector to the lens mount.
3. Do one of the following:
   - When transporting the projector a long distance or as checked luggage, pack it in a firm box with cushioning around it and mark the box "Fragile."
   - When shipping the projector for repairs, place it in its original packing materials, if possible, or use equivalent materials with cushioning around the projector. Mark the box "Fragile."

Note: Epson shall not be liable for any damages incurred during transportation.

Parent topic: Maintaining and Transporting the Projector

Related tasks

Attaching a Lens

Removing a Lens

Adjusting the Image Position Using Lens Shift

Solving Problems

Check the solutions in these sections if you have any problems using the projector.

Projection Problem Tips
Projector Light Status
Viewing the Status Display
Using the Projector Help Displays
Solving Image or Sound Problems
Solving Projector or Remote Control Operation Problems
Solving Network Problems
Where to Get Help

Projection Problem Tips

If the projector is not working properly, try turning it off and unplugging it. Then plug it back in and turn it on.

If this does not solve the problem, check the following:

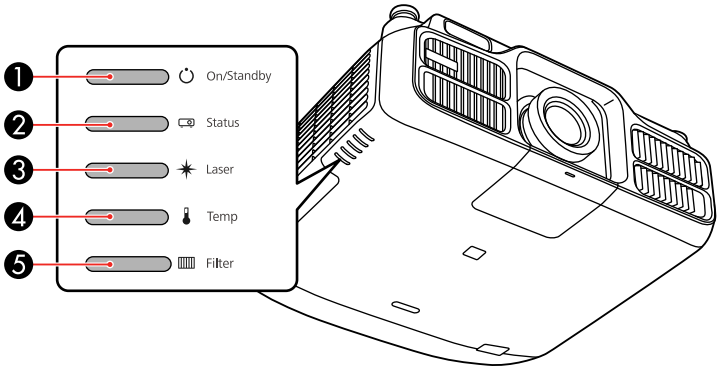
- The lights on the projector may indicate what the problem is.
- The Help option on the Home screen can display information about common problems, if the projector is operating.
- The solutions in this manual can help you solve many problems.

If none of these solutions help, you can contact Epson for technical support.

Parent topic: Solving Problems

Projector Light Status

The lights on the projector indicate the projector status and let you know when a problem occurs. Check the status and color of the lights and look for a solution in the table here.



1 On/Standby (power) light

2 Status light

3 Laser light

4 Temp (temperature) light

5 Filter light

On/Standby (power) light	Status light	Laser light	Temp light	Filter light	Status and solution
Blue	Blue	Varies	Off	Off	Normal operation.
Blue	Blue	Flashing blue	Off	Off	A/V Mute is on.
Blue	Flashing blue	Varies	Off	Off	Warming up. Wait for an image to appear.
Blue	Off	Off	Off	Off	Standby or network monitoring and control (when **Standby Mode** is set to **Communication On**).

On/Standby (power) light	Status light	Laser light	Temp light	Filter light	Status and solution
Flashing blue	Off	Off	Off	Off	Preparing network monitoring. (Wait for the light to remain orange before unplugging the projector.)
Blue	Flashing blue	Off	Off	Off	Cooling down. All buttons are disabled.
Flashing blue	Varies	Varies	Flashing orange	Varies	High temperature warning. If the temperature gets too high, projection will automatically stop. • Make sure that the vents and air filter are not clogged with dust or obstructed by nearby objects. • Clean or replace the air filter.
Off	Flashing blue	Orange	Orange	Off	Lens Shift error. Turn off the projector, unplug it from the electrical outlet, and contact Epson for help
Off	Flashing blue	Flashing orange	Off	Off	Internal error. Turn off the projector, unplug it from the electrical outlet, and contact Epson for help.

On/Standby (power) light	Status light	Laser light	Temp light	Filter light	Status and solution
Off	Flashing blue	Off	Orange	Off	Projector is too hot (overheating) and projection stops. Leave it for about five minutes to cool down. • Make sure that the vents and air filter are not clogged with dust or obstructed by nearby objects. • Clean or replace the air filter. • Make sure the environmental temperature is not too hot. • If operating the projector at high altitude, turn on **High Altitude Mode**. • If the problem persists, unplug the projector and contact Epson for help.
Off	Flashing blue	Orange	Off	Off	Laser has a problem. • Make sure that the vents and air filter are not clogged with dust or obstructed by nearby objects. • Clean or replace the air filter. • If the problem persists, unplug the projector and contact Epson for help.
Varies	Varies	Varies	Varies	Flashing orange	It is time to clean the air filter.

On/Standby (power) light	Status light	Laser light	Temp light	Filter light	Status and solution
Off	Flashing blue	Off	Off	Orange	Low air flow through the projector. • Make sure that the vents and air filter are not clogged with dust or obstructed by nearby objects. • Clean or replace the air filter. • If the problem persists, unplug the projector and contact Epson for help.
Flashing blue	Varies	Varies	Varies	Orange	Low air flow through the air filter. • Make sure that the vents and air filter are not clogged with dust or obstructed by nearby objects. • Clean or replace the air filter. • If the problem persists, unplug the projector and contact Epson for help.
Off	Flashing blue	Off	Flashing orange	Off	A fan or sensor has a problem. Turn the projector off, unplug it, and contact Epson for help.
Flashing blue	Varies	Flashing orange	Varies	Varies	Laser has a problem. Turn the projector off, unplug it, and contact Epson for help.
Flashing blue	Varies	Flashing orange	Varies	Varies	An unsupported lens is attached (Pro L1500U/L1505U). Make sure your lens is supported.

Note: If the lights display a pattern not listed in the table above, turn the projector off, unplug it, and contact Epson for help.

Parent topic: Solving Problems

Related concepts

Air Filter and Vent Maintenance

Related references

Projector Setup Settings - Extended Menu

Optional Equipment and Replacement Parts

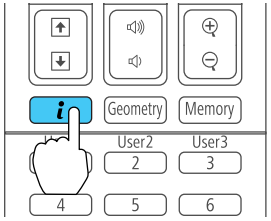
Related tasks

Stopping Video Action Temporarily

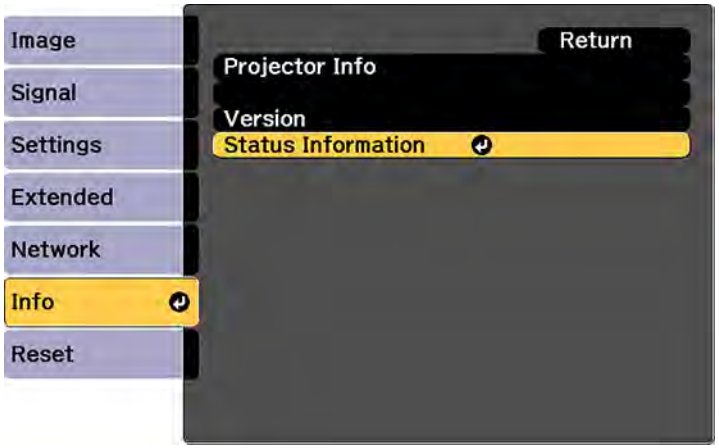
Viewing the Status Display

You can monitor the projector's status and view error information from the status display.

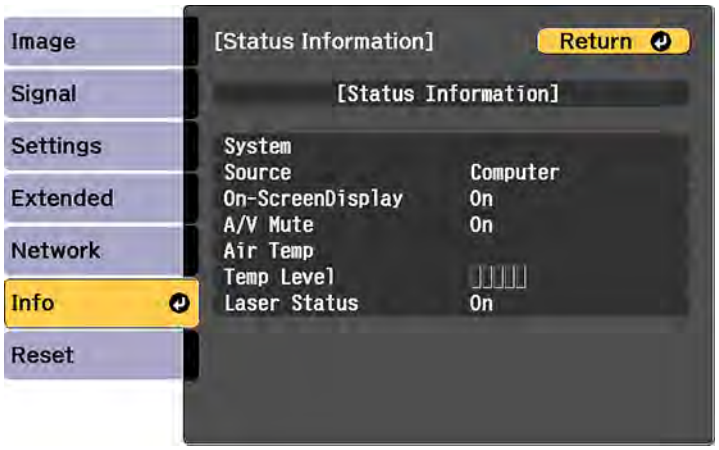
1. Turn on the projector.
2. Press the **i** button on the remote control or the right arrow button on the control panel.



3. Select **Status Information** and press **Enter**.



4. Press the left or right arrow buttons to view different categories of information.



- **Status Information**: The projector's operating status
- **Source**: Input signal information
- **Signal Information**: Input digital signal information
- **Network Wired**: Wired LAN settings
- **Network Wireless**: Wireless LAN settings
- **Maintenance**: Operating time for the projector and light source

Projector Status Display Messages

Parent topic: Solving Problems

Projector Status Display Messages

Categories on the status display screens let you view information about the projector and its operation.

Status Information category

Information	Description
System	See the System status information table at the end of this topic
Source	Displays the source currently being used

Information	Description
On-Screen Display	Displays the settings for on-screen displays . When turned off, menus or messages are not displayed on the projected images
A/V Mute	Displays the A/V Mute status
Air Temp	Display the environmental temperature
Temp Level	
Laser Status	Display the operating status of the light source

Source category

Information	Description
Source	Displays the source currently being used
Resolution	Displays the resolution of the current input signal
Video Signal	Displays the current input video signal
Color Space	Displays the color space of the current input signal
H-Frequency	Displays the horizontal frequency of the current input signal
V-Frequency	Displays the vertical frequency of the current input signal
Sync Polarity	Displays the sync polarity
Sync Mode	Displays the sync type
Detected Mode	Displays the detected mode of the current input signal
Video Level	Displays the video level of the projector

Signal Information category

Information	Description
5V Detect	Displays the detection results of 5V signals

Information	Description
TMDS Clock	Displays the TMDS frequency of the current input signal
TMDS H-Frequency	Displays the horizontal frequency of the current input signal
TMDS V-Frequency	Displays the vertical frequency of the current input signal
DetChg 5CFHMP123	Displays the factors of signal changes
Stable Time	Displays the amount of operating time since the input source was determined
HDCP Status	Displays the HDCP status
HDCP Ver	Displays the HDCP version
AVI Info VIC	Displays the VIC information (AVI) of the current input signal
AVI InfoChecksum	Displays the checksum result for AVI
Signal Mode	Displays the signal mode
Pixel Encoding	Displays the color space information (AVI) of the current input signal
HDBaseT Quality	Displays the image signal information from the HDBaseT port

Network Wired category

Information	Description
Projector Name	Displays the name used to identify the projector when connected to a network
Connection Mode	Displays the connection path for the LAN
DHCP	Displays the DHCP display settings
IP Display	Displays the IP address display settings
IP Address	Displays the IP address
MAC Address	Displays the MAC address

Network Wireless category

Information	Description
Projector Name	Displays the name used to identify the projector when connected to a network
Connection Mode	Displays the connection mode to use when connecting the projector and a computer over a wireless LAN
SSID Display	Displays the SSID display settings
IP Display	Displays the IP address display settings
SSID	Displays the SSID
IP Address	Displays the IP address
DHCP	Displays the DHCP settings
MAC Address	Displays the MAC address
Security	Displays the security settings
Antenna Level	Displays the reception status for Wi-Fi

Maintenance category

Information	Description
Operation Time	Displays the projector's total operation time
Laser Op. Time	Displays the laser operating time for each Light Source Mode setting

Version category

Information	Description
Serial No.	Displays the projector's serial number
Main	Display the projector's firmware version information
Video2	
Sub	
Sub2	
HDBaseT	

System status information

Status	Description
OK	The projector is in normal operating mode
Warm-up	The projector is warming up
Standby	The projector is in standby mode
Cool Down	The projector is cooling down
Temp Error	A high temperature error occurred
Fan Error	A fan error occurred
Sensor Error	A sensor error occurred
Power Error	A power error occurred
Internal Error	An internal error occurred
Airflow Error	A filter airflow error occurred
Temp Warning	A high temperature warning occurred
Internal Warning	A warning regarding the internal system occurred
Airflow Decline	A low airflow error occurred
Power Warning	A power warning occurred
Clean Filter	An air filter notice occurred; clean the air filter
Lens Error	A lens error has occurred
Laser Error	A laser error has occurred
Laser Warning	A laser warning has occurred

Parent topic: Viewing the Status Display

Using the Projector Help Displays

You can display information to help you solve common problems using the projector's Help system.

1. Turn on the projector.
2. Press the **Home** button on the remote control.
3. Use the arrow buttons to select **Help**.
4. Press **Enter**.

You see the Help menu.

5. Use the up and down arrow buttons to highlight the problem you want to solve.
6. Press **Enter** to view the solutions.
7. When you are finished, do one of the following:
   - To select another problem to solve, press **Esc**.
   - To exit the help system, press **Home**.

Parent topic: Solving Problems

Solving Image or Sound Problems

Check the solutions in these sections if you have any problems with projected images or sound.

Solutions When No Image Appears
Solutions When "No Signal" Message Appears
Solutions When "Not Supported" Message Appears
Solutions When Only a Partial Image Appears
Solutions When the Image is Not Rectangular
Solutions When the Image Contains Noise or Static
Solutions When the Image is Fuzzy or Blurry
Solutions When the Image Brightness or Colors are Incorrect
Solutions to Sound Problems

Parent topic: Solving Problems

Solutions When No Image Appears

If no image appears, try the following solutions:

- Make sure the lens cap is off.
- Press the **A/V Mute** button on the remote control to see if the image was temporarily turned off.
- Make sure all necessary cables are securely connected and the power is on for the projector and connected video sources.
- Press the projector's power button to wake it from standby or sleep mode. Also see if your connected computer is in sleep mode or displaying a blank screen saver.
- Press the **Menu** button. If the projector menu is able to display, there may be a problem with the connected video source, cable connection, or port.

- Check the settings on the Signal menu to make sure they are correct for the current video source.
- Adjust the **Brightness Settings**.
- Check the **Display** setting to make sure **Messages** is set to **On**.
- If the projector does not respond when you press the control panel buttons, the buttons may be locked. Unlock the buttons.
- For images projected with Windows Media Center, reduce the screen size from full screen mode.
- For images projected from applications using Windows DirectX, turn off DirectX functions.
- If the other solutions do not solve the problem, reset all of the projector settings using the options on the **Reset** menu.

Parent topic: Solving Image or Sound Problems

Related concepts

Projector Connections

Related references

Input Signal Settings - Signal Menu

Projector Setup Settings - Extended Menu

Related tasks

Adjusting the Brightness

Unlocking the Projector's Buttons

Solutions When "No Signal" Message Appears

If the "No Signal" message appears, try the following solutions:

- Press the **Source Search** or **Search** button and wait a few seconds for an image to appear.
- Turn on the connected computer or video source, and press its play button to begin your presentation, if necessary.
- Check the connection from the projector to your video sources.
- If you are projecting from a laptop computer, make sure it is set up to display on an external monitor.
- If necessary, turn the projector and the connected computer or video source off and then on again.
- If the other solutions do not solve the problem, reset all of the projector settings using the options on the **Reset** menu.

Displaying From a PC Laptop

Displaying From a Mac Laptop

Parent topic: Solving Image or Sound Problems

Related concepts

Projector Connections

Displaying From a PC Laptop

If you see the "No Signal" message when you display from a PC laptop, you need to set up the laptop to display on an external monitor.

1. Hold down the laptop's **Fn** key and press the key labeled with a monitor icon or **CRT/LCD**. (See your laptop manual for details.) Wait a few seconds for an image to appear.
2. To display on both the laptop's monitor and the projector, try pressing the same keys again.
3. If the same image is not displayed by the laptop and projector, check the Windows **Display** utility to make sure the external monitor port is enabled and extended desktop mode is disabled. (See your computer or Windows manual for instructions.)
4. If necessary, check your video card settings and set the multiple display option to **Mirror** or **Duplicate**.

Parent topic: Solutions When "No Signal" Message Appears

Displaying From a Mac Laptop

If you see the "No Signal" message when you display from a Mac laptop, you need to set up the laptop for mirrored display. (See your laptop manual for details.)

1. Open the **System Preferences** utility and select **Displays**.
2. Click the **Arrangement** tab.
3. Select the **Mirror Displays** checkbox.

Parent topic: Solutions When "No Signal" Message Appears

Solutions When "Not Supported" Message Appears

If the "Not Supported" message appears, try the following solutions:

- Make sure the correct input signal is selected on the Signal menu.
- Make sure the computer's display resolution does not exceed the projector's resolution and frequency limit. If necessary, select a different display resolution for your computer. (See your computer manual for details.)
- As a test, try setting the computer's display resolution to the lowest possible setting, and then gradually increase it as necessary.

Parent topic: Solving Image or Sound Problems

Related references

Input Signal Settings - Signal Menu

Supported Video Display Formats

Solutions When Only a Partial Image Appears

If only a partial computer image appears, try the following solutions:

- Make sure you selected the correct **Screen Type** setting for the screen being used.
- Make sure the **Scale** setting in the Extended menu is turned off.
- Try adjusting the image position using the **Position** menu setting.
- Try adjusting the image position using the **Screen Position** menu setting.
- Press the **Aspect** button on the remote control to select a different image aspect ratio.
- If you zoomed into or out of the image using the **E-Zoom** buttons, press the **Esc** button until the projector returns to a full display.
- Check the cables connecting the computer or video source to the projector. Try connecting different cables.
- Check your computer display settings to disable dual display and set the resolution within the projector's limits. (See your computer manual for details.)
- Check the resolution assigned to your presentation files to see if they are created for a different resolution than you are projecting in. (See your software help for details.)

Parent topic: Solving Image or Sound Problems

Related concepts

Projector Connections

Related references

Projector Setup Settings - Extended Menu

Input Signal Settings - Signal Menu

Supported Video Display Formats

Related tasks

Setting the Screen Type

Adjusting the Image Position Using Screen Position

Solutions When the Image is Not Rectangular

If the projected image is not evenly rectangular, try the following solutions:

- Place the projector directly in front of the center of the screen, facing it squarely, if possible.
- Adjust the image shape using the **Geometry Correction** menu settings.

Parent topic: Solving Image or Sound Problems

Related references

Projector Feature Settings - Settings Menu

Solutions When the Image Contains Noise or Static

If the projected image seems to contain electronic interference (noise) or static, try the following solutions:

- Check the cables connecting your computer or video source to the projector. They should be:
  - Separated from the power cord to prevent interference
  - Securely connected at both ends
  - Not connected to an extension cable
  - No longer than 10 feet (3 m) for VGA/computer cables or 24 feet (7.3 m) for HDMI cables
- Check the settings on the projector's Signal menu to make sure they match the video source.If available for your video source, adjust the **Deinterlacing** and **Noise Reduction** settings.
- Select a computer video resolution and refresh rate that are compatible with the projector.
- If you are projecting from a computer, press the **Auto** button on the remote control to automatically adjust the tracking and sync. If the problem remains, display a uniformly patterned image on the screen and manually adjust the **Tracking** and **Sync** settings.
- If you adjusted the image shape using the projector controls, try decreasing the **Sharpness** setting to improve image quality.
- If you connected an extension power cable, try projecting without it to see if it caused interference in the signal.
- Try a different cable.
- Try turning off **Frame Interpolation**, or turn on **Image Enhancement** in the Image menu.

Parent topic: Solving Image or Sound Problems

Related references

Image Quality Settings - Image Menu

Input Signal Settings - Signal Menu
Supported Video Display Formats

Solutions When the Image is Fuzzy or Blurry

If the projected image is fuzzy or blurry, try the following solutions:

- Adjust the image focus.
- Clean the projector lens.

  Note: To avoid condensation on the lens after bringing the projector in from a cold environment, let the projector warm up to room temperature before using it.

- Try connecting the projector to the highest quality connection available on your input source. For example, connect to an HMDI port or component video ports for a better quality input signal.
- Position the projector close enough to the screen.
- Position the projector so the keystone adjustment angle is not so wide that it distorts the image.
- Adjust the **Sharpness** setting to improve image quality.
- If you are projecting from a computer, press the **Auto** button on the remote control to automatically adjust the tracking and sync. If any bands or overall blurriness remain, display a uniformly patterned image on the screen and manually adjust the **Tracking** and **Sync** settings.
- If you are projecting from a computer, try using a lower resolution or try to match the projector's native resolution.

Parent topic: Solving Image or Sound Problems

Related concepts

Projector Connections

Related references

Projector Setup and Installation Options
Image Quality Settings - Image Menu
General Projector Specifications
Supported Video Display Formats

Related tasks

Focusing the Image Using the Focus Button
Cleaning the Lens

Solutions When the Image Brightness or Colors are Incorrect

If the projected image is too dark or light, or the colors are incorrect, try the following solutions:

- Press the **Color Mode** button on the remote control to try different color modes for the image and environment.
- Check your video source settings.
- Adjust the available settings on the Image menu for the current input source, such as **Brightness**, **Contrast**, **Tint**, **Advanced**, and **Color Saturation**.
- Make sure you selected the correct **Input Signal** or **Video Signal** setting on the Signal menu, if available for your image source.
- Make sure all the cables are securely connected to the projector and your video device. If you connected long cables, try connecting shorter cables.
- Make sure the **Brightness Settings** in the Settings menu is set correctly.
- Position the projector close enough to the screen.

Parent topic: Solving Image or Sound Problems

Related references

Image Quality Settings - Image Menu
Input Signal Settings - Signal Menu
Projector Feature Settings - Settings Menu
Projection Distance

Solutions to Sound Problems

If there is no sound when you expect it or the volume is too low or high, try the following solutions:

- Adjust the projector's volume settings.
- Press the **A/V Mute** button on the remote control to resume video and audio if they were temporarily stopped.
- Press the **Source Search** or **Search** button to switch to the correct input source, if necessary.
- Check your computer or video source to make sure the volume is turned up and the audio output is set for the correct source.
- Check the audio cable connections between the projector and your video source.
- If you do not hear sound from an HDMI source, set the connected device to PCM output.
- Make sure any connected audio cables are labeled "No Resistance".

- If you are using a Mac and you do not hear sound from an HDMI source, make sure your Mac supports audio through the HDMI port. If not, you need to connect an audio cable.
- If you want to use a connected audio source when the projector is off, set the **Standby Mode** option to **Communication On** and make sure the **A/V Settings** options are set correctly.
- You must connect external speakers to the projector to hear sound (Pro L1405U/L1500U/L1505U).
- Make sure the **Audio Settings** option is set to the correct audio port for your video device.
- If you connected an audio device to the projector's **Audio Out** port, the internal speaker is disabled. However, you can still control the volume level via the remote control.
- If you turn the projector on immediately after turning it off, the cooling fans may run at high speed momentarily and cause an unexpected noise. This is normal.

Parent topic: Solving Image or Sound Problems

Related references

Projector Setup Settings - Extended Menu

Related tasks

Controlling the Volume with the Volume Buttons
Connecting to a Video Source for Sound
Connecting to a Computer for Sound
Connecting to External Speakers

Solving Projector or Remote Control Operation Problems

Check the solutions in these sections if you have problems operating the projector or remote control.

Solutions to Projector Power or Shut-Off Problems
Solutions to Problems with the Remote Control
Solutions to Password Problems

Parent topic: Solving Problems

Solutions to Projector Power or Shut-Off Problems

If the projector does not come on when you press the power button or it shuts off unexpectedly, try the following solutions:

- Make sure the power cord is securely connected to the projector and to a working electrical outlet.
- The projector's buttons may be locked for security. Unlock the buttons or use the remote control to turn on the projector.

- If the projector's laser shuts off unexpectedly, it may have entered standby mode after a period of inactivity. Press the power button to wake the projector and adjust the **Sleep Mode Timer** setting to change the sleep interval.
- If the projector's laser shuts off, the Status light is flashing blue, and the Temp light is orange, the projector has overheated and shut off. Check the solutions for this light status.
- If the power button on the remote control does not turn on the projector, check its batteries and make sure the **Remote Receiver** setting is turned on in the projector's menu, if available.
- The power cord may be defective. Try another power cord. If that doesn't work, disconnect the cord and contact Epson.

Parent topic: Solving Projector or Remote Control Operation Problems

Related references

Projector Setup Settings - Extended Menu
Projector Feature Settings - Settings Menu
Projector Light Status

Related tasks

Unlocking the Projector's Buttons

Solutions to Problems with the Remote Control

If the projector does not respond to remote control commands, try the following solutions:

- Check that the remote control batteries are installed correctly and have power. If necessary, replace the batteries.
- Make sure you are operating the remote control within the reception angle and range of the projector.
- Make sure the projector is not warming up or shutting down.
- Check to see if a button on the remote control is stuck down, causing it to enter sleep mode. Release the button to wake the remote control up.
- Strong fluorescent lighting, direct sunlight, or infrared device signals may be interfering with the projector's remote receivers. Dim the lights or move the projector away from the sun or interfering equipment.
- Make sure the optional remote control cable set is not attached to the projector's **Remote** port. If you leave the cable connected to the port, the remote control cannot control the projector.
- If available, turn off one of the remote receivers in the projector's menu system, or check if all the remote receivers were turned off.

- If you assigned an ID number to the remote control to operate multiple projectors, you may need to check or change the ID setting (feature not available with all projectors).
- Make sure the **Remote Control Type** setting in the Extended menu is set to **Normal** if you are using the remote control that came with the projector.
- Make sure the **Control Communications** or **Extron XTP** setting in the Extended menu is set to **Off** if you are using the optional remote control cable set.
- If you lose the remote control, you can purchase another from an authorized Epson reseller.

Parent topic: Solving Projector or Remote Control Operation Problems

Related concepts

Projector Identification System for Multiple Projector Control

Related references

Remote Control Operation

Projector Feature Settings - Settings Menu

Projector Setup Settings - Extended Menu

Related tasks

Replacing the Remote Control Batteries

Solutions to Password Problems

If you cannot enter or remember a password, try the following solutions:

- You may have turned on password protection without first setting a password. Try entering **0000** using the remote control.
- If you have entered an incorrect password too many times and see a message displaying a request code, write down the code and contact Epson. Do not attempt to enter the password again. Provide the request code and proof of ownership for assistance in unlocking the projector.
- If you set a Web Control password and forgot the user ID or password, try entering the following:
  - User ID: **EPSONWEB**
  - Default password: **admin**
- If you set a Remote password (in Epson Web Control) and forgot the user ID or password, try entering the following:
  - User ID: **EPSONREMOTE**
  - Default password: **guest**
- If you lose the remote control, you cannot enter a password. Order a new one from Epson.

Parent topic: Solving Projector or Remote Control Operation Problems

Related concepts

Password Security Types

Solving Network Problems

Check the solutions in these sections if you have problems using the projector on a network.

Solutions When You Cannot Access the Projector Through the Web

Solutions When Network Alert E-Mails are Not Received

Parent topic: Solving Problems

Solutions When You Cannot Access the Projector Through the Web

If you are unable to access the projector through a web browser, make sure you are using the correct ID and password, which are case sensitive.

- For the user ID, enter **EPSONWEB**. (You cannot change the user ID.)
- For the password, enter the password set in the projector's Network menu. The default password is **admin**.
- Make sure you have access to the network the projector is on.

Note: The user ID and password are case sensitive.

Parent topic: Solving Network Problems

Related concepts

Password Security Types

Related tasks

Controlling a Networked Projector Using a Web Browser

Solutions When Network Alert E-Mails are Not Received

If you do not receive an e-mail alerting you to problems with a projector over the network, try the following solutions:

- Make sure the projector is turned on and connected to the network correctly. (If an error shut down the projector, it cannot send an e-mail.)
- Make sure you set up the projector e-mail alert settings correctly on the projector's network Mail menu or in the network software.

- Set the **Standby Mode** setting to **Communication On** so the network software can monitor the projector in standby mode.

Parent topic: Solving Network Problems

Related references

Projector Network Settings - Network Menu

Projector Setup Settings - Extended Menu

Where to Get Help

If you need to contact Epson for technical support services, use the following support options.

Internet Support

Visit Epson's support website at epson.com/support (U.S.) or epson.ca/support (Canada) for solutions to common problems with your projector. You can download utilities and documentation, get FAQs and troubleshooting advice, or e-mail Epson with your questions.

Speak to a Support Representative

To use the Epson PrivateLine Support service, call (800) 637-7661. This service is available for the duration of your warranty period. You may also speak with a projector support specialist by dialing (562) 276-4394 (U.S.) or (905) 709-3839 (Canada).

Support hours are 6 AM to 8 PM, Pacific Time, Monday through Friday and 7 AM to 4 PM, Pacific Time, Saturday.

Days and hours of support are subject to change without notice. Toll or long distance charges may apply.

Before you call, have the following information ready:

- Product name
- Product serial number (located on the bottom or rear of the projector, or in the menu system)
- Proof of purchase (such as a store receipt) and date of purchase
- Computer or video configuration
- Description of the problem

Purchase Supplies and Accessories

You can purchase screens, other optional accessories, and replacement parts from an Epson authorized reseller. To find the nearest reseller, call 800-GO-EPSON (800-463-7766). Or you can purchase online at epsonstore.com (U.S. sales) or epson.ca (Canadian sales).

To purchase a replacement remote control, call (562) 276-4394 (U.S.) or (905) 709-3839 (for dealer referral in Canada).

Parent topic: Solving Problems

Technical Specifications

These sections list the technical specifications of your projector.

General Projector Specifications
Projector Light Source Specifications
Remote Control Specifications
Projector Dimension Specifications
Projector Electrical Specifications
Projector Environmental Specifications
Projector Safety and Approvals Specifications
Supported Video Display Formats

General Projector Specifications

Type of display	Poly-silicon TFT active matrix
Resolution	1920 × 1200 pixels (WUXGA)
Lens	**Pro L1100U/L1200U/L1300U/L1405U**: F=1.7 to 2.3 Focal length: 24.02 to 38.24 mm **Pro L1500U/L1505U**: F=1.8 to 2.5 Focal length: 36 to 57.35 mm
Color reproduction	Full color, up to 1 billion colors

Brightness **Note:** Color brightness (color light output) and white brightness (white light output) will vary depending on usage conditions. Color light output measured in accordance with IDMS 15.4; white light output measured in accordance with ISO 21118.	**Pro L100U**: Normal Light Source Mode: White light output 6000 lumens (ISO 21118 standard) Color light output 6000 lumens Quiet or Extended Light Source Mode: White light output 4200 lumens (ISO 21118 standard) **Pro L1200U**: Normal Light Source Mode: White light output 7000 lumens (ISO 21118 standard) Color light output 7000 lumens Quiet or Extended Light Source Mode: White light output 4900 lumens (ISO 21118 standard) **Pro L1300U/L1405U**: Normal Light Source Mode: White light output 8000 lumens (ISO 21118 standard) Color light output 8000 lumens Quiet or Extended Light Source Mode: White light output 5600 lumens (ISO 21118 standard) **Pro L1500U/L1505U**: Normal Light Source Mode: White light output 12000 lumens (ISO 21118 standard) Color light output 12000 lumens Quiet or Extended Light Source Mode: White light output 8400 lumens (ISO 21118 standard)
Contrast ratio	Over 2,500,000:1 with Dynamic Color Mode, Normal Light Source Mode, Wide Zoom, Lens Shift centered, and Light Optimizer on

Image size (in native aspect ratio)	**Pro L1100U/L1200U/L1300U/L1405U**: 50 inches (1.27 m) to 300 inches (7.62 m) **Pro L1500U/L1505U**: 60 inches (1.52 m) to 500 inches (12.7 m)
Projection distance (in native aspect ratio)	**Pro L1100U/L1200U/L1300U/L1405U**: 60.2 inches (1.53 m) to 594.5 inches (15.10 m) **Pro L1500U/L1505U**: 78.3 inches (1.99 m) to 1093.31 inches (27.77 m)
Projection methods	Front, rear, ceiling-mounted
Optical aspect ratio (width-to-height)	16:10
Focus adjustment	Powered
Zoom adjustment	Powered
Zoom ratio (Tele-to-Wide)	**Pro L1100U/L1200U/L1300U/L1405U**: 1 to 1.6 **Pro L1500U/L1505U**: 1 to 1.61
Internal sound system	**Pro L1100U/L1200U/L1300U/L1405U**: 10 W monaural **Pro L1500U/L1505U**: N/A

Noise level	**Pro L1100U/L1200U**: 34 dB (Normal Light Source Mode) 28 dB (Quiet Light Source Mode) **Pro L1300U/L1405U**: 35 dB (Normal Light Source Mode) 29 dB (Quiet Light Source Mode) **Pro 1500U/L1505U**: 39 dB (Normal Light Source Mode) 33 dB (Quiet Light Source Mode)
Keystone correction angle	± 45º vertical (Tele Zoom with Standard Zoom lens) ± 30° horizontal (Tele Zoom with Standard Zoom lens)
USB Type B port compatibility	USB 1.1 and 2.0 compliant for firmware update or copying menu settings
USB Type A port compatibility	One USB 1.1 and 2.0 compliant port for wireless LAN, firmware update, or copying menu settings

Parent topic: Technical Specifications

Projector Light Source Specifications

Type	Laser Diode
Power consumption	**Pro L1100U**:
(Normal Light Source Mode)	290 W
	Pro L1200U:
	385 W
	Pro L1300U/L1405U:
	430 W
	Pro L1500U/L1505U:
	670 W

Light source output power	**Pro L1100U**: 108 W **Pro L1200U**: 144 W **Pro L1300U/L1405U**: 162 W **Pro L1500U/L1505U**: 252 W
Wavelength	450 to 460 nm
Light source life	Normal or Quiet Light Source Mode: Up to about 20000 hours Extended Light Source Mode: Up to about 30000 hours

Note: Turn off this product when not in use to prolong the life of the projector. Laser life will vary depending upon mode selected, environmental conditions, and usage. Brightness decreases over time.

Parent topic: Technical Specifications

Remote Control Specifications

Reception range	98.4 feet (30 m)
Batteries	Two alkaline or manganese AA

Parent topic: Technical Specifications

Projector Dimension Specifications

Height (excluding feet)	7.3 inches (185 mm)
Width	23.1 inches (586 mm)
Depth	19.4 inches (492 mm)

Weight	**Pro L1100U**: 44.4 lb (20.1 kg) **Pro L1200U**: 45.4 lb (20.6 kg) **Pro L1300U/L1405U**: 45.5 lb (20.7 kg) **Pro L1500U/L1505U**: 51.9 lb (23.5 kg)

Parent topic: Technical Specifications

Projector Electrical Specifications

Rated frequency	50/60 Hz
Power supply	100 to 240 VAC ±10% **Pro L100U**: 4.9 to 2.2 A **Pro L1200U**: 6.0 to 2.7 A **Pro L1300U/L1405U**: 6.7 to 3.0 A **Pro L1500U/L1505U**: 9.6 to 4.2 A

Power consumption (100 to 120 V)	Operating: **Pro L100U**: Normal Light Source Mode: 479 W Extended Light Source Mode: 327 W **Pro L1200U**: Normal Light Source Mode: 594 W Extended Light Source Mode: 400 W **Pro L1300U/L1405U**: Normal Light Source Mode: 658 W Extended Light Source Mode: 434 W **Pro L1500U/L1505U**: Normal Light Source Mode: 955 W Extended Light Source Mode: 597 W Standby: **Pro L100U/L1200U/L1300U/L1405U**: 0.22 W (Communication Off), 2.3 W (Communication On) **Pro L1500U/L1505U**: 0.23 W (Communication Off), 2.2 W (Communication On)

Power consumption (220 to 240 V)	Operating: **Pro L100U**: Normal Light Source Mode: 454 W Extended Light Source Mode: 313 W **Pro L1200U**: Normal Light Source Mode: 566 W Extended Light Source Mode: 384 W **Pro L1300U/L1405U**: Normal Light Source Mode: 625 W Extended Light Source Mode: 417 W **Pro L1500U/L1505U**: Normal Light Source Mode: 908 W Extended Light Source Mode: 597 W Standby: **Pro L100U/L1200U/L1300U/L1405U**: 0.28 W (Communication Off), 2.4 W (Communication On) **Pro L1500U/L1505U**: 0.33 W (Communication Off), 2.3 W (Communication On)

Parent topic: Technical Specifications

Projector Environmental Specifications

Temperature	Operating: Up to 4921 feet (1500 m): 32 to 113 °F (0 to 45 °C) 4921 feet (1500 m) to 10000 feet (3048 m) with High Altitude Mode enabled: 32 to 104 °F (0 to 40 °C) Brightness automatically dims at these altitudes/operating temperatures: Up to 4921 feet (1500 m): 122 °F (50 °C) 4921 feet (1500 m) to 10000 feet (3048 m): 113 °F (45 °C) Storage: 14 to 140 °F (–10 to 60 °C)
Humidity (relative, non-condensing)	Operating: 20 to 80% Storage: 10 to 90%
Operating altitude	Up to 4921 feet (1500 m) Up to 10000 feet (3048 m) with High Altitude Mode enabled

Parent topic: Technical Specifications

Projector Safety and Approvals Specifications

United States	FCC Part 15 Class B UL60950-1 2nd edition (cTUVus Mark)
Canada	ICES-003 Class B CSA C22.2 No. 60950-1-07 (cTUVus Mark)

Parent topic: Technical Specifications

Supported Video Display Formats

For best results, your computer's monitor port or video card resolution should be set to display in the projector's native resolution. However, your projector includes Epson's SizeWise chip that supports other computer display resolutions, so your image will be resized to fit automatically.

Your computer's monitor port or video card refresh rate (vertical frequency) must be compatible with the projector. (See your computer or video card manual for details.)

The table here lists the compatible refresh rate and resolution for each compatible video display format.

Display format	Refresh rate (in Hz)	Resolution (in pixels)
Computer signals (analog RGB)		
VGA	60/72/75/85	640 × 480
SVGA	56/60/72/75/85	800 × 600
XGA	60/70/75/85	1024 × 768
WXGA	60	1280 × 768
	60	1366 × 768
	60/75/85	1280 × 800
WXGA+	60/75/85	1440 × 900
WXGA++	60	1600 × 900
SXGA	70/75/85	1152 × 864
	60/75/85	1280 × 960
	60/75/85	1280 × 1024
SXGA+	60/75	1400 × 1050
WSXGA+[1]	60	1680 × 1050
UXGA	60	1600 × 1200
WUXGA[2]	60	1920 × 1200
Component video		
SDTV (480i)	60	720 × 480
SDTV (576i)	50	720 × 576
SDTV (480p)	60	720 × 480
SDTV (576p)	50	720 × 576
HDTV (720p)	50/60	1280 × 720
HDTV (1080i)	50/60	1920 × 1080

Display format	Refresh rate (in Hz)	Resolution (in pixels)
HDTV (1080p)[3]	50/60	1920 × 1080
HDMI, DVI-D, and HDBaseT input signals		
VGA	60	640 × 480
SVGA	60	800 × 600
XGA	60	1024 × 768
WXGA	60	1280 × 800
	60	1366 × 768
WXGA+	60	1440 × 900
WXGA++	60	1600 × 900
WSXGA+	60	1680 × 1050
SXGA	60	1280 × 960
	60	1280 × 1024
SXGA+	60	1400 × 1050
UXGA	60	1600 × 1200
WUXGA[3]	60	1920 × 1200
QXGA[4]	60	2048 × 1536
WQHD[4]	60	2560 × 1440
WQXGA[3, 4]	60	2560 × 1600
SDTV (480i/480p)	60	720 × 480
SDTV (576i/576p)	50	720 × 576
HDTV (720p)	50/60	1280 × 720
HDTV (1080i)	50/60	1920 × 1080
HDTV (1080p)	24/30/50/60	1920 × 1080
4K×2K[4]	24/25/30/50/60	3840 × 2160
4K×2K (SMPTE)[4]	24/50/60	4096 × 2160
SDI input signals (Pro L1405U/L1500U/L1505U only)		

Display format	Refresh rate (in Hz)	Resolution (in pixels)
SDTV (480i)	59.94 (SD-SDI mode)	720 × 480
SDTV (576i)	50 (SD-SDI mode)	720 × 576
HDTV (720p)	50/59.94/60 (HD-SDI mode)	1280 × 720
HDTV (1080i)	50/59.94/60 (HD-SDI mode)	1920 × 1080
HDTV (1080p)	23.98/24/25/29.97/30 (HD-SDI mode)	1920 × 1080
	50.59.94/60 (3G-SDI mode; Level A)	1920 × 1080

[1] Only compatible when **Wide** is selected as the **Resolution** setting

[2] Compatible only with VESA CVT-RB (Reduced Blanking) input signal

[3] Input signals only from the **Computer** port

[4] HDMI input only

Parent topic: Technical Specifications

Notices

Check these sections for important notices about your projector.

Recycling
Important Safety Information
Important Safety Instructions
List of Safety Symbols (corresponding to IEC60950-1 A2)
FCC Compliance Statement
Open Source Software License
Trademarks
Copyright Notice

Recycling

Epson offers a recycling program for end of life products. Please go to this site for information on how to return your products for proper disposal.

Parent topic: Notices

Important Safety Information

Caution: Never look into the projector lens when the laser is turned on; the bright light can damage your eyes. Never let children look into the lens when it is on. Never open any cover on the projector, except the filter covers. Dangerous electrical voltages inside the projector can severely injure you. Except as specifically explained in this *User's Guide*, do not attempt to service this product yourself. Refer all servicing to qualified service personnel.

Warning: The projector and its accessories come packaged in plastic bags. Keep plastic bags away from small children to avoid any risk of suffocation.

Parent topic: Notices

Important Safety Instructions

Follow these safety instructions when setting up and using the projector:

- Do not look into the lens when the projector is on. The bright light can damage your eyes. Avoid standing in front of the projector so the bright light does not shine into your eyes.

- Do not place the projector on an unstable cart, stand, or table.
- If the projector is mounted on a ceiling or wall, it should be installed by qualified technicians using mounting hardware designed for use with this projector.
- When installing or adjusting a ceiling or wall mount, do not use adhesives to prevent the screws from loosening and do not use oils or lubricants. This may cause the projector case to crack and the projector to fall from its ceiling mount. This could cause serious injury to anyone under the mount and could damage the projector.
- Do not use the projector near water, sources of heat, high-voltage electrical wires, or sources of magnetic fields.
- Use the type of power source indicated on the projector. Use of a different power source may result in fire or electric shock. If you are not sure of the power available, consult your dealer or power company.
- Place the projector near a wall outlet where the plug can be easily unplugged.
- Take the following precautions when handling the plug: Do not hold the plug with wet hands. Do not insert the plug into a dusty outlet. Insert the plug firmly into the outlet. Do not pull the power cord when disconnecting the plug; always be sure to hold the plug when disconnecting it. Do not overload wall outlets, extension cords, or power strips. Failure to comply with these precautions could result in fire or electric shock.
- Do not place the projector where the cord can be walked on. This may result in fraying or damage to the plug.
- Unplug the projector from the wall outlet and allow to cool before cleaning. Use a dry cloth (or, for stubborn dirt or stains, a moist cloth that has been wrung dry) for cleaning. Do not use liquid or aerosol cleaners, any sprays containing flammable gas, or solvents such as alcohol, paint thinner, or benzine.
- Do not block the slots and openings in the projector case. They provide ventilation and prevent the projector from overheating. Do not operate the projector on a sofa, rug, or other soft surface, or set it on top of loose papers. Do not cover the projector with a blanket, curtain, or tablecloth. If you are setting up the projector near a wall, leave at least 7.9 inches (20 cm) of space between the wall and the projector.
- Do not operate the projector in a closed-in cabinet unless proper ventilation is provided.
- Never allow objects of any kind to enter any openings in the projector. Do not leave objects, especially flammable objects, near the projector. Never spill liquid of any kind into the projector.
- If you are using two or more projectors side-by-side, leave at least 20 inches (50 cm) of space between the projectors to allow for proper ventilation.
- You may need to clean the air filter and vent. A clogged air filter or vent can block ventilation needed to cool the projector. Do not use canned air, or the gases may leave a residue.

- Do not store the projector outdoors for an extended length of time.
- Except as specifically explained in this manual, do not attempt to service this product yourself. Refer all servicing to qualified personnel. Opening or removing covers may expose you to dangerous voltages and other hazards.
- Never open any covers on the projector except as specifically explained in this manual. Never attempt to disassemble or modify the projector. Refer all repairs to qualified service personnel.
- Unplug the projector from the wall outlet and refer servicing to qualified service personnel under the following conditions: if it does not operate normally when you follow the operating instructions, or exhibits a distinct change in performance; if smoke, strange odors, or strange noises come from the projector; if the power cord or plug is damaged or frayed; if liquid or foreign objects get inside the projector, or if it has been exposed to rain or water; if it has been dropped or the housing has been damaged.
- Do not touch the plug during an electrical storm. Otherwise, you may receive an electric shock.
- Unplug the projector when it will not be used for extended periods.
- Do not use the projector where it may be exposed to rain, water, or excessive humidity.
- Do not use or store the projector where it may be exposed to smoke, steam, corrosive gases, excessive dust, vibration, or shock.
- Do not use the projector where flammable or explosive gases may be present.
- Do not use or store the projector or remote control in a hot location, such as near a heater, in direct sunlight, or in a closed vehicle.
- If you use the projector in a country other than where you purchased it, use the correct power cord for that country.
- Do not stand on the projector or place heavy objects on it.
- Do not use the projector outside of the required temperature range below:

  32 to 113 °F (0 to 45 °C) at an altitude of 4921 feet (1500 m) or less, or 32 to 104 °F (0 to 40 °C) at a higher altitude

  Doing so may cause an unstable display and could lead to projector damage. Do not use or store the projector where it may be exposed to sudden changes in temperature.
- Do not store the projector outside of the required temperature range of 14 to 140 °F (–10 to 60 °C) or in direct sunlight for long periods of time. Doing so may cause damage to the case.
- Do not place anything that can become warped or damaged by heat near the exhaust vents. Do not bring your hands or face close to the vents while projection is in progress. Do not bring your face close to the projector while it is in use.

- Before you move the projector, make sure its power is turned off, the plug is disconnected from the outlet, and all cables are disconnected.
- Do not place the source of an open flame, such as a lit candle, on or near the projector.
- Do not block the lens during projection using a book or any other object. This could damage the projector or cause a fire.
- Do not modify the power cord. Do not place heavy objects on top of the power cord or bend, twist, or pull it excessively. Keep the power cord away from hot electrical appliances.
- Always attach the lens cover to the lens when not using the projector to prevent the lens from becoming dirty or damaged.

WARNING: The cords included with this product contain chemicals, including lead, known to the State of California to cause birth defects or other reproductive harm. ***Wash hands after handling.*** (This notice is provided in accordance with Proposition 65 in Cal. Health & Safety Code § 25249.5 and following.)

Laser Safety Information
Laser Light Source Warning
Restriction of Use

Parent topic: Notices

Laser Safety Information

This projector is a Class 3R laser product that complies with the IEC60825-1 international standard for lasers. Follow these safety instructions when using the projector.

- If an error occurs in the projector, turn off the power and unplug the projector immediately. Continuing to use the projector could result in an electric shock, fire, or visual impairment. Contact Epson support.
- Do not attempt to disassemble or modify the projector. The projector contains a high-power laser component. Serious injury could result.
- Do not look into the lens during projection. Also, do not look into the lens using optical devices, such as a magnifying glass or telescope. This could cause visual impairment.
- When turning on the projector at a distance using the remote control, make sure no one is looking into the lens.
- Do not allow small children to operate the projector. Children must be accompanied by an adult.
- Do not apply optical devices, such as a magnifying glass or reflector, to the projected image. Using the projector may result in physical harm, fire, or an accident.
- Before using the projector, make sure there is nothing in the area that could reflect the projected image.

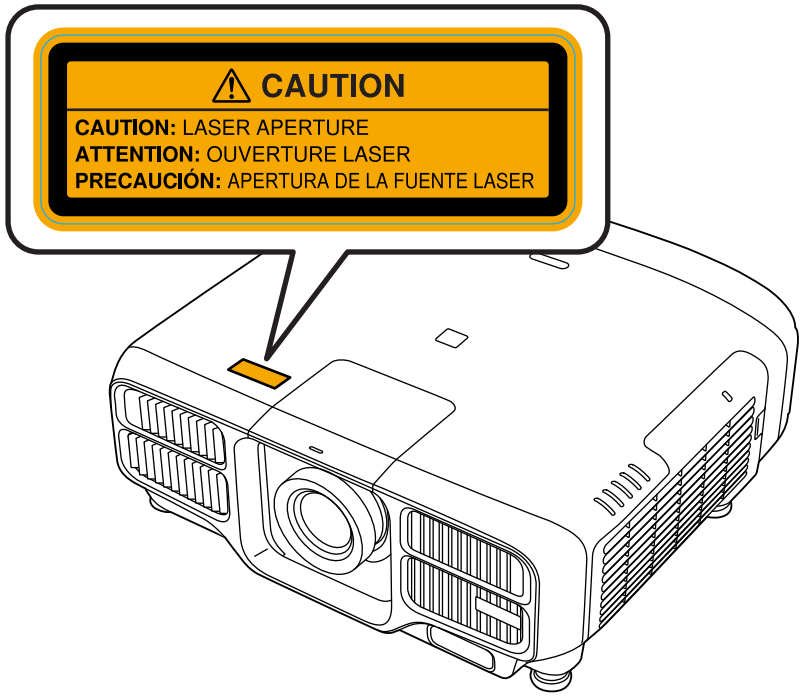
- When disposing of the projector, do not disassemble it. Dispose of the projector in accordance with your local or national laws and regulations.

Labels are attached to the projector to indicate it is a Class 3R product and complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice N. 50, dated June 24, 2007:

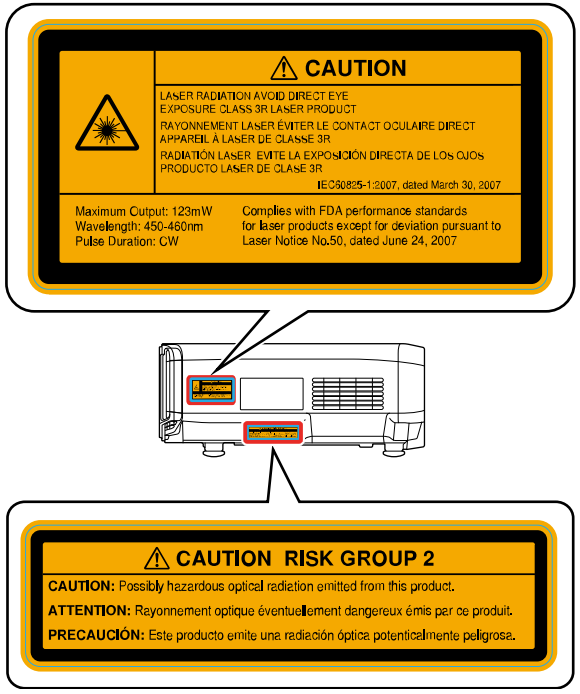
- **Inside**



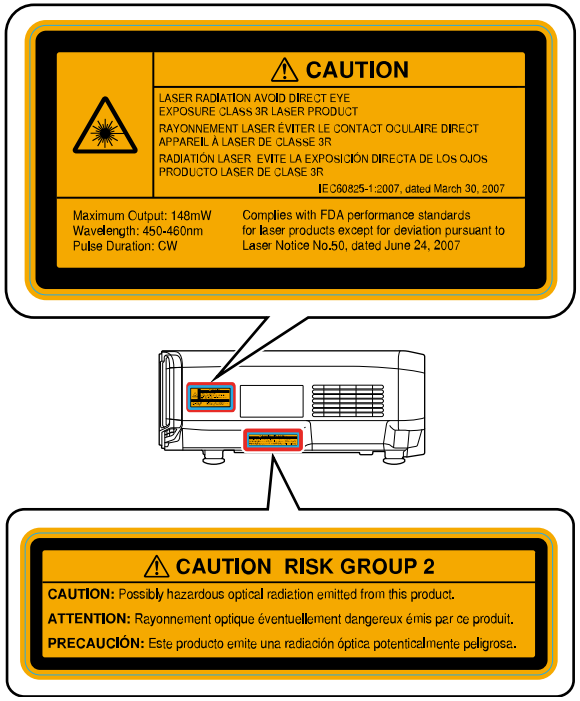
- **Top**


⚠ CAUTION
CAUTION: LASER APERTURE
ATTENTION: OUVERTURE LASER
PRECAUCIÓN: APERTURA DE LA FUENTE LASER

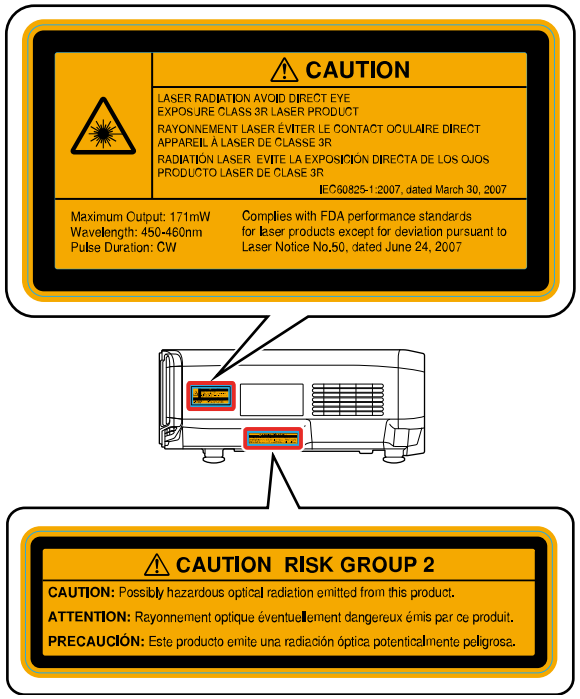
- **Pro L1100U Side**



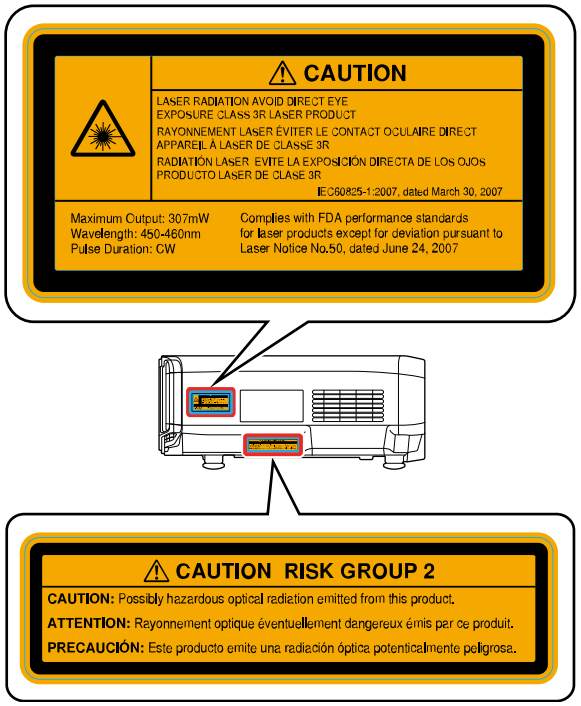
Pro L1200U Side



Pro L1300U/L1405U Side



Pro L1500U/L1505U Side



Parent topic: Important Safety Instructions

Laser Light Source Warning

Refer to the table here for the Exposure Hazard Values (EHV) in accordance with the IEC62471-2:2009 standard. The EHV indicates the hazard level for objects in front of the light source for 0.25 seconds at a distance of 7.9 inches (20 cm). The higher the value, the greater the hazard level.

Lens	Exposure Hazard Value			
	Pro L1100U	Pro L1200U	Pro L1300U Pro L1405U	Pro L1500U Pro L1505U
ELPLM08	0.5	0.5	0.5	0.5

Lens	Exposure Hazard Value			
	Pro L1100U	Pro L1200U	Pro L1300U Pro L1405U	Pro L1500U Pro L1505U
ELPLM09 ELPLS04	0.6	0.6	0.6	0.6
ELPLX01	<0.5	<0.5	<0.5	—
ELPLU03	<0.5	<0.5	<0.5	<0.5
ELPLU04 ELPLU02	<0.5	<0.5	<0.5	<0.5
ELPLW05	<0.5	<0.5	<0.5	<0.5
ELPLW06 ELPLW04	<0.5	<0.5	<0.5	<0.5
ELPLM10 ELPLM06	0.6	0.6	0.6	0.7
ELPLM11 ELPLM07	0.6	0.6	0.6	0.7
ELPLL08 ELPLL07	0.5	0.5	0.5	0.7

Parent topic: Important Safety Instructions

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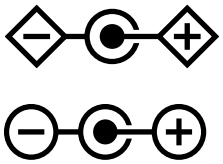
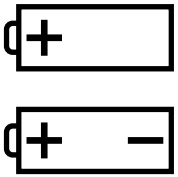
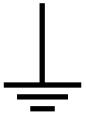
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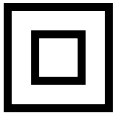
Parent topic: Important Safety Instructions

List of Safety Symbols (corresponding to IEC60950-1 A2)

The following table lists the meaning of the safety symbols labeled on the equipment.

No.	Symbol	Approved Standards	Description
1		IEC60417 No.5007	"ON" (power) To indicate connection to the mains.
2		IEC60417 No.5008	"OFF" (power) To indicate disconnection from the mains.
3		IEC60417 No.5009	Stand-by To identify the switch or switch position by means of which part of the equipment is switched on in order to bring it into the stand-by condition.
4		ISO7000 No.0434B IEC3864-B3.1	Caution To identify general caution when using the product.
5		IEC60417 No.5041	Caution, hot surface To indicate that the marked item can be hot and should not be touched without taking care.
6		IEC60417 No.6042 ISO3864-B3.6	Caution, risk of electric shock To identify equipment that has risk of electric shock.
7		IEC60417 No.5957	For indoor use only To identify electrical equipment designed primarily for indoor use.

No.	Symbol	Approved Standards	Description
8		IEC60417 No.5926	Polarity of DC power connector To identify the positive and negative connections (the polarity) on a piece of equipment to which a DC power supply may be connected.
9		IEC60417 No.5001B	Battery, general On battery powered equipment. To identify a device for instance a cover for the battery compartment, or the connector terminals.
10		IEC60417 No.5002	Positioning of cell To identify the battery holder itself and to identify the positioning of the cell(s) inside the battery holder.
11		IEC60417 No.5019	Protective earth To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth electrode.
12		IEC60417 No.5017	Earth To identify an earth (ground) terminal in cases where neither the symbol No.13 is explicitly required.
13		IEC60417 No.5032	Alternating current To indicate on the rating plate that the equipment is suitable for alternating current only; to identify relevant terminals.

No.	Symbol	Approved Standards	Description
14		IEC60417 No.5031	Direct current To indicate on the rating plate that the equipment is suitable for direct current only; to identify relevant terminals.
15		IEC60417 No.5172	Class II equipment To identify equipment meeting the safety requirements specified for Class II equipment according to IEC 61140.
16		ISO 3864	General prohibition To identify actions or operations that are prohibited.
17		ISO 3864	Contact prohibition To indicate injury that could occur due to touching a specific part of the equipment.
18		—	Never look into the optical lens while the projector is on.
19		—	To indicate that the marked item don’t place anything on projector.
20		ISO3864 IEC60825-1	Caution, laser radiation To indicate the equipment has a laser radiation part.
21		ISO 3864	Disassembly prohibition To indicate a risk of injury, such as electric shock, if the equipment is disassembled.
22		—	Never look into the lens while the LED for lighting is on.

No.	Symbol	Approved Standards	Description
23		IEC60417 No. 5266	Standby, partial standby To indicate that part of the equipment is in the ready status.
24		ISO3864 IEC60417 No. 5057	Caution, movable parts To indicate that you must keep away from movable parts according to protection standards.

Parent topic: Notices

FCC Compliance Statement

For United States Users

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification or Declaration of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

For Canadian Users

CAN ICES-3(B)/NMB-3(B)

Parent topic: Notices

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- linux-3.4.49
- patches
- udhcp 0.9.8
- wireless_tools 29
- dbus-1.6.18
- EPSON original drivers
- Stonestreet One Drivers

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Version 2, June 1991

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The basic library functions are written in C and are freestanding. Also included in the distribution is a set of C++ wrapper functions, and a just-in-time compiler that can be used to optimize pattern matching. These are both optional features that can be omitted when the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel

Email local part: ph10

Email domain: cam.ac.uk

University of Cambridge Computing Service, Cambridge, England.

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Written by: Zoltan Herczeg

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LG
Life's Good

Owner's Manual
IPS LED MONITOR (LED MONITOR*)

***LG LED Monitors are LCD Monitors with LED Backlighting.**

Please read the safety information carefully before using the product.

IPS LED Monitor (LED Monitor) Model List

24UD58
27UD58

www.lg.com

ENGLISH

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The following content is only applied to the monitor which is sold in Europe market and which needs to meet the ErP Directive:

* This monitor is set to be turned off automatically in 4 hours after you turned on display if there is no adjustment to display.
* To make this setting be disabled, change the option to 'Off' in OSD menu of "Automatic Standby".

ASSEMBLING AND PREPARING

Product Components

Please check whether all the components are included in the box before using the product. If there are missing components, contact the retail store where you purchased the product. Note that the product and components may look different from those shown here.



CD(Owner's Manual) / Card



Power Cord



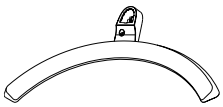
HDMI Cable

(This cable is not included in all countries.)

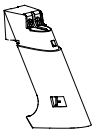


Display Port Cable

(This cable is not included in all countries.)



Stand Base



Stand Body



Screw Cover



Cable Holder



2 Screws

CAUTION

- Always use genuine components to ensure safety and product performance.
- The product warranty will not cover damage or injury caused by the use of counterfeit components.
- It is recommend that use the supplied components.
- If you use generic cables not certified by LG, the screen may not display or there may be image noises.

NOTE

- Note that the components may look different from those shown here.
- Without prior notice, all information and specifications in this manual are subject to change to improve the performance of the product.
- To purchase optional accessories, visit an electronics store or online shopping site or contact the retail store where you purchased the product.

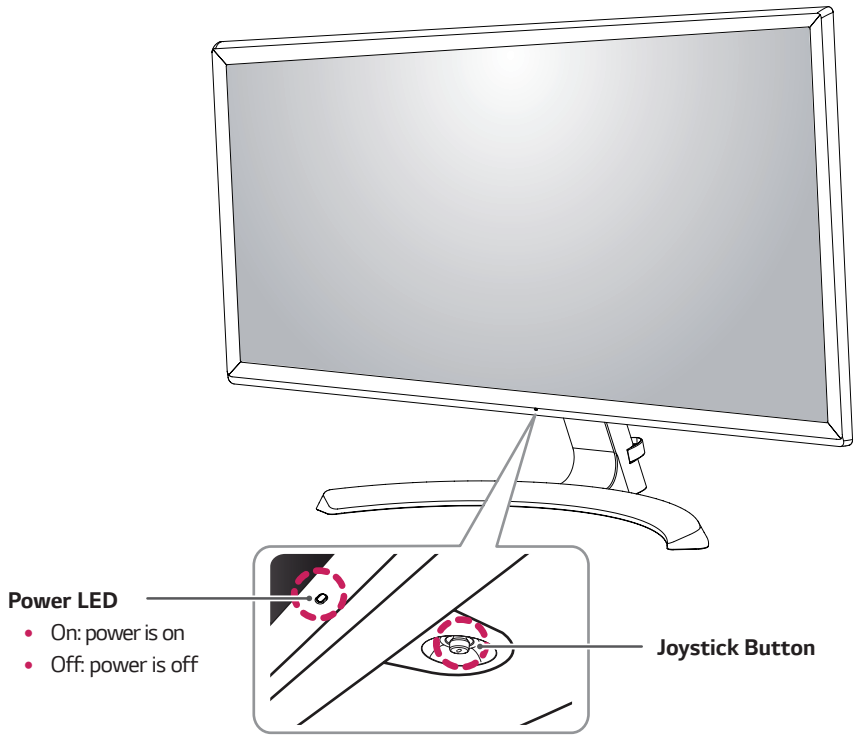
Supported Drivers and Software

Check the drivers and software supported by your product and refer to the manuals on the CD enclosed in the product package.

Drivers and Software	Installation Priority	24UD58,27UD58
Monitor Driver	Recommended	O
OnScreen Control	Recommended	O
Dual Controller	Recommended	O

- Required and Recommended: You can download and install the latest version from the enclosed CD or from the LGE website (www.lg.com).

Component and Button Description



How to Use the Joystick Button

You can easily control the functions of the monitor by pressing the joystick button or moving it left/right with your finger.

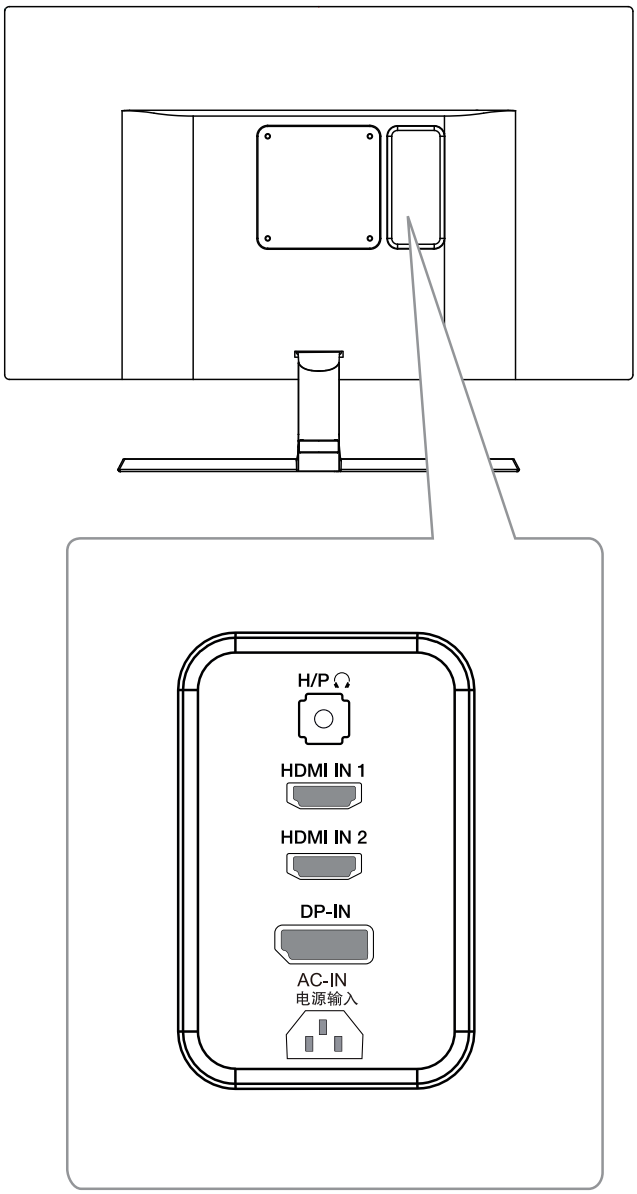
Basic Functions

		**Power on**	Press the joystick button once with your finger to turn on the monitor.
		**Power off**	Press and hold the joystick button once with your finger to turn off the monitor.
	◀/▶	**Volume Control**	You can control the volume by moving the joystick button left/right.

NOTE

- The joystick button is located at the bottom of the monitor.

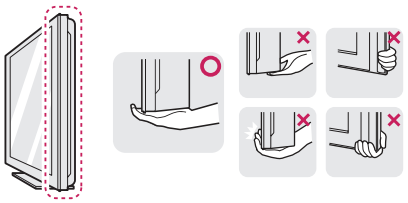
Input Connector



Moving and Lifting the Monitor

When moving or lifting the monitor, follow these instructions to prevent the monitor from being scratched or damaged and to ensure safe transportation regardless of its shape or size.

- It is advisable to place the monitor in the original box or packing material before attempting to move it.
- Before moving or lifting the monitor, disconnect the power cord and all cables.
- Hold the top and bottom of the monitor frame firmly. Do not hold the screen itself.



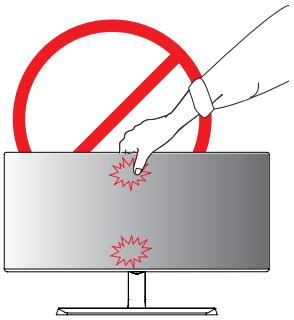
- When holding the monitor, the screen should face away from you to prevent it being scratched.



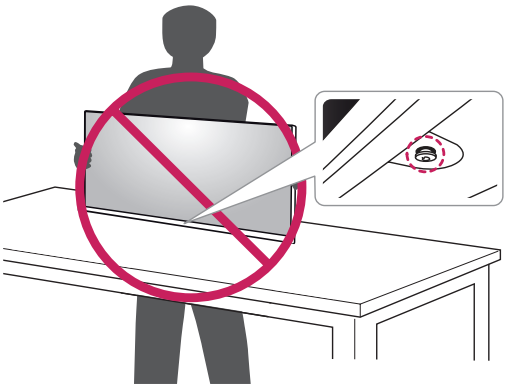
- When moving the monitor, avoid any strong shock or vibrations to the product.
- When moving the monitor, keep it upright, never turn the monitor on its side or tilt it sideways.

CAUTION

- As far as possible, avoid touching the monitor screen. This may result in damage to the screen or some of the pixels used to create images.



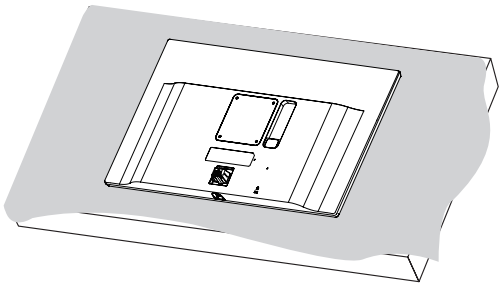
- If you use the monitor panel without the stand base, its joystick button may cause the monitor to become unstable and fall, resulting in damage to the monitor or human injury. In addition, this may cause the joystick button to malfunction.



Installing the Monitor

Assembling the stand base

1 Place the screen face down.

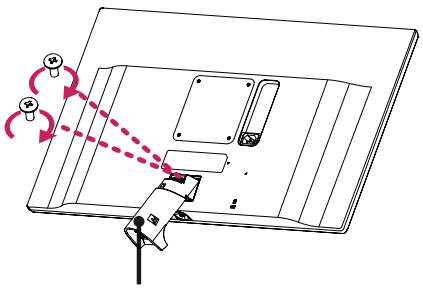


CAUTION

- To protect the screen from scratches, cover the surface with a soft cloth.

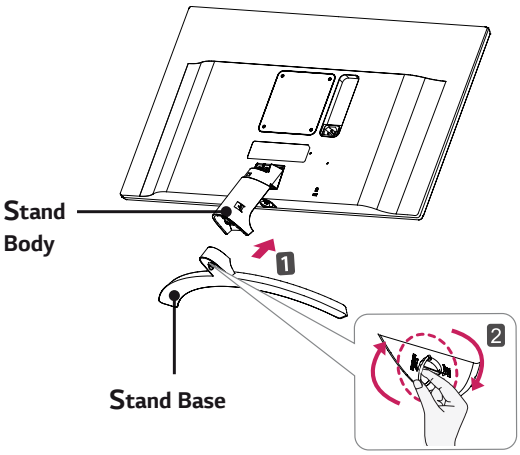
2 Check the direction of the **stand body** (front, back) and then mount the **stand body** onto the **stand hinge**.

Use a tool to attach the **stand body** as shown in the figure.

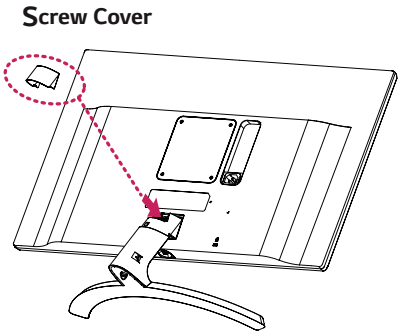


3 1 Attach the Stand Base to Stand Body.

2 Tighten the screw to the right.



4 Attach the **screw cover**.



CAUTION

Applying excessive force when tightening the screws may cause damage to the monitor. Damage caused in this way will not be covered by the product warranty.

CAUTION

It may hurt your foot off the stand, so be careful.

Detaching the Stand Base

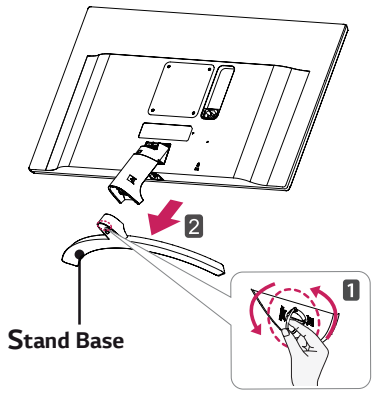
1 Place the screen face down.

CAUTION

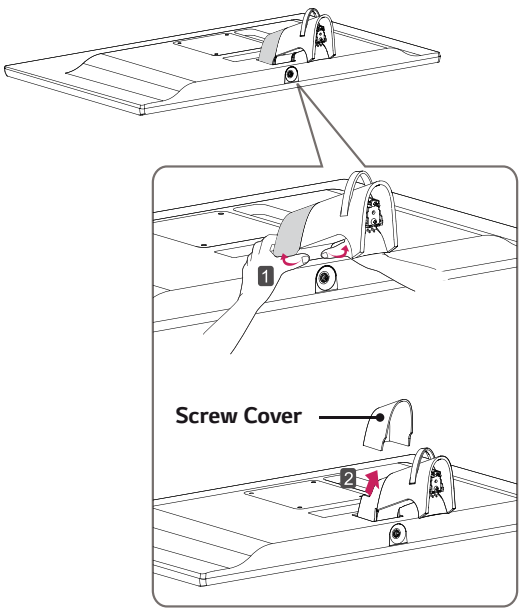
- To protect the screen from scratches, cover the surface with a soft cloth.

2 1 Turn the screw to the left.

2 Pull out the **Stand Base**.

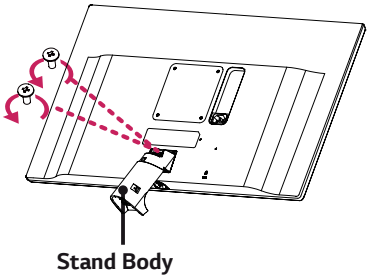


3 As shown in the illustration, pull Screw Cover out to separate it from the set.



4 Remove the two screws on the back of **stand body.**

As shown in the illustration, disconnect the **stand body** from the **stand hinge.**



CAUTION

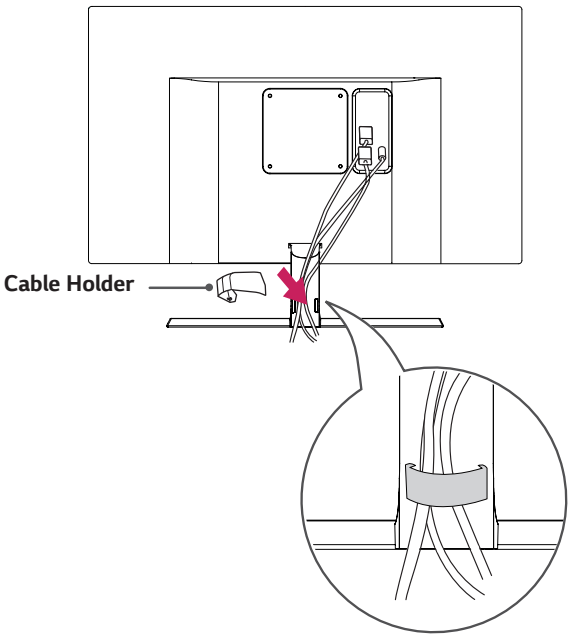
- Illustrations in this document represent typical procedures, so they may look different from the actual product.
- Applying excessive force when tightening screws may cause damage to the monitor. Damage caused in this way will not be covered by the product warranty.
- Be careful not to hurt your hand on the edges of the screw covers.
- Do not carry the monitor upside down by just holding the base. This may cause the monitor to fall off the stand and could result in personal injury.
- When lifting or moving the monitor, do not touch the monitor screen. The force applied to the monitor screen may cause damage to it.

CAUTION

It may hurt your foot off the stand, so be careful.

Using the cable holder

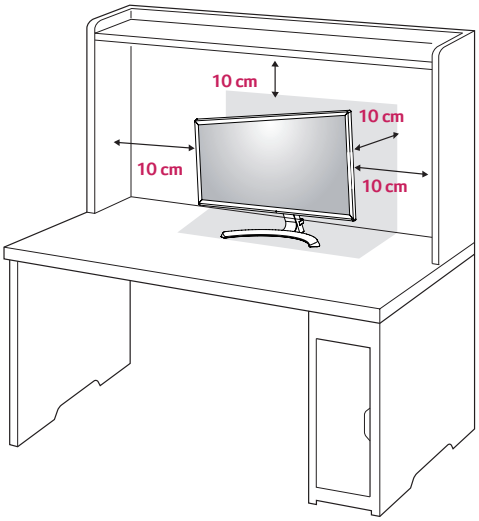
Arrange the cables using the cable holder as shown in the illustration.



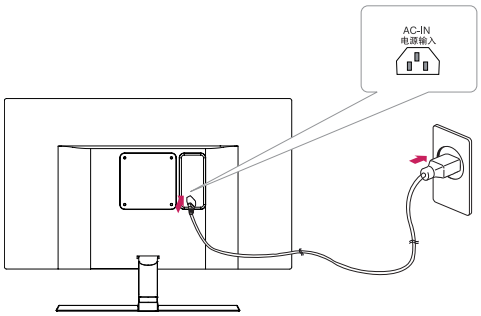
Installing onto a table

1 Lift the monitor and place it on the table in an upright position.

Place at least **10 cm** away from the wall to ensure sufficient ventilation.



2 Connect the power adapter to the monitor and then plug the power cord into the wall outlet.



3 Press the joystick button on the bottom of the monitor to turn on the monitor.

CAUTION

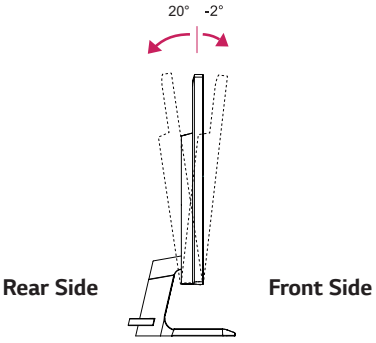
- Unplug the power cord prior to moving or installing the monitor. There is risk of electric shock.

Adjusting the angle

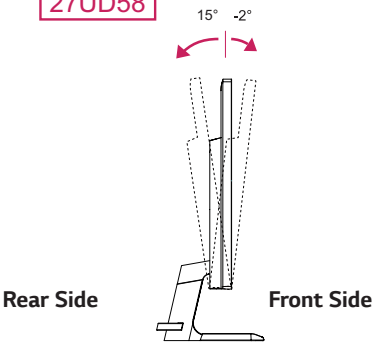
1 Place the monitor in an upright position, mounted on the stand base.

2 Adjust the angle of the screen. The angle of the screen can be adjusted forwards or backwards for a comfortable viewing experience.

24UD58

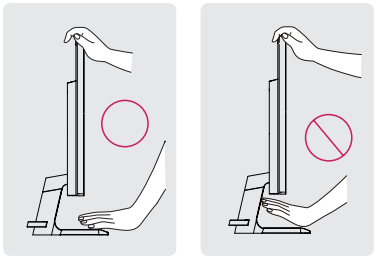


27UD58

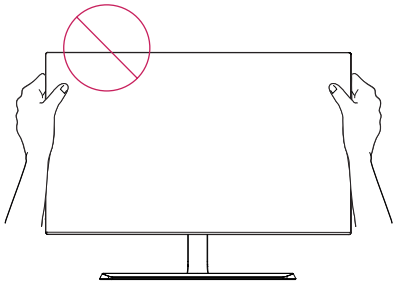


WARNING

- To avoid injury to the fingers when adjusting the screen, do not hold the lower part of the monitor's frame as illustrated below.



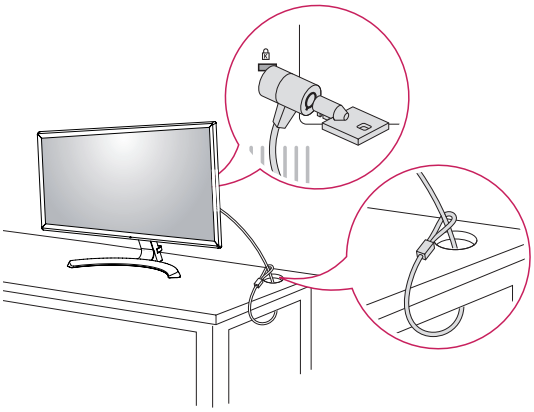
- Be careful not to touch or press the screen area when adjusting the angle of the monitor.



Using the Kensington lock

The Kensington security system connector is located at the back of the Monitor set.
For more information on installation and usage, refer to the Kensington lock user manual or visit the website at http://www.kensington.com.

Connect the Kensington security system cable between the Monitor set and a table.



NOTE

- Use of the Kensington lock is optional. The accessories can be purchased at your local electronics store.

Installing the wall mount plate

This monitor supports the specification of the standard wall mount plate or compatible device.

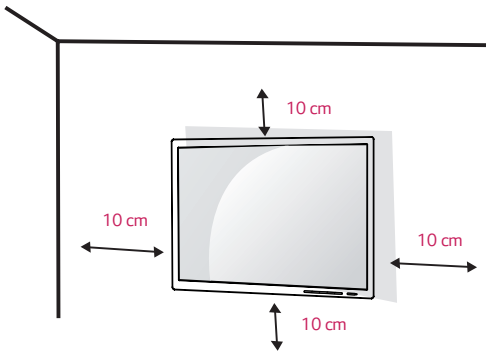
1. Place the screen face down. To protect the screen from scratches, cover the surface with a soft cloth.
2. Place the wall mount plate onto the monitor and align it with the screw holes.
3. Tighten the four screws to fix the plate to the monitor using a screwdriver.

NOTE

- The wall mount plate is sold separately.
- For more information on installation, refer to the wall mount plate's installation guide.
- Be careful not to use excessive force when mounting the wall mount plate, as this can damage the monitor's screen.

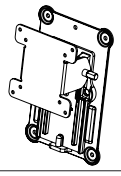
Installing to a wall

Install the monitor at least 10 cm away from the wall and leave about 10 cm of space at each side of the monitor to ensure sufficient ventilation. Detailed installation instructions can be obtained from your local retail store. Please refer to the manual to install and set up a tilting wall mounting bracket.

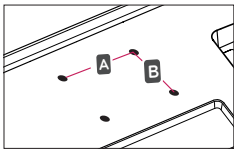


To install the monitor to a wall, attach a wall mounting bracket (optional) to the back of the monitor.
Make sure that the wall mounting bracket is securely fixed to the monitor and to the wall.

1 If you use screw longer than standard, the monitor might be damaged internally.
2 If you use improper screw, the product might be damaged and drop from mounted position.
In this case, LG Electronics is not responsible for it.

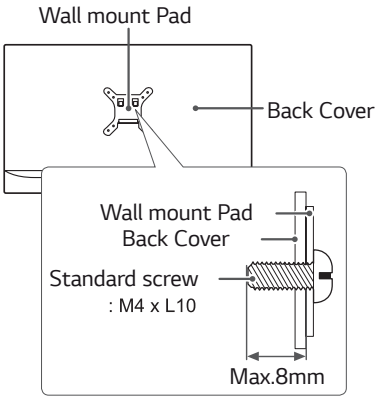
Wall Mount (A x B)	100 x 100
Standard screw	M4 x L10
Number of screws	4
Wall Mount Plate (Optional)	RW120 

- Wall Mount (A x B)



CAUTION

- Unplug the power cord before moving or installing the monitor to avoid electric shocks.
- Installing the monitor on the ceiling or on a slanted wall may result in the monitor falling off, which could lead to injury. Please use the genuine LG wall mounting bracket. For more information, contact your local retail store or a qualified installer.
- Applying excessive force when fastening screws may cause damage to the monitor. Damage caused in this way will not be covered by the product warranty.
- Use the wall mounting bracket and screws that conform to the VESA standard. Damage caused by the use or misuse of inappropriate components will not be covered by the product warranty.
- Screw length from outer surface of back cover should be under 8mm.



NOTE

- Use the screws specified by the VESA standard.
- The wall mount kit includes the installation guide and all necessary parts.
- The wall mounting bracket is optional. The accessories can be purchased at your local retail store.
- The length of the screw may differ for each wall mounting bracket. Ensure the correct length screw is used.
- For more information, please refer to the user manual for the wall mounting bracket.

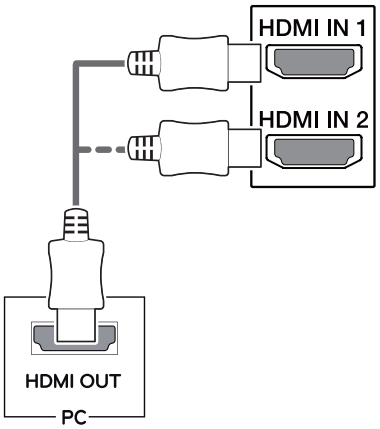
USING THE MONITOR

Connecting to a PC

- This monitor supports the *Plug and Play feature.
  *Plug and Play: A feature that allows you to add a device to your computer without having to reconfigure anything or install any manual drivers.

HDMI connection

Transmits the digital video and audio signals from your PC and A/V devices to the monitor. Connect your PC and AV device to the monitor with the HDMI cable as illustrated below.
Press the menu button and then select the input option from the input menu.

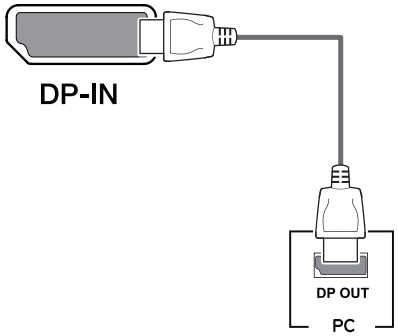


NOTE

- If you use HDMI PC, it can cause compatibility problem.
- Use a certified cable with the HDMI logo attached.
  If you do not use a certified HDMI cable, the screen may not display or a connection error may occur.
- Recommended HDMI cable types
  - High-Speed HDMI®/™ Cable
  - High-Speed HDMI®/™ Cable with Ethernet

DisplayPort connection

Transmits the digital video and audio signals from your PC to the monitor. Connect your PC to the monitor using the Displayport cable as illustrated below.
Press the menu button and then select the input option from the input menu.



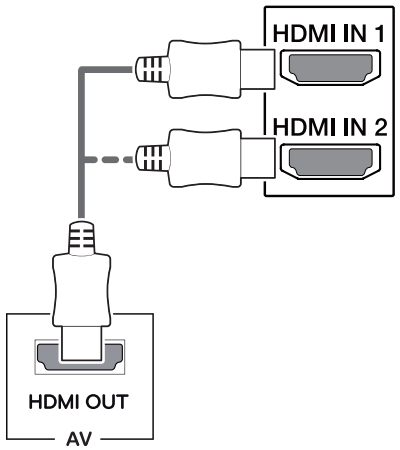
NOTE

- There may be no video or audio output depending on the DP version of the PC.
- If you use generic cables not certified by LG, the screen may not display or there may be image noises.

Connecting to AV Devices

HDMI connection

Transmits the digital video and audio signals from your PC and A/V devices to the monitor. Connect your PC and AV device to the monitor with the HDMI cable as illustrated below.
Press the menu button and then select the input option from the input menu.



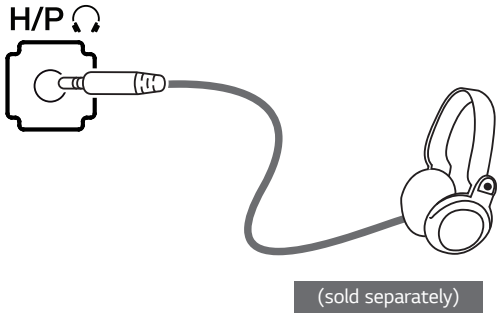
NOTE

- If you use HDMI PC, it can cause compatibility problem.
- Use a certified cable with the HDMI logo attached. If you do not use a certified HDMI cable, the screen may not display or a connection error may occur.
- Recommended HDMI cable types
  - High-Speed HDMI®/™ Cable
  - High-Speed HDMI®/™ Cable with Ethernet

Connecting to External Devices

Connecting Headphones

Connect peripherals to the monitor via the headphones port. Connect as illustrated.



NOTE

- Peripheral devices are sold separately.
- If you use angled earphones, it may cause a problem with connecting another external device to the monitor. Therefore, it is recommended to use straight earphones.



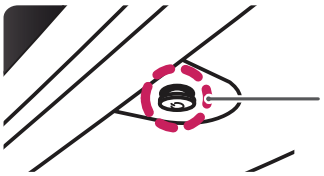
Angled **Straight**

- Depending on the audio settings of the PC and external device, headphones and speaker functions may be limited.

USER SETTINGS

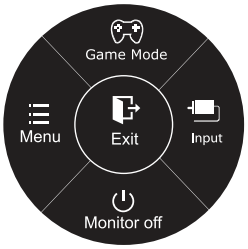
Activating the Main Menu

1 Press the joystick button on the bottom of the monitor.
2 Move the joystick up/down (▲/▼) and left/right(◀/▶) to set the options.
3 Press the joystick button once more to exit the main menu.



Button	Menu Status		Description
	**Main menu disabled**		Enables the main menu.
	Main menu enabled		Exits the main menu. (Holding down the button to turn off the monitor. You can turn off the monitor this way at any time, including when the OSD is on.)
	◀	**Main menu disabled**	Adjusts the monitor volume level.
		Main menu enabled	Enters the menu features.
	▶	**Main menu disabled**	Adjusts the monitor volume level.
		Main menu enabled	Enters the input feature.
	▲	**Main menu disabled**	Enables the main menu.
		Main menu enabled	Enters the game mode feature.
	▼	**Main menu disabled**	Enables the main menu.
		Main menu enabled	Turns off the monitor.

Main Menu Features



Long press:Monitor Off

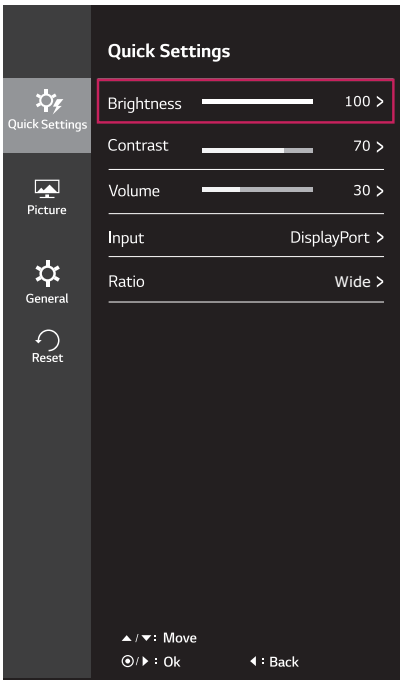
Main Menu	Description
Menu	Configures the screen settings.
Game Mode	You can change Picture Mode to a gaming mode.
Input	Sets input mode.
Monitor off	Turns off the monitor.
Exit	Exits the main menu.

Customizing settings

Menu Settings

-Quick Settings

1 To view the **OSD menu**, press the **joystick button** at the bottom of the monitor and then enter the **Menu**.
2 Go to **Quick Settings** > **Brightness** by moving the joystick.
3 Configure the options following the instructions that appear in the bottom right corner.
4 To return to the upper menu or set other menu items, move the joystick to ◀ or pressing (◉ / OK) it.
5 If you want to exit the OSD menu, move the joystick to ◀ until you exit.



Each option is described below.

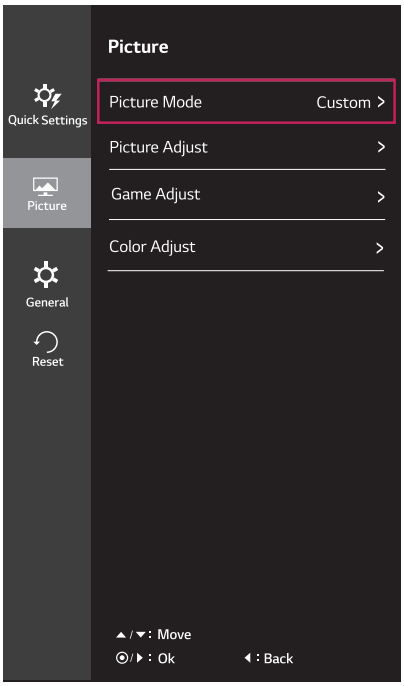
Menu > Quick Settings		Description
Brightness		Adjusts the color contrast and brightness of the screen.
Contrast		
Volume		Adjusts the volume.
		NOTE • Jog joystick button down (⏻) in the Volume menu will enable/ disable the Mute function.
Input		Selects the current input mode.
Ratio		Adjusts the screen ratio.
	Wide	Displays the video in wide-screen, regardless of the video signal input.
	Original	Displays a video according to the input video signal aspect ratio.

NOTE

- The display may look the same for Wide, Original options at the recommended resolution.
- The ratio is disabled in the interlaced signal.

-Picture

1 To view the **OSD menu**, press the **joystick button** at the bottom of the monitor and then enter the **Menu**.
2 Go to **Picture** by moving the joystick.
3 Configure the options following the instructions that appear in the bottom right corner.
4 To return to the upper menu or set other menu items, move the joystick to ◀ or pressing (◉ / OK) it.
5 If you want to exit the OSD menu, move the joystick to ◀ until you exit.



Each option is described below.

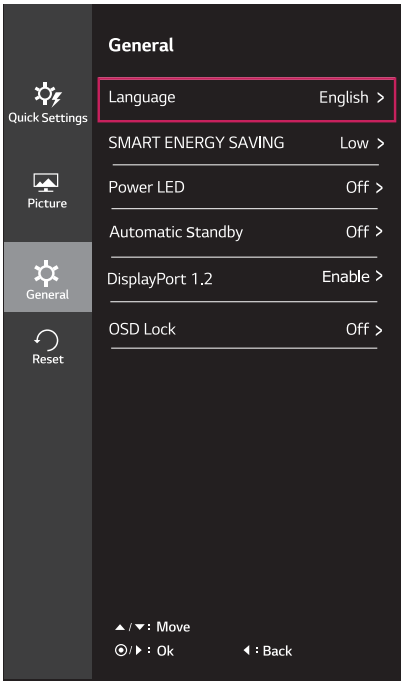
Menu > Picture	Description	
Picture Mode	**Custom**	Allows the user to adjust each element. The color mode of the main menu can be adjusted.
	Reader	Optimizes the screen for viewing documents. You can brighten the screen in the OSD menu.
	Photo	Optimizes the screen for photos.
	Cinema	Optimizes the screen for video.
	Dark Room 1	This mode adjusts the brightness to the optimal level for working in a dark environment.
	Dark Room 2	This mode sets the brightness to a lower level than Dark Room 1.
	Color Weakness	This mode is for users who cannot distinguish between red and green. It enables users with color weakness to easily distinguish between the two colors.
	FPS Game 1	This mode is optimized for FPS games.
	FPS Game 2	It has a higher Black Stabilizer value than FPS Game 1. It is suitable for very dark FPS games.
	RTS Game	This mode is optimized for RTS Game.
	Custom (Game)	In this mode, users can customize various elements including game-related options.
	NOTE • If the picture mode is changed in the DP (DisplayPort) input, the screen may flicker or the resolution of your PC screen may be affected.	

<table>
<tr><td rowspan="11">Picture Adjust</td><td rowspan="4">SUPER RESOLUTION+</td><td>High</td><td>Optimized picture quality is displayed when a user wants crystal clear images. It is effective for high quality video or game.</td></tr>
<tr><td>Middle</td><td>The optimized picture quality is displayed when a user wants images between low and high modes for comfortable viewing. It is effective for UCC or SD video.</td></tr>
<tr><td>Low</td><td>The optimized picture quality is displayed when a user wants smooth and natural images. It is effective for slow-moving pictures or still images.</td></tr>
<tr><td>Off</td><td>Select this option for everyday viewing. SUPER RESOLUTION+ is turned off in this mode.</td></tr>
<tr><td>Sharpness</td><td colspan="2">Adjusts the sharpness of the screen.</td></tr>
<tr><td rowspan="3">Black Level</td><td colspan="2">Sets the offset level (for HDMI only).
• Offset: as a reference for a video signal, this is the darkest color the monitor can display.</td></tr>
<tr><td>High</td><td>Keeps the current contrast ratio of the screen.</td></tr>
<tr><td>Low</td><td>Lowers the black levels and raises the white levels from the current contrast ratio of the screen.</td></tr>
<tr><td rowspan="7">HDMI ULTRA HD Deep Color</td><td colspan="2">Provides sharper images when connected to a device supporting ULTRA HD Deep Color.</td></tr>
<tr><td colspan="2">4K@60 Hz Support Format¹⁾
<table>
<tr><th rowspan="2">Resolution</th><th rowspan="2">Frame rate (Hz)</th><th colspan="2">Color Depth / Chroma Sampling</th></tr>
<tr><th>8 bit</th><th>10 bit</th></tr>
<tr><td rowspan="4">3840 x 2160</td><td rowspan="4">59.94
60.00</td><td colspan="2">YCbCr 4:2:0</td></tr>
<tr><td colspan="2">YCbCr 4:2:2</td></tr>
<tr><td>YCbCr 4:4:4</td><td>-</td></tr>
<tr><td>RGB 4:4:4</td><td>-</td></tr>
</table></td></tr>
<tr><td colspan="2">1) Supported when HDMI ULTRA HD Deep Color is set to On.</td></tr>
<tr><td colspan="2">NOTE
• If the connected device does not support ULTRA HD Deep Color, the feature may not work properly.
• If a problem occurs, set the HDMI ULTRA HD Deep Color option to Off.</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>DFC</td><td colspan="2">Adjusts the brightness automatically according to the screen.</td></tr>
</table>

<table>
<tr><td rowspan="10">Game Adjust</td><td rowspan="5">Response Time</td><td colspan="2">Sets a response time for displayed pictures based on the speed of the screen.
For a normal environment, it is recommended that you use Middle. For a fast-moving picture, it is recommended that you use high.
Setting to High may cause image sticking.</td></tr>
<tr><td>High</td><td>Sets the response time to High.</td></tr>
<tr><td>Middle</td><td>Sets the response time to Middle.</td></tr>
<tr><td>Low</td><td>Sets the response time to Low.</td></tr>
<tr><td>Off</td><td>Does not use the response time improvement feature.</td></tr>
<tr><td rowspan="4">FreeSync</td><td colspan="2">Provides seamless and natural images by synchronizing the vertical frequency of the input signal with that of the output signal.
NOTE
• To use the FreeSync feature, a graphic card that supports FreeSync is necessary.
• Supported Interface: DisplayPort
• For more information, refer to AMD website at http://www.amd.com/FreeSync
• The screen flickering may occur intermittently in a specific gaming environment.</td></tr>
<tr><td>Extended</td><td>Enable wider frequency range of FreeSync function than basic mode.
The screen may flicker during the game play.</td></tr>
<tr><td>Basic</td><td>Enable basic frequency range of FreeSync function.</td></tr>
<tr><td>Off</td><td>FreeSync function off.</td></tr>
<tr><td>Black Stabilizer</td><td colspan="2">You can control the black contrast to have better visibility in dark scenes.
Increasing the Black Stabilizer value brightens the low gray level area on the screen. (You can easily distinguish objects on dark game screens.)
Reducing the Black Stabilizer value darkens the low gray level area and increases the dynamic contrast on the screen.</td></tr>
<tr><td rowspan="9">Color Adjust</td><td>Gamma</td><td colspan="2">The higher the gamma value, the darker the image becomes. Likewise, the lower the gamma value, the lighter the image becomes. If you do not need to adjust the gamma settings, select Off.</td></tr>
<tr><td rowspan="4">Color Temp</td><td>Custom</td><td>The user can adjust it to red, green, or blue by customization.</td></tr>
<tr><td>Warm</td><td>Sets the screen color to a reddish tone.</td></tr>
<tr><td>Medium</td><td>Sets the screen color between a red and blue tone.</td></tr>
<tr><td>Cool</td><td>Sets the screen color to a bluish tone.</td></tr>
<tr><td>Red</td><td colspan="2" rowspan="3">You can customize the picture color using Red, Green, and Blue colors.</td></tr>
<tr><td>Green</td></tr>
<tr><td>Blue</td></tr>
<tr><td rowspan="2">Six Color</td><td colspan="2">Meets the user requirements for colors through adjusting the color and saturation of the six colors(Red_Hue, Red_Saturation, Green_Hue, Green_Saturation, Blue_Hue, Blue_Saturation, Cyan_Hue, Cyan_Saturation, Magenta_Hue, Magenta_Saturation, Yellow_Hue, Yellow_Saturation) and saving the settings.</td></tr>
<tr><td colspan="2">*Hue: Adjusts tone of the screen.
*Saturation: Adjusts the saturation of the screen colors. The lower the value, less saturated and bright the colors become. The higher the value, the more saturated and dark the colors become.</td></tr>
<tr><td>Reset</td><td colspan="2">Returns the color settings to the default settings.</td></tr>
</table>

-General

1 To view the **OSD menu**, press the **joystick button** at the bottom of the monitor and then enter the **Menu**.
2 Go to **General** by moving the joystick.
3 Configure the options following the instructions that appear in the bottom right corner.
4 To return to the upper menu or set other menu items, move the joystick to ◀ or pressing (◉ / OK) it.
5 If you want to exit the OSD menu, move the joystick to ◀ until you exit.



Each option is described below.

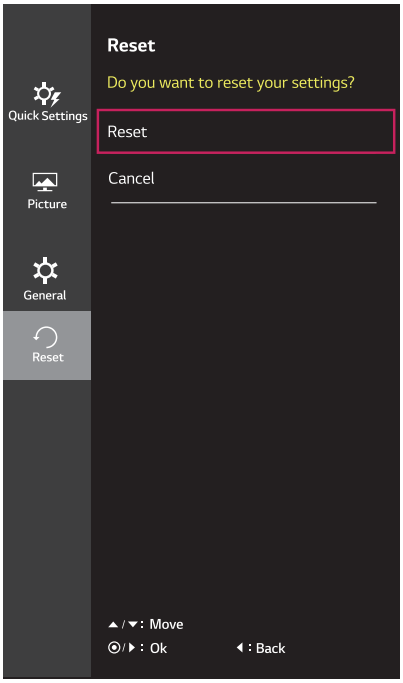
Menu > General	Description	
Language	Sets the menu screen to the desired language.	
SMART ENERGY SAVING	**High**	Saves energy using the high-efficiency SMART ENERGY SAVING feature.
	Low	Saves energy using the low-efficiency SMART ENERGY SAVING feature.
	Off	Disables the SMART ENERGY SAVING feature.
Power LED	Turns the power LED on the front of the monitor on or off.	
	On	The power LED turns on automatically.
	Off	The power LED turns off.
Automatic Standby	Feature that automatically turns off the monitor when there is no movement on the screen for a period of time. You can set a timer for the auto-off function. (Off, 4 H, 6 H, and 8 H)	
DisplayPort 1.2	Enables or disables DisplayPort 1.2. **NOTE** • Be sure to configure this option according to the DisplayPort version supported by your graphics card. Set this option to Disable if your graphics card does not support DisplayPort 1.2.	
OSD Lock	This feature disables the configuration and adjustment of menus.	
	On	Enables OSD Lock.
	Off	Disables OSD Lock.
	NOTE • All features are disabled except Brightness, Contrast, Volume, Input, OSD Lock in Settings, and the Exit button.	

NOTE

- Saving Data depends on the Panel. So, those values should be different from each panel and panel vendor. If option of SMART ENERGY SAVING is High or Low, monitor luminance become higher or lower depend on source.

-Reset

1 To view the **OSD menu**, press the **joystick button** at the bottom of the monitor and then enter the **Menu**.
2 Go to **Reset** by moving the joystick.
3 Configure the options following the instructions that appear in the bottom right corner.
4 To return to the upper menu or set other menu items, move the joystick to ◀ or pressing (◉ / OK) it.
5 If you want to exit the OSD menu, move the joystick to ◀ until you exit.



Each option is described below.

Menu > Reset	Description
Do you want to reset your settings?	
Reset	Returns to the default settings.
Cancel	Cancel the select.

TROUBLESHOOTING

Nothing is displayed on the screen.	
Is the monitor's power cord plugged in?	• Check if the power cord is correctly plugged into the power outlet.
Is the power LED on?	• Check the power cable connection and press the power button.
Is the power on and the power LED displaying white?	• Check that the connected input is enabled (Menu > Quick Settings > Input).
Is the power LED blinking?	• If the monitor is in sleep mode, move the mouse, or press any key on the keyboard, to switch the display on. • Check if the computer is turned on.
Is the OUT OF RANGE message being displayed?	• This occurs when signals transferred from the PC (graphics card) are out of the horizontal or vertical frequency range of the monitor. Please see the Product Specification section of this manual to set the appropriate frequency.
Is the No Signal message being displayed?	• This is displayed when the signal cable between the PC and the monitor is missing or disconnected. Check the cable and reconnect it.

The OSD lock message is being displayed.	
Are some functions not avail-able when you press the Menu button?	• The OSD is locked. Go to Menu > General and set OSD Lock to Off.

The screen retains an image.	
Does image sticking occur even when the monitor is turned off?	• Displaying a still image for a prolonged time may cause damage to the screen, resulting in the retention of the image. • To extend the lifetime of the monitor, use a screensaver.

Screen display is unstable and shaky / Images displayed on the monitor leave shadow trails.	
Did you select the appropriate resolution?	• If the selected resolution is HDMI 1080i 60/50 Hz (interlaced), the screen may be flickering. Change the resolution to 1080P or the recommended resolution.

NOTE

- **Vertical frequency** In order to display an image, the screen must be refreshed dozens of times per second, like a fluorescent lamp. The number of times the screen is refreshed per second is called vertical frequency, or refresh rate, and is represented by Hz.
- **Horizontal frequency** The time it takes to display one horizontal line is called the horizontal cycle. If 1 is divided by the horizontal interval, the result is the number of horizontal lines displayed per second. This is called horizontal frequency and is represented by kHz.

NOTE

- Check if the graphics card's resolution or frequency is within the range allowed by the monitor and set it to the recommended (optimal) resolution in **Control Panel > Display > settings**.
- Not setting the graphics card to the recommended (optimal) resolution may result in blurred text, a dimmed screen, a truncated display area, or misalignment of the display.
- The setting methods may be different depending on the computer or operating system, and some resolutions may not be available depending on the performance of the graphics card. If this is the case, contact the manufacturer of the computer or graphics card for assistance.
- Some graphics cards may not support 3840 x 2160 resolution. If the resolution cannot be displayed, contact the manufacturer of your graphics card.

The display color is abnormal.	
Does the display appear discol-ored (16 colors)?	• Set the color to 24 bit (true color) or higher. In Windows, go to Con-trol Panel > Display > Settings > Color Quality.
Does the display color appear unstable or monochrome?	• Check if the signal cable is connected properly. Reconnect the cable or reinsert the PC's graphics card.
Are there spots on the screen?	• When using the monitor, pixilated spots (red, green, blue, white, or black) may appear on the screen. This is normal for an LCD screen. It is not an error, nor is it related to the monitor's performance.

Do you see an "Unrecognized monitor, Plug&Play (VESA DDC) monitor found" message?	
Have you installed the display driver?	• Be sure to install the display driver from the display driver CD (or diskette) that comes with your display. Or, you can also download the driver from our web site: http://www.lg.com. • Make sure to check if the video card supports Plug&Play function.

No sound from the headphone port or speaker.	
Are images displayed using DisplayPort or HDMI input without sound?	• Try increasing the volume using the button on the monitor. • Set the audio output of the PC to the monitor you are using. On Microsoft Windows, go to Control Panel > Hardware and Sound > Sound > set the monitor as default device.

SPECIFICATIONS

24UD58

LCD Screen	Type	TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Screen
	Pixel Pitch	0.1369 mm x 0.1369 mm
Resolution	Maximum Resolution	3840 x 2160 @ 60 Hz
	Recommended Resolution	3840 x 2160 @ 60 Hz
Video Signal	Horizontal Frequency	30 kHz to 135 kHz
	Vertical Frequency	56 Hz to 61 Hz
Input Connector	HDMI IN1, HDMI IN2 , DP(DisplayPort) IN, H/P(Headphone) OUT	
Power input	AC 100-240 V~ 50 / 60 Hz, 1.2 A	
Power consumption (Typ.)	On mode: 26.8 W Typ. (ENERGY STAR® standard)* 35 W Typ. (Outgoing condition)** Sleep Mode ≤ 0.5 W Off Mode ≤ 0.3 W	
Environmental Conditions	Operating Condition	Temperature: 0°C to 40°C; Humidity: < 80%
	Storing Condition	Temperature: -20°C to 60°C; Humidity: < 85%
Dimension	Monitor Size (Width x Height x Depth)	
	With Stand	553.7 mm x 420.5 mm x 202.2 mm
	Without Stand	553.7 mm x 333 mm x 60.8 mm
Weight (Without Packaging)	4.0 kg	

The specifications are subject to change without notice.

*The power consumption level can be different by operating condition and monitor setting.
*The On mode power consumption is measured with ENERGY STAR® test standard.
** The On mode power consumption is measured with LGE test standard (Full White pattern , Maximum resolution).

SPECIFICATIONS

27UD58

LCD Screen	Type	TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Screen
	Pixel Pitch	0.1554 mm x 0.1554 mm
Resolution	Maximum Resolution	3840 x 2160 @ 60 Hz
	Recommended Resolution	3840 x 2160 @ 60 Hz
Video Signal	Horizontal Frequency	30 kHz to 135 kHz
	Vertical Frequency	56 Hz to 61 Hz
Input Connector	HDMI IN1, HDMI IN2 , DP(DisplayPort) IN, H/P(Headphone) OUT	
Power input	AC 100-240 V~ 50 / 60 Hz, 1.5 A	
Power consumption (Typ.)	On mode: 29.5 W Typ. (ENERGY STAR® standard)* 37 W Typ. (Outgoing condition)** Sleep Mode ≤ 0.5 W Off Mode ≤ 0.3 W	
Environmental Conditions	Operating Condition	Temperature: 0°C to 40°C; Humidity: < 80%
	Storing Condition	Temperature: -20°C to 60°C; Humidity: < 85%
Dimension	Monitor Size (Width x Height x Depth)	
	With Stand	632.5 mm x 463.5 mm x 202.2 mm
	Without Stand	632.5 mm x 375.9 mm x 61.3 mm
Weight (Without Packaging)	5.6 kg	

The specifications are subject to change without notice.

* The power consumption level can be different by operating condition and monitor setting.
* The On mode power consumption is measured with ENERGY STAR® test standard.
** The On mode power consumption is measured with LGE test standard (Full White pattern , Maximum resolution).

Factory Support Mode (Preset Mode, PC)

HDMI

Display Modes (Resolution)	Horizontal Frequency(kHz)	Vertical Frequency(Hz)	Polarity(H/V)	Remarks
640 x 480	31.469	59.94	-/-	
800 x 600	37.879	60.317	+/+	
1024 x 768	48.363	60	-/-	
1152 x 864	54.347	60.05	+/+	
1280 x 720	45	60	+/+	
1280 x 1024	63.981	60.02	+/+	
1600 x 900	60	60	+/+	
1920 x 1080	67.5	60	+/-	
2560 x 1440	88.79	59.95	+/-	
3840 x 2160	67.5	30	+/-	
3840 x 2160	135	60	+/-	When HDMI ULTRA HD Deep Color is set to ON.

DisplayPort

Display Modes (Resolution)	Horizontal Frequency(kHz)	Vertical Frequency(Hz)	Polarity(H/V)	Remarks
640 x 480	31.469	59.94	-/-	
800 x 600	37.879	60.317	+/+	
1024 x 768	48.363	60	-/-	
1152 x 864	54.347	60.05	+/+	
1280 x 720	45	60	+/+	
1280 x 1024	63.981	60.02	+/+	
1600 x 900	60	60	+/+	
1920 x 1080	67.5	60	+/-	
2560 x 1440	88.79	59.95	+/-	
3840 x 2160	66.66	30	+/-	
3840 x 2160	133.32	60	+/-	

HDMI Timing (Video)

Factory support mode (Preset Mode)	Horizontal Frequency(kHz)	Vertical Frequency(Hz)	Remarks
480p	31.5	60	
720p	45.0	60	
1080p	67.5	60	
2160p	135	60	When HDMI ULTRA HD Deep Color is set to ON.

Power LED

Mode	LED Color
On Mode	White
Sleep Mode	Flashing White
Off Mode	Off



To obtain the source code under GPL, LGPL, MPL, and other open source licenses, that is contained in this product, please visit http://opensource.lge.com. In addition to the source code, all referred license terms, warranty disclaimers and copyright notices are available for download.LG Electronics will also provide open source code to you on CD-ROM for a charge covering the cost of performing such distribution (such as the cost of media, shipping, and handling) upon email request to opensource@lge.com. This offer is valid for three (3) years from the date on which you purchased the product.

Declaration of Conformity

Trade Name: LG

Model : 24UD58,27UD58

Responsible Party: LG Electronics Inc.

Address : 1000 Sylvan Ave. Englewood Cliffs
NJ 07632 U.S.A

TEL: 201-266-2534

*above information is only for USA FCC Regulatory

This device meets the EMC requirements for home appliances (Class B) and is intended for home usage. This device can be used in all regions. Read the owner's manual (CD) carefully and keep it at hand. Please note that the label attached to the product provides information for technical support.

MODEL _____

SERIAL _____

ENERGY STAR is a set of power-saving guidelines issued by the U.S.Environmental Protection Agency(EPA).



As an ENERGY STAR Partner LGE U. S. A.,Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

Refer to ENERGY STAR.gov for more information on the ENERGY STAR program.

LG
Life's Good

OWNER'S MANUAL

Safety and Reference

LED TV*

* LG LED TVs are LCD TVs with LED backlighting.

Please read this manual carefully before operating your TV and retain it for future reference.

43UX340C
49UX340C
55UX340C
65UX340C
79UX340C



www.lg.com

P/NO : MFL68925843 (1612-REV03)

Important Safety Instructions

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product.



TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING/CAUTION

- TO REDUCE THE RISK OF FIRE AND ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

WARNING

If you ignore the warning message, you may be seriously injured or there is a possibility of accident or death.

CAUTION

If you ignore the caution message, you may be slightly injured or the product may be damaged.

NOTE

The note helps you understand and use the product safely. Please read the note carefully before using the product.

Read these instructions.
Keep these instructions.
Heed all warnings.
Follow all instructions.



- Do not use this apparatus near water.



- Clean only with dry cloth.



- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.



- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.



- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.



- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.



- Only use attachments/accessories specified by the manufacturer.



ENGLISH

- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- Unplug this apparatus during lightning storms or when unused for long periods of time.



- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



- Do not press strongly upon the panel with a hand or a sharp object such as a nail, pencil, or pen, or make a scratch on it.



- Do not stick metal objects or any other conductive material into the power cord. Do not touch the end of the power cord while it is plugged in.
- Keep the packing anti-moisture material or vinyl packing out of the reach of children. Anti-moisture material is harmful if swallowed. If swallowed, induce vomiting and go to the nearest hospital. Additionally, vinyl packing can cause suffocation. Keep it out of the reach of children.
- CAUTION concerning the Power Cord (Can differ by country):
  Check the specification page of this owner's manual to be certain. Do not connect too many appliances to the same AC power outlet as this could result in fire or electric shock. Do not overload wall outlets. Overloaded wall outlets, loose or damaged wall outlets, extension cords, frayed power cords, or damaged or cracked wire insulation are dangerous. Any of these conditions could result in electric shock or fire. Periodically examine the cord of your appliance, and if its appearance indicates damage or deterioration, unplug it, discontinue use of the appliance, and have the cord replaced with an exact replacement part by an authorized servicer. Protect the power cord from physical or mechanical abuse, such as being twisted, kinked, pinched, closed in a door, or walked upon. Pay particular attention to plugs, wall outlets, and the point where the cord exits the appliance. Do not move the TV with the power cord plugged in. Do not use a damaged or loose power cord. Be sure do grasp the plug when unplugging the power cord. Do not pull on the power cord to unplug the TV.



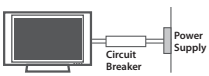
- **Warning** - To reduce the risk of fire or electrical shock, do not expose this product to rain, moisture or other liquids. Do not touch the TV with wet hands. Do not install this product near flammable objects such as gasoline or candles, or expose the TV to direct air conditioning.



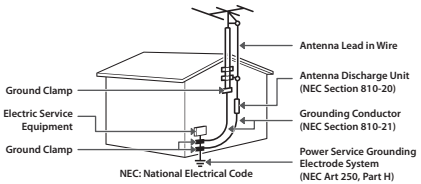
- Do not expose to dripping or splashing and do not place objects filled with liquids, such as vases, cups, etc. on or over the apparatus (e.g., on shelves above the unit).



- **Grounding**
  (Except for devices which are not grounded.) Ensure that you connect the earth ground wire to prevent possible electric shock (i.e., a TV with a three-prong grounded AC plug must be connected to a three-prong grounded AC outlet). If grounding methods are not possible, have a qualified electrician install a separate circuit breaker. Do not try to ground the unit by connecting it to telephone wires, lightning rods, or gas pipes.



- As long as this unit is connected to the AC wall outlet, it is not disconnected from the AC power source even if the unit is turned off.
- Do not attempt to modify this product in any way without written authorization from LG Electronics. Unauthorized modification could void the user's authority to operate this product.
- **Outdoor Antenna Grounding**
  (Can differ by country):
  If an outdoor antenna is installed, follow the precautions below. An outdoor antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can come in contact with such power lines or circuits as death or serious injury can occur. Be sure the antenna system is grounded to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code (NEC) in the U.S.A. provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
  Antenna grounding according to the National Electrical Code, ANSI/NFPA 70

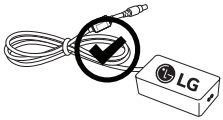


- **Cleaning**
  When cleaning, unplug the power cord and wipe gently with a soft cloth to prevent scratching. Do not spray water or other liquids directly on the TV as electric shock may occur. Do not clean with chemicals such as alcohol, thinners, or benzene.
- **Moving**
  Make sure the product is turned off, unplugged, and all cables have been removed. It may take 2 or more people to carry larger TVs. Do not press or put stress on the front panel of the TV.
- **Ventilation**
  Install your TV where there is proper ventilation. Do not install in a confined space such as a bookcase. Do not cover the product with cloth or other materials while plugged. Do not install in excessively dusty places.
- If you smell smoke or other odors coming from the TV, unplug the power cord and contact an authorized service center.
- Keep the product away from direct sunlight.
- Never touch this apparatus or antenna during a lightning storm.
- When mounting a TV on the wall, make sure not to install the TV by hanging the power and signal cables on the back of the TV.
- Do not allow an impact shock, any objects to fall into the product, and do not drop anything onto the screen.
- **DISCONNECTING THE DEVICE FROM THE MAIN POWER**
  The power plug is the disconnecting device. In case of an emergency, the power plug must remain readily accessible.
- **Batteries**
  Store the accessories (battery, etc.) in a safe location out of the reach of children.
- This apparatus uses batteries. In your community there might be regulations that require you to dispose of these batteries properly due to environmental considerations. Please contact your local authorities for disposal or recycling information.
- Do not dispose of batteries in a fire.
- Do not short circuit, disassemble, or allow the batteries to overheat.
- Do not use high voltage electrical equipment near the TV, (e.g., a bug zapper.)
  This may result in product malfunction.
- **Dot Defect**
  The panel is a high technology product with resolution of two million to six million pixels. In a very few cases, you could see fine dots on the screen while you're viewing the TV. Those dots are deactivated pixels and do not affect the performance and reliability of the TV.

- **Generated Sound**
  Cracking noise A cracking noise that occurs when watching or turning off the TV is generated by plastic thermal contraction due to temperature and humidity. This noise is common for products where thermal deformation is required.
  Electrical circuit humming/panel buzzing
  A low level noise is generated from a high-speed switching circuit, which supplies a large amount of current to operate a product. It varies depending upon the product. This generated sound does not affect the performance and reliability of the product.
- Take care not to touch the ventilation openings. When watching the TV for a long period, the ventilation openings may become hot. This does not affect the performance of the product or cause defects in the product.
- Do not install this product on a wall if it could be exposed to oil or oil mist. This may damage the product and cause it to fall.
- If the TV feels cold to the touch, there may be a small flicker when it is turned on. This is normal; there is nothing wrong with TV. Some minute dot defects may be visible on the screen, appearing as tiny red, green, or blue spots. However, they have no adverse effect on the TV's performance. Avoid touching the LCD screen or holding your finger(s) against it for long periods of time. Doing so may produce some temporary distortion effects on the screen.
- If water or another substance enters the product (like an AC adapter, power cord, TV), disconnect the power cord and contact the service center immediately.
  Otherwise, this may result in fire or electric shock.



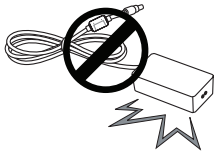
- Only use an authorized AC adapter and power cord approved by LG Electronics. Otherwise, this may result in fire, electric shock, malfunction, or product deformation.



- Never Disassemble the AC adapter or power cord. This may result in fire or electric shock.



- Handle the adapter carefully to avoid dropping or striking it. An impact could damage the adapter.



- Displaying a still image for a prolonged period of time may cause an image sticking. Avoid displaying a fixed image on the TV screen for a extended length of time.

FCC Notice

(For USA)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation of the device. Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radio Frequency Interference Requirements (for UNII devices)

High power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device. This device cannot be co-located with any other transmitter.

FCC RF Radiation Exposure Statement

[For having wireless function (WLAN, Bluetooth,...)]

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 20 cm (7.8 inches) between the antenna and your body. Users must follow the specific operating instructions for satisfying RF exposure compliance.

Industry Canada Statement

(For Canada)
[For having wireless function (WLAN, Bluetooth,...)]

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

1. This device may not cause interference and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

IC Radiation Exposure Statement

(For Canada)
[For having wireless function (WLAN, Bluetooth,...)]

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm (7.8 inches) between the radiator & your body.

NOTE : THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

⚠ WARNING

(For Canada)

[For product having the wireless function using 5 GHz frequency bands]

- The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- The maximum antenna gain permitted for devices in the bands 5250–5350 MHz and 5470–5725 MHz shall comply with the EIRP limit; and
- The maximum antenna gain permitted for devices in the band 5725–5825 MHz shall comply with the EIRP limits specified for point-to-point and non point-to-point operation as appropriate.
- High-power radars are allocated as primary users (i.e. priority users) of the bands 5250–5350 MHz and 5650–5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Note to Cable/TV Installer

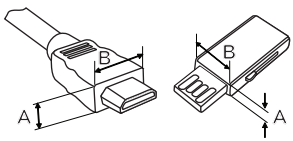
(For USA and Canada)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the National Electric Code (U.S.A.). The code provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of the cable entry as practical.

Preparing

NOTE

- Image shown may differ from your TV.
- Your TV's OSD (On Screen Display) may differ slightly from that shown in this manual.
- The available menus and options may differ from the input source or product model that you are using.
- New features may be added to this TV in the future.
- The items supplied with your product may vary depending upon the model.
- Product specifications or contents of this manual may be changed without prior notice due to upgrade of product functions.
- For an optimal connection, HDMI cables and USB devices should have bezels less than 10 mm (0.39 inches) thick and 18 mm (0.7 inches) width.
- Use an extension cable that supports USB 2.0 if the USB cable or USB flash drive does not fit into your TV's USB port.
- Use a certified cable with the HDMI logo attached. If you do not use a certified HDMI cable, the screen may not display or a connection error may occur.
- Recommended HDMI cable types (3 m or less)
  - High-Speed HDMI®/™ cable
  - High-Speed HDMI®/™ cable with Ethernet



*A ≦ 10 mm (0.39 inches)
*B ≦ 18 mm (0.7 inches)

⚠ CAUTION

- Do not use any unapproved items to ensure the safety and lifespan of the product.
- Any damages or injuries by using unapproved items are not covered by the warranty.
- Some models appear to have a thin film on the screen. It is actually part of the screen; do not remove it.
- When attaching the stand to the TV set, place the screen facing down on a cushioned table or flat surface to protect the screen from scratches.
- Make sure that the screws are fastened tightly. (If they are not fastened securely enough, the TV may tilt forward after being installed.)
- Do not fasten the screws with excessive force; otherwise, they may be worn out and become loose.

Warning when using USB storage devices

- USB storage devices with a built-in auto recognition program or its own driver may not work.
- Some USB storage devices may not work or may work improperly.
- Use only those USB storage devices formatted with FAT32 or NTFS File System provided by Windows.
- For external USB HDD, use devices with less than 5V-rated voltages and 500 mA-rated current.
- It is recommended to use USB flash drive with 32 GB or less and USB HDD with 2 TB or less.
- If a USB HDD with power-saving function does not work properly, turn the power off and on. For more information, refer to the user manual of USB HDD.
- Data in the USB storage device can be damaged so back up important files in other devices. Data maintenance is the user's responsibility. The manufacturer is not responsible for data loss.

Maintenance

Cleaning your TV

Clean your TV regularly to keep it at peak performance and to extend the product's lifespan.

⚠ CAUTION

- Before cleaning, turn the power off and disconnect the power cord and all other cables.
- When the TV is left unattended or unused for a long time, disconnect the power cord from the wall outlet to prevent possible damage from lightning or power surges.

Screen, Frame, Cabinet, and Stand

To remove dust or light dirt, wipe the surface with a dry, clean, and soft cloth.
To remove major dirt, wipe the surface with a soft cloth dampened in clean water or a diluted mild detergent. Then wipe immediately with a dry cloth.

⚠ CAUTION

- Do not push, rub, or hit the surface with your fingernail or a sharp object, as this may result in scratches on the screen and image distortions.
- Do not use any chemicals, such as waxes, benzene, alcohol, thinners, insecticides, air fresheners, or lubricants, as these may damage the screen's finish and cause discoloration.
- Do not spray liquid onto the surface. If water enters the TV, it may result in fire, electric shock, or malfunction.

Power Cord

Remove the accumulated dust or dirt on the power cord regularly.

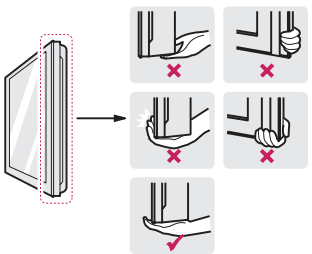
Lifting and Moving the TV

When moving or lifting the TV, read the following to prevent the TV from being scratched or damaged and for safe transportation regardless of its type and size.

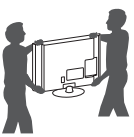
- It is recommended to move the TV in the box or packing material that the TV originally came in.
- Before moving or lifting the TV, disconnect the power cord and all cables.
- When holding the TV, the screen should face away from you to avoid damage.



- Hold the top and bottom of the TV frame firmly. Make sure not to hold the transparent part, speaker, or speaker grille area.



- Use at least two people to move a large TV.
- When transporting the TV by hand, hold the TV as shown in the following illustration.



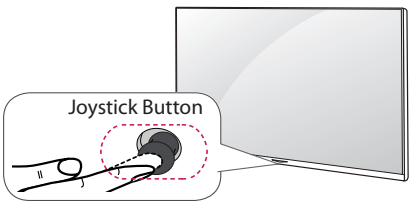
- When transporting the TV, do not expose the TV to jolts or excessive vibration.
- When transporting the TV, keep the TV upright; never turn the TV on its side or tilt towards the left or right.
- When handling the TV, be careful not to damage the protruding joystick button.

⚠ CAUTION
- Avoid touching the screen at all times, as this may result in damage to the screen.
- Do not place the product on the floor with its front facing down without padding. Failure to do so may result in damage to the screen.
- Do not move the TV by holding the cable holders, as the cable holders may break, and injuries and damage to the TV may occur. (Depending upon model)

Using the Joystick Button

(Image shown may differ from your TV.)

You can operate the TV by pressing the button or moving the joystick left, right, up, or down.



Basic Functions

Power On	When the TV is turned off, place your finger on the joystick button, press it once, and release it.
Power Off	When the TV is turned on, place your finger on the joystick button, press it once for a few seconds, and release it. (However, if the menu button is on the screen, pressing and holding the joystick button will let you exit the menu.)
Volume Control	If you place your finger over the joystick button and move it left or right, you can adjust the volume level.
Channels Control	If you place your finger over the joystick button and move it up or down, you can scroll through the saved channels.

NOTE
- Move the joystick up, down, left, or right. Be careful not to press the joystick button. If you press the joystick button first, you may not be able to adjust the volume level and/or scroll through saved channels.

Adjusting the Menu

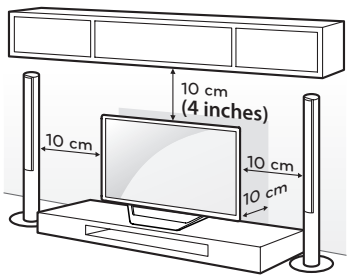
When the TV is turned on, press the joystick button one time. You can adjust the menu items moving the joystick button up, down, left, or right.

⏻	Turns the power off.
⚙	Accesses the main menu.
✕	Clears on-screen displays and returns to TV viewing
⇄	Changes the input source.

Mounting on a Table

(Image shown may differ from your TV.)

1 Lift and tilt the TV into its upright position on a table.
- Leave a 10 cm (4 inches) (minimum) space from the wall for proper ventilation.



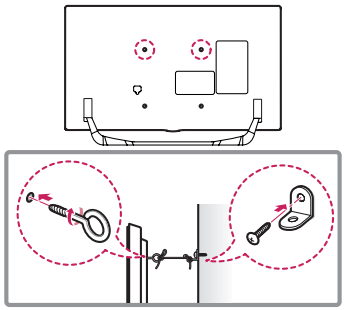
2 Connect the power cord to a wall outlet.

⚠ CAUTION
- Do not place the TV near or on sources of heat, as this may result in fire or other damage.

ENGLISH

Securing the TV to a Wall (optional)

(Depending upon model)
(Image shown may differ from your TV.)



1 Insert and tighten the eye-bolts or TV brackets and bolts on the back of the TV.
- If there are bolts inserted at the eye-bolts position, remove the bolts first.

2 Mount the wall brackets with the bolts to the wall. Match the location of the wall bracket and the eye-bolts on the rear of the TV.

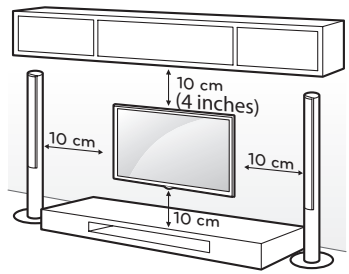
3 Connect the eye-bolts and wall brackets tightly with a sturdy rope or cable. Make sure to keep the rope parallel to the flat surface.

⚠ CAUTION
- Make sure that children do not climb on or hang on the TV.

NOTE
- Use a platform or cabinet that is strong and large enough to support the TV securely.
- Brackets, bolts, and ropes are optional. You can obtain additional accessories from your local dealer.

Mounting on a Wall

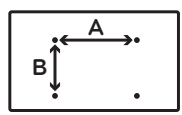
An optional wall mount can be used with your LG Television. Consult with your local dealer for a wall mount that supports the VESA standard used by your TV model. Carefully attach the wall mount bracket at the rear of the TV. Install the wall mount bracket on a solid wall perpendicular to the floor. If you are attaching the TV to other building materials, please contact qualified personnel to install the wall mount. Detailed instructions will be included with the wall mount. We recommend that you use an LG brand wall mount. The LG wall mount is easy to adjust or to connect the cables. When you do not use LG's wall mount bracket, use a wall mount bracket where the device is adequately secured to the wall with enough space to allow connectivity to external devices. If you are using a non-adjustable mount, attach the mount to the wall. Attach the cables to the TV first, then attach the TV to the mount.



Make sure to use screws and wall mounts that meet the VESA standard. Standard dimensions for the wall mount kits are described in the following table.

Model	43UX340C	49/55UX340C
VESA (A x B)	200 x 200	300 x 300
Standard screw	M6	M6
Number of screws	4	4
Wall mount bracket (optional)	LSW240B MSW240	LSW350B MSW240

Model	65UX340C	79UX340C
VESA (A x B)	300 x 300	600 x 400
Standard screw	M6	M8
Number of screws	4	4
Wall mount bracket (optional)	LSW350B	LSW640B

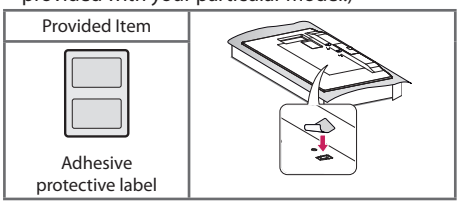


⚠ CAUTION

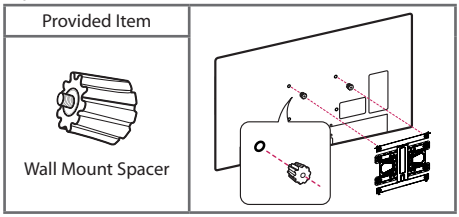
- Disconnect the power before moving or installing the TV. Otherwise electric shock may occur.
- Remove the stand before installing the TV on a wall mount by performing the stand attachment in reverse.
- If you install the TV on a ceiling or slanted wall, it may fall and result in severe injury. Use an authorized LG wall mount and contact the local dealer or qualified personnel. When using a third-party wall mount, it is not covered by the warranty.
- Do not overtighten the screws as this may cause damage to the TV and void your warranty.
- Use the screws and wall mounts that meet the VESA standard. Any damages or injuries by misuse or using an improper accessory are not covered by the warranty.

NOTE

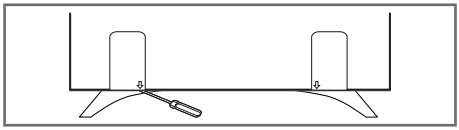
- Use the screws that are listed in the VESA standard screw specifications.
- The wall mount kit includes an installation manual and necessary parts.
- The wall mount bracket is optional. You can obtain additional accessories from your local dealer.
- The length of screws may differ depending upon the wall mount. Make sure to use the proper length.
- For more information, refer to the manual supplied with the wall mount.
- When using the wall mounting bracket, apply the adhesive protective label to cover the unused stand openings. This will prevent the accumulation of dust and dirt. (Use only when provided with your particular model.)



- When attaching a wall mounting bracket to the TV, insert the wall mount inner spacers into the TV wall mount holes to adjust the vertical angle of the TV. (Use only when provided with your particular model.)



- When removing the stand covers, insert a flat tool below the arrows. (e.g., a flat screwdriver) (For 79UX340C)



Connections (Notifications)

You can connect various external devices to the TV. Supported external devices are: HD receivers, DVD players, VCRs, audio systems, USB storage devices, PC, gaming devices, and other external devices. For more information on external device's connection, refer to the manual provided with each device.

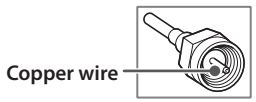
NOTE

- This model supports 4K (ULTRA HD) videos only in HDMI input.
- ULTRA HD videos are not supported in the tuner or USB input.
- If you record a TV program on a DVD recorder or VCR, make sure to connect the TV signal input cable to the TV through a DVD recorder or VCR. For more information about recording, refer to the manual provided with the connected device.
- The external device connections shown may differ slightly from illustrations in this manual.
- Connect external devices to the TV regardless about the order of the TV port.
- If you connect a gaming device to the TV, use the cable supplied with the gaming device.
- Refer to the external equipment's manual for operating instructions.

Connecting to an Antenna or Cable

Connect an antenna, cable, or cable box to watch TV while referring to the following. The illustrations may differ from the actual items and an RF cable is optional.

⚠ CAUTION
- Make sure not to bend the copper wire of the RF cable.



- Complete all connections between devices, and then connect the power cord to the power outlet to prevent damage to your TV.

NOTE
- Use a signal splitter to use 2 TVs or more.
- DTV Audio Supported Codec: MPEG, Dolby Digital.
- Direct UHD broadcast is unavailable in areas without a UHD signal.

Other Connections

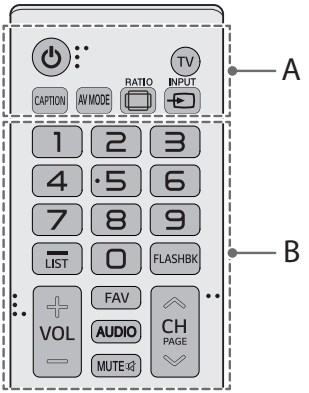
Connect your TV to external devices. For the best picture and audio quality, connect the external device and the TV with the HDMI cable.

NOTE
- Use only with the 3-pole 3.5 mm Stereo Jack.
- Do not connect your headphones or earphones to the port for connecting an external speaker.

Remote Control

The descriptions in this manual are based on the buttons on the remote control. Please read this manual carefully and use the TV correctly. To install batteries, open the battery cover, replace batteries (1.5 V AAA) matching the ⊕ and ⊖ ends to the label inside the compartment, and close the battery cover. Failure to match the correct polarities of the battery may cause the battery to burst or leak, resulting in fire, personal injury, or ambient pollution. To remove the batteries, perform the installation actions in reverse. This remote uses infrared light. When in use, it should be pointed in the direction of the TV's remote sensor.

⚠ CAUTION
- Do not mix old and new batteries, as this may damage the remote control.



A

⏻ **(POWER)** Turns the TV on or off.

TV Returns to the last TV channel.

CAPTION Activates or deactivates the subtitles.

AV MODE Selects an AV mode.

RATIO Resizes an image.

INPUT Changes the input source.

B

Number button Enters numbers.

- (DASH) Inserts a dash between numbers such as 2-1 and 2-2.

LIST Accesses the saved channel list.

FLASHBK Alternates between the two last channels selected (pressing repeatedly).

+ VOL − Adjusts the volume level.

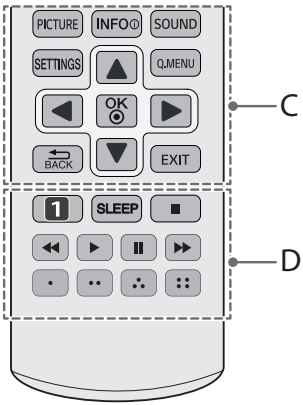
FAV Accesses your favorite channel list.

AUDIO Digital signal : Changes the audio language.
Analog signal : Changes the MTS sound.

MUTE Mutes all sounds.

∧ CH ∨ Scrolls through the saved channels.

∧ PAGE ∨ Moves to the previous or next screen.



C

PICTURE Changes the image mode.

INFO ⓘ Shows information on the current program.

SOUND Changes the sound mode.

SETTINGS Accesses the main menu.

Q.MENU Accesses the quick menu.

Navigation button (up/down/left/right) Scrolls through menus or options.

OK ⦿ Selects menus or options and confirms your input.

⮌BACK Returns to the previous screen.

EXIT Clears all on-screen displays and returns to TV viewing.

D

1 SAP/✳ Enables SAP (Secondary Audio Program) Feature.
✳ Not functional.

SLEEP Sets the length of time until the TV to turns off.

Control buttons (■, ▶, ❚❚, ◀◀, ▶▶) Controls the MY MEDIA menus and the SIMPLINK compatible devices (USB, SIMPLINK).

· ·· ∴ ⁘ These access special functions in some menus.

To select Picture Mode

SETTINGS ➡ PICTURE ➡ Picture Mode

Select the picture mode optimized for the viewing environment or the program.

- **Vivid** Heightens contrast, brightness, and sharpness to display vivid images.
- **Standard** Displays images in standard levels of contrast, brightness and sharpness.
- **APS** APS (Auto power saving) mode reduces power consumption by dimming control.
- **Cinema / Sport / Game** Displays the optimum picture for movie, sport, or game.
- **Expert** Menu for adjusting picture quality that allows experts and amateurs to enjoy the best TV viewing. This menu for adjustment is provided for ISF-certified picture tuning professionals. (ISF logo can be used only on ISF-certified TVs.) ISFccc: Imaging Science Foundation Certified Calibration Control (Depending upon model)
- Depending upon the input signal, the available range of picture modes may differ.
- **Expert** mode is for picture tuning professionals to control and fine-tune using a specific image. For normal images, the effects may not be drastic.

To Use Energy Saving Feature

SETTINGS ➡ PICTURE ➡ Energy Saving

Reduces power consumption by adjusting peak screen brightness.

- **Off** Turns off the Energy Saving.
- **Minimum / Medium / Maximum** Applies the pre-set Energy Saving.
- **Screen Off** Screen is turned off and only sound is played. Press any button on the remote control to turn the screen back on.

ENGLISH

To use HDMI ULTRA HD Deep Color

SETTINGS ➡ PICTURE ➡ HDMI ULTRA HD Deep Color ➡ HDMI (1/2) ULTRA HD Deep Color

HDMI port provides ULTRA HD Deep Color, You can watch more clear picture.

- **On** ULTRA HD Deep Color support
- **Off** ULTRA HD Deep Color not support
- All HDMI ports support the HDCP 2.2.
- 4K Source is only supported in HDMI input.
- 4K signal and content are not available in the RF/USB input.
- All HDMI input ports support 4K @ 50/60 Hz (4:4:4, 4:2:2) for high-definition video. Picture or sound may not be supported depending upon the specifications of the external device connected. In that case, change the settings for **HDMI ULTRA HD Deep Color**.

4K @ 60 Hz Support Format

Resolution	Frame rate (Hz)	Color Depth / Chroma Sampling		
		8 bit	10 bit	12 bit
3840 X 2160p 4096 X 2160p	59.94 60.00	YCbCr 4:2:0	YCbCr 4:2:0[1]	
		YCbCr 4:2:2[1]		
		YCbCr 4:4:4[1]	-	-
		RGB 4:4:4[1]	-	-

1 Supported when HDMI ULTRA HD Deep Color is set to **On**.

Specifications

Product specifications may be changed without prior notice due to upgrade of product functions.

Television System

ATSC, NTSC-M, 64 & 256 QAM

Program Coverage

VHF 2-13, UHF 14-69, DTV 2-69, CATV 1-135, CADTV 1-135

External Antenna Impedance

75 Ω

Environment Condition

- **Operating Temperature**
  0 °C to 40 °C (32 °F to 104 °F)
- **Operating Humidity**
  Less than 80 %
- **Storage Temperature**
  -20 °C to 60 °C (-4 °F to 140 °F)
- **Storage Humidity**
  Less than 85 %

HDMI (PC) Supported Mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
640 x 350	31.46	70.09
720 x 400	31.46	70.08
640 x 480	31.46	59.94
800 x 600	37.87	60.31
1024 x 768	48.36	60.00
1152 x 864	54.34	60.05
1280 x 1024	63.98	60.02
1360 x 768	47.71	60.01
1920 x 1080	67.50	60.00
3840 x 2160	67.50	30.00
3840 x 2160	56.25	25.00
3840 x 2160	54.00	24.00
4096 x 2160	53.95	23.97
4096 x 2160	54.00	24.00

RGB (PC) Supported Mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
640 x 350	31.46	70.09
720 x 400	31.46	70.08
640 x 480	31.46	59.94
800 x 600	37.87	60.31
1024 x 768	48.36	60.00
1152 x 864	54.34	60.05
1360 x 768	47.71	60.01
1280 x 1024	63.98	60.02
1920 x 1080	67.50	60.00

HDMI (DTV) Supported Mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
640 x 480p	31.46	59.94
	31.50	60.00
720 x 480p	31.47	59.94
	31.50	60.00
1280 x 720p	44.96	59.94
	45.00	60.00
1920 x 1080i	33.72	59.94
	33.75	60.00
1920 x 1080p	26.97	23.97
	27.00	24.00
	33.71	29.97
	33.75	30.00
	67.43	59.94
	67.50	60.00
3840 x 2160p	53.95	23.98
	54.00	24.00
	56.25	25.00
	61.43	29.97
	67.50	30.00
	135.00	60.00
	135.00	59.94
4096 x 2160p	53.95	23.98
	54.00	24.00
	56.25	25.00
	61.43	29.97
	67.50	30.00
	135.00	60.00
	135.00	59.94

Component Port Connecting Information

Component ports on the TV	Y	P_B	P_R

Video output ports on DVD player	Y	P_B	P_R
	Y	B-Y	R-Y
	Y	Cb	Cr
	Y	Pb	Pr

Component Supported Mode

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
720 x 480i	15.73	60.00
	15.73	59.94
720 x 480p	31.50	60.00
	31.47	59.94
1280 x 720p	45.00	60.00
	44.96	59.94
1920 x 1080i	33.75	60.00
	33.72	59.94
1920 x 1080p	67.50	60.00
	67.432	59.94
	27.00	24.00
	26.97	23.976
	33.75	30.00
	33.71	29.97

My Media Supported Files

- Maximum data transfer rate: 20 Mbps (Mega bit per second)
- External supported subtitle formats: *.srt (SubRip), *.smi (SAMI), *.sub (SubViewer, MicroDVD, DVDsubtitleSystem, SubIdx (Vobsub)), *.ass/*.ssa (SubStation Alpha), *.txt (TMplayer), *.psb (PowerDivX)
- Internal supported subtitle formats: *.dat/*.mpg/*.mpeg/*.vob (DVD Subtitle), *.ts/*.tp/*.m2ts (DVB Subtitle), *.mp4 (DVD Subtitle, UTF-8 Plain Text), *.mkv (ASS, SSA, UTF-8 Plain Text, Universal Subtitle Format, VobSub, DVD Subtitle), *.divx/*.avi (XSUB[1], XSUB+)

  XSUB[1] Supports internal subtitles generated from DivX6

ENGLISH

Supported Video Formats

- Maximum : 1,920 x 1,080 @ 30p (only Motion JPEG 640 x 480 @ 30p)
- .asf, .wmv
  [Video] MPEG-2, MPEG-4 Part2, XViD, H.264/AVC, VC1(WMV3, WVC1), MP43
  [Audio] WMA Standard, WMA9(Pro), MP3, AAC, AC3, MP3
- .divx, .avi
  [Video] MPEG-2, MPEG-4 Part2, DivX3.11, DivX4, DivX5, DivX6, XViD, H.264/AVC
  [Audio] HE-AAC, LPCM, ADPCM, MPEG-1 Layer1, MPEG-1 Layer2, Dolby Digital, MPEG-1 Layer3 (MP3)
- .ts, .trp, .tp, .mts, .m2ts
  [Video] H.264/AVC, MPEG-2, AVS, VC1
  [Audio] MPEG-1 Layer1, MPEG-1 Layer2, MPEG-1 Layer3 (MP3), Dolby Digital, Dolby Digital Plus, AAC, HE-AAC
- .vob
  [Video] MPEG-1, MPEG-2
  [Audio] Dolby Digital, MPEG-1 Layer1, MPEG-1 Layer2, DVD-LPCM
- .mp4, .m4v, .mov
  [Video] MPEG-2, MPEG-4 Part2, DivX3.11, DivX4, DivX5, DivX6, XVID, H.264/AVC
  [Audio] AAC, MPEG-1 Layer3 (MP3)
- .mkv
  [Video] MPEG-2, MPEG-4 Part2, XVID, H.264/AVC
  [Audio] HE-AAC, Dolby Digital, MPEG-1 Layer3 (MP3), LPCM
- motion JPEG
  [Video] MJPEG
  [Audio] LPCM, ADPCM
- .mpg, .mpeg, .mpe
  [Video] MPEG-1, MPEG-2
  [Audio] MPEG-1 Layer1, MPEG-1 Layer2, Dolby Digital, LPCM
- .dat
  [Video] MPEG-1, MPEG-2
  [Audio] MP2
- .flv
  [Video] Sorenson H.263, H.264/AVC
  [Audio] MP3, AAC, HE-AAC
- .3gp, .3gp2
  [Video] H.264/AVC, MPEG-4 Part2
  [Audio] AAC, AMR(NB/WB)

Supported Audio Formats

- File type : mp3
  [Bit rate] 32 Kbps - 320 Kbps
  [Sample freq.] 16 kHz - 48 kHz
  [Support] MPEG-1, MPEG-2, Layer2, Layer3
- File type : AAC
  [Bit rate] Free Format
  [Sample freq.] 8 kHz ~ 48 kHz
  [Support] ADIF, ADTS
- File type : M4A
  [Bit rate] Free Format
  [Sample freq.] 8 kHz ~ 48 kHz
  [Support] MPEG-4
- File type : WMA
  [Bit rate] 128 Kbps ~ 320 Kbps
  [Sample freq.] 8 kHz ~ 48 kHz
  [Support] WMA7, WMA8, WMA9 Standard
- File type : WMA 10 Pro
  [Bit rate] ~ 768 Kbps
  [Channel / Sample freq.]
  M0 : up to 2 Channel @ 48 kHz (Except LBR mode),
  M1 : up to 5.1 Channel @ 48 kHz,
  M2 : up to 5.1 Channel @ 96 kHz
  [Support] WMA 10 Pro
- File type : OGG
  [Bit rate] Free Format
  [Sample freq.] ~ 48 kHz
  [Support] OGG Vorbis

Supported Photo Formats

- Category : 2D (jpeg, jpg, jpe)
  [Available File type]
  SOF0 : Baseline,
  SOF1 : Extend Sequential,
  SOF2 : Progressive
  [Photo size] Minimum: 64 x 64,
  Maximum : Normal Type: 15,360 (W) x 8,640 (H),
  Progressive Type : 1,920 (W) x 1,440 (H)
- Category : BMP
  [Photo size] Minimum : 64 x 64, Maximum: 9,600 x 6,400
- Category : PNG
  [Available file type] Interlace, Non-Interlace
  [Photo size] Minimum : 64 x 64
  Maximum: Interlace : 1,200 x 800
  Non-Interlace : 9,600 x 6,400
- BMP and PNG format files may be slower to display than JPEG.

Open Source Software Notice Information

To obtain the source code under GPL, LGPL, MPL, and other open source licenses, that is contained in this product, please visit *http://opensource.lge.com*.
In addition to the source code, all referred license terms, warranty disclaimers and copyright notices are available for download.
LG Electronics will also provide open source code to you on CD-ROM for a charge covering the cost of performing such distribution (such as the cost of media, shipping, and handling) upon email request to *opensource@lge.com.* This offer is valid for three (3) years from the date on which you purchased the product.

Troubleshooting

The software may be updated for improvement in performance. The customer is responsible to ensure the compatibility of their equipment with any LG Electronics software. If needed, please consult with LG Electronics and update new software versions according to the guidance provided by LG Electronics.

- Cannot control the TV with the remote control.
  - Check if anything such as tape has been placed over the receiver.
  - Check if there is any obstacle between the product and the remote control.
  - Replace the batteries with new fresh ones.
- No image display and no sound is produced.
  - Check if the product is turned on.
  - Check if the power cord is connected to a wall outlet.
  - Check if there is a problem in the wall outlet by connecting other products.
- The TV turns off suddenly.
  - Check the power control settings. The power supply may be interrupted.
  - Check if the **Off Time** / **Sleep Timer** feature is activated in the **TIME** settings.
  - If there is no signal while the TV is on, the TV will turn off automatically after 15 minutes of inactivity.

Licenses

Supported licenses may differ by model.
For more information about licenses, visit *www.lg.com*.

Manufactured under license from Dolby Laboratories.
Dolby and the double-D symbol are trademarks of Dolby Laboratories.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

This DivX Certified® device has passed rigorous testing to ensure it plays DivX® video. To play purchased DivX movies, first register your device at vod.divx.com. Find your registration code in the DivX VOD section of your device setup menu. DivX Certified® to play DivX® video up to HD 1080p, including premium content. DivX®, DivX Certified® and associated logos are trademarks of DivX, LLC and are used under license.
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Key Codes

• This feature is not available for all models.

Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
00	CH PAGE ∧	R/C Button	44	OK ⊙	R/C Button
01	CH PAGE ∨	R/C Button	45	Q.MENU	R/C Button
02	VOL +	R/C Button	4C	LIST	R/C Button
03	VOL -	R/C Button	4D	PICTURE	R/C Button
06	►	R/C Button	52	SOUND	R/C Button
07	◄	R/C Button	5B	EXIT	R/C Button
08	⏻ (Power)	R/C Button	61	∷	R/C Button
09	MUTE 🔇	R/C Button	63	∴	R/C Button
0B	INPUT ⏎	R/C Button	71	··	R/C Button
0E	SLEEP	R/C Button	72	·	R/C Button
0F	TV	R/C Button	79	RATIO ▭	R/C Button
10 - 19	Number Key 0 - 9	R/C Button	8E	►►	R/C Button
1A	FLASHBK	R/C Button	8F	◄◄	R/C Button
1E	FAV	R/C Button	AA	INFO ⓘ	R/C Button
28	BACK	R/C Button	B0	►	R/C Button
30	AV MODE	R/C Button	B1	■	R/C Button
39	CAPTION	R/C Button	BA	❚❚	R/C Button
40	▲	R/C Button	0A	AUDIO	R/C Button
41	▼	R/C Button	91	SAP/✱	R/C Button
43	SETTINGS	R/C Button	--	✱	R/C Button

• Key code 4C (0x4C) is available on ATSC / ISDB models which use major / minor channel.
(For South Korea, Japan, North America, Latin America except Colombia models)

(Depending upon country)

ENGLISH

External Control Device Setup

• Image shown may differ from your TV.

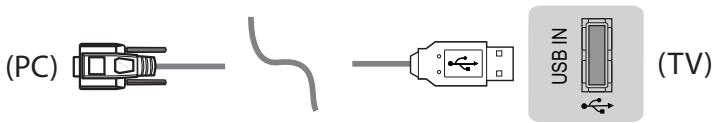
Connect the USB to Serial converter/RS-232C input jack to an external control device (such as a computer or an A/V control system) to control the product's functions externally.

Note: The type of control port on the TV can be different between model series.

• Please be advised that not all models support this type of connectivity.
• Cable is not provided.

USB to Serial Converter with USB Cable

USB Type

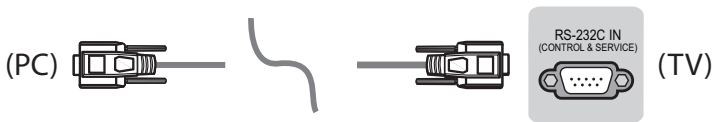


• LGTV supports PL2303 chip-based (Vendor ID : 0x0557, Product ID : 0x2008) USB to serial converter which is not made nor provided by LG.
• It can be purchased from computer stores that carry accessories for IT support professionals.

RS-232C With RS232C Cable

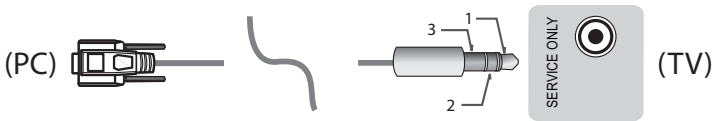
DE9 (D-Sub 9-pin) Type

• You need to purchase the RS-232C (DE9, D-Sub 9-pin female-to-female type) to RS-232C cable required for the connection between the PC and the TV, which is specified in the manual.
• The connection interface may differ from your TV.

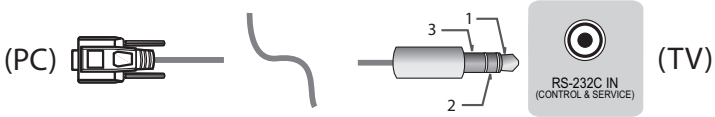


Phone jack Type

• You need to purchase the phone-jack to RS-232 cable required for the connection between the PC and the TV, which is specified in the manual.
• For other models, connect to the USB port.
• The connection interface may differ from your TV.

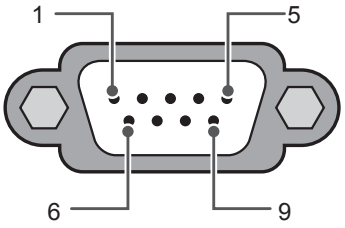


- or



ENGLISH

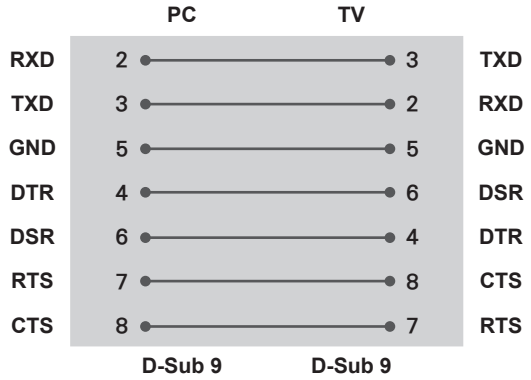
Customer Computer



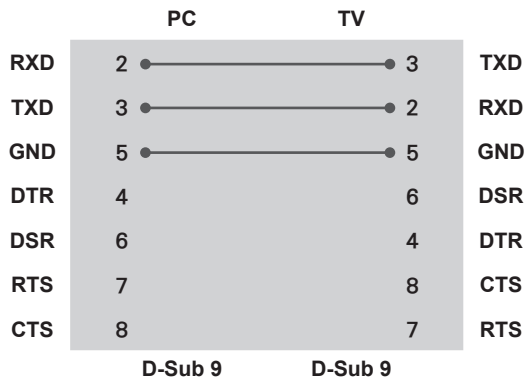
RS-232C
(Serial port)

RS-232C Configurations

7-Wire Configuration
(Serial female-female NULL modem cable)



3-Wire Configurations (Not standard)



Set ID

For Set ID number, see **Real Data Mapping**.

1. Press **SETTINGS** to access the main menus.
2. Press the navigation buttons to scroll to **(General → About this TV or OPTION)** and press **OK**.
3. Press the navigation buttons to scroll to **SET ID** and press **OK**.
4. Scroll left or right to select a set ID number and select **CLOSE**. The adjustment range is 1-99.
5. When you are finished, press **EXIT**.
   * (Depending upon model)

Communication Parameters

- Baud rate : 9600 bps (UART)
- Data length : 8 bits
- Parity : None
- Stop bit : 1 bit
- Communication code : ASCII code
- Use a crossed (reverse) cable.

Command Reference List

(Depending upon model)

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power*	k	a	00 to 01	15. Balance	k	t	00 to 64
02. Aspect Ratio	k	c	(page 23)	16. Color (Colour) Temperature	x	u	00 to 64
03. Screen Mute	k	d	(page 23)	17. ISM Method (Only Plasma TV)	j	p	(page 25)
04. Volume Mute	k	e	00 to 01	18. Equalizer	j	v	(page 25)
05. Volume Control	k	f	00 to 64	19. Energy Saving	j	q	00 to 05
06. Contrast	k	g	00 to 64	20. Tune Command	m	a	(page 25)
07. Brightness	k	h	00 to 64	21. Channel (Programme) Add/Del(Skip)	m	b	00 to 01
08. Color/Colour	k	i	00 to 64	22. Key	m	c	Key Codes
09. Tint	k	j	00 to 64	23. Control Backlight, Control Panel Light	m	g	00 to 64
10. Sharpness	k	k	00 to 32	24. Input select (Main)	x	b	(page 27)
11. OSD Select	k	l	00 to 01	25. 3D (Only 3D models)	x	t	(page 27)
12. Remote Control Lock Mode	k	m	00 to 01	26. Extended 3D (Only 3D models)	x	v	(page 28)
13. Treble	k	r	00 to 64	27. Auto Configure	j	u	(page 28)
14. Bass	k	s	00 to 64				

* Note: During playing or recording media, all commands except Power (ka) and Key (mc) are not executed and treated as NG.
With RS232C cable, TV can communicate **ka command** in power-on or power-off status. but with USB-to-Serial converter cable, the command works only if TV is on.

Transmission / Receiving Protocol

Transmission

[Command 1][Command2][ ][Set ID][ ][Data][Cr]

[Command 1]	First command to control the TV. (j, k, m or x)
[Command 2]	Second command to control the TV.
[Set ID]	You can adjust the [Set ID] to choose desired monitor ID number in option menu. Adjustment range in TV is 1 to 99. If [Set ID] value is selected to '0', every connected set can be controlled. * [Set ID] is indicated as decimal (1 to 99) on menu and as Hexadecimal (0x00 to 0x63) on transmission/receiving protocol.
[DATA]	To transmit command data (hexadecimal). Transmit 'FF' data to read status of command.
[Cr]	Carriage Return - ASCII code '0x0D'
[ ]	Space – ASCII code '0x20'

OK Acknowledgement

[Command2][ ][Set ID][ ][OK][Data][x]

The set transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.

Error Acknowledgement

[Command2][ ][Set ID][ ][NG][Data][x]

The set transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable functions or communication errors.

Data 00 : Illegal Code

Real Data Mapping (Hexadecimal : Decimal)

- When you enter the [data] in hexadecimal, refer to following conversion table.
- Channel Tune (ma) Command uses two-byte hexadecimal value([data]) to select channel number.

00 : Step 0	32 : Step 50 (Set ID 50)	FE : Step 254
01 : Step 1 (Set ID 1)	33 : Step 51 (Set ID 51)	FF : Step 255
...	...	...
0A : Step 10 (Set ID 10)	63 : Step 99 (Set ID 99)	01 00 : Step 256
...	...	...
0F : Step 15 (Set ID 15)	C7 : Step 199	27 0E : Step 9998
10 : Step 16 (Set ID 16)	C8 : Step 200	27 0F : Step 9999
...	...	...

• Commands may work differently depending upon model and signal.

01. Power (Command : k a)

▶ To control Power *On or Off of the set.

Transmission[k][a][ ][Set ID][ ][Data][Cr]

Data 00 : Power Off 01 : *Power On

Ack [a][ ][Set ID][ ][OK/NG][Data][x]

▶ To Show TV is Power On or *Off

Transmission [k][a][ ][Set ID][ ][FF][Cr]

Ack [a][ ][Set ID][ ][OK][Data][x]

* Similarly, if other functions transmit 'FF' data based on this format, Acknowledgement feedback presents status about each function.

02. Aspect Ratio (Command : k c)
(Main Picture Size)

▶ To adjust the screen format. (Main picture format)
You can also adjust the screen format using the Aspect Ratio in the Q.MENU or PICTURE menu.

Transmission [k][c][ ][Set ID][ ][Data][Cr]

Data 01 : Normal screen (4:3)
02 : Wide screen(16:9)
04 : Zoom
05 : Zoom 2
(Latin America except Colombia Only)
06 : Set by Program/ Original
07 : 14:9 (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
09 : * Just Scan
0B : Full Wide (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
10 to 1F : Cinema Zoom 1 to 16

Ack [c][ ][Set ID][ ][OK/NG][Data][x]

- Using the PC input, you select either 16:9 or 4:3 screen aspect ratio.
- In DTV/HDMI/Component mode (high-definition), Just Scan is available.
- Full wide mode may work differently based on model and is supported for DTV fully, and ATV, AV partially.

03. Screen Mute (Command : k d)

▶ To select screen mute on/off.

Transmission [k][d][ ][Set ID][ ][Data][Cr]

Data 00 : Screen mute off (Picture on) Video mute off
01 : Screen mute on (Picture off)
10 : Video mute on

Ack [d][ ][Set ID][ ][OK/NG][Data][x]

* In case of video mute on only, TV will display On Screen Display(OSD). But, in case of Screen mute on, TV will not display OSD.

04. Volume Mute (Command : k e)

▶ To control volume mute on/off.
You can also adjust mute using the MUTE button on remote control.

Transmission [k][e][ ][Set ID][ ][Data][Cr]

Data 00 : Volume mute on (Volume off)
01 : Volume mute off (Volume on)

Ack [e][ ][Set ID][ ][OK/NG][Data][x]

05. Volume Control (Command : k f)

▶ To adjust volume.
You can also adjust volume with the volume buttons on remote control.

Transmission [k][f][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [f][ ][Set ID][ ][OK/NG][Data][x]

06. Contrast (Command : k g)

▶ To adjust screen contrast.
You can also adjust contrast in the PICTURE menu.

Transmission [k][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

07. Brightness (Command : k h)

▶ To adjust screen brightness.
You can also adjust brightness in the PICTURE menu.

Transmission [k][h][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [h][ ][Set ID][ ][OK/NG][Data][x]

08. Color/Colour (Command : k i)

▶ To adjust the screen Color(Colour).
You can also adjust colour in the PICTURE menu.

Transmission [k][i][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [i][ ][Set ID][ ][OK/NG][Data][x]

09. Tint (Command : k j)

▶ To adjust the screen tint.
You can also adjust tint in the PICTURE menu.

Transmission [k][j][ ][Set ID][ ][Data][Cr]

Data Red : 00 to Green : 64

Ack [j][ ][Set ID][ ][OK/NG][Data][x]

10. Sharpness (Command : k k)

▶ To adjust the screen sharpness.
You can also adjust sharpness in the PICTURE menu.

Transmission [k][k][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 32

Ack [k][ ][Set ID][ ][OK/NG][Data][x]

11. OSD Select (Command : k l)

▶ To select OSD (On Screen Display) on/off when controlling remotely.

Transmission [k][l][ ][Set ID][ ][Data][Cr]

Data 00 : OSD off 01 : OSD on

Ack [l][ ][Set ID][ ][OK/NG][Data][x]

12. Remote control lock mode (Command : k m)

▶ To lock the front panel controls on the monitor and remote control.

Transmission [k][m][ ][Set ID][ ][Data][Cr]

Data 00 : Lock off 01 : Lock on

Ack [m][ ][Set ID][ ][OK/NG][Data][x]

* If you are not using the remote control, use this mode.
When main power is off for 30 seconds and then restored, (plug-off and plug-in, after 20 - 30 seconds), external control lock is released.
* In the standby mode (DC off by off timer or 'ka', 'mc' command), and if key lock is on, TV will not turn on by power on key of IR and Local Key.

13. Treble (Command : k r)

▶ To adjust treble.
You can also adjust in the AUDIO menu.

Transmission [k][r][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [r][ ][Set ID][ ][OK/NG][Data][x]

* (Depending upon model)

14. Bass (Command : k s)

▶ To adjust Bass.
You can also adjust in the AUDIO menu.

Transmission [k][s][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [s][ ][Set ID][ ][OK/NG][Data][x]

* (Depending upon model)

15. Balance (Command : k t)

▶ To adjust balance.
You can also adjust balance in the AUDIO menu.

Transmission [k][t][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [t][ ][Set ID][ ][OK/NG][Data][x]

16. Color(Colour) Temperature (Command : x u)

► To adjust colour temperature. You can also adjust Color(Colour) Temperature in the PICTURE menu.

Transmission [x][u][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [u][ ][Set ID][ ][OK/NG][Data][x]

17. ISM Method (Command : j p) (Only Plasma TV)

► To control the ISM method. You can also adjust ISM Method in OPTION menu.

Transmission [j][p][ ][Set ID][ ][Data][Cr]

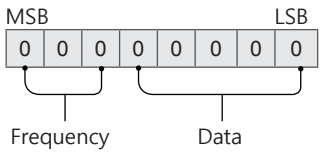
Data Min : 02: Orbiter
08: Normal
20: Color(Colour) Wash

Ack [p][ ][Set ID][ ][OK/NG][Data][x]

18. Equalizer (Command : j v)

► Adjust EQ of the set.

Transmission [j][v][ ][Set ID][ ][Data][Cr]



7	6	5	Frequency	4	3	2	1	0	Step
0	0	0	1st Band	0	0	0	0	0	0 (decimal)
0	0	1	2nd Band	0	0	0	0	1	1 (decimal)
0	1	0	3rd Band	...	...	...	...	...	...
0	1	1	4th Band	1	0	0	1	1	19 (decimal)
1	0	0	5th Band	1	0	1	0	0	20 (decimal)

Acknowledgement [v][ ][Set ID][ ][OK/NG][Data][x]

* It depends on model, and can adjust when sound mode is EQ adjustable value.

19. Energy Saving (Command : j q)

► To reduce the power consumption of the TV. You can also adjust Energy Saving in PICTURE menu.

Transmission [j][q][ ][Set ID][ ][Data][Cr]

Data
00 : Off
01 : Minimum
02 : Medium
03 : Maximum
04 : Auto (For LCD TV / LED TV) / Intelligent sensor (For PDP TV)
05 : Screen off

* (Depending upon model)

Ack [q][ ][Set ID][ ][OK/NG][Data][x]

20. Tune Command (Command : m a)

* This command may work differently depending upon model and signal.
- For Europe, Mid-East, Colombia, Asia except South Korea and Japan Model

► Select channel to following physical number.

Transmission [m][a][ ][Set ID][ ][Data 00][ ]
[Data 01][ ][Data 02][Cr]

* Analog Antenna/Cable

[Data 00][Data 01] Channel Data
Data 00 : High byte channel data
Data 01 : Low byte channel data
- 00 00 ~ 00 C7 (Decimal : 0 ~ 199)

Data 02 : Input Source (Analog)
- 00 : Antenna TV (ATV)
- 80 : Cable TV (CATV)

* Digital Antenna/Cable/Satellite

[Data 00][Data 01] : Channel Data
Data 00 : High Channel data
Data 01 : Low Channel data
- 00 00 ~ 27 0F (Decimal: 0 ~ 9999)

Data 02 : Input Source (Digital)
- 10 : Antenna TV (DTV)
- 20 : Antenna Radio (Radio)
- 40 : Satellite TV (SDTV)
- 50 : Satellite Radio (S-Radio)
- 90 : Cable TV (CADTV)
- a0 : Cable Radio (CA-Radio)

* Tune Command Examples:
1. Tune to the Analog antenna (PAL) Channel 10.
Set ID = All = 00
Data 00 & 01 = Channel Data is 10 = 00 0a
Data 02 = Analog Antenna TV = 00
Result = **ma 00 00 0a 00**

2. Tune to the digital antenna (DVB-T) Channel 01.
   Set ID = All = 00
   Data 00 & 01 = Channel Data is 1 = 00 01
   Data 02 = Digital Antenna TV = 10
   Result = **ma 00 00 01 10**

3. Tune to the satellite (DVB-S) Channel 1000.
   Set ID = All = 00
   Data 00 & 01 = Channel Data is 1000 = 03 E8
   Data 02 = Digital Satellite TV = 40
   Result = **ma 00 03 E8 40**

   Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
   [Data 02][x][a][ ][Set ID][ ][NG][Data 00][x]

- For South Korea, North/Latin America except Colombia Model

▶ To tune channel to following physical/major/minor number.

   Transmission [m][a][ ][0][ ][Data00][ ][Data01]
   [ ][Data02][ ][Data03][ ][Data04][ ][Data05][Cr]

Digital channels have a Physical, Major, and Minor channel number. The Physical number is the actual digital channel number, the Major is the number that the channel should be mapped to, and the Minor is the sub-channel. Since the ATSC tuner automatically maps the channel from the Major / Minor number, the Physical number is not required when sending a command in Digital.

* Analog Antenna/Cable

Data 00 : Physical Channel Number
- Antenna (ATV) : 02~45 (Decimal: 2 ~ 69)
- Cable (CATV) : 01, 0E~7D (Decimal : 1, 14~125)

[Data 01 ~ 04] : Major/Minor Channel Number
Data 01 & 02 : xx (Don't care)
Data 03 & 04 : xx (Don't care)
Data 05 : Input Source (Analog)
- 00 : Antenna TV (ATV)
- 01 : Cable TV (CATV)

* Digital Antenna/Cable

Data 00 : xx (Don't care)

[Data 01][Data 02]: Major Channel Number
Data 01 : High byte Channel Data
Data 02 : Low byte Channel Data
- 00 01 ~ 27 0F (Decimal: 1 ~ 9999)

[Data 03][Data 04]: Minor Channel Number
Data 03 : High byte Channel Data
Data 04 : Low byte Channel Data
Data 05 : Input Source (Digital)
- 02 : Antenna TV (DTV) – Use Physical Channel Number
- 06 : Cable TV (CADTV) – Use Physical Channel Number
- 22 : Antenna TV (DTV) – Don't Use Physical Channel Number
- 26 : Cable TV (CADTV) - Don't Use Physical Channel Number
- 46 : Cable TV (CADTV) – Use Major Channel Number Only (One Part Channel)

Two bytes are available for each major and minor channel data, but usually the low byte is used alone (high byte is 0).

* Tune Command Examples:

1. Tune to the Analog cable (NTSC) channel 35.
   Set ID = All = 00
   Data 00 = Channel Data is 35 = 23
   Data 01 & 02 = No Major = 00 00
   Data 03 & 04 = No Minor = 00 00
   Data 05 = Analog Cable TV = 01
   Total = **ma 00 23 00 00 00 00 01**

2. Tune to the digital antenna (ATSC) channel 30-3.
   Set ID = All = 00
   Data 00 = Don't know Physical = 00
   Data 01 & 02 = Major is 30 = 00 1E
   Data 03 & 04 = Minor is 3 = 00 03
   Data 05 = Digital Antenna TV = 22
   Total = **ma 00 00 00 1E 00 03 22**

   Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
   [Data 02][Data 03][Data 04][Data 05]
   [x][a][ ][Set ID][ ][NG][Data 00][x]

- For Japan Model

▶ To tune channel to following physical/major/minor number.

   Transmission [m][a][ ][0][ ][Data00][ ][Data01]
   [ ][Data02][ ][Data03][ ][Data04][ ][Data05][Cr]

* Digital Antenna / Satellite

Data 00 : xx (Don't care)

[Data 01][Data 02] : Major Channel Number
Data 01 : High byte Channel Data
Data 02 : Low byte Channel Data
- 00 01 ~ 27 0F (Decimal : 1 ~ 9999)

[Data 03][Data 04] : Minor/Branch Channel Number (Don't care in Satellite)
Data 03 : High byte Channel Data
Data 04 : Low byte Channel Data

Data 05 : Input Source (Digital/Satellite for Japan)
- 02 : Antenna TV (DTV)
- 07 : BS (Broadcasting Satellite)
- 08 : CS1 (Communication Satellite 1)
- 09 : CS2 (Communication Satellite 2)

* Tune Command Examples:

1 Tune to the digital antenna (ISDB-T) channel 17-1.
Set ID = All = 00
Data 00 = Don't know Physical = 00
Data 01 & 02 = Major is 17 = 00 11
Data 03 & 04 = Minor/Branch is 1 = 00 01
Data 05 = Digital Antenna TV = 02
Total = **ma 00 00 00 11 00 01 02**

2. Tune to the BS (ISDB-BS) channel 30.
Set ID = All = 00
Data 00 = Don't know Physical = 00
Data 01 & 02 = Major is 30 = 00 1E
Data 03 & 04 = Don't Care = 00 00
Data 05 = Digital BS TV = 07
Total = **ma 00 00 00 1E 00 00 07**

* This feature is varied based on the model.

Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
[Data 02][Data 03][Data 04][Data 05]
[x][a][ ][Set ID][ ][NG][Data 00][x]

21. Channel(Programme) Add/Del(Skip) (Command: m b)

► To skip current channel(programme) for next time.

Transmission [m][b][ ][Set ID][ ][Data][Cr]

Data 00 : Del(ATSC,ISDB)/Skip(DVB) 01 : Add

Ack [b][ ][Set ID][ ][OK/NG][Data][x]

* Set the saved channel status to del(ATSC, ISDB)/ skip(DVB) or add.

22. Key (Command : m c)

► To send IR remote key code.

Transmission [m][c][ ][Set ID][ ][Data][Cr]

Data Key code - page 18.

Ack [c][ ][Set ID][ ][OK/NG][Data][x]

23. Control Backlight (Command : m g)

• For LCD TV / LED TV

► To control the backlight.

Transmission [m][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

• For Plasma TV

► To control the panel light.

Transmission [m][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

24. Input select (Command : x b)
(Main Picture Input)

► To select input source for main picture.

Transmission [x][b][ ][Set ID][ ][Data][Cr]

Data

00 : DTV	01 : CADTV
02 : Satellite DTV ISDB-BS (Japan)	10 : ATV
03 : ISDB-CS1 (Japan)	
04 : ISDB-CS2 (Japan)	
11 : CATV	
20 : AV or AV1	21 : AV2
40 : Component1	41 : Component2
60 : RGB	
90 : HDMI1	91 : HDMI2
92 : HDMI3	93 : HDMI4

Ack [b][ ][Set ID][ ][OK/NG][Data][x]

* This function depends on model and signal.

25. 3D(Command: x t) (only 3D models)
(Depending upon model)

► To change 3D mode for TV.

Transmission [x][t][ ][Set ID][ ][Data 00][ ][Data 01]
[ ][Data 02][ ][Data 03][Cr]

* (Depending upon model)

Data Structure

[Data 00] 00 : 3D On
01 : 3D Off
02 : 3D to 2D
03 : 2D to 3D

[Data 01] 00 : Top and Bottom
01 : Side by Side
02 : Check Board
03 : Frame Sequential
04 : Column interleaving
05 : Row interleaving
[Data 02] 00 : Right to Left
01 : Left to Right
[Data 03] 3D Effect(3D Depth) : Min : 00 - Max : 14
(*transmit by Hexadecimal code)

* If [Data 00] is 00 (3D On), [Data 03] has no meaning.
* If [Data 00] is 01 (3D off) or 02 (3D to 2D), [Data 01], [Data 02] and [Data 03] have no meaning.
* If [Data 00] is 03 (2D to 3D), [Data 01] and [Data 02] have no meaning.
* If [Data 00] is 00 (3D On) or 03 (2D to 3D), [Data 03] works when 3D Mode (Genre) is manual only.
* All 3D pattern options ([Data 01]) may not be available according to broadcasting/video signal.

[Data 00]	[Data 01]	[Data 02]	[Data 03]
00	O	O	O
01	X	X	X
02	X	X	X
03	X	O	O

X : don't care

Ack [t][ ][Set ID][ ][OK][Data00][Data01][Data02][Data03][x]
[t][ ][Set ID][ ][NG][Data00][x]

26. Extended 3D(Command : x v) (only 3D models) (Depending upon model)

► To change 3D option for TV.

Transmission [x][v][ ][Set ID][ ][Data 00][ ][Data 01][Cr]

[Data 00] 3D option
00 : 3D Picture Correction
01 : 3D Depth (3D Mode is Manual Only)
02 : 3D Viewpoint
06 : 3D Color Correction
07 : 3D Sound Zooming
08 : Normal Image View
09 : 3D Mode (Genre)

[Data 01] It has own range for each 3D option determined by [Data 00].
1) When [Data 00] is 00
00 : Right to Left
01 : Left to Right

2) When [Data 00] is 01, 02
Data Min: 0 - Max: 14 (*transmit by Hexadecimal code)
Data value range(0 - 20) converts Viewpoint range (-10 - +10) automatically (Depending upon model)
* This option works when 3D Mode (Genre) is manual only.

3) When [Data 00] is 06, 07
00 : Off
01 : On

4) When [Data 00] is 08
00 : Revert to 3D video from 3D-to-2D converted 2D video
01 : Change 3D video to 2D video, except 2D-to-3D video
* If conversion condition doesn't meet, command is treated as NG.

5) When [Data 00] is 09

00 : Standard
01 : Sport
02 : Cinema
03 : Extreme
04 : Manual
05 : Auto

Ack [v][ ][Set ID][ ][OK][Data00][Data01][x]
[v][ ][Set ID][ ][NG][Data00][x]

27. Auto Configure (Command : j u) (Depending upon model)

► To adjust picture position and minimize image shaking automatically. It works only in RGB (PC) mode.

Transmission [j][u][ ][Set ID][ ][Data][Cr]

Data 01 : To set Auto Configure

Ack [u][ ][Set ID][ ][OK/NG][Data][x]



Declaration of Conformity
Trade Name: LG
Model: 43UX340C-UA, 43UX340C-UB, 43UX340C-UF,
49UX340C-UA, 49UX340C-UB, 49UX340C-UF
55UX340C-UA, 55UX340C-UB, 55UX340C-UF,
65UX340C-UA, 65UX340C-UB, 65UX340C-UF,
79UX340C-UA, 79UX340C-UF
Responsible Party: LG Electronics Inc.
Address: 1000 Sylvan Ave. Englewood Cliffs NJ 07632
U.S.A
TEL: 201-266-2534

The model and serial numbers of the TV are located on the back and on one side of the TV. Record them below should you ever need service.
MODEL _____
SERIAL _____

LG Customer Information Center

For inquires or comments, visit www.lg.com or call;

1-855-286-2456 CANADA
1-888-865-3026 USA, Commercial User

LG
Life's Good

OWNER'S MANUAL

EXTERNAL CONTROL DEVICE SETUP

Please read this manual carefully before operating the set and retain it for future reference.

www.lg.com

ENGLISH

KEY CODES

- This feature is not available for all models.

Code (Hexa)	Function	Note	Code (Hexa)	Function	Note
00	CH +, PR +	R/C Button	53	List	R/C Button
01	CH -, PR -	R/C Button	5B	Exit	R/C Button
02	Volume +	R/C Button	60	PIP(AD)	R/C Button
03	Volume -	R/C Button	61	Blue	R/C Button
06	> (Arrow Key / Right Key)	R/C Button	63	Yellow	R/C Button
07	< (Arrow Key / Left Key)	R/C Button	71	Green	R/C Button
08	Power	R/C Button	72	Red	R/C Button
09	Mute	R/C Button	79	Ratio / Aspect Ratio	R/C Button
0B	Input	R/C Button	91	AD (Audio Description)	R/C Button
0E	SLEEP	R/C Button	7A	User Guide	R/C Button
0F	TV, TV/RAD	R/C Button	7C	Smart / Home	R/C Button
10 - 19	* Number Key 0 - 9	R/C Button	7E	SIMPLINK	R/C Button
1A	Q.View / Flashback	R/C Button	8E	►► (Forward)	R/C Button
1E	FAV (Favorite Channel)	R/C Button	8F	◄◄ (Rewind)	R/C Button
20	Text (Teletext)	R/C Button	AA	Info	R/C Button
21	T. Opt (Teletext Option)	R/C Button	AB	Program Guide	R/C Button
28	Return (BACK)	R/C Button	B0	► (Play)	R/C Button
30	AV (Audio / Video) Mode	R/C Button	B1	■ (Stop / File List)	R/C Button
39	Caption/Subtitle	R/C Button	BA	II (Freeze / Slow Play / Pause)	R/C Button
40	Λ (Arrow Key / Cursor Up)	R/C Button	BB	Soccer	R/C Button
41	V (Arrow Key / Cursor Down)	R/C Button	BD	● (REC)	R/C Button
42	My Apps	R/C Button	DC	3D	R/C Button
43	Menu / Settings	R/C Button	99	AutoConfig	R/C Button
44	OK / Enter	R/C Button	9F	App / *	R/C Button
45	Q.Menu	R/C Button			
4C	List, - (ATSC Only)	R/C Button			

* Key code 4C (0x4C) is available on ATSC/ISDB models which use major/minor channel.
(For South Korea, Japan, North America, Latin America except Colombia models)

EXTERNAL CONTROL DEVICE SETUP

- Image shown may differ from your TV.

Connect the USB to Serial converter/RS-232C input jack to an external control device (such as a computer or an A/V control system) to control the product's functions externally.

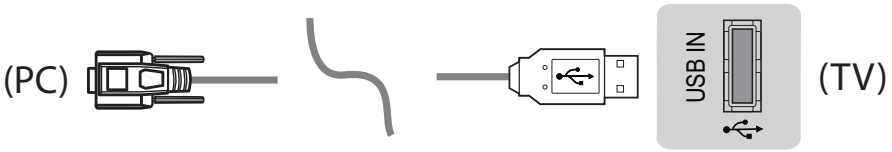
Note: The type of control port on the TV can be different between model series.

* Please be advised that not all models support this type of connectivity.

* Cable is not provided.

USB to Serial converter with USB Cable

USB Type

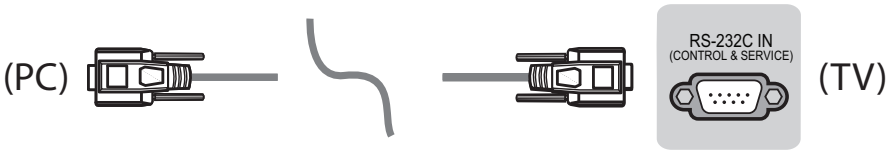


- LGTV supports PL2303 chip-based (Vendor ID : 0x0557, Product ID : 0x2008) USB to serial converter which is not made nor provided by LG.
- It can be purchased from computer stores that carry accessories for IT support professionals.

RS-232C With RS232C Cable

DE9 (D-Sub 9pin) Type

- You need to purchase the RS-232C (DE9, D-Sub 9pin female-to-female type) to RS-232C cable required for the connection between the PC and the TV, which is specified in the manual.



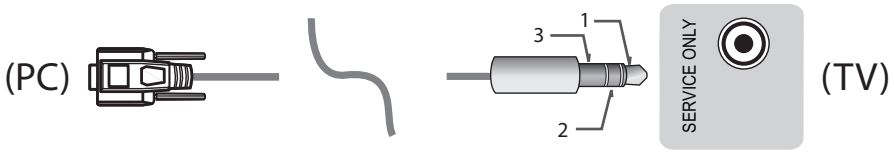
The connection interface may differ from your TV.

Phone jack Type

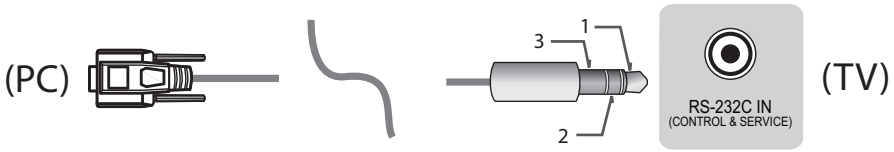
- You need to purchase the phone-jack to RS-232 cable required for the connection between the PC and the TV, which is specified in the manual.

* For other models, connect to the USB port.

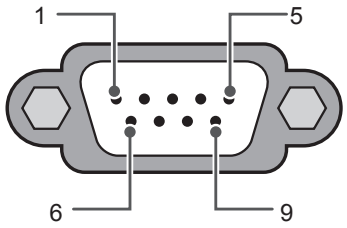
* The connection interface may differ from your TV.



- or



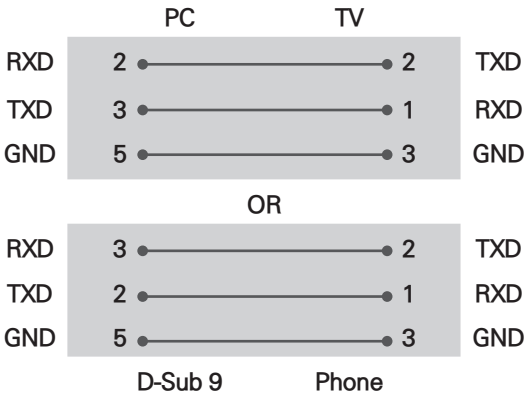
Customer Computer



RS-232C
(Serial port)

RS-232C configurations

3-Wire Configurations(Not standard)



Set ID

For Set ID number, see "**Real Data Mapping**" on p.6

1. Press **SETTINGS** to access the main menus.
2. Press the Navigation buttons to scroll to **(*General → About this TV or OPTION)** and press **OK**.
3. Press the Navigation buttons to scroll to **SET ID** and press **OK**.
4. Scroll left or right to select a set ID number and select **CLOSE**. The adjustment range is 1-99.
5. When you are finished, press **EXIT**.
   * (Depending on model)

Communication Parameters

- Baud rate : 9600 bps (UART)
- Data length : 8 bits
- Parity : None
- Stop bit : 1 bit
- Communication code : ASCII code
- Use a crossed (reverse) cable.

Command reference list

(Depending on model)

	COMMAND1	COMMAND2	DATA (Hexadecimal)		COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power*	k	a	00 to 01	15. Balance	k	t	00 to 64
02. Aspect Ratio	k	c	(p.7)	16. Color (Colour) Temperature	x	u	00 to 64
03. Screen Mute	k	d	(p.7)	17. ISM Method (Only Plasma TV)	j	p	(p.8)
04. Volume Mute	k	e	00 to 01	18. Equalizer	j	v	(p.8)
05. Volume Control	k	f	00 to 64	19. Energy Saving	j	q	00 to 05
06. Contrast	k	g	00 to 64	20. Tune Command	m	a	(p.9)
07. Brightness	k	h	00 to 64	21. Channel (Programme) Add/Del(Skip)	m	b	00 to 01
08. Color/ Colour	k	i	00 to 64	22. Key	m	c	Key Codes
09. Tint	k	j	00 to 64	23. Control Backlight, Control Panel Light	m	g	00 to 64
10. Sharpness	k	k	00 to 32	24. Input select (Main)	x	b	(p.11)
11. OSD Select	k	l	00 to 01	25. 3D (Only 3D models)	x	t	(p.11)
12. Remote Control Lock Mode	k	m	00 to 01	26. Extended 3D (Only 3D models)	x	v	(p.11)
13. Treble	k	r	00 to 64	27. Auto Configure	j	u	(p.12)
14. Bass	k	s	00 to 64				

* Note: During playing or recording media, all commands except Power (ka) and Key (mc) are not executed and treated as NG.
With RS232C cable, TV can communicate "ka command" in power-on or power-off status. but with USB-to-Serial converter cable, the command works only if TV is on.

Transmission / Receiving Protocol

Transmission

[Command1][Command2][ ][Set ID][ ][Data][Cr]

[Command 1] : First command to control the TV. (j, k, m or x)
[Command 2] : Second command to control the TV.
[Set ID] : You can adjust the [Set ID] to choose desired monitor ID number in option menu. Adjustment range in TV is 1 to 99. If [Set ID] value is selected to '0', every connected set can be controlled.
* [Set ID] is indicated as decimal (1 to 99) on menu and as Hexadecimal (0x00 to 0x63) on transmission/receiving protocol.
[DATA] : To transmit command data (hexadecimal). Transmit 'FF' data to read status of command.
[Cr] : Carriage Return - ASCII code '0x0D'
[ ] : Space – ASCII code '0x20'

OK Acknowledgement

[Command2][ ][Set ID][ ][OK][Data][x]

* The set transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.

Error Acknowledgement

[Command2][ ][Set ID][ ][NG][Data][x]

* The set transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable functions or communication errors.

Data 00: Illegal Code

Real data mapping (Hexadecimal ь Decimal)

* When you enter the [data] in hexadecimal, refer to following conversion table.
* Channel Tune (ma) Command uses two-byte hexadecimal value([data]) to select channel number.

00 : Step 0	32 : Step 50 (Set ID 50)	FE : Step 254
01 : Step 1 (Set ID 1)	33 : Step 51 (Set ID 51)	FF : Step 255
...	...	...
0A : Step 10 (Set ID 10)	63 : Step 99 (Set ID 99)	01 00 : Step 256
...	...	...
0F : Step 15 (Set ID 15)	C7 : Step 199	27 0E : Step 9998
10 : Step 16 (Set ID 16)	C8 : Step 200	27 0F : Step 9999
...	...	...

* Commands may work differently depending on model and signal.

01. Power (Command: k a)

► To control Power *On or Off of the set.

Transmission[k][a][ ][Set ID][ ][Data][Cr]

Data 00 : Power Off 01 : *Power On

Ack [a][ ][Set ID][ ][OK/NG][Data][x]

► To Show TV is Power On or *Off

Transmission [k][a][ ][Set ID][ ][FF][Cr]

Ack [a][ ][Set ID][ ][OK][Data][x]

* Similarly, if other functions transmit 'FF' data based on this format, Acknowledgement feedback presents status about each function.

02. Aspect Ratio (Command: k c)
(Main Picture Size)

► To adjust the screen format. (Main picture format)
You can also adjust the screen format using the Aspect Ratio in the Q.MENU. or PICTURE menu.

Transmission [k][c][ ][Set ID][ ][Data][Cr]

Data 01 : Normal screen (4:3)
02 : Wide screen (16:9)
04 : Zoom
05 : Zoom 2 (Latin America except Colombia Only)
06 : Set by Program/ Original
07 : 14:9 (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
09 : * Just Scan
0B : Full Wide (Europe, Colombia, Mid-East, Asia except South Korea and Japan)
10 to 1F : Cinema Zoom 1 to 16
0c : 21:9 (Depending on model)

Ack [c][ ][Set ID][ ][OK/NG][Data][x]

* Using the PC input, you select either 16:9 or 4:3 screen aspect ratio.
* In DTV/HDMI/Component mode (high-definition), Just Scan is available.
* Full wide mode may work differently based on model and is supported for DTV fully, and ATV, AV partially.

03. Screen Mute (Command: k d)

► To select screen mute on/off.

Transmission [k][d][ ][Set ID][ ][Data][Cr]

Data 00 : Screen mute off (Picture on) Video mute off
01 : Screen mute on (Picture off)
10 : Video mute on

Ack [d][ ][Set ID][ ][OK/NG][Data][x]

* In case of video mute on only, TV will display On Screen Display(OSD). But, in case of Screen mute on, TV will not display OSD.

04. Volume Mute (Command: k e)

► To control volume mute on/off.
You can also adjust mute using the MUTE button on remote control.

Transmission [k][e][ ][Set ID][ ][Data][Cr]

Data 00 : Volume mute on (Volume off)
01 : Volume mute off (Volume on)

Ack [e][ ][Set ID][ ][OK/NG][Data][x]

05. Volume Control (Command: k f)

► To adjust volume.
You can also adjust volume with the volume buttons on remote control.

Transmission [k][f][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [f][ ][Set ID][ ][OK/NG][Data][x]

06. Contrast (Command: k g)

► To adjust screen contrast.
You can also adjust contrast in the PICTURE menu.

Transmission [k][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

07. Brightness (Command: k h)

► To adjust screen brightness.
You can also adjust brightness in the PICTURE menu.

Transmission [k][h][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [h][ ][Set ID][ ][OK/NG][Data][x]

08. Color/Colour (Command: k i)

► To adjust the screen Color(Colour).
You can also adjust colour in the PICTURE menu.

Transmission [k][i][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [i][ ][Set ID][ ][OK/NG][Data][x]

09. Tint (Command: k j)

► To adjust the screen tint.
You can also adjust tint in the PICTURE menu.

Transmission [k][j][ ][Set ID][ ][Data][Cr]

Data Red : 00 to Green : 64

Ack [j][ ][Set ID][ ][OK/NG][Data][x]

10. Sharpness (Command: k k)

► To adjust the screen sharpness.
You can also adjust sharpness in the PICTURE menu.

Transmission [k][k][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 32

Ack [k][ ][Set ID][ ][OK/NG][Data][x]

11. OSD Select (Command: k l)

► To select OSD (On Screen Display) on/off when controlling remotely.

Transmission [k][l][ ][Set ID][ ][Data][Cr]

Data 00 : OSD off 01 : OSD on

Ack [l][ ][Set ID][ ][OK/NG][Data][x]

12. Remote control lock mode (Command: k m)

► To lock the front panel controls on the monitor and remote control.

Transmission [k][m][ ][Set ID][ ][Data][Cr]

Data 00 : Lock off 01 : Lock on

Ack [m][ ][Set ID][ ][OK/NG][Data][x]

* If you are not using the remote control, use this mode.
When main power is off & on (plug-off and plug-in, after 20 - 30 seconds), external control lock is released.
* In the standby mode (DC off by off timer or 'ka', 'mc' command), and if key lock is on, TV will not turn on by power on key of IR & Local Key.

13. Treble (Command: k r)

► To adjust treble.
You can also adjust in the AUDIO menu.

Transmission [k][r][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [r][ ][Set ID][ ][OK/NG][Data][x]

* (Depending on model)

14. Bass (Command: k s)

► To adjust Bass.
You can also adjust in the AUDIO menu.

Transmission [k][s][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [s][ ][Set ID][ ][OK/NG][Data][x]

* (Depending on model)

15. Balance (Command: k t)

► To adjust balance.
You can also adjust balance in the AUDIO menu.

Transmission [k][t][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [t][ ][Set ID][ ][OK/NG][Data][x]

16. Color(Colour) Temperature (Command: x u)

► To adjust colour temperature. You can also adjust Color(Colour) Temperature in the PICTURE menu.

Transmission [x][u][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [u][ ][Set ID][ ][OK/NG][Data][x]

17. ISM Method (Command: j p) (Only Plasma TV)

► To control the ISM method. You can also adjust ISM Method in OPTION menu.

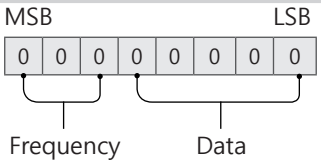
Transmission [j][p][ ][Set ID][ ][Data][Cr]

Data Min : 02: Orbiter
08: Normal
20: Color(Colour) Wash

Ack [p][ ][Set ID][ ][OK/NG][Data][x]

18. Equalizer (Command : j v)

► Adjust EQ of the set.
Transmission [j][v][ ][Set ID][ ][Data][Cr]



7	6	5	Frequency	4	3	2	1	0	Step
0	0	0	1st Band	0	0	0	0	0	0(decimal)
0	0	1	2nd Band	0	0	0	0	1	1(decimal)
0	1	0	3rd Band	...	...	...	...	...	...
0	1	1	4th Band	0	0	0	1	1	19(decimal)

1	0	0	5th Band	0	0	1	0	1	20(decimal)

Acknowledgement [v][ ][Set ID][ ][OK/NG][Data][x]

* It depends on model, and can adjust when sound mode is EQ adjustable value.

19. Energy Saving (Command: j q)

► To reduce the power consumption of the TV. You can also adjust Energy Saving in PICTURE menu.

Transmission [j][q][ ][Set ID][ ][Data][Cr]

Data
00 : Off
01 : Minimum
02 : Medium
03 : Maximum
04 : Auto (For LCD TV / LED TV) / Intelligent sensor (For PDP TV)
05 : Screen off

* (Depending on model)

Ack [q][ ][Set ID][ ][OK/NG][Data][x]

20. Tune Command (Command: m a)

* This command may work differently depending on model and signal.

• For Europe, Mid-East, Colombia, Asia except South Korea and Japan Model

► Select channel to following physical number.

Transmission [m][a][ ][Set ID][ ][Data 00][ ]
[Data 01][ ][Data 02][Cr]

* Analog Antenna/Cable

[Data 00][Data 01] Channel Data
Data 00 : High byte channel data
Data 01 : Low byte channel data
- 00 00 ~ 00 C7 (Decimal : 0 ~ 199)

Data 02 : Input Source (Analog)
- 00 : Antenna TV (ATV)
- 80 : Cable TV (CATV)

* Digital Antenna/Cable/Satellite

[Data 00][Data 01]: Channel Data
Data 00 : High Channel data
Data 01 : Low Channel data
- 00 00 ~ 27 0F (Decimal: 0 ~ 9999)

Data 02 : Input Source (Digital)
- 10 : Antenna TV (DTV)
- 20 : Antenna Radio (Radio)
- 40 : Satellite TV (SDTV)
- 50 : Satellite Radio (S-Radio)
- 90 : Cable TV (CADTV)
- a0 : Cable Radio (CA-Radio)

* Tune Command Examples:

1. Tune to the Analog antenna (PAL) Channel 10.
Set ID = All = 00
Data 00 & 01 = Channel Data is 10 = 00 0a
Data 02 = Analog Antenna TV = 00
Result = **ma 00 00 0a 00**

2. Tune to the digital antenna (DVB-T) Channel 01.
Set ID = All = 00
Data 00 & 01 = Channel Data is 1 = 00 01
Data 02 = Digital Antenna TV = 10
Result = **ma 00 00 01 10**

3. Tune to the satellite (DVB-S) Channel 1000.
Set ID = All = 00
Data 00 & 01 = Channel Data is 1000 = 03 E8
Data 02 = Digital Satellite TV = 40
Result = **ma 00 03 E8 40**

Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
[Data 02][x][a][ ][Set ID][ ][NG][Data 00][x]

• For South Korea, North/Latin America except Colombia Model

► To tune channel to following physical/major/minor number.

Transmission [m][a][ ][0][ ][Data00][ ][Data01]
[ ][Data02][ ][Data03][ ][Data04][ ][Data05][Cr]

Digital channels have a Physical, Major, and Minor channel number. The Physical number is the actual digital channel number, the Major is the number that the channel should be mapped to, and the Minor is the sub-channel. Since the ATSC tuner automatically maps the channel from the Major / Minor number, the Physical number is not required when sending a command in Digital.

* Analog Antenna/Cable

Data 00 : Physical Channel Number
- Antenna (ATV) : 02~45 (Decimal: 2 ~ 69)
- Cable (CATV) : 01, 0E~7D (Decimal : 1, 14~125)

[Data 01 ~ 04]: Major/Minor Channel Number
Data 01 & 02: xx (Don't care)
Data 03 & 04: xx (Don't care)
Data 05: Input Source (Analog)
- 00 : Antenna TV (ATV)
- 01 : Cable TV (CATV)

* Digital Antenna/Cable

Data 00 : xx (Don't care)

[Data 01][Data 02]: Major Channel Number
Data 01 : High byte Channel Data
Data 02 : Low byte Channel Data
- 00 01 ~ 27 0F (Decimal: 1 ~ 9999)

[Data 03][Data 04]: Minor Channel Number
Data 03 : High byte Channel Data
Data 04 : Low byte Channel Data

Data 05 : Input Source (Digital)
- 02 : Antenna TV (DTV) – Use Physical Channel Number
- 06 : Cable TV (CADTV) – Use Physical Channel

Number
- 22 : Antenna TV (DTV) – Don't Use Physical Channel Number
- 26 : Cable TV (CADTV) - Don't Use Physical Channel Number
- 46 : Cable TV (CADTV) – Use Major Channel Number Only (One Part Channel)

Two bytes are available for each major and minor channel data, but usually the low byte is used alone (high byte is 0).

* Tune Command Examples:

1. Tune to the Analog cable (NTSC) channel 35.
   Set ID = All = 00
   Data 00 = Channel Data is 35 = 23
   Data 01 & 02 = No Major = 00 00
   Data 03 & 04 = No Minor = 00 00
   Data 05 = Analog Cable TV = 01
   Total = **ma 00 23 00 00 00 00 01**
2. Tune to the digital antenna (ATSC) channel 30-3.
   Set ID = All = 00
   Data 00 = Don't know Physical = 00
   Data 01 & 02 = Major is 30 = 00 1E
   Data 03 & 04 = Minor is 3 = 00 03
   Data 05 = Digital Antenna TV = 22
   Total = **ma 00 00 00 1E 00 03 22**

Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
[Data 02][Data 03][Data 04][Data 05]
[x][a][ ][Set ID][ ][NG][Data 00][x]

• For Japan Model

► To tune channel to following physical/major/minor number.

Transmission [m][a][ ][0][ ][Data00][ ][Data01]
[ ][Data02][ ][Data03][ ][Data04][ ][Data05][Cr]

* Digital Antenna/Satellite

Data 00: xx (Don't care)

[Data 01][Data 02]: Major Channel Number
Data 01: High byte Channel Data
Data 02: Low byte Channel Data
- 00 01 ~ 27 0F (Decimal: 1 ~ 9999)

[Data 03][Data 04]: Minor/Branch Channel Number (Don't care in Satellite)
Data 03: High byte Channel Data
Data 04: Low byte Channel Data

Data 05 : Input Source (Digital/Satellite for Japan)
- 02 : Antenna TV (DTV)
- 07 : BS (Broadcasting Satellite)
- 08 : CS1 (Communication Satellite 1)
- 09 : CS2 (Communication Satellite 2)

* Tune Command Examples:

1 Tune to the digital antenna (ISDB-T) channel 17-1.
   Set ID = All = 00
   Data 00 = Don't know Physical = 00
   Data 01 & 02 = Major is 17 = 00 11
   Data 03 & 04 = Minor/Branch is 1 = 00 01
   Data 05 = Digital Antenna TV = 02
   Total = **ma 00 00 00 11 00 01 02**

2. Tune to the BS (ISDB-BS) channel 30.
   Set ID = All = 00
   Data 00 = Don't know Physical = 00
   Data 01 & 02 = Major is 30 = 00 1E
   Data 03 & 04 = Don't Care = 00 00
   Data 05 = Digital BS TV = 07
   Total = **ma 00 00 00 1E 00 00 07**

* This feature is varied based on the model.

Ack [a][ ][Set ID][ ][OK][Data 00][Data 01]
[Data 02][Data 03][Data 04][Data 05]
[x][a][ ][Set ID][ ][NG][Data 00][x]

21. Channel(Programme) Add/Del(Skip) (Command: m b)

► To skip current channel(programme) for next time.

Transmission [m][b][ ][Set ID][ ][Data][Cr]

Data 00 : Del(ATSC,ISDB)/Skip(DVB) 01 : Add

Ack [b][ ][Set ID][ ][OK/NG][Data][x]

* Set the saved channel status to del(ATSC, ISDB)/ skip(DVB) or add.

22. Key (Command: m c)

► To send IR remote key code.

Transmission [m][c][ ][Set ID][ ][Data][Cr]

Data Key code - p.2.

Ack [c][ ][Set ID][ ][OK/NG][Data][x]

23. Control Backlight (Command: m g)

• For LCD TV / LED TV

► To control the backlight.

Transmission [m][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

Control Panel Light (Command: m g)

• For Plasma TV

► To control the panel light.

Transmission [m][g][ ][Set ID][ ][Data][Cr]

Data Min : 00 to Max : 64

Ack [g][ ][Set ID][ ][OK/NG][Data][x]

24. Input select (Command: x b)
(Main Picture Input)

► To select input source for main picture.

Transmission [x][b][ ][Set ID][ ][Data][Cr]

Data
00 : DTV 01 : CADTV
02 : Satellite DTV 10 : ATV
ISDB-BS (Japan)
03 : ISDB-CS1 (Japan)
04 : ISDB-CS2 (Japan)
11 : CATV
20 : AV or AV1 21 : AV2
40 : Component1 41 : Component2
60 : RGB
90 : HDMI1 91 : HDMI2
92 : HDMI3 93 : HDMI4

Ack [b][ ][Set ID][ ][OK/NG][Data][x]

* This function depends on model and signal.

25. 3D(Command: x t) (only 3D models)
(Depending on model)

► To change 3D mode for TV.

Transmission [x][t][ ][Set ID][ ][Data 00][ ][Data 01][ ][Data 02][ ][Data 03][Cr]

* (Depending on model)

Data Structure

[Data 00] 00 : 3D On
01 : 3D Off
02 : 3D to 2D
03 : 2D to 3D

[Data 01] 00 : Top and Bottom
01 : Side by Side
02 : Check Board
03 : Frame Sequential
04 : Column interleaving
05 : Row interleaving

[Data 02] 00 : Right to Left
01 : Left to Right

[Data 03] 3D Effect(3D Depth): Min : 00 - Max : 14
(*transmit by Hexadecimal code)

* [Data 02], [Data 03] functions depend on model and signal.
* If [Data 00] is 00 (3D On), [Data 03] has no meaning.
* If [Data 00] is 01 (3D off) or 02 (3D to 2D), [Data 01], [Data 02] and [Data 03] have no meaning.
* If [Data 00] is 03 (2D to 3D), [Data 01] and [Data 02] have no meaning.
* If [Data 00] is 00 (3D On) or 03 (2D to 3D), [Data 03] works when 3D Mode (Genre) is manual only.
* All 3D pattern options ([Data 01]) may not be available according to broadcasting/video signal.

[Data 00]	[Data 01]	[Data 02]	[Data 03]
00	O	O	O
01	X	X	X
02	X	X	X
03	X	O	O

X : don't care

Ack [t][ ][Set ID][ ][OK][Data00][Data01][Data02][Data03][x]

[t][ ][Set ID][ ][NG][Data00][x]

26. Extended 3D(Command: x v) (only 3D models)
(Depending on model)

► To change 3D option for TV.

Transmission [x][v][ ][Set ID][ ][Data 00][ ][Data 01][Cr]

[Data 00] 3D option
00 : 3D Picture Correction
01 : 3D Depth (3D Mode is Manual Only)
02 : 3D Viewpoint
06 : 3D Color Correction
07 : 3D Sound Zooming
08 : Normal Image View
09 : 3D Mode (Genre)

[Data 01] It has own range for each 3D option determined by [Data 00].

1) When [Data 00] is 00
00 : Right to Left
01 : Left to Right

2) When [Data 00] is 01, 02
Data Min: 0 - Max: 14 (*transmit by Hexadecimal code)
Data value range(0 - 20) converts Viewpoint range (-10 - +10) automatically (Depending on model)
* This option works when 3D Mode (Genre) is manual only.

3) When [Data 00] is 06, 07
00 : Off
01 : On

4) When [Data 00] is 08
00 : Revert to 3D video from 3D-to-2D converted 2D video
01 : Change 3D video to 2D video, except 2D-to-3D video
* If conversion condition doesn't meet, command is treated as NG.

5) When [Data 00] is 09
00 : Standard 01 : Sport
02 : Cinema 03 : Extreme
04 : Manual 05 : Auto

Ack [v][ ][Set ID][ ][OK][Data00][Data01][x]

[v][ ][Set ID][ ][NG][Data00][x]

27. Auto Configure (Command: j u)
(Depending on model)

► To adjust picture position and minimize image shaking automatically. It works only in RGB (PC) mode.

Transmission [j][u][ ][Set ID][ ][Data][Cr]

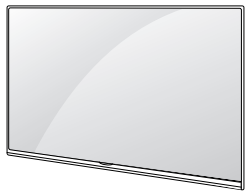
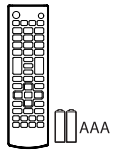
Data 01 : To set

Ack [u][ ][Set ID][ ][OK/NG][Data][x]

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ENGLISH Easy Setup Guide
Please read this manual carefully before operating your set and retain it for future reference.
ESPAÑOL Guía Rápida de Configuración
Lea atentamente este manual antes de poner en marcha el equipo y consérvelo para futuras consultas.
FRANÇAIS Guide de configuration rapide
Avant d'utiliser l'appareil, veuillez lire attentivement ce manuel et le conserver pour pouvoir vous y reporter ultérieurement.

LED TV
43UX340C
49UX340C
55UX340C
65UX340C
79UX340C

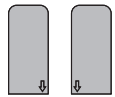



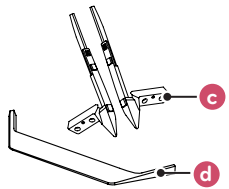


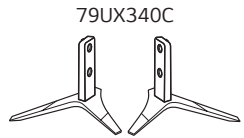


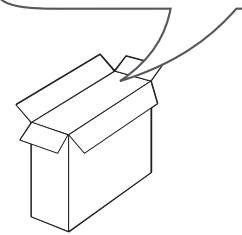

43/49/55/65UX340C
a X 4
(M4 x L20)


79UX340C
b X 4
(M4 x L16)


79UX340C







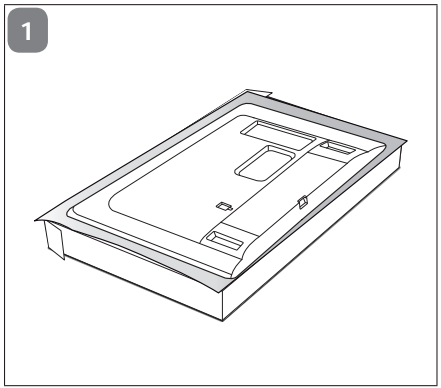
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ESPAÑOL Según el modelo
FRANÇAIS Selon le modèle

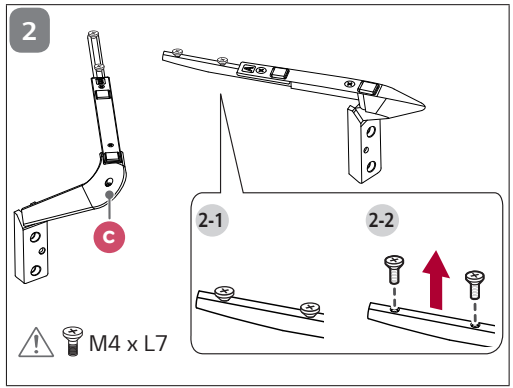
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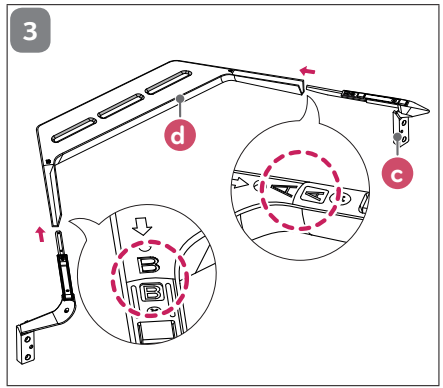
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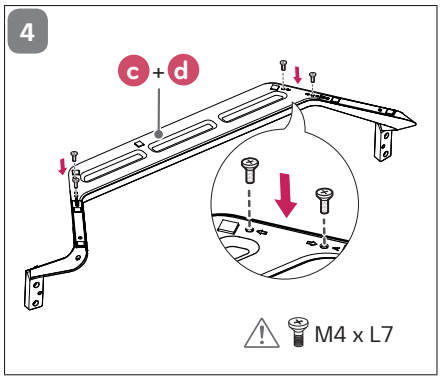
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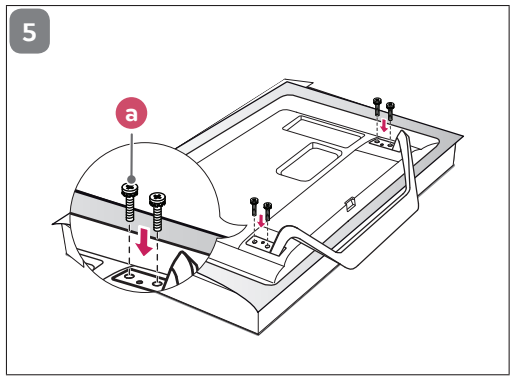
43/49/55/65UX340C

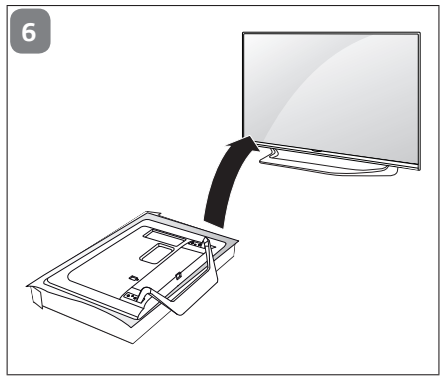




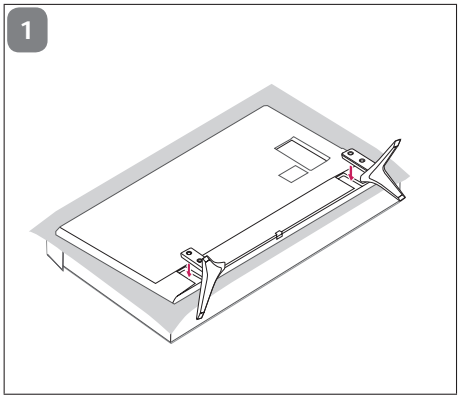


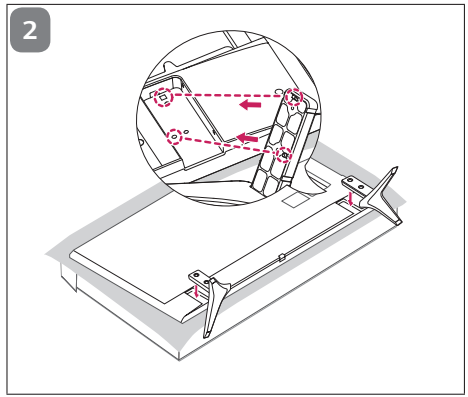


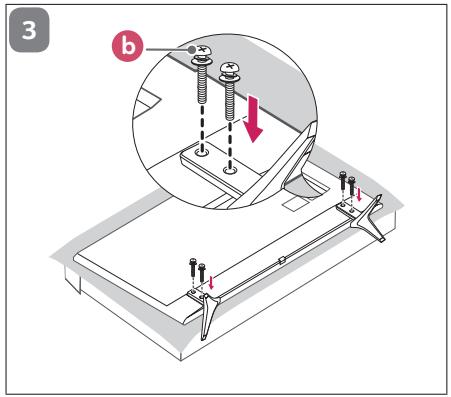


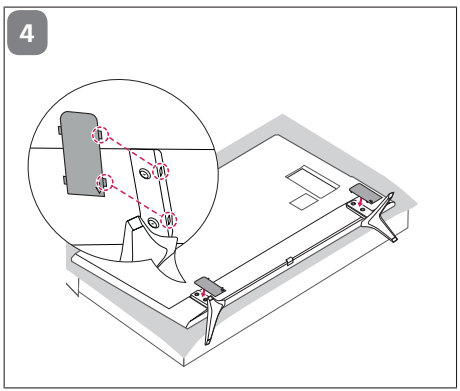


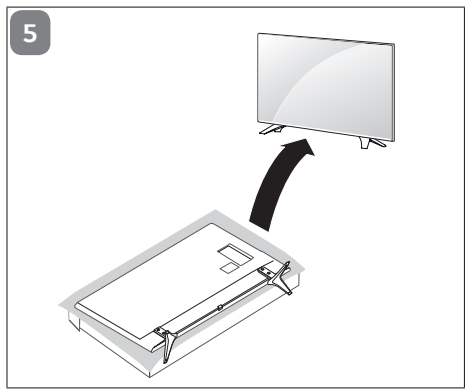
79UX340C









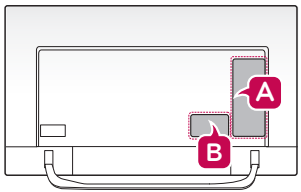


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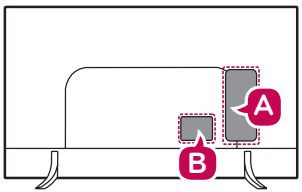
ENGLISH
FRANÇAIS
ESPAÑOL

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Cette illustration peut ne pas correspondre à votre téléviseur.
La imagen puede ser diferente a la de su televisor.

43/49/55/65UX340C

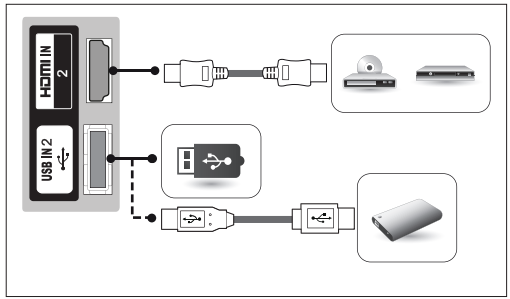


79UX340C

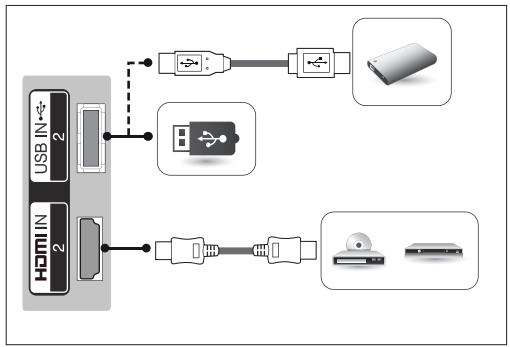


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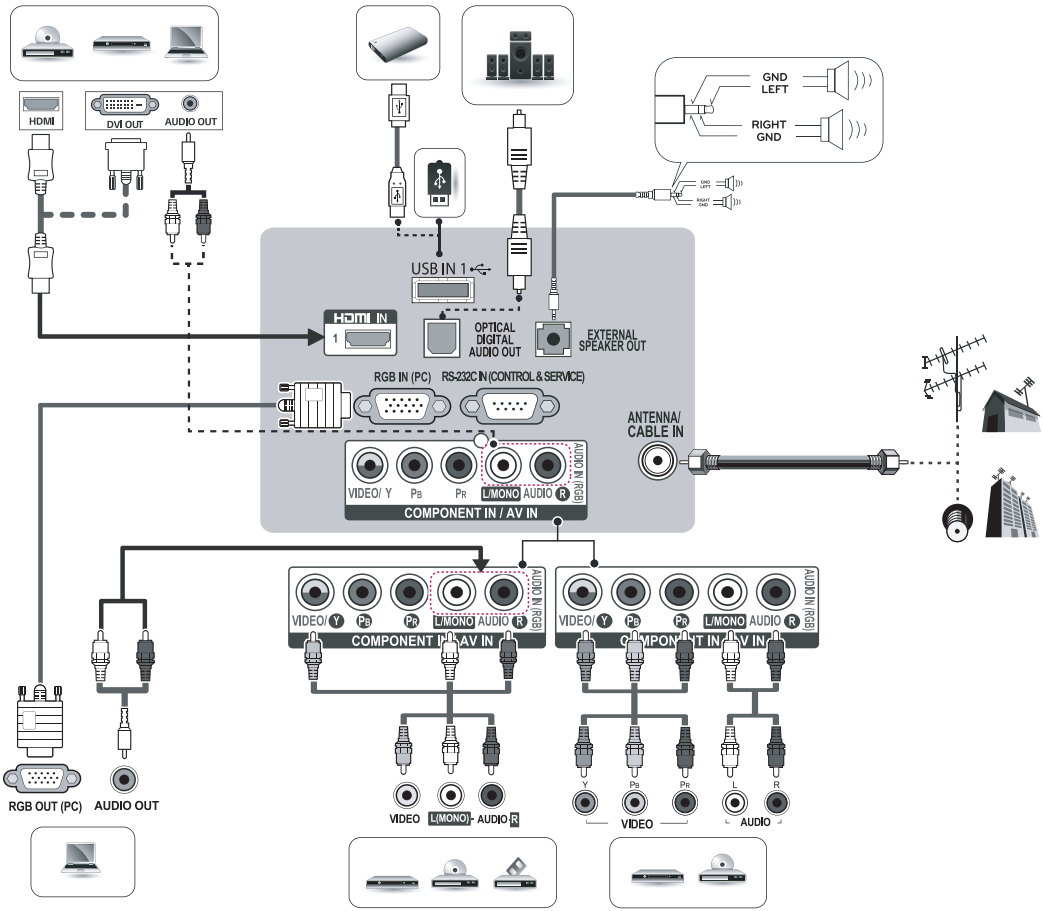
43/49/55/65UX340C



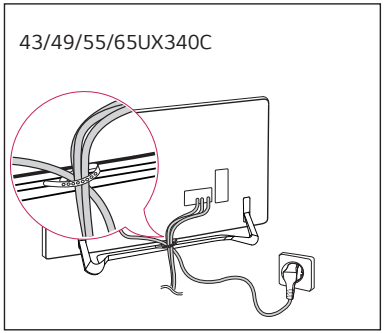
79UX340C

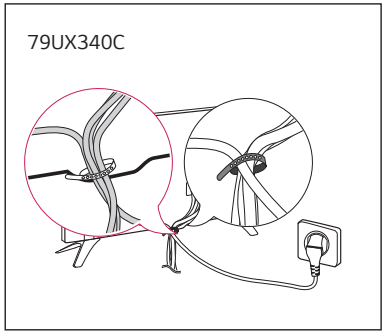


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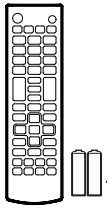

HDMI
DVI OUT
AUDIO OUT
GND
LEFT
RIGHT
GND
USB IN 1
HDMI IN
1
OPTICAL
DIGITAL
AUDIO OUT
EXTERNAL
SPEAKER OUT
RGB IN (PC)
RS-232C IN (CONTROL & SERVICE)
ANTENNA/
CABLE IN
VIDEO/ Y
PB
PR
L/MONO
AUDIO
R
AUDIO IN (RGB)
COMPONENT IN / AV IN
RGB OUT (PC)
AUDIO OUT
VIDEO
L(MONO)
AUDIO
R

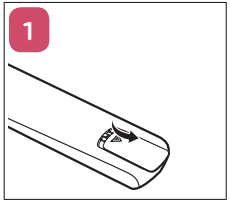
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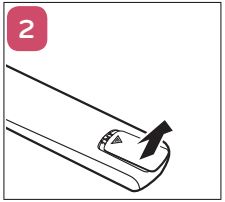


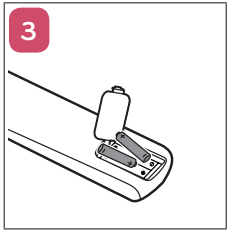


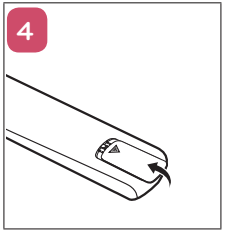
4











5



MODELS		43UX340C (43UX340C-UA)	49UX340C (49UX340C-UA)	55UX340C (55UX340C-UA)
Dimensions (W x H x D)	With stand	971 x 630 x 216 (mm) 38.2 x 24.8 x 8.5 (inches)	1,104 x 701 x 261 (mm) 43.4 x 27.5 x 10.2 (inches)	1,240 x 778 x 261 (mm) 48.8 x 30.6 x 10.2 (inches)
	Without stand	971 x 570 x 56.4 (mm) 38.2 x 22.4 x 2.2 (inches)	1,104 x 645 x 56.7 (mm) 43.4 x 25.3 x 2.2 (inches)	1,240 x 722 x 56.7 (mm) 48.8 x 28.4 x 2.2 (inches)
Weight	With stand	11.8 kg (26.0 lbs)	15.9 kg (35.0 lbs)	19.7 kg (43.4 lbs)
	Without stand	10.5 kg (23.1 lbs)	14.0 kg (30.8 lbs)	17.8 kg (39.2 lbs)
Power Requirement		AC 100-240 V~ 50/60 Hz		
Current Value / Power Consumption		1.1 A / 110 W	1.3 A / 130 W	1.4 A / 140 W

MODELS		65UX340C (65UX340C-UA)	79UX340C (79UX340C-UA / 79UX340C-UF)
Dimensions (W x H x D)	With stand	1,460 x 903 x 338 (mm) 57.4 x 35.5 x 13.3 (inches)	1,770.4 x 1,083.2 x 317 (mm) 69.7 x 42.6 x 12.4 (inches)
	Without stand	1,460 x 846 x 58.5 (mm) 57.4 x 33.3 x 2.3 (inches)	1,770.4 x 1,025.2 x 59.5 (mm) 69.7 x 40.3 x 2.3 (inches)
Weight	With stand	29.6 kg (65.2 lbs)	54.5 kg (120.1 lbs)
	Without stand	27.0 kg (59.5 lbs)	52.4 kg (115.5 lbs)
Power Requirement		AC 100-240 V~ 50/60 Hz	AC 120 V~ 50/60 Hz
Current Value / Power Consumption		1.7 A / 170 W	2.9 A / 290 W

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ESPAÑOL
FRANÇAIS

MODELOS / MODÈLES		43UX340C (43UX340C-UA)	49UX340C (49UX340C-UA)	55UX340C (55UX340C-UA)
Dimensiones (Ancho x altura x profundidad)	Con base	971 x 630 x 216 (mm) 38,2 x 24,8 x 8,5 (pulgadas / po)	1 104 x 701 x 261 (mm) 43,4 x 27,5 x 10,2 (pulgadas / po)	1 240 x 778 x 261 (mm) 48,8 x 30,6 x 10,2 (pulgadas / po)
	Avec support			
Dimensions (L x H x P)	Sin base	971 x 570 x 56,4 (mm) 38,2 x 22,4 x 2,2 (pulgadas / po)	1 104 x 645 x 56,7 (mm) 43,4 x 25,3 x 2,2 (pulgadas / po)	1 240 x 722 x 56,7 (mm) 48,8 x 28,4 x 2,2 (pulgadas / po)
	Sans support			
Peso	Con base	11,8 kg (26,0 libras / lb)	15,9 kg (35,0 libras / lb)	19,7 kg (43,4 libras / lb)
	Avec support			
Poids	Sin base	10,5 kg (23,1 libras / lb)	14,0 kg (30,8 libras / lb)	17,8 kg (39,2 libras / lb)
	Sans support			
Potencia requerida / Alimentation		AC 100-240 V~ 50/60 Hz		
Corriente de consumo / Consumo de la potencia / Valeur courante / Consommation électrique		1,1 A / 110 W	1,3 A / 130 W	1,4 A / 140 W

MODELOS / MODÈLES		65UX340C (65UX340C-UA)	79UX340C (79UX340C-UA / 79UX340C-UF)
Dimensiones (Ancho x altura x profundidad)	Con base	1 460 x 903 x 338 (mm) 57,4 x 35,5 x 13,3 (pulgadas / po)	1 770,4 x 1 083,2 x 317 (mm) 69,7 x 42,6 x 12,4 (pulgadas / po)
	Avec support		
Dimensions (L x H x P)	Sin base	1 460 x 846 x 58,5 (mm) 57,4 x 33,3 x 2,3 (pulgadas / po)	1 770,4 x 1 025,2 x 59,5 (mm) 69,7 x 40,3 x 2,3 (pulgadas / po)
	Sans support		
Peso	Con base	29,6 kg (65,2 libras / lb)	54,5 kg (120,1 libras / lb)
	Avec support		
Poids	Sin base	27,0 kg (59,5 libras / lb)	52,4 kg (115,5 libras / lb)
	Sans support		
Potencia requerida / Alimentation		AC 100-240 V~ 50/60 Hz	AC 120 V~ 50/60 Hz
Corriente de consumo / Consumo de la potencia / Valeur courante / Consommation électrique		1,7 A / 170 W	2,9 A / 290 W

(For USA and Canada only)
(Para Estados Unidos y Canadá)

This product qualifies for ENERGY STAR® in the factory default (Home Configuration) setting. Changing the factory default settings or enabling other features may increase power consumption that could exceed the limits necessary to quality for ENERGY STAR®. Refer to ENERGYSTAR.gov for more information on the ENERGY STAR® program.

(Pour les États-Unis et le Canada)

Ce produit est conforme aux normes ENERGY STAR® lorsque le « réglage d'usine par défaut (Résidentiel) » est sélectionné. Modifier les réglages d'usine par défaut ou activer d'autres fonctionnalités augmente la consommation d'énergie qui pourrait alors dépasser les limites de la qualification ENERGY STAR®. Consultez le site ENERGYSTAR.gov pour en savoir plus au sujet du programme ENERGY STAR®.

Life's Good

Owner's Manual

LG Digital Signage

(MONITOR SIGNAGE)

Please read this manual carefully before operating your set and retain it for future reference.

84TR3B

www.lg.com

ENGLISH

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WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. ***Wash hands after handling***.

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Important Precautions

Please read these safety precautions carefully before using the product.

⚠ WARNING

Failure to follow those warnings may result in death, serious injury or damage to the product or other property.

⚠ WARNING

- Indoor Use Only.

Electrical Power Related Precautions

⚠ WARNING

- Use only the power cord supplied with the unit or another manufacturer's authorized cord.
  - ▶ Failure to do so may result in fire or electrical shock or damage to the product.
- Use only a properly grounded plug and receptacle.
  - ▶ If you do not you may be electrocuted or injured. Or the product might be damaged.
- Do not use a damaged or loose plug.
  - ▶ This may cause electrical shock or fire.
- Operate the display only from a power source (i.e. voltage) indicated in the product specification.
  - ▶ Otherwise the product can be damaged, fire can occur or you may be electrocuted. If you are not sure what type of power supply you have, consult a certified electrician.
- In the presence of thunder and lightning, never touch the power cord and signal cable because it can be very dangerous.
  - ▶ It can cause electric shock.
- Do not connect several extension cords, electrical appliances or electrical heaters to a single outlet. Use a power strip with a grounding terminal designed for exclusive use with the computer.
  - ▶ A fire can break out due to overheating.
- Do not touch the power plug with wet hands. Additionally, if the cord pin is wet or covered with dust, dry the power plug completely or wipe dust off before plugging in the cord.
  - ▶ You may be electrocuted due to excess moisture.
- If you don't intend to use the product for a long time, unplug the power cable from the product.
  - ▶ Covering dust can cause a fire, or insulation deterioration can cause electric leakage, electric shock or fire.
- Insert the power plug firmly so it cannot come loose.
  - ▶ A loose connection can cause fire.
- Hold the plug when pulling out the power cable. Do not pull the plug out by the wire. Do not bend the power cord with excessive force or put heavy objects on the power cord.
  - ▶ The power line can be damaged, which may cause electric shock or fire.
- Do not insert metal or other conductive materials into the product openings. Additionally, do not touch the power cable right after plugging into the wall input terminal.
  - ▶ You may be electrocuted.
- The appliance coupler is used as the disconnect device.
- Please make sure the device is installed near the wall outlet to which it is connected and that the outlet is easily accessible.
- Do not unplug the power cord while the product is in use.
  - ▶ Electrical shock can damage the product.
- As long as this unit is connected to the AC wall outlet, it is not disconnected from the AC power source even if the unit is turned off.

Precautions for installing the Product

⚠ WARNING

- Keep away from heat sources like heaters or open flames.
  - ▶ Electrical shock, fire, malfunction or deformation may occur.
- Keep the packing anti-moisture material or vinyl packing out of the reach of children.
  - ▶ Anti-moisture material is harmful if swallowed. If swallowed by mistake, force the patient to vomit and visit the nearest hospital. Additionally, vinyl packing can cause suffocation. Keep it out of the reach of children.
- Do not put heavy objects on the product or sit upon it.
  - ▶ If the product collapses or is dropped, you may be injured. Children must pay particular attention.
- Do not leave the power or signal cable where someone can trip over it.
  - ▶ The passerby can falter, which can cause electrical shock, fire, product breakdown, or injury.
- Install the product in a neat and dry place. Do not use near water.
  - ▶ Dust or moisture can cause electrical shock, fire, or product damage.
- Do not add accessories that have not been designed for this display.
- If you smell smoke or other odors or hear a strange sound from the product unplug the power cord and contact LG Customer Service.
  - ▶ If you continue to use without taking proper measures, electrical shock or fire can occur.
- If you dropped the product or the case is broken, turn off the product and unplug the power cord.
  - ▶ If you continue to use without taking proper measures, electrical shock or fire can occur. Contact LG Customer Service.
- Do not drop an object on or apply impact to the product. Do not throw any toys or objects at the product.
  - ▶ It can cause injury to humans, problems to the product and damage the display.
- Keep out of reach of children and do not place toys near the product.
- Make sure the product ventilation hole is not blocked. Install the product more than 100 mm (3.9 inches) from the wall.
  - ▶ If you install the product too close to the wall, it may be deformed or fire can break out due to internal heat build-up.
- Do not cover the product with cloth or other material (e.g., plastic) while plugged in.
  - ▶ The product can be deformed or fire can break out due to internal overheating.
- Place the product on a flat and stable surface that is large enough to support the product.
  - ▶ If the product is dropped, you may be injured or the product may be broken.
- Install the product where no electromagnetic interference occurs.
- Keep the product away from direct sunlight.
  - ▶ The product can be damaged.
- Do not place the product on the floor.
  - ▶ Small children and others may trip over it.
- Do not install this product on a wall if it could be exposed to oil or oil mist.
  - ▶ This may damage the product and cause it to fall.
- For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces.

Precautions for Moving the Product

⚠ WARNING

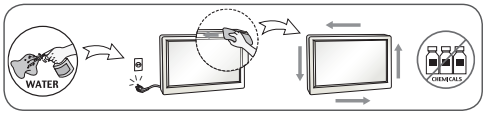
- Make sure to turn off the product.
  - ▶ You may be electrocuted or the product can be damaged.
- Make sure to remove all cables before moving the product.
  - ▶ You may be electrocuted or the product can be damaged.
- When lifting or moving the product, do not hold it upside down while holding only the stand.
  - ▶ This may cause the product to fall resulting in damage or injury.
- Do not shock the product when moving it.
  - ▶ You may be electrocuted or the product can be damaged.
- Make sure the panel faces forward and hold it with both hands to move.
  - ▶ If you drop the product, the damaged product can cause electric shock or fire.
- Do not place the product face down.
  - ▶ This may damage the TFT-LCD screen.

Precautions for Using/Cleaning the Product

⚠ WARNING

- Do not attempt to disassemble, repair or modify the product yourself.
  - ▶ Fire or electric shock can occur.
  - ▶ Contact LG Customer Service for repair.
- When cleaning the product, unplug the power cord and scrub gently with a soft cloth to prevent scratching. Do not clean with a wet cloth or spray water or other liquids directly onto the product. An electric shock may occur. (Do not use chemicals such as benzene, paint thinners, or alcohol.)
- Keep the product away from water.
  - ▶ Fire or electric shock accident can occur.
- Avoid high temperatures and humidity.
- Do not put or store flammable substances near the product.
  - ▶ There is a danger of explosion or fire.
- Keep the product clean at all times.
- Take a comfortable and natural position when working with the product.
- Take a regular break when working with the product for a long time.
- Do not press on the panel with a hand or sharp object such as nail, pencil or pen, or make a scratch on it.
- Keep proper distance from the product and rest from time-to-time.
  - ▶ Your vision may be impaired if you look at the product too closely or for too long.
- Set the appropriate resolution by referring to the User's Guide.
- Keep small accessories out of the reach of children.
- Displaying a still image for long time on the monitor may leave persistent image or stain on the monitor screen. To avoid this problem, use a screen saver and power off when this product is not used. Persistent image or screen burn caused by long time usage are not covered by the warranty on this product.

- Do not use products using high voltage around the Monitor. (e.g., a bug zapper.)
  - ▶ Monitor may exhibit signs of incorrect operation due to electromagnetic pulses from high voltage devices.
- Spray water onto a soft cloth 2 to 4 times, and use it to clean the front frame; wipe in one direction only. Too much moisture may cause staining.



On Disposal (Only, Hg lamp used LCD Monitor)

- The fluorescent lamp used in this product contains a small amount of mercury.
- Do not dispose of this product with general household waste.
- Disposal of this product must be carried out in accordance to the regulations of your local authority.

LICENSES

Supported licenses may differ by model. For more information of the licenses, visit *www.lg.com*.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

This DivX Certified® device has passed rigorous testing to ensure it plays DivX® video.

To play purchased DivX movies, first register your device at vod.divx.com. Find your registration code in the DivX VOD section of your device setup menu.

DivX Certified® to play DivX® video up to HD 1080p, including premium content.

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NOTE

- The warranty will not cover any damages caused by using the product in an excessively dusty environment.
- Avoid using the product in a high temperature and high humidity area. Moving the monitor from a environment like this to an air conditioned area may cause moisture formation inside the glass. This moisture will be dissipate over time, which may vary depending on the operating environment.

ASSEMBLY AND PREPARATION

CAUTION

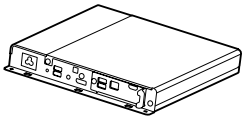
- Do not use any unapproved items to ensure the safety and product life span.
- Any damages or injuries by using unapproved items are not covered by the warranty.

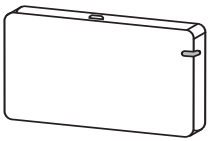
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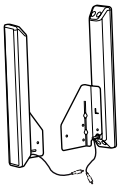
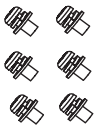
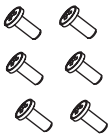
- The accessories supplied with your product may vary depending upon the model.
- Product specifications or contents in this manual may be changed without prior notice due to upgrade of product functions.
- SuperSign Software and Manual
  - Downloading from the LG Electronics website.
  - Visit the LG Electronics website (*www.lgecommercial.com/supersign*) and download the latest software for your model.

Optional Accessories

Without prior notice, optional accessories are subject to change to improve the performance of the product, and new accessories may be added. The illustrations in this manual may differ from the actual product and accessories.

Media Player Kit		
		
Media Player	Screws	CD (Owner's Manual) / Card

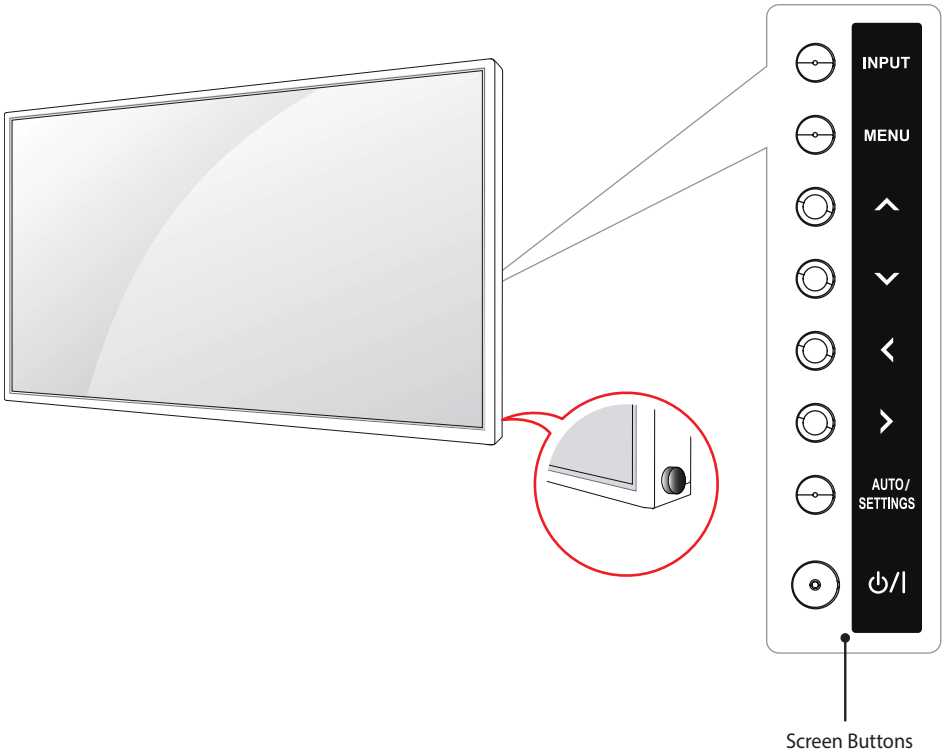
Wi-Fi Dongle kit

AN-WF500

Speaker kit			
			
Speakers SP-2100	Cable Holders/ Cable Ties	Screws Diameter 4.0 mm x Pitch 0.7 mm x Length 8 mm (0.1 inches x 0.02 inches x 0.3 inches) (including spring washer)	Screws Diameter 4.0 mm x Pitch 1.6 mm x Length 10 mm (0.1 inches x 0.06 inches x 0.3 inches)

NOTE

- Cable holder/Cable tie may not be available in some areas or for some models.
- Optional accessories are available for some models. If necessary, please purchase them separately.

Parts and Buttons

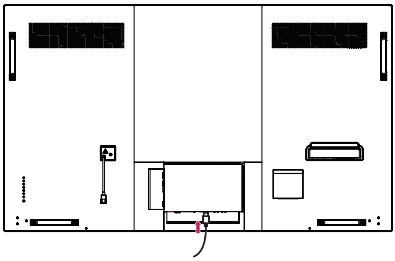


- **INPUT**: Changes the input source.
- **MENU**: Accesses the main menus, or saves your input and exits the menus.
- ∧ ∨: Adjust the up and down.
- < >: Moves left and right.
- **AUTO/SETTINGS**: Displays the current signal and mode.
- ⏻/I: Turns the power on or off.

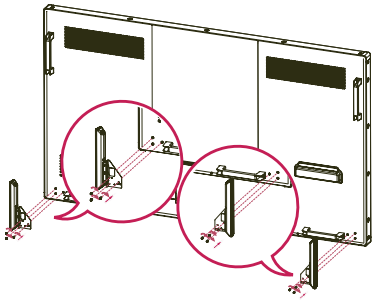
Connecting the Speaker

- Only on some models.

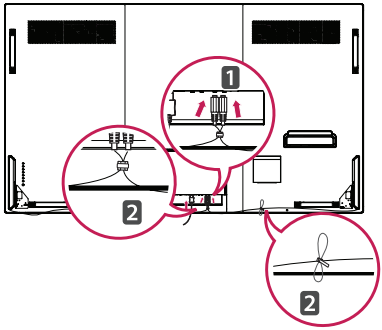
1 Connect the input signal cable to the monitor before installing the speakers. Use a cable tie to organize the cables.



2 Mount the speakers using the screws as shown in the following image.



3 After installing the speakers, Connect the speaker cables and use the holders and cable ties to organize the speaker cables.



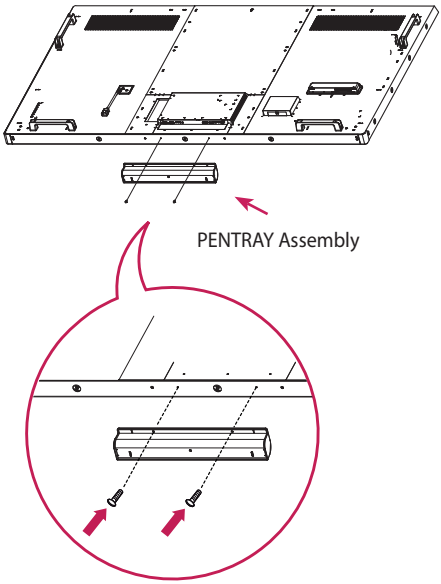
NOTE

- Remove or connect the speaker cable while the power is Off.
- If you remove or connect the speaker cable with the monitor power On, the sound may not come out.
- This feature is to prevent the set and the speaker from malfunctioning. If no sound comes out, turn the power Off and On.

Connecting the PENTRAY Assembly

(When assembling the provided PENTRAY)

Use the screws provided to attach the PENTRAY assembly



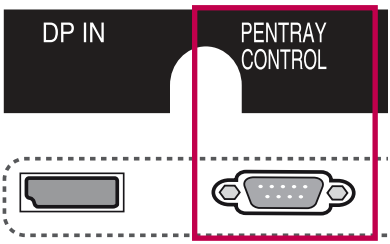
Connecting the PENTRAY CONTROL cable

(When connecting KT-WT1)

The PENTRAY CONTROL port is a dedicated port for use with the PENTRAY model (KT-WT1, purchased separately).

Do not connect the cable to a product other than the PENTRAY model (KT-WT1, purchased separately). When the cable is connected to a product other than the PENTRAY model, the product may not work properly.

Connect the PENTRAY CONTROL cable only when the power is turned off. When the power is on and the cable is connected, the product may not work properly.

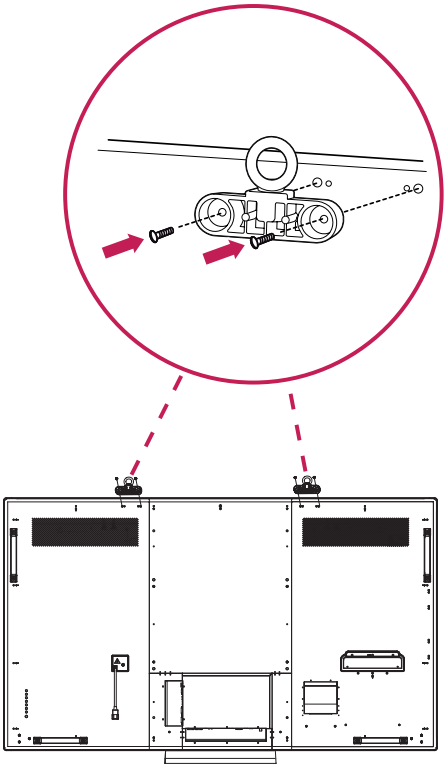


Connecting the Eye-Bolt Bracket

The eye-bolt bracket is designed to be used to lift the set up.

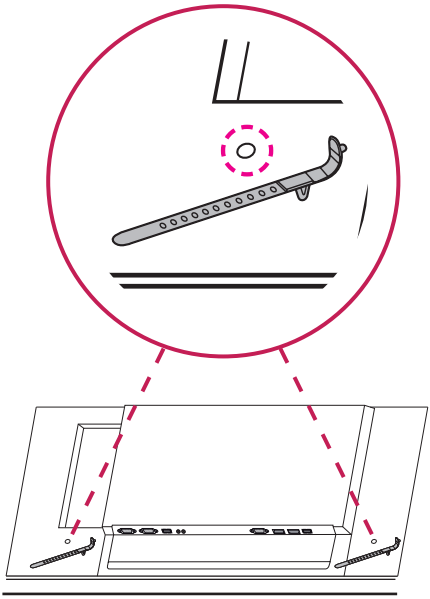
Attach the bracket to the product using the two screws provided.

Installing in Landscape Position



Using the Mounting Cable Tie

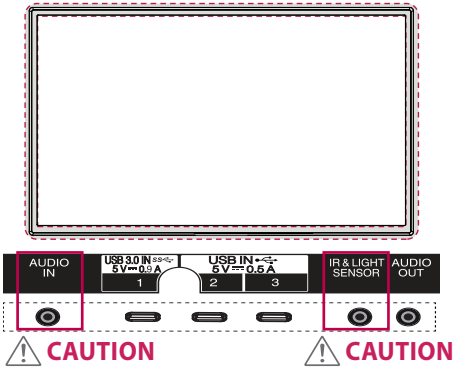
Insert the two cable ties into the bottom hole on the back of the set as shown in the figure to organize cables.



Connecting IR and Light Sensor

When you connect the cable to the product, the feature for receiving remote control signals is activated. The IR & light sensor is magnetic. Attach it to the side of the product for use.

[Front]

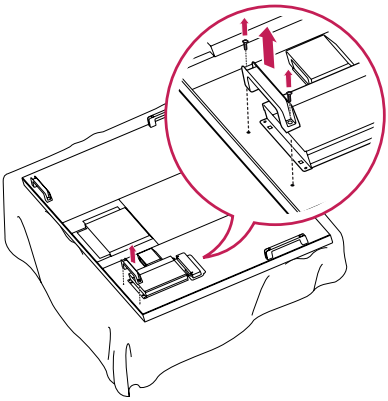


NOTE

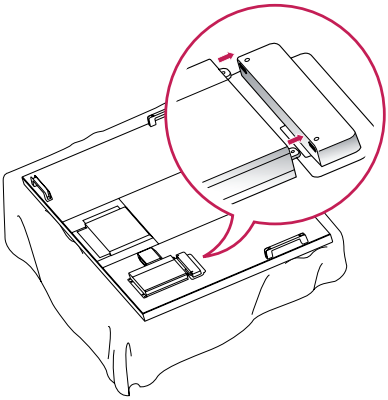
- Connect the IR & Light sensor to the dedicated jack properly. If it is connected to a jack other than the dedicated one, the set or sensor may not work properly.

Connecting the Media Player

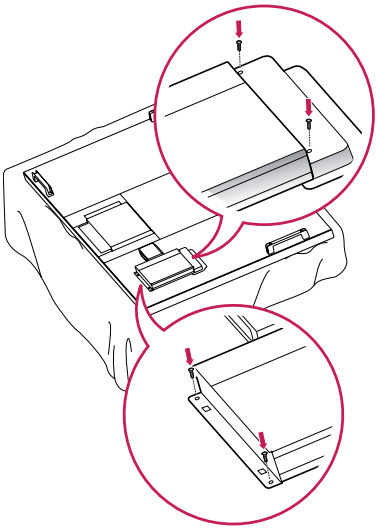
1 Place a soft cloth on the table and put the set with the screen facing downward. Remove the handle at the bottom of the section where the Media Player is mounted on the set.



2 To mount the Media Player, push it into the special compartment located on the back of the monitor.



3 Attach the Media Player using the four provided screws.

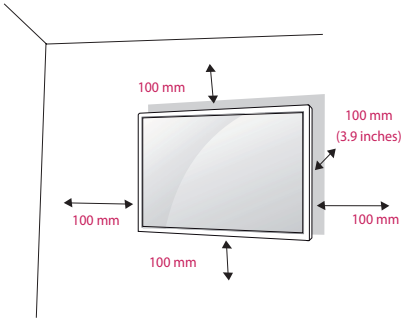


NOTE

- Use the screws provided with the product. (diameter 3.0 mm x pitch 0.5 mm x length 6.0 mm (diameter 0.1 inches x pitch 0.01 inches x length 0.2 inches))

Installing on a Wall

For proper ventilation, allow a clearance of 100 mm (3.9 inches) on each side and from the wall. Detailed installation instructions are available from your dealer, see the optional Tilt Wall Mounting Bracket Installation and Setup Guide.



To install your monitor on a wall, attach a wall mounting bracket (optional part) to the back of the monitor.

Make sure that the wall mounting bracket is securely fixed to the monitor and to the wall.

1. Use only screws and wall mounting brackets that conform to VESA standards.
2. Screws which are longer than standard length may damage the inside of the monitor.
3. A non-VESA standard screw may damage the product and cause the monitor to fall. LG Electronics is not liable for any accidents related to the use of non-standard screws.
4. Please use VESA standard as below.

- 785 mm (30.9 inches) and above

  * Fixing screws: Diameter 8.0 mm x Pitch 1.25 mm x Length 16 mm (Diameter 0.3 inches x Pitch 0.04 inches x Length 0.6 inches)

  * Wall mounting screw spec. (M8 screw)

    - Minimum ultimate tensile load : Min. 12,100N (1,230 kgf)
    - Proofing Load : Min. 8,840N (902 kgf)

CAUTION

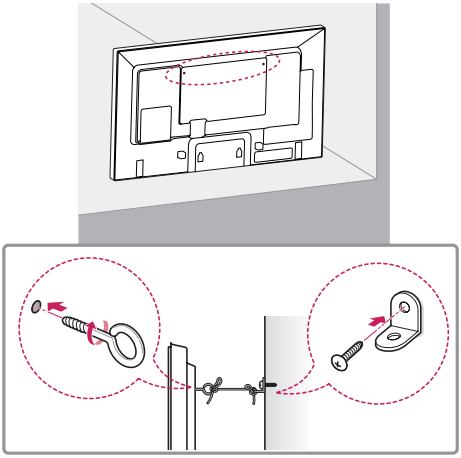
- Disconnect the power cord before moving or installing the monitor to avoid risk of electric shock.
- If you install the monitor on a ceiling or slanted wall, it may fall and result in injury. Use an authorized LG wall mount and contact your local dealer or qualified personnel to assist with the installation.
- Do not over tighten the screws as this may damage the monitor and void your warranty.
- Use only screws and wall mounting brackets that meet the VESA standard. Any damage or injuries caused by misuse or use of improper accessories are not covered by the warranty.

NOTE

- The wall mount kit includes an installation manual and necessary parts.
- The wall mount bracket is optional. You can obtain additional accessories from your local dealer.
- The length of screws may differ depending on the wall mount. Be sure to use the proper length.
- For more information, refer to the instructions supplied with the wall mount.

Securing the product to a wall (optional)

(Depending on model)



1 Insert and tighten the eye-bolts, or product brackets and bolts on the back of the product.
   - If there are bolts inserted at the eye-bolts position, remove the bolts first.
2 Mount the wall brackets with the bolts to the wall. Match the location of the wall bracket and the eye-bolts on the rear of the product.
3 Connect the eye-bolts and wall brackets tightly with a sturdy rope.
4 Make sure to keep the rope horizontal with the flat surface.

CAUTION

- Make sure that children do not climb on or hang on the product.

NOTE

- Use a platform or cabinet that is strong and large enough to support the product securely.
- Brackets, bolts, and ropes are optional. You can obtain additional accessories from your local dealer.

WARNING

- If a product is not positioned in a sufficiently stable location, it can be potentially hazardous due to falling. Many injuries, particularly to children, can be avoided by taking simple precautions such as:
  - » Using cabinets or stands recommended by the manufacturer of the product.
  - » Only using furniture that can safely support the product.
  - » Ensuring the product is not overhanging the edge of the supporting furniture.
  - » Not placing the product on tall furniture (for example, cupboards or bookcases) without anchoring both the furniture and the product to a suitable support.
  - » Not standing the product on cloth or other materials placed between the product and supporting furniture.
  - » Educating children about the dangers of climbing on furniture to reach the product or its controls.

REMOTE CONTROL

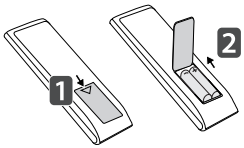
The descriptions in this manual are based on the buttons on the remote control. Please read this manual carefully to use the monitor correctly.

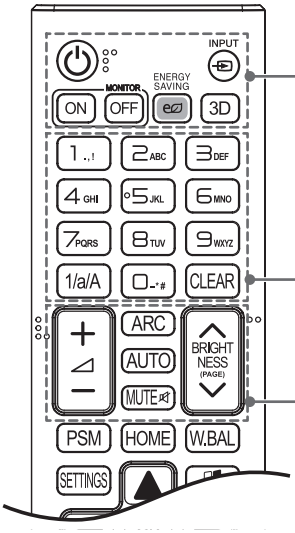
To install batteries, open the battery cover, place batteries (1.5 V AAA) matching ⊕ and ⊖ terminals to the labels inside the compartment, and close the battery cover.

To remove the batteries, perform the installation actions in reverse. The illustrations may differ from the actual accessories.

CAUTION

- Do not mix old and new batteries, as this may damage the remote control.
- Be sure to point the remote control toward the remote control sensor on the monitor.





⏻ **(POWER)** Turns the monitor on or off.

MONITOR ON Turns the monitor on.

MONITOR OFF Turns the monitor off.

ENERGY SAVING Reduces power consumption by adjusting peak screen brightness.

INPUT Selects the input mode.

3D Used for viewing 3D videos. (This model does not support this.)

1/a/A Toggles between numerical and alphabetical. (Depending upon the model, this feature may not be supported.)

Number and Alphabet buttons

Enters numerical or alphabetical characters depending upon the setting. (Depending upon the model, this feature may not be supported.)

CLEAR Deletes the entered numerical or alphabetical character. (Depending upon the model, this feature may not be supported.)

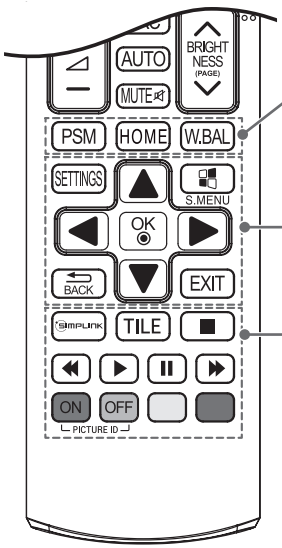
Volume Up/Down Button Adjusts the volume.

ARC Selects the Aspect Ratio mode.

AUTO Automatically adjusts picture position and minimizes image instability (available for RGB input only). (Depending upon the model, this feature may not be supported.)

MUTE Mutes all sounds.

BRIGHTNESS Adjusts the brightness of the display. PAGE function is not supported in this model. (Depending upon the model, this feature may not be supported.)



PSM Selects the Picture Mode.

HOME Activates the Launcher.

W.BAL Enters the White Balance menu. (This model does not support this.)

SETTINGS Accesses the main menus or saves your input and exit menus.

S.MENU SuperSign menu key (This model does not support this.)

Navigation Buttons Scrolls through menus or options.

OK Selects menus or options and confirms your input.

BACK Allows you to move back one step in the user interaction function.

EXIT Quit all OSD tasks and applications.

SIMPLINK Allows you to control various multimedia devices to enjoy multimedia simply by using the remote control through the SimpLink menu. (Depending upon the model, this feature may not be supported.)

TILE Selects the TILE Mode. (This model does not support this.)

PICTURE ID ON/OFF When the Picture ID number matches the Set ID number, you can control whichever monitor you want in multi-display format.

USB Menu Control Controls media playback.

USING THE MONITOR

Connecting to a PC

Your Monitor supports the Plug & Play* feature.

* Plug & Play: This is the function that allows a PC to use the monitor without installing a driver.

NOTE

- It is recommended you use an HDMI connection for the best image quality.
- To comply with the standard specifications of the product, use a shielded interface cable with a ferrite core.
- If you turn the Monitor on when the set is cold, the screen may flicker. This is normal.
- Some red, green, or blue spots may appear on the screen. This is normal.
- For some graphic cards, the screen may not display properly when you use dual monitors.

CAUTION

- Connect the signal input cable and tighten it by turning the screws clockwise.
- Do not press the screen with your finger for a long time as this may result in temporary distortion on the screen.
- Avoid displaying a fixed image on the screen for a long period of time to prevent image burn. Use a screensaver if possible.
- A wireless communication device near your monitor can affect the image.

NOTE

- Use the standard Macintosh adapter since an incompatible adapter is available in the market. (Different signaling system)
- Apple computers may require an adapter to connect to this monitor. Call or visit their web site for more information.
- Use a High Speed HDMI®/™ Cable.
- Please check the PC environment if you cannot hear audio in HDMI mode. Some PCs require you to manually change the default audio output to HDMI.
- If you want to use HDMI PC mode, you must set PC/DTV to PC mode.
- When HDMI PC is used, a compatibility problem might occur.
- Make sure the power cable is disconnected.
- Use a certified cable with the HDMI logo attached. If you do not use a certified HDMI cable, the screen may not display or a connection error may occur.
- Recommended HDMI cable types
  - High-Speed HDMI®/™ cable
  - High-Speed HDMI®/™ cable with Ethernet
- It is recommended to use the following specifications to play 3840 x 2160 video seamlessly in HDMI or DP modes.
  - » Recommended PC specifications - CPU: Intel core i7 or higher, graphic card: NVIDIA GTX TITAN or higher, AMD HD7000 series or higher.
  - » Recommended video - For H.264, 140 Mbps or lower data transmission rate.

HDMI (4K @ 60 Hz) input 1 (HDCP2.2), 2 (10 Bit)

HDMI (4K @ 60 Hz) input ports: When using HDMI (4K @ 60 Hz) input port 2 (10-bit), use the provided HDMI cable. When using an HDMI cable that was not provided, please use a high-speed HDMI cable (shorter than 3 meters). (Information may vary depending on the model.)

4K @ 60 Hz input supported formats

<table>
<tr><th>Resolution</th><th>Vertical frequency (Hz)</th><th colspan="3">Color depth</th></tr>
<tr><td rowspan="6">3840 X 2160p</td><td rowspan="6">59.94
60</td><td>HDMI1</td><td colspan="2">HDMI2</td></tr>
<tr><td>8 bit</td><td>8 bit</td><td>10 bit</td></tr>
<tr><td>YCbCr 4:2:0</td><td colspan="2">YCbCr 4:2:0</td></tr>
<tr><td>-</td><td>YCbCr 4:2:2</td><td>-</td></tr>
<tr><td>-</td><td>YCbCr 4:4:4</td><td>-</td></tr>
<tr><td>-</td><td>RGB 4:4:4</td><td>-</td></tr>
</table>

- HDMI specifications may vary depending on the input port. Check the specifications of each device before connecting.
- HDMI input port 2 is best suited for 4K at 60 Hz (4:4:4, 4:2:2) to enjoy high definition video. However, video or audio may not be supported depending on the specifications of the external devices. In that case, please connect to another HDMI port.

NOTE

- DisplayPort does not support Deep Color (YCbCr 4:2:0, YCbCr 4:2:2).

Using the Input List

Remote Control (HOME) → 

Input Mode	Description
HDMI1	You can watch content on a PC, DVD player, Digital set-top box, and other high definition devices.
HDMI2	
DISPLAYPORT	
DVI-D/SuperSign	
COMPONENT	

NOTE

- External inputs supported: Component, HDMI1, HDMI2, DVI-D, DisplayPort and SuperSign
- Input labels available: Satellite, Set-top Box, DVD, Blu-ray, Home theater, game console, streaming box, Camera, PC and mobile device
- The set Input Label is displayed on the Input List, or when switching the input.

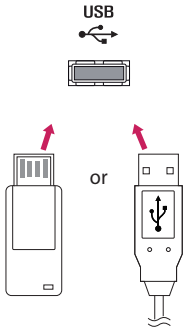
ENTERTAINMENT

Using My Media

Connecting USB storage devices

Connect a USB storage device such as a USB flash memory or an external hard drive to the display and use multimedia features.

Connect a USB flash memory or USB memory card reader to the display as shown in the following illustration.



CAUTION

- Do not turn off the monitor or remove a USB storage device when the **My Media** screen is activated. This could result in loss of files or damage to the USB storage device.
- Back up files you have saved on a USB storage device frequently, as loss or damage to the files may be not covered by the warranty.

Tips for using USB storage devices

- Only a USB storage device can be recognized.
- A USB device does not work effectively when it is connected via a USB hub.
- A USB storage device using an automatic recognition program may not be recognized.
- A USB storage device using its own driver may not be recognized.
- The recognition speed of a USB storage device may depend on each device.
- Please do not turn off the display or unplug the USB storage device when the connected device is working. If the USB storage device is suddenly disconnected, the stored files or the device itself may be damaged.
- Please do not connect a USB storage device which was modified to work on a PC. The device may cause the monitor to malfunction or the content fail to be played. Use only a USB storage device which contains normal music, image or video files.
- A USB storage device formatted as a utility program not supported by Windows may not be recognized.
- A USB storage device (over 0.5 A) which requires an external power supply must be connected to a power supply separately. If it is not, the device may not be recognized.
- Please connect the USB storage device using the cable provided by the device manufacturer.
- Some USB storage devices may not be supported or operate smoothly.
- File alignment method of USB storage devices is similar to that of Window XP and filenames can recognize up to 100 English characters.
- Back up important files regularly as data stored on a USB storage device may be damaged. We will not be responsible for any data loss.
- If the USB HDD does not have an external power source, the USB device may not be detected. To ensure the device is detected, connect the external power source.
  - Please use a power adapter for an external power source. We do not provide a USB cable for an external power source.
- If your USB storage device has multiple partitions, or if you use a USB multi-card reader, you can use up to four partitions or USB storage devices.
- If a USB storage device is connected to a USB multi-card reader, its volume data may not be detected.
- If the USB storage device does not work properly, disconnect and reconnect it.
- Detection speed differs from device to device.
- If the USB storage device is connected in Standby Mode, the specific hard disk will automatically be loaded when the display is turned on.
- The recommended capacity is 1 TB or less for a USB external hard drive and 32 GB or less for USB memory stick.
- Any device with more than the recommended capacity may not work properly.
- If a USB external hard drive with an "Energy Saving" function does not work, try turning the hard drive off and on again.
- USB storage devices below USB 2.0 are also supported but may not function correctly in the videos.
- A maximum of 999 sub-folders or files can be recognized under one folder.

NOTE

- Connecting guide for USB 3.0
  - Some USB device may not work if it does not meet USB 3.0 standard. In this case, connect it to USB IN 2 or USB IN 3 port.
  - Total Internal memory is 3.68 GB, however it may vary due to the bad block issue.

Files Supported by My Media

Supported External Subtitle Format

- *.smi, *.srt, *.sub (MicroDVD, SubViewer 1.0/2.0), *.ass, *.ssa, *.txt (TMPlayer), *.psb (PowerDivX)

To use Select Play,

Remote Control (HOME) →  → **Photos/ Videos/ Music** → 

- **Play Selection**: plays back selected content.

To set Device Selection,

Remote Control (HOME) →  → **Photos/ Videos/ Music** → 

- **Device Selection**: import contents from the selected device.

Supported Internal Subtitle Format

- FULL HD Video
  1920 X 1080: XSUB (Supports internal subtitles generated from DivX6)

Supported Video Codec

Extension	Codec	
.asf .wmv	Videos	VC-1 Simple and Main Profiles
	Audio	WMA Standard (excluding WMA v1/ WMA Speech), WMA9 Professional
.dvix .avi	Videos	DivX3.11, DivX4, DivX5, DivX6, XViD, H.264/AVC, Motion Jpeg, MPEG-4 Part 2
	Audio	MPEG-1 Layer I II, MPEG-1 Layer III (MP3), Dolby Digital, Dolby Digital Plus, LPCM, ADPCM, DTS
.mp4 .m4v .mov	Videos	H.264 / AVC , MPEG-4 Part 2
	Audio	AAC, MPEG-1 Layer III (MP3)
.3gp .3g2	Videos	H.264/AVC, MPEG-4 Part 2
	Audio	AAC, AMR-NB, AMR-WB
.mkv	Videos	H.264 / AVC
	Audio	HE-AAC, Dolby Digital
.ts .trp .tp .mts .m2ts	Videos	H.264 / AVC, MPEG-2, VC-1
	Audio	MPEG-1 Layer I, II / MPEG-1 Layer III (MP3), Dolby Digital, Dolby Digital Plus, AAC
.vob	Videos	MPEG-1, MPEG-2
	Audio	Dolby Digital, MPEG-1 Layer I, II, DVD-LPCM
.mpg .mpeg .dat	Videos	MPEG-1, MPEG-2
	Audio	MPEG-1 Layer I, II / MPEG-1 Layer III (MP3), AAC

Supported Audio File

File Format	Item	Information
MP3	Bit rate	32 Kbps to 320 Kbps
	Sample freq.	32 KHz to 48 KHz
	Support	MPEG1, MPEG2, MPEG2.5, Layer2, Layer3
.wav	Support	PCM
.ogg	Support	Vorbis
.wma	Support	WMA

Supported Photo File

File Format	Format	Item
2D (jpeg, jpg, jpe)	JPEG	• Minimum : 64 x 64 • Maximum: Normal Type: 15360 (W) x 8640 (H) / Progressive Type: 1920 (W) x 1440 (H)
2D (png)	PNG	• Minimum : 64 x 64 • Maximum: 1920 (W) x 1080 (H)
2D (bmp)	BMP	• Minimum : 64 x 64 • Maximum: 1920 (W) x 1080 (H)

Viewing Videos

Play video files on display. All of the saved video files are shown in your display.

To play video files on display,

Remote Control (HOME) ➔  **➔ Videos**

Tips for Playing Video Files

- Some subtitles created by users may not work properly.
- The video and subtitle files should be placed in the same folder. For subtitles to display correctly, the video and subtitle files must have the same name.
- Subtitles on an NAS (Network Attached Storage) device may not be supported depending on the manufacturer and model.
- We do not support any stream that contains GMC (Global Motion Compensation) or Qpel (Quarterpel Motion Estimation).
- The file size limit is dependent on the encoding environment.
- It works only the above version of Window Media Audio V2.
- It's not supported AAC Main Profile.
- Video files created by some encoders may not be played back.
- Video files in formats other than the ones specified here may not be played back.
- Playback of video files stored on the USB device that do not support High Speed, may not work properly.
- The monitor supports DTS audio codec when the USB/HDMI video file playback.

NOTE

- When restarting a video file after stopping it, you can play from the point at which it was stopped.
- Only 10,000 sync blocks can be supported within the subtitle file.
- When playing a video, you can adjust the picture size by pressing the ARC button.
- Korean subtitle is supported only when the OSD menu is in Korean.
- The code page options may be disabled depending on the language of the subtitle files.
- Select the appropriate code page for the subtitle files.

Viewing Photos

The displays on the screen may differ from the model.

Viewing image files

Remote Control (HOME) ➔  **➔ Photos**

Information

To check the basic information of Signage

Remote Control (HOME) ➔

You can see the basic information on Signage.
You can also switch to **Smart Energy Saving Mode** or configure **Fail Over** settings. (You can only switch to **Smart Energy Saving Mode** when **Energy Saving Mode** is set to **Off**.)

File Manager

You can move, copy or delete files.

To move, copy, or delete files

Remote Control (HOME) ➔ 

- You can move or copy files or folders from internal to external memory.
- You can move or copy files or folders from external to internal memory.
- You can delete files or folders from internal or external memory.

NOTE

- Those files bigger than internal remaining memory aren`t allowed to be copied or moved to the internal memory.
- You cannot copy or move a file to the internal storage if the file size is larger than the available free space of the internal storage.

Listening to Music

Viewing music files

Remote Control (HOME) →  → **Music**

NOTE

- Files with unsupported extensions are not displayed.
- If a file is invalid, a broken image and the message 'Unrecognizable file' are displayed.
- Damaged music files are displayed as 00:00 and will not be played.
- A music file downloaded from a paid service with copyright protection will not play, and inappropriate information may be displayed during playback.
- You can use ▶, ⏸, ■, ⏭, ⏮ buttons on the remote control also in this mode.
- You can use the ⏭ button to select the next track and the ⏮ button to select the previous track.
- If you press the ⏮ button within 5 seconds after playing the song, you will return to the previous song; if you press the same button after 5 seconds, you will return to the start of the song.

Settings

You must register your product to play a DRM-protected DivX video.

In order to register/deregister purchased or rented DivX ® VOD contents

Remote Control (HOME) → → Settings → DivX ® VOD

In order to play purchased or rented DivX® VOD contents, you should register your device with 10 digit DivX registration code from your device at *www.divx.com/vod*.

- **Registration**: view the registration code of your display.
- **Deregistration**: cancel the registration.

NOTE

- While you are checking the registration code, some buttons may not work.
- If you use the DivX registration code of another device, you cannot play rented or purchased DivX files. Use only the DivX registration code assigned to your product.
- Video or audio files that are not converted using the standard DivX codec may be corrupted or not play.
- The DivX VOD code allows you to activate up to 6 devices under one account.
- After deregistration, you must register your device again to see DivX® VOD contents.

Screen Share

Allows the screen of a user's device such as a mobile or PC Windows to be shared with a display using a wireless connection such as WiDi or Miracast.

To use Screen Share

Remote Control (HOME) ➔ 

When the **Screen Share** app is running, the wireless connection such as WiDi or Miracast is automatically set to ON and the display is automatically changed to the connection ready mode. In this state, you can use **Screen Share** by turning on the wireless connection on the device and selecting the display to establish a connection between the device and the display.

Configuring WiDi (Wireless Display)

WiDi, which is short for Wireless Display, is a system that wirelessly transmits video and sound files from a laptop that supports Intel WiDi to the display.

For more information on how to use Intel WiDi, visit *http://intel.com/go/widi*.

[Microsoft Windows 8.1 WiDi Configuration]

1 On the desktop, move the mouse cursor to the top right.
2 Select a device.
3 Select a project.
4 Search for Signage or a TV to add.

NOTE

- The wireless environment may affect the screen from displaying. If the connection is poor, the Screen Share (Miracast/WiDi) connection may be lost.
- Using Screen Share requires no AP connection. However, it is recommended that you connect both the Signage and device (laptop or smartphone) in the same AP of the 5GHz frequency band.
- Connecting to a device other than an LG device may cause failure when searching or connecting.
- It may take up to one minute to reconnect, once Screen Share is disconnected.
- WiDi works on Microsoft Windows 8.1 or later.
- Disconnecting Screen Share switches to the input screen before connecting. (The Screen Share app may be displayed while disconnecting.)

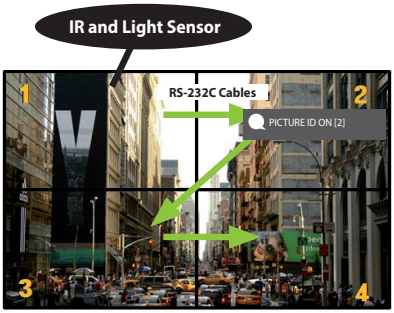
CAUTION

- To use Screen Share, an additional accessory is required.

Picture ID Settings

Picture ID is used to change the settings of a specific set (display) using a single IR receiver for multi-vision. Communication is possible between a monitor with an IR receiver and other monitors using RS-232C cables. Each monitor is identified by a **Set ID**. If you assign the **Picture ID** using the remote control, only displays with matching **Picture ID** and **Set ID** can be controlled remotely.

1 Assign the **Set ID** to the installed monitors as shown below.



2 Press the red ON button on the remote control to assign the **PICTURE ID**.

3 Assign the **Set ID** to the selection of your choice.

- A set with a different **Set ID** from the **Picture ID** cannot be controlled by IR signals.

NOTE

- If **Picture ID** is set to 2, only the upper right monitor, which has a **Set ID** of 2, can be controlled by IR signals.
- If you press the green **OFF** button for **PICTURE ID**, the **Picture ID**s for all monitors are turned off. If you then press any button on the remote control, all monitors can be controlled by IR signals regardless of **Set ID**.
- With **PICTURE ID** ON, you can only increase the **Picture ID** by 1. You cannot decrease it.

USER SETTINGS

Main Menu Settings

Quick Settings

Configures frequently used settings menus.

To turn your monitor on or off automatically

Remote Control (SETTINGS) → Quick → On Timer/Off Timer

You can set the On/Off Timer for your monitor. If you do not want to set the **On/Off Timer**, select **Off**.

To set the backlight and contrast automatically

Remote Control (SETTINGS) → Quick → Smart Energy Saving

According to picture brightness, the brightness of the monitor will be adjusted automatically to save energy.

- **Off**: disables the **Smart Energy Saving** function.
- **On**: enables the **Smart Energy Saving** function.

Picture Setting

To Select Picture Mode

Remote Control (SETTINGS) ➔ Picture ➔ Picture Mode

Select the picture mode that is best suited to the video type.

- **Vivid**: adjusts the video image for a retail environment by enhancing the contrast, brightness, and sharpness.
- **Standard**: adjusts the video image for a normal environment.
- **APS**: APS (Auto power saving) mode reduces power consumption by dimming control.
- **Cinema**: optimizes the video image for watching movies.
- **Sports**: optimizes the video image for watching sports. Even fast actions such as kicking or throwing a ball are rendered clearly on the screen.
- **Touch**: Optimizes the image for touch.
- **Photo**: This mode is optimized for viewing pictures. It displays photos smoothly while minimizing the loss of the original photo quality.
- **Expert 1**/**Expert 2**: allows an expert, or anyone interested in high quality pictures, to manually tune the picture for the best picture quality.

NOTE

- Depending on the input signal, the available **Picture mode**s may differ.
- **Expert** is an option that allows a picture quality expert to fine-tune the picture quality using a specific image. Thus, it may not be effective for a normal picture.

To fine-tune the picture mode

Remote Control (SETTINGS) → Picture → Picture Adjust

- **Backlight**: adjusts the brightness of the screen by controlling the LCD backlight. The closer the value is to 100, the brighter the screen is.
- **Contrast**: adjusts the difference between the light and dark areas of the picture. The closer the value is to 100, the greater the difference is.
- **Brightness**: adjusts the overall brightness of the screen. The closer the value is to 100, the brighter the screen is.
- **Sharpness**: adjusts the sharpness of the edges of objects. The closer the value is 50, the clearer and the sharper the edge becomes.
- **H Sharpness**: adjusts the sharpness of the contrast edges on the screen from a horizontal point of view.
- **V Sharpness**: adjusts the sharpness of the contrast edges on the screen from a vertical point of view.
- **Color**: softens or deepens the tints on the screen. The closer the value is 100, the deeper the colors become.
- **Tint**: adjusts the balance between red and green levels displayed on the screen. The closer the value is to Red 50, the deeper the color red becomes, and the closer the value is to Green 50, the deeper the color green becomes.
- **Color Temperature**: adjusts the tints of the screen to evoke feelings of warmth or coolness.
- **Advanced Control/Expert Control**: customizes the advanced options.

Dynamic Contrast	Optimizes the difference between the light and dark parts of the screen according to the brightness of the image.
Super Resolution	Sharpens the blurry or indistinguishable parts of the picture.
Color Gamut	Selects the range of colors to display.
Dynamic Color	Adjusts the tint and saturation of the image for a more vivid and lively display.
Edge Enhancer	Provides much sharper and clearer edges to the picture.
Color Filter	Accurately adjusts color and tint by filtering a specific color area of RGB space.
Preferred Color	Adjusts the skin tint, grass tint, and sky tint to your preference.
Gamma	Adjusts the medium brightness of the image.
White Balance	Adjusts the overall tint of the picture to your preference. In Expert mode, you can fine-tune the picture using the Method/Pattern options.
Color Management System	Experts use the color management system when they adjust the colors by using the test pattern. The color management system allows you to make an adjustment by selecting from among 6 different color spaces (Red/Yellow/Blue/Cyan/Magenta/Green) without affecting other colors. You may not see tints change in a normal picture even after adjustment.

NOTE

- Depending on the input signal or the selected picture mode, the available options may differ.

- **Picture Options**: customizes the picture options.

Noise Reduction	Removes irregularly generated tiny dots for a clear picture.
MPEG Noise Reduction	Reduces the noise produced while creating digital video signals.
Black Level	Adjusts the black level of the picture to correct the brightness and contrast of the picture.
Real Cinema	Optimizes the video image for a cinematic look.
TruMotion	Displays fast-moving pictures with optimal picture quality. - **Off**: Turns off the TruMotion. - **Smooth**: displays fast-moving pictures smoothly. - **Clear**: displays fast-moving pictures clearly. - **User**: set de-judder manually. * **De-judder**: adjusts judder on the screen.

- **Reset**: resets the picture settings.

NOTE

- You can adjust advanced settings only in the **User** mode.

To set the aspect ratio,

Remote Control (SETTINGS) → Picture → Aspect Ratio

Changes the aspect ratio to view the image in its optimal size.

- **16:9**: displays the image with a 16:9 aspect ratio.
- **Just Scan**: displays the image in the original size without cutting off the edges.
  Original is available in HDMI (720p or higher) mode.
- **Set By Program**: automatically changes the aspect ratio to 4:3 or 16:9 depending on the input video signal.
- **4:3**: displays the image with a 4:3 aspect ratio.
- **Zoom**: expands the image to fit to the width of the screen. The top and bottom of the image may be cropped.
- **Cinema Zoom**: enlarges the image to have a cinemascope ratio of 2.35:1 without distortion.

CAUTION

- If a fixed image is displayed on the screen for a long period of time, it will be imprinted and become a permanent disfigurement on the screen. This image burn or burn-in is not covered by the warranty.
- If the aspect ratio is set to **4:3** for a long period of time, image burn may occur on the letterboxed area of the screen.
- The options may differ depending upon the model.
- Depending on the input signal, the available aspect ratio may differ.

To use the Energy Saving function

Remote Control (SETTINGS) ➔ Picture ➔ Energy Saving

Reduces power consumption by adjusting peak screen brightness.

- **Auto**: adjusts the brightness of the monitor according to ambient light. (This feature is available only with certain models.)
- **Off**: disables the Energy Saving mode.
- **Minimum/Medium/Maximum**: uses the Energy Saving according to the Energy Saving level specified for your monitor.
- **Screen Off**: turns off the screen. You will only hear audio. You can turn on the screen again by pressing any button on the remote control except the power button.

To use the Smart Energy Saving function

Remote Control (SETTINGS) ➔ Picture ➔ Smart Energy Saving

According to picture brightness, the brightness of the monitor will be adjusted automatically to save energy.

- **Off**: disables the **Smart Energy Saving** function.
- **On**: enables the **Smart Energy Saving** function.

To run a Picture Test

Remote Control (SETTINGS) ➔ Picture ➔ Picture Test

Run a Picture Test to check that picture signals are outputted normally, then solve any problems by selecting the relevant option on the screen. If there are no problems with the Test Picture, check connected external devices.

HDMI UHD Deep Colour

Remote Control (SETTINGS) ➔ Picture ➔ HDMI UHD Deep Colour

- HDMI2 port supports UHD Deep Colour.
- If you connect an HDMI device to one of the Deep Color adjustable ports, you can select Deep Color On (6G) or Off (3G) in the HDMI ULTRA HD Deep Colour settings menu.
- If the device connected to HDMI2 also supports UHD Deep Colour, your picture may be clearer.
- However, if the device doesn't support it, it may not work properly.
- In that case, connect the device to a different HDMI port or change the UHD Deep Colour setting to **OFF**.

Sound Settings

To select a Sound Mode

Remote Control (SETTINGS) → Sound → Sound Mode

The best sound quality will be selected automatically depending on the video type currently being watched.

- **Standard**: this sound mode works well for content of all types.
- **News**: optimizes sound for watching news.
- **Music**: optimizes sound for listening to music.
- **Cinema**: optimizes sound for watching movies.
- **Sports**: optimizes sound for watching sports.
- **Game**: optimizes sound for playing videogames.

To use the Sound Effects function

Remote Control (SETTINGS) → Sound → Sound Effects

- **Clear Voice II**: enjoy clearer sound with the three-level adjustment.
- **Equalizer**: manually adjust sound by using the equalizer.
- **Balance**: adjust the output volume for the left speaker and the right speaker.
- **Reset**: reset the sound settings.

To select a Volume Increase Rate

Remote Control (SETTINGS) → Sound → Volume Increase Rate

You can set the volume range by selecting any of **Low**/ **Medium**/ **High**.

To sync audio with video

Remote Control (SETTINGS) → Sound → AV Sync. Adjust

- **Speaker**: adjusts the sync between video and audio coming from external speakers, such as those connected to the digital audio output port, LG audio equipment, or headphones. From the default value, the closer the value is to -, the faster the sound output becomes, and the closer the value is to +, the slower the sound output becomes.
- **Bypass**: audio coming from external devices without delay. Audio may be outputted earlier than video due to the processing time for video that is inputted into the monitor.

To Run a sound test

Remote Control (SETTINGS) → Sound → Sound Test

Run a sound test to check that sound signals are outputted normally, then solve any problems by selecting the relevant option on the screen. If there are no problems with the Sound Test, check connected external devices.

Network Settings

To Set a Signage Name

Remote Control (SETTINGS) → Network → Signage Name

You can set a name for Signage Monitor that will be used on the network by using the on-screen keyboard.

To Set Your Network

Remote Control (SETTINGS) → Network → Wired Connection (Ethernet)

- **Connecting to a wired network**: Connect your monitor to a local area network (LAN) via the LAN port, and configure the network settings. Only wired network connections are supported. After making a physical connection, a small number of networks may require the display network settings to be adjusted. For most networks, the display will automatically make a connection without any adjustments. For detailed information, contact your Internet provider or consult your router manual.

To Set Your Wireless Network

Remote Control (SETTINGS) → Network → Wi-Fi Connection

If you have set the display up for a wireless network, you can check and connect to the available wireless Internet networks.

- **Add a Hidden Wireless Network**: If you input the name of network directly, you can add a wireless network.
- **Connect via WPS PBC**: Connects easily when the button of a wireless AP supporting PBC is pressed.
- **Connect via WPS PIN**: Connects easily when the PIN of the wireless AP that you wish to connect to is entered in to the AP configuration webpage.
- **Advanced Settings**: If you input the information of network directly, you can enter a wireless network. If there is no wireless network available, click **Advanced Settings**. You can add a network.

CAUTION

- Additional accessories are required to use a wireless network.

Tips for Network Setting

- Use a standard LAN cable (Cat5 or higher with a RJ45 connector) with this display.
- Many network connection problems during set-up can often be fixed by re-setting the router or modem. After connecting the display to the home network, quickly power off and/or disconnect the power cable of the home network router or cable modem, then power on and/or connect the power cable again.
- Depending on the Internet Service Provider (ISP), the number of devices that can receive Internet service may be limited by the applicable terms of service. For details, contact your ISP.
- LG is not responsible for any malfunction of the display and/or the Internet connection feature due to communication errors/malfunctions associated with your Internet connection, or other connected equipment.
- LG is not responsible for problems with your Internet connection.
- You may experience undesired results if the network connection speed does not meet the requirements of the content being accessed.
- Some Internet connection operations may not be possible due to certain restrictions set by the Internet Service Provider (ISP) supplying your Internet connection.
- Any fees charged by an ISP including, without limitation, connection charges are your responsibility.

NOTE

- If you want to access the Internet directly on your display, the Internet connection should always be on.
- If you cannot access the Internet, check the network conditions from a PC on your network.
- When you use Network Setting, check the LAN cable or check if DHCP in the router is turned on.
- If you do not complete the network settings, the network may not function correctly.

CAUTION

- Do not connect a modular telephone cable to the LAN port.
- Since there are various connection methods, please follow the specifications of your telecommunication carrier or Internet Service Provider.
- Network Setting menu will not be available until the display is connected to a physical network.

Tips for Wireless Network Setting

- Wireless networks can be subject to interference from other devices operating at a frequency of 2.4 GHz (wireless phones, Bluetooth devices or microwave ovens). There may also be interference from devices with a frequency of 5 GHz, same as other Wi-Fi devices.
- The surrounding wireless environment can cause the wireless network service to run slowly.
- If you do not turn off the entire local home network, network traffic may occur on some devices.
- For an AP connection, an access point device that supports wireless connection is required and the wireless connection feature must be enabled on the device. Contact your service provider regarding availability of wireless connection on your access point.
- Check the SSID and security settings of the AP for AP connection. Refer to the appropriate documentation for SSID and security settings of the AP.
- Invalid settings on network devices (wired/wireless line sharer, hub) can cause the monitor to run slowly or not operate properly. Install the devices correctly according to the appropriate manual and set the network.
- Connection method may differ according to the AP manufacturer.

General Settings

To configure the language

Remote Control (SETTINGS) → General → Menu Language

Select one of the languages on the menu displayed on the screen.

- **Menu Language**: sets a language for Signage.

To set the time/date

Remote Control (SETTINGS) → General → Time & Date

You can check or change the time.

- **Time**: you can set the time manually.
- **Date**: you can set the date manually.

To turn your monitor on or off automatically

Remote Control (SETTINGS) → General → Timers

You can set the On/Off Timer for your monitor.

- **On Timer**: you can set the time when your monitor turns on.
- **Off Timer**: you can set the time when your monitor turns off.
- **No Signal Power Off (15 minutes)**: If you do not press any button within 15 minutes of the monitor being turned on by the On Timer feature, the monitor turns off automatically. To ensure the monitor does not turn off automatically, set Auto Off to Off.
- **Auto Power Off**: If you do not press any button within four hours of the monitor being turned on, the monitor enters Standby mode automatically.

NOTE

- On Time/Off Time can be saved for up to seven schedules; the monitor is turned on or off at the preset time in the schedule list. If multiple preset times are stored in the schedule list, this function works at the nearest time from the current time.
- Once the on or off time is set, these functions operate daily at the preset time.
- The scheduled power-off function works properly only when the device time is set correctly.
- When the scheduled power-on and power-off times are the same, the power-off time has priority over the power-on time if the set is turned on, and vice versa if the set is turned off.

To reset your monitor settings

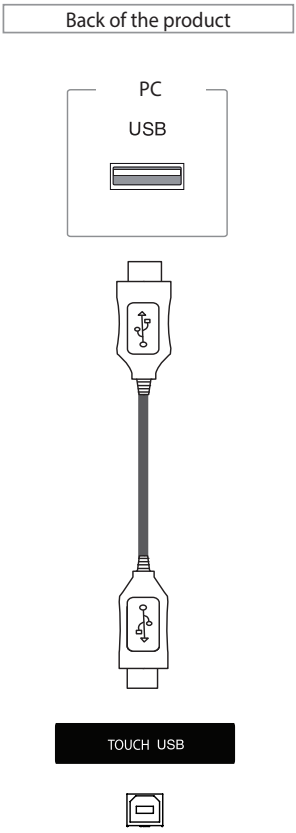
Remote Control (SETTINGS) → General → Reset to Initial Settings

Resets all monitor settings.

USING THE TOUCH SCREEN

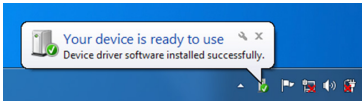
To Use the Touch Screen on Windows 7 / 8.x

Plug a USB cable into a TOUCH USB port on the back of the monitor.

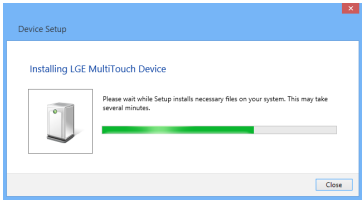


Then, connect the USB cable to your PC so that it automatically recognizes the touch screen monitor.

*** Windows 7**



*** Windows 8.x**



Go to Control Panel > System and Security > System. You will see the number of touch-points supported under Pen and Touch.

CAUTION

- Once your PC recognizes the monitor, you will be able to use the touch screen.

NOTE

- The monitor can respond to 10 Touch Points when connected to a Windows 7 / 8.x computer.
- When using the touch screen monitor, it is recommended to set the screen aspect ratio to Just Scan.
- For more information about gestures and settings on Windows 7 / 8.x, refer to Windows Help.

Gestures and Settings on Windows 7 / 8.x

For information about gestures and settings on Windows 7 / 8.x, refer to the Windows Help.

Precaution When Using the Touch Screen

CAUTION

- The monitor is optimized for indoor use.
- The touch screen monitor is optimized for Windows 7 / 8.x.
- Do not remove the USB cable when using the touch screen monitor.
- If touch does not respond, remove the USB cable and connect it back in ten seconds.
- Touch responds when the monitor is powered on.
- Touch accuracy is optimized by using full screen mode.
- Your action may not work properly on the edge area of the touch screen.
- If the 10 touch-points are not detected, restart your PC. (Windows 7 / 8.x)
- The touch operation (e.g. touches count, gesture, etc.) may vary depending on the content.
- The spot that you try to touch and the one which is actually touched on the screen may differ depending on the angle you view the monitor screen.

Precaution When Using the Stylus

CAUTION

- During multi-point touch operations, the multi-touch function may not work properly when the stylus touches the screen together with a large object such as a human finger.

LG Touch Screen Software

Specifications

Minimum System Requirements for Windows PC	CPU	Intel Core 2 Duo or higher
	RAM	1 GB or more
Recommended System Requirements for Windows PC	CPU	Intel Core i3 or higher
	RAM	2 GB or more
Supported OS	Windows 7 professional/Ultimate, Windows 8/8.x (32/64 bit)	

Precaution When Using LG Touch Screen Software

CAUTION

- When running a separate application on LG Touch Screen software, the application screen may flicker.
- When using multi-touch feature while running PowerPoint on LG Touch Screen software, the Touch Screen software may be closed abnormally.
- To play or record video on the LG Touch Screen software, Windows Media Player 10 or higher and Microsoft Expression Encoder 4 SP2 are required.
- LG Touch Screen software supports Microsoft Office 2007 or a later version.
- If the print area is not aligned to the paper size, select the “Fit to Page” option.
- When you print to the XPS document writer, the "Save the file as" pop-up window may appear behind the LG Touch Screen software.
- To underline the text in the textbox, apply the underline after entering the text.
- The video player in LG Touch Screen software works the same as Windows Media Player in Windows.
- On LG Touch Screen software, characters may be cropped when fonts from languages other than Korean are applied to Korean.
- Depending on the status of the PC where LG Touch Screen Software is installed, an abnormal shutdown or problem with the thumbnail images and skins may occur during the use of Internet Explorer.
- When you create a drawing on MS Office in App mode, flashing or afterimage may occur, and it may look different from the drawing in Note mode.

TROUBLESHOOTING

No image is displayed.

Problem	Resolution
Is the product power cord connected?	• See if the power cord is properly connected to the outlet. • See if the power switch is turned on.
Power is on, but the screen appears extremely dark.	• Adjust brightness and contrast again. • Backlight may need repair.
Is the product in Power Saving Mode?	• If the product is in power saving mode, move the mouse or press any key. • Turn both devices off and then back on.
Does the "Invalid Format" message appear?	• The signal from the PC (graphic card) is out of the vertical or horizontal frequency range of the product. Adjust the frequency range by referring to the Specifications in this manual.
Does the "No Signal" message appear?	• The signal cable between PC and product is not connected. Check the signal cable. • Press the INPUT menu in the remote Control to check the input signal.

'Unknown Product' message appears when the product is connected.

Problem	Resolution
Did you install the driver?	• See if the plug&play function is supported by referring to the video card user manual.

The screen image looks abnormal.

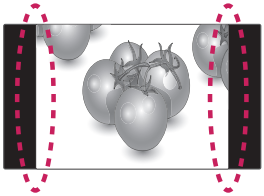
Problem	Resolution
Is the screen position wrong?	• See if the graphic card resolution and frequency are supported by the product. If the frequency is out of range, set to the recommended resolution in the Control Panel "Display" Setting menu.
The screen is displayed abnormally.	• The proper input signal is not connected to the signal port. Connect the signal cable that matches with the source input signal.

After-image appears on the product.

Problem	Resolution
After-image appears when the product is turned off.	• If you use a fixed image for a long time, the pixels may be damaged quickly. Use the screen-saver function.

PRECAUTIONS TO TAKE TO PREVENT IMAGE RETENTION

- If a static image is displayed for an extended period of time, the screen may be damaged and the image retention can last for a long time or could be permanent. Damage resulting from long-term static images is not covered by the product warranty.
- Do not display a static image on the screen for more than two hours. Displaying images in a 4:3 aspect ratio for an extended period of time may cause image retention around the border of the screen. Most third-party products have the same issue and this will not be accepted as a cause for refund or exchange.



The audio function does not work.

Problem	Resolution
No sound?	• See if the audio cable is connected properly. • Adjust the volume. • See if the sound is set properly.
Sound is too dull.	• Adjust the Clear Voice II, Treble, and Bass appropriately.
Sound is too low.	• Adjust the volume.

Screen color is abnormal.

Problem	Resolution
Screen has poor color resolution (16 colors).	• Set the number of colors to more than 24 bits (true color) Select Control Panel - Display - Settings - Color Table menu in Windows.
Screen color is unstable or mono-colored.	• Check the connection status of the signal cable. Or, re-insert the PC graphic card.
Do black spots appear on the screen?	• Several pixels (red, green, white, or black color) may appear on the screen, which can be attributable to the unique characteristics of the LCD panel. It is not a malfunction of the LCD.
When I set Input Label to PC in the Input List, some letters are displayed with a different color than the original color.	• For Windows 7, go to Start -> Control Panel -> Appearance and Personalization -> Font and select Adjust ClearType text. * If you are using a specific graphic card that supports the UHD resolution, the problem may not be solved due to compatibility issues.

The operation does not work normally.

Problem	Resolution
The power suddenly turned off.	• Is the sleep timer set? • Check the power control settings. Power interrupted

I have a problem with touch response.

Problem	Resolution
Touch does not respond.	• Check the USB cable connection. - This may occur when the USB cable between PC and monitor is not connected. Check the USB cable and make it firmly connected. * Check the connection on Windows 7 / 8.x Control Panel > System and Security > System - Check the number of touch-points supported under Pen and Touch. • Check the PC power. - This may occur when the PC is powered off. Make sure that your PC's power cord is firmly plugged into a power outlet. • Restart your PC. - Touch may not respond when the system is down due to the unstable network. Reconnect the LAN cable or restart your PC. • Check the signal cable connection. - If your PC and monitor are not connected using a signal cable, touch does not respond. Check the signal cable connection. • Check the monitor power. - Touch may not respond when the monitor is powered off. • Check if the screen is currently on.
The location of a touch does not correspond to the touch coordinates.	• Change your tablet PC settings (Windows 7 / 8.x). - This may occur when the touch screen is not calibrated properly. Control Panel > Hardware and Sound > Tablet PC Settings > Display > Display options > Calibrate or Reset * For information about gestures and settings on Windows 7 / 8.x, refer to the Windows Help.
A touch is applied to a monitor other than the one I intended.	• Set the monitor as the default monitor. - This may occur if the monitor is not set as the default monitor when you are using multiple monitors. Go to Control Panel > Display > Settings tab > Select the monitor > Use this device as the primary monitor (U) > Apply (A) • Change your tablet PC settings (Windows 7 / 8.x). - This may occur when the touch screen is not calibrated properly. Go to Control Panel > Hardware and Sound > Tablet PC Settings > Display > Display options > Calibrate or Reset

Problem	Resolution
I cannot use 10 touch points in Windows 7 / 8.x.	• Make sure that you use a content that supports up to 10 touch points. - The content played (e.g. Flash Player, Paint, etc.) may not support 10 touch points. • Remove the USB cable and connect it again in 10 seconds. • Run the content (e.g. Flash Player, Paint, etc.) again. • Restart your PC. • If the gap between two touch points is 20 mm (0.78 inches) or less, the touch error may occur. • On the edge of the touch screen, 10 touch points may work unstably.

SPECIFICATIONS

LCD Panel	Screen Type	TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Panel.
	Pixel Pitch	0.4845 mm (H) x 0.4845 mm (V) (0.01 inches (H) x 0.01 inches (V))
Video Signal	Max. Resolution	DVI-D: 1920 x 1080 @ 60 Hz DISPLAYPORT: 3840 x 2160 @ 30 Hz HDMI 1: 3840 x 2160 @ 60 Hz (YCbCr 4:2:0) HDMI 2: 3840 x 2160 @ 60 Hz - It may not be supported depending on the OS or Graphic card type.
	Recommended Resolution	DVI-D : 1920 x 1080 @ 60 Hz DISPLAYPORT / HDMI 1 : 3840 x 2160 @ 30 Hz HDMI 2 : 3840 x 2160 @ 60 Hz - It may not be supported depending on the OS or Graphic card type.
	Horizontal Frequency	DVI-D/ HDMI 1/ HDMI 2/ DISPLAYPORT: 15 kHz to 83 kHz, 112.5 kHz(HDMI2),135 kHz(HDMI2)
	Vertical Frequency	DVI-D/ HDMI 1/ HDMI 2/ DISPLAYPORT: 24 Hz to 76 Hz
	Synchronization Type	Digital
Input/ Output ports		RS-232C IN/OUT, LAN, COMPONENT IN, DVI-D IN, DP IN, PENTRAY CONTROL, HDMI1, HDMI2, AUDIO IN/OUT, USB IN 1/2/3, IR&LIGHT SENSOR, SPEAKER OUT, TOUCH USB
Embedded battery		Applied
Power	Power Rating	AC 100-240 V~ 50/60 Hz 5.7 A
	Power Consumption	On Mode: 400 W (Typ.) Sleep Mode : ≤ 3 W Off Mode : ≤ 1 W
Environmental conditions	Operating Temperature Operating Humidity	0 °C to 40 °C (32 °F to 104 °F) 10 % to 80 %
	Storage Temperature Storage Humidity	-20 °C to 60 °C (-68 °F to 140 °F) 5 % to 95 %
Dimensions (Width x Height x Depth) / Weight		1951.2 mm x 1137.2 mm x 111.9 mm / 104 kg (76.8 inches x 44.7 inches x 4.4 inches / 229.2 lbs)

Product specifications shown above may be changed without prior notice due to upgrade of product functions.

"~" refers to alternating current (AC), and "⎓" refers to direct current (DC).

*** Touch Screen**

OS (Operating System)	Windows 7 / 8.x	10 Points
	Space between touches : at least 20 mm (0.78 inches) or more	

*** Applicable only for models that support the speakers**

Audio	RMS Audio Output	10 W + 10 W (R + L)
	Input Sensitivity	0.7 Vrms
	Speaker Impedance	8 Ω

Product specifications shown above may be changed without prior notice due to upgrade of product functions.

HDMI (PC) Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)	Remarks
640 x 350	31.468	70.09	
720 x 400	31.469	70.08	
640 x 480	31.469	59.94	
800 x 600	37.879	60.317	
1024 x 768	48.363	60.004	
1152 x 864	54.348	60.053	
1280 x 1024	63.981	60.02	
1920 x 1080	67.5	60	
3840 x 2160	54	24	
3840 x 2160	56.25	25	
3840 x 2160	67.5	30	
3840 x 2160	112.5	50	HDMI2
3840 x 2160	135	60	HDMI2

DVI-D Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)
640 x 350	31.469	70.8
720 x 400	31.468	70.8
640 x 480	31.469	59.94
800 x 600	37.879	60.317
832 x 624	49.725	74.55
1024 x 768	48.363	60
1366 x 768	47.7	60
1280 x 1024	63.981	60.02
1680 x 1050	65.290	59.954
1920 x 1080	67.5	60

HDMI (DTV) Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)	Remarks
640 x 480	31.469	59.94	
640 x 480	31.5	60	
720 x 480	15.73	59.94	
720 x 480	15.75	60	
720 x 576	15.625	50	
720 x 480	31.47	59.94	
720 x 480	31.5	60	
720 x 576	31.25	50	
1280 x 720	44.96	59.94	
1280 x 720	45	60	
1280 x 720	37.5	50	
1920 x 1080	28.125	50	
1920 x 1080	33.72	59.94	
1920 x 1080	33.75	60	
1920 x 1080	26.97	23.976	
1920 x 1080	27	24	
1920 x 1080	33.71	29.97	
1920 x 1080	33.75	30	
1920 x 1080	56.25	50	
1920 x 1080	67.432	59.94	
1920 x 1080	67.5	60	
3840 x 2160	53.95	23.976	
3840 x 2160	54	24	
3840 x 2160	56.25	25	
3840 x 2160	61.43	29.97	
3840 x 2160	67.5	30	
3840 x 2160	112.5	50	HDMI2
3840 x 2160	135	60	HDMI2

DISPLAYPORT (PC) Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)
640 x 480	31.469	59.94
800 x 600	37.879	60.317
1024 x 768	48.363	60
1280 x 720	44.772	59.855
1152 x 864	53.783	59.959
1280 x 1024	63.981	60.02
1920 x 1080	67.5	60
3840 x 2160	67.5	30

DISPLAYPORT (DTV) Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)
720 x 480p	31.5	60
720 x 576p	31.25	50
1280 x 720p	37.5	50
1280 x 720p	45	60
1920 x 1080i	28.1	50
1920 x 1080i	33.75	60
1920 x 1080p	56.25	50
1920 x 1080p	67.5	60
3840 x 2160p	67.5	30

SUPERSIGN (PC) Support Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)
640 x 480	31.469	59.94
800 x 600	37.879	60.317
1024 x 768	48.363	60.004
1152 x 864	54.348	60.053
1280 x 1024	63.981	60.02
1920 x 1080	67.5	60
3840 x 2160	54	24
3840 x 2160	56.25	25
3840 x 2160	67.5	30

COMPONENT Mode

Resolution	Horizontal frequency (kHz)	Vertical frequency (Hz)
720 x 480i	15.73	59.94
720 x 480i	15.73	60
720 x 576i	15.625	50
720 x 480p	31.47	59.94
720 x 480p	31.5	60
720 x 576p	31.25	50
1280 x 720	44.96	59.94
1280 x 720	45	60
1280 x 720	45	50
1920 x 1080	28.125	50
1920 x 1080	33.72	59.94
1920 x 1080	33.75	60
1920 x 1080	56.25	50
1920 x 1080	67.5	60

NOTE

- Vertical frequency: The product display functions by the screen image changing dozens of times every second like a fluorescent lamp. The vertical frequency or refresh rate is the number of image displays per second. The unit is Hz.
- Horizontal frequency: The horizontal interval is the time taken to display one horizontal line. When 1 is divided by the horizontal interval, the number of horizontal lines displayed every second can be tabulated as the horizontal frequency. The unit is kHz.

IR CODES

All models do not support the HDMI/USB function.
Some key codes may not be supported depending upon the model.

Code (Hex)	Function	Remarks
08	⏻ (POWER)	Remote control button
C4	MONITOR ON	Remote control button
C5	MONITOR OFF	Remote control button
95	Energy Saving	Remote control button
0B	INPUT	Remote control button
10	Number Key 0	Remote control button
11	Number Key 1	Remote control button
12	Number Key 2	Remote control button
13	Number Key 3	Remote control button
14	Number Key 4	Remote control button
15	Number Key 5	Remote control button
16	Number Key 6	Remote control button
17	Number Key 7	Remote control button
18	Number Key 8	Remote control button
19	Number Key 9	Remote control button
02	Volume (+)	Remote control button
03	Volume (-)	Remote control button
E0	BRIGHTNESS ^ (Page Up)	Remote control button
E1	BRIGHTNESS ˅ (Page Down)	Remote control button
DC	3D	Remote control button
32	1/a/A	Remote control button
2F	CLEAR	Remote control button
7E	SIMPLINK	Remote control button
79	ARC(MARK) (Aspect Ratio)	Remote control button
4D	PSM (Picture Mode)	Remote control button
09	MUTE	Remote control button
43	SETTINGS (Menu)	Remote control button
99	Auto Config.	Remote control button
40	Up ▲	Remote control button
41	Down ▼	Remote control button
06	Right ▶	Remote control button
07	Left ◀	Remote control button
44	OK	Remote control button

Code (Hex)	Function	Remarks
28	BACK	Remote control button
7B	TILE	Remote control button
5B	EXIT	Remote control button
72	PICTURE ID ON (RED)	Remote control button
71	PICTURE ID OFF (GREEN)	Remote control button
63	YELLOW	Remote control Button
61	BLUE	Remote control button
B1	■	Remote control button
B0	▶	Remote control button
BA	⏸	Remote control button
8F	◀◀	Remote control button
8E	▶▶	Remote control button
5F	W.BAL	Remote control button
3F	S.MENU	Remote control button
7C	HOME	Remote control button

TO CONTROL MULTIPLE PRODUCTS

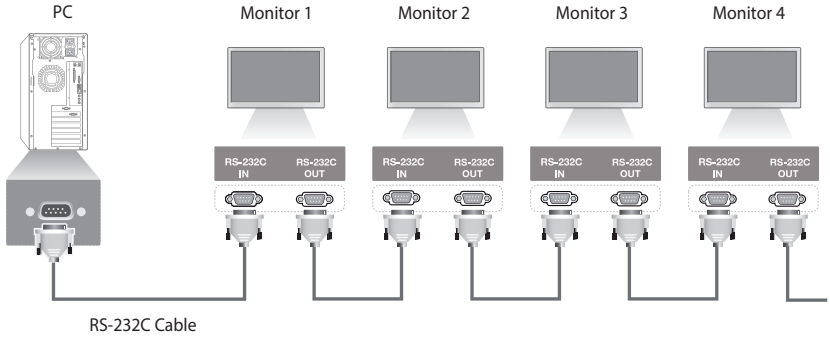
Use this method to connect several products to a single PC. You can control several products at a time by connecting them to a single PC.

In the Installation menu, the Set ID must be between 1 and 1000 without being duplicated.

Connecting the cable

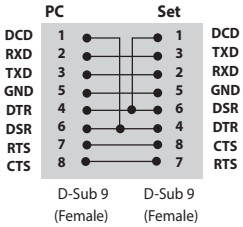
Connect the RS-232C cable as shown in the picture.

The RS-232C protocol is used for communication between the PC and product. You can turn the product on or off, select an input source or adjust the OSD menu from your PC.



RS-232C Configurations

8-Wire Configurations (Standard RS-232C cable)

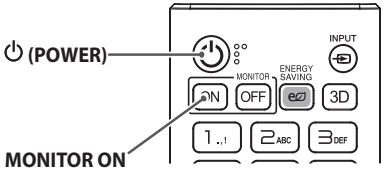


Communication Parameter

Baud Rate: 9600 BPS
Data Length: 8 bit
Parity Bit: None
Stop Bit: 1 bit
Flow Control: None
Communication Code: ASCII code
Use a crossed (reverse) cable

NOTE

- When using three-wire connections (non-standard), an IR daisy chain cannot be used.
- When monitors connected via Daisy Chain (that controls multiple monitors) are turned off and on successively, some monitors may not turn on. In this case, you can turn those monitors on by pressing the **MONITOR ON** button, not the **POWER** button.



Command Reference List

		COMMAND		DATA (Hexadecimal)
		1	2	
01	Power	k	a	00 to 01
02	Select input	x	b	See Select Input
03	Aspect Ratio	k	c	See Aspect Ratio
04	Energy Saving	j	q	See Energy Saving
05	Picture Mode	d	x	See Picture Mode
06	Contrast	k	g	00 to 64
07	Brightness	k	h	00 to 64
08	Sharpness	k	k	00 to 32
09	Color	k	i	00 to 64
10	Tint	k	j	00 to 64
11	Color temperature	x	u	00 to 64
12	Balance	k	t	00 to 64
13	Sound Mode	d	y	See Sound Mode
14	Mute	k	e	00 to 01
15	Volume Control	k	f	00 to 64
16	Time 1 (year/month/day)	f	a	See Time 1
17	Time 2 (hour/minute/second)	f	x	See Time 2
18	Off time schedule	f	c	00 to 01
19	On Time Schedule	f	b	00 to 01
20	Off Timer (Repeat/Time)	f	e	See Off Timer
21	On Timer (Repeat/Time)	f	d	See On Timer
22	On Timer Input	f	u	Refer to On Timer Input.
23	No Signal Power Off (15Min)	f	g	00 to 01
24	Auto Power Off (4 Hours)	m	n	00 to 01
25	Language	f	i	See Language
26	Reset	f	k	00, 02
27	Current Temperature	d	n	FF
28	Key	m	c	See Key
29	Time Elapsed	d	l	FF
30	Product Serial Number	f	y	FF
31	Software Version	f	z	FF
32	White Balance Red Gain	j	m	00 to FE
33	White Balance Green Gain	j	n	00 to FE

		COMMAND		DATA (Hexadecimal)
		1	2	
34	White Balance Blue Gain	j	o	00 to FE
35	White Balance Red Offset	s	x	00 to FE
36	White Balance Green Offset	s	y	00 to FE
37	White Balance Blue Offset	s	z	00 to FE
38	Backlight	m	g	00 to 64
39	Screen off	k	d	00 to 01
40	Tile Mode	d	d	00 to FF
41	Check Tile Mode	d	z	FF
42	Tile ID	d	i	See Tile ID
43	Natural Mode	d	j	00 to 01
44	DPM Select	f	j	00 to 07
45	Remote Control/Local Key Lock	k	m	00 to 01
46	Power On Delay	f	h	00 to 64
47	Fail Over Select	m	i	00 to 02
48	Fail Over Input Select	m	j	See Fail Over Input Select
49	IR Operation	t	p	00 to 02
50	Local Key Operation	t	o	00 to 02
51	Check the status	s	v	See Check the status
52	Check Screen	t	z	00 to 01
53	Speakers	d	v	00 to 01

* Note: Only the power and key commands can be used while media files are playing from a USB device or internal/external memory. The commands other than the power and key commands will be treated as NG. Some commands may not be supported depending upon the model.

Transmission/Reception Protocol

Transmission

[Command1][Command2][ ][Set ID][ ][Data][Cr]

- [Command1]: identifies between the factory setting and the user setting modes.
- [Command2]: controls monitor sets.
- [Set ID]: Used for selecting a set you want to control. A unique Set ID can be assigned to each set ranging from 1 to 255 (01H~FFH) under Settings in the OSD menu.
  - Selecting '00H' for Set ID allows the simultaneous control of all connected monitors.
  - The maximum value of Set ID may differ depending on the model.
- [Data]: Transmits command data.
  - Data count may increase depending on the command.
- [Cr]: Carriage Return. Corresponds to '0x0D' in ASCII code.
- [ ]: White Space. Corresponds to '0x20' in ASCII code.

Acknowledgement

[Command2][ ][Set ID][ ][OK/NG][Data][x]

- The Product transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is FF, it indicates the present status data. If the data is in data write mode, it returns the data of the PC computer.
- If a command is sent with Set ID '00' (=0x00), the data is reflected to all monitor sets and each monitor set does not send an acknowledgement (ACK).
- If the data value 'FF' is sent in control mode via RS-232C, the current setting value of a function can be checked (only for some functions).
- Some commands are not supported depending upon the model.

01. Power (Command: k a)

Controls the power on/off of the set.

Transmission

[k][a][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[a][ ][Set ID][ ][OK/NG][Data][x]

- The acknowledgement signal is returned properly only when the monitor is fully powered on.
- There may be a delay between the transmission and acknowledgement signals.

02. Select Input (Command: x b)

Selects an input signal.

Transmission

[x][b][ ][Set ID][ ][Data][Cr]

Data 40: COMPONENT
70: DVI-D (PC)
80: DVI-D (DTV)
90: HDMI1 (DTV)
A0: HDMI1 (PC)
91: HDMI2 (DTV)
A1: HDMI2 (PC)
C0: DISPLAYPORT (DTV)
D0: DISPLAYPORT (PC)

Acknowledgement

[b][ ][Set ID][ ][OK/NG][Data][x]

- Some input signals may not be supported depending upon the model.

03. Aspect Ratio (Command: k c)

Adjusts the aspect ratio.

Transmission

[k][c][ ][Set ID][ ][Data][Cr]

Data 01: 4:3
02: 16:9
04: Zoom
06: Set by Program
09: Just Scan (720p or higher)
10 to 1F: Cinema Zoom 1 to 16

- Available data types differ depending on the input signal. For more information, see the aspect ratio section of the owner's manual.
- The aspect ratio may differ depending upon the model's input configuration.

Acknowledgement

[c][ ][Set ID][ ][OK/NG][Data][x]

04. Energy Saving (Command: j q)

Sets the Energy Saving.

Transmission

[j][q][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: Minimum
02: Medium
03: Maximum
04: Automatic
05: Screen off

Acknowledgement

[q][ ][Set ID][ ][OK/NG][Data][x]

- This may not be supported depending upon the model.

05. Picture Mode (Command: d x)

Selects a picture mode.

Transmission

[d][x][ ][Set ID][ ][Data][Cr]

Data 00: Vivid
01: Standard
02: Cinema
03: Sports
04: Game
05: Expert 1
06: Expert 2
08: APS
09: Photo
10: Touch

Acknowledgement

[x][ ][Set ID][ ][OK/NG][Data][x]

- Depending upon the model, some picture modes may not be supported.

06. Contrast (Command: k g)

Adjusts the screen contrast.

Transmission

[k][g][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Contrast 0 to 100

Acknowledgement

[g][ ][Set ID][ ][OK/NG][Data][x]

07. Brightness (Command: k h)

Adjusts the screen brightness.

Transmission

[k][h][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Brightness 0 to 100

Acknowledgement

[h][ ][Set ID][ ][OK/NG][Data][x]

08. Sharpness (Command: k k)

Adjusts the screen sharpness.

Transmission

[k][k][ ][Set ID][ ][Data][Cr]

Data 00 to 32: Sharpness 0 to 50

Acknowledgement

[k][ ][Set ID][ ][OK/NG][Data][x]

09. Color (Command: k i)

Adjusts the screen color.

Transmission

[k][i][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Color 0 to 100

Acknowledgement

[i][ ][Set ID][ ][OK/NG][Data][x]

10. Tint (Command: k j)

Adjusts the screen tint.

Transmission

[k][j][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Tint red 50 to green 50

Acknowledgement

[j][ ][Set ID][ ][OK/NG][Data][x]

11. Color Temperature (Command: x u)

Adjusts the screen color temperature.

Transmission

[x][u][ ][Set ID][ ][Data][Cr]

Data 00 to 64: warm 50 to cool 50

Acknowledgement

[u][ ][Set ID][ ][OK/NG][Data][x]

12. Balance (Command: k t)

Adjusts the sound balance.

Transmission

[k][t][ ][Set ID][ ][Data][Cr]

Data 00 to 64: left 50 to right 50

Acknowledgement

[t][ ][Set ID][ ][OK/NG][Data][x]

13. Sound mode (Command: d y)

Selects a sound mode.

Transmission

[d][y][ ][Set ID][ ][Data][Cr]

Data 01: Standard
02: Music
03: Cinema
04: Sports
05. Game
07: News

Acknowledgement

[y][ ][Set ID][ ][OK/NG][Data][x]

14. Mute (Command: k e)

Mutes/unmutes the sound.

Transmission

[k][e][ ][Set ID][ ][Data][Cr]

Data 00: Mute
01: Unmute

Acknowledgement

[e][ ][Set ID][ ][OK/NG][Data][x]

15. Volume Control (Command: k f)

Adjusts the playback volume.

Transmission

[k][f][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Volume 0 to 100

Acknowledgement

[f][ ][Set ID][ ][OK/NG][Data][x]

16. Time 1 (year/month/day) (Command: f a)

Adjusts the Time 1 (year/month/day) value.

Transmission

[f][a][ ][Set ID][ ][Data1][ ][Data2][ ][Data3][Cr]

Data1 04 to 1B: year 2014 to 2037

Data2 01 to 0C: January to December

Data3 01 to 1F: 1st to 31st

- Enter "fa [Set ID] ff" to view the Time 1 (year/month/day) settings.

Acknowledgement

[a][ ][Set ID][ ][OK/NG][Data1][Data2][Data3][x]

17. Time 2 (hour/minute/second) (Command: f x)

Adjusts the Time 2 (hour/minute/second) value.

Transmission

[f][x][ ][Set ID][ ][Data1][ ][Data2][ ][Data3][Cr]

Data1 00 to 17: 00 to 23 hours

Data2 00 to 3B: 00 to 59 minutes

Data3 00 to 3B: 00 to 59 seconds

- Enter "fx [Set ID] ff" to view the Time 2 (hour/minute/second) settings.
- This function is only available when Time 1 (year/month/day) is set.

Acknowledgement

[x][ ][Set ID][ ][OK/NG][Data1][Data2][Data3][x]

18. Off Time Schedule (Command: f c)

Enables/disables the Off Time Schedule.

Transmission

[f][c][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[c][ ][Set ID][ ][OK/NG][Data][x]

19. On Time Schedule (Command: f b)

Enables/disables the On Time schedule.

Transmission

[f][b][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[b][ ][Set ID][ ][OK/NG][Data][x]

20. Off Timer (Repeat/Time) (Command: f e)

Configures Off Timer (Repeat/Time) settings.

Transmission

[f][e][ ][Set ID][ ][Data1][ ][Data2][ ][Data3][Cr]

Data1

1. f1h to f7h (reading data)

F1: reads the 1st Off Timer data

F2: reads the 2nd Off Timer data

F3: reads the 3rd Off Timer data

F4: reads the 4th Off Timer data

F5: reads the 5th Off Timer data

F6: reads the 6th Off Timer data

F7: reads the 7th Off Timer data

2. e1h-e7h (delete one index), e0h (delete all indexes)

E0: erases all Off Timer settings

E1: erases the 1st Off Timer setting

E2: erases the 2nd Off Timer setting

E3: erases the 3rd Off Timer setting

E4: erases the 4th Off Timer setting

E5: erases the 5th Off Timer setting

E6: erases the 6th Off Timer setting

E7: erases the 7th Off Timer setting

3. 01h to 0Ch (sets the day of the week for the Off Timer)

01: Once

02. Daily

03: Mon - Fri

04: Mon - Sat

05: Sat - Sun

06. Every Sunday

07. Every Monday

08. Every Tuesday

09. Every Wednesday

0A. Every Thursday

0B. Every Friday

0C. Every Saturday

Data2 00 to 17: 00 to 23 hours

Data3 00 to 3B: 00 to 59 minutes

- To read or delete the Off Time Schedule list, [Data2] [Data3] must be set to FFH.

  Example 1: fe 01 f1 ff ff – reads the first index data in Off Timer.

  Example 2: fe 01 e1 ff ff - deletes the first index data from Off Timer.

  Example 3: fe 01 04 02 03 - sets Off Timer to 02:03 from Monday to Saturday.

- This function is only available when Time 1 (year/month/day) and Time 2 (hour/minute/second) are set.

Acknowledgement

[e][ ][Set ID][ ][OK/NG][Data1][Data2][Data3][x]

21. On timer (Repeat/Time) (Command: f d)

Configures On Timer (Repeat/Time) settings.

Transmission

[f][d][ ][Set ID][ ][Data1][ ][Data2][ ][Data3][Cr]

Data1

1. f1h to f7h (reading data)

F1: reads the 1st On Timer data

F2: reads the 2nd On Timer data

F3: reads the 3rd On Timer data

F4: reads the 4th On Timer data
F5: reads the 5th On Timer data
F6: reads the 6th On Timer data
F7: reads the 7th On Timer data
2. e1h to e7h (delete one index), e0h (delete all indexes)
E0: erases all On Timer settings
E1: erases the 1st On Timer setting
E2: erases the 2nd On Timer setting
E3: erases the 3rd On Timer setting
E4: erases the 4th On Timer setting
E5: erases the 5th On Timer setting
E6: erases the 6th On Timer setting
E7: erases the 7th On Timer setting
3. 01h to 0Ch (sets the day of the week for the On Timer)
01: Once
02. Daily
03: Mon - Fri
04: Mon - Sat
05: Sat - Sun
06. Every Sunday
07. Every Monday
08. Every Tuesday
09. Every Wednesday
0A. Every Thursday
0B. Every Friday
0C. Every Saturday
Data2 00 to 17: 00 to 23 hours
Data3 00 to 3B: 00 to 59 minutes

- To read or delete an On Time schedule list, [Data2] [Data3] must be set to FFH.

  Example 1: fd 01 f1 ff ff - reads the first index data from On Timer.

  Example 2: fd 01 e1 ff ff - deletes the first index data from On Timer.

  Example 3: fd 01 04 02 03 - sets On Timer to 02:03 from Monday to Saturday.
- This function is only available when Time 1 (year/month/day) and Time 2 (hour/minute/second) are set.
- This feature works as normal when the values for 22. On timer input are entered.

Acknowledgement
[d][ ][Set ID][ ][OK/NG][Data1][Data2][Data3][x]

22. On Timer Input (Command: f u)

Select an external input for the current On Time setting and add a new schedule.

Transmission
[f][u][ ][Set ID][ ][Data1][Cr]
[f][u][ ][Set ID][ ][Data1][ ][Data2][Cr]

Data (Add schedule)
40: COMPONENT
70: DVI-D (PC)
A0: HDMI1 (PC)
A1: HDMI2 (PC)
D0: DISPLAYPORT (PC)
Data1 (Read schedule)
1. f1h to f7h (Read data)
F1: Select the 1st schedule input
F2: Select the 2nd schedule input
F3: Select the 3rd schedule input
F4: Select the 4th schedule input
F5: Select the 5th schedule input
F6: Select the 6th schedule input
F7: Select the 7th schedule input
Data2 (Read schedule)
FF

- To read the schedule input, enter FF for [Data2].

  If no schedule is available for [Data1] when attempting to read the schedule data, the text 'NG' will be displayed and the operation will fail.

  (Example 1: fu 01 90 - Move each schedule input down one row and save the 1st schedule input in HDMI mode.)

  (Example 2: fu 01 f1 ff - Read the 1st schedule input.)
- This function is supported only when 1 (Year/Month/Day), 2 (Hour/Minute/Second), On Time (Repeat Mode/Time) are set.
- It may not be supported depending upon the model.

Acknowledgement
[u][ ][Set ID][ ][OK/NG][Data][x]
[u][ ][Set ID][ ][OK/NG][Data1][Data2][x]

23. No Signal Power Off (15Min) (Command: f g)

The monitor will enter Automatic Standby mode if there is no signal for 15 minutes.

Transmission

[f][g][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[g][ ][Set ID][ ][OK/NG][Data][x]

24. Auto Power Off (4 Hours) (Command: m n)

The monitor will Auto Power Off after 4 hours.

Transmission

[m][n][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: 4 hours

Acknowledgement

[n][ ][Set ID][ ][OK/NG][Data][x]

25. Language (Command: f i)

Sets the OSD language.

Transmission

[f][i][ ][Set ID][ ][Data][Cr]

Data 00: Czech
01: Danish
02: German
03: English
04: Spanish (Europe)
05: Greek
06: French
07: Italian
08: Dutch
09: Norwegian
0A: Portuguese
0B: Portuguese (Brazil)
0C: Russian
0D: Finnish
0E: Swedish
0F: Korean
10: Chinese (Mandarin)
11: Japanese
12: Chinese (Cantonese)

Acknowledgement

[i][ ][Set ID][ ][OK/NG][Data][x]

26. Reset (Command: f k)

Performs the Picture Reset/Reset functions.

Transmission

[f][k][ ][Set ID][ ][Data][Cr]

Data 00: Picture Reset
02: Initial Settings

Acknowledgement

[k][ ][Set ID][ ][OK/NG][Data][x]

27. Current temperature (Command: d n)

Checks the inside temperature.

Transmission

[d][n][ ][Set ID][ ][Data][Cr]

Data FF: Check the status

Acknowledgement

[n][ ][Set ID][ ][OK/NG][Data][x]

- Temperature is displayed as a hexadecimal value.

28. Key (Command: m c)

Sends a key code for the IR remote control.

Transmission

[m][c][ ][Set ID][ ][Data][Cr]

Data IR_KEY_CODE

Acknowledgement

[c][ ][Set ID][ ][OK/NG][Data][x]

- For key codes, see IR Codes.
- Some key codes are not supported Depending upon the model.

29. Time Elapsed (Command: d l)

Checks the elapsed time.

Transmission

[d][l][ ][Set ID][ ][Data][Cr]

Data FF: Read status

Acknowledgement

[l][ ][Set ID][ ][OK/NG][Data][x]

- The data received is shown as a hexadecimal value.

30. Product serial number (Command: f y)

Checks the serial number of the product.

Transmission

[f][y][ ][Set ID][ ][Data][Cr]

Data FF: Check product serial number

Acknowledgement

[y][ ][Set ID][ ][OK/NG][Data][x]

- Data is in ASCII code.

31. Software Version (Command: f z)

Checks the software version of the product.

Transmission

[f][z][ ][Set ID][ ][Data][Cr]

Data FF: Check software version

Acknowledgement

[z][ ][Set ID][ ][OK/NG][Data][x]

32. White balance red gain (Command: j m)

Adjusts the white balance red gain value.

Transmission

[j][m][ ][Set ID][ ][Data][Cr]

Data 00 to FE: Red Gain 0 to 254

FF: checks the red gain value

Acknowledgement

[m][ ][Set ID][ ][OK/NG][Data][x]

33. White Balance Green Gain (Command: j n)

Adjusts the white balance green gain value.

Transmission

[j][n][ ][Set ID][ ][Data][Cr]

Data 00 to FE: Green Gain 0 to 254
FF: checks the green gain value

Acknowledgement

[n][ ][Set ID][ ][OK/NG][Data][x]

34. White Balance Blue Gain (Command: j o)

Adjusts the white balance blue gain value.

Transmission

[j][o][ ][Set ID][ ][Data][Cr]

Data 00 to FE: Blue Gain 0 to 254
FF: checks the blue gain value

Acknowledgement

[o][ ][Set ID][ ][OK/NG][Data][x]

35. White Balance Red Offset (Command: s x)

Adjusts the white balance red offset value.

Transmission

[s][x][ ][Set ID][ ][Data][Cr]

Data 00 to 7F: Red Offset 0 to 127
FF: checks the red offset value

Acknowledgement

[x][ ][Set ID][ ][OK/NG][Data][x]

36. White Balance Green Offset (Command: s y)

Adjusts the white balance green offset value.

Transmission

[s][y][ ][Set ID][ ][Data][Cr]

Data 00 to 7F: Green Offset 0 to 127
FF: checks the green offset value

Acknowledgement

[y][ ][Set ID][ ][OK/NG][Data][x]

37. White Balance Blue Offset (Command: s z)

Adjusts the white balance blue offset value.

Transmission

[s][z][ ][Set ID][ ][Data][Cr]

Data 00 to 7F: Blue Offset 0 to 127
FF: checks the blue offset value

Acknowledgement

[z][ ][Set ID][ ][OK/NG][Data][x]

38. Backlight (Command: m g)

Adjusts the backlight brightness.

Transmission

[m][g][ ][Set ID][ ][Data][Cr]

Data 00 to 64: Backlight 0 to 100

Acknowledgement

[g][][set ID][][OK/NG][Data][x]

39. Screen Off (Command: k d)

Turns the screen on or off.

Transmission

[k][d][ ][Set ID][ ][Data][Cr]

Data 00: turns the screen on
01: turns the screen off

Acknowledgement

[d][ ][Set ID][ ][OK/NG][Data][x]

40. Tile Mode (Command: d d)

Sets the Tile Mode and sets values for the tile rows and columns.

Transmission

[d][d][ ][Set ID][ ][Data][Cr]

Data 00 to FF: The first byte - tile column
The second byte - tile row

- 00, 01, 10, and 11 mean that the tile mode is off.
- The maximum values of the rows and columns in Tile Mode may differ depending on the model.

Acknowledgement

[d][ ][Set ID][ ][OK/NG][Data][x]

- This may not be supported depending upon the model.

41. Check Tile Mode (Command: d z)

Checks the tile mode.

Transmission

[d][z][ ][Set ID][ ][Data][Cr]

Data FF: checks the tile mode

Acknowledgement

[z][ ][Set ID][ ][OK/NG][Data1][Data2][Data3][x]

Data1 00: tile mode off
01: tile mode on

Data2 00 to 0F: tile column

Data3 00 to 0F: tile row

42. Tile ID (Command: d i)

Sets the tile ID value of the product.

Transmission

[d][i][ ][Set ID][ ][Data][Cr]

Data 01 to E1: Tile ID 1 to 225**
FF: checks the tile ID

** The data value cannot exceed the value of row x column.

Acknowledgement

[i][ ][Set ID][ ][OK/NG][Data][x]

- When a data value that exceeds the value of row x column is entered (except 0xFF), ACK becomes NG.

43. Natural Mode (in Tile mode) (Command: d j)

When displaying the image naturally, the part of the image that would normally be displayed in the gap between the monitors is omitted.

Transmission

[d][j][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[j][ ][Set ID][ ][OK/NG][Data][x]

44. DPM Select (Command: f j)

To set the DPM (Display Power Management) function.

Transmission

[f][j][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: 5 seconds
02: 10 seconds
03: 15 seconds
04: 1 minutes
05: 3 minutes
06: 5 minutes
07: 10 minutes

Acknowledgement

[j][ ][Set ID][ ][OK/NG][Data][x]

45. Remote Control/Local Key Lock (Command: k m)

Adjusts the remote control/local key (front) lock.

Transmission

[k][m][ ][Set ID][ ][Data][Cr]

Data 00: Off (Lock Off)
01: On (Lock On)

- When the remote control and front keys are locked in Standby mode, you cannot turn on the power on by using the remote control or front power button.

Acknowledgement

[m][ ][Set ID][ ][OK/NG][Data][x]

46. Power On Delay (Command: f h)

Sets the schedule delay when the power turns on. (unit: seconds).

Transmission

[f][h][ ][Set ID][ ][Data][Cr]

Data 00 to 64: min. 0 to maximum 100 (seconds)

Acknowledgement

[h][ ][Set ID][ ][OK/NG][Data][x]

- The maximum Power On delay time may differ depending on the model.

47. Fail Over Select (Command: m i)

Selects an input mode for auto switch.

Transmission

[m][i][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: Auto
02: Manual

Acknowledgement

[i][ ][Set ID][ ][OK/NG][Data][x]

48. Fail Over Input Select (Command: m j)

Selects an input source for auto switch.

* This command is only available when the Fail Over (auto) mode is set to Custom.

Transmission

[m][j][ ][Set ID][ ][Data1][ ][Data2][ ][Data3][ ][Data4][ ][Data5][Cr]

Data 1 to 5 (Input priority: 1 to 5)
40: COMPONENT
70: DVI-D
90: HDMI1
91: HDMI2
C0: DISPLAYPORT

Acknowledgement

[j][ ][SetID][ ][OK/NG][Data1][Data2][Data3][Data4][Data5][x]

Data 1 to 5 (Input priority: 1 to 5)
40: COMPONENT
70: DVI-D
90: HDMI1
91: HDMI2
C0: DISPLAYPORT

- Some input signals may not be supported depending upon the model.

49. IR Operation (Command: t p)

Configures the IR operation settings of the product.

Transmission

[t][p][ ][Set ID][ ][Data][Cr]

Data 00: locks off all of the keys
01: locks on all of the keys except the Power key
02: locks on all of the keys

Acknowledgement

[x][ ][Set ID][ ][OK/NG][Data][x]

- When the monitor is turned off, the power key still functions, even in the locks on all of the keys (02) mode.

50. Local Key Operation (Command: t o)

Configures the local key operation settings of the product.

Transmission

[t][o][ ][Set ID][ ][Data][Cr]

Data 00: locks off all of the keys
01: locks on all of the keys except the Power key
02: locks on all of the keys

Acknowledgement

[o][ ][Set ID][ ][OK/NG][Data][x]

- When the monitor is turned off, the power key still functions, even in the locks on all of the keys (02) mode.

51. Status (Command: s v)

Checks the current signal status of the product.

Transmission

[s][v][ ][Set ID][ ][Data][ ][FF][Cr]

Data 02: checks whether there is a signal or not
10: RGB sensing OK/NG (Check Screen)

Acknowledgement

[v][ ][Set ID][ ][OK/NG][Data][Data1][x]

Data: 02 (when a signal is found)
Data1 00: no signal
01: there is a signal
Data: 10 (Check Screen)
Data1 00: Check Screen result NG
07: Check Screen result OK

- Treated as NG if Check Screen is set to Off.

52. Check Screen (Command: t z)

Sets Check Screen.

Transmission

[t][z][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[z][ ][Set ID][ ][OK/NG][Data][x]

- Depending upon the model, Check Screen may not be supported.

53. Speaker (Command: d v)

Sets the speaker function.

Transmission

[d][v][ ][Set ID][ ][Data][Cr]

Data 00: Off
01: On

Acknowledgement

[v][ ][Set ID][ ][OK/NG][Data][x]



To obtain the source code under GPL, LGPL, MPL and other open source licenses, that is contained in this product, please visit *http://opensource.lge.com*.

In addition to the source code, all referred license terms, warranty disclaimers and copyright notices are available for download.

LG Electronics will also provide open source code to you on CD-ROM for a charge covering the cost of performing such distribution (such as the cost of media, shipping, and handling) upon email request to opensource@lge.com. This offer is valid for three (3) years from the date on which you purchased the product.

The model and serial numbers of the SET are located on the back and one side of the SET. Record them below should you ever need service.

MODEL _____

SERIAL _____

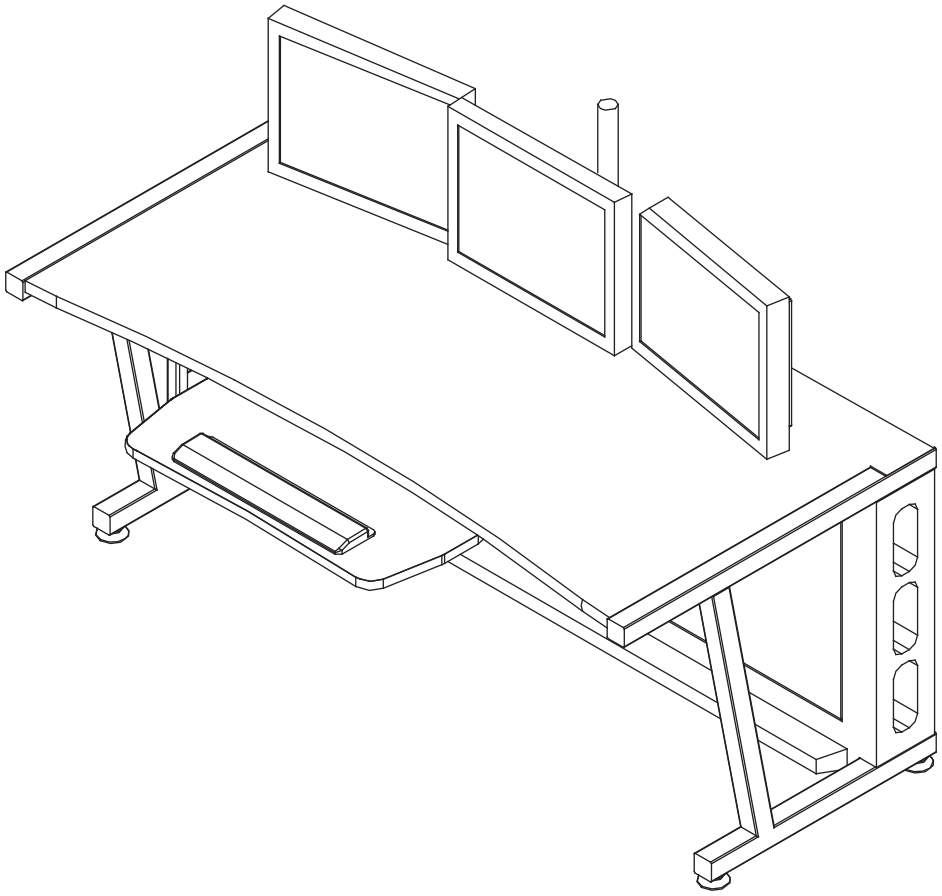
WARNING - This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Temporary noise is normal when powering ON or OFF this device.

Instruction Sheet

LD SERIES

LCD Monitoring Desk



THANK YOU

Thank you for purchasing the LD Series LCD Monitoring Desk. Please read these instructions thoroughly before assembling this product.

PRODUCT FEATURES

- Modular Design allows economical additions and limitless design possibilities
- Power distribution and cable management cabinet features integral front door and rear doors for access

Middle Atlantic Products

ASSEMBLY

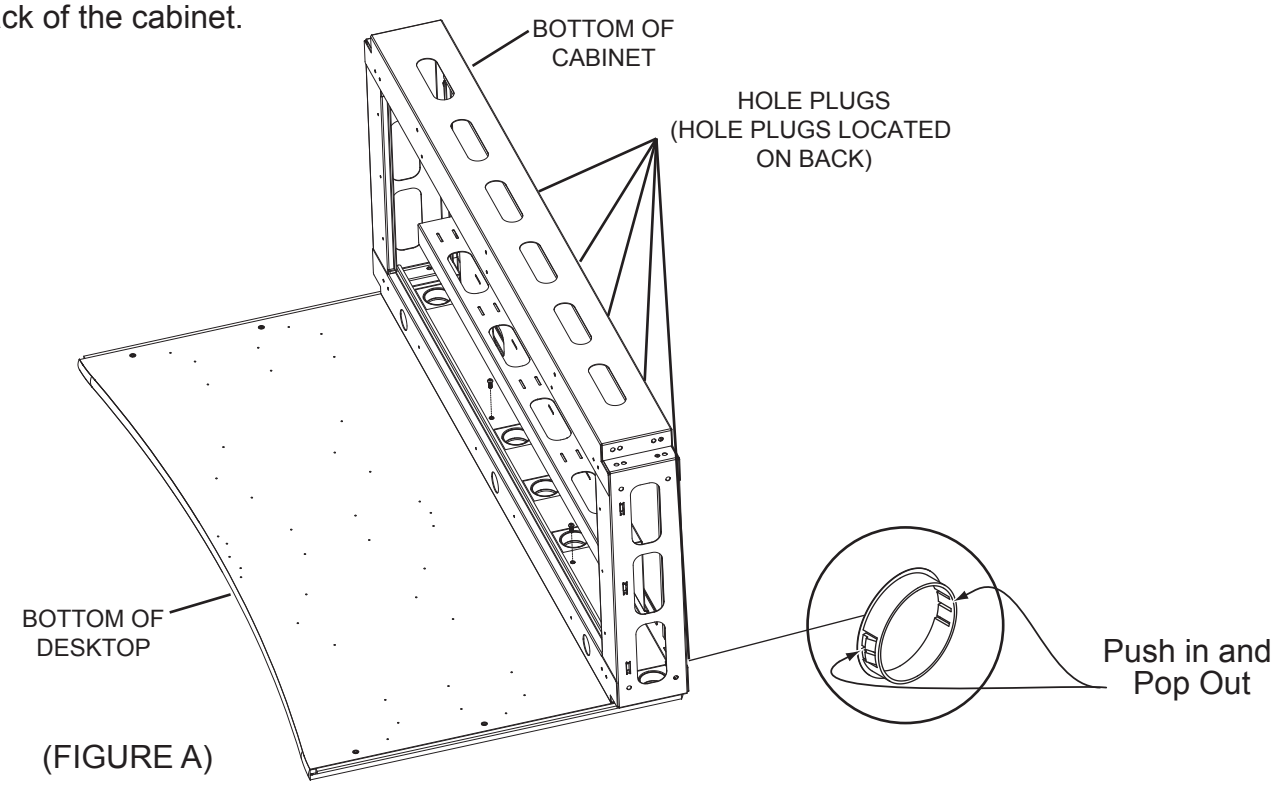
CAREFULLY REMOVE ALL CONTENTS FROM CRATE BEFORE BEGINNING ASSEMBLY

1) Lay desktop upside down on a flat surface. Using the two screws provided, attach cabinet to work surface. Do not tighten screws. **(FIGURE A)**

NOTE: For ease of installation, keep desk flipped over until assembly of desk and accessories is complete.

NOTE: Bottom of desktop has mounting holes for accessories. Bottom of cabinet does not have mounting holes. Cabinet direction is correct when hole plugs and mounting holes on cabinet line up with hole plugs and mounting holes on desktop.

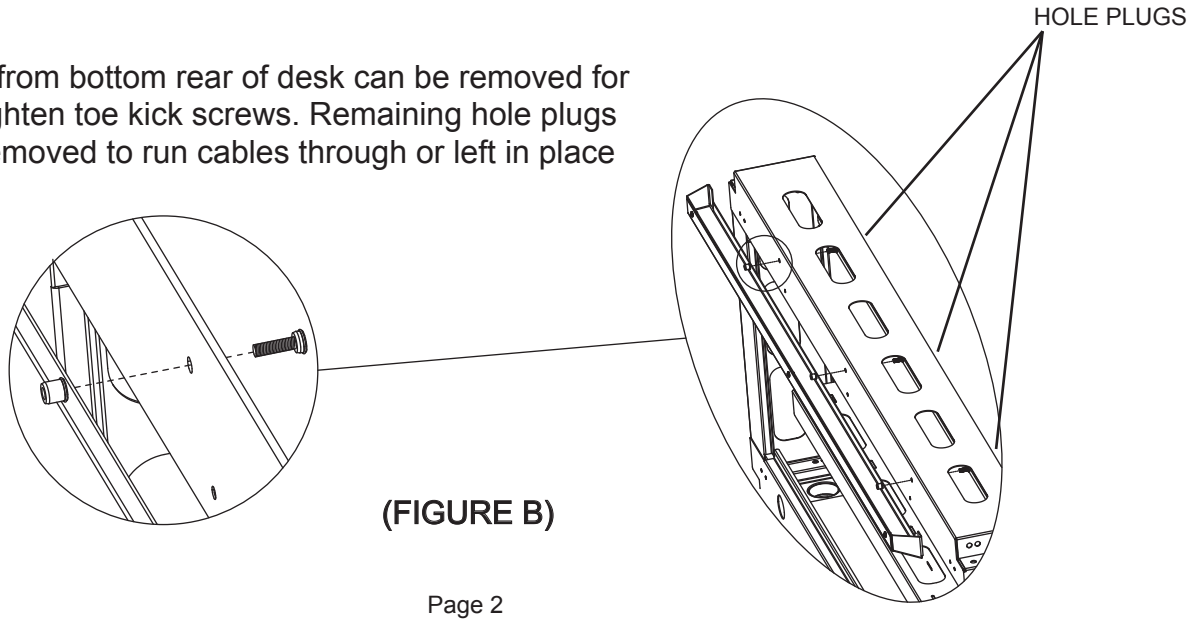
TIP: Remove the doors from the cabinet during assembly and remove the hole plugs from the back of the cabinet.



(FIGURE A)

2) Attach toe kick to cabinet by using three screws provided. **(FIGURE B)**

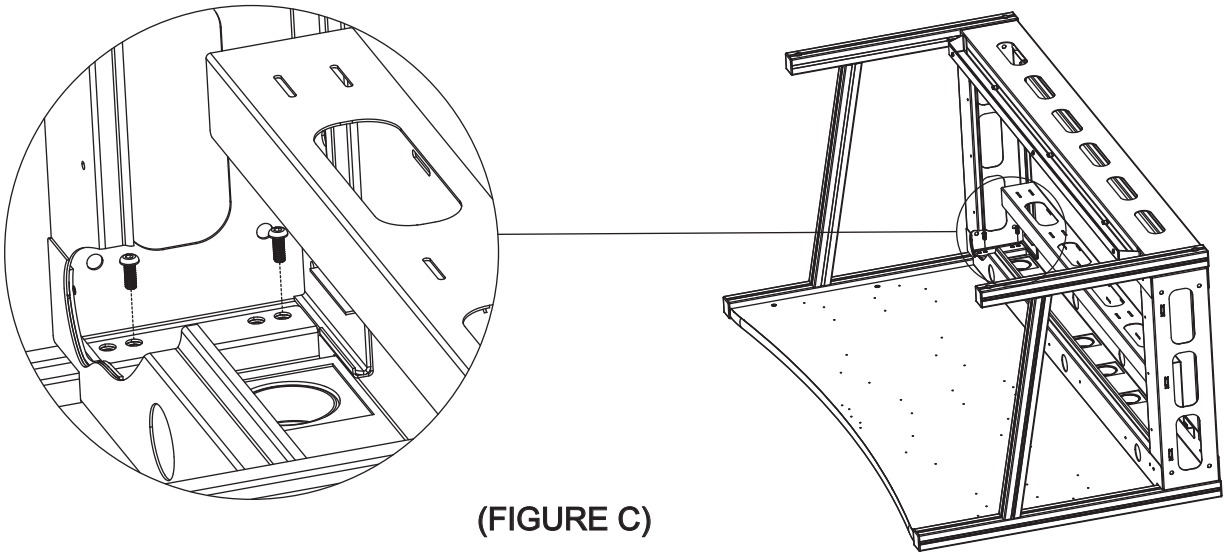
NOTE: Hole plugs from bottom rear of desk can be removed for easier access to tighten toe kick screws. Remaining hole plugs from rear can be removed to run cables through or left in place if not used.



(FIGURE B)

ASSEMBLY

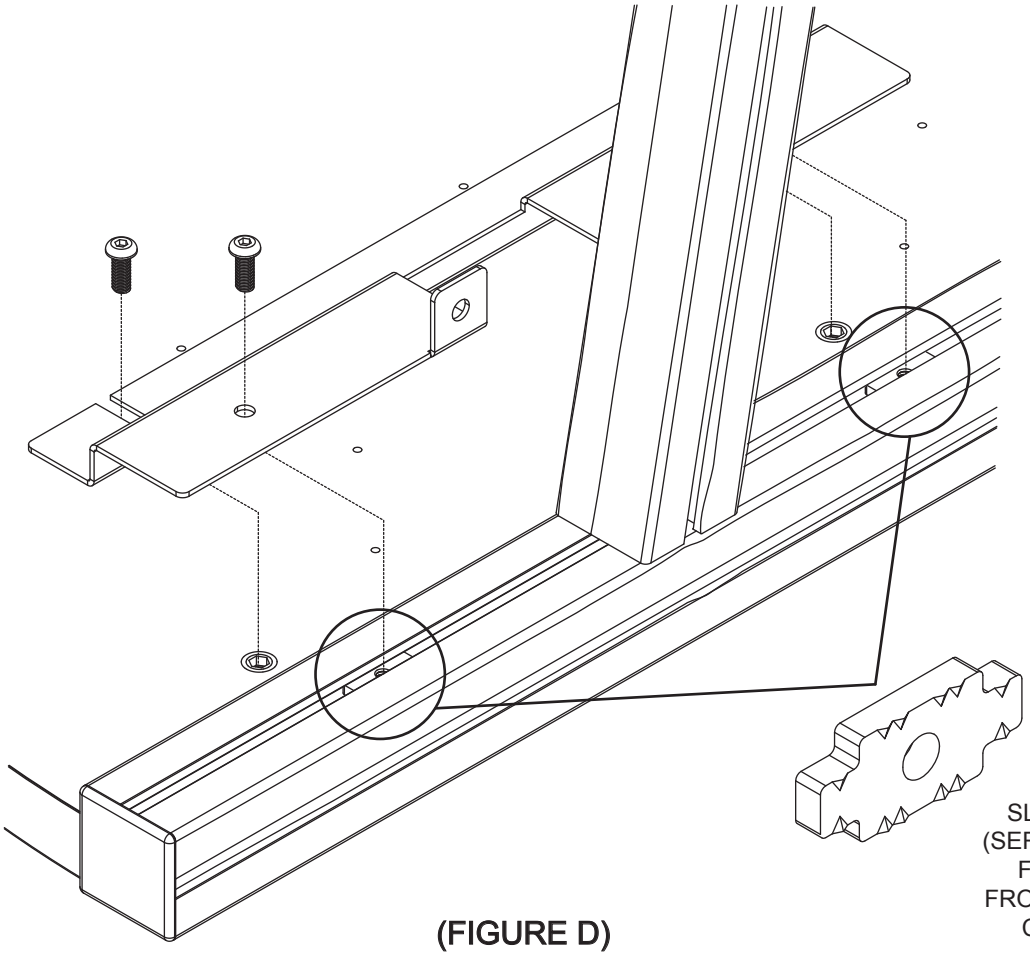
3) Identify the right leg and the left leg by referring to labels. Attach legs to the desktop by sliding the legs into the grooves on the work surface. Install four screws into each leg from the inside of the cabinet (two on top, two on bottom). Do not tighten. (FIGURE C)



(FIGURE C)

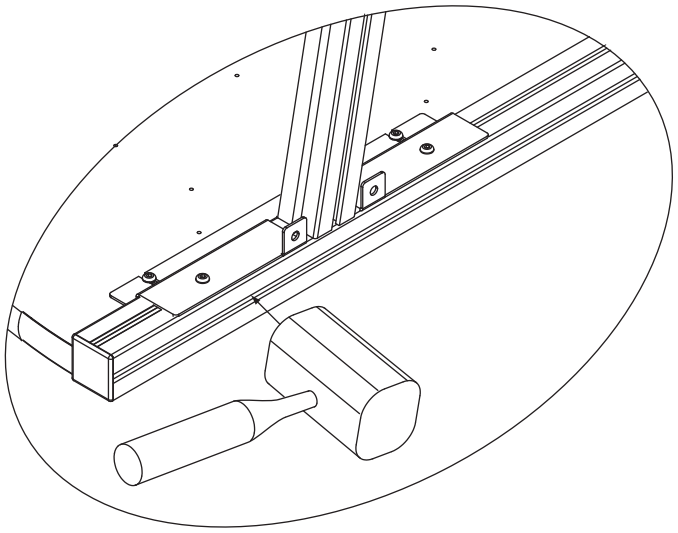
4) Attach support brackets by installing four screws in each bracket. Do not tighten.

NOTE: Sliding nuts are dropped into leg channel and can be positioned into place using a thin tool to align with holes in mounting bracket. **(FIGURE D)**



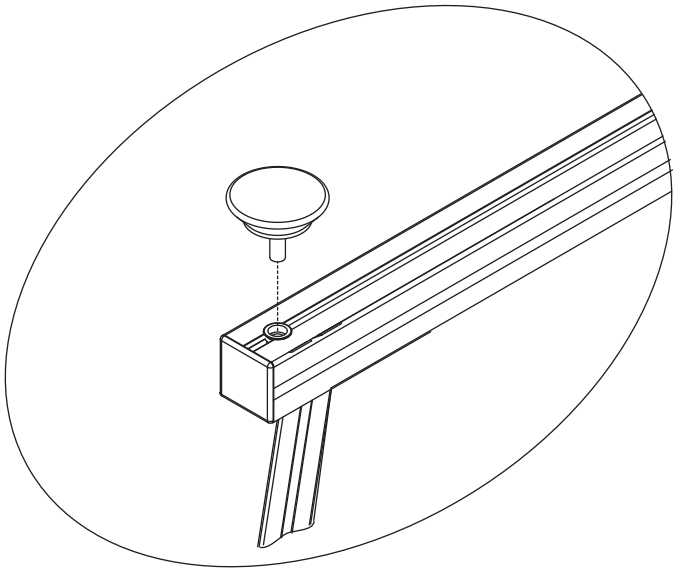
(FIGURE D)

5) Check alignment and gently tap side of leg with rubber mallet to make sure it is in securely **(FIGURE E)**. Tighten all screws.



(FIGURE E)

6) Install leveling feet by screwing into bottom of legs, two on each leg. **(FIGURE F)**. Adjust as needed.



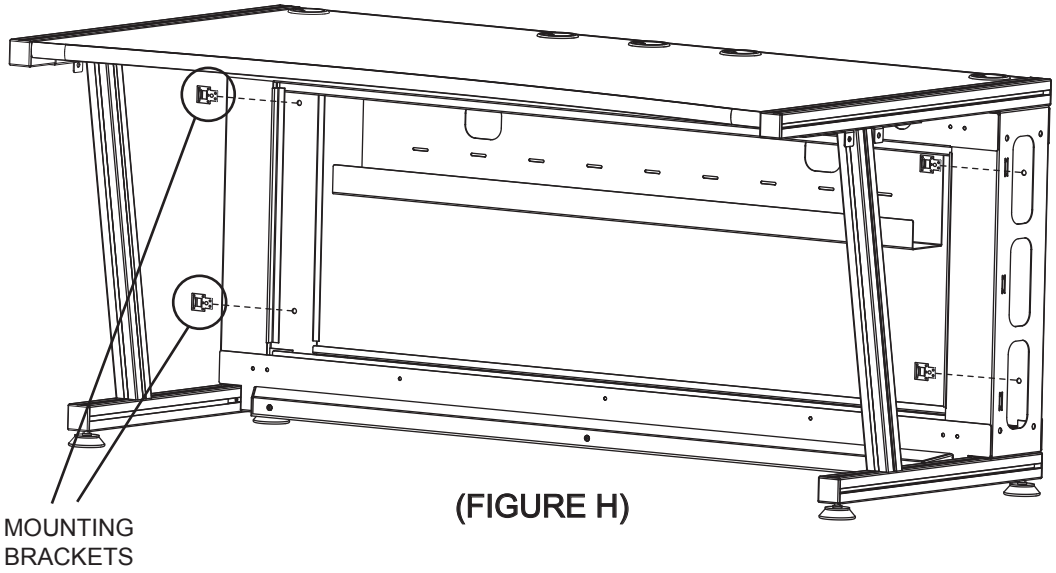
(FIGURE F)

INSTALLATION OF OPTIONAL POWER STRIP (SOLD SEPARATELY)

NOTE: Disregard instruction sheet that came with power strip and follow the instructions below.

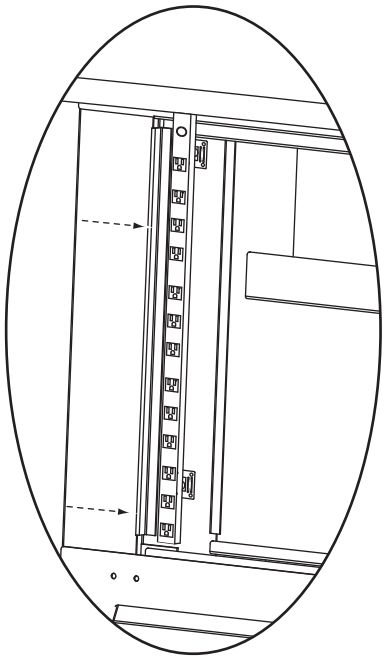
Middle Atlantic Products recommends the use of the PD-815SC or PD-815SC-NS slim 8 outlet power strip with the LCD monitoring desk. The desk has been optimized to accommodate up to two power strips.

1) Install mounting brackets with screws provided with PD-815SC or PD-815SC-NS power strip using acorn nuts included with desk. **(FIGURE H)**



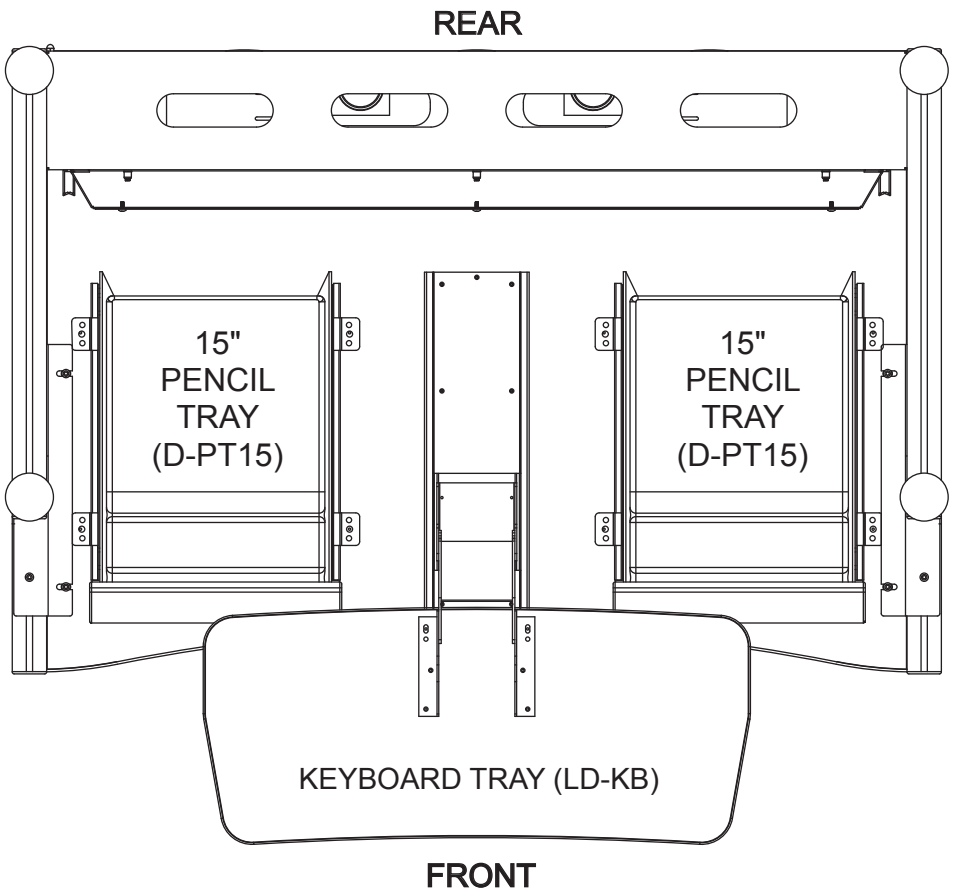
(FIGURE H)

2) Attach power strip to mounting bracket by snapping in place. **(FIGURE J)**

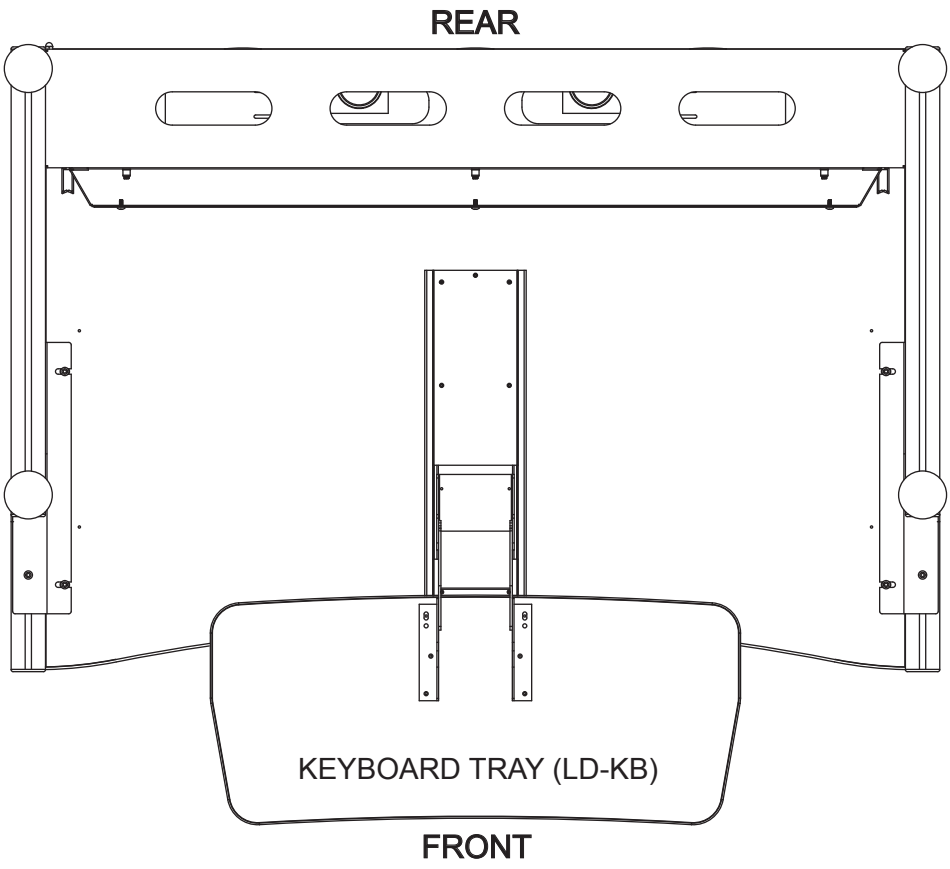


(FIGURE J)

LD-48 (48" DESK): Work Surface Accessory Mounting Points



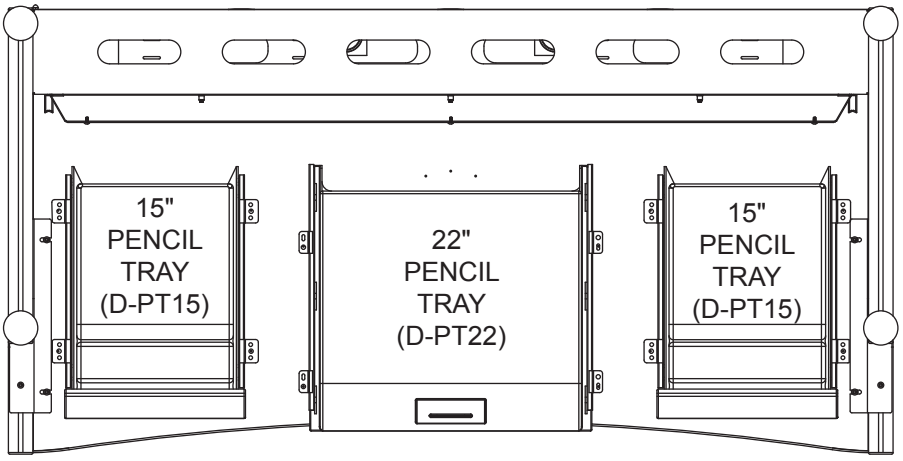
PART #	NUMBER OF MOUNTING HOLES
Pencil Tray (D-PT15, D-PT22)	4
Keyboard Tray (LD-KB)	8



NOTE: 22" pencil tray (D-PT22) does not fit on 48" desk (LD-48)

LD-64 (64" DESK): Work Surface Accessory Mounting Points

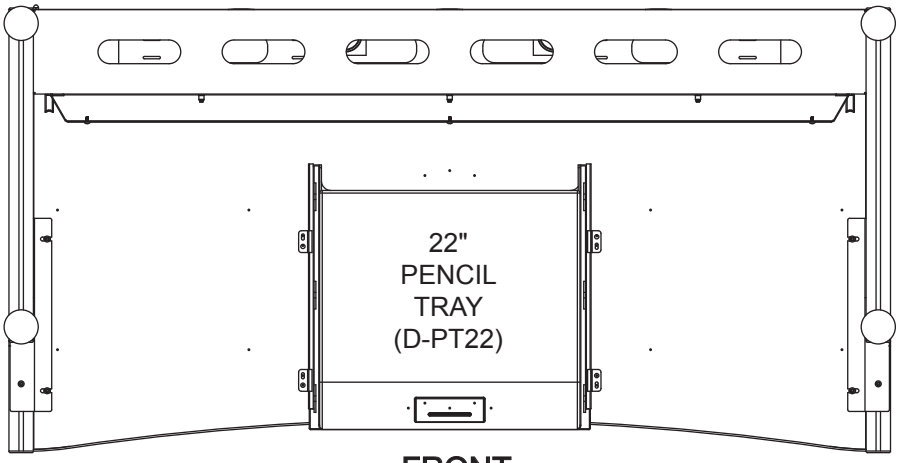
REAR



FRONT

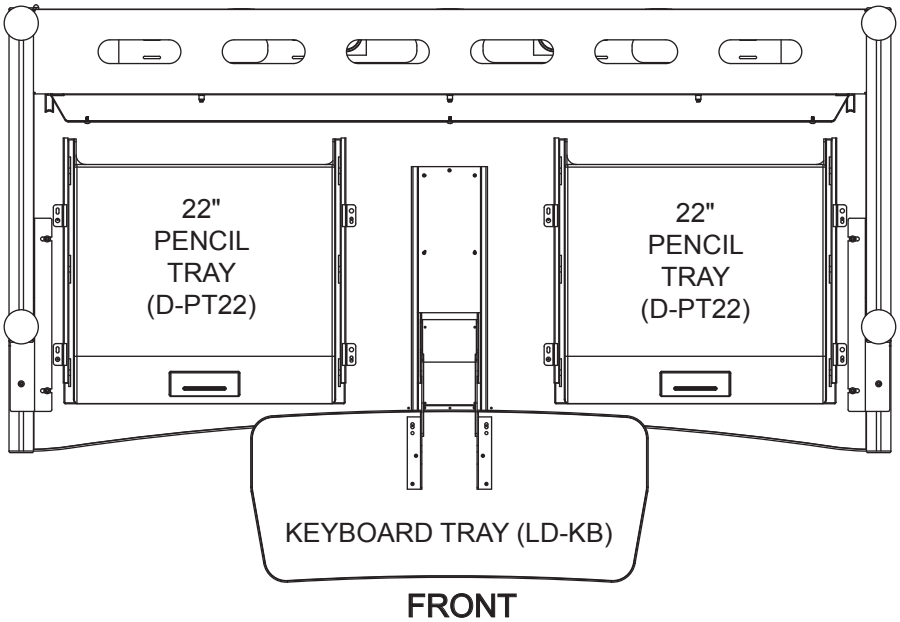
PART #	NUMBER OF MOUNTING HOLES
Pencil Tray (D-PT15, D-PT22)	4
Keyboard Tray (LD-KB)	8

REAR



FRONT

REAR



FRONT

WARRANTY

Middle Atlantic Products, Inc. (the "Company") warrants the LD Series LCD Monitoring Desk to be free from defects in material or workmanship under normal use and conditions for a period of (3) three years from date of shipment by the Company.

The Company's entire liability to the purchaser, and the purchaser's (or any other party's) sole and exclusive remedy, under this warranty shall be limited, at the Company's option, to either (a) return of and refund of the price paid for, or (b) repair or replacement at the Company's factory of the products purchased, or any part or parts thereof, which the Company has determined to be defective after inspection thereof at the Company's factory.

This warranty does not cover damage due to acts of God, accident, misuse, abuse or negligence by parties other than the Company, or any modification or alteration of the products. In addition, this warranty does not cover damage due to improper handling, assembly, installation or maintenance.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF THE PRODUCTS PURCHASED, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE COMPANY'S LIABILITY TO THE PURCHASER (OR ANY OTHER PARTY) HEREUNDER, IF ANY, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PRODUCTS PAID TO THE COMPANY.

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Panasonic
BUSINESS

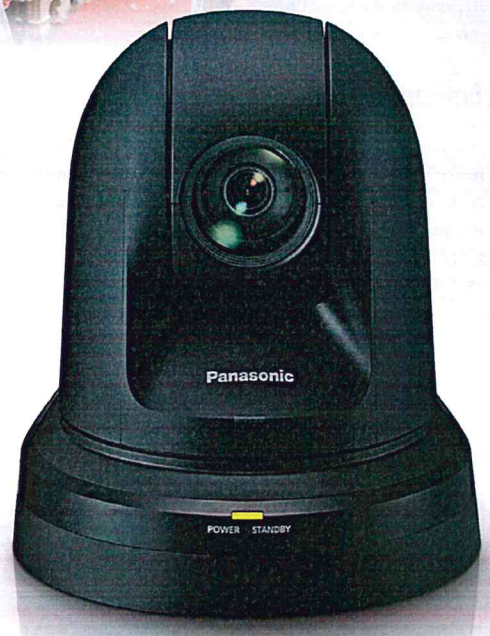
AW-HE40SW/SK [SDI Model]
AW-HE40HW/HK [HDMI Model]
HD Integrated Camera



AW-HE40SW/AW-HE40HW
Suspended (Hanging) style

For indoor use

Features 30x optical zoom lens
and support for PoE+*
for outstanding operability
and installation flexibility



AW-HE40SK/AW-HE40HK
Stand-alone (Desktop) style

For indoor use

*Abbreviation of Power over Ethernet Plus.

microSD Card Recording Function

MicroSD card recording is supported. Camera video and audio can be recorded in MP4 format on microSD card (sold separately) inserted into the unit. In addition, using an IP network, it is possible to externally control recording start/stop and download the recorded files.



Full HD Video Output Via IP Transmission

In addition to HD-SDI and HDMI output, production quality full HD video output via IP transmission is supported. The camera delivers up to four channels of IP streaming video (H.264), with a maximum quality level of 1080/60p at 24 Mbps*1. Simultaneous transmission to as many as 14 devices is also supported*2. Flexible system setup is possible to meet various application needs.

HDMI

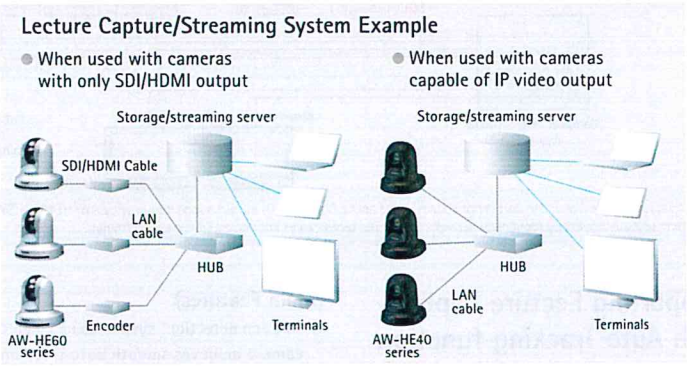
List of Supported Multi-Streaming Outputs (When IP output priority is selected*)

Settings		H.264			JPEG
		CH1	CH2*3	CH3*3/CH4*4	CH1/CH2/CH3
Resolution		1920×1080 1280×720*3 640×360*5	1280×720 640×360 320×180	1280×720 640×360 320×180	1920×1080*4 1280×720*3 640×360 320×180*3
Frame rate	59.94 Hz	60 fps/30 fps/15 fps/5 fps	30 fps/15 fps/5 fps	30 fps/15 fps/5 fps	30 fps/15 fps/5 fps
	50 Hz	50 fps/25 fps/12.5 fps/5 fps	25 fps/12.5 fps/5 fps	25 fps/12.5 fps/5 fps	25 fps/12.5 fps/5 fps
Bit rate		Up to 24 Mbps			
Voice transmission		Yes (AAC48 kHz)			
PoE+		Yes			

*Depending on the output mode, certain restrictions apply.

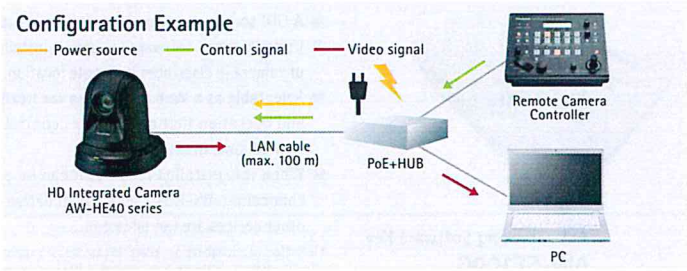
Transmit IP Video Without a Separate Encoder Reduces Cost and Simplifies Installation

There is no need for the separate encoder normally required when streaming video and audio via IP. Systems can be built with exceptional cost/performance benefits.



Supporting PoE+*6 for Lower Installation Costs

By connecting network devices that support the IEEE802.3at PoE+ standard, power can be supplied via LAN cable. Since it is not necessary to install a power supply or even a local AC outlet, installation costs can be significantly reduced.



IP Control with Image Monitoring Using PC, Mac and Mobile Terminals

Using an IP browser, the camera can be controlled from a remote location, and IP video monitoring and remote camera control can be performed from a PC, Mac or mobile terminal such as an iPhone, iPad or Android device, enabling easy operations. IP video*7 can be transmitted to up to 14 terminals*1.

*For the latest information on supported OS/browsers, please refer to the "service and support" section on the Panasonic website (http://pro-av.panasonic.net/en/).

Camera Control Screen (PC)



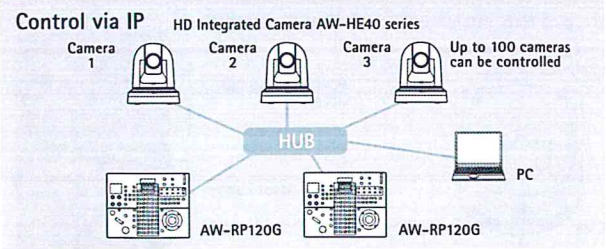
Live Screen

Mobile Terminal Screen



Flexible IP Control Architecture Simplifies System Design and Operation*8

Up to 100 x AW-HE40 series cameras can be controlled via IP from a single AW-RP120G/RP50 or PC. An AW-HE40 series can also be simultaneously controlled by up to five AW-RP120G/RP50's via IP.



*1: 1920 x 1080 60 fps output is 1ch display only. For 2ch or more, display is max. 30 fps. Also, JPEG output is up to 3ch. *2: Depends on your network environment. *3: Settable when HDR is "Off". *4: Settable when HDR is set to "Off" and the frame rate is other than 60fps (or 50fps). *5: Not settable when HDR is "Off". *6: Abbreviation of Power over Ethernet Plus. *7: Supports only SD video output. *8: Controller upgrade required. For details, please refer to the "service and support" section on the Panasonic website (http://pro-av.panasonic.net).

Specifications

As of April, 2016

GENERAL	Power requirements		DC 12 V (Supplied AC adaptor) DC 42 V to 57 V (PoE+ power supply)
	Current consumption		1.2 A (Supplied AC adaptor) 0.4 A (PoE+ power supply)
	Ambient operating temperature		0 °C to 40 °C (32 °F to 104 °F)
	Storage temperature		-20 °C to 50 °C (-4 °F to 122 °F)
	Allowable humidity ranges		20 % to 90 % (no condensation)
	Mass		Approx. 1.5 kg (3.30 lb)
	Dimensions (W x H x D)		160 mm x 186 mm x 166 mm (6-5/16 inches x 7-41/128 inches x 6-17/32 inches) [excluding protrusions, direct ceiling mount bracket]
	Finish		[AW-HE40HWPJ9], [AW-HE40SWPJ9], [AW-HE40HWEJ9], [AW-HE40SWEJ9] Pearl white [AW-HE40HKPJ9], [AW-HE40SKPJ9], [AW-HE40HKEJ9], [AW-HE40SKEJ9] Metallic black
	Controller supported*1		AW-RP50, AW-RP120, AK-HRP200
INPUT	Power		DC 12 V IN, PoE+ (IEEE802.3at standard)
	Mic/line input		Stereo mini-jack (ø3.5 mm) Input impedance: Approx. 2 kΩ (unbalanced) [Mic input] Supported microphones: Stereo mic (plug-in power, on/off switching via menu) Supplied voltage: 2.5 V ± 0.5 V Mic input level: -60 dBV ± 3 dBV [Line input] Input level: -10 dBV ± 3 dBV
OUTPUT	Video output	HDMI	[AW-HE40HW/HK] HDMI connector • HDCP is not supported. • VIERA Link is not supported.
		HD SDI OUT	[AW-HE40SW/SK] Compliant with the SMPTE292M standards/75 Ω(BNC x 1)
INPUT/ OUTPUT	Input/ Output connector	LAN	LAN connector for IP control (RJ-45) Equipped with straight/crossover cable auto detection function
		RS-232C	Mini DIN 8-pin (IN) Mini DIN 8-pin (OUT)
		RS-422	CONTROL IN RS422A (RJ-45)
		USB	Mini-B port
		SD card	microSD card slot
FUNCTIONS AND PERFORMANCE	**[Camera unit]**		
	Imaging sensors		1/2.3-type MOS
	Lens		Motorized 30x zoom, F1.6 to F4.7 [f=4.3 mm (11/64 inches) to 129 mm(5-5/64 inches); 35 mm (1-3/8 inches) equivalent: 31.6 mm (1-31/128 inches)to 962.0 mm (37-7/8 inches)]
	Focus		Switching between auto and manual
	Focus distance		Entire zooming range:1.2 m (3.94 ft) Wide end: 10 cm (0.33 ft)
	Color separation optical system		On-chip color filter system
	Minimum illumination	59.94 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/60 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/30 with accumulation[Frame Mix 6 dB])
		50 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/50 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/25 with accumulation[Frame Mix 6 dB])
	Horizontal resolution		1000 TV lines Typ (Center area)
	Gain selection*2		Auto, 0 dB to 48 dB (3 dB step)
	Frame mix*3		Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB
	Electronic shutter speed	During Full Auto	1/30 to 1/2000 [59.94 Hz] 1/25 to 1/2000 [50 Hz]
		During Auto	1/60 to 1/2000 [59.94 Hz] 1/50 to 1/2000 [50 Hz]
		During Manual	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [59.94 Hz] 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [50 Hz]
	Synchro scan		59.94 Hz : 59.94 Hz to 660.09 Hz 50 Hz : 50.00 Hz to 570.12 Hz
	Gamma		Off, Normal (Low, Mid, High), Cinema
	White balance		AWB A, AWB B, ATW, 3200K,5600K, VAR (2400K to 9900K)
	Chroma amount variability		±3 step
	Scene file		Full Auto, Manual1, Manual2, Manual3
	Output format	HD	1080:59.94p/50p*4 1080:59.94i/50i 1080:29.97p/25p 1080:29.97PsF/25PsF 720:59.94p/50p
	Synchronization system		Internal synchronization
	[USB connection]		• This may vary depending on the operating environment.
	Video output		USB Video Class Ver1.0
	Video compression format		Motion JPEG
	Resolution		1920 x 1080, 1280 x 720, 640 x 360
	Frame rate		max 30 fps (System frequency 59.94 Hz) max 25 fps (System frequency 50 Hz)
	Audio output		USB Audio Class Ver1.0
	Audio compression format		Linear PCM, 48 kHz, 16-bit, 2 channels
	Supported models		Devices standardly equipped with a USB 2.0 compatible port
	[Pan-tilt head unit]		
	Installation method		Stand-alone (Desktop) or suspended (Hanging)*5
	Pan/tilt operation speed		Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s
	Panning range		±175°
	Tilting range		-30° to 90°*6
	Quietness		During preset: NC40 or less During manual: NC35 or less
FUNCTIONS AND PERFORMANCE	**[Camera/pan-tilt head control]**		
	IP connecting cable		When connecting through a hub: LAN cable*7 (category 5 or above),max. 100 m (328 ft) When using a PoE+ hub: LAN cable*7 (category 5e or above),max. 100 m (328 ft) When a hub is not used: LAN cable*7 (category 5 or above),max. 100 m (328 ft)
	AW protocol connecting cable		LAN cable*7 (category 5 or above,straight cable), max. 1000 m (3280 ft)
	Standard protocol connecting cable		Mini DIN 8-pin cable, male
	[SD card recording]		
	SD card type		micro SDHC (4 GB to 32 GB), micro SDXC (64 GB to 128 GB), Speed class 10 or higher
	System frequency		59.94 Hz/50 Hz
	Video compression format		MPEG-4 AVC/H.264 High Profile
	Audio compression format		AAC-LC (48 kHz, 16 bit, 2 ch, 128 kbps)
	SD card recording		MPEG-4 AVC file standard compliant (.MP4)
	Recording format		1920 x 1080/59.94p, 1920 x 1080/50p, 1920 x 1080/29.97p, 1920 x 1080/25p, 1280 x 720/59.94p, 1280 x 720/50p, 1280 x 720/29.97p, 1280 x 720/25p
	[Network]		
	Resolution	JPEG	VGA (640 x 360), QVGA (320 x 180) max.30 fps 1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.30 fps
		H.264	1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.60 fps
	Supported protocol	IPv4	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCP, DNS, NTP, IGMP, UPnP, ICMP, ARP, RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
		IPv6	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCPv6, DNS, NTP, ICMPv6(MLD), RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
	i-OS, Android support		JPEG image display
ACCESSORIES	Mount bracket for installation surface (Hanging*8 / Desktop): 1 Drop-prevention wire (already attached to the unit): 1 Bracket mounting screws (bind-head) M4 x 10 mm: 4 Main unit mounting screw (with flat washer, spring washer) M3 x 6 mm: 1 Power cable (1.5 m [4.92 ft]): 1 AC adaptor: 1 CD-ROM: 1		

• 1: It may be necessary to upgrade the version of the controller so that the controller will support the unit. • 2: During Auto, 6 dB to 48 dB (6 dB step) are available for AGC Max Gain setting.
• 3: During Auto, 0 dB, 6 dB, 12 dB and 18 dB are available for Auto F.Mix Max Gain setting. • 4: AW-HE40HW/HK only • 5: To ensure safety, the unit must be secured using the mount bracket supplied.
• 6: Depending on the pan or tilt position, the camera may be reflected in the image. • 7: Use of an STP (shielded twisted pair) cable is recommended.
• 8: To ensure more safety, AW-HE40 series can be secured by using the direct ceiling mount bracket (WV-Q105A).

Required personal computer environment

As of April, 2016

CPU		When using 1080/60p [59.94 Hz] and 1080/50p [50 Hz] Intel® CoreTM i7 3.4 GHz or higher recommended Other than above Intel® CoreTM2 Duo 2.4 GHz or higher recommended
Memory	For Windows	1 GB or higher (2 GB or higher for Microsoft® Windows® 8.1, Microsoft® Windows® 8, Microsoft® Windows® 7 64-bit edition)
	For Mac	2 GB or more
Network function		10BASE-T or 100BASE-TX port x 1
Image display function		Resolution: 1024 x 768 pixels or more Color generation: True Color 24-bit or more
Supported operating system and Web browser	Windows	Microsoft® Windows® 8.1 Pro 64-bit/32-bit*9 Windows® Internet Explorer® 11.0*9 Microsoft® Windows® 8 Pro 64-bit/32-bit*9 Windows® Internet Explorer® 10.0*9 Microsoft® Windows® 7 Professional SP1 64-bit/32-bit*10 Windows® Internet Explorer® 8.0 / 9.0 / 10.0 / 11.0*11
	Mac	OS X 10.8 Safari 6.2 / OS X 10.9 Safari 7.1 / OS X 10.10 Safari 8.0
	iPhone / iPad / iPod touch	iOS 8.3 Standard browser
	Android	Android OS 4.4 Standard browser
Other		CD-ROM drive (for using the Operating Instructions and various software) Adobe® Reader® (for viewing the Operating Instructions on the CD-ROM)

• 9 : Use the desktop version of Internet Explorer. (Internet Explorer for Windows UI is not supported.) • 10: Windows® XP compatibility mode is not supported.
• 11: The 64-bit version of Internet Explorer® is not supported.

For the latest information on supported OS/brower, please refer to the "service and support" on the Panasonic website (http://pro-av.panasonic/en/).

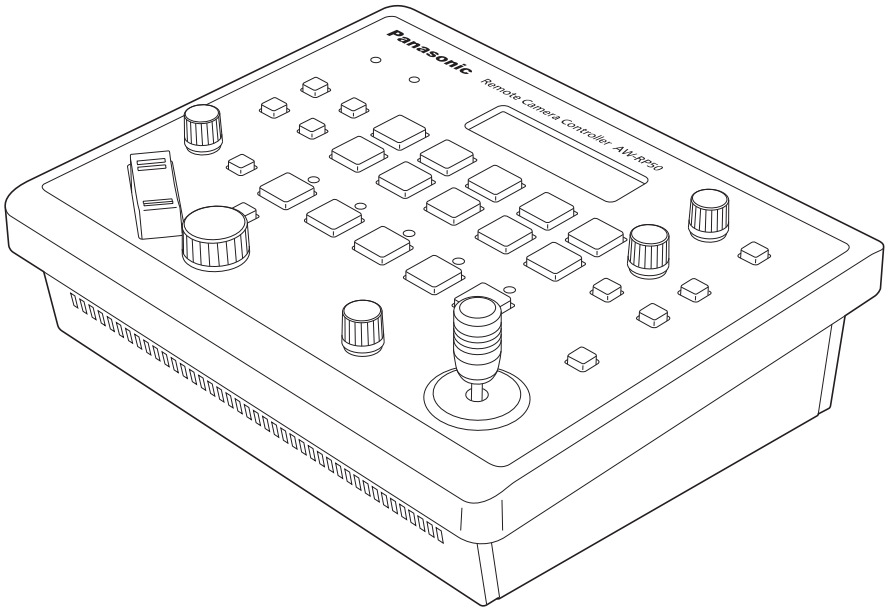
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Panasonic

Operating Instructions <Basics>

Remote Camera Controller

Model No. AW-RP50N



Before operating this product, please read the instructions carefully and save this manual for future use.

For instructions on how to operate this Remote Camera Controller and how to establish its settings, refer to the "Operations and Settings" manual (PDF file) which can be found on the CD-ROM supplied with the camera.

3TR006515BAA

Safety precautions

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER TO SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the appliance.

WARNING:

■ **THIS APPARATUS MUST BE EARTHED**

To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring.
Extension cords used with the apparatus must have three cores and be correctly wired to provide connection to the earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the apparatus operates satisfactorily does not imply that the power point is earthed or that the installation is completely safe. For your safety, if you are in any doubt about the effective earthing of the power point, please consult a qualified electrician.

For CANADA

This class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

WARNING:

- **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.**
- **THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.**

CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

FCC Note:
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning:
To assure continued FCC emission limit compliance, the user must use only shielded interface cables when connecting to external units. Also, any unauthorized changes or modifications to this equipment could void the user’s authority to operate it.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

The socket outlet shall be installed near the equipment and easily accessible or the mains plug or an appliance coupler shall remain readily operable.

A warning that an apparatus with CLASS 1 construction shall be connected to a MAINS socket outlet with a protective earthing connection.

▭ indicates safety information.

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord form being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.



13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

▭ indicates safety information.

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How the model's Operating Instructions manuals are configured

- The manual of this Remote Camera Controller (hereafter, "the unit") is divided into two manuals: one is the <Basics> (this manual), and the other is the <Operations and Settings> (CD-ROM).
  Before installing the unit, be sure to read the <Basics> to ensure that the unit is installed correctly.
- This manual explains how to install the unit, and it details the network connection and setting procedures.
  For details on how to operate the unit and select its settings, refer to the "Operating Instructions <Operations and Settings>" (PDF file) on the CD-ROM supplied with the unit.
  To read PDF files, you will need Adobe® Reader® which is available from Adobe Systems.
- For the purposes of this manual, the model numbers of the units are given as listed in the table below.

Model number of unit	Model number given in manual	Model number of unit	Model number given in manual
AW-HS50N	AW-HS50	AW-E860N	AW-E860
AW-HE50HN	AW-HE50	AW-PH360N	AW-PH360
AW-HE50SN	AW-HE50	AW-PH400P	AW-PH400
AW-HE100N	AW-HE100	AW-PH405N	AW-PH405
AW-HE870N	AW-HE870	AW-PH650N	AW-PH650
AW-E350P	AW-E350	AW-IF400G	AW-IF400
AW-E650P	AW-E650	AK-HC1500G	AK-HC1500
AW-E750P	AW-E750	AK-HC1800G	AK-HC1800

- In these instructions, the phrases "pan-tilt head and camera combination" and "camera integrated with a pan-tilt head" are both referred to collectively as **"remote camera"** except in places where specific equipment is mentioned.

■ Overview

This unit is a controller which is designed to control remote cameras (cameras integrated with pan-tilt heads) and pan-tilt head systems (which consist of pan-tilt heads and the cameras which are mounted on them).
By means of an IP connection, an operating environment where the unit is tied in with the AW-HE50 HD integrated camera and AW-HS50 compact live switcher is achieved.
When IP connections are used, the unit can be used to control up to 100 remote cameras.
When serial connections are used, up to five remote cameras and pan-tilt head systems can be controlled.

■ Trademarks and registered trademarks

- Microsoft, Windows, Windows Vista, Windows 7 and Internet Explorer are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- Intel and Intel Core are trademarks or registered trademarks of Intel Corporation in the United States and other countries.
- Adobe and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- Other names of companies and products contained in these Operating Instructions may be trademarks or registered trademarks of their respective owners.

■ About copyright and licence

Distributing, copying, disassembling, reverse compiling, reverse engineering, and also exporting in violation of export laws of the software provided with this unit are expressly prohibited.

■ Concerning the ratings display

The unit's name, model number and electrical ratings are indicated on its bottom panel.

■ Disclaimer of warranty

IN NO EVENT SHALL Panasonic System Networks Co., Ltd. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

① ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
② PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
③ UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
④ INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;
⑤ ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
⑥ ANY INCONVENIENCE, DAMAGES OR LOSSES RESULTING FROM ACCIDENTS CAUSED BY AN INADEQUATE INSTALLATION METHOD OR ANY FACTORS OTHER THAN A DEFECT IN THE PRODUCT ITSELF;
⑦ LOSS OF REGISTERED DATA CAUSED BY ANY FAILURE;
⑧ ANY DAMAGES, CLAIMS, ETC. DUE TO LOSS OR LEAKAGE OF THE SETTING DATA SAVED ON THIS UNIT OR IN A PERSONAL COMPUTER.

■ Network security

As you will use this unit connected to a network, your attention is called to the following security risks.

① Leakage or theft of information through this unit
② Use of this unit for illegal operations by persons with malicious intent
③ Interference with or stoppage of this unit by persons with malicious intent

It is your responsibility to take precautions such as those described below to protect yourself against the above network security risks.

- Use this unit in a network secured by a firewall, etc.
- If this unit is connected to a network that includes PCs, make sure that the system is not infected by computer viruses or other malicious entities (using a regularly updated antivirus program, anti-spyware program, etc.).
- Refrain from connections that use public lines.

Characteristics

Compact design

- The unit features a compact design with its half-rack size width (210 mm [8-1/4˝]) and its 4RU size (177 mm [6-15/16˝]) depth.
  The unit is the same size as the AW-HS50 compact live switcher (option), and when the switcher is placed alongside the unit, the two units are housed in the full rack width.

IP connection and serial connection supported

IP connection

- Up to 100 remote cameras(✱1) can be controlled through a network hub (switching hub).
- Using the unit's automatic IP setting function, the IP addresses of the remote cameras(✱1) and switcher(✱2) can be assigned and controlled automatically.

> **✱1:** Camera supported: AW-HE50
> **✱2:** Switcher supported: AW-HS50

- Up to five units can be connected to the same network to control the remote cameras simultaneously.
- Using the Setup Software provided by the camera controller, it is possible to set the IP addresses of the remote cameras and switchers from a PC via the camera controller.

Serial connection

- Up to five remote cameras or pan-tilt head systems can be controlled.

Easy to operate the cameras

- The pan, tilt, zoom, focus and iris operations of the cameras can be easily performed from the unit.
- The gain, shutter, detail, white balance and black balance adjustments can be performed on the unit's LCD menu. (The adjustment items and range differ depending on the cameras connected.)

Easy to operate the preset memory data of the pan-tilt heads

- Up to 100 sets of preset memory data of the pan-tilt heads can be registered and then recalled later.

Function for linkup with the switcher using IP connection

- By linking the unit with one AW-HS50 compact live switcher using an IP connection to make the connection between them, a highly efficient operating environment is achieved.

Camera information display

- The camera setting information (such as the lens iris and gain setting) imported by the unit can be shown on the AUX image output from the switcher or on the split-screen display multi view display.

Tally information imported

- The switcher's ON AIR tally information is imported, and the tally indicators (above the CAMERA STATUS/SELECTION buttons) on the panel are lighted.

Bus material selection

- The switcher's bus materials can be selected from the unit.
  By pressing the CAMERA STATUS/SELECTION button, these materials can be switched.

> Control buses supported: AUX, PVW, PinP, KEY-F

Using a single-step action to operate one of these buttons, the switcher's multi view screen can be switched to a full-screen display on which to show the camera images. (Focus assist function)

> Control buses supported: AUX

Parameter changes

- Using the unit's PAN/TILT lever or ZOOM button, the PinP position and other parameters of the switcher can be changed.

Pan-tilt heads and cameras supported

■ **Remote cameras supported (cameras integrated with a pan-tilt head)**
AW-HE100, AW-HE50

■ **Pan-tilt heads supported**
AW-PH360, AW-PH405, AW-PH650, AW-PH400 (AW-IF400 required)

■ **Cameras supported (must be combined with the pan-tilt head supported)**
AW-HE870, AW-E860, AW-E750, AW-E650, AW-E350, AK-HC1500, AK-HC1800

Notes

- Prior to use, be absolutely sure to set the movement ranges (limiters).
- When serial connections are used for the unit and remote cameras or pan-tilt head systems, the cables can be extended up to 1000 meters (3280 ft.).

In these instructions, the phrases “pan-tilt head and camera combination” and “camera integrated with a pan-tilt head” are both referred to collectively as **“remote camera”** except in places where specific equipment is referred to.

Accessories

Check that the following accessories are present and accounted for.

Operating Instructions <Basics> (this manual) 1

CD-ROM 1

- Operating Instructions <Basics>
- Operating Instructions <Operations and Settings>
- Setup Software

AC adapter 1

Power cable 1

Required personal computer environment

Run the software that is provided with the switcher on a host computer which satisfies the following specifications.

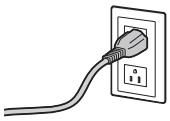
CPU	Intel® Core™2 DUO 2.4 GHz or faster recommended
Memory	Windows® XP: 512 MB or more Microsoft® Windows Vista®, Microsoft® Windows® 7: 1 GB or more
Network function	10BASE-T or 100BASE-TX
Image display function	Resolution: 1024 × 768 pixels or more Color generation: True Color (24 bits or more)
Supported operating system	Microsoft® Windows® XP, Microsoft® Windows Vista®, Microsoft® Windows® 7
Hard disk drive	At least 50 MB of free memory
Other	CD-ROM drive (for using the Operating Instructions and various software) Adobe® Reader® (for browsing the Operating Instructions on the CD-ROM)

Installation precautions

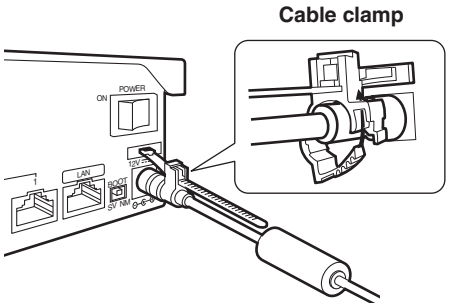
● In addition to heeding the points presented in the “Safety precautions”, observe the following precautions as well.

Be absolutely sure to ask your dealer to do the jobs of installing and connecting the unit.

Connecting the power supply

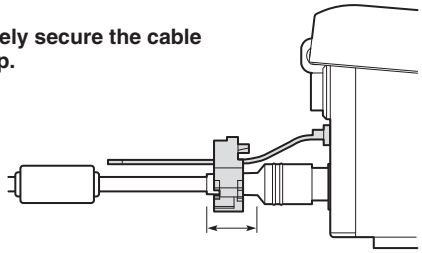


- Use within AC 100 V to 120 V.
- Be absolutely sure to use only the power cable and AC adapter supplied with the unit.
- The power cable supplied with the unit has a 3-pin plug with a grounding terminal. Connect it to a 3-pole outlet which has been connected to ground.
- Be absolutely sure to connect the ground terminal (SIGNAL GND) at the rear of the unit to the system ground.
- When the unit is not going to be used for a prolonged period of time, turn off its power, and disconnect the power plug from the AC outlet.
- To prevent the DC plug from being disconnected, secure the cable of the AC adapter to the cable clamp.



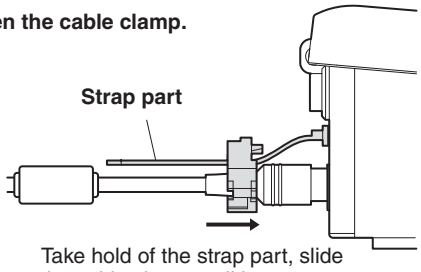
- **How to secure the DC plug (side view)**

① **Loosely secure the cable clamp.**



Loosely secure the cable clamp in the area shown above.

② **Fasten the cable clamp.**



Take hold of the strap part, slide the cable clamp until it stops moving, and then secure it tightly.

Installation precautions

Handle carefully!

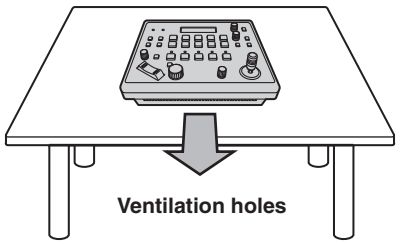
- Dropping the unit or subjecting it to strong impact or vibration may cause trouble and/or malfunctioning.

Do not allow any foreign objects to enter inside the unit!

- Allowing water, metal items, scraps of food or other foreign objects inside the unit may cause a fire and/or electric shocks.

Choosing the best installation location

- This unit is designed for indoor use only.
- Install the unit on a sufficiently strong, stable and level surface for use.
- Ensure a space of at least 100 mm (3-15/16˝) around the front vents to avoid obstructing ventilation. In particular, ensure sufficient space between ventilation and wiring when using mounted in a panel or table.
- Do not install the unit in a manner in which its cables and other accessories can be easily damaged.
- Do not install the unit in a cold place where the temperatures will drop below 0 °C (32 °F) or in a hot place where the temperatures will rise above +40 °C (104 °F).
- Avoid installing the unit where it will be exposed to direct sunlight or to the hot air that is blown out from other products.
- Installing the unit in a very humid, dusty or vibration-prone location may give rise to trouble.



Operating precautions

● In addition to heeding the points presented in the “Safety precautions”, observe the following precautions as well.

Handle carefully.
Do not drop the product, or subject it to strong shock or vibration.
Do not carry or move the product by the PAN/TILT lever.
This is important to prevent trouble.

Use the product in an ambient temperature of 0 °C to +40 °C (32 °F to 104 °F).
Avoid using the product at a cold place below 0 °C (32 °F) or at a hot place above +40 °C (104 °F) because extremely low or high temperature will adversely affect the parts inside.

Power off before connecting or disconnecting cables.
Before plugging or unplugging the cables, be sure to switch power off.

Avoid humidity and dust.
Avoid using the product at a humid, dusty place because much humidity and dust will cause damage to the parts inside.

Maintenance
Wipe the product using a dry cloth. To remove stubborn dirt, dip a cloth into a diluted solution of kitchen detergent (neutral), wring it out well, and wipe the product gently.
Then, after wiping the product with a moist cloth, wipe it again with a dry cloth.

Caution
- Avoid using benzine, paint thinners and other volatile fluids.
- If a chemical cleaning cloth is to be used, carefully read through the precautions for its use.

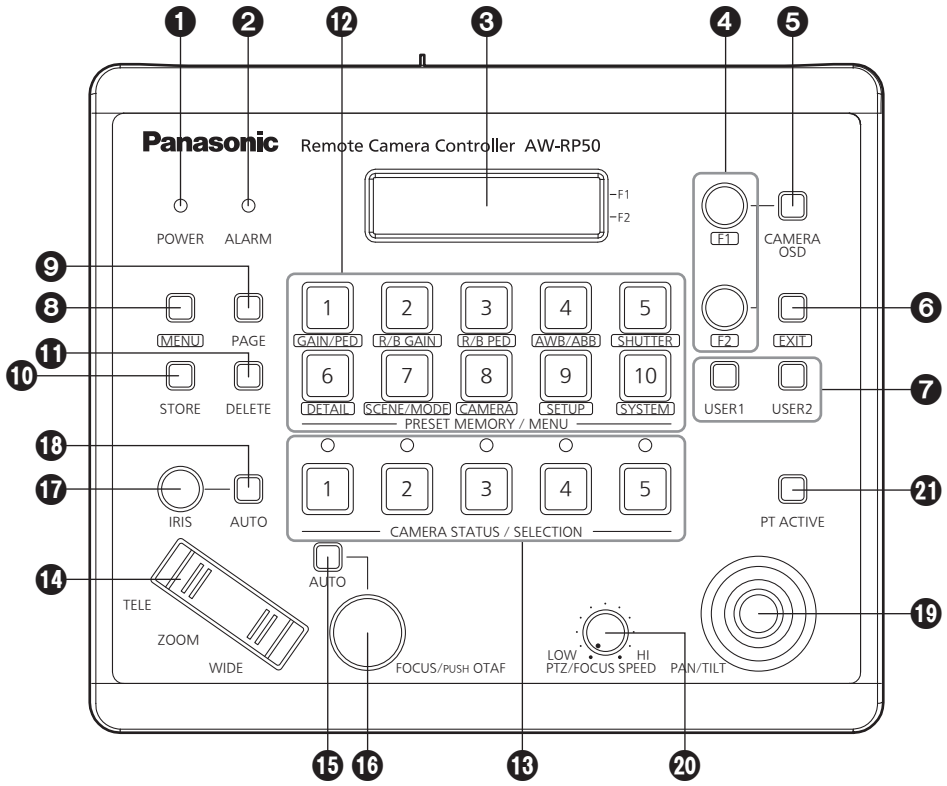
When the product is to be discarded
When the product is to be discarded at the end of its service life, ask a specialized contractor to dispose of it properly in order to protect the environment.

Concerning the consumable parts
- AC adapter:
  This is a consumable part.
  As a general rule, replace it every 5 years or so (when the unit has been operated for 15 hours a day).

  The period when the consumable parts need to be replaced will differ depending on the operating conditions.
  When the time comes to replace one of these parts, be absolutely sure to ask your dealer to do the job.

Parts and their functions

■ Control panel



❶ POWER indicator [POWER]

This indicator lights when the POWER switch (㉒) on the rear panel is set to ON while power is supplied to the DC IN socket.

❷ ALARM indicator [ALARM]

This indicator lights when there is a problem with the power supply (voltage drop).
It also lights when an alarm (a cooling fan alarm or pan/tilt error) has been received from a remote camera.

☞ Refer to “Checking the equipment alarm information” (<Operations and Settings> Operating Instructions).

When the alarm indicator has lighted, stop using the unit immediately, and be absolutely sure to contact your dealer.
Continuing to use the unit even after an alarm has occurred may cause the unit to malfunction.
The alarm information can be output to an external device from the unit’s TALLY/GPI connector (㉕).

❸ LCD panel

The current setting statuses are displayed on this panel.

❹ F1 dial, F2 dial [F1, F2]

These dials are turned to change the menu values, and they are pressed to enter the changes that have been made.
The F1 dial is used to operate the items displayed at the top of the LCD panel, and the F2 dial is used to operate the items displayed underneath.
What appears on the on-screen displays of the remote cameras and how operations are performed differ depending on the camera type.

☞ Refer to “Operating the menu items of the selected remote camera” (<Operations and Settings> Operating Instructions).

❺ CAMERA OSD button [CAMERA OSD]

When the CAMERA OSD button is held down, its indicator lights, and the on-screen menu of the selected remote camera is displayed as the output image of the remote camera.
When the button is held down again while its indicator is lighted, the menu is cleared, and the indicator goes off.

❻ EXIT button [EXIT]
Press this during menu operations to return to the previous hierarchical level.

❼ USER buttons [USER1, USER2]
The functions of some of the setting items on the menus can be assigned to [USER1] and [USER2] to be recalled later.
☞ Refer to “Setting the USER buttons” (<Operations and Settings> Operating Instructions).

❽ MENU button [MENU]
Press this to recall the menus using the PRESET MEMORY/MENU buttons (⓬).
When it is pressed again while its indicator is lighted, the menu is cleared, and the indicator goes off.

Button indicator ON:
The menu operations take effect.

Button indicator OFF:
The menu operations have no effect.

☞ Refer to “Basic operations for the menus”.

❾ PAGE button [PAGE]
Press this to specify the preset memory of the remote camera.
When the button is pressed, its indicator lights, and the mode for selecting the page of the preset memory is established.
In this mode, press one of the PRESET MEMORY/MENU buttons (⓬), and specify the page number.
Next, specify the number on the page using one of the PRESET MEMORY/MENU buttons.
☞ Refer to “Setting and operating the preset memories” (<Operations and Settings> Operating Instructions).

❿ STORE button [STORE]
Press this to register the preset memory data of the currently selected remote camera.
When it is pressed again while its indicator is lighted, the menu is cleared, and the indicator goes off.

Button indicator ON:
The preset memory data registration mode is established.

Button indicator OFF:
The preset memory data registration mode is released.

☞ Refer to “Setting and operating the preset memories” (<Operations and Settings> Operating Instructions).

⓫ DELETE button [DELETE]
Press this to delete the preset memory data for the currently selected remote camera.
When it is pressed again while its indicator is lighted, the menu is cleared, and the indicator goes off.

Button indicator ON:
The preset memory data deletion mode is established.

Button indicator OFF:
The preset memory data deletion mode is released.

☞ Refer to “Setting and operating the preset memories” (<Operations and Settings> Operating Instructions).

⓬ PRESET MEMORY/MENU buttons [PRESET MEMORY/MENU]
Use these buttons to recall the preset memory data and recall menus.

⓭ CAMERA STATUS/SELECTION buttons [CAMERA STATUS/SELECTION]
Use these buttons to select up to five remote cameras.

Button indicator ON:
The corresponding remote camera is selected.

Button indicator OFF:
The selection of the corresponding remote camera is released.

Using the menu, up to 100 remote cameras can be divided into 1 to 20 groups, and then registered and controlled. The statuses of the remote cameras assigned to buttons 1 to 5 can be identified using the indicators positioned above the buttons.
☞ Refer to “Selecting the remote cameras to be operated”.

⓮ ZOOM button [ZOOM]
Use this to adjust the lens zoom.

When the TELE end is pressed:
Telephoto setting

When the WIDE end is pressed:
Wide-angle setting

The zooming speed changes depending on the extent to which the button is pressed.

⑮ Auto focus button [AUTO]

Press this to control the focus automatically.

Button indicator ON:
Auto focusing

Button indicator OFF:
Manual focusing

During auto focusing, operating the FOCUS/PUSH OTAF dial (⑯) will have no effect.

- This function works when an auto focus function is provided in the remote cameras.
  If the auto focus function is not provided, operate the focus manually (in which case the button indicator will be OFF).

⑯ FOCUS/PUSH OTAF dial [FOCUS/PUSH OTAF]

Use this to control the focus manually.

When it is turned clockwise:
The focusing moves to the far end.

When it is turned counterclockwise:
The focusing moves to the near end.

When the dial is pressed, auto focusing is initiated temporarily, and the subject being shot is brought into focus. (OTAF)

During auto focusing (while the indicator of the auto focus button (⑮) is lighted), operating this dial will have no effect.

OTAF: one-touch auto focus

⑰ IRIS dial [IRIS]

Use this dial to control the lens iris manually.

When it is turned clockwise:
The lens iris opens more and more.

When it is turned counterclockwise:
The lens iris closes more and more.

When it is held down:
The lens iris closes.

During auto iris (while the indicator of the auto iris button (⑱) is lighted), operating this dial will have no effect.

⑱ Auto iris button [AUTO]

Press this to control the lens iris automatically.

Button indicator ON:
Auto iris

Button indicator OFF:
Manual iris

During auto iris, operating the iris dial (⑰) will have no effect.

⑲ PAN/TILT lever [PAN/TILT]

Use this lever to control the direction of the remote cameras.

When it is leaned toward the left or right:
The cameras move to the left or right.

When it is leaned toward you or away from you:
The cameras move up or down.

The movement speed differs depending on the angle to which the lever is moved.

⑳ PTZ/FOCUS SPEED dial [PTZ/FOCUS SPEED]

Use this dial to adjust the speed at which the operations (pan, tilt, zoom, focus) of the remote cameras are controlled.

When it is turned clockwise:
Operation at a higher speed

When it is turned counterclockwise:
Operation at a lower speed

㉑ PT ACTIVE button [PT ACTIVE]

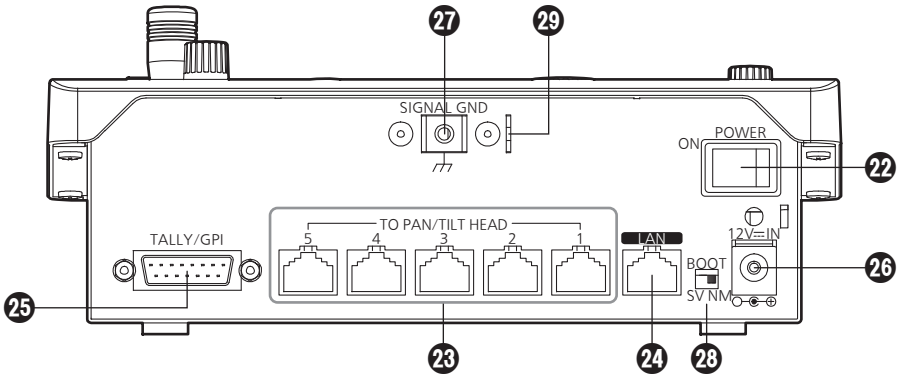
Press this to switch between enabling and disabling the PAN/TILT lever operations.

Button indicator ON:
The PAN/TILT lever operations take effect.

Button indicator OFF:
The PAN/TILT lever operations have no effect.

Parts and their functions

■ Rear panel



㉒ POWER switch [POWER]
When the POWER switch is set to the ON position, the POWER indicator (❶) lights, and the unit can be operated.

㉓ TO PAN/TILT HEAD 1 to 5 connectors [TO PAN/TILT HEAD 1 to 5] (RJ-45)
Connect the remote cameras to these connectors using straight cables (category 5 or above).

㉔ LAN connector [LAN] (RJ-45) (10BASE-T/100BASE-TX)
Connect the remote camera, switcher or host computer that supports IP connections to this connector using a LAN cable.
When directly connecting a device to the unit, use a crossover cable (category 5 or above).
When making the connection through a hub (switching hub) or other device, use a straight cable (category 5 or above).

㉕ TALLY/GPI input/output connector [TALLY/GPI] (D-sub 15-pin, female, inch thread)
☞ Refer to “Control interface for external devices” (<Operations and Settings> Operating Instructions).

㉖ DC IN socket [12V ⎓ IN] (DC 12 V)
The AC adapter provided with the unit is connected to this socket.

㉗ Ground terminal [SIGNAL GND]
Connect this to the system’s ground.

㉘ SERVICE switch [SV/NM]
This switch is used for maintenance purposes. Normally, it is set at the “NM” position.

㉙ Wire fastening fitting
An anti-theft wire available on the market can be fastened to this fitting to prevent theft.

Basic operations of the unit

1 Turn on the unit's power.

Set the POWER switch to the ON position.
Power is now supplied to the unit, and the POWER indicator lights.

- However, when [CAMERA] → [POWER] → AUTO ON item have been selected and "On" is selected as the AUTO ON item setting, power-on is automatically instructed for the remote cameras controlled by the [SYSTEM] → CAM IP ADR item.

2 Select the remote cameras.

Select the remote cameras to be controlled using the CAMERA STATUS/SELECTION buttons.

3 Adjust the direction in which the remote cameras are to be pointed.

Use the PAN/TILT lever to adjust the direction in which the remote cameras are to be pointed.

4 Adjust the zoom.

Use the ZOOM button to adjust the lens zoom.
When the TELE side is pressed, the zoom is set to the telephoto mode; when the WIDE side is pressed, it is set to the wide-angle mode.

5 Adjust the lens iris.

Use the IRIS dial to adjust the lens iris.

- While the lens iris is being adjusted, a level meter is displayed on the LCD panel. (What is displayed by the level meter is an approximate value.)

```
IRIS
 --*---+------
```

Note

When performing adjustments for one remote camera from a multiple number of AW-RP50 remote camera controllers, the level meter may not show the correct displays.

6 Adjust the focus.

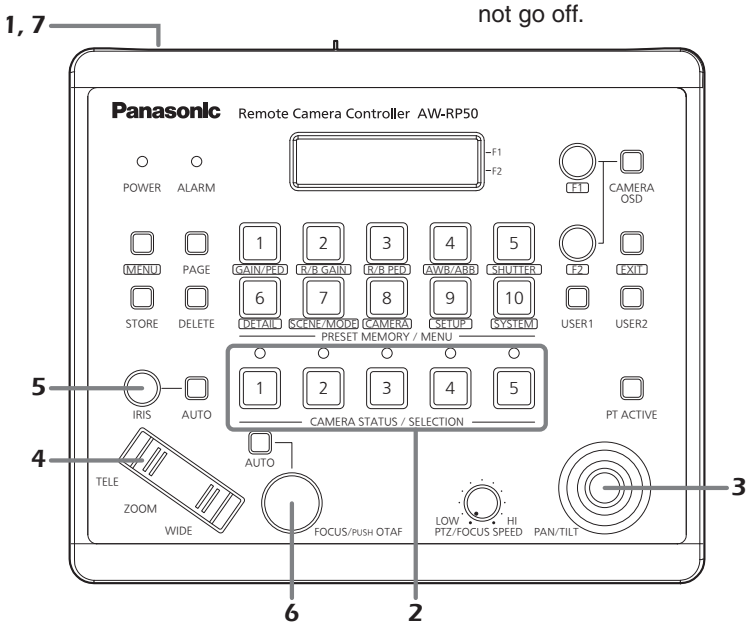
Turn the FOCUS/PUSH OTAF dial, and adjust the lens focus.
When the dial is pressed during manual focusing, the auto focus mode is established temporarily, and the subject is brought into focus automatically.

- The OTAF (one-touch auto focus) takes effect for remote cameras which are equipped with the OTAF function.

7 Turn off the unit's power.

Set the POWER switch to the OFF position.
The unit's power is turned off, and the POWER indicator goes off.

- Even when the unit's power is turned off, the power of the connected remote cameras does not go off.



For detailed operations, refer to the Operating Instructions — <Operations and Settings>.

Basic operations for the menus

1 Set the MENU button to ON.

Press the MENU button and light its indicator.

2 Select the target menu.

Press the corresponding PRESET MEMORY/ MENU button, and light its indicator.
For details on the menus assigned to these buttons, refer to “Table of menu items” (<Operations and Settings> Operating Instructions).
The selected menu is displayed on the LCD panel.

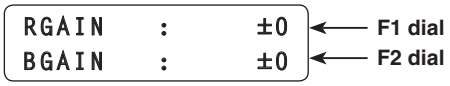
3 Change the settings using the F1 dial and F2 dial.

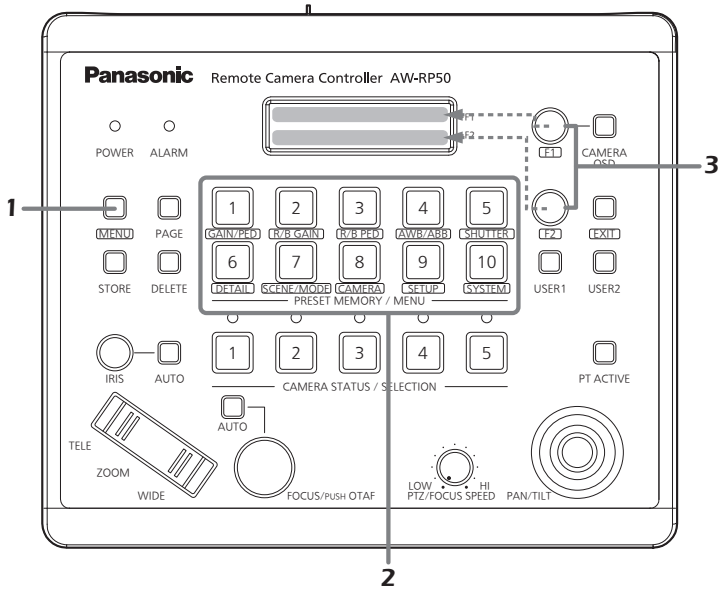
Use the F1 dial and F2 dial to select the menus and change the settings.
Use the F1 dial for operations involving the items displayed on the top line of the LCD panel.
Use the F2 dial for operations involving the items displayed on the bottom line of the LCD panel.

- Press the EXIT button to return the menu to its previous hierarchical level.
- When the down arrow “↓” is displayed for a setting item, it means that the value shown will be entered and the setting reflected when the F1 dial or F2 dial is pressed.



- When the down arrow “↓” is not displayed for a setting item, it means that the value shown will be entered and the setting reflected when the F1 dial or F2 dial is turned.





For detailed operations, refer to the Operating Instructions — <Operations and Settings>.

Network settings

This section describes how the unit's network are set.

Note

Correct operation is not possible if the same IP address already exists in the same network.
Set the IP addresses in such a way that they do not duplicate any existing IP addresses.

■ Setting the unit

The unit's settings are established using the [SYSTEM] menu.
Set the IP address, subnet mask and default gateway.
First, the basic menu operations will be described.

1 Set the MENU button to ON.

Press the MENU button, and light its indicator.

2 Set the PRESET MEMORY/MENU 10 button (SYSTEM) to ON.

When the button is pressed and its indicator is lighted, the [SYSTEM] menu is displayed on the LCD panel.



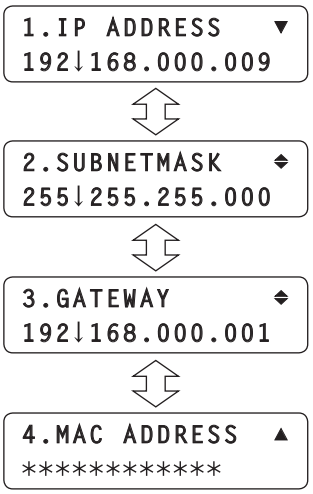
3 Turn the F1 dial, and display the [NETWORK] menu.



4 Press the F1 dial.



5 Turn the F1 dial, and display the target setting item.



6 Turn the F2 dial, and select the setting.



7 Press the F2 dial, and change the setting.



Input all the settings except for the MAC address in four blocks of numerals.
When input advances to the last block and the F2 dial is pressed, the IP address is entered.



- The MAC address is merely displayed — it cannot be changed.

Note

In order for the settings to take effect, the unit must be restarted.
Turn off the unit's power, and then turn it back on again.

Network settings

Setting the IP address

On the [SYSTEM] menu, select the [NETWORK] menu, and display [IP ADDRESS].
Then operate the F2 dial to set the IP address.
Select a setting which will not duplicate the IP setting of another device.



If the same IP address is used more than once, the "IP Duplicate!" message is displayed on the LCD panel.



If the IP address is incorrect, the following message is displayed on the LCD panel.



Notes

- In order for the setting to take effect, the unit must be restarted.
  Turn off the unit's power, and then turn it back on again.
- Consult the network administrator before setting the IP address.

Setting the subnet mask

On the [SYSTEM] menu, select the [NETWORK] menu, and display [SUBNETMASK].
Then operate the F2 dial to set the subnet mask.



If the subnet mask is incorrect, the following message is displayed on the LCD panel.



Note

In order for the setting to take effect, the unit must be restarted.
Turn off the unit's power, and then turn it back on again.

Setting the default gateway

On the [SYSTEM] menu, select the [NETWORK] menu, and display [GATEWAY].
Then operate the F2 dial to set the gateway.



If the default gateway is incorrect, the following message is displayed on the LCD panel.



Note

In order for the setting to take effect, the unit must be restarted.
Turn off the unit's power, and then turn it back on again.

Network settings

Setting the port number

Set the port number for the remote camera.
On the [SYSTEM] menu, select [CAM PORT] and display [PORT:CAM1] to [PORT:CAM100], and then operate the F2 dial to set the port number.



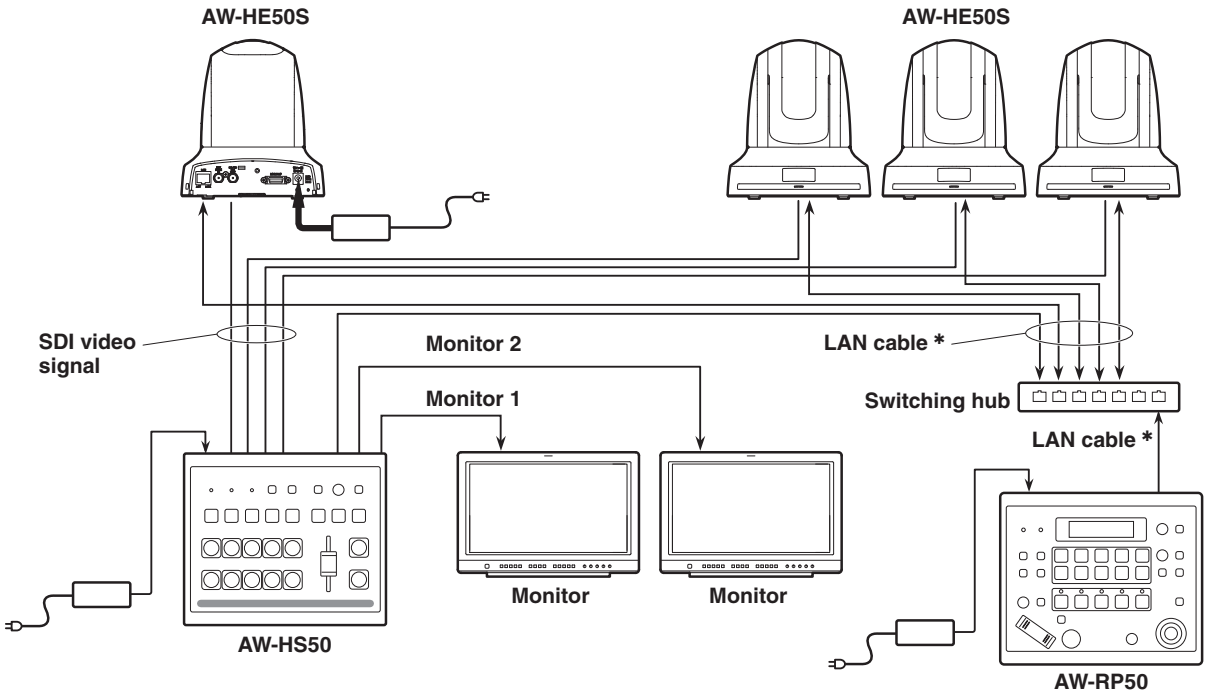
Setting the MAC address

On the [SYSTEM] menu, select the [NETWORK] menu, and display [MAC ADDRESS].

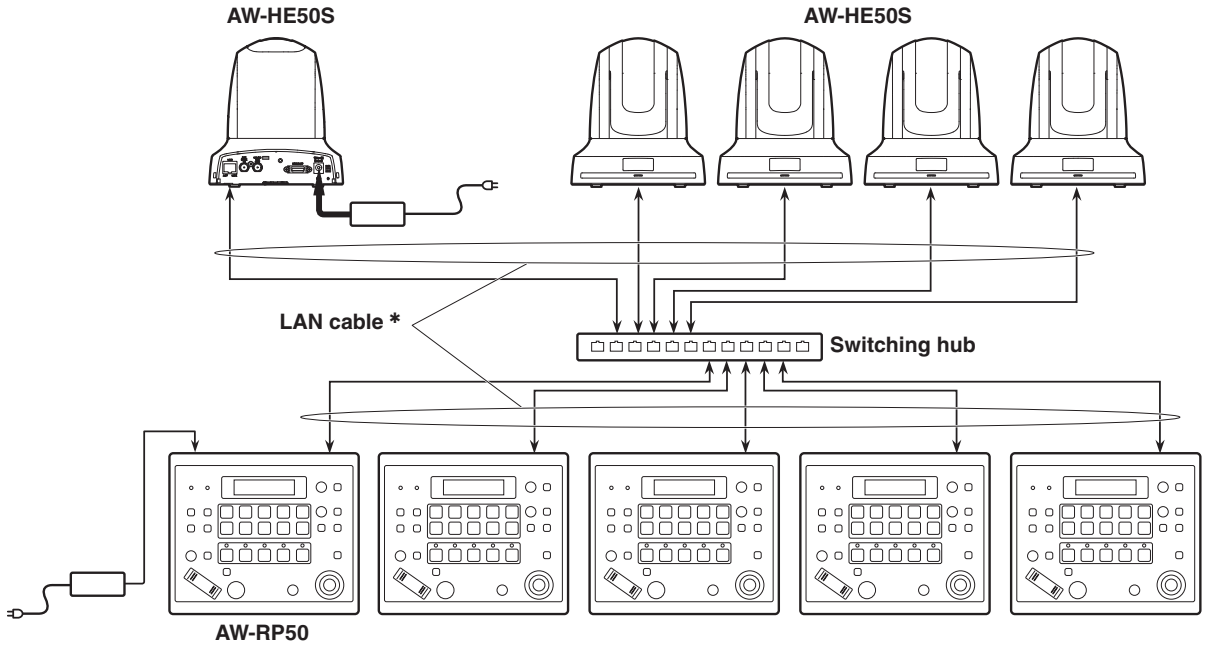


■ Example of IP connections

● Connections with the AW-HE50 and AW-HS50



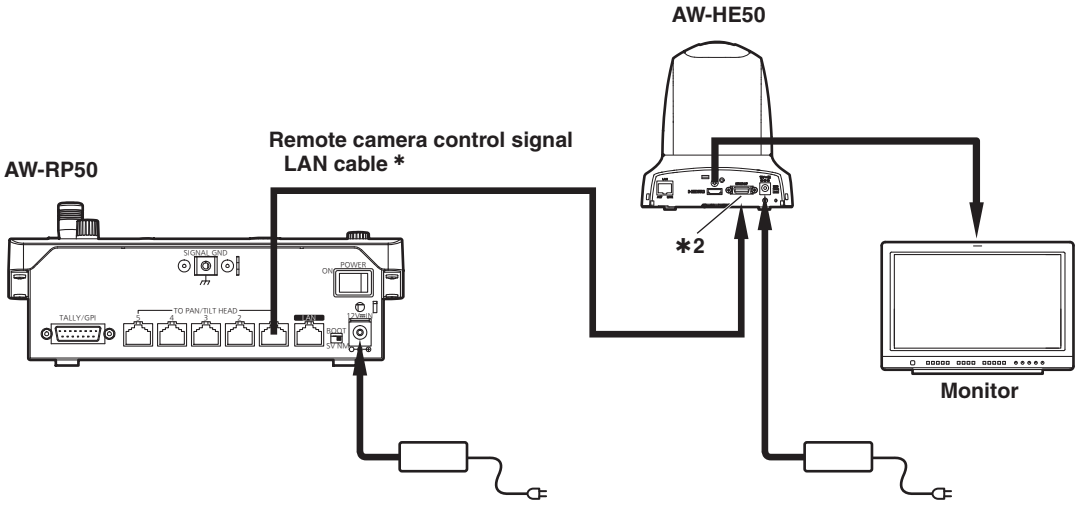
● Connecting a multiple number of the units with the AW-HE50 units



***:** Use straight cables (category 5 or above) for these connections.

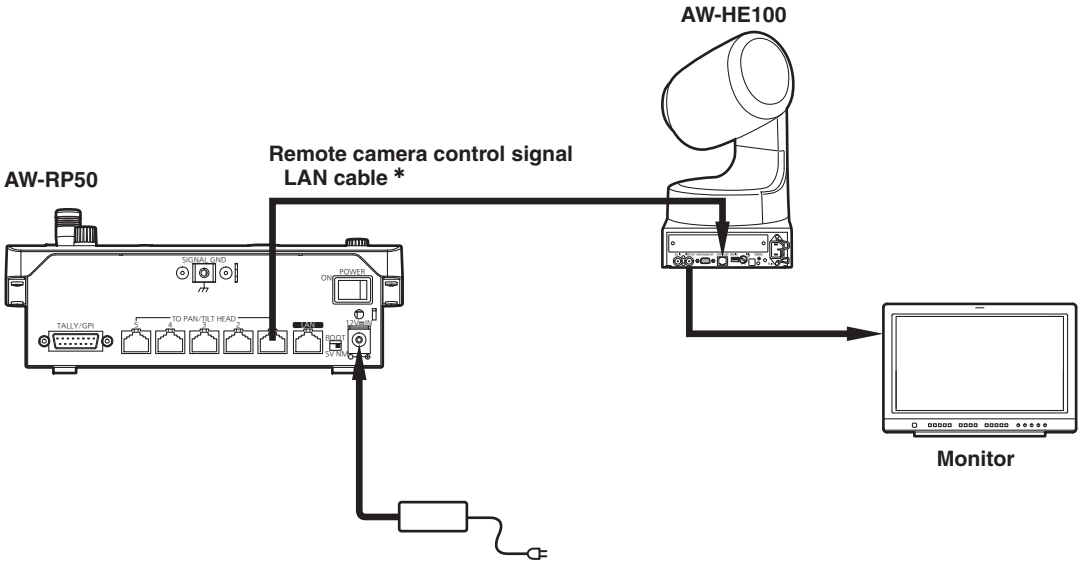
■ Example of serial connections

● Connection with the AW-HE50



∗1: Use straight cables (category 5 or above) for these connections.
∗2: The multi-interface cable (AW-CA20T6G) is required for the serial connection with the AW-HE50.

● Connection with the AW-HE100

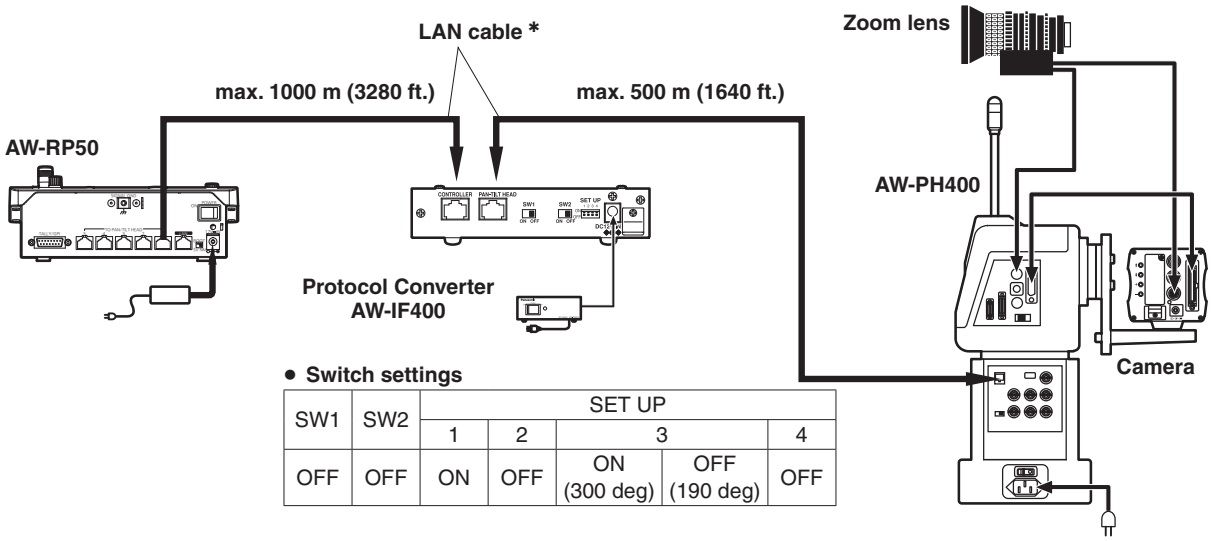


∗: Use straight cables (category 5 or above) for these connections.

Connections

● Connections with the AW-PH400 and camera

Camera model:
AW-HE870, AW-E860, AW-E750, AW-E650, AW-E350, AK-HC1500 or AK-HC1800

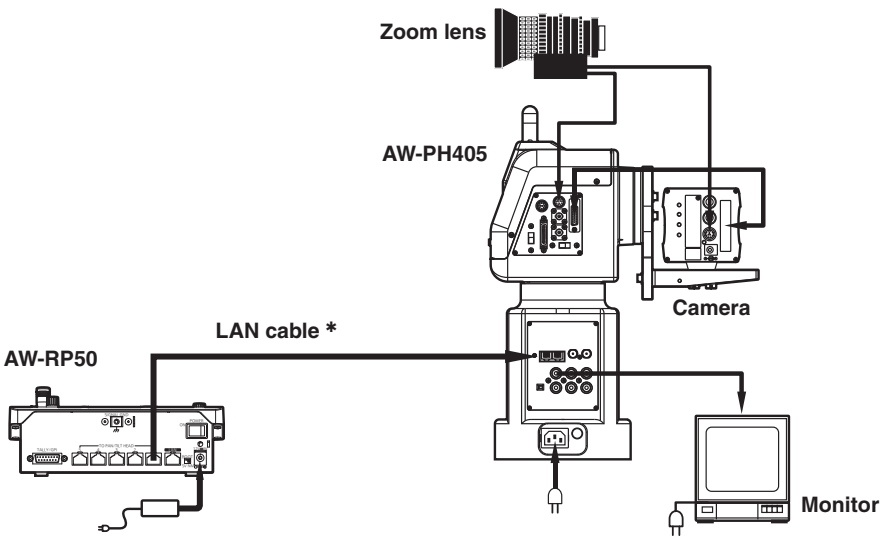


● **Switch settings**

SW1	SW2	SET UP				
		1	2	3		4
OFF	OFF	ON	OFF	ON (300 deg)	OFF (190 deg)	OFF

● Connections with the AW-PH405 and camera

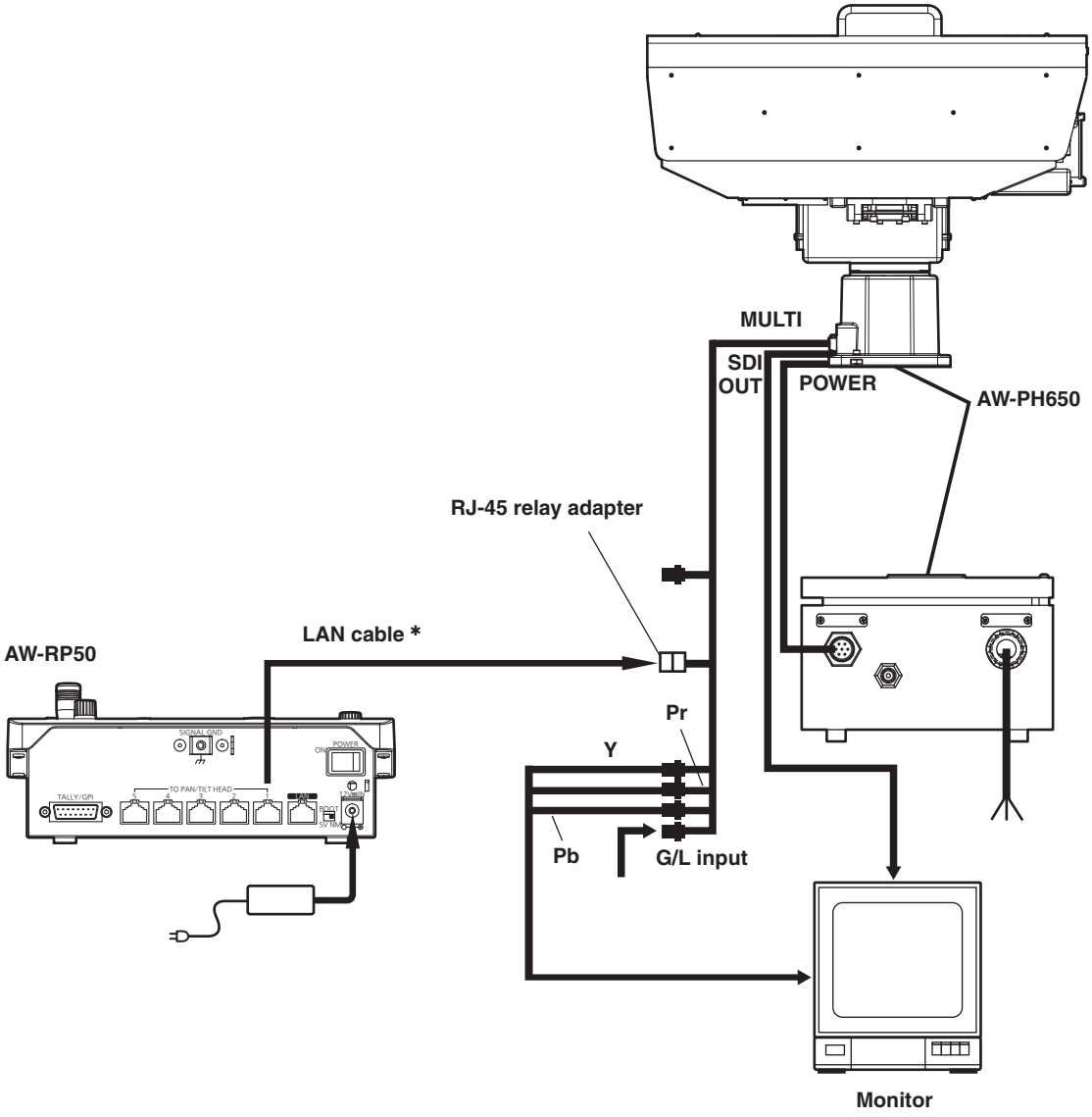
Camera model:
AW-HE870, AW-E860, AW-E750, AW-E650, AW-E350, AK-HC1500 or AK-HC1800



***:** Use straight cables (category 5 or above) for these connections.

Connections

● Connection with the AW-PH650



✱: Use straight cables (category 5 or above) for these connections.

There are two procedures for the connection settings, and these are described in “Settings for connection with the remote cameras” and “Settings for connection with the switcher”.

There are two series of steps to be taken for “Settings for connection with the remote cameras”.

- Setting method using the unit
  (Refer to the following items.)
  ☞ “Settings for connection with the remote cameras”
  ☞ “Setting the IP addresses automatically (auto IP setting)”
  ☞ “Changing the IP addresses of the camera numbers controlled by the unit”
  ☞ “Changing the camera numbers”

- Setting method using the “Setup Software”
  ☞ Refer to “Setup Software” (<Operations and Settings> Operating Instructions).
  The “Setup Software” is provided on the supplied CD-ROM.

The “Settings for connection with the switcher” are established using the unit.
☞ Refer to “Setting linkup with the switcher” (<Operations and Settings> Operating Instructions).

If the same information on the settings for the connections with the remote cameras is shared among a multiple number (up to 5 units) of AW-RP50 remote camera controllers which are connected on the same network, the operations are performed using the “Setup Software” provided on the supplied CD-ROM.
☞ Refer to “Saving and loading data” in the “Setup Software” section of the (<Operations and Settings> Operating Instructions).

■ Settings for connection with the remote cameras

Either serial connection “Serial” or IP connection “Network” can be selected for the connections between the unit and the remote cameras for camera numbers CAM1 to CAM100.
On the [SYSTEM] menu, select [CAMERA CTL], and display [CAM1] to [CAM100].
Then select the setting for the camera numbers.

Serial: Serial connection
Network: IP connection
NoAsign: No setting assigned (initial setting)

● Serial connection

Select “Serial” as the setting for the target camera number.

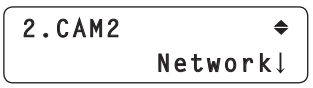


Camera numbers CAM1 to CAM5 correspond to the TO PAN/TILT HEAD connectors [1] to [5] on the unit’s rear panel.

- Serial connection “Serial” cannot be selected for camera numbers CAM6 to CAM100.

● IP connection

Select “Network” as the setting for the target camera number.



On the [SYSTEM] menu, select [CAM IP ADR], and display [IP:CAM1] to [IP:CAM100]. Then use the IP addresses corresponding to the camera numbers for the connection.

Note

When performing the steps described in “Auto IP setting”, set “NoAsign” for the target camera number.

■ Setting the IP addresses automatically (auto IP setting)

When “Auto IP setting” is initiated, the IP addresses are set automatically for the remote cameras and the switcher which are connected within the same subnet. The IP addresses can be set for up to 100 remote cameras and one switcher.

[Remote camera settings]

The unit sets the IP addresses for the remote cameras that have been detected by associating them with **camera numbers whose connection setting is set to “NoAsign”**.

Connection settings:

On the [SYSTEM] menu, select [CAMERA CTL], and then display items [CAM1] to [CAM100].

Setting or changing IP addresses:

On the [SYSTEM] menu, select [CAM IP ADR], and then display items [CAM1] to [CAM100].

Example:
① Remote cameras A, B, and C are detected.
② In [CAMERA CTL], items [CAM1] to [CAM3] are all set to “NoAsign”.
③ In [CAM IP ADR], the IP addresses of items [CAM1] to [CAM3] range from 192.168.000.010 to 192.168.000.012.

In the above example, the IP addresses for the remote cameras are set as follows:
Remote camera A: 192.168.000.010
Remote camera B: 192.168.000.011
Remote camera C: 192.168.000.012

- Subnet mask, default gateway, and port number settings are the same as those for the unit.
- The connection setting for camera numbers that have been set once with “Auto IP setting” becomes “Network”.
  These camera numbers will be excluded as targets of “Auto IP setting” the next time that “Auto IP setting” is performed.
  However, if the IP address for a camera number that has been set with “Auto IP setting” is changed, or if a camera number’s connection setting is changed to “NoAsign” or “Serial”, the corresponding camera numbers will be targeted in the next “Auto IP setting” operation.
- If the IP address for a detected remote camera matches the IP address set for a camera number (a camera number with a connection setting other than “Serial”), the IP address setting for the remote camera will be used as is. If the IP address for a remote camera is set once and then changed so that it differs from the IP address set for the camera number, the remote camera IP address is set again to the camera number IP address.

[Switcher settings]

The IP address set in the [IP:SW] item from [SW IP ADR] on the [SYSTEM] menu will be set for the switcher.

Notes

- Duplication in the IP addresses may arise when a device other than a remote camera or switcher has been connected within the same subnet. Connect only devices which are covered by the “Auto IP setting” within the same subnet.
- If a remote camera with the same IP address as the unit’s exists, the IP address of the remote camera concerned cannot be set by following the steps in “Auto IP setting”.
- When a multiple number of AW-RP50 remote camera controllers have been connected in the same subnet, do not perform the steps described in “Auto IP setting” using each controller at the same time.
- When the steps described in “Auto IP setting” have been performed by operating the unit, do not use the “Setup Software” (provided with the unit) in the host computer end at the same time. Similarly, do not use the “Easy IP Setup Software” provided with the AW-HE50 at the same time. Otherwise, the settings may not be established correctly.

●When setting the IP addresses for the first time

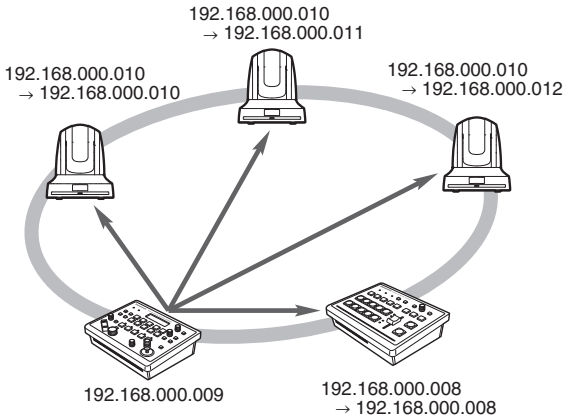
The IP addresses are set while the remote cameras, switcher and unit are at their factory settings.

Note

Before setting the IP addresses, check that "NoAsign" is shown as the remote camera's connection setting.

Connection settings:
On the [SYSTEM] menu, select [CAMERA CTL], and then display items [CAM1] to [CAM100].

1 Connect the remote cameras, switcher and unit to the network within the same subnet.



2 On the [SYSTEM] menu, select [AUTO SET IP], and display [AUTO SETUP]. Then select "RENEW IP ADR", and press the F2 dial.

```
1.AUTO SETUP
   RENEW IP ADR↓
```

Both the number of devices (all remote cameras and the switcher) currently being managed by the unit and the number of new devices detected are displayed on the LCD panel.

```
C:003/003 S:1/1
            YES↓
```

C:003/003

- Number of devices currently managed by the unit + Number of new devices detected
- Number of new devices detected

C: Remote camera, S: Switcher

✎ Memo ✎

- If the number of new devices detected exceeds the number of devices that can be registered (100 remote cameras and 1 switcher), [C/S OVER!] will be displayed at the bottom of the LCD panel. Automatic IP address setting can be performed even in this state, but IP addresses will be set only for the number of devices that can be registered.

```
C:020/100 S:1/1
C/S OVER!   YES↓
```

- When a multiple number of remote cameras have been started up at the same time, for instance, it may not be possible for all of these cameras to be detected by the unit.
  In this case, select "RETRY", and then press the F2 dial to retry the operation.
  The number of units to be added can be updated.

- The number displayed for "Number of new devices detected" may be lower than the actual number of devices to be set, due to a cause such as the remote cameras or switches not being powered on.
  In this case, eliminate the cause of the problem, select "RETRY", and then press the F2 dial to retry the operation.
  The number of units to be added can be updated.

```
C:020/020 S:1/1
          RETRY↓
```

3 Turn the F2 dial, select “Yes”, and then press the F2 dial.

This starts the “Auto IP setting” process.
When “Auto IP setting” has been initiated, the progress is shown by the number of displayed dots which are reduced one by one.



When all the operations have been completed successfully, “COMPLETE!” is displayed.



The remote cameras and the switcher are automatically rebooted, and they restart with the new IP addresses which were set.
The remote cameras can now be operated from the unit.
The function for linking the switcher with the unit becomes available for use at this point.

✎ Memo ✎

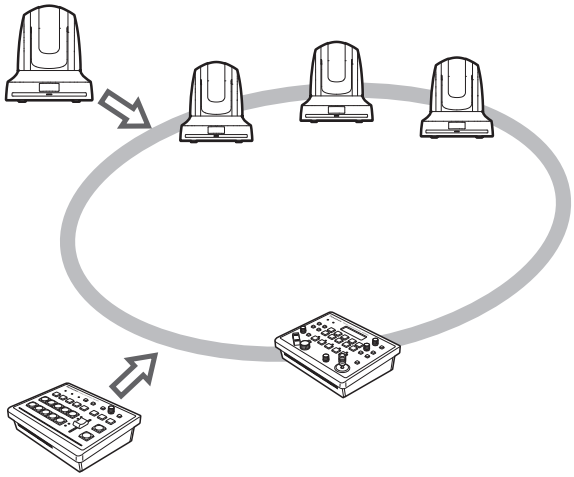
If the IP addresses were not set successfully, “SET UP ERR!” is displayed.



The cause of the problem is likely a network malfunction.
Check the connection status of the hub and LAN cables, and then retry the “Auto IP setting” operation.

● When introducing additional remote cameras or a switcher into an environment where similar existing devices are already in use

Even when additional remote cameras or switcher are introduced into an environment where similar existing devices are already in use, the settings can be easily established using “Auto IP setting”.



There are two methods for setting the IP addresses of newly introduced devices (remote cameras or a switcher), as follows:

1. **Setting the IP address from the unit**
2. **Changing the IP address on the unit to match the IP address of the remote camera or switcher**

This section explains each of these methods.

Setting the IP address from the unit

[Remote camera settings]

The unit sets the IP addresses for the remote cameras that have been detected by associating them with camera numbers whose connection setting is set to “NoAsign”.

Connection settings:

On the [SYSTEM] menu, select [CAMERA CTL], and then display items [CAM1] to [CAM100].

Setting or changing IP addresses:

On the [SYSTEM] menu, select [CAM IP ADR], and then display items [CAM1] to [CAM100].

Example:

① Three remote cameras are in operation.
② An additional remote camera is newly introduced (and becomes remote camera D).
③ Remote camera D is detected.
④ In [CAMERA CTL], the [CAM4] item is set to “NoAsign”.
⑤ In [CAM IP ADR], the IP address for the [CAM4] item is 192.168.000.013.

In the above example, remote camera D’s camera number allocation becomes CAM4, and its IP address is set as follows:
Remote camera D: 192.168.000.013

- Subnet mask, default gateway, and port number settings are the same as those for the unit.

[Switcher settings]

The IP address set in the [IP:SW] item from [SW IP ADR] on the [SYSTEM] menu will be set for the switcher.

1 Connect the additional remote cameras and the switcher to be introduced and the unit to the network within the same subnet.

2 On the [SYSTEM] menu, select [AUTO SET IP], and display [AUTO SETUP]. Then select "RENEW IP ADR", and press the F2 dial.

```
1.AUTO SETUP
   RENEW IP ADR↓
```

Both the number of devices (all remote cameras and the switcher) currently being managed by the unit and the number of new devices detected are displayed on the LCD panel.

```
C:001/004 S:0/1
          YES↓
```

C:001/004

- **Number of devices currently managed by the unit + Number of new devices detected**
- **Number of new devices detected**

C: Remote camera, S: Switcher

✎ Memo ✎

- If the number of new devices detected exceeds the number of devices that can be registered (100 remote cameras and 1 switcher), [C/S OVER!] will be displayed at the bottom of the LCD panel. Automatic IP address setting can be performed even in this state, but IP addresses will be set only for the number of devices that can be registered.

```
C:020/100 S:1/1
C/S OVER!   YES↓
```

- The number displayed for "Number of new devices detected" may be lower than the actual number of devices to be set, due to a cause such as the remote cameras or switches not being powered on. In this case, eliminate the cause of the problem, select "RETRY", and then press the F2 dial to retry the operation.
  The number of units to be added can be updated.

```
C:020/020 S:1/1
          RETRY↓
```

3 Turn the F2 dial, select "Yes", and then press the F2 dial.

This starts the "Auto IP setting" process.
When "Auto IP setting" has been initiated, the progress is shown by the number of displayed dots which are reduced one by one.

```
AUTO SETUP
      •••••
```

When all the operations have been completed successfully, "COMPLETE!" is displayed.

```
AUTO SETUP
      COMPLETE!
```

The remote cameras and the switcher are automatically rebooted, and they restart with the new IP addresses which were set.
The remote cameras can now be operated from the unit.
The function for linking the switcher with the unit becomes available for use at this point.

✎ Memo ✎

If the IP addresses were not set successfully, "SET UP ERR!" is displayed.

```
AUTO SETUP
    SET UP ERR!
```

The cause of the problem is likely a network malfunction.
Check the connection status of the hub and LAN cables, and then retry the "Auto IP setting" operation.

Changing the IP address on the unit to match the IP address of the remote camera or switcher

[Remote camera settings]

The unit sets the IP addresses for the remote cameras that have been detected by associating them with camera numbers whose connection setting is set to “NoAsign”.

Connection settings:

On the [SYSTEM] menu, select [CAMERA CTL], and then display items [CAM1] to [CAM100].

Setting or changing IP addresses:

On the [SYSTEM] menu, select [CAM IP ADR], and then display items [CAM1] to [CAM100].

Example:

① Three remote cameras are in operation.
② An additional remote camera with an IP address of “192.168.000.020” is newly introduced (and becomes remote camera E).
③ Remote camera E is detected.
④ In [CAMERA CTL], the [CAM4] item is set to “NoAsign”.

In the above example, on the [SYSTEM] menu, in [CAM IP ADR], the IP address of the [CAM4] item is set to “192.168.000.020”.

- Subnet mask, default gateway, and port number settings are the same as those for the unit.

[Switcher settings]

The IP address for the switcher will be set in the [IP:SW] item from [SW IP ADR] on the [SYSTEM] menu.

Note

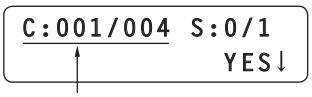
If different subnet mask settings are used for unit and remote camera, no operations using the network will be possible.

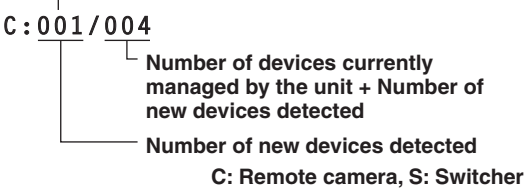
1 Connect the additional remote cameras and the switcher to be introduced and the unit to the network within the same subnet.

2 On the [SYSTEM] menu, select [AUTO SET IP], and display [AUTO SETUP]. Then select “KEEP IP ADR”, and press the F2 dial.



Both the number of devices (all remote cameras and the switcher) currently being managed by the unit and the number of new devices detected are displayed on the LCD panel.





C: Remote camera, S: Switcher

Memo

- If the number of new devices detected exceeds the number of devices that can be registered (100 remote cameras and 1 switcher), [C/S OVER!] will be displayed at the bottom of the LCD panel. Automatic IP address setting can be performed even in this state, but IP addresses will be set only for the number of devices that can be registered.



- The number displayed for “Number of new devices detected” may be lower than the actual number of devices to be set, due to a cause such as the remote cameras or switches not being powered on. In this case, eliminate the cause of the problem, select “RETRY”, and then press the F2 dial to retry the operation.
  The number of units to be added can be updated.



3 Turn the F2 dial, select “Yes”, and then press the F2 dial.

This starts the “Auto IP setting” process.
When “Auto IP setting” has been initiated, the progress is shown by the number of displayed dots which are reduced one by one.

```
AUTO SETUP
      •••••
```

When all the operations have been completed successfully, “COMPLETE!” is displayed.

```
AUTO SETUP
       COMPLETE!
```

The remote cameras can now be operated from the unit.
The function for linking the switcher with the unit becomes available for use at this point.

Memo

- The “IP Duplication!” message is displayed if there is duplication between the IP addresses of the devices in operation and the IP addresses of the additional remote cameras to be introduced.
  The IP addresses are not set for those remote cameras whose IP addresses are in duplication.

```
AUTO SETUP
IP Duplication!
```

  Check the IP addresses, and then retry the “Auto IP setting” operation.

- If the IP addresses were not set successfully, “SET UP ERR!” is displayed.

```
AUTO SETUP
     SET UP ERR!
```

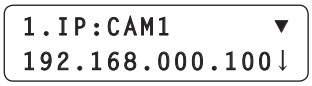
  The cause of the problem is likely a network malfunction.
  Check the connection status of the hub and LAN cables, and then retry the “Auto IP setting” operation.

■ Changing the IP addresses of the camera numbers controlled by the unit

Use the steps below when connecting the remote cameras (thorough a router) whose IP addresses cannot be set by following the steps in “Auto IP setting”.

● Setting the IP addresses

On the [SYSTEM] menu, select [CAM IP ADR], and display [IP:CAM1] to [IP:CAM100]. The IP addresses of the camera numbers can now be changed.
Even when “NoAsign” or “Serial” has been selected as the [CAM1] to [CAM100] setting of [CAMERA CTL] on the [SYSTEM] menu, the IP addresses can still be changed.



The IP addresses are set for all the camera numbers [CAM1] to [CAM100].

Initial values:
CAM1 (192.168.000.010)
↓
CAM100 (192.168.000.109)

✎ Memo ✎

If the unit’s IP address has been changed using the [IP ADDRESS] item of [NETWORK] on the [SYSTEM] menu, the IP addresses of the camera numbers which were set to “NoAsign” for the [CAM1] to [CAM100] item of [CAMERA CTL] on the [SYSTEM] menu and which are higher than the unit’s IP address, will be automatically re-set in the sequence of the camera numbers set to “NoAsign” starting with the lowest number.

When the IP addresses are changed, a check for IP address duplication is conducted.
A check is carried out to verify whether there is any duplication with the IP addresses of the camera numbers which were set to “Network” for the [CAM1] to [CAM100] item of [CAMERA CTL] on the [SYSTEM] menu.
If duplication is found, the “Duplicate!” is displayed for three seconds, and the IP addresses cannot be set.



Note

The IP addresses set by following these steps are the IP address of the camera numbers controlled by the unit.
The IP addresses of the remote cameras are not changed.

■ Changing the camera numbers

The camera numbers which have been set by “Auto IP setting” can be changed.
They are changed by replacing the IP addresses of the current camera numbers with the IP addresses of the camera numbers to be changed.

1 On the [SYSTEM] menu, select [CAMASSIGN], and display [CAM1] to [CAM100]. Then select the camera number to be changed.

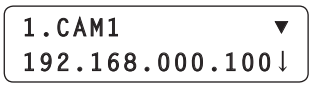
2 Select the IP address of the remote camera for the selected camera number.

The tally indicator of the remote camera corresponding to the selected IP address lights. Operate the PAN/TILT lever, and check whether the camera whose camera number is to be changed is being moved.

The IP address that can be selected is the IP address of the camera number which has been set for “Network” for the [CAM1] to [CAM100] item of [CAMERA CTL] on the [SYSTEM] menu.

3 Press the F2 dial to enter the IP address.

The IP addresses for the camera number of the change destination and for the camera number of the change source are switched over.



Note

When “ASSIGN” is displayed for the [CAM1] to [CAM100] item of [CAM ASSIGN] on the [SYSTEM] menu, the CAMERA STATUS/ SELECTION buttons cannot be operated, and the camera operations (IRIS, FOCUS, PT, ZOOM and CAMERA OSD) cannot be controlled.

■ Changing the IP address of the switcher

The IP address of the switcher which was set by “Auto IP setting” can be changed.

1 On the [SYSTEM] menu, select [SW IP ADR], and display [IP:SW]. Then change the IP address.

■ Clearing the IP address control tables

All the IP address control tables which have been set can be cleared together.

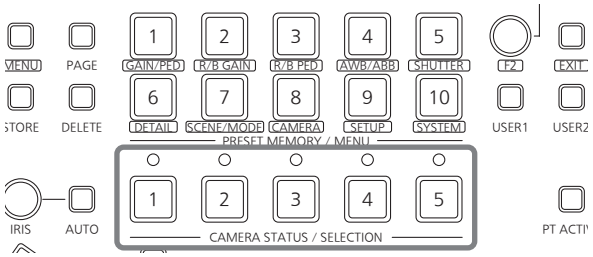
1 On the [SYSTEM] menu, select [AUTO SETUP], and display [AUTO SETUP]. Then select “ALL CLEAR”, and press the F2 dial to clear all the tables.



- The “Serial” settings are not cleared.

Selecting the remote cameras to be operated

Up to five remote cameras to be operated can be selected using the CAMERA STATUS/SELECTION buttons.
When one of the CAMERA STATUS/SELECTION buttons 1 to 5 is pressed, the indicator of the corresponding button lights.
The statuses of the remote cameras assigned to CAMERA STATUS/SELECTION buttons 1 to 5 can be identified by the lighting statuses of the indicators above the buttons.



Indicator lighting statuses and remote camera statuses

Indicator lighting status	Remote camera status	The unit and remote camera connections
Off	● No remote camera has been assigned to the corresponding button. (“NoAsign” is set for the remote camera connection.) ● The power of the remote camera has not been turned on. (✱1, ✱2)	IP connection/ Serial connection
Lights (✱3) (orange)	The remote camera is in the standby status.	IP connection/ Serial connection
Blinking (orange)	It is not possible for the unit to be connected to the remote camera concerned because five other AW-RP50 remote camera controllers have already been connected.	IP connection
Lights (green)	The unit is now connected with the remote camera.	IP connection/ Serial connection
Blinking (green)	The remote camera concerned is connected to an AW-RP50 remote camera controller which is other than the unit.	IP connection
Lights (red)	The image of the remote camera concerned is now on the air. (The OA tally signal is received over the network or at the GPI input connector.)	IP connection/ Serial connection
Blinking (red)	The remote camera concerned is connected to another AW-RP50 remote camera controller, and the image of the its remote camera is now on the air.	IP connection

✱1: Follow the steps set forth in the “How to turn the power of the remote cameras on and off” in the <Operations and Settings> Operating Instructions, and turn on the power of the remote camera.

✱2: When the AW-PH400 is connected through the protocol converter (AW-IF400), the indicator also will go off when the LAN cable has been connected or disconnected.
Follow the steps set forth in the “How to turn the power of the remote cameras on and off” in the <Operations and Settings> Operating Instructions, and turn off the power of the remote camera and then turn it back on.

✱3: This is “Off” when the AW-PH400 is connected through the protocol converter (AW-IF400).

Selecting the remote cameras to be operated

Up to 100 cameras can be divided into 1 to 20 groups by menu operations, and controlled by the unit.
The selection procedure is described below.

1 **Set the MENU button to ON.**

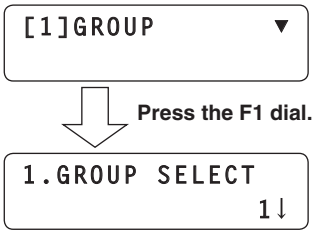
Press the MENU button and light its indicator.

2 **Set the PRESET MEMORY/MENU 8 button (CAMERA) to ON.**

When the button is pressed and its indicator is lighted, the [CAMERA] menu is displayed on the LCD panel.

3 **Press the F1 dial.**

The GROUP SELECT item is displayed.

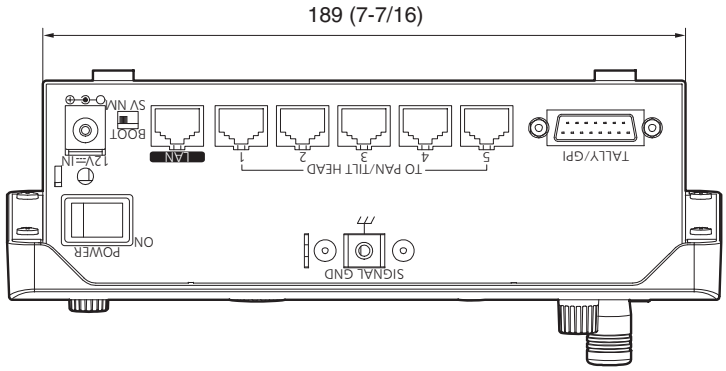


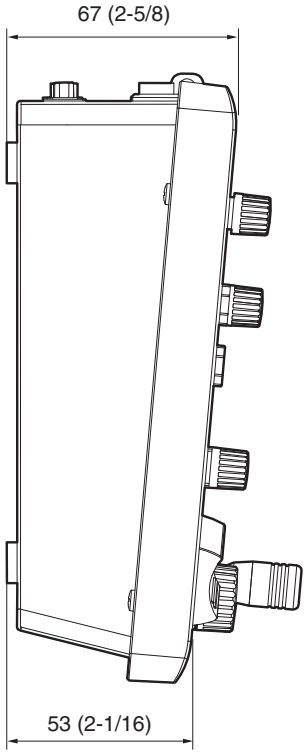
4 **Turn the F2 dial, select the group, and then press the F2 dial.**

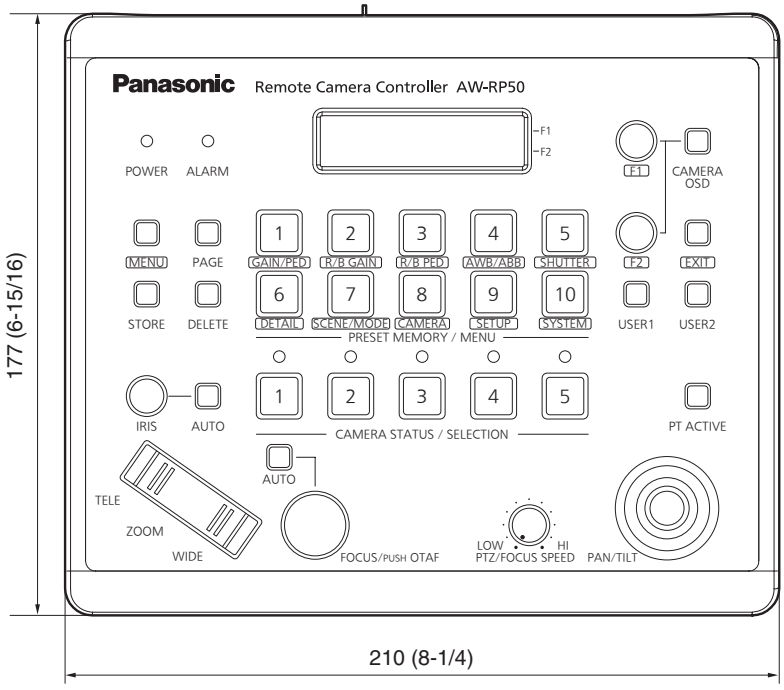
The remote cameras assigned to the group selected here can be selected using the CAMERA STATUS/ SELECTION buttons.

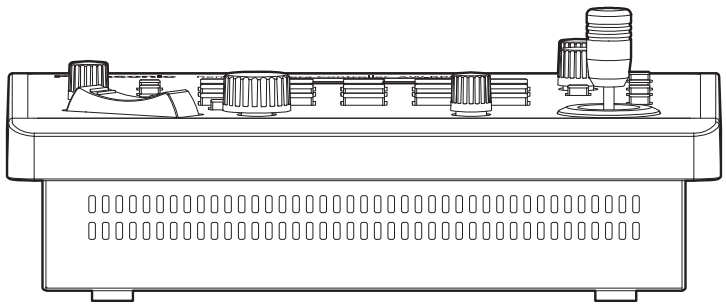
Appearance

Unit: mm (inch)









Specifications

Power requirements:	DC 12 V ±10 % (AC adapter provided)
Current consumption:	0.5 A (DC 12 V)

⊏⊐ indicates safety information.

■ GENERAL

Ambient operating temperature:
0 °C to +40 °C (32 °F to 104 °F)

Allowable humidity ranges:
10 % to 90 % (no condensation)

Mass:
Approx. 1.1 kg (2.43 lbs.)

Dimensions (W × H × D):
210 × 67 × 177 mm
(8-1/4″ × 2-5/8″ × 6-15/16″)
[excluding protrusions]

■ Input/Output connector

LAN (RJ-45):
10BASE-T/100BASE-TX
Connecting cable: LAN cable, max. 100 meters (328 ft.)

- When the unit is connected via a switching hub:
  Straight cable (category 5 or above), STP (Shielded Twisted Pair) cable recommended
- When the unit is connected directly:
  Crossover cable (category 5 or above), STP (Shielded Twisted Pair) cable recommended

TO PAN/TILT HEAD (RJ-45):
RS-422 (control signals for remote cameras)
Connecting cable:
Straight cable (category 5 or above)
max. 1000 meters (3280 ft.)

TALLY/GPI (D-sub 15-pin, female, inch thread):
TALLY IN:
5 inputs (for receiving photocoupler signals)
GPI IN:
4 inputs (for receiving photocoupler signals)
GPI OUT:
4 outputs (open collector outputs, negative logic)

■ AC adapter

Input:
AC 100 V to 240 V, 1.5 A, 50/60 Hz

Output:
DC 12 V, 2.5 A, 30 W

The provided power cable is for 125 V AC or less. Use it within AC 100 V to 120 V.

Mass and dimensions shown are approximate.
Specifications are subject to change without notice.

Memo

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Integrator's Reference Manual for the Polycom® RealPresence® Group Series



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About This Guide

The Integrator's Reference Manual for Polycom® RealPresence® Group Series is for system integrators who need to configure, customize, manage, and troubleshoot Polycom RealPresence Group systems. The API commands in this guide are applicable to the Polycom RealPresence Group 300, Polycom RealPresence Group 500, and Polycom RealPresence Group 700 systems.

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1

Room Integration

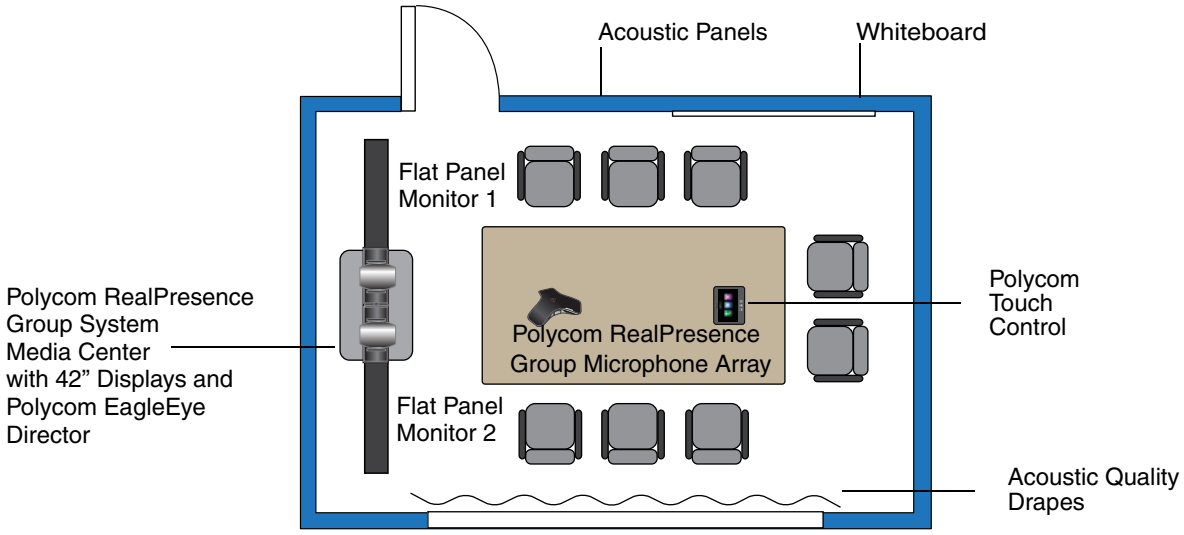
Setting Up a Room for Video Conferencing

For detailed information about setting up a room for video conferencing, refer to Room Design and Layout on page 235.

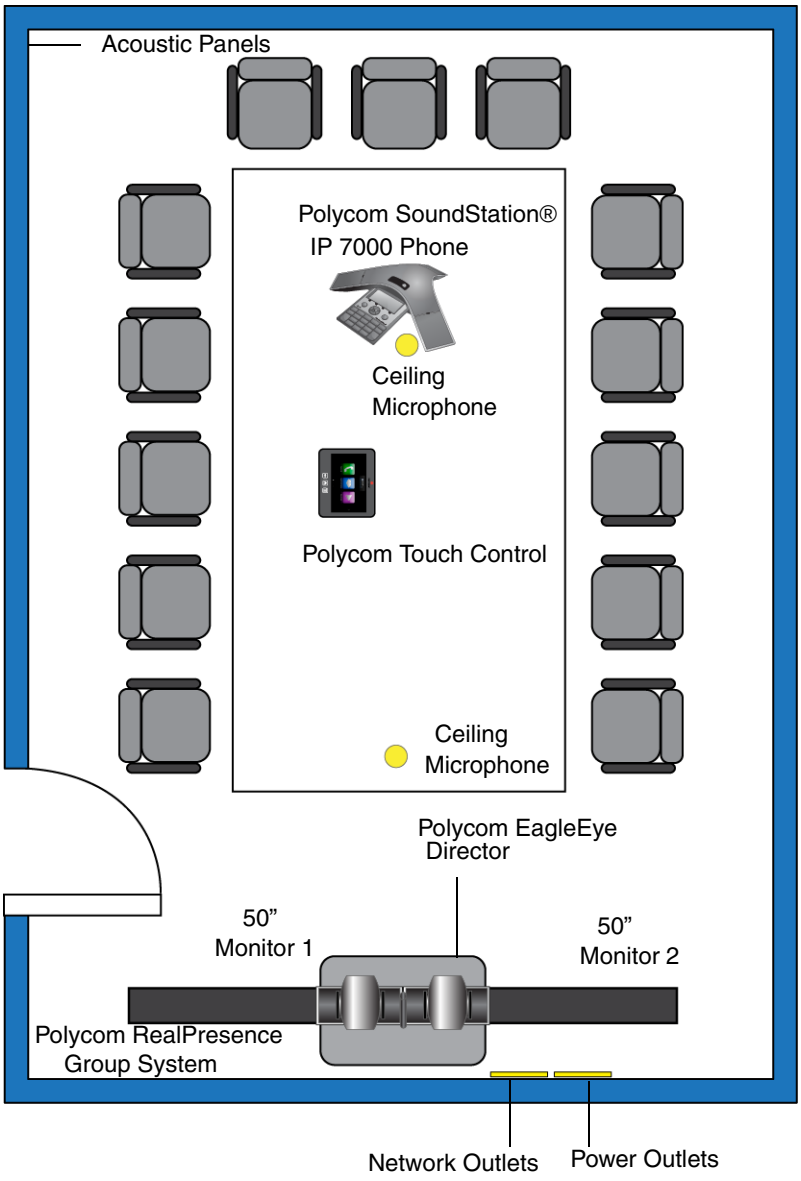
Room Layout Examples

Use the following diagrams as examples for setting up a conference room with Polycom RealPresence Group systems. Polycom recommends that you contract an experienced contractor to ensure all the components operate as a single cohesive system.

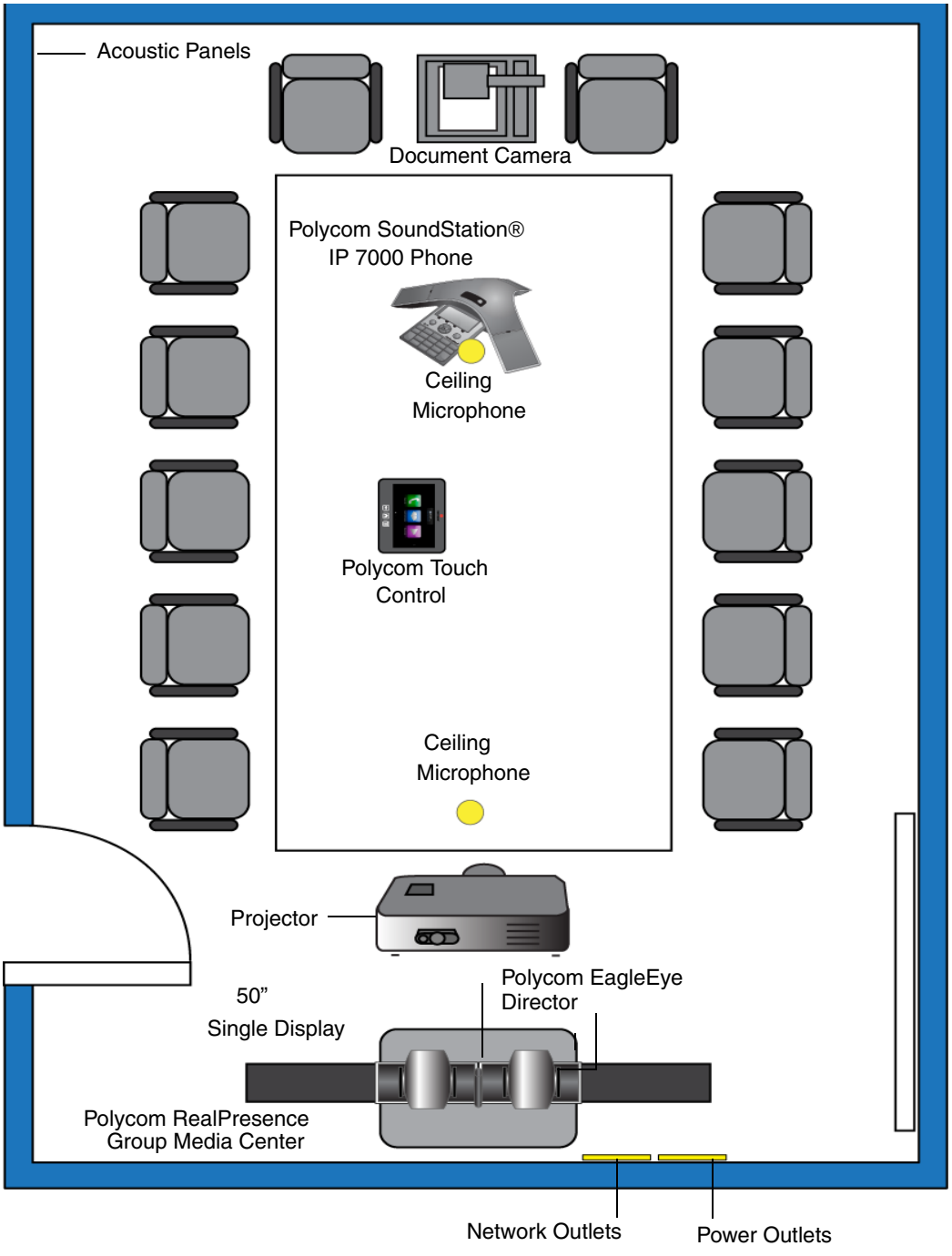
Small Conference Room



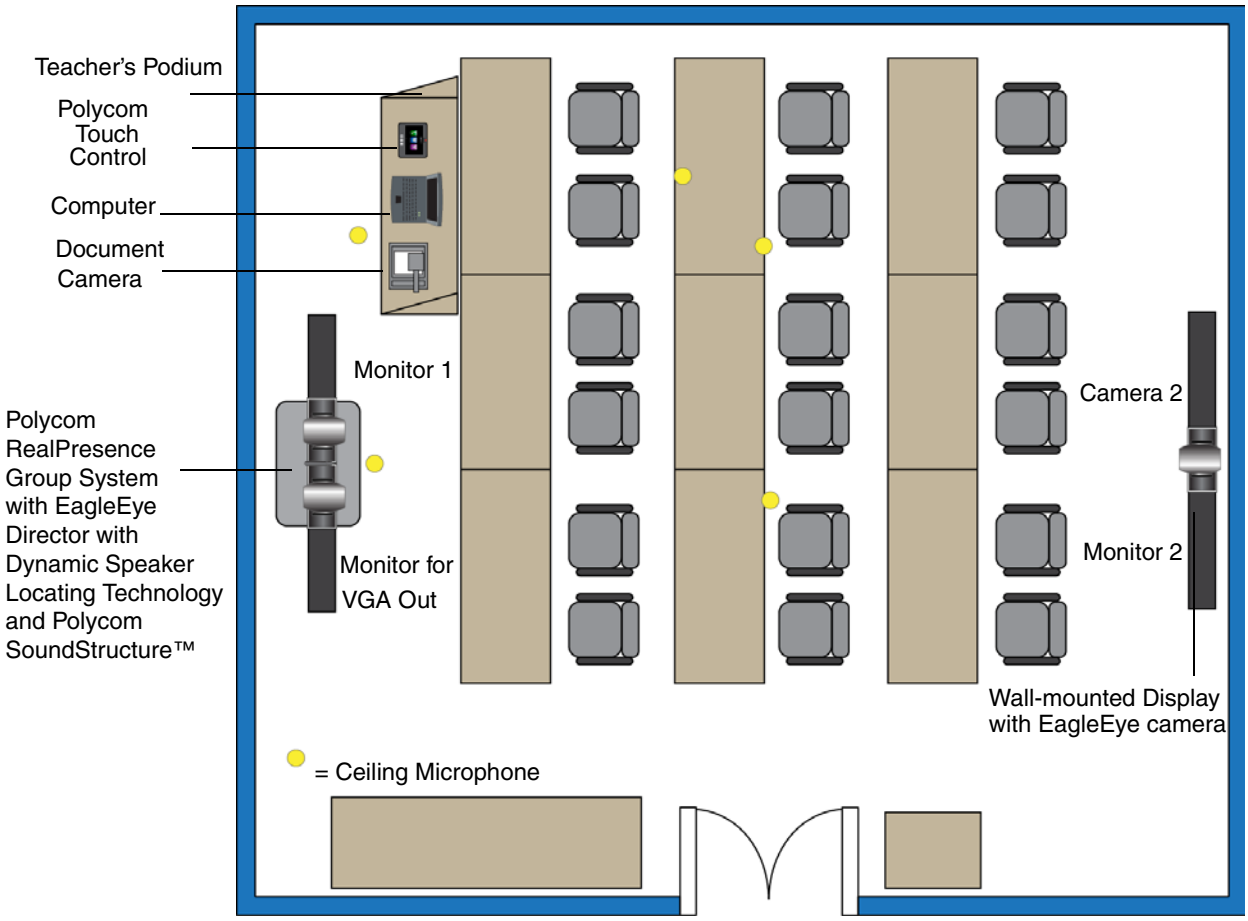
Large Conference Room: Option 1



Large Conference Room: Option 2



Classroom


Teacher's Podium
Polycom Touch Control
Computer
Document Camera
Monitor 1
Polycom RealPresence Group System with EagleEye Director with Dynamic Speaker Locating Technology and Polycom SoundStructure™
Monitor for VGA Out
Camera 2
Monitor 2
Wall-mounted Display with EagleEye camera
= Ceiling Microphone

Integrating Video

The following sections describe how to connect cameras to Polycom RealPresence Group systems. After you connect a camera to a Polycom RealPresence Group system, refer to the *Administrator's Guide for the Polycom RealPresence Group Series* for information about configuring the camera options in the user interface.

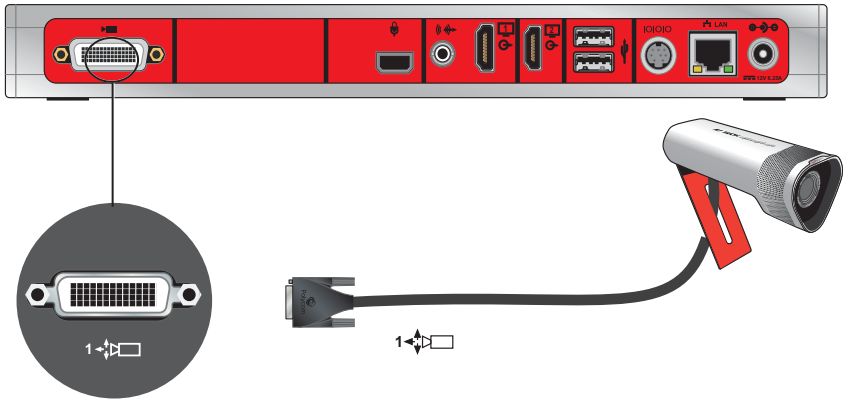
Connecting Polycom Cameras

You can connect Polycom RealPresence Group systems to a Polycom EagleEye Acoustic, Polycom EagleEye III, Polycom EagleEye Director, Polycom EagleEye HD, Polycom EagleEye 1080, Polycom EagleEye View, or Polycom EagleEye II camera from Polycom. Refer to the release notes for the software release installed on the Polycom RealPresence Groupsystem for a list of supported PTZ cameras.

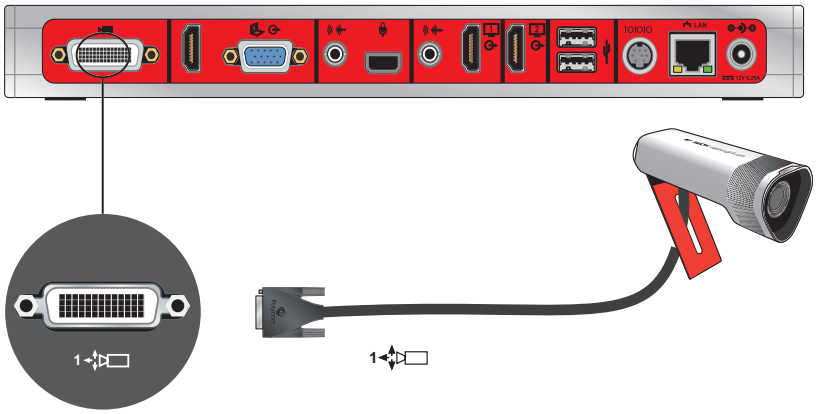
Polycom EagleEye Acoustic Camera as the Main Camera

You can connect a Polycom EagleEye Acoustic camera (part number 2624-65058-001) to a RealPresence Group 300 system as the main camera.

Connecting a Polycom EagleEye Acoustic Camera to a RealPresence Group 300 system:



Connecting a Polycom EagleEye Acoustic Camera to a RealPresence Group 500 system:



Connecting a Polycom EagleEye Acoustic Camera to a RealPresence Group 700 system:



Polycom EagleEye III Camera as the Main Camera

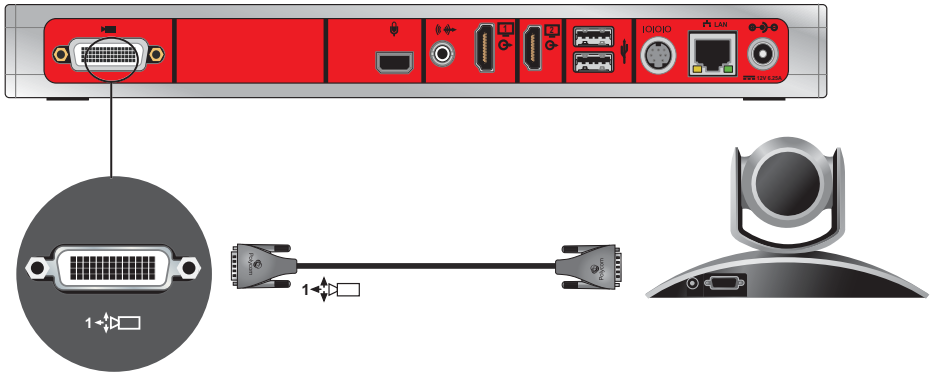
You can connect a Polycom EagleEye III camera (part number 1624-08283-002, 8200-63730-xxx, or 8200-63740-xxx) to a Polycom RealPresence Group system as the main camera using:

Option 1

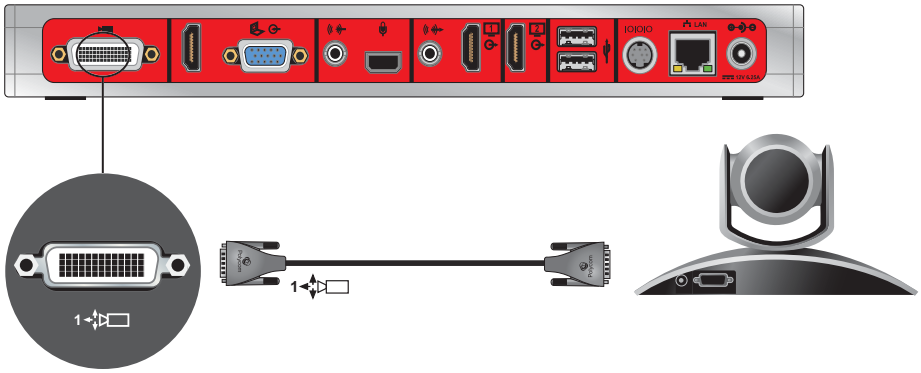
- HDCI Analog Camera Cable on page 23.
- Power supply. Power supply is only required if you want to use the IR remote to wake the system when it is in sleep mode on RealPresence Group 700 systems. Use only the approved power supply from Polycom

(part number 1465-52748-040). Do not exceed 12 Volts at 3 Amps. Verify the polarity of the power supply as shown on the Polycom camera next to the power supply input.

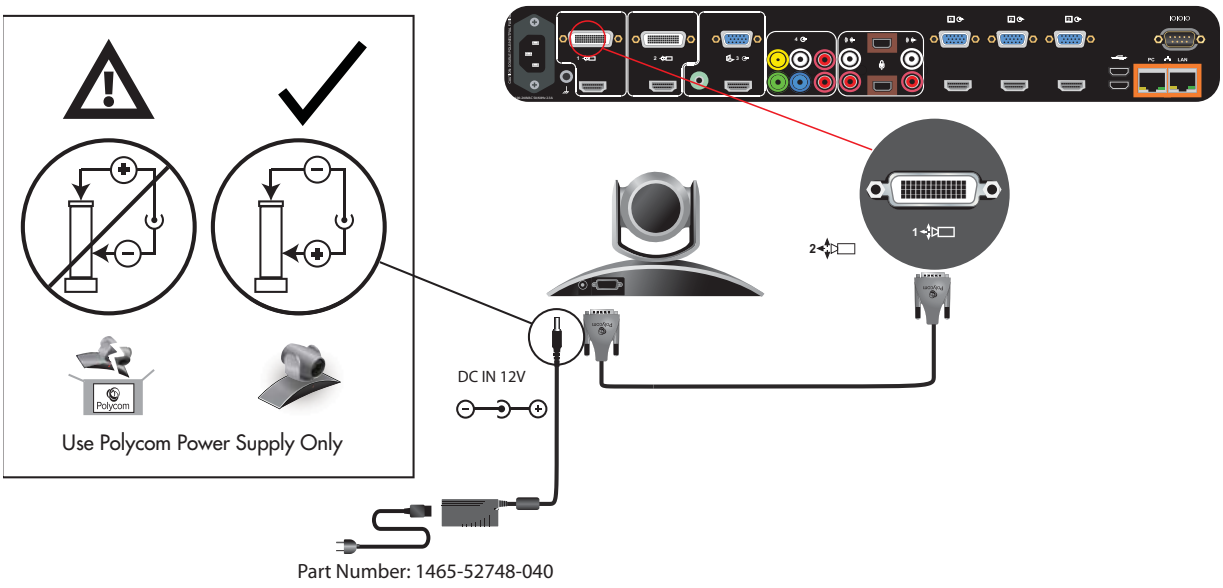
Connecting a Polycom EagleEye III Camera to a Polycom RealPresence Group 300 system:



Connecting a Polycom EagleEye III Camera to a Polycom RealPresence Group 500 system:



Connecting a Polycom EagleEye III Camera to a Polycom RealPresence Group 700 system:

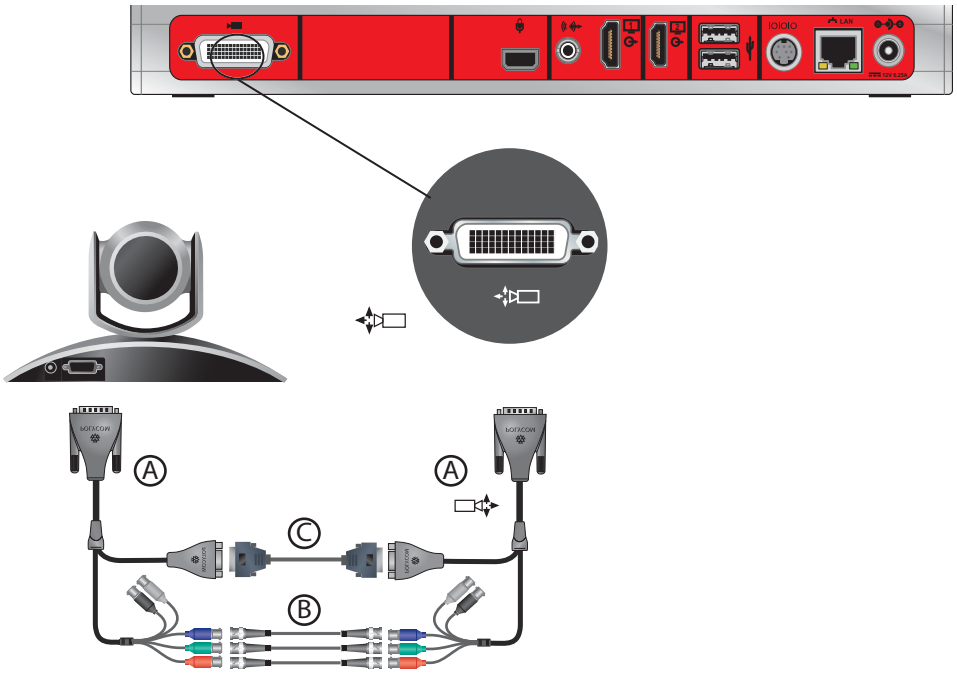


Option 2

- A—Two HDCI Camera Break-Out Cable on page 27.
- B—Coaxial analog video cables.
- C—DB-9 serial cable.
- Power supply. Power supply is only required if you want to use the IR remote to wake the system when it is in sleep mode on RealPresence Group 700 systems. Use only the approved power supply from Polycom (part number 1465-52748-040). Do not exceed 12 Volts at 3 Amps. Verify the polarity of the power supply as shown on the Polycom camera next to the power supply input.

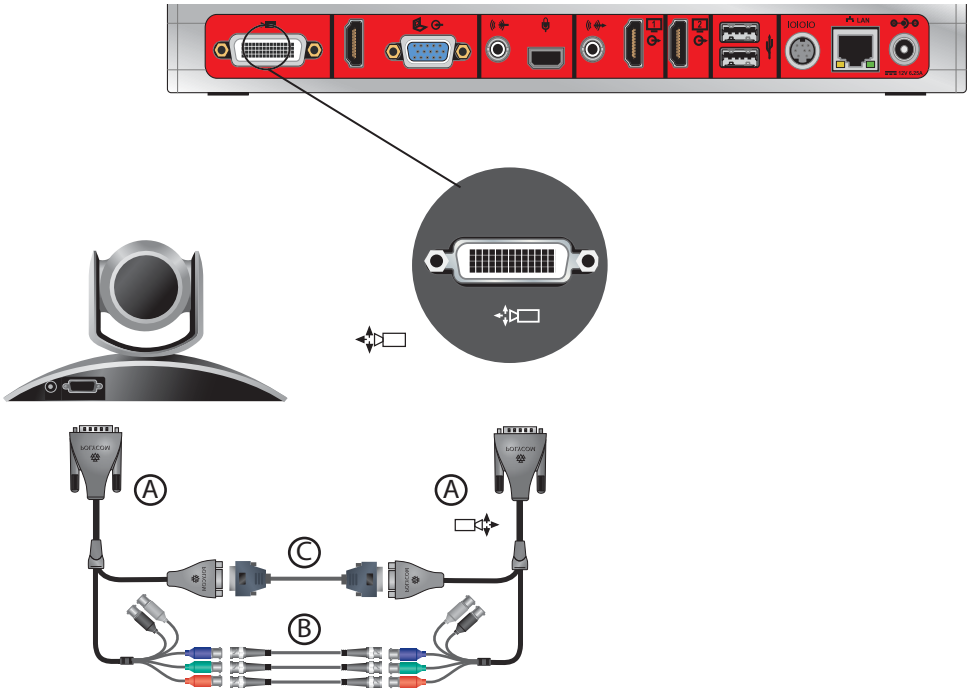
Polycom recommends this configuration when a custom cable length is required. The BNC and serial cables can be built to custom lengths.

Connecting a Polycom EagleEye III Camera to a Polycom RealPresence Group 300 system:



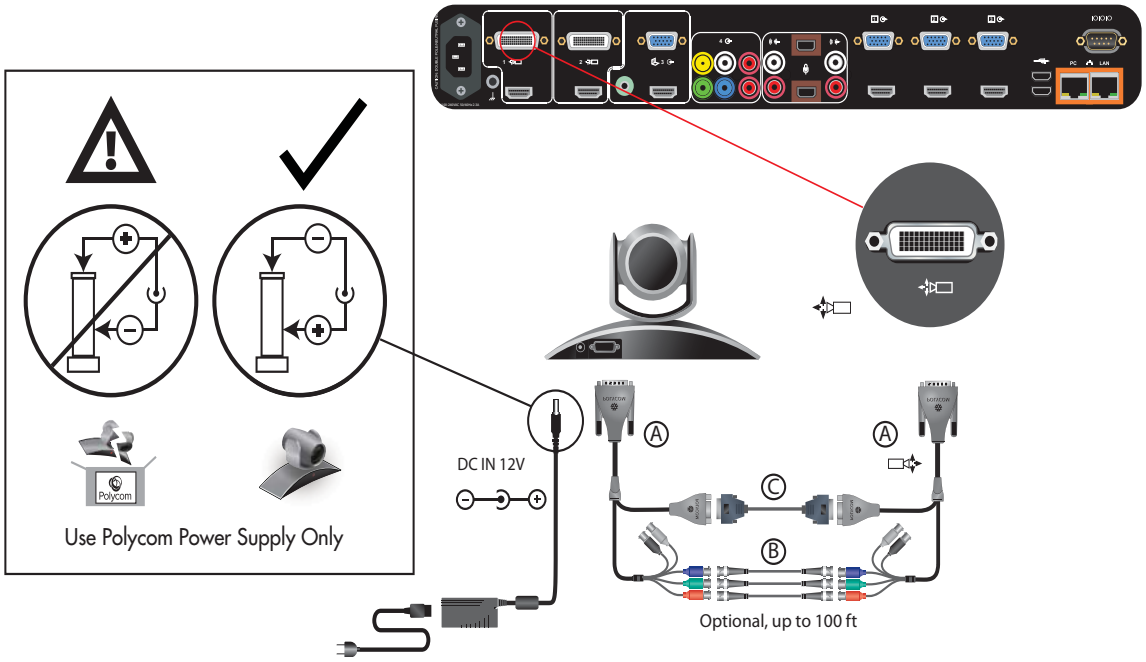
Optional, up to 100 ft

Connecting a Polycom EagleEye III Camera to a Polycom RealPresence 500 system:



Optional, up to 100 ft

Connecting a Polycom EagleEye III Camera to a Polycom RealPresence 700 system:



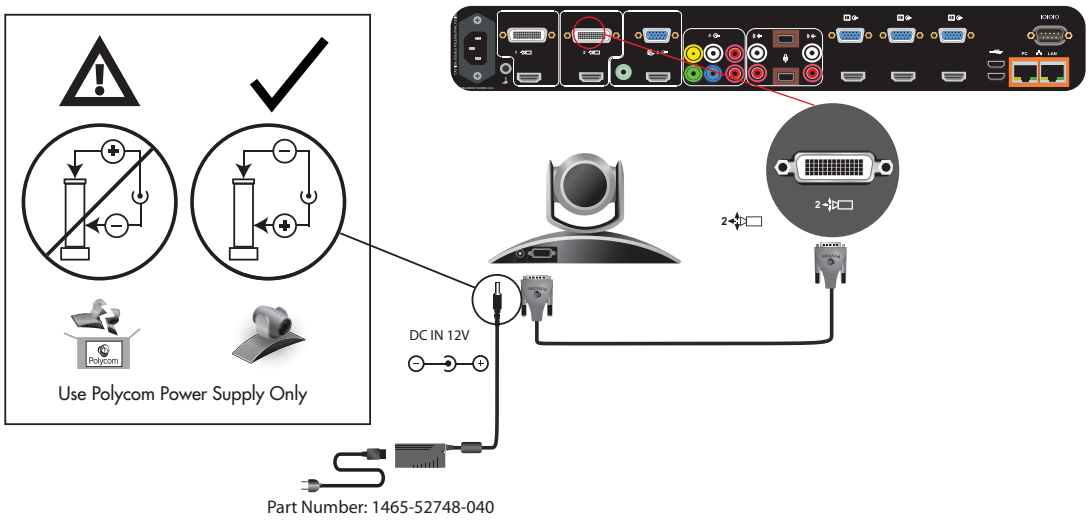
Polycom EagleEye III Camera as the Second Camera

You can connect a Polycom EagleEye III camera (part number 1624-08283-002, 8200-63730-xxx, or 8200-63740-xxx) to a Polycom RealPresence Group 700 system as the second camera.

Option 1

- HDCI Analog Camera Cable on page 23
- Power supply. Power supply is only required if you want to use the IR remote to wake the system when it is in sleep mode on RealPresence Group 700 systems. Use only the approved power supply from Polycom (part number 1465-52748-040). Do not exceed 12 Volts at 3 Amps. Verify the polarity of the power supply as shown on the Polycom camera next to the power supply input

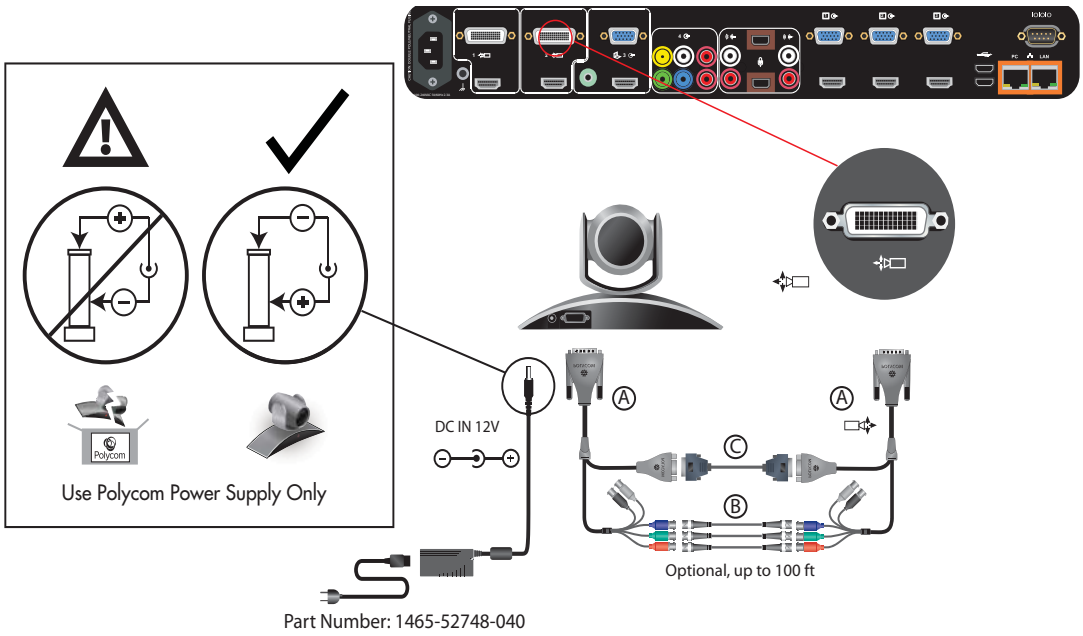
Connecting to a Polycom EagleEye III Camera to a Polycom RealPresence Group 700 system:



Option 2

- A—Two HDCI Camera Break-Out Cable on page 27.
- B—Coaxial analog video cables.
- C—DB-9 serial cable.
- Power supply. Power supply is only required if you want to use the IR remote to wake the system when it is in sleep mode on RealPresence Group 700 systems. Use only the approved power supply from Polycom (part number 1465-52748-040). Do not exceed 12 Volts at 3 Amps. Verify the polarity of the power supply as shown on the Polycom camera next to the power supply input.

Connecting to a Polycom EagleEye III Camera to a Polycom RealPresence Group 700 system:



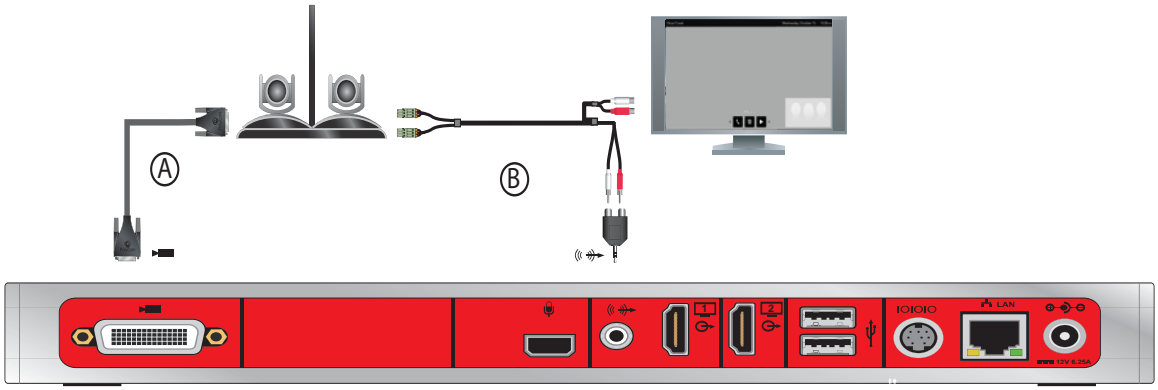
Polycom EagleEye Director as the Main Camera or Second Camera

EagleEye Director can be connected to Polycom RealPresence Group 300 and 500 systems as the main camera. Polcyom EagleEye Director can be connected to a Polycom RealPresence Group 700 system as the main camera or second camera.

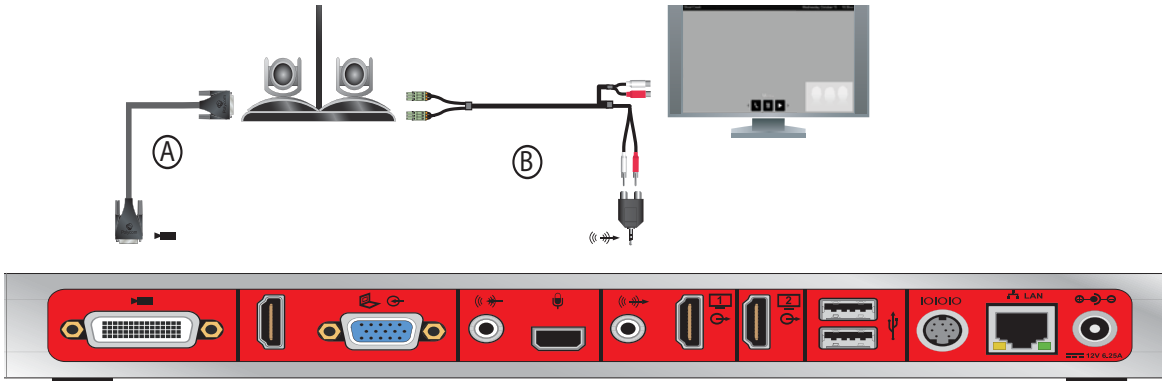
Connect a Polycom EagleEye Director (part number 7200-82632-xxx, 7200-82631-xxx, or 2200-82559-xxx) to Polycom RealPresence Group system as the main camera using:

- A—HDCI Analog Camera Cable on page 23.
- B—Polycom EagleEye Director Audio Feedback Phoenix to RCA Cable on page 35.

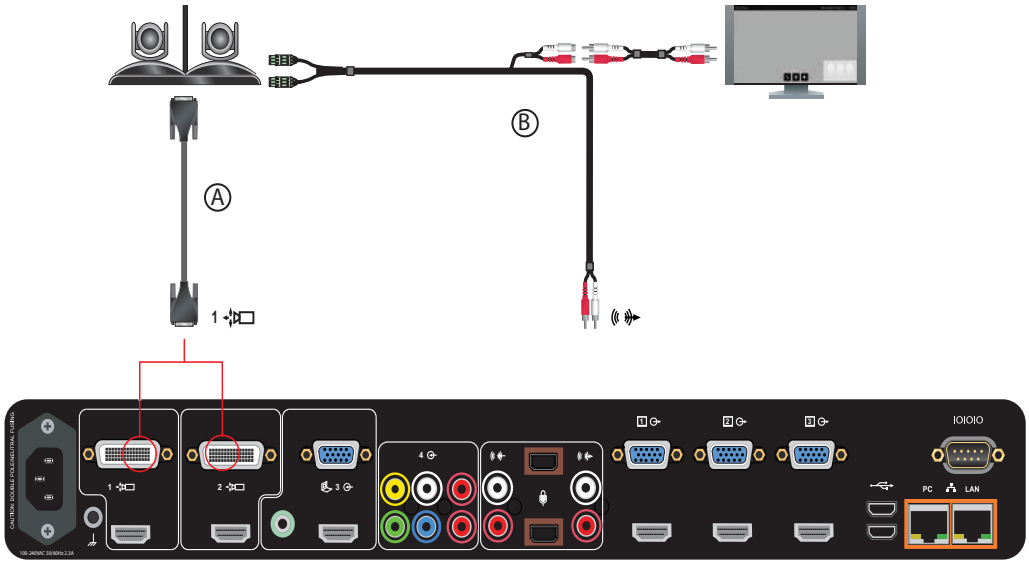
Connecting a Polycom EagleEye Director to a Polycom RealPresence Group 300 system:



Connecting a Polycom EagleEye Director to a Polycom RealPresence Group 500 system:



Connecting a Polycom EagleEye Director to a Polycom RealPresence Group 700 system:



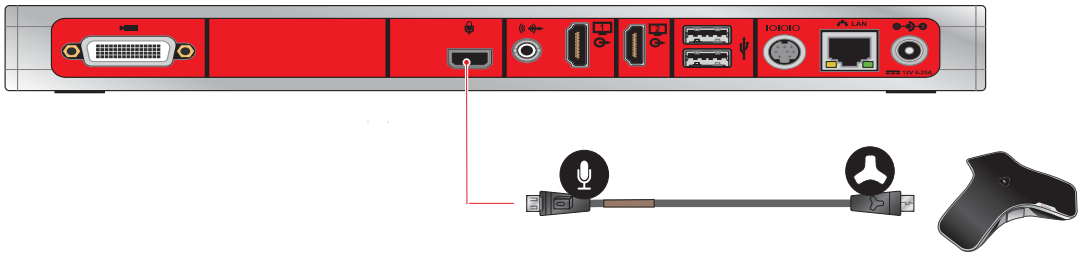
Integrating Audio and Content

Connecting a Polycom RealPresence Group Microphone Array to a Polycom RealPresence Group System

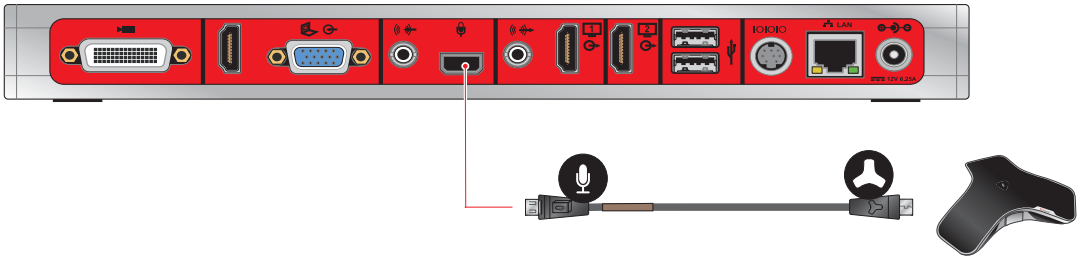
You can connect a Polycom RealPresence Group Series microphone array to a Polycom RealPresence Group system using the RealPresence Group Microphone Array Cable on page 30.

When connecting a Polycom RealPresence Group Series microphone array to a Polycom RealPresence Group system, ensure that the cable is inserted correctly. When connecting the cable to a microphone, the icon must be facing up. When connecting the cable to a RealPresence Group system or Polycom SoundStation IP 7000 phone, the .icon must be facing up.

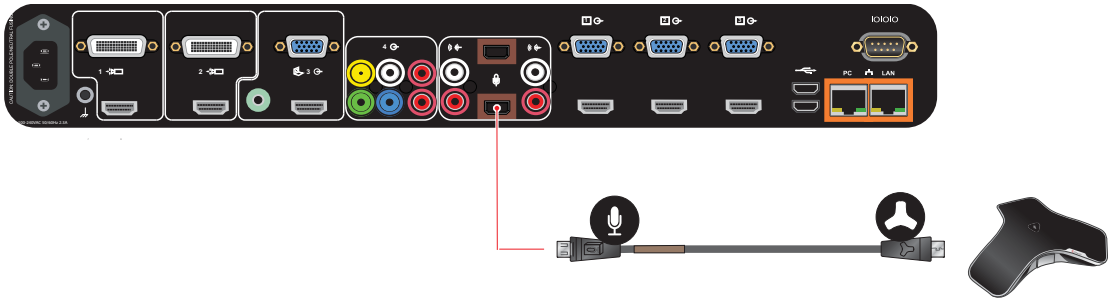
Connect a RealPresence Group Series microphone array to a RealPresence Group 300 system:



Connect a RealPresence Group Series microphone array to a RealPresence Group 500 system:



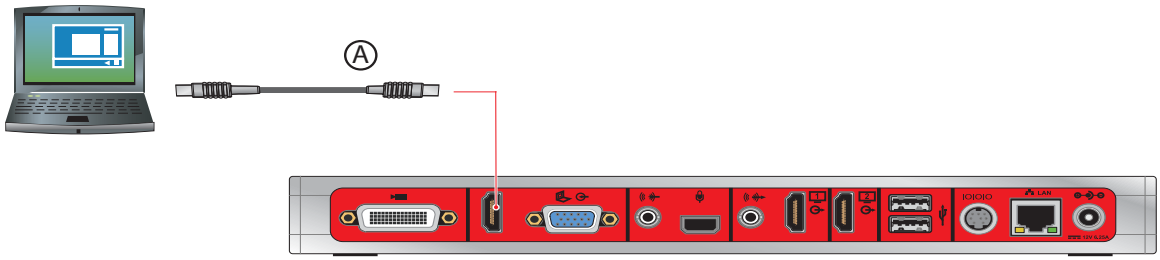
Connect a RealPresence Group Series microphone array to a RealPresence Group 700 system:



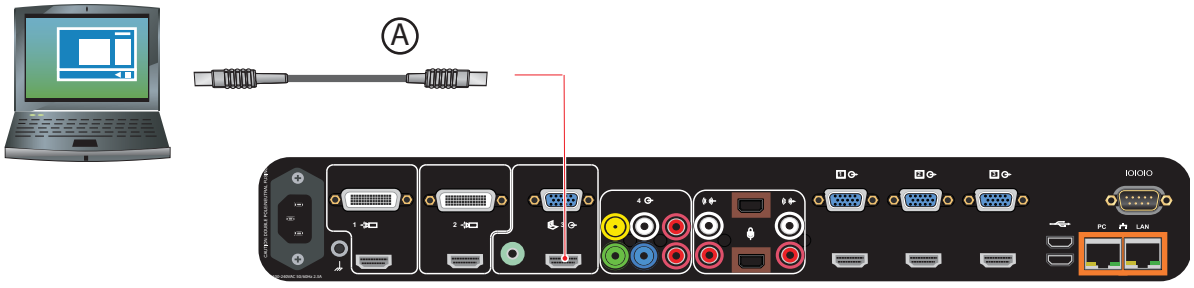
Connecting a Computer to a Polycom RealPresence Group System

You can connect Polycom RealPresence Group series 500 and 700 systems to a computer using the HDMI Monitor Cable on page 22.

Connect a computer to a RealPresence Group 500 system:



To connect a computer to a RealPresence Group 700 system:



2

Cables

This section includes information about cables that can be used with a RealPresence Group system. Please note that drawings and part numbers are provided for reference only. Compliance information is provided for the Restriction of certain Hazardous Substances Directive (RoHS).

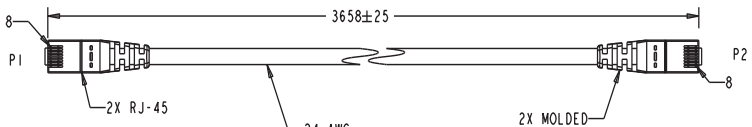
Network Cables

CAT 5e LAN Cable



This cable connects a RealPresence Group system to the LAN. It has orange RJ-45 connectors on both ends. It meets category 5e requirements and is wired according to EIA/TIA-568B. The maximum approved length for this cable is 100 ft (30 m) on an 802 network.

Length	Part Number	RoHS Compliant
12 ft (3.6 m)	2457-23537-001	Yes



WIRING LIST			
P1	P2	T568B Pair	COLOR CODE
1	1	2	WHITE/ORANGE
2	2	2	ORANGE
3	3	3	WHITE/GREEN
4	4	1	BLUE
5	5	1	WHITE/BLUE
6	6	3	GREEN
7	7	4	WHITE/BROWN
8	8	4	BROWN



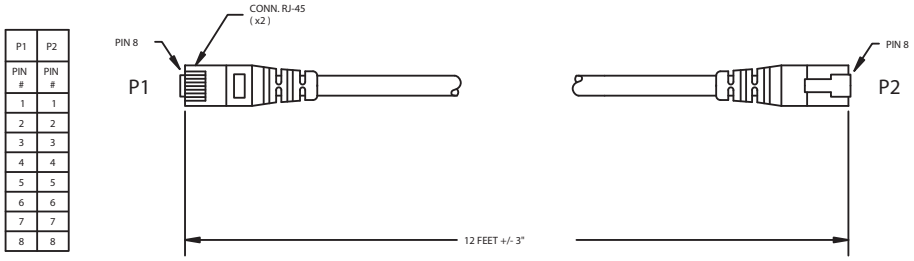
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

LAN Cable



This cable connects a RealPresence Group to the LAN. It has orange RJ-45 connectors on both ends and is used with all systems. The maximum approved length for this cable is 100 ft (30 m).

Length	Part Number	RoHS Compliant
12 ft (3.6 m)	2457-08343-001	Yes



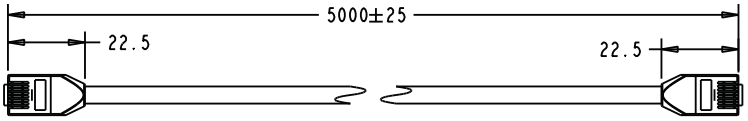
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

Polycom Touch Control LAN Cable



This cable connects a Polycom Touch Control device to the LAN.

Length	Part Number	RoHS Compliant
25 ft (7.62 m)	2457-26994-001	Yes



WIRING LIST		
P1	P2	COLOR CODE
1	1	WHITE/ORANGE
2	2	ORANGE/WHITE
3	3	WHITE/GREEN
4	4	BLUE/WHITE
5	5	WHITE/BLUE
6	6	GREEN/WHITE
7	7	WHITE/BROWN
8	8	BROWN/WHITE

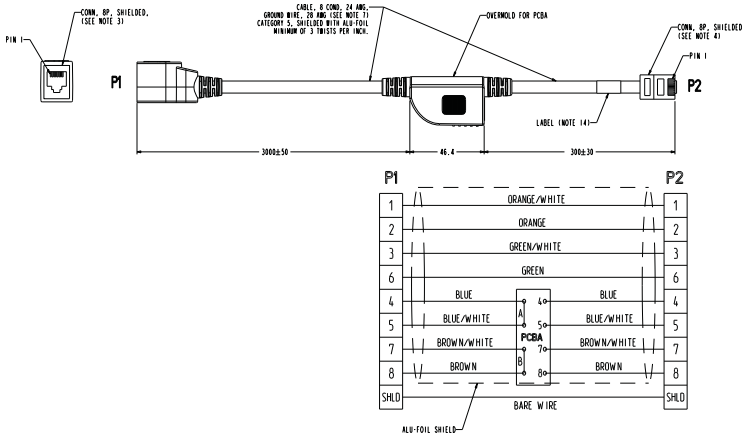
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

Polycom Touch Control Power Adapter



This adapter connects the Polycom Touch Control device to the LAN and a power supply (part number 2200-42740-XXX) for rooms that do not have Power over Ethernet (PoE)

Length	Part Number	RoHS Compliant
2.1 ft (.61 m)	2457-40054-001	Yes



Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

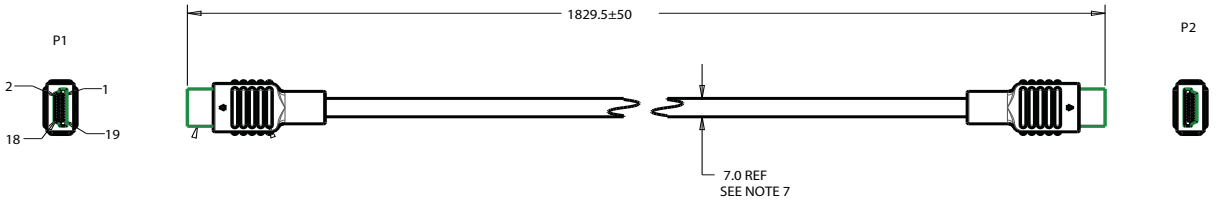
Video and Camera Cables

HDMI Monitor Cable

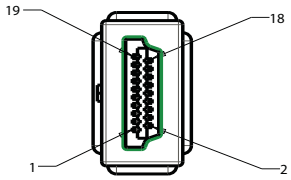


This cable connects the RealPresence Group system HDMI output to an HDMI monitor. It is HDMI to male HDMI.

Length	Part Number	RoHS Compliant
6 ft (1.8 m)	2457-28808-004	Yes



WIRING LIST				
SIGNAL	P1	P2	CABLE UNIT	CONDUCTOR
TMDS Data2+	1	1	D1	TIP
TMDS Data2 Shield	2	2		DRAIN
TMDS Data2-	3	3		RING
TMDS Data1+	4	4	D2	TIP
TMDS Data1 Shield	5	5		DRAIN
TMDS Data1-	6	6		RING
TMDS Data0+	7	7	D3	TIP
TMDS Data0 Shield	8	8		DRAIN
TMDS Data0-	9	9		RING
TMDS Clock+	10	10	D4	TIP
TMDS Clock Shield	11	11		DRAIN
TMDS Clock-	12	12		RING
CEC	13	13	E1	——
RESERVED	14	14	E2	——
SCL	15	15	F	TIP
SDA	16	16		RING
DDC/CEC GROUND	17	17	E3	——
+5 Volts	18	18	E4	——
Hot Plug Detect	19	19	E5	——
Cable Shield	SHELL	SHELL	B	——



DETAIL A
SCALE 3.000

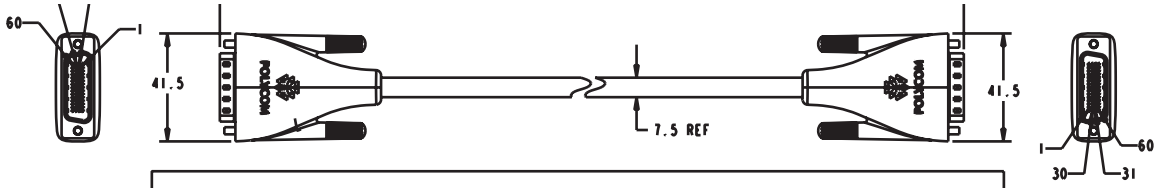
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

HDCI Analog Camera Cable



This cable connects a system to a Polycom EagleEye HD, Polycom EagleEye II, Polycom EagleEye III, or Polycom EagleEye Director. This cable can be connected to the EagleEye View camera, but does not support audio. It has male HDCI connectors on both ends. The over-mold connectors of the 2457-27453-001 and 2457-27454-001 cables are black.

Length	Part Number	RoHS Compliant
3 ft 7 in (1.1 m)	2457-27453-001	Yes
6 ft 3 in (1.9 m)	2457-27454-001	Yes
9 ft 10 in (3 m)	2457-23180-003	Yes
9 ft 10 in (3 m)	2457-65015-003	Yes
33 ft (10 m)	2457-65015-010	Yes
33 ft (10 m)	2457-23180-010	Yes
50 ft (15 m)	2457-23180-015	Yes
100 ft (30 m)	2457-23180-030	Yes



WIRING LIST					
SIGNAL NAME	P1 PIN#	P2 PIN#	CABLE UNIT	CONDUCTOR	COLOR
Y	47	47	D1	CENTER	
Y SHIELD	46	46		SHIELD	
Pb	13	13	D2	CENTER	
Pb SHIELD	12	12		SHIELD	
Pr	14	14	D3	CENTER	
Pr SHIELD	15	15		SHIELD	
+12 VDC	4	4	E1	-	
+12 VDC	5	5	E2	-	
+12 VDC	10	10	E3	-	
+12 VDC	11	11	E4	-	
GND	7	7	E5	-	
GND	8	8	E6	-	
GND	48	48	E7	-	
GND	58	58	E8	-	
Rx	1	1	E9	-	
Tx	2	2	E10	-	



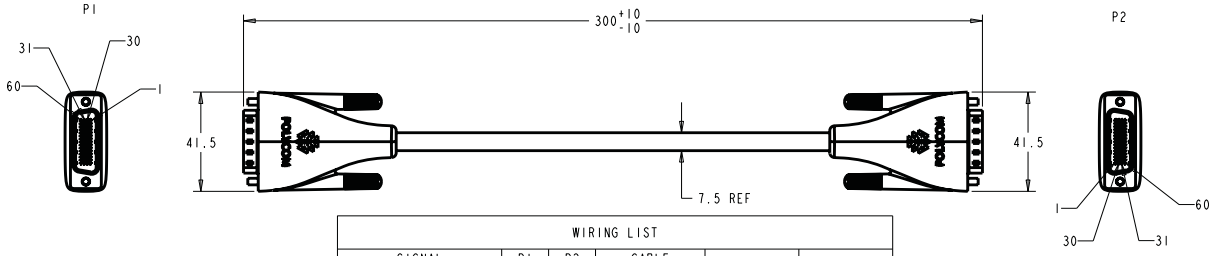
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

HDCI Polycom EagleEye Director Cable



This cable connects a Polycom EagleEye II or Polycom EagleEye III camera to the Polycom EagleEye Director base. It has male HDCI connectors on both ends.

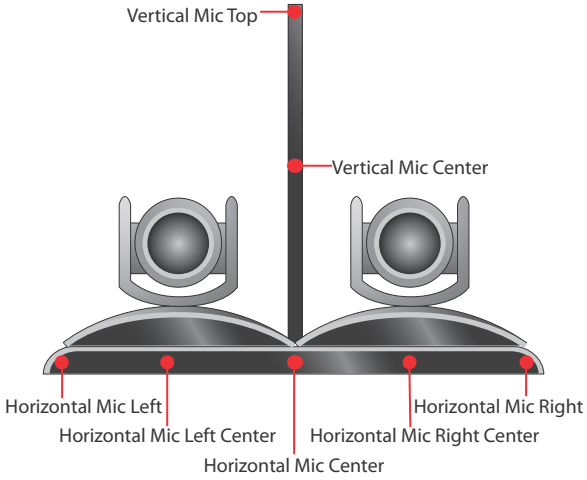
Length	Part Number	RoHS Compliant
1 ft (0.3 m)	2457-26122-001	Yes



WIRING LIST					
SIGNAL NAME	P1 PIN#	P2 PIN#	CABLE UNIT	CONDUCTOR	COLOR
Y	47	47	D1	CENTER	
Y SHIELD	46	46		SHIELD	
Pb	13	13	D2	CENTER	
Pb SHIELD	12	12		SHIELD	
Pr	14	14	D3	CENTER	
Pr SHIELD	15	15		SHIELD	
+12 VDC	4	4	E1	-	
+12 VDC	5	5	E2	-	
+12 VDC	10	10	E3	-	
+12 VDC	11	11	E4	-	
GND	7	7	E5	-	
GND	8	8	E6	-	
GND	48	48	E7	-	
GND	58	58	E8	-	
Rx	1	1	E9	-	
Tx	2	2	E10	-	
IR	3	3	E11	-	
GND	SHELL	SHELL	B	-	

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As shown in the following figure, the EagleEye Director has seven microphones embedded in the base.

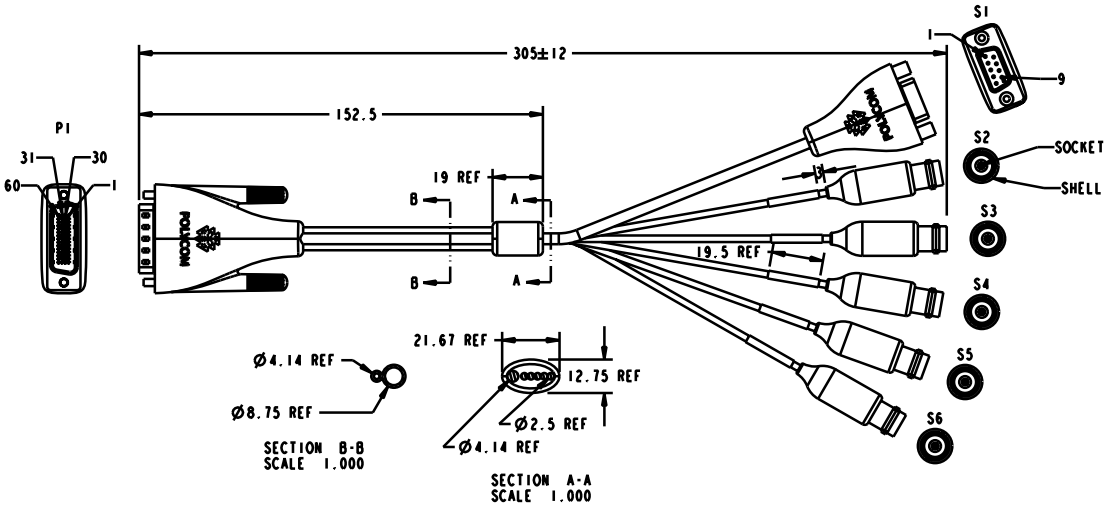


HDCI Camera Break-Out Cable



This cable breaks out the HDCI camera cable video and control signals to standard interfaces. This cable can be connected to the EagleEye View camera, but does not support audio. The five BNC connectors can be used to carry composite and digital video composite video, S-Video, or analog component YPbPr video. The DB-9 connector is used to connect to PTZ camera control interfaces. It is male HDCI to five female BNC and one female DB-9.

Length	Part Number	RoHS Compliant
1ft (0.3 m)	2457-23521-001	Yes



WIRING LIST								
SIGNAL	WIRE	P1	S1	S2	S3	S4	S5	S6
RS-232 Rx	28 AWG #1	1	2	—	—	—	—	—
RS-232 Tx	28 AWG #2	2	3	—	—	—	—	—
IR	28 AWG #3	3	9	—	—	—	—	—
GROUND	28 AWG #4	7	5	—	—	—	—	—
Pb/B SHIELD	COAX #1 SHIELD	12	—	—	—	SHELL	—	—
Pb/B	COAX #1 CENTER	13	—	—	—	SOCKET	—	—
Pr/R/C SHIELD	COAX #2 CENTER	14	—	SOCKET	—	—	—	—
Pr/R/C	COAX #2 SHIELD	15	—	SHELL	—	—	—	—
Y/G/C SHIELD	COAX #3 SHIELD	46	—	—	SHELL	—	—	—
Y/G/C	COAX #3 CENTER	47	—	—	SOCKET	—	—	—
HSync	COAX #4 CENTER	50	—	—	—	—	SOCKET	—
VSync	COAX #5 CENTER	51	—	—	—	—	—	SOCKET
HSync SHIELD	COAX #4 SHIELD	52	—	—	—	—	SHELL	—
VSync SHIELD	COAX #5 SHIELD		—	—	—	—	—	SHELL
—	BRAIDED SHIELD	SHIELD	SHIELD	—	—	—	—	—

Universal Breakout Cable

		Video Output		
		Composite	Svideo	Component
3 x BNC	Red		C	Pr
	Green	C	Y	Y
	Blue			Pb

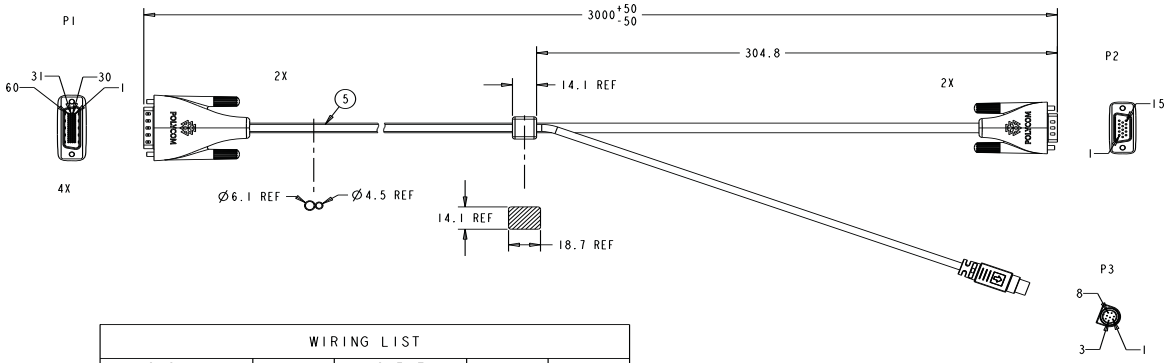
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HDCI Polycom EagleEye 1080 Camera Cable



This cable connects a Polycom system HDCI video input to the Polycom EagleEye 1080 camera. It is HDCI to 8-pin mini-DIN and HD-15. The maximum approved length for this cable is 100 ft (30 m).

Length	Part Number	RoHS Compliant
1 ft (0.3 m)	2457-23548-001	Yes
9 ft 10 in (3 m)	2457-28153-001	Yes
33 ft (10 m)	2457-28154-001	Yes
50 ft (15m)	2457-28154-050	Yes
100 ft (30m)	2457-28154-100	Yes



WIRING LIST				
SIGNAL NAME	P1	CABLE UNIT	P2	P3
RS-232 Rx	1	E1	—	3
RS-232 Tx	2	E2	—	5
IR	3	E3	—	7
				8
GROUND	7	E4	—	4
B SHIELD	12	D1 SHIELD	8	—
B	13	D1 CENTER	3	—
R	14	D2 CENTER	1	—
R SHIELD	15	D2 SHIELD	6	—
G SHIELD	46	D3 SHIELD	7	—
G	47	D3 CENTER	2	—
H SYNC	50	D4 CENTER	13	—
V SYNC	51	D5 CENTER	14	—
VSYNC GROUND	52	D4 SHIELD	11	—
HSYNC GROUND		D5 SHIELD	10	—
GROUND	48	E5	4	—
	58	E6	5	—
SHIELD	SHELL	B1	—	SHELL
		B2	SHELL	—

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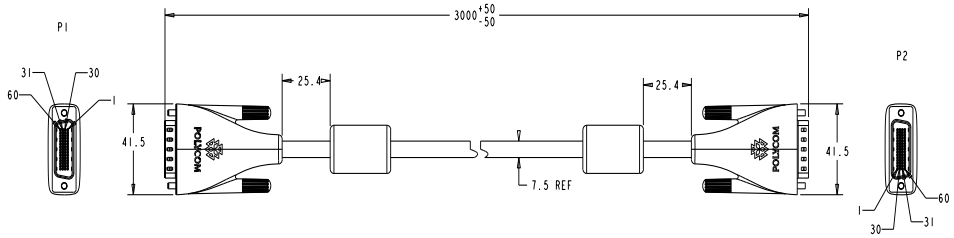
HDCI Polycom EagleEye View Camera Cable



This cable connects a RealPresence Group system HDCI video input to a Polycom EagleEye View camera. It has male HDCI connectors on both ends.

The over-mold connectors of the 2457-09729-001 cable are brown.

Length	Part Number	RoHS Compliant
1.5 ft (457 mm)	2457-09729-001	Yes
9 ft 10 in (3 m)	2457-29759-001	Yes
33 ft (10 m)	2457-29759-010	Yes



WIRING LIST				
SIGNAL NAME	P1 PIN#	P2 PIN#	CABLE UNIT	CONDUCTOR
Y	47	47	D1	CENTER
Y SHIELD	46	46		SHIELD
Pb	13	13	D2	CENTER
Pb SHIELD	12	12		SHIELD
Pr	14	14	D3	CENTER
Pr SHIELD	15	15		SHIELD
LEFT MIC	16	16	D4	CENTER
LEFT MIC SHIELD	45	45		SHIELD
RIGHT MIC	17	17	D5	CENTER
RIGHT MIC SHIELD	44	44		SHIELD
+12 VDC	4	4	E1	-
+12 VDC	5	5	E2	-
+12 VDC	10	10	E3	-
+12 VDC	11	11	E4	-
GND	7	7	E5	-
GND	8	8	E6	-
GND	48	48	E7	-
GND	58	58	E8	-
Rx	1	1	E9	-
Tx	2	2	E10	-
IR	3	3	E11	-
GND	SHELL	SHELL	B	-

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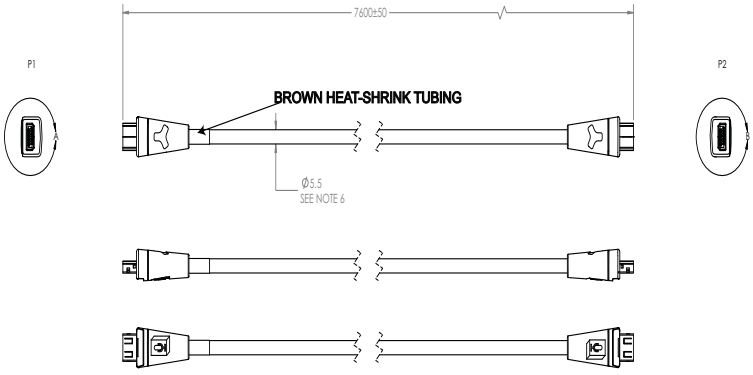
Audio Cables

RealPresence Group Microphone Array Cable



This cable connects two RealPresence Group microphone arrays. This cable can also be used to connect a RealPresence Group system to a RealPresence Group microphone array or to a SoundStation IP 7000 phone.

Length	Part Number	RoHS Compliant
25 ft (7.6 m)	2457-23216-002	Yes



WIRING LIST			
P1	P2	CABLE UNIT	CONDUCTOR
10	2	TWISTED PAIR #1	1
14	6		2
2	10	TWISTED PAIR #2	1
6	14		2
13	13	CONDUCTOR #1	-
9	9	CONDUCTOR #2	-
3	3	DRAIN	-
SHIELD	SHIELD	SHIELD	-
P1	P1	CABLE UNIT	-
4	13	JUMPER #1	-
P2	P2	CABLE UNIT	-
4	13	JUMPER #2	-
PINS 1, 5, 7, 8, 11 AND 12 OF P1 & P2 ARE NOT USED AND SHALL BE LEFT OPEN.			

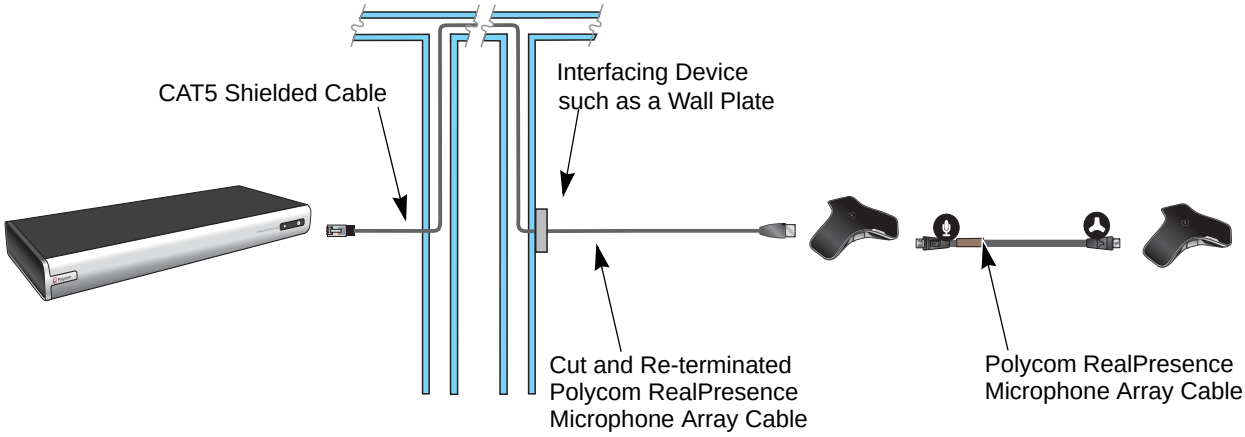
Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

Custom Cabling for Polycom RealPresence Group Microphone Arrays

You can create a custom-length cable that connects a RealPresence Group system to a RealPresence Group microphone array or SoundStation IP 7000 phone. Start with the microphone cable (part number 2457-23216-002), and cut off the P1 end. Using the wiring tables shown, create a custom cable from the microphone to a wall plate or other interfacing device. Next, from the wall plate or other interfacing device, run shielded CAT5 or better cable to the RealPresence Group system, terminating with a shielded RJ-45 plug connector.

The total length from the RealPresence Group system to the first Polycom microphone array or SoundStation IP 7000 phone can vary between 18 in and 100 ft. The maximum length between subsequent microphone arrays is 25 ft.

The following diagram shows an example of longer custom cabling from a RealPresence Group system to a Polycom microphone array or a Polycom SoundStation IP 7000 Phone.



The following steps explain how to wire this custom cable configuration.

Refer to Connecting a Polycom RealPresence Group Microphone Array to a Polycom RealPresence Group System on page 14 for instructions on how to use the icons on the RealPresence Microphone Array Cable to ensure the cable is connected correctly.

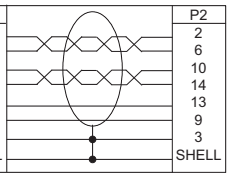
1 Identify the P1 connector on the Polycom RealPresence microphone cable according to the location of the brown heat-shrink tubing as shown on RealPresence Group Microphone Array Cable on page 30. Remove the P1 connector and skip to step 4. Note that two separate vendors manufacture

these cables, which are electrically equivalent but have different color coding. If you cannot identify the P1 connector, remove either connector from the cable and continue with step 2.

The following tables show the color coding for the cable wiring.

VENDOR 1

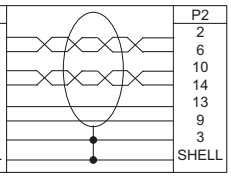
COLOR	AWG	P1	P2
RED	28	10	2
ORANGE	28	14	6
YELLOW	28	2	10
GREEN	28	6	14
WHITE	24	13	13
BLACK	24	9	9
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL



P1, P2 - Walta Electronics, M30-558-0051

VENDOR 2

COLOR	AWG	P1	P2
BLUE	28	10	2
YELLOW	28	14	6
ORANGE	28	2	10
GREEN	28	6	14
BLACK	24	13	13
WHITE	24	9	9
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL

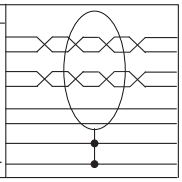


P1, P2 - Walta Electronics, M30-558-0051

2 If you are not sure which connector you need to cut off, use the following tables to perform a continuity check between the connector and the cable colors. If you cut off P1, skip to step 4. If you cut off P2, continue with step 3.

VENDOR 1, P1

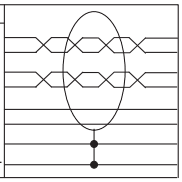
COLOR	AWG	P1
RED	28	10
ORANGE	28	14
YELLOW	28	2
GREEN	28	6
WHITE	24	13
BLACK	24	9
DRAIN WIRE		3
SHIELD		SHELL



P1 - Walta Electronics, M30-558-0051

VENDOR 2, P1

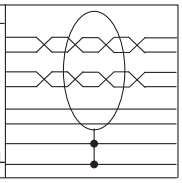
COLOR	AWG	P1
BLUE	28	10
YELLOW	28	14
ORANGE	28	2
GREEN	28	6
BLACK	24	13
WHITE	24	9
DRAIN WIRE		3
SHIELD		SHELL



P1 - Walta Electronics, M30-558-0051

VENDOR 1, P2

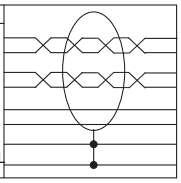
COLOR	AWG	P2
RED	28	2
ORANGE	28	6
YELLOW	28	10
GREEN	28	14
WHITE	24	13
BLACK	24	9
DRAIN WIRE		3
SHIELD		SHELL



P2 - Walta Electronics, M30-558-0051

VENDOR 2, P2

COLOR	AWG	P2
BLUE	28	2
YELLOW	28	6
ORANGE	28	10
GREEN	28	14
BLACK	24	13
WHITE	24	9
DRAIN WIRE		3
SHIELD		SHELL

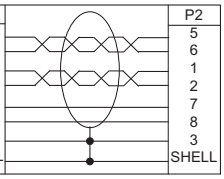


P2 - Walta Electronics, M30-558-0051

3 If you cut off P2, re-terminate the cable with a shielded RJ-45 connector using the following tables, then skip to step 5.

VENDOR 1, P1

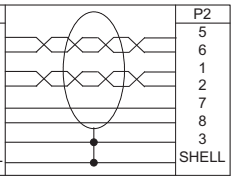
COLOR	AWG	P1	P2
RED	28	10	5
ORANGE	28	14	6
YELLOW	28	2	1
GREEN	28	6	2
WHITE	24	13	7
BLACK	24	9	8
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL



P1 - Walta Electronics, M30-558-0051
P2 - RJ-45 shielded plug, Tyco 5-569552 or equivalent

VENDOR 2, P1

COLOR	AWG	P1	P2
BLUE	28	10	5
YELLOW	28	14	6
ORANGE	28	2	1
GREEN	28	6	2
BLACK	24	13	7
WHITE	24	9	8
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL

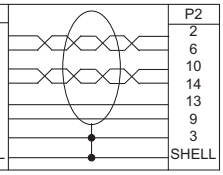


P1 - Walta Electronics, M30-558-0051
P2 - RJ-45 shielded plug, Tyco 5-569552 or equivalent

4 If you cut off P1, re-terminate the cable with an RJ-45 8-pin plug using the following tables, then continue with step 5.

VENDOR 1

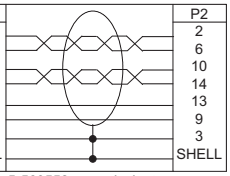
COLOR	AWG	P1	P2
RED	28	1	2
ORANGE	28	2	6
YELLOW	28	5	10
GREEN	28	6	14
WHITE	24	7	13
BLACK	24	8	9
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL



P1- RJ-45 shielded plug, Tyco 5-569552 or equivalent
P2 - Walta Electronics, M30-558-0051

VENDOR 2

COLOR	AWG	P1	P2
BLUE	28	1	2
YELLOW	28	2	6
ORANGE	28	5	10
GREEN	28	6	14
BLACK	24	7	13
WHITE	24	8	9
DRAIN WIRE		3	3
SHIELD		SHELL	SHELL



P1- RJ-45 shielded plug, Tyco 5-569552 or equivalent
P2 - Walta Electronics, M30-558-0051

Whether you re-terminated the P1 or P2 end of the cable, at this point the cable can be connected directly to the system and to the first microphone. If it is necessary to install an extension to the system's RJ-45 connection on a wall plate or panel, create a custom pinout cable using shielded CAT5 cable. The cable is terminated on one end to either a shielded CAT5 keystone jack or, if using a shielded panel coupler, a shielded RJ-45 plug connector. The other end terminates to a shielded RJ-45 plug that connects to the RealPresence Group system.

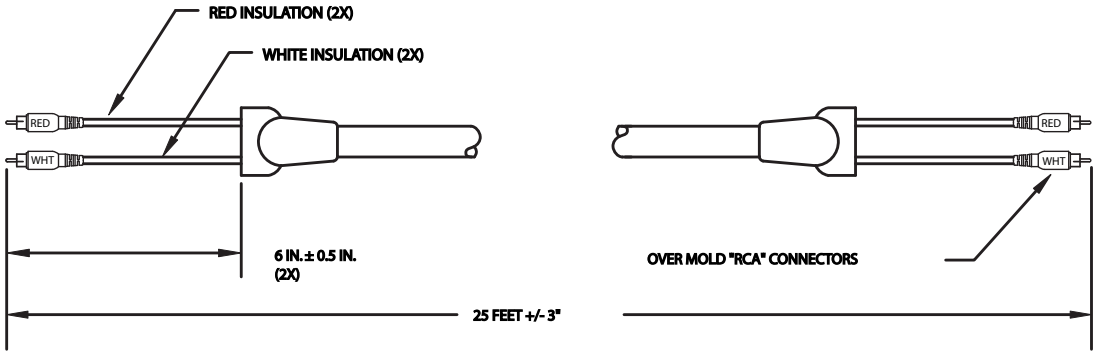
The Polycom RJ-45 connector pinout is custom. For best performance, follow the wiring tables shown in this document. If standard Ethernet cables are used, signal integrity cannot be guaranteed and degraded performance may occur, especially at longer lengths.

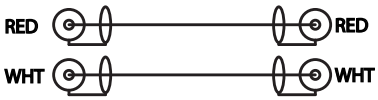
Audio Cable



This cable connects a system to an external audio system. It has dual RCA connectors (red/white) on both ends. The maximum approved length for this cable is 100 ft (30 m).

Length	Part Number	RoHS Compliant
25 ft (7.6 m)	2457-09212-002	Yes
9 ft 10 in (3 m)	2457-09212-010	Yes





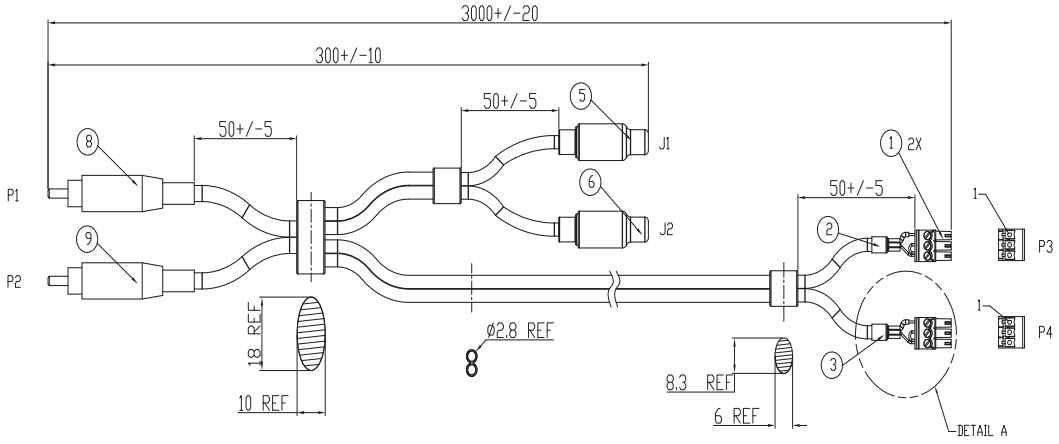
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Polycom EagleEye Director Audio Feedback Phoenix to RCA Cable



This cable connects a RealPresence Group system to the Polycom EagleEye Director and the room audio playback system. It is dual male Phoenix connectors (for RealPresence Group systems) to dual male RCA connectors (for the EagleEye Director) with dual female RCA connectors (for the room audio playback system).

Length	Part Number	RoHS Compliant
9.10 ft (3 m)	2457-82587-001	Yes



WIRING LIST								
PLUG	CONTACT	CONDCTOR	PLUG	CONTACT	CONDCTOR	JACK	CONTACT	CONDCTOR
P1	1	CENTER	P3	1	A	J1	1	CENTER
	2	SHELL		3	A DRAIN		2	SHELL
	—	—		2	—		—	—
P2	1	CENTER	P4	1	B	J2	1	CENTER
	2	SHELL		3	B DRAIN		2	SHELL
	—	—		2	—		—	—
INSTALL JUMPER BETWEEN CONTACT 2 AND CONTACT 3 OF BOTH P3&P4 AS SHOWN IN DETAIL "A"								

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Serial Cables

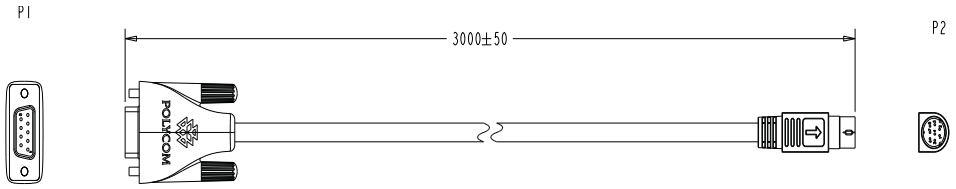
Polycom RealPresence Group Series Serial cable



This cable connects a Polycom RealPresence Group system to a serial device. It is 8-pin mini-DIN to DB-9.

- The 8-pin mini-DIN RS232 connection is wired per Polycom RS232 and does not follow VISCA pinout convention. Do NOT try to use a cable meant to support VISCA in this application as it will not work correctly.
- Do not use this adapter DIRECTLY CONNECTED to multi-purpose AMX serial ports. AMX systems support both RS-232 and RS-422. Therefore, for the most reliable RS-232 support with this adapter, use an additional null modem cross-over cable in-line that only carries only pins 2, 3, and 5, with pins 2 and 3 crossed.

Length	Part Number	RoHS Compliant
10 ft (3 m)	2457-63542-001	Yes



WIRING LIST			
P1		P2	
SIGNAL	PIN	PIN	SIGNAL
RXD	2	2	RXD
TXD	3	3	TXD
DTR	4	4	DTR
GND	5	5	GND
DSR	6	6	DSR
RTS	7	8	CTS
CTS	8	7	RTS
BRAIDED SHIELD	SHELL	SHELL	BRAIDED SHIELD

Straight-Through Serial Cable

Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

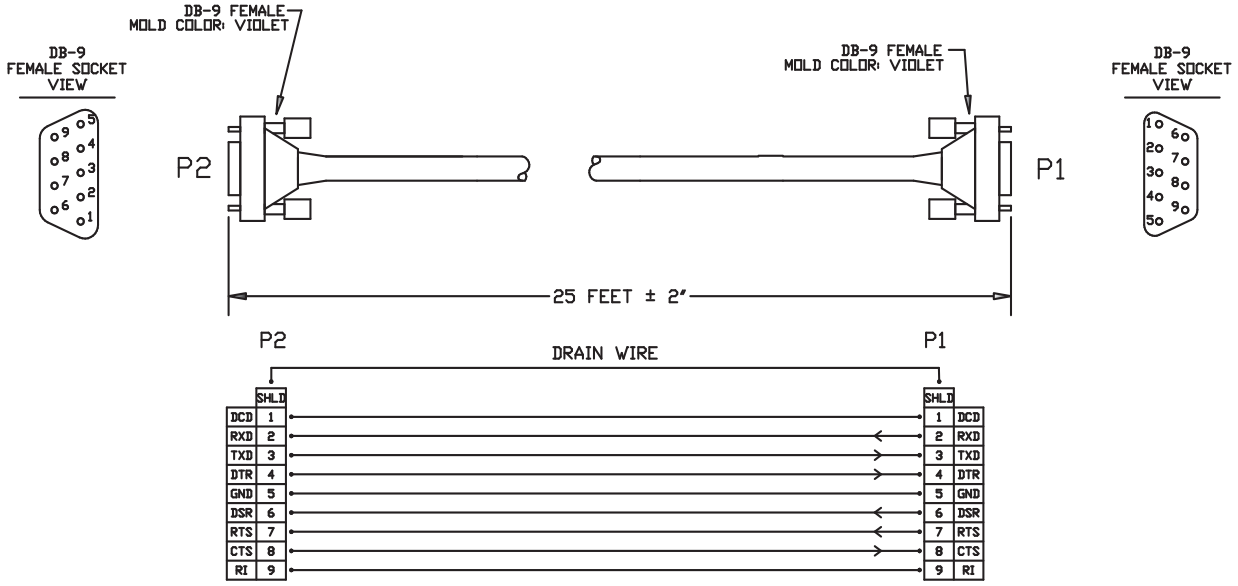


This cable connects a RealPresence Group system to a serial device. It has a DB-9 connector on each end. The maximum approved length for this cable is 100 ft (30 m).

Polycom does not recommend using this straight-through serial cable for RS-232 communication from a computer, Crestron system, or AMX device. Instead, for RS-232 communication, Polycom recommends using a cross-over cable with pin 2 wired to pin 3, pin 3 wired to pin 2, and pin 5 wired to pin 5. The other pins are not used.

If you choose to use this straight-through serial cable for RS-232 communication from a computer or Crestron system, the Null Modem Adapter on page 39 is required. However, the null modem adapter does not work for RS-232 communication from AMX devices and causes problems if you try to use it.

Length	Part Number	RoHS Compliant
25 ft (7.6 m)	2457-09172-001	—


DB-9 FEMALE
MOLD COLOR: VIOLET
DB-9
FEMALE SOCKET
VIEW
P2
DB-9 FEMALE
MOLD COLOR: VIOLET
DB-9
FEMALE SOCKET
VIEW
P1
25 FEET ± 2"
P2
DRAIN WIRE
P1
SHLD 1
DCD 2
RXD 3
TXD 4
DTR 5
GND 6
DSR 7
RTS 8
CTS 9
RI
SHLD 1
DCD 2
RXD 3
TXD 4
DTR 5
GND 6
DSR 7
RTS 8
CTS 9
RI

Null Modem Adapter

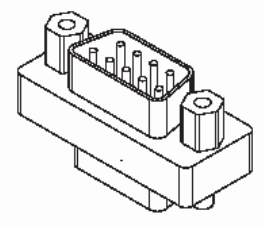


This adapter is used when connecting RealPresence Group 700 system to a serial device that transmits on pin 3 such as Crestron Pro2 processor. It is a male to female DB-9 adapter plug.

Do not use this adapter with an AMX device. AMX systems support both RS-232 and RS-422. Therefore, for RS-232 support, use a null modem cross-over cable that carries only pins 2, 3, and 5, with pins 2 and 3 crossed.

Length	Part Number	RoHS Compliant
—	1517-61577-001	Yes

DB9F	DB9M
PIN 1&6	PIN 4
PIN 2	PIN 3
PIN 3	PIN 2
PIN 4	PIN 1&6
PIN 5	PIN 5
PIN 7	PIN 8
PIN 8	PIN 7
PIN 9	N/C



Drawings and part numbers are provided for reference only. Polycom claims no responsibility or liability for the quality, performance, or reliability of cables based on these reference drawings, other than cables provided by Polycom. Contact your Polycom distributor or Polycom Custom/Vertical Products to order cables that meet the appropriate manufacturing tolerances, quality, and performance parameters for your application.

3

Using the API

The Application Programming Interface (API) is a set of commands for advanced users who want to automate a Polycom RealPresence Group system. You can use the API by connecting a control system or computer RS-232 serial port to a Polycom RealPresence Group system. You can also use Telnet over the LAN to use the API with Polycom RealPresence Group systems.

Using the API with an RS-232 Interface

If you use an RS-232 interface to send API commands, you must connect and configure the control system or computer and the Polycom RealPresence Group system for serial communication.

Configuring the RS-232 Interface

If you use the API with a serial connection, make sure that the RS-232 interfaces of the Polycom RealPresence Group system and your computer are configured appropriately.

To access the RS-232 settings on your system, go to **Admin Settings > General Settings > Serial Port** from the web interface.

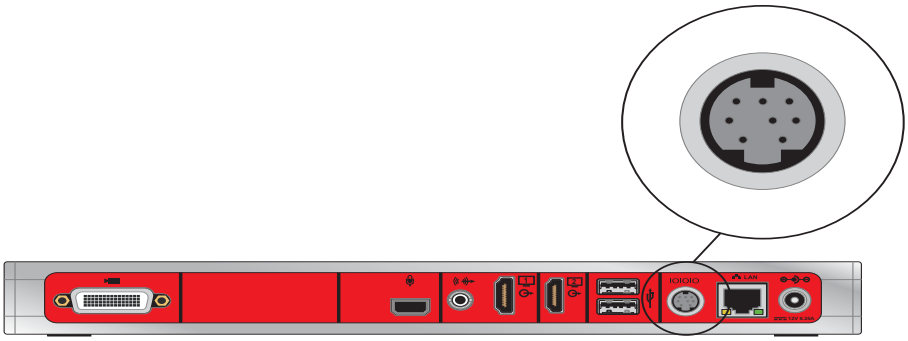
Configure the Baud Rate and RS-232 Mode options as follows:

Option	Configure this way on your computer	Configure this way on the Polycom RealPresence Group system
Baud Rate	Must be the same rate for both devices. Available rates are: • 9600 • 14400 • 19200 • 38400 • 57600 • 115200	
RS-232 Mode	—	Control

The RS-232 port on the Polycom RealPresence Group system supports Control mode. In Control Mode, a device (for example, a computer) connected to the RS-232 port can control the system using the API.

Understanding the RealPresence Group Series RS-232 Interfaces

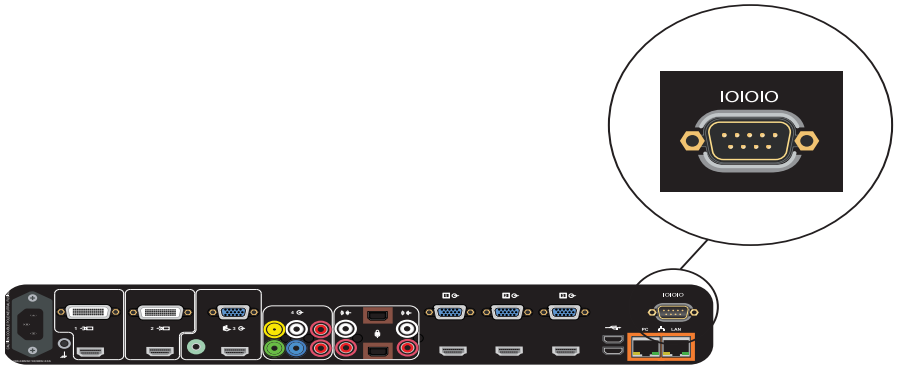
The serial ports on Polycom RealPresence Group 300 and Real Presence Group 500 systems are mini-DIN-8 connectors.



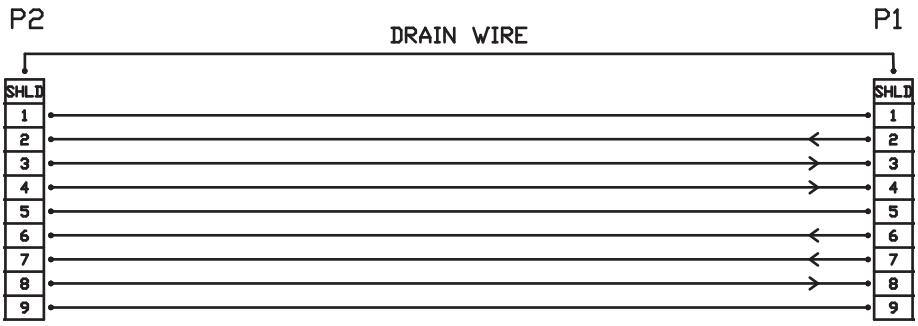
Use an 8-pin mini-DIN to DB-9 cable such as the Polycom RealPresence Group Series Serial cable on page 36 to connect to the RS-232 interface. The pinouts for this type of cable are listed in the following table:

WIRING LIST			
P1		P2	
SIGNAL	PIN	PIN	SIGNAL
RXD	2	2	RXD
TXD	3	3	TXD
DTR	4	4	DTR
GND	5	5	GND
DSR	6	6	DSR
RTS	7	8	CTS
CTS	8	7	RTS
BRAIDED SHIELD	SHELL	SHELL	BRAIDED SHIELD

The serial port on a Polycom RealPresence Group 700 system is a DB-9 connector:



Use a DB-9 to DB-9 cable such as the Straight-Through Serial Cable on page 37 to connect to the RS-232 interface. The pinouts for this type of cable are listed in the following table:



Starting an API Session using an RS-232 Interface

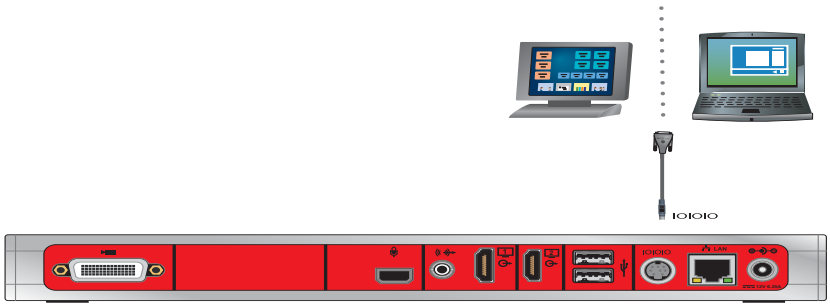
Polycom RealPresence Group systems can run API sessions from the RS-232 interface.

After you have verified that the Polycom RealPresence Group system and your computer or control system are both configured appropriately, set up both devices as follows:

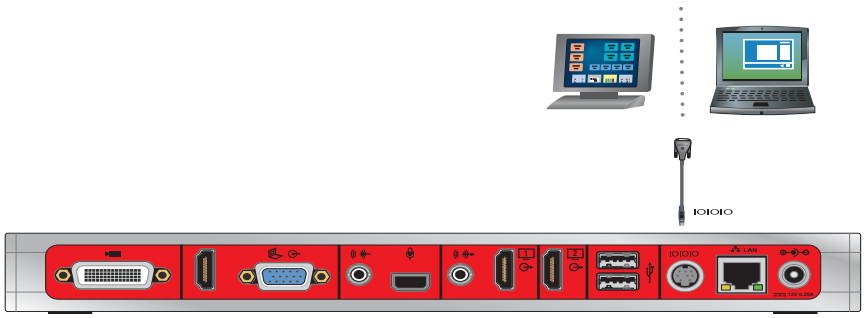
1. Power off the computer or control system and the Polycom RealPresence Group system.

2 Use an RS-232 cable to connect the computer or control system RS-232 port to an RS-232 port on the Polycom RealPresence Group system as shown in the following illustrations. This connection may require the Null Modem Adapter on page 39.

To connect a computer to a Polycom RealPresence Group 300 system:



To connect a computer to a Polycom RealPresence Group 500 system:



To connect a control system to a Polycom RealPresence Group 700 system:



3 Power on the computer or control system and the Polycom RealPresence Group system.

4 From the computer or control system, start a serial session using HyperTerminal or another appropriate utility.

Using the API with the Maximum Security Profile Enabled

You must log in with a password to start an RS-232 session if the system is configured with the Security Profile set to Maximum. You can log in with either the Admin ID and Admin Remote Password or the User ID and User Remote Password of the Polycom RealPresence Group system. In software version 4.1.1, you must be logged in using the Admin ID in order to use the API commands.

For more information about the Security Profile, refer to the *Security Deployment Guide for Polycom RealPresence Group Systems*.

Using the API with a LAN Connection

If you have a computer connected to the LAN, you can send API commands to the Polycom RealPresence Group system through telnet port 24.



If your computer is running the Windows 7 operating system, you might need to install the telnet client before starting a telnet session. The telnet client is not installed by default with Microsoft Windows 7 operating systems.

1. On the computer, open a command line interface.
2. Start a Telnet session using the Polycom RealPresence Group system IP address and port number — for example, `telnet 10.11.12.13 24`.

Using the API Controller Code

In cooperation with the leading touch panel controller manufacturers, Polycom provides its own version of controller code designed to run on a Crestron control system. It provides a fully executable controller program but also serves as a guideline for ongoing development using Polycom preferred methodology and commands.

Additional API Resources

The following online resources are available for your reference as you use the API.

Technical Support Contact Information

To contact Polycom Technical Support, go to support.polycom.com. This web site provides you with contact information for Polycom technical support. Use this web site when you need help using the API.

Feature Enhancement Request Web Site

Go to support.polycom.com and navigate to **Feature Request**. This web site allows you to submit suggestions for feature enhancements. Use this web site when you have requests for future development of the Polycom API.

Video Test Numbers

Refer to www.polycom.com/videotest. This web site provides you with test numbers of various Polycom systems worldwide. Use this web site when you need to access video test numbers to use when testing your Polycom system.

Knowledge Base

Refer to the Knowledge Base at support.polycom.com. This tool allows you to search for user guides, release notes, and other forms of product documentation. You can also search for troubleshooting information and technical briefs. Use this web site when you need to access Polycom product documentation or tips.

4

System Commands

This chapter describes the API commands forRealPresence Group software version 4.1.1.

For an alphabetical list of all the commands, refer to the table of contents for this document. For a list of commands by category, refer to Categorical List of API Commands on page 255.

About the API Commands

Syntax Conventions

The following conventions are used for the API command descriptions in this chapter. All of the commands are case sensitive.

Convention	Meaning
<param1|param2|param3>	Multiple valid parameters are enclosed in angle brackets and separated by the pipe ("|") character. Example: *allowdialing <yes|no|get>* shows that the *allowdialing* command must be followed by one of the parameters listed.
[param] *["param"]*	Optional parameters are enclosed in square brackets. Quotation marks indicate strings to be supplied by the user. Example: teleareacode set ["telephone_area_code"] shows that you can supply a value for the area code, or omit it and let the default value apply. You do not need to enclose the actual value in quotes unless it contains a space.

Convention	Meaning
{a..z}	A range of possible alphanumeric values is enclosed in braces. Example: *abk letter {a..z}* shows that the *abk* command can be used to return address book entries that begin with an alphanumeric character in the range specified. Example: *camera near {1..4}* shows that the *camera* command can be used to select Camera 1, 2, 3, or 4 at the near site.
"x"	Quotation marks indicate strings to be supplied by the user. You do not need to enclose the value in quotes unless it contains a space.

Although the API command parser may accept the minimum number of characters in a command that makes it unique, you should always use the full command string.

Availability of Commands

The availability of API commands depends on the type of system optional equipment installed or connected, security settings and the software version installed on the system. If a particular command is not supported on the system, the command returns feedback such as "*error: this command is not supported on this model*" or "*command is not available in current system configuration*". If a setting is configured by a provisioning service, the command may return feedback such as "*this setting is controlled by a provisioning service and cannot be changed. For more information about provisioned settings, refer to your provisioning service administrator.*"

Deprecated commands are included for backward compatibility only and are not recommended for use with this version. Suitable replacements are noted for each deprecated command.

Commands that are not listed in this chapter are not supported by Polycom. Commands might change or be removed at any time. Polycom discourages integrators from using unpublished commands.



API support is not available for software versions for the Joint Interoperability Test Command (JITC) certification.

Command Response Syntax

When you send a command, the system returns responses using the syntax described in the following sections, where <CR> indicates a carriage return and <LF> indicates a line feed.



The end of line (EOL) character for the echo is different for serial and LAN responses. The feedback examples below and elsewhere in the Integrator's Reference Manual are based on the serial response.

When Not Registered to Receive Notifications

When your system is not registered to receive any notifications and you send an API command, a single API acknowledgement is returned.

For example:

*camera near 2 <CR>*API command
returns
*camera near 2<CR><LF>*API acknowledgement

In the example above, the command was sent with an end of line character of a carriage return <CR>.

The API expects a carriage return <CR> as well as the standard end of line characters carriage return/line feed <CR><LF>. All API responses end in carriage return/line feed <CR><LF>.

When Registered to Receive Notifications

Registering for notifications adds extra line responses in the form of API registration responses. The number of additional lines depends on the specific registration. In the following example, the response shows an API acknowledgement and an API registration response returned.

- *camera near 1 <CR>*API command
  returns
  *camera near 1<CR><LF>*API acknowledgement
  notification:vidsourcechange:near:1:Main:people<CR><LF>
  API registration response

When your system is registered for notifications, always use the API registration response for status.

Commands that Restart the System

Commands that Restart the System with a Prompt

- *reboot*

Commands that Restart the System without a Prompt

- *reboot now*
- *resetsystem*

Additional Tips

- The system does not provide flow control. If the connection is lost through restarting the system or other means, you must re-establish the connection.
- The API processes one command at a time.
- Polycom does not recommend sending multiple commands simultaneously without a pause or delay between them.
- For commands with a single action and a single response: A delay of 200 milliseconds between commands is usually sufficient. Examples of these commands include the commands for switching cameras (*camera near 1*), sending content *(vcbutton play*), and checking the status of the audio mute (*mute near get*).
- For commands with a single action and a more extensive response: The time required to receive the response, and thus the time between commands, may be longer than 200 milliseconds. The response length, which can vary in size, determines the time required to receive the response. Examples of these commands include the commands for retrieving the local address book (a*ddrbook all*), the global address book (*gaddrbook all)*, the list of system settings, and system session information (such as *whoami*).
- When developing your program, always allow enough time for the response to the requested command to complete before sending another command.
- Do not send any commands while an incoming or outgoing call is being established.
- The API provides feedback status in two ways: registrations or polling.
- It is only required that you send registration and notification API commands once, because the registrations become written into Flash memory and are retained even upon restarting the system.
- Polycom recommends putting registrations in the initialization or startup of Crestron and AMX systems.
- Registrations are recommended over polling since they will provide status updates without having to query for changes.
- Never poll for registrations.
- Registrations are specific to the port from which they are registered. If you register for notifications from com port 1, registration will not be sent to com port 2 or Telnet port 24.

addrbook

Returns local directory (address book) entries.

Syntax

Commands for local directory

```
addrbook all
addrbook batch {0..59}
addrbook batch search “pattern” “count”
addrbook batch define “start_no” “stop_no”
addrbook letter {a..z}
addrbook range “start_no” “stop_no”
```

Commands for LDAP only

```
addrbook names <all|video|phone> [<range_start>] [<range_end>]
addrbook names <all|video|phone> size
addrbook names search "search_pattern" <all|video|phone>
                    [<range_start>] [<range_end>]
addrbook names search "search_pattern" <all|video|phone> size
addrbook group "group_name" [<range_start>] [<range_end>]
addrbook group "group_name" size
addrbook address "sys_name" ["sys_label"]
```

Parameter	Description
all	Returns all the entries in the local directory.
batch	Returns a batch of 10 local directory entries. Requires a batch number, which must be an integer in the range *{0..59}*.
search	Specifies a batch search.
“pattern”	Specifies a pattern to match for the batch search.
“count”	Specifies the number of entries to list that match the pattern.
define	Returns a batch of entries in the range defined by “*start_no*” to “*stop_no*.”
letter	Returns entries beginning with the letter specified from the range *{a..z}*. Requires one or two alphanumeric characters. Valid characters are: *- _ / ; @ , . * *0* through *9* *a* through *z*

Parameter	Description
range	Returns local directory entries numbered *"start_no"* through *"stop_no"*. Requires two integers.
"start_no"	Specifies the beginning of the range of entries to return.
"stop_no"	Specifies the end of the range of entries to return.
names	Returns a list of system names in the local address book. Also returns the system type: video, multicodec, phone, or multisite. A multi-codec system will appear as a single row. The response is in the following format: *addrbook names {0..n}. name:"sys_name" sys_label:"sys_label" type: <video|multicodec|phone|group> ... addrbook names <all|video|phone> done*
<all|video>	Specifies the type of entries to return. *video* returns entries that have video addresses. *all* returns entries with video numbers or phone numbers or both.
size	Returns the size of the result set that will be returned by the command. The size parameter can be used with the names and the names search commands. The response is in the following format: *addrbook names <all|video|phone> size {0..n}* *addrbook names search "search_pattern" <all|video|phone> size {0..n}*
range_start	For the names, names search, and group commands, specifies the beginning of the range of entries to return.
range_end	For the names, names search, and group commands, specifies the end of the range of entries to return. If a range_start is specified without a range_end, then the single range_start entry will be returned. If range_end is -1, all entries starting with range_start will be returned.

Parameter	Description
search	Returns a list local directory names that match the search criteria. The response is similar to the names command described above: *addrbook search {0..n}. name:"sys_name" sys_label:"sys_label" type: <video|multicodec|phone|group> ... addrbook names search "search_pattern" <all|video|phone> done*
search_pattern	Specifies the string pattern for which to search. Wildcard characters are not supported. The search string is used to match the beginning of any of the attributes listed in the “names search” parameter description above. For example, the search string “Jo” would match any name that begins with Jo, such as John or Jones. The search is not case sensitive.
group	Returns a list of the names of all the sites included in a local directory group in this format: *addrbook group {0..n}. name:"site_sys_name" sys_label:"site_sys_label" ... addrbook group "group_name" [range] done addrbook group size <num_entries>*
group_name	A local address book group name.
address	Obtains the address information for a specified entry. If the entry is an ITP system, the results will include the addresses for all codecs. If codecs support multiple protocols, the different addresses will be returned on separate lines. This command is not supported for multisite entries.
sys_name	The friendly name for an address book entry. It is the name of the person or the room. It is surrounded by quotes if it contains spaces.
sys_label	If a person/room has more than one system, the result set will include a row for each system. If those systems are of the same type the client will consider that entry to be a telepresence system with multiple codecs rather than separate systems. If the systems are of different types, then this sys_label attribute will be included to differentiate the systems.

Parameter	Description
type	The type of local address book entry. Possible values are: *video, multicodec, phone, group*
site_sys_name	The name of a site in a group. It is surrounded by quotes if it contains spaces
site_sys_label	The label associated with a site name in a local group. It is surrounded by quotes if it contains spaces.
codec:<1..4>	If the entry is a telepresence system, each codec will include a codec number attribute.
h323_spd	The preferred speed for an H.323 call to this entry. If no speed is associated with the entry, then the value of the configuration variable "globaladdrmaxh323" is returned. The default is 384.
h323_num	H.323 address or alias.
h323_ext	H.323 extension or E.164 number.
sip_spd	The preferred speed for a SIP call to this entry. If no speed is associated with the entry, then this is the same as the *h323_spd*.
sip_num	IP address.
xmpp_addr	XMPP address, also known as the Jabber ID (JID).

Feedback Examples

- *addrbook all*
  returns
  addrbook 0. "Polycom Group Series Demo 1" isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  addrbook 1. "Polycom Group Series Demo 2" h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  addrbook 2. "Polycom Group Series Demo 3" sip_spd:384 sip_num:polycomgroupseries@polycom.com
  addrbook 3. "Polycom Group Series Demo 3" phone_num:1.512.5121212
  (and so on, until all entries in the local directory are listed, then:)
  addrbook all done
- *addrbook batch 0*
  returns
  addrbook 0. "Polycom Group Series Demo 1" isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  addrbook 1. "Polycom Group Series Demo 2" h323_spd:384

h323_num:192.168.1.101 h323_ext:7878
addrbook 2. “Polycom Group Series Demo 3” sip_spd:384
sip_num:polycomgroupseries@polycom.com
addrbook 3. “Polycom Group Series Demo 3” phone_num:1.512.5121212
(and so on, through the last entry in the batch of 10 directory entries, such as:)
addrbook 9. “Polycom Group Series Demo 20” h323_spd:384
h323_num:192.168.1.120 h323_ext:
addrbook batch 0 done

- *addrbook batch define 0 2*
  returns
  addrbook 0. “Polycom Group Series Demo 1” isdn_spd:384
  isdn_num:1.700.5551212 isdn_ext:
  addrbook 1. “Polycom Group Series Demo 2” h323_spd:384
  h323_num:192.168.1.101 h323_ext:7878
  addrbook 2. “Polycom Group Series Demo 3” sip_spd:384
  sip_num:polycomgroupseries@polycom.com
  addrbook batch define 0 2 done
- *addrbook names all size*
  returns
  addrbook names all size 21
- *addrbook names all size 21*
  returns
  addrbook names all size 21
  addrbook names 0. name:"Eng RPX" sys_label:"Group Series"
  type:multicodec
  addrbook names 1. name:"Fulton" sys_label:"" type:video
  addrbook names 2. name:"Gen Group" sys_label:"" type:group
  addrbook names 3. name:"Geno Alissi" sys_label:"" type:video
  addrbook names 4. name:"Joseph Sigrist" sys_label:"" type:video
  addrbook names 5. name:"Lab TPX" sys_label:"" type:video
  addrbook names 6. name:"Minuteman RPX" sys_label:"" type:multicodec
  addrbook names 7. name:"Monday Staff Mtg" sys_label:"" type:group
  addrbook names 8. name:"Polycom Austin Stereo" sys_label:""
  type:video
  addrbook names 9. name:"Polycom Austin HD" sys_label:"" type:video
  addrbook names all 0 9 done
- *addrbook names all*
  returns
  addrbook names 0. name:"Eng RPX" sys_label:"HDX" type:multicodec
  addrbook names 1. name:"Fulton" sys_label:"" type:video
  addrbook names 2. name:"Gen Group" sys_label:"" type:group
  addrbook names 3. name:"Geno Alissi" sys_label:"" type:video
  addrbook names 4. name:"Joseph Sigrist" sys_label:"" type:video
  addrbook names 5. name:"Lab TPX" sys_label:"" type:video
  addrbook names 6. name:"Minuteman RPX" sys_label:"" type: multicodec
  addrbook names 7. name:"Monday Staff Mtg" sys_label:"" type:group
  addrbook names 8. name:"Polycom Austin Stereo" sys_label:""

```
type:video
addrbook names 9. name:"Polycom Austin HD" sys_label:"" type:video
addrbook names 10. name:"Polycom Austin USA IP" sys_label:""
type:video
addrbook names 11. name:"Polycom Japan" sys_label:"" type:video
addrbook names 12. name:"Scott CMAD IP" sys_label:"" type:video
addrbook names 13. name:"Scott Phone" sys_label:"" type:phone
addrbook names 14. name:"Scott PVX" sys_label:"" type:video
addrbook names 15. name:"Scott Quasar 19" sys_label:"" type:video
addrbook names 16. name:"SQA Group Series" sys_label:"" type:video
addrbook names 17. name:"Sunil Bhalla" sys_label:"" type:video
addrbook names 18. name:"Test System 1" sys_label:"" type:video
addrbook names 19. name:"Test System 2A" sys_label:"" type:video
addrbook names 20. name:"Test System 2B" sys_label:"" type:video
addrbook names all done
```

- *addrbook names search "p" all*
  returns
  ```
  addrbook search 0. name:"Polycom Austin HD" sys_label:"" type:video
  addrbook search 1. name:"Polycom Austin Stereo" sys_label:""
  type:video
  addrbook search 2. name:"Polycom Austin USA IP" sys_label:""
  type:video
  addrbook search 3. name:"Polycom Japan" sys_label:"" type:video
  addrbook search 4. name:"Scott Phone" sys_label:"" type:phone
  addrbook search 5. name:"Scott PVX" sys_label:"" type:video
  addrbook search search p all done
  ```

- *addrbook names search "p" all 0 2*
  returns
  ```
  addrbook search 0. name:"Polycom Austin HD" sys_label:"" type:video
  addrbook search 1. name:"Polycom Austin Stereo" sys_label:""
  type:video
  addrbook search 2. name:"Polycom Austin USA IP" sys_label:""
  type:video
  addrbook search search p all 0 2 done
  ```

- *addrbook group "Monday Staff Mtg"*
  returns
  ```
  addrbook group 0. name:"Eng RPX" sys_label:"HDX"
  addrbook group 1. name:"Geno Alissi" sys_label:""
  addrbook group 2. name:"Joseph Sigrist" sys_label:""
  addrbook group 3. name:"TPW" sys_label:"HDX"
  addrbook group "Monday Staff Mtg" done
  ```

- *addrbook address "Geno Alissi"*
  return
  ```
  addrbook address 0. name:"Geno Alissi" sys_label:"" codec:1
                      h323_spd:384 h323_num:172.25.137.101 h323_ext:
  addrbook address name:"Geno Alissi" sys_label:"" done
  ```

See Also

See the gaddrbook command on page 116 and speeddial command on page 182.

advnetstats

Gets advanced network statistics for a call connection.

Syntax

advnetstats [{0..n}]

Parameter	Description
{0..n}	Specifies a connection in a multipoint call, where *n* is the maximum number of connections supported by the system. *0* is call #1, *1* is call #2, *2* is call #3, and so on. Select a number from this range to specify a remote site call for which you want to obtain advanced network statistics. Omit this parameter when retrieving statistics for a point-to-point call.

Feedback Examples

- *advnetstats 1*
  returns
  call:1 tar:24k rar:24k tvr:64.3k rvr:104k
  tvru:63.8k rvru:114.6k tvfr:15.0 rvfr:15.0 vfe ---
  tapl:66 rapl:0 taj:46mS raj:40mS tvpl:122 rvpl:0
  tvj:21mS rvj:60mS dc:--- rsid:Polycom_4.2 ccaps:E9P
- *Returned parameters are:*
  tar=Transmit audio rate
  rar=Receive audio rate
  tvr=Transmit video rate
  rvr=Receive video rate
  tvru=Transmit video rate used
  rvru=Receive video rate used
  tvfr=Transmit video frame rate
  rvfr=Receive video frame rate
  vfe=Video FEC errors
  tapl=Transmit audio packet loss (H.323 calls only)
  tlsdp=Transmit LSD protocol (H.320 calls only)
  rapl=Receive audio packet loss (H.323 calls only)
  rlsdp=Receive LSD protocol (H.320 calls only)
  taj=Transmit audio jitter (H.323 calls only)
  tlsdr=Transmit LSD rate (H.320 calls only)
  raj=Receive audio jitter (H.323 calls only)
  rlsd=Receive LSD rate (H.320 calls only)
  tvpl=Transmit video packet loss (H.323 calls only)
  tmlpp=Transmit MLP protocol (H.320 calls only)
  rvpl=Receive video packet loss (H.323 calls only)

rmlpp=Receive MLP protocol (H.320 calls only)
tvj=Transmit video jitter (H.323 calls only)
tmlpr=Transmit MLP rate (H.320 calls only)
rvj=Receive video jitter (H.323 calls only)
rmlpr=Receive MLP rate (H.320 calls only)
dc=Encryption information
rsid=Remote system id
ccaps=Content capability, where possible responses include "9" (H.239), "E" (enterprise dual streams), "N" (none), and "P" (content over the people stream)

See Also

To return network statistics for a call, use the netstats command on page 155.

all register

Registers for most commonly-used user registration events.

Syntax

all register

Feedback Examples

- *all register*
  returns
  callstate registered
  camera registered
  chaircontrol registered
  mute registered
  preset registered
  screen registered
  vcbutton registered
  volume registered

Comments

Registers changes to any of the following types of parameters:

- Current near-site or far-site source
- State of privacy
- Current volume level
- Active camera presets
- Status of point-to-point or multipoint calls
- IP connection to codec
- System information

This command is particularly useful when two different control systems are being used simultaneously, such as the web and API commands. The system maintains the registration changes through restarts.

To register for events not included in this feedback, refer to the specific registration command.

This is a one time registration command that is retained in flash memory. Sending the command a second time results in the following feedback response:

- *info: event/notification already active:callstate*
  info: event/notification already active:camera

  info: event/notification already active:linestate

```
info: event/notification already active:mute

info: event/notification already active:preset
info: event/notification already active:screen
info: event/notification already active:vcbutton
info: event/notification already active:volume
```

The *all register* command does not return local camera movements if the camera is moved using the remote control, the web interface, or the Polycom Touch Control virtual remote.

all unregister

Simultaneously unregisters all registered user feedback so that the API no longer reports changes to the parameters.

Syntax

all unregister

Feedback Examples

all unregister
returns
callstate unregistered
camera unregistered
linestate unregistered
mute unregistered
preset unregistered
screen unregistered
vcbutton unregistered
volume unregistered

Comments

The following types of parameters are unregistered:

- Current near-site or far-site source
- State of privacy
- Current volume level
- Active camera presets
- Status of point-to-point or multipoint calls
- IP connection to codec
- System information

amxdd

Sets or gets the AMX Device Discovery beacon.

Syntax

amxdd get
amxdd <on|off>

Parameter	Description
get	Returns the current setting.
on	Turns on the AMX Device Discovery beacon.
off	Turns off the AMX Device Discovery beacon.

Feedback Examples

- *amxdd get*
  returns
  amxdd off
- *amxdd on*
  returns
  amxdd on

Comments

The default setting for this signal is *off*.

answer

Answers incoming video calls.

Syntax

answer <video>

Parameter	Description
video	Answers incoming video calls when Auto Answer Point-to-Point Video or Auto Answer Multipoint Video is set to No.

Feedback Examples

- *answer video*
  returns
  answer incoming video call failed
- *answer video*
  returns
  answer incoming video call passed

audiotransmitlevel

Sets or gets the audio volume transmitted to the far site, or notification of transmit level changes.

Syntax

audiotransmitlevel <get|up|down|register|unregister>
audiotransmitlevel set {-20..30}

Parameter	Description
get	Returns the current setting.
up	Sets the volume 1 decibel higher than the current setting.
down	Sets the volume 1 decibel lower than the current setting.
register	Registers to receive notification when audio transmit level changes.
unregister	Unregisters to receive notification when audio transmit level changes.
set	Sets the volume to the specified dB level. Valid values are: *{-20..30}*.

Feedback Examples

- *audiotransmitlevel set 2*
  returns
  audiotransmitlevel 2
- *audiotransmitlevel get*
  returns
  audiotransmitlevel 2
- *audiotransmitlevel up*
  returns
  audiotransmitlevel 3
- *audiotransmitlevel down*
  returns
  audiotransmitlevel 2
- *audiotransmitlevel register*
  returns
  audiotransmitlevel registered
- *audiotransmitlevel unregister*
  returns
  audiotransmitlevel unregistered

autoanswer

Sets or gets the Auto Answer Point-to-Point Video mode, which determines how the system handles an incoming call in a point-to-point video conference.

Syntax

autoanswer <get|yes|no|donotdisturb>

Parameter	Description
yes	Allows any incoming video call to be connected automatically. This is the default setting.
no	Prompts the user to answer incoming video calls.
donotdisturb	Notifies the user of incoming calls, but does not connect the call. The site that placed the call receives a Far Site Busy (H.320) or Call Rejected (H.323) code.
get	Returns the current setting.

Feedback Examples

- *autoanswer* yes
  returns
  autoanswer yes
- *autoanswer* no
  returns
  autoanswer no
- *autoanswer* get
  returns
  autoanswer no
- *autoanswer donotdisturb*
  returns
  autoanswer donotdisturb

Comments

If *autoanswer* is set to *no* or *donotdisturb,* you must rely on API session notifications to answer inbound calls.

autoshowcontent

Specifies whether to send content automatically when a computer is connected to the system.

Syntax

autoshowcontent <get|on|off>

Parameter	Description
get	Returns the current setting.
on	Sets the system to send content automatically when a computer is connected to the system.
off	Sets the system to not send content automatically.

Feedback Examples

- *autoshowcontent on*
  returns
  autoshowcontent on
- *autoshowcontent off*
  returns
  autoshowcontent off
- *autoshowcontent get*
  returns
  autoshowcontent off

basicmode

Sets or gets the Diagnostic Mode configuration, a limited operating mode that uses H.261 for video and G.711 for audio. Basic mode provides administrators with a workaround for interoperability issues that cannot be solved using other methods.

Syntax

basicmode <get|on|off>

Parameter	Description
get	Returns the current setting.
on	Enables diagnostic mode.
off	Disables diagnostic mode.

Feedback Examples

- *basicmode on*
  returns
  basicmode on
- *basicmode off*
  returns
  basicmode off
- *basicmode get*
  returns
  basicmode off

calendardomain

Gets and sets the domain used by the calendaring service to log in to the Microsoft® Exchange server.

Syntax

calendardomain get
calendardomain "domain"

Parameter	Description
get	Returns the domain used by the calendaring service.
"domain"	The domain to be used by the calendaring service.

Feedback Examples

- *calendardomain get*
  returns
  calendardomain smithfield
- *calendardomain fairview*
  returns
  calendardomain fairview

See Also

To enable or disable the calendaring service, use the calendarregisterwithserver command on page 78. To configure the Microsoft Exchange server address used by this service, use the calendarserver command on page 81. To set the resource mailbox to be monitored, use the calendarresource command on page 80.

calendarmeetings

Retrieves scheduled meetings within the given time span or with the given meeting ID.

Syntax

calendarmeetings list "starttime" ["endtime"]
calendarmeetings info "meetingid"

Parameter	Description
list	Returns the meeting id or ids for meetings that start at or after the specified start time and end time.
"starttime"	The start time of meetings to be retrieved. The start time can be entered in one of the following formats: • YYYY-MM-DD:HH:MM • today:HH:MM • today • tomorrow:HH:MM • tomorrow The times are interpreted to be local times in the time zone the system was configured for.
"endtime"	The end time of meetings to be retrieved. This parameter can be given in the following format. • YYYY-MM-DD:HH:MM • today:HH:MM • today • tomorrow:HH:MM • tomorrow The times are interpreted to be local times in the time zone the system was configured for.
info	Retrieves meeting details for scheduled meetings when the system is registered with the calendaring service. Returns information such as the location, subject and organizer of the meeting.
"meetingid"	The ID of the meeting for which you want to find details.

Feedback Examples

- *calendarmeetings list tomorrow*
  returns
  calendarmeetings list begin
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJl
  eQIOS7j2mzRJxkLKAAADI/F8BAAA|2010-03-30:08:30|2010-03-30:09:00|Dis
  cuss Budget
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJl
  eQIOS7j2mzRJxkLKAAAA/9PhAAAQ|2010-03-30:09:00|2010-03-30:09:30|Pro
  gram Review
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAABZ29fO
  UOS5Q6xzZ1lzDDNnAABFQAQ3AAAQ|2010-03-30:10:00|2010-03-30:11:00|Cus
  tomer Care Commitment Meeting
  calendarmeetings list end

- *calendarmeetings list 2010-03-30:08:00 2010-04-01:17:00*
  returns
  calendarmeetings list begin
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJl
  eQIOS7j2mzRJxkLKAAADI/G8AAAQ|2010-03-30:08:30|2010-03-30:09:00|Bug
  Scrub
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAABZ29fO
  UOS5Q6xzZ1lzDDNnAABFQARCAAAQ|2010-03-30:11:30|2010-03-30:12:30|gro
  upseries/IP7000/Conference Coordination
  meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARg
  AAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAABZ29fO
  UOS5Q6xzZ1lzDDNnAABFQAQ3AAAQ|2010-04-01:16:30|2010-04-01:17:00|Cus
  tomer Care Commitment Meeting
  calendarmeetings list end

- *calendarmeetings info*
  AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARgAAAADr9G
  lhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS7j2
  mzRJxkLKAAADI/G8AAAQ
  returns
  calendarmeetings info start
  id|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARgAAAAD
  r9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS
  7j2mzRJxkLKAAADI/G8AAAQ
  2010-03-30:08:30|2010-03-30:09:00|dialable|public
  organizer|Russell Bell
  location|Russell's RMX Meeting Room - IP Video Number: 123456 (if
  registered to corp GK); 888-123-4567/978-123-4567 with passcode:
  #760900
  subject|Bug Scrub

```
dialingnumber|video|733397@vsgwstdma01.r13.vsg.local2|sip
dialingnumber|video|733397|h323
dialingnumber|audio|48527
meetingpassword|none
attendee|Russell Bell
attendee|Rebecca Sharp
calendarmeetings info end
```

- `calendarmeetings info AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMn4AUcVgARgAAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS7j2mzRJxkLKAAAA30GwAAAQ`
  returns
  `calendarmeetings info start id|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMn4AUcVgARgAAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS7j2mzRJxkLKAAAA30GwAAAQ`
  `2010-04-01:10:30|2010-04-01:11:00|nondialable|private`
  `organizer|Rebecca Sharp`
  `location|Red River conference room`
  `subject|Escalations Review`
  `attendee|Roslin Adam`
  `attendee|Conf.AUS.Red River`
  `attendee|Claudia Nevarez`
  `calendarmeetings info end`

Comments

If the meeting's end time is more than 31 days from the meeting's start time, the response is shortened to *starttime+31days*, and meetings that start in that time span are returned.

If an API client is logged in with user-level credentials and if the system is configured to hide private meeting information on the web interface, the API hides the information from the API client and shows the subject of the meeting as "Private Meeting"; for example:

```
calendarmeetings list begin
meeting|AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMn4AUcVgARgAAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS7j2mzRJxkLKAAAA30GwAAAQ|2009-09-25:08:30|2009-09-25:09:15|private meeting
calendarmeetings list end
```

If a system is configured to provide private meeting information on the web interface, the API provides the same information to the API client; for example:

```
calendarmeetings list begin
meeting|AAAZAGV4Y2H1C2VYMDFACJEZLNZZZY5SB2NHBDIARGAAAAAAKQKC8WW3CUWGCPM+AP66WQCASOLXUYMOMEKYBQJJ1Z0MBWASDQANHQAASOLXUYMOMEKYBQJJ1Z0MBWASDQASVGAA|2009-09-25:08:30|2009-09-25:09:15| Demo
calendarmeetings list end
```

If the API client is logged in with admin-level credentials, the API provides private meeting information to the API client, regardless of the configuration for displaying private meeting information; for example:

```
calendarmeetings list begin
meeting|AAAZAGV4Y2H1C2VYMDFACJEZLNZZZY5SB2NHBDIARGAAAAAAKQKC8WW3CUWGCP
M+AP66WQCASOLXUYMOMEKYBQJJ1ZOMBWASDQANHQAASOLXUYMOMEKYBQJJ1ZOMBWASDQAS
VGAA|2009-09-25:08:30|2009-09-25:09:15|Release plan
meeting|AAAZAGV4Y2H1C2VYMDFACJEZLNZZZY5SB2NHBDIARGAAAAAAKQKC8WW3CUWGCP
M+AP66WQCASOLXUYMOMEKYBQJJ1ZOMBWASDQANHQAASOLXUYMOMEKYBQJJ1ZOMBWASDQAS
VGAA|2009-09-23:11:00|2009-09-23:11:45|Product roadmap for 2010
calendarmeetings list end
```

The calendaring service must be registered with Microsoft Exchange server for the calendarmeetings command to work successfully. If the calendar credentials are invalid, the server address is not valid, or the configured user credentials don't have access permissions to the resource mailbox calendar, the service will fail to register.

This command has multi line output.

The following characters in the meeting subject will not be displayed:

- | (vertical bar)
- CR (carriage return)
- LF (line feed)

See Also

To enable or disable the calendaring service, use the calendarregisterwithserver command on page 78. To configure the Microsoft Exchange server address used by this service use the calendarserver command on page 81.

calendarpassword

Sets the password used by the calendaring service to log in to the Microsoft Exchange server.

Syntax

calendarpassword "password"

Parameter	Description
"password"	The password used by the calendaring service to log in to the Microsoft Exchange server.

Feedback Examples

- *calendarpassword Dsca1end@r*
  returns
  calendarpassword Dsca1end@r

Comments

The password can be up to 15 characters long and is case-sensitive. Use strong passwords that combine uppercase and lowercase letters, numbers, and symbols.

See Also

To enable or disable the calendaring service, use the calendarregisterwithserver command on page 78.

calendarplaytone

Enables or disables the reminder alert tone that plays with the meeting reminder when the system is registered with the calendaring service.

Syntax

calendarplaytone get
calendarplaytone <yes|no>

Parameter	Description
get	Gets the current setting for the alert tone.
yes	Enables the alert tone.
no	Disables the alert tone.

Feedback Examples

- *calendarplaytone get*
  returns
  calendarplaytone yes
- *calendarplaytone yes*
  returns
  calendarplaytone yes
- *calendarplaytone no*
  returns
  calendarplaytone no

See Also

See calendarremindertime command on page 79.

calendarregisterwithserver

Enables or disables the calendaring service.

Syntax

calendarregisterwithserver get
calendarregisterwithserver <yes|no>

Parameter	Description
get	Returns the current server registration status.
yes	Enables the calendaring service.
no	Disables the calendaring service.

Feedback Examples

- *calendarregisterwithserver get*
  returns
  calendarregisterwithserver no
- *calendarregisterwithserver yes*
  returns
  calendarregisterwithserver yes
- *calendarregisterwithserver no*
  returns
  calendarregisterwithserver no

Comments

To configure the Microsoft Exchange server address used by the calendaring service, use the calendarserver command on page 81.

calendarremindertime

Gets and sets the reminder time for meetings in the calendar when the system is registered with the calendaring service.

Syntax

calendarremindertime <get|1|5|10|15|30|none>

Parameter	Description
get	Gets the current reminder time.
1|5|10|15|30|none	The number of minutes before a meeting starts that a meeting reminder is given.

Feedback Examples

- *calendarremindertime get*
  returns
  calendarremindertime 5
- *calendarremindertime 15*
  returns
  calendarremindertime 15
- *calendarremindertime none*
  returns
  calendarremindertime none

Comments

By default, the reminder time is set to 5 minutes.

See Also

Use the notify command on page 157 to register for meeting reminders.

See also calendarplaytone command on page 77.

calendarresource

Gets and sets the mailbox account being monitored for calendar events. The mailbox account is called a resource.

Syntax

calendarresource get
calendarresource "resource"

Parameter	Description
get	Returns the resource being monitored for calendar events.
"*resource*"	The resource to monitor for calendaring events.

Feedback Examples

- *calendarresource get*
  returns
  calendarresource radam@abcde.com
- *calendarresource jmcnulty@abcde.com*
  returns
  calendarresource jmcnulty@abcde.com

Comments

A resource can be a user mailbox or a resource mailbox. A resource mailbox is a mailbox specifically assigned to a meeting room.

See Also

Use the calendarregisterwithserver command on page 78 to enable or disable the calendaring service. See the calendarserver command on page 81 to configure the Microsoft Exchange server address used by the calendaring service.

calendarserver

Gets or sets the Microsoft Exchange server used by the calendaring service.

Syntax

calendarserver get
calendarserver "server"

Parameter	Description
get	Gets the current Microsoft Exchange server used by the calendaring service.
“server”	The IP address or DNS name of the Microsoft Exchange server to be used by the calendaring service.

Feedback Examples

- *calendarserver get*
  returns
  calendarserver 192.168.44.168
- *calendarserver 192.168.23.221*
  returns
  calendarserver 192.168.23.221
- *calendarserver get*
  returns
  calendarserver mail.exchangeserver.local.com
- *calendarserver mail2.exchserver.local.com*
  returns
  calendarserver mail2.exchserver.local.com

See Also

Use the calendarregisterwithserver command on page 78 to enable or disable the calendaring service.

calendarshowpvtmeetings

Enables or disables the display of private meetings in the calendar when the system is registered with the calendaring service.

Syntax

calendarshowpvtmeetings get
calendarshowpvtmeetings <yes|no>

Parameter	Description
get	Gets the current setting for private meeting display.
yes	Enables the display of private meetings.
no	Blocks the display of private meetings.

Feedback Examples

- *calendarshowpvtmeetings get*
  returns
  calendarshowpvtmeetings no
- *calendarshowpvtmeetings yes*
  returns
  calendarshowpvtmeetings yes
- *calendarshowpvtmeetings no*
  returns
  calendarshowpvtmeetings no

calendarstatus

Returns the status of the Microsoft Exchange server connection.

Syntax

calendarstatus get

Parameter	Description
get	Returns the Microsoft Exchange server connection status.

Feedback Examples

- *calendarstatus get*
  returns
  calendarstatus established
- *calendarstatus get*
  returns
  calendarstatus unavailable

See Also

Use the calendarregisterwithserver command on page 78 to enable or disable the calendaring service.

calendaruser

Gets or sets the user name the calendaring service uses to log in to the Microsoft Exchange server.

Syntax

calendaruser get
calendaruser "username"

Parameter	Description
get	Returns the user name being used by the calendaring service.
username	The user name the calendaring service uses to log in to the Microsoft Exchange server.

Feedback Examples

- *calendaruser get*
  returns
  calendaruser jpolycom

See Also

See the calendarserver command on page 81 to configure the Microsoft Exchange server address used by this service.

callinfo

Returns information about the current call. If you are in a multipoint call, this command returns one line for each site in the call.

Syntax

callinfo all
callinfo callid "callid"

Parameter	Description
all	Returns information about each connection in the call.
callid	Returns information about the connection with the specified call ID.

Feedback Examples

- *callinfo all*
  returns
  callinfo begin
  callinfo:43:Polycom Group Series Demo:192.168.1.101:384:connected:notmuted:outgoing:videocall
  callinfo:36:192.168.1.102:256:connected:muted:outgoing:videocall
  callinfo end
- *callinfo callid 36*
  returns
  callinfo:36:192.168.1.102:256:connected:muted:outgoing:videocall
- *callinfo all*
  returns
  system is not in a call
  when no call is currently connected

Comments

The *callid* information is returned using the following format:
callinfo:<callid>:<far site name>:<far site number>:<speed>:<connection status>:<mute status>:<call direction>:<call type>

callstate

Sets or gets the call state notification for call state events.

Syntax

callstate <get|register|unregister>

Parameter	Description
get	Returns the current setting.
register	Registers the system to give notification of call activities.
unregister	Disables the register mode.

Feedback Examples

- *callstate register*
  returns
  callstate registered
- *callstate unregister*
  returns
  callstate unregistered
- *callstate get*
  returns
  callstate unregistered

After registering, the following callstate (cs:) data is returned when connecting an IP call:

```
cs: call[34] chan[0] dialstr[192.168.1.103] state[ALLOCATED]
cs: call[34] chan[0] dialstr[192.168.1.103] state[RINGING]
cs: call[34] chan[0] dialstr[192.168.1.103] state[COMPLETE]
active: call[34] speed [384]
```

After registering, the following response occurs when disconnecting an IP call:

```
cleared: call[34]
dialstr[IP:192.168.1.103 NAME:Polycom Group Series Demo]
ended: call[34]
```

See Also

You can also use the notify command on page 157 and the nonotify command on page 156 for notifications.

camera

Sets or gets the near-site or far-site camera settings.

Syntax

```
camera near {1..4}
camera far {1..4}
camera <near|far> move <left|right|up|down|zoom+|zoom-|stop>
camera <near|far> source
camera <near|far> stop
camera near ppcip
camera near tracking statistics
camera near tracking <get|on|off>
camera for-people {1..4}
camera for-content {1..4}
camera list-content
```

Parameter	Description
near	Specifies that the command selects or controls the near camera.
far	Specifies that the command selects or controls the far camera.
{1..4}	Specifies a near or far camera as the main video source. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
move	Changes the near or far camera's direction or zoom. Only *continuous* and *discrete* return feedback. Valid directions are: left, right, up, down, zoom+, zoom-, stop, continuous, and discrete.
left	Starts moving the camera left.
right	Starts moving the camera right.
up	Starts moving the camera up.
down	Starts moving the camera down.
zoom+	Starts zooming in.
zoom-	Starts zooming out.
stop	Stops the near or far camera when in continuous mode. Returns no feedback.
source	Returns the number of the near or far camera source currently selected.

Parameter	Description
ppcip	Specifies People+Content IP as the main video source if it is running and connected to the system.
for-people {1..4}	Sets the source for the specified camera to People. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
for-content {1..4}	Sets the source for the specified camera to Content. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
list-content	Gets a list of cameras configured as Content.
tracking statistics	Gets EagleEye Director tracking statistics. Tracking statistics measure: • the amount of time tracking is turned off divided by the total call time in the most recent 100 calls lasting more than five minutes. • the amount of room and close-up view switches divided by the total call time in the most recent 100 calls lasting more than five minutes.
tracking <get|on|off>	Enables or disables the Polycom EagleEye Director tracking feature. *on* turns the tracking feature on, *off* turns the tracking feature off, and *get* returns the current tracking feature setting.

Feedback Examples

- *camera far 2*
  specifies camera 2 at the far-site and returns
  camera far 2
- *camera far move left*
  causes the far-site camera to start panning to the left and returns
  event: camera far move left
- *camera near move zoom+*
  causes the near-site camera to zoom in and returns
  event: camera near move zoom+
- *camera near tracking off*
  returns
  camera near tracking off
- *camera near tracking on*
  returns
  camera near tracking on

- *camera near tracking get*
  returns
  camera near tracking Voice

Comments

If the *camera near {1..4}* API command is used for an input configured as content, the command becomes a toggle. You must send the command once to send the content source and a second time to stop the content source.

As of release 4.1.1, the *camera register* and *camera unregister* commands are no longer available. Use the *notify vidsourcechanges* command instead.

camerainput

Gets the format for a video source.

Syntax

camerainput <1..4> get

Parameter	Description
<1..4>	Specifies the video source. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
get	Returns the current setting.

Feedback Examples

- *camerainput 1 get*
  returns
  camerainput 1 component

configdisplay

Sets or gets the video format, aspect ratio and resolution for Monitor 1 or Monitor 2.

Syntax

configdisplay [<monitor1|monitor2>] get
configdisplay <monitor1|monitor2> <component|vga|dvi|hdmi|>
configdisplay <monitor1|monitor2> <component|vga|dvi|hdmi|>
[<50hz1280x720p|60hz1280x720p|60hz1280x1024p|60hz1024x768p|60hz1920x1080p|50hz1920x1080i|60hz1920x1080i|50hz1920x1080p>]
configdisplay monitor2 off

Parameter	Description
get	Returns the current setting.
monitor1	Specifies Monitor 1.
monitor2	Specifies Monitor 2.
vga	Sets the specified display to VGA format.
dvi	Sets the specified display to DVI format.
component	Sets the specified display to Component format.
hdmi	Sets the specified display to HDMI format.
50hz1280x720p	Sets the resolution to 1280x720p, 50 Hz.
60hz1280x720p	Sets the resolution to 1280x720p, 60 Hz.
60hz1280x1024p	Sets the resolution to 1280x1024p, 60 Hz.
60hz1024x768p	Sets the resolution to 1024x768p, 60 Hz.
60hz1920x1080p	Sets the resolution to 1920x1080p, 60 Hz.
50hz1920x1080i	Sets the resolution to 1920x1080i, 50 Hz.
60hz1920x1080i	Sets the resolution to 1920x1080i, 60 Hz.
50hz1920x1080p	Sets the resolution to 1920x1080p, 50 Hz.
off	Sets Monitor 2 to *off*.

Feedback Examples

- *configdisplay get*
  returns
  configdisplay monitor1 hdmi 1920x1080p 60Hz configdisplay monitor2

get
returns
configdisplay monitor2 hdmi 1920x1080p 60Hz

- *configdisplay monitor2 off*
  returns
  configdisplay monitor2 off
- *configdisplay monitor2 hdmi*
  returns
  configdisplay monitor2 hdmi

configparam

Sets or gets the video quality setting for the specified video input for motion or sharpness.

Syntax

configparam <“parameter”> get
configparam <“parameter”> set <“value”>

Parameter	Possible Values	Description
camera_video_quality <1|2|3|4>	*motion|sharpness*	Sets or gets the video quality setting for the specified video input for motion or for sharpness (for images without motion).

Feedback Examples

- *configparam camera_video_quality 1 set motion*
  returns
  camera1_video_quality motion

contentauto

Sets or gets the automatic bandwidth adjustment for people and content in point-to-point H.323 calls. Automatic adjustment maintains equal image quality in the two streams.

Syntax

contentauto <get|on|off>

Parameter	Description
get	Returns the current setting.
on	Enables automatic bandwidth adjustment for people and content.
off	Disables automatic bandwidth adjustment for people and content. The system Quality Preference settings is used instead.

Feedback Examples

- *contentauto off*
  returns
  contentauto off
- *contentauto on*
  returns
  contentauto on
- *contentauto get*
  returns
  contentauto on

daylightsavings

Sets or gets the daylight saving time setting. When you enable this setting, the system clock automatically changes for daylight saving time.

Syntax

daylightsavings <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables automatic adjustment for daylight savings time.
no	Disables automatic adjustment for daylight savings time.

Feedback Examples

- *daylightsavings no*
  returns
  daylightsavings no
- *daylightsavings yes*
  returns
  daylightsavings yes
- *daylightsavings get*
  returns
  daylightsavings yes

defaultgateway

Sets or gets the default gateway.

Syntax

defaultgateway get
defaultgateway set "xxx.xxx.xxx.xxx"

Parameter	Description
get	Returns the default gateway IP address.
set	Sets the default gateway when followed by the *"xxx.xxx.xxx.xxx"* parameter.
"xxx.xxx.xxx.xxx"	IP address to use as the default gateway.

Feedback Examples

- *defaultgateway set 192.168.1.101*
  returns
  defaultgateway 192.168.1.101

Comments

This setting can only be changed if DHCP is turned off. After making a change, you must restart the system for the setting to take effect.

dhcp

Sets or gets DHCP options.

Syntax

dhcp <get|off|client>

Parameter	Description
get	Returns the selected DHCP option.
off	Disables DHCP.
client	Enables DHCP client, setting the system to obtain an IP address from a server on your network.

Feedback Examples

- *dhcp off*
  returns
  dhcp off
- *dhcp client*
  returns
  dhcp client
- *dhcp get*
  returns
  dhcp client

Comments

After making a change, you must restart the system for the setting to take effect.

dial

Dials video or audio calls either manually or from the directory.

Syntax

dial addressbook "addr book name"
dial auto "speed" "dialstr"
dial manual "speed" "dialstr1" ["dialstr2"] [h323|ip|sip]
dial phone <sip_speakerphone> "dialstring"

Parameter	Description
addressbook	Dials a directory (address book) entry. Requires the name of the entry.
"addr book name"	The name of the directory (address book) entry. The name may be up to 25 characters. Use quotation marks around strings that contain spaces. For example: *"John Doe"*.
auto	Dials a video call number dialstr1 at speed of type h323. Requires the parameters "speed" and "dialstr". Allows the user to automatically dial a number. . Deprecated. Instead of this command, Polycom recommends using *dial manual* and not specifying a call type.
"speed"	Valid data rate for the network.
"dialstr", *"dialstr1"*, *"dialstr2"*	IP directory number.
manual	Dials a video call number dialstr1 at speed of type h323. Requires the parameters "speed" and "dialstr1". Use *dial manual "speed" "dialstr" "type"* when you do not want automatic call rollover or when the dialstring might not convey the intended transport.
h323|ip|sip	Type of call.
sip_speakerphone	Specify to dial SIP call.
"dialstring"	Numeric string specifying the phone number to dial. Enclose the string in quotation marks if it includes spaces. Example: *"512 555 1212"*

Feedback Examples

- *If registered for callstate notifications* (callstate register), the API returns
  cs: call[44] chan[0] dialstr[5551212] state[ALLOCATED]
  cs: call[44] chan[0] dialstr[5551212] state[RINGING]
  cs: call[44] chan[0] dialstr[5551212] state[CONNECTED]
  cs: call[44] chan[0] dialstr[5551212] state[CONNECTED]
  cs: call[44] chan[0] dialstr[5551212] state[COMPLETE]
  cs: call[44] chan[0] dialstr[5551212] state[COMPLETE]
  active: call[44] speed[64]
- *dial addressbook "John Polycom"*
  returns
  dialing addressbook "John Polycom"
- *dial phone sip_speakerphone 123456*
  returns
  dialing sip_speakerphone
- *If registered for callstate notifications* (callstate register), the API returns
  cs: call[44] chan[0] dialstr[192.168.1.101] state[ALLOCATED]
  cs: call[44] chan[0] dialstr[192.168.1.101] state[RINGING]
  cs: call[44] chan[0] dialstr[192.168.1.101] state[COMPLETE]
  active: call[44] speed[384]

  Notes: The [BONDING] responses in IP calls are extraneous text that will be removed in a subsequent software version.

  Call ID (call [44]) is an example of the response. The Call ID number depends upon the call type.
- *If registered for callstatus notifications* (notify callstatus), the API returns,
  notification:callstatus:outgoing:45:null 1::opened::0:videocall
  notification:callstatus:outgoing:45: Polycom Austin: 192.168.1.101:connecting:384:0:videocall
  notification:callstatus:outgoing:45: Polycom Austin: 192.168.1.101:connected:384:0:videocall

  Note: The call ID number (45) is an example of the response. The Call ID number depends upon the call type.

Comments

When searching for feedback from the *dial* command, expect to see the set of described strings as many times as there are channels in the call.

See Also

Refer to the callstate command on page 86. You can use callstate register to obtain updated information on the status of a call. For example, when using the dial manual to place a call, callstate register can tell you when the call is connected.

dns

Sets or gets the configuration for up to four DNS servers.

Syntax

dns get {1..4}
dns set {1..4} "xxx.xxx.xxx.xxx"

Parameter	Description
get	Returns the current IP address of the specified server. A server identification number *{1..4}* is required.
{1..4}	Specifies the server identification number.
set	Sets the IP address of the specified DNS server when followed by the *"xxx.xxx.xxx.xxx"* parameter. A server identification number *{1..4}* is required.
"xxx.xxx.xxx.xxx"	Specifies the IP address for the specified server.

Feedback Examples

- *dns set 1 192.168.1.205*
  returns
  dns 1 192.168.1.205

Comments

After making a change, you must restart the system for the setting to take effect. These values cannot be set if the system is in DHCP client mode.

dynamicbandwidth

Sets or gets the use of dynamic bandwidth allocation for Quality of Service.

Syntax

dynamicbandwidth <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the dynamic bandwidth option.
no	Disables the dynamic bandwidth option.

Feedback Examples

- *dynamicbandwidth yes*
  returns
  dynamicbandwidth yes
- *dynamicbandwidth no*
  returns
  dynamicbandwidth no
- *dynamicbandwidth get*
  returns
  dynamicbandwidth no

Comments

The system's dynamic bandwidth function automatically finds the optimum line speed for a call. If you experience excessive packet loss while in a call, the dynamic bandwidth function decrements the line speed until there is no packet loss. This is supported in calls with end points that also support dynamic bandwidth.

e164ext

Sets or gets an H.323 (IP) extension, also known as an E.164 name.

Syntax

e164ext get
e164ext set "e.164name"

Parameter	Description
get	Returns the current setting.
set	Sets the E.164 extension when followed by the *"e.164name"* parameter. To erase the current setting, omit *"e.164name"*.
"e.164name"	A valid E.164 extension (usually a four-digit number).

Feedback Examples

- *e164ext set*
  returns
  e164ext <empty>
- *e164ext set 7878*
  returns
  e164ext 7878
- *e164ext get 7878*
  returns
  e164ext 7878

Comments

The extension number is associated with a specific LAN device.

echocanceller

Sets or gets the configuration of echo cancellation, which prevents users from hearing their voices loop back from the far site.

Syntax

echocanceller <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the echo canceller option.
no	Disables the echo canceller option.

Feedback Examples

- *echocanceller yes*
  returns
  echocanceller yes
  echocanceller yes
- *echocanceller no*
  returns
  echocanceller no
  echocanceller no
- *echocanceller get*
  returns
  echocanceller no
  echocanceller no

Comments

This option is enabled by default. Polycom strongly recommends that you do not turn off echo cancellation except when using an external microphone system with its own built-in echo cancellation.

echoreply

Sets or gets the system's ability to send an Echo Reply message in response to an Echo Request message sent to an IPv4 multicast/anycast address.

Syntax

echoreply <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the echo reply option.
no	Disables the echo reply option.

Feedback Examples

- *echoreply get*
  returns
  echoreply yes
- *echoreply no*
  returns
  echoreply no

Comments

The number of responses may be traffic-conditioned to limit the effect of a denial of service attack.

After making a change, you must restart the system for the setting to take effect.

enablefirewalltraversal

Sets or gets the **Enable H.460 Firewall Traversal** setting. This feature requires an Edgewater session border controller that supports H.460.

Syntax

enablefirewalltraversal <get|on|off>

Parameter	Description
get	Returns the current setting.
on	Enables the firewall traversal feature.
off	Disables the firewall traversal feature.

Feedback Examples

- *enablefirewalltraversal on*
  returns
  enablefirewalltraversal on
- *enablefirewalltraversal off*
  returns
  enablefirewalltraversal off
- *enablefirewalltraversal get*
  returns
  enablefirewalltraversal off

enablekeyboardnoisereduction

Sets or gets the **Enable Keyboard Noise Reduction** setting.

Syntax

enablekeyboardnoisereduction <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables keyboard noise reduction.
no	Disables keyboard noise reduction.

Feedback Examples

- *enablekeyboardnoisereduction yes*
  returns
  enablekeyboardnoisereduction yes
- *enablekeyboardnoisereduction no*
  returns
  enablekeyboardnoisereduction no
- *enablekeyboardnoisereduction get*
  returns
  enablekeyboardnoisereduction no

enablelivemusicmode

Sets or gets the **Enable MusicMode** setting.

Syntax

enablelivemusicmode <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables live music mode.
no	Disables live music mode.

Feedback Examples

- *enablelivemusicmode yes*
  returns
  enablelivemusicmode yes
- *enablelivemusicmode no*
  returns
  enablelivemusicmode no

enablepvec

Sets or gets the Polycom Video Error Concealment (PVEC) setting on the system.

Syntax

enablepvec <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the PVEC option.
no	Disables the PVEC option.

Feedback Examples

- *enablepvec yes*
  returns
  enablepvec yes
- *enablepvec no*
  returns
  enablepvec no
- *enablepvec get*
  returns
  enablepvec no

Comments

This option is enabled by default.

enablersvp

Sets or gets the RSVP (Resource Reservation Protocol) setting on the system, which requests that routers reserve bandwidth along an IP connection path.

Syntax

enablersvp <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the RSVP option.
no	Disables the RSVP option.

Feedback Examples

- *enablersvp yes*
  returns
  enablersvp yes
- *enablersvp no*
  returns
  enablersvp no
- *enablersvp get*
  returns
  enablersvp no

Comments

This option is enabled by default.

enablesnmp

Sets or gets the SNMP configuration.

Syntax

enablesnmp <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the SNMP option.
no	Disables the SNMP option.

Feedback Examples

- *enablesnmp yes*
  returns
  enablesnmp yes
- *enablesnmp no*
  returns
  enablesnmp no
- *enablesnmp get*
  returns
  enablesnmp no

Comments

After making a change, you must restart the system for the setting to take effect.

encryption

Sets or gets the AES encryption mode for the system.

Syntax

encryption <get|yes|no|requiredvideocallsonly|requiredallcalls>

Parameter	Description
get	Returns the current setting.
yes	Use encryption when the far site is capable of encryption. Note: This parameter is called "When Available" in the user interface.
no	Disables encryption. Note: This parameter is called "Off" in the user interface.
requiredvideocallsonly	Enforces encryption on all video endpoints. Any video calls to or from systems that do not have encryption enabled are not connected. Audio-only calls are connected.
requiredallcalls	Enforces encryption on all endpoints. Any video or audio calls to or from systems that do not have encryption enabled are rejected and are not connected.

Feedback Examples

- *encryption yes*
  returns
  encryption yes
- *encryption no*
  returns
  encryption no
- *encryption get*
  returns
  encryption no
- *encryption requiredvideocallsonly*
  returns
  encryption requiredvideocallsonly

- *encryption requiredallcalls*
  returns
  encryption requiredallcalls

Comments

You cannot use this command while a call is in progress. Using this command while the system is in a call returns an *error: command has illegal parameters* message.

exit

Ends the API command session.

Syntax

exit

Feedback Examples

- *exit*
  returns
  Connection to host lost.

Comments

For serial sessions, this command effectively starts a new session.

farcontrolnearcamera

Sets or gets far control of the near camera, which allows far sites to control the camera on your system.

Syntax

farcontrolnearcamera <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Allows the far site to control the near camera if the far site has this capability.
no	Disables far control of the near camera.

Feedback Examples

- *farcontrolnearcamera yes*
  returns
  farcontrolnearcamera yes
- *farcontrolnearcamera no*
  returns
  farcontrolnearcamera no
- *farcontrolnearcamera get*
  returns
  farcontrolnearcamera no

gaddrbook

Returns global directory (address book) entries.

Syntax

Commands for GDS directory

gaddrbook all
gaddrbook batch {0..59}
gaddrbook batch define "start_no" "stop_no"
gaddrbook batch search "pattern" "count"
gaddrbook letter {a..z}
gaddrbook range "start_no" "stop_no"

Commands for LDAP only

gaddrbook grouplist [<range_start>] [<range_end>]
gaddrbook grouplist size
gaddrbook group "group_name" [<range_start>] [<range_end>]
gaddrbook group "group_name" size
gaddrbook names search "search_pattern" [<range_start>] [<range_end>]
gaddrbook names search "search_pattern" size
gaddrbook address "sys_id_string"

Parameter	Description
all	Returns all the entries in the global directory.
batch	Returns a batch of 20 global directory entries. Requires a batch number, which must be an integer in the range *{0..59}*.
define	Returns a batch of entries in the range defined by "*start_no*" to "*stop_no*."
search	Specifies a batch search.
"pattern"	Specifies a pattern to match for the batch search.
"count"	Specifies the number of entries to list that match the pattern.
letter	Returns entries beginning with the letter specified from the range *{a..z}*. Requires one or two alphanumeric characters. Valid characters are: *- _ / ; @ , . * *0* through *9* *a* through *z*
range	Returns global directory entries numbered *"start_no"* through *"stop_no"*. Requires two integers.

Parameter	Description
“start_no”	Specifies the beginning of the range of entries to return.
“stop_no”	Specifies the end of the range of entries to return.
grouplist	Returns a list of group names in this format: *gaddrbook grouplist {0..n}.* *group:"group_name"* *...* *gaddrbook grouplist done*
size	Returns the size of the result set that will be returned by the command. The size parameter can be used with the grouplist, group, and names search commands. The response is in the following format: `gaddrbook <command> size {0..n}`
range_start	For the grouplist, group, and names search commands, specifies the beginning of the range of entries to return.
range_end	For the grouplist, group, and names search commands, specifies the end of the range of entries to return. If a range_start is specified without a range_end, then the single range_start entry will be returned. If range_end is -1, all entries starting with range_start will be returned. Note that the LDAP server will limit the maximum number of entries that may be returned.

group	Returns a list of the members of a specified group. A multi-codec system will appear as a single row with a sys_id_string field containing multiple sys_id’s. (See the sys_id_string description below.)
	The response is in the following format, one row for each address book entry:
	`gaddrbook system {0..n}. name:"sys_name"`
	`sys_label:"sys_label"`
	`sys_id:"sys_id_string"`
	`phone_num:"phone_num"`
	
	`type:<video|multicodec|phone>`
	`...`
	`gaddrbook group "group_name" done`

Parameter	Description

group_name	Returns summary information for the people or rooms that match the search criteria. The search looks for a match at the beginning of any of these attributes: first name, last name, display/friendly name, or room name. The response is similar to the group command:
	`gaddrbook search {0..n}. name:"sys_name" sys_label:"sys_label" sys_id:"sys_id_string" phone_num:"phone_num"`
	`type:<video|multicodec|phone>`
	`...`
	`gaddrbook names search "search_pattern" done`

names search	Returns summary information for the people or rooms that match the search criteria. The search looks for a match at the beginning of any of these attributes: first name, last name, display/friendly name, or room name.
	The response is similar to the group command:
	`gaddrbook search {0..n}. name:"sys_name" sys_label:"sys_label" sys_id:"sys_id_string" phone_num:"phone_num"`
	`type:<video|multicodec|phone>`
	`...`

search_pattern	Specifies the string pattern for which to search. Wildcard characters are not supported.

Parameter	Description
address	Obtains the address information for a specified entry. For a multi-codec system, there will be separate lines for each codec, distinguished by the codec's sys_id. The codecs will be retuned in order, starting with the primary codec. If codecs support multiple protocols, the different addresses will be returned on separate lines. The response is in the following format: `gaddrbook address {0..n}. sys_id:"sys_id" h323_spd:"h323_spd" h323_num:"h323_num" h323_ext:"h323_ext" gaddrbook address {0..n}. sys_id:"sys_id" sip_spd:"sip_spd" sip_num:"sip_num" gaddrbook address {0..n}. sys_id:"sys_id" xmpp:xmpp_addr gaddrbook address {0..n}. sys_id:"sys_id" isdn_spd:"isdn_spd" isdn_num:"isdn_num" isdn_ext:"isdn_ext" ... gaddrbook address "sys_id_string" done`
sys_id_string	The unique identifier string for an endpoint. When the client retrieves the members of a group or searches by name, the results will include a list of people or rooms and the endpoints or systems associates with each of those entries. Each endpoint will have a sys_id_string which can be used to query for the endpoint's address information. For multi-codec systems, the sys_id_string will include multiple sys_id's, one for each codec, separated by a # delimiter. For LDAP, the sys_id will be the LDAP commUniqueID. It should be a quoted string. See examples below.
sys_id	This is the unique identifier for a codec. If an entry has just a phone number and no video codecs, this attribute will be blank.
sys_name	The friendly name for an address book entry. It is the name of the person or the room. It is surrounded by quotes if it contains spaces.

Parameter	Description
sys_label	If a person/room has more than one system, the result set will include a row for each system. If those systems are of the same type, such as , the client will consider that entry to be a telepresence system with multiple codecs rather than separate systems. If the systems are of different types, such as an and a CMAD, then this sys_label attribute will be included to differentiate the systems.
type	The type of global address book entry. Possible values are: `video, multicodec, phone`.
h323_spd	The preferred speed for an H.323 call to this entry. If no speed is associated with the entry, then the value of the configuration variable "globaladdrmaxh323" is returned. The default is 384.
h323_num	For LDAP entries systems currently do not use this field. It is always blank.
h323_ext	If an LDAP entry has a value for the H.350.1 `h323Identityh323-ID` attribute (H.323 alias), it will be returned as the h323_ext. If there is no `h323Identityh323-ID`, then if there is a value for the H.350.1 `h323IdentitydialedDigits` attribute (E.164 number), it will be returned.
sip_spd	The preferred speed for a SIP call to this entry. If no speed is associated with the entry, then this is the same as the `h323_spd`.
sip_num	SIP address. For LDAP this is the H.350.4 `SIPIdentitySIPURI` attribute.
xmpp_addr	XMPP address, also known as the Jabber ID (JID). For LDAP this is the H.350.7 `XmppIdentityURI` attribute.

Feedback Examples

- *gaddrbook all*
  returns
  gaddrbook 0. "Polycom Group Series Demo 1" isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. "Polycom Group Series Demo 2" h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. "Polycom Group Series Demo 3" sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook 3. "Polycom Group Series Demo 3" phone_num:1.512.5121212

(and so on, until all entries in the global directory are listed, then:)
gaddrbook all done

- *gaddrbook batch 0*
  returns
  gaddrbook 0. “Polycom Group Series Demo 1” isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. “Polycom Group Series Demo 2” h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. “Polycom Group Series Demo 3” sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook 3. “Polycom Group Series Demo 3” phone_num:1.512.5121212
  (and so on, through the last entry in the batch of 20 directory entries, such as:)
  gaddrbook 19. “Polycom Group Series Demo 20” h323_spd:384 h323_num:192.168.1.120 h323_ext:
  gaddrbook batch 0 donegaddrbook batch define 0 2
  returns
  gaddrbook 0. “Polycom Group Series Demo 1” isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. “Polycom Group Series Demo 2” h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. “Polycom Group Series Demo 3” sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook batch define 0 2 done
- *gaddrbook batch search Polycom 3*
  returns
  gaddrbook 0. “Polycom Group Series Demo 1” isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. “Polycom Group Series Demo 2” h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. “Polycom Group Series Demo 3” sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook batch search Polycom 3 done
- *gaddrbook letter p*
  returns
  gaddrbook 0. “Polycom Group Series Demo 1” isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. “Polycom Group Series Demo 2” h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. “Polycom Group Series Demo 3” sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook 3. “Polycom Group Series Demo 3” phone_num:1.512.5121212
  gaddrbook 19. “Polycom Group Series Demo 20” h323_spd:384 h323_num:192.168.1.120 h323_ext:
  gaddrbook letter p done

- *gaddrbook range 0 2*
  returns
  gaddrbook 0. "Polycom Group Series Demo 1" isdn_spd:384 isdn_num:1.700.5551212 isdn_ext:
  gaddrbook 1. "Polycom Group Series Demo 2" h323_spd:384 h323_num:192.168.1.101 h323_ext:7878
  gaddrbook 2. "Polycom Group Series Demo 3" sip_spd:384 sip_num:polycomgroupseries@polycom.com
  gaddrbook range 0 2 done
- *gaddrbook grouplist size*returns*gaddrbook grouplist size 6*
- *gaddrbookgrouplist size 0 3*returns*gaddrbook grouplist 0. group:"Andover ITP"*
  gaddrbook grouplist 1. group:"ITP Test Systems"
  gaddrbook grouplist 2. group:"Support"
  gaddrbook grouplist 3. group:"SW Group"
  gaddrbook grouplist 0 3 done
- *gaddrbook grouplist*
  returns
  gaddrbook grouplist 0. group:"Andover ITP"
  gaddrbook grouplist 1. group:"ITP Test Systems"
  gaddrbook grouplist 2. group:"Support"
  gaddrbook grouplist 3. group:"SW Group"
  gaddrbook grouplist 4. group:"Video Group"
  gaddrbook grouplist 5. group:"VSG Software"
  gaddrbook grouplist done
- *gaddrbook group "Andover ITP" size*
  returns
  gaddrbook group "Andover ITP" size 5
- *gaddrbook group size 0 3*
  returns*gaddrbook system 0. name:"AVKit TPX 306" sys_label:"groupseries" sys_id:"10062#10055#10056" phone_num:""type:multicodec*
  gaddrbook system 1. name:"Mark Duckworth" sys_label:"groupseries" sys_id:"10006" phone_num:"978.292.5478" type:video
  gaddrbook system 2. name:"Minuteman RPX" sys_label:"groupseries" sys_id:"10074#10020" phone_num:"" type:multicodec
  gaddrbook system 3. name:"Support 400" sys_label:"groupseries" sys_id:"10058#10059#10060#10061" phone_num:""type:multicodec
  gaddrbook group "Andover ITP" 0 3 done
  In the example above, the multicodec systems have sys_id strings with multiple sys_id's, one for each codec, separated by a # delimiter.
- *gaddrbook group "Video Group"*
  returns
  gaddrbook system 0. name:"Dan Renalds" sys_label:"groupseries" sys_id:"10002" phone_num: type:video
  gaddrbook system 1. name:"Mark Duckworth" sys_label:"groupseries" sys_id:"10006" phone_num:"978.292.5478" type:video

gaddrbook system 2. name:"Scott Wilson" sys_label:"groupseries" sys_id:"10047" phone_num:"978.292.5347" type:video
gaddrbook system 3. name:"Simbalab" sys_label:"groupseries" sys_id:"10037#10038#10077" phone_num: type:multicodec
gaddrbook system 4. name:"Tanvir Rahman" sys_label:"groupseries"sys_id:"10031#10035" phone_num: type:multicodec
gaddrbook system 5. name:"Tanvir Rahman" sys_label:"VSeries" sys_id:"10032#10033" phone_num: type:multicodec
gaddrbook system 6. name:"Vineyard" sys_label:"groupseries"sys_id:"10065#10009#10010" phone_num: type:multicodec
gaddrbook system 7. name:"VSG SW Lab" sys_label:"groupseries" sys_id:"10018#10082" phone_num: type:multicodec
gaddrbook group "Video Group" done

- *gaddrbook names search "s" size*
  returns
  gaddrbook names search s size 5

- *gaddrbook names search "s"*
  returns
  gaddrbook search 0. name:"Sami Hamdi" sys_label:"groupseries" sys_id:"10094" phone_num:"" type:video
  gaddrbook search 1. name:"Scott Wilson" sys_label:"CMADesktop" sys_id:"10111" phone_num:"978.292.5347" type:video
  gaddrbook search 2. name:"Scott Wilson" sys_label:"groupseries" sys_id:"10047" phone_num:"978.292.5347" type:video
  gaddrbook search 3. name:"Simbalab" sys_label:"groupseries" sys_id:"10037#10038#10077" phone_num:"" type:multicodec
  gaddrbook search 4. name:"Support 400" sys_label:"groupseries" sys_id:"10058#10059#10060#10061" phone_num:"" type:multicodec
  gaddrbook names search s done

- *gaddrbook names search "s" 0 3*
  returns
  gaddrbook search 0. name:"Sami Hamdi" sys_label:"groupseries" sys_id:"10094" phone_num:"" type:video
  gaddrbook search 1. name:"Scott Wilson" sys_label:"CMADesktop" sys_id:"10111" phone_num:"978.292.5347" type:videogaddrbook search 2. name:"Scott Wilson" sys_label:"Group Series" sys_id:"10047" phone_num:"978.292.5347" type:video
  gaddrbook search 3. name:"Simbalab" sys_label:"Group Series" sys_id:"10037#10038#10077" phone_num:"" type:multicodec
  gaddrbook names search s 0 3 done

- *gaddrbook address "10047*
  returns
  gaddrbook address 0. sys_id:"10047" h323_spd:Auto h323_num: h323_ext:1246540010
  gaddrbook address 10047 done
- *gaddrbook address "10065#10009#10010"*
  returns
  gaddrbook address 0. sys_id:"10065" h323_spd:Auto h323_num: h323_ext:44041gaddrbook address 1. sys_id:"10009" h323_spd:Auto h323_num: h323_ext:44042
  gaddrbook address 2. sys_id:"10010" h323_spd:Auto h323_num: h323_ext:44043
  gaddrbook address 10065#10009#10010 done

Comments

Entries with multiple addresses (for example, an H.323 address and a SIP number) return each address type on separate lines with an incremented record number.

When the system is registered with the LDAP directory server, only the *gaddrbook* batch search "pattern" "count" is supported. All other *gaddrbook* commands return the response *command not supported*.

When the system is registered with the Polycom GDS directory server, all of the *gaddrbook* commands and parameters are supported.

gaddrbook entries are stored in the global directory (address book).

See Also

See the addrbook command on page 53.

gatekeeperip

Sets or gets the IP address of the gatekeeper.

Syntax

gatekeeperip get
gatekeeperip set ["xxx.xxx.xxx.xxx"]

Parameter	Description
get	Returns the current setting.
set	Sets the gatekeeper IP address when followed by the *"xxx.xxx.xxx.xxx"* parameter. To erase the current setting, omit *"xxx.xxx.xxx.xxx"*.
"xxx.xxx.xxx.xxx"	IP address of the gatekeeper.

Feedback Examples

- *gatekeeperip set 192.168.1.205*
  returns
  gatekeeperip 192.168.1.205
- *gatekeeperip get*
  returns
  gatekeeperip 192.168.1.205



The gatekeeperip get command feedback may include the port number after the IP address.

gendial

Generates DTMF dialing tones.

Syntax

gendial <{0..9}|#|>*

Parameter	Description
{0..9}	Generates the DTMF tone corresponding to telephone buttons 0-9.
#	Generates the DTMF tone corresponding to a telephone # button.
***	Generates the DTMF tone corresponding to a telephone * button.

Feedback Examples

- *gendial 2*
  returns
  gendial 2
  and causes the system to produce the DTMF tone corresponding to a telephone's 2 button

getcallstate

Gets the state of the calls in the current conference.

Syntax

getcallstate

Feedback Examples

- *getcallstate*
  returns
  cs: call[34] speed[384] dialstr[192.168.1.101] state[connected]
  cs: call[1] inactive
  cs: call[2] inactive

See Also

To register the shell session to receive notifications about call state activities, see the callstate command on page 86.

getconfiguredipaddress

Retrieves the currently configured IPv4 address from the system.

Syntax

getconfiguredipaddress

Feedback Examples

- *getconfiguredipaddress*
  returns
  getconfiguredipaddress 1.2.3.4

Comments

getconfiguredipaddress returns the currently configured IPv4 address of the system regardless of the status of the LAN connection. This differs from the *ipaddress get* command, which returns the current IP address of the system if it has an active LAN connection, else it returns 0.0.0.0.

The definition of "currently configured IPv4 address" depends on the IPv4 address configuration settings:

- If the IP address is set manually the configured IP address is returned, regardless of whether the LAN connection is currently active.
- If the IP address is obtained automatically, the currently-assigned address is returned, or 0.0.0.0 is returned if there is no active connection.

h239enable

Sets or gets the H.239 People+Content setting.

Syntax

h239enable get
h239enable <yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables H.239 People+Content on the system.
no	Disables H.239 People+Content on the system.

Feedback Examples

- *h239enable yes*
  returns
  h239enable yes
- *h239enable no*
  returns
  h239enable no
- *h239enable get*
  returns
  h239enable no

h323name

Sets or gets the system's H.323 name.

Syntax

h323name get
h323name set ["H.323name"]

Parameter	Description
get	Returns the current setting.
set	Sets the H.323 name when followed by the *"H.323name"* parameter. To erase this setting, omit the *"H.323name"* parameter.
"H.323name"	Character string specifying the H.323 name. Use quotation marks around strings that contain spaces. For example: *"Polycom Group Series Demo"*

Feedback Examples

- *h323name set My*
  returns
  h323name my
- *h323name set "Polycom Group Series Demo"*
  returns
  h323name "polycom group series demo"
- *h323name get*
  returns
  h323name "polycom group series demo"

hangup

Hangs up the current video call.

Syntax

hangup video ["callid"]
hangup all

Parameter	Description
video	Disconnects the current video call. If the *"callid"* parameter is omitted, the system disconnects all video far sites in the call.
all	Disconnects all video and audio sites in the call.

Feedback Examples

- *hangup video*
  returns
  hanging up video
- *hangup video 42*
  returns
  hanging up video
  and disconnects the specified site, leaving other sites connected
- If callstate register is used for notifications,
  hangup video 42
  returns
  hanging up video
  cleared: call[42]
  dialstring[IP:192.168.1.101 NAME:Polycom Group Series Demo]
  ended: call[42]
  and disconnects the specified site, leaving other sites connected

Comments

After sending the *hangup* command, feedback that the call has ended can take up to 15 seconds.

hostname

Sets or gets the LAN host name, which is assigned to the system for TCP/IP configuration and can be used in place of an IP address when dialing IP calls.

Syntax

hostname get
hostname set ["hostname"]

Parameter	Description
get	Returns the current setting.
set	Sets the system's LAN host name when followed by the *"hostname"* parameter.
"hostname"	Character string specifying the LAN host name of the system. The LAN host name follows these format rules: Starts with a letter (A-a to Z-z). It is not case sensitive. Ends with a letter (A-a to Z-z) or a number (0 to 9). May include letters, numbers, and a hyphen. May not be longer than 63 characters. Note: The LAN host name is initialized during the setup wizard sequence. The LAN host name is the same as the system name, if the system name conforms to the rules above. If the system name does not conform to these rules, the invalid characters are removed from the system name.

Feedback Examples

- *hostname set*
  returns
  hostname ADMIN
- *hostname set "My"*
  returns
  hostname My
- *hostname get*
  returns
  hostname My

Comments

A LAN host name is required; it cannot be deleted or left blank. After making a change, you must restart the system for the setting to take effect.

ipaddress

Sets or gets the LAN IP address (IPv4) of the system.

Syntax

ipaddress get
ipaddress set "xxx.xxx.xxx.xxx"

Parameter	Description
get	Returns the current setting.
set	Sets the LAN IP address to the *"xxx.xxx.xxx.xxx"* parameter. This setting can only be changed when DHCP is off.
"xxx.xxx.xxx.xxx"	IP address of the system.

Feedback Examples

- *ipaddress set 192.168.1.101*
  returns
  *ipaddress 192.168.1.10*1
- *ipaddress get*
  returns
  ipaddress 192.168.1.101

Comments

Use this command when you need to allocate a static IP address to your system. After making a change, you must restart the system for the setting to take effect.

lanport

Sets or gets the LAN port settings of the system.

Syntax

lanport <get|auto|10hdx|10fdx|100hdx|100fdx|1000hdx|1000fdx>

Parameter	Description
get	Returns the current setting.
auto|10hdx|10fdx|100hdx|100fdx|1000hdx|1000fdx	Sets the LAN speed and duplex mode. This parameter is not allowed while in a call. *auto*: Automatically negotiates the LAN speed and duplex mode. *10hdx*: 10 Mbps, half duplex *10fdx*: 10 Mbps, full duplex *100hdx*: 100 Mbps, half duplex *100fdx*: 100 Mbps, full duplex *1000hdx*: 1000 Mbps, half duplex *1000fdx*: 1000 Mbps, full duplex

Feedback Examples

- *lanport auto*
  returns
  lanport auto
  restart system for changes to take effect. restart now? <y,n>
- *lanport get*
  returns
  lanport auto

Comments

After making a change, you are prompted to restart the system.

ldapauthenticationtype

Sets or gets the authentication type required to authenticate with an LDAP server.

Syntax

ldapauthenticationtype get
ldapauthenticationtype set <anonymous|basic>

Parameter	Description
get	Returns the current setting.
set	Sets the authentication type of an LDAP server. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
anonymous	Specifies "*anonymous*" as the authentication type of an LDAP server.
basic	Specifies "*basic*" as the authentication type of an LDAP server.
ntlm	Specifies "*ntlm*" as the authentication type of an LDAP server. This is the default setting.

Feedback Examples

- *ldapauthenticationtype get*
  returns
  ldapauthenticationtype anonymous
- *ldapauthenticationtype set basic*
  returns
  ldapauthenticationtype basic
- *ldapauthenticationtypeset ntlm*
  returns
  ldapauthenticationtype ntlm

ldapbasedn

Sets or gets the base distinguished name (DN) of an LDAP server.

Syntax

ldapbasedn get
ldapbasedn set [“base dn”]

Parameter	Description
get	Returns the current setting.
set	Sets the base DN of an LDAP server. To erase the current setting, omit the “*base dn*” parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
“base dn”	Specifies the base DN of an LDAP server. Valid characters include: Unicode (ISO-10646) characters, including IA5/ASCII characters and extended characters such as é, Ø, and å.

Feedback Examples

- *ldapbasedn get*
  returns
  ldapbasedn dc=hardware,dc=domain,dc=Polycom,dc=com
  where:
  dc=domain component
- *ldapbasedn set dc=software,dc=domain,dc=Polycom,dc=com*
  returns
  ldapbasedn dc=software,dc=domain,dc=Polycom,dc=com
  where:
  dc=domain component

ldapbinddn

Sets or gets the bind DN for LDAP Simple Authentication.

Syntax

ldapbinddn get
ldapbinddn set ["bind dn"]

Parameter	Description
get	Returns the current setting.
set	Sets the bind DN for LDAP Simple Authentication. To erase the current setting, omit the "*bind dn*" parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
"bind dn"	Specifies the bind DN of an LDAP server. Valid characters include: Unicode (ISO-10646) characters, including IA5/ASCII characters and extended characters such as é, Ø, and å.

Feedback Examples

- *ldapbinddn get*
  returns
  ldapbinddn cn=plcm admin1,ou=plcmsupport,ou=plcmhelp,
  dc=hardware,dc=domain,dc=polycom,dc=com
  where:
  cn=common name
  ou=organizational unit
  dc=domain component
- *ldapbinddn set cn=plcm admin2,ou=plcmaccounts,ou=plcmservice,*
  dc=hardware,dc=domain,dc=polycom,dc=com
  returns
  ldapbinddn *cn=plcm admin2,ou=plcmaccounts,ou=plcmservice,*
  dc=hardware,dc=domain,dc=polycom,dc=com
  where:
  cn=common name
  ou=organizational unit
  dc=domain component

ldapdirectory

Sets or gets whether the LDAP directory server is enabled.

Syntax

ldapdirectory <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables the LDAP directory server.
no	Disables the LDAP directory server. This is the default setting.

Feedback Examples

- *ldapdirectory get*
  returns
  ldapdirectory yes
- *ldapdirectory no*
  returns
  ldapdirectory no

Comments

Each Polycom system supports a single global directory server at any given time. Therefore, enabling the LDAP directory server automatically disables any other global directory server, such as the Polycom GDS directory server, that is enabled.

If the Polycom GDS directory server and another directory server are defined on the system, the Polycom GDS directory server becomes the default directory server after upgrading the system software.

ldapntlmdomain

Sets or gets the domain in which authentication takes place in the Active Directory server.

Syntax

ldapntlmdomain get
ldapntlmdomain set ["domain"]

Parameter	Description
get	Returns the current setting.
set	Sets the domain in which authentication takes place in the Active Directory server. To erase the current setting, omit the "*domain*" parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
"domain"	Specifies the domain in which authentication takes place in the Active Directory server. Valid characters include: *0* through *9*, *a* through *z*, *A* through *Z*, hyphen *(-)*, and period (*.*) Note: The domain name cannot begin or end with a hyphen or a period.

Feedback Examples

- *ldapntlmdomain get*
  returns
  ldapntlmdomain AUSTIN
- *ldapntlmdomain set ANDOVER*
  returns
  ldapntlmdomain ANDOVER

ldappassword

Sets the password for Simple or NT LAN Manager (NTLM) authentication of an LDAP server.

Syntax

ldappassword set ["password"]

Parameter	Description
set	Sets the password for Simple authentication of an LDAP server. To erase the current setting, omit the "*password*" parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
ntlm	Specifies setting the password for NTLM authentication of an LDAP server.
basic	Specifies setting the password for Simple authentication of an LDAP server.
"password"	Specifies the password for Simple or NTLM authentication of an LDAP server. Valid characters include: Unicode (ISO-10646) characters, including IA5/ASCII characters and extended characters such as é, Ø, and å. Note: The server administrator may specify additional restrictions for password creation.

Feedback Examples

- *ldappassword set ntlm P!cmp@s5wd*
  returns
  ldappassword NTLM P!cmp@s5wd
- *ldappassword set basic P0!ycOmp@s5*
  returns
  ldappassword BASIC P0!ycOmp@s5

ldapserveraddress

Sets or gets the LDAP server address.

Syntax

ldapserveraddress get
ldapserveraddress set ["address"]

Parameter	Description
get	Returns the current setting.
set	Sets the IP address or the DNS name of an LDAP server. To erase the current setting, omit the "*address*" parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
"address"	Specifies the IP address or the DNS name of an LDAP server. The DNS name requires alphanumeric characters. Valid characters include: *0* through *9* *a* through *z* *A* through *Z* - Note: The "-" character cannot be used as the first or last character in the DNS name.

Feedback Examples

- *ldapserveraddress get*
  returns
  ldapserveraddress hardware.domain.polycom.com
- *ldapserveraddress set software.domain.polycom.com*
  returns
  ldapserveraddress software.domain.polycom.com

ldapserverport

Sets or gets the port number of an LDAP server.

Syntax

ldapserverport get
ldapserverport set ["port number"]

Parameter	Description
get	Returns the current setting.
set	Sets the port number of an LDAP server. To erase the current setting, omit the "*port number*" parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
"port number"	Specifies the port number of an LDAP server. The default setting is 389.

Feedback Examples

- *ldapserverport get*
  returns
  ldapserverport 389
- *ldapserverport set 636*
  returns
  ldapserverport 636

ldapsslenabled

Sets or gets the Secure Sockets Layer (SSL)/Transport Layer Security (TLS) encryption state for LDAP operations.

Syntax

ldapsslenabled get
ldapsslenabled set [on|off]

Parameter	Description
get	Returns the current setting.
set	Sets the SSL encryption state for LDAP operations. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
on	Specifies "*on*" as the encryption state for LDAP operations. This is the default setting.
off	Specifies "*off*" as the encryption state for LDAP operations.

Feedback Examples

- *ldapsslenabled get*
  returns
  ldapsslenabled off
- *ldapsslenabled set on*
  returns
  ldapsslenabled on

ldapusername

Sets or gets the user name for NTLM authentication of an LDAP server.

Syntax

ldapusername get
ldapusername set [“user name”]

Parameter	Description
get	Returns the current setting.
set	Sets the user name for NTLM authentication of an LDAP server. To erase the current setting, omit the “*user name*” parameter. Note: This parameter does not change the setting on the server. Instead, this parameter changes how the Polycom system recognizes the server.
“user name”	Specifies the user name for NTLM authentication of an LDAP server. Valid characters include: Unicode (ISO-10646) characters, including IA5/ASCII characters and extended characters such as é, Ø, and å.

Feedback Examples

- *ldapusername get*
  returns
  ldapusername jpolycom
- *ldapusername set mpolycom*
  returns
  ldapusername mpolycom

listen

Registers the RS-232 session to listen for incoming video calls or system sleep or awake state and, consequently, to give notification when the registered state occurs.

Syntax

listen <video|sleep>

Parameter	Description
video	Instructs the session to listen for incoming video calls. When this event occurs, the message "*listen video ringing*" is received.
sleep	Instructs the session to listen for when the system goes into sleep mode. When this event occurs, the message "*listen going to sleep*" is received. When the system wakes up, the message "*listen waking up*" is received. Deprecated. Polycom recommends using *sleep register* instead of this command.

Feedback Examples

- *listen sleep*
  returns
  listen sleep registered
  to acknowledge that the session is now registered to listen for sleep mode
- *listen video*
  returns
  listen video registered
  to acknowledge that the session is now registered to listen for incoming video calls

maxtimeincall

Sets or gets the maximum number of minutes allowed for call length.

Syntax

maxtimeincall get
maxtimeincall set [{0..2880}]

Parameter	Description
get	Returns the current setting.
set	Sets the maximum time for calls when followed by a parameter from *{0..2880}*. To erase the current setting, omit the time parameter or set it to *0*. The call will then stay up indefinitely.
{0..2880}	Maximum call time in minutes. Must be an integer in the range *{0..2880}*. The value in minutes will be rounded up to hours in the system, the valid hour values are 1_hour, 2_hours to 12_hours, 24_hours and 48_hours.

Feedback Examples

- *maxtimeincall set*
  returns
  maxtimeincall <empty>
- *maxtimeincall set 180*
  returns
  maxtimeincall 180
- *maxtimeincall get*
  returns
  maxtimeincall 180

Comments

When the time has expired in a call, a message asks you if you want to hang up or stay in the call. If you do not answer within one minute, the call automatically disconnects.

mpautoanswer

Sets or gets the Auto Answer Multipoint mode, which determines how the system will handle an incoming call in a multipoint video conference.

Syntax

mpautoanswer <get|yes|no|donotdisturb>

Parameter	Description
get	Returns the current setting.
yes	Connects incoming video calls automatically. The screen will split into a multipoint call progress screen as the incoming call is answered.
no	For an incoming video call, the user will be notified and given the choice to answer the call. If the user selects Yes, the call is added to the ongoing conference. If the user selects No, the call is rejected. The default is No.
donotdisturb	The user is not notified of incoming video calls. The sites that placed the calls receive a Call Rejected (H.323) code.

Feedback Examples

- *mpautoanswer* yes
  returns
  mpautoanswer yes
- *mpautoanswer* no
  returns
  mpautoanswer no
- *mpautoanswer* get
  returns
  mpautoanswer no
- *mpautoanswer donotdisturb*
  returns
  mpautoanswer donotdisturb

Comments

If *mpautoanswer* is set to *no* or *donotdisturb,* you must rely on API session notifications to answer inbound calls.

mpmode

Sets or gets the multipoint conference viewing mode for the system in a multipoint call. The multipoint mode can be set to auto, discussion, presentation, or fullscreen. By default, it is set to auto.

Syntax

mpmode <get|auto|discussion|presentation|fullscreen>

Parameter	Description
get	Returns the current setting.
auto	In Auto mode, the system switches between Full Screen Mode and Discussion mode, depending on the interaction between the sites. If one site is talking uninterrupted for 15 seconds or more, the speaker appears full screen.
presentation	In Presentation mode, the person who is speaking appears full screen to the far sites, while the person who is speaking sees all the other sites on a split screen.
discussion	In Discussion mode (also called Continuous Presence mode), every site sees all the sites in the meeting at the same time, on a split screen.
fullscreen	In Full Screen mode, every site in the call sees the current speaker, or the latest person to speak, on the full screen.

Feedback Examples

- *mpmode auto*
  returns
  mpmode auto
- *mpmode discussion*
  returns
  mpmode discussion
- *mpmode get*
  returns
  mpmode discussion

Comments

This option is not available unless the multipoint option is enabled.

What you see during a multipoint call can depend on many factors such as the system's monitor configuration, the number of sites in the call, whether content is shared, and whether dual monitor emulation is used.

mute

Sets or gets the near or far site mute settings.

Syntax

mute <register|unregister>
mute near <get|on|off|toggle>
mute far get

Parameter	Description
register	Registers to receive notification when the mute mode changes.
unregister	Disables register mode.
near	Sets the command for the near site. Requires *on*, *off*, *toggle*, or *get*.
get	Returns the current setting for the near or far site.
on	Mutes the near site (*mute near on*).
off	Unmutes the near site (*mute near off*).
toggle	If mute near mode is *mute near on*, this switches to *mute near off*, and vice versa.
far	Returns the mute state of the far site system. Requires the parameter *get*.

Feedback Examples

- *mute register*
  returns
  mute registered
- *mute near on*
  returns
  mute near on
- *mute far get*
  returns
  mute far off

Comments

In register mode, the system sends notification to the API session when the far or near site is muted or unmuted.

muteautoanswer

Sets or gets the Mute Auto Answer Calls mode. When this setting is selected, the microphone is muted to prevent the far site from hearing the near site when the system answers automatically.

Syntax

muteautoanswer <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Enables Mute Auto Answer Calls mode. The microphone will be muted when the system receives a call while in Auto Answer mode.
no	Disables Mute Auto Answer Calls mode. The microphone will not be muted when the system receives a call while in Auto Answer mode.

Feedback Examples

- *muteautoanswer yes*
  returns
  muteautoanswercalls yes
- *muteautoanswer no*
  returns
  muteautoanswercalls no
- *muteautoanswer get*
  returns
  muteautoanswercalls no

natconfig

Sets or gets the NAT configuration.

Syntax

natconfig <get|auto|manual|off>

Parameter	Description
get	Returns the current setting.
auto	Specifies that the system is behind a NAT; specifies that the system will automatically discover the public (WAN) address.
manual	Specifies that the system is behind a NAT. Requires the WAN address to be assigned using the wanipaddress command on page 232.
off	Disables the option when the system is not behind a NAT.

Feedback Examples

- *natconfig auto*
  returns
  natconfig auto
- *natconfig manual*
  returns
  natconfig manual
- *natconfig off*
  returns
  natconfig off
- *natconfig get*
  returns
  natconfig off

nath323compatible

Sets or gets the **NAT is H.323 Compatible** setting.

Syntax

nath323compatible <get|yes|no>

Parameter	Description
get	Returns the current setting.
yes	Specifies that NAT is capable of translating H.323 traffic.
no	Specifies that NAT is not capable of translating H.323 traffic.

Feedback Examples

- *nath323compatible yes*
  returns
  nath323compatible yes
- *nath323compatible no*
  returns
  nath323compatible no
- *nath323compatible get*
  returns
  nath323compatible no

netstats

Returns network statistics for each call.

Syntax

netstats [{0..n}]

Parameter	Description
{0..n}	Call in a multipoint call, where *n* is the maximum number of calls supported by the system. *0* is the first site connected. If no call is specified, *netstats* returns information about the near site.

Feedback Examples

- *netstats 2*
  returns
  call:1 txrate:128 K rxrate:128 K pktloss:0 %pktloss:0.0 % tvp:H.263 rvp:H.263 tvf:CIF rvp:CIF tap:G.722.1 rap:G.722.1 tcp:H.323 rcp:H.323
  where:
  txrate=transmit clock rate
  rxrate=receive clock rate
  pktloss=number of packet loss/errors
  %pktloss=percentage of packet loss/errors
  tvp=transmit video protocol
  rvp=receive video protocol
  tvf=transmit video format
  rvf=receive video format
  tap=transmit audio protocol
  rap=receive audio protocol
  tcp=transmit comm protocol
  rcp=receive comm protocol

nonotify

Unregisters the API client to receive status notifications.

Syntax

nonotify <callstatus|linestatus|mutestatus|screenchanges>
nonotify <sysstatus|sysalerts|vidsourcechanges>

Parameter	Description
calendarmeetings	Stops the system from receiving meeting reminders.
callstatus	Stops the system from receiving changes in call status, such as a connection or disconnection.
linestatus	Stops the system from receiving line status notifications.
mutestatus	Stops the system from receiving changes in audio mute status.
screenchanges	Stops the system from receiving notification when a user interface screen is displayed.
sysstatus	Stops the system from receiving system status notifications.
sysalerts	Stops the system from receiving system alerts.
vidsourcechanges	Stops the system from receiving notification of camera source changes.

Feedback Examples

- *nonotify callstatus*
  returns
  nonotify callstatus success
- If entered again,
  nonotify callstatus
  returns
  info: event/notification not active:callstatus
- *nonotify calendarmeetings*
  returns
  nonotify calendarmeetings success

See Also

See the related notify command on page 157.

notify

Lists the notification types that are currently being received, or registers to receive status notifications.

Syntax

notify
notify <callstatus|linestatus|mutestatus|screenchanges>
notify <sysstatus|sysalerts|vidsourcechanges>
notify calendarmeetings

Parameter	Description
notify	Lists the notification types that are currently being received, in the following format: *registered for <num> notifications[:notification type>...]*
calendarmeetings	Registers the API client to receive meeting reminders.
callstatus	Registers the system to receive changes in call status, such as a connection or disconnection, in the following format: *notification:callstatus:<call direction>:<call id>:<far site name>:<far site number>:<connection status>:<call speed>:<status-specific cause code from call engine>:<calltype>*
linestatus	Registers the system to receive line status notifications as they occur, in the following format: *notification:linestatus:<direction>: <call id>:<line id>:<channel id>: <connection status>*
mutestatus	Registers the system to receive changes in audio mute status, in the following format: *notification:mutestatus:<near or far>:<call id>:<site name>:<site number>:<mute status>*
screenchanges	Registers the system to receive notification when a user interface screen is displayed, in the following format: *notification:screenchange:<screen name>:<screen def name>*

Parameter	Description
sysstatus	Registers the system to receive system status notifications, in the following format: *notification:sysstatus:<sys parameter name>:<value1>[:<value2>...]*
sysalerts	Registers the system to receive system alerts, in the following format: *notification:sysalert:<alert name>:<value1>[:<value2>...]*
vidsourcechanges	Registers the system to receive notification of camera source changes, in the following format: *notification:vidsourcechange:<near or far>:<camera index>:<camera name>:<people or content>*

Feedback Examples

- *notify mutestatus*
  returns
  notify mutestatus success
  acknowledging that the session is now registered to receive mutestatus notifications
- *notify callstatus*
  returns
  notify callstatus success
  acknowledging that the session is now registered to receive callstatus notifications
- If entered again,
  notify callstatus
  returns
  info: event/notification already active:callstatus
- *notify*
  returns
  registered for 2 notifications:mutestatus:
- *notify calendarmeetings*
  returns
  notify calendarmeetings success

The following are examples of notifications that may be returned after registering to receive them.

- *notification:callstatus:outgoing:34:Polycom Group Series Demo:192.168.1.101:connected:384:0:videocall*
- *notification:mutestatus:near:near:near:near:muted*
- *notification:screenchange:systemsetup:systemsetup_a*

- *notification:vidsourcechange:near:1:Main:people*
- *notification:linestatus:outgoing:32:0:0:disconnected*
- *notification:vidsourcechange:near:6:ppcip:content*
- *notification:vidsourcechange:near:none:none:content*
- *notification: calendarmeetings: AAAaAEFsZXguTWFjRG9uYWxkQHBvbHljb20uY29tAVEACIjMne2/ndgARgAAAADr9GlhsSjWEZBcAAKzMphJBwA4wicbtr3UEZArAKAk09LtAAACZpKWAADe7hJleQIOS7j2mzRJxkLKAAADI/G8AAAQ:Product Planning:10*

Comments

The *notify callstatus* command registers the current API session for call status notifications. The API client receives call status notifications as a call progresses.

Registration for status notifications is session-specific. For example, registering for alerts in a Telnet session does not return alerts in a simultaneous RS-232 session with the same system.

Duplicate registrations produce another success response. The notify setting remains in effect, even if you restart the system or update the software with system settings saved.

See Also

See also the nonotify command on page 156 and the callinfo command on page 85.

oobcomplete

Completes the setup wizard and restarts the Polycom system.

Syntax

oobcomplete

Feedback Examples

oobcomplete
returns
oobcomplete

Comments

The *oobcomplete* command is processed only when the Polycom system is in setup wizard mode.

To execute *oobcomplete* successfully, the Polycom system name must be configured.

preset

Sets the presets or goes (moves) to the presets for the near or far camera source. Also registers or unregisters the API session to give notification when the user sets or goes to presets.

Syntax

preset <register|unregister>
preset register get
preset far <go|set> <{0..15}>
preset near <go|set> <{0..99}>

Parameter	Description
register	Registers the system to give notification when the user or far site sets or goes to a preset. Returns the current preset registration state when followed by the *get* parameter.
unregister	Disables register mode.
far	Specifies the far camera. Requires a *set* or *go* parameter and a preset identifier.
go	Moves the camera to a camera preset. Requires a *"preset"* parameter.
set	Sets a camera preset. Requires a *"preset"* parameter.
{0..15}, *{0..99}*	Camera preset identifier. Must be an integer in the range *{0..15}* for a far-site camera or *{0..99}* for a near-site camera.
near	Specifies the near camera. Requires a *set* or *go* parameter and a preset identifier.

Feedback Examples

- *preset register*
  returns
  preset registered
- *preset near go 1*
  returns
  preset near go 1
  and moves the near-site camera to the preset 1 position

- *preset near set 2*
  returns
  preset near set 2
  and saves the current location/position of the near-site camera as preset 2

Comments

Up to 100 preset camera positions can be set. These camera presets can be distributed across the far camera and up to four near-site cameras.

reboot

Restarts the system.

Syntax

reboot [now]

Parameter	Description
now	restarts the system without prompting you.

Feedback Examples

- *reboot now*
  does not prompt the user to confirm and restarts the system with no other feedback returned
-

Comments

The preferred format is *reboot now*.

remotemonenable

Gets the state of remote room and call monitoring.

Syntax

remotemonenable <get>

Feedback Examples

- *remotemonenable get*
  returns
  remotemonenable on
- *remotemonenable get*
  returns
  remotemonenable off

resetsystem

Resets the system and, optionally, deletes system settings or local address book entries.

Syntax

resetsystem [deletesystemsettings]
[deletelocaldirectory][deletecdr][deletelogs][deletecertificates]

Parameter	Description
deletesystemsettings	Resets all configuration settings to default values.
deletelocaldirectory	Deletes all local directory entries from the address book.
deletecdr	Deletes the CDR file from the /opt/polycom/cdr directory after copying the contents of the file to the trace log.
deletelogs	Deletes the system logs.
deletecertificates	Deletes all certificates from the system.

Feedback Examples

- *resetsystem*
  returns
  resetsystem
- *resetsystem deletesystemsettings*
  returns
  resetsystem deletesystemsettings
- *resetsystem deletelocaldirectory*
  returns
  resetsystem deletelocaldirectory
- *resetsystem deletecdr*
  returns
  resetsystem deletecdr
- *resetsystem deletesystemsettings deletelocaldirectory deletecdr*
  returns
  resetsystem deletesystemsettings deletelocaldirectory deletecdr
- *resetsystem deletelogs*
  returns
  resetsystem deletelogs

- *resetsystem deletecertificates*
  returns
  resetsystem deletecertificates

rs232 baud

The rs232 baud command sets or gets the baud rate for the first RS-232 port.

Syntax

rs232 baud <get|9600|14400|19200|38400|57600|115200>

Parameter	Description
get	Returns the current baud rate setting.
9600|14400|19200|38400|57600|115200	Sets the RS-232 port to this baud rate.

Feedback Examples

- *rs232 baud 9600*
  returns
  rs232 baud 9600
- *rs232 baud get*
  returns
  rs232 baud 9600

rs232 mode

The *rs232 mode* command sets or gets the operational mode of the first RS-232 port.

Syntax

rs232 mode <get|off|control>

Parameter	Description
get	Returns the current mode setting.
off	Sets the operational mode of the RS-232 port to off.
control	Sets the RS-232 port to Control mode.

Feedback Examples

- *rs232 mode control*
  returns
  rs232 mode control

screen

Returns the name of the current user interface screen on the system, registers or unregisters for screen changes, or goes to a specific user interface screen.

Syntax

screen
screen register get
screen [register|unregister]
screen "screen_name"

Parameter	Description
screen	Returns the name of the current user interface screen if not followed by other parameters.
register	Registers for user interface screen changes. In register mode, the name of every screen accessed is listed.
get	Returns the registration state for screen change events when followed by the *get* parameter.
unregister	Unregisters from user interface screen changes.
"screen_name"	Changes the user interface to display the specified screen. The supported screens depend on the system configuration. To determine the name to use for a specific screen, navigate to that screen in the user interface and send the *screen* command.

Feedback Examples

- *screen*
  returns
  screen: adminsettings
  if the Admin Settings screen is currently displayed in the user interface
- *screen register*
  returns
  screen registered
- *screen monitors*
  returns
  screen: monitors
  and displays the Monitors screen in the user interface

Comments

Only a small number of user interface screens are available using this command.

serialnum

Returns the serial number of the system.

Syntax

serialnum

Feedback Examples

- *serialnum*
  returns
  serialnum 82065205E72E1

session

Names or finds an active API session.

Syntax

session name "session-name"
session find "session-name"

Parameter	Description
name	Names the current API session.
find	Finds an active API session for this system.
session-name	Unique string that identifies the session.

Feedback Examples

- *session name sessionone*
  returns
  session name sessionone success
- *If entered again,*
  session name sessionone
  returns
  info: the supplied session name is already in use
  session name sessionone failed
- *session find sessionone*
  info: session sessionone attached
- *session find sessiontwo*
  info: session sessiontwo not connected

setpassword

Sets the admin password for the Polycom system local admin account.

Syntax

setpassword admin room "currentacctpasswd" "newacctpasswd"

Parameter	Description
admin	Specifies the Polycom system local admin account.
room	Changes the room password.
“currentacctpasswd”	The current account password.
“newacctpasswd”	The new account password.

Feedback Examples

- *setpassword admin room 123 456*
  returns
  password changed
- *setpassword admin room ‘’ 456*
  returns
  password changed
- *setpassword admin room 123 ‘’*
  returns
  password changed

Comments

If the account has no administrator room password, enter a pair of single quotes ('') to denote an empty password.

sleep

Registers or unregisters the system for sleep or wake events.

Syntax

sleep <register|unregister>

Parameter	Description
register	Registers for sleep or wake events.
unregister	Unregisters from sleep or wake events.

Feedback Examples

- *sleep register*
  returns
  sleep registered
- If entered again,
  sleep register
  returns
  info: event/notification already active:sleep
- *sleep unregister*
  returns
  sleep unregistered
- If entered again,
  sleep unregister
  returns
  info: event/notification not active:sleep

See Also

To wake the system from sleep mode, use the wake command on page 231.

sleeptime

Sets or gets the wait time value before the system goes to sleep and displays the screen saver.

Syntax

sleeptime <get|0|1|3|15|30|60|120|240|480>

Parameter	Description
get	Returns the current setting.
0|1|3|15|30|60|120|240|480	Sets the number of minutes from last user interaction to entering sleep mode. The default value is 3. A value of *0* indicates that the system will never go to sleep.

Feedback Examples

- *sleeptime 30*
  returns
  sleeptime 30

snmpadmin

Sets or gets the SNMP administrator name.

Syntax

snmpadmin get
snmpadmin set ["admin name"]

Parameter	Description
get	Returns the current setting.
set	Sets the administrator name when followed by the *"admin name"* parameter. To erase the current setting, omit *"admin name"*.
"admin name"	SNMP administrator contact name. Character string. Enclose the character string in quotation marks if it includes spaces. Example: *"John Admin"*

Feedback Examples

- *snmpadmin set*
  returns
  error: command needs more parameters to execute successfully
- *snmpadmin set "John Admin"*
  returns
  snmpadmin "John Admin"
- *snmpadmin get*
  returns
  snmpadmin "John Admin"

Comments

After making a change, you must restart the system for the setting to take effect.

snmpcommunity

Sets or gets the SNMP community name.

Syntax

snmpcommunity get
snmpcommunity set ["community name"]

Parameter	Description
get	Returns the current setting.
set	Sets the SNMP community name when followed by the *"community name"* parameter. To erase the current setting, omit the parameter.
"community name"	SNMP community name. Character string. Enclose the character string in quotation marks if it includes spaces.

Feedback Examples

- *snmpcommunity* set
  returns
  snmpcommunity <empty>
- *snmpcommunity set Public*
  returns
  snmpcommunity Public
- *snmpcommunity get*
  returns
  snmpcommunity Public

Comments

After making a change, you must restart the system for the setting to take effect.

snmpconsoleip

Sets or gets the SNMP console IP address.

Syntax

snmpconsoleip get
snmpconsoleip set ["xxx.xxx.xxx.xxx"]

Parameter	Description
get	Returns the current setting.
set	Sets the SNMP console IP address when followed by the *"xxx.xxx.xxx.xxx"* parameter. To erase the current setting, omit the parameter.
"xxx.xxx.xxx.xxx"	IP address of the console.

Feedback Examples

- *snmpconsoleip set*
  returns
  snmpconsoleip <empty>
- *snmpconsoleip set 192.168.1.111*
  returns
  snmpconsoleip 192.168.1.111
- *snmpconsoleip get 192.168.1.111*
  returns
  snmpconsoleip 192.168.1.111

Comments

After making a change, you must restart the system for the setting to take effect.

snmplocation

Sets or gets the SNMP location name.

Syntax

snmplocation get
snmplocation ["location name"]

Parameter	Description
get	Returns the current setting.
"location name"	SNMP location name. Enclose the location name in quotation marks if it includes spaces. To erase the current setting, omit the parameter.

Feedback Examples

- *snmplocation*
  returns
  snmplocation <empty>
- *snmplocation "Mary_Polycom in United States"*
  returns
  snmplocation "Mary_Polycom in United States"
- *snmplocation get*
  returns
  snmplocation "Mary_Polycom in United States"

Comments

After making a change, you must restart the system for the setting to take effect.

snmpsystemdescription

Sets or gets the SNMP system description.

Syntax

snmpsystemdescription get
snmpsystemdescription set ["system description"]

Parameter	Description
get	Returns the current setting.
set	Sets the SNMP system description when followed by the *"system description"* parameter. To erase the current setting, omit the parameter.
"system description"	SNMP system description.

Feedback Examples

- *snmpsystemdescription set*
  returns
  snmpsystemdescription <empty>
- *snmpsystemdescription set "videoconferencing system"*
  returns
  snmpsystemdescription "videoconferencing system"
- *snmpsystemdescription get*
  returns
  snmpsystemdescription "videoconferencing system"

Comments

After making a change, you must restart the system for the setting to take effect.

snmptrapversion

Sets or gets the SNMP trap version.

Syntax

snmptrapversion get
snmptrapversion set <v1|v2c>

Parameter	Description
get	Returns the current setting.
set	Sets the SNMP trap protocol that the system uses.
v1|v2c	SNMP trap version 1 or version 2c.

Feedback Examples

- *snmptrapversion set v1*
  returns
  snmptrapversion v1
- *snmptrapversion set v2c*
  returns
  snmptrapversion v2c
- *snmptrapversion get*
  returns
  snmptrapversion v2c

Comments

After making a change, you must restart the system for the setting to take effect.

speeddial

Returns speed dial (Sites) entries.

Syntax

```
speeddial names <all|video|phone> [<range_start>] [<range_end>]
speeddial names <all|video|phone> size
speeddial group "group_name" [<range_start>] [<range_end>]
speeddial group "group_name" size
speeddial address "sys_name" ["sys_label"]
```

Parameter	Description
names	Returns a list of system names in the speed dial (Sites) list. Also returns the system type: video, multicodec, phone, or multisite. A multicodec system appears as a single row. The response is in the following format: *speeddial names {0..n}. name:"sys_name" sys_label:"sys_label" type: <video|multicodec|phone|group> ... speeddial names <all|video|phone> done*
<all|video>	Specifies the type of entries to return. *video* returns entries that have video addresses. *all* returns entries with video numbers or phone numbers or both.
size	Returns the size of the result set that will be returned by the command. The size parameter can be used with the names command. The response is returned in the following format: *speeddial names <all|video|phone> size {0..n}*
range_start	For the names and group command, specifies the beginning of the range of entries to return.
range_end	For the names and group command, specifies the end of the range of entries to return. If a *range_start* is specified without a *range_end*, then the single *range_start* entry is returned. If *range_end* is *-1*, all entries starting with *range_start* are returned.

Parameter	Description
group	Returns a list of the names of all the sites included in a local directory group in this format: *speeddial group {0..n}. name:"site_sys_name" sys_label:"site_sys_label"* *...* *speeddial group "group_name" [range] done* *speeddial group size <num_entries>* Note: For ITP version 2.5 and later a “group” is a local directory multisite entry.
group_name_multisite_entry_name	A local directory group name.
address	Obtains the address information for a specified entry. If the entry is an ITP system, the results include the addresses for all codecs. If the codecs support multiple protocols, the different addresses are returned on separate lines. This command is not supported for multisite entries. The response is in the following format: *speeddial address {0..n}. name:"sys_name" sys_label:"sys_label" codec:<1..4> h323_spd:"h323_spd" h323_num:"h323_num" h323_ext:"h323_ext"* *speeddial address {0..n}. name:"sys_name" sys_label:"sys_label" codec:<1..4> sip_spd:"sip_spd" sip_num:"sip_num"* *speeddial address {0..n}. name:"sys_name" sys_label:"sys_label" codec:<1..4> xmpp:"xmpp_addr"* *speeddial address {0..n}. name:"sys_name" sys_label:"sys_label" codec:<1..4> phone_num:"phone_num"* *speeddial address {0..n}. name:"sys_name" sys_label:"sys_label" codec:<1..4> isdn_spd:"isdn_spd" isdn_num:"isdn_num" isdn_ext:"isdn_ext"* *...* *speeddial address name:"sys_name" sys_label:"sys_label"*

Parameter	Description
sys_name	The friendly name for a speed dial entry. It is the name of the person or the room. It is surrounded by quotes if it contains spaces.
sys_label	If a person/room has more than one system, the result set includes a row for each system. If those systems are of the same type, such as allRealPresence Group systems, the client considers that entry to be a telepresence system with multiple codecs rather than separate systems. If the systems are of different types, such as a RealPresence Groupsystem and a CMA Desktop system, then this sys_label attribute is included to differentiate the systems.
type	The type of speed dial entry. Possible values are: `video, multicodec, phone, group`.
site_sys_name	The name of a site in a group. It is surrounded by quotes if it contains spaces.
site_sys_label	The label associated with a site name in a group. It is surrounded by quotes if it contains spaces.
codec: <1..4>	If the entry is a telepresence system, each codec includes a codec number attribute.
h323_spd	The preferred speed for an H.323 call to this entry. If no speed is associated with the entry, then the value of the configuration variable *globaladdrmaxh323* is returned. The default is *384*.
h323_num	H.323 address or alias.
h323_ext	H.323 extension or E.164 number.
sip_spd	The preferred speed for a SIP call to this entry. If no speed is associated with the entry, then this is the same as the `h323_spd`.
sip_num	SIP address.
xmpp_addr	XMPP address, also known as the Jabber ID (JID).

Feedback Examples

- *speeddial names all size 4*
  returns
  speeddial names 0. name:"Evergreen" sys_label:"groupseries" type:video
  speeddial names 1. name:"ITP Staff Mtg" sys_label:"" type:group
  speeddial names 2. name:"Magnolia" sys_label:"groupseries"

```
type:video
speeddial names 3. name:"Vineyard" sys_label:"groupseries"
type:multicodec
speeddial names all done
```

Speed dial entries can link to either local or global directory entries and can be a local group.

- *speeddial names all 0 1*
  returns
  ```
  speeddial names 0. name:"Evergreen" sys_label:"groupseries"
  type:video
  speeddial names 1. name:"ITP Staff Mtg" sys_label:"" type:group
  speeddial names all 0 1 done
  ```
- *speeddial group*
  returns
  ```
  speeddial group "Monday Staff Mtg"speeddial multi sites 0. name:"Eng
  RPX" sys_label:"groupseries"
  speeddial multi sites 1. name:"Geno Alissi" sys_label:""
  speeddial multi sites 2. name:"Joseph Sigrist" sys_label:""
  speeddial multi sites 3. name:"TPW" sys_label:"groupseries"
  speeddial multi sites "Monday Staff Mtg" done
  ```

  The group query is the same as that for the local directory. It returns all the sites in the group.
- *speeddial address "Vineyard" "groupseries*
  returns
  ```
  speeddial address 0. name:"Vineyard" sys_label:"groupseries"
  codec:1
                          h323_spd:384 h323_num: h323_ext:44042
     speeddial address 1. name:"Vineyard" sys_label:"groupseries"
     codec:2
                          h323_spd:384 h323_num: h323_ext:44043
     speeddial address 2. name:"Vineyard" sys_label:"groupseries"
     codec:3
     h323_spd:384 h323_num: h323_ext:44044
     speeddial address name:"Vineyard" sys_label:"groupseries" done
  ```

  If the entry is an ITP system, the results include address information for each codec. If the entry has multiple endpoints of different types, the addresses for each endpoint are returned including a *sys_label* attribute to distinguish the endpoints. For Polycom RealPresence Resource Manager, *sys_label* is the type of endpoint, such as CMA Desktop.

Comments

You do not need to enclose a value in quotes unless it contains a space.

See Also

See the addrbook command on page 53 and gaddrbook command on page 116.

subnetmask

Sets or gets the subnet mask of the system.

Syntax

subnetmask get
subnetmask set [“xxx.xxx.xxx.xxx”]

Parameter	Description
get	Returns the current subnet mask.
set	Sets the subnet mask of the system when followed by the *”xxx.xxx.xxx.xxx”* parameter. To erase the current setting, omit *“xxx.xxx.xxx.xxx”*. This paramater is not allowed while in a call.
“xxx.xxx.xxx.xxx”	Subnet mask of the system.

Feedback Examples

- *subnetmask set 255.255.255.0*
  returns
  subnetmask 255.255.255.0
- *subnetmask get*
  returns
  subnetmask 255.255.255.0

Comments

After making a change, you must restart the system for the setting to take effect.

systemname

Sets or gets the name of the system.

Syntax

systemname get
systemname set "system name"

Parameter	Description
get	Returns the current setting.
set	Sets the system name to *"system name"*.
"system name"	Character string specifying the system name. Enclose the string in quotation marks if it includes spaces. Example: *"Polycom Group Series Demo"*

Feedback Examples

- *systemname set "Polycom Group Series Demo"*
  returns
  systemname "Polycom Group Series Demo"
- *systemname set get*
  returns
  systemname "Polycom Group Series Demo"

Comments

The first character must be a numeric (a digit) or an alphabetic (a letter) character including foreign language characters. The name can be any combination of alphanumeric characters and may be up to 30 characters in length. The system name cannot be blank.

systemsetting 323gatewayenable

Enables IP-to-IP calling through a gateway.

Syntax

systemsetting 323gatewayenable <True|False>
systemsetting get 323gatewayenable

Parameter	Description
True	Enables IP gateway calls.
False	Disables IP gateway calls.
get	Returns the current setting.

Feedback Examples

- *systemsetting 323gatewayenable True*
  returns
  systemsetting 323gatewayenable True
- *systemsetting get 323gatewayenable*
  returns
  systemsetting 323gatewayenable True

systemsetting cameracontent

Specifies Camera 1 as a People or Content source.

Syntax

systemsetting cameracontent <People|Content>
systemsetting get cameracontent

Parameter	Description
People	Specifies camera as a People source.
Content	Specifies camera as a Content source.
get	Returns the current setting.

Feedback Examples

- *systemsetting cameracontent People*
  returns
  systemsetting cameracontent People
- *systemsetting cameracontent Content*
  returns
  systemsetting cameracontent Content
- *systemsetting get cameracontent*
  returns
  systemsetting cameracontent Content

systemsetting cameracontent1

Specifies Camera 2 as a People or Content source.

Syntax

systemsetting cameracontent1 <People|Content>
systemsetting get cameracontent1

Parameter	Description
People	Specifies camera as a People source.
Content	Specifies camera as a Content source.
get	Returns the current setting.

Feedback Examples

- *systemsetting cameracontent1 People*
  returns
  systemsetting cameracontent1 People
- *systemsetting cameracontent1 Content*
  returns
  systemsetting cameracontent1 Content
- *systemsetting get cameracontent1*
  returns
  systemsetting cameracontent1 Content

Comments

This command is valid on Polycom RealPresence Group 500 and 700 systems only.

systemsetting cameracontent2

Specifies Camera 3 as a People or Content source.

Syntax

systemsetting cameracontent2 <People|Content>
systemsetting get cameracontent2

Parameter	Description
People	Specifies camera as a People source.
Content	Specifies camera as a Content source.
get	Returns the current setting.

Feedback Examples

- *systemsetting cameracontent2 People*
  returns
  systemsetting cameracontent2 People
- *systemsetting cameracontent2 Content*
  returns
  systemsetting cameracontent2 Content
- *systemsetting get cameracontent2*
  returns
  systemsetting cameracontent2 Content

Comments

This command is valid on Polycom RealPresence Group 700 systems only.

systemsetting cameracontent3

Specifies Camera 4 as a people or content source.

Syntax

systemsetting cameracontent3 <People|Content>
systemsetting get cameracontent3

Parameter	Description
People	Specifies camera as a people source.
Content	Specifies camera as a content source.
get	Returns the current setting.

Feedback Examples

- *systemsetting cameracontent3 People*
  returns
  systemsetting cameracontent3 People
- *systemsetting cameracontent3 content*
  returns
  systemsetting cameracontent3 Content
- *systemsetting get cameracontent3*
  returns
  systemsetting cameracontent3 People

Comments

This command is valid on Polycom RealPresence Group 700 systems only.

systemsetting connectionpreference

Specifies whether the system uses the Video Dialing Order or the Audio Dialing Order first when placing calls.

Syntax

systemsetting connectionpreference <VIDEO_THEN_AUDIO|AUDIO_THEN_VIDEO>
systemsetting get connectionpreference

Parameter	Description
VIDEO_THEN_AUDIO	Sets Video as the preferred call choice before Audio calls.
AUDIO_THEN_VIDEO	Sets Audio as the preferred call choice before Video calls.
get	Returns the current setting.

Feedback Examples

- *systemsetting connectionpreference VIDEO_THEN_AUDIO*
  returns
  systemsetting connectionpreference VIDEO_THEN_AUDIO
- *systemsetting get connectionpreference*
  returns
  systemsetting connectionpreference VIDEO_THEN_AUDIO

systemsetting dialingmethod

Specifies the preferred method for dialing various call types.

Syntax

systemsetting dialingmethod <Auto|Manual>
systemsetting get dialingmethod

Parameter	Description
Auto	Sets the dialing mode to Auto. Calls use the configured dialing order.
Manual	Sets the dialing mode to Manual. The system prompts the user to select the call type from a list when placing a call.
get	Returns the current setting.

Feedback Examples

- *systemsetting dialingmethod Auto*
  returns
  systemsetting dialingmethod Auto
- *systemsetting get dialingmethod*
  returns
  systemsetting dialingmethod Auto

systemsetting displayiconsincall

Specifies whether to display icons on the info bar when the system is in a call.

Syntax

systemsetting displayiconsincall <True|False>
systemsetting get displayiconsincall

Parameter	Description
True	Specifies to display the icons on the info bar while in a call.
False	Specifies to not display the icons on the info bar while in a call.
get	Returns the current setting.

Feedback Examples

- *systemsetting displayiconsincall True*
  returns
  systemsetting displayiconsincall True
- *systemsetting get displayiconsincall*
  returns
  systemsetting displayiconsincall True

systemsetting enablepolycommics

Specifies whether the Polycom C-Link 2 microphone arrays attached to the system are enabled.

Syntax

systemsetting enablepolycommics <True|False>
systemsetting get enablepolycommics

Parameter	Description
True	Enables Polycom microphones.
False	Disables Polycom microphones.
get	Returns the current setting.

Feedback Examples

- *systemsetting enablepolycommics True*
  returns
  systemsetting enablepolycommics True
- *systemsetting get enablepolycommics*
  returns
  systemsetting enablepolycommics True

systemsetting iph323enable

Allows the system to make IP calls.

Syntax

systemsetting iph323enable <True|False>
systemsetting get iph323enable

Parameter	Description
True	Enables IP call capability.
False	Disables IP call capability.
get	Returns the current setting.

Feedback Examples

- *systemsetting iph323enable True*
  returns
  systemsetting iph323enable True
- *systemsetting get iph323enable*
  returns
  systemsetting iph323enable True

systemsetting lineinlevel

Sets or returns the volume level for audio input 1.

Syntax

systemsetting lineinlevel {0..10}
systemsetting get lineinlevel

Parameter	Description
0..10	Sets the volume level for input 1. Valid range is 0 to 10.
get	Returns the current setting.

Feedback Examples

- *systemsetting lineinlevel 5*
  returns
  systemsetting lineinlevel 5
- *systemsetting get lineinlevel*
  returns
  systemsetting lineinlevel 5

systemsetting lineoutmode

Specifies whether the volume for a device connected to the audio line out connectors is variable or fixed.

Syntax

systemsetting lineoutmode <fixed|variable>
systemsetting get lineoutmode

Parameter	Description
fixed	Sets the volume to the audio level specified in the system interface.
variable	Allows users to set the volume with the remote control.
get	Returns the current setting.

Feedback Examples

- *systemsetting lineoutmode fixed*
  returns
  systemsetting lineoutmode fixed
- *systemsetting get lineoutmode*
  returns
  systemsetting lineoutmode fixed

systemsetting maxrxbandwidth

Specifies the maximum receive line speed between 64 kbps and 4096 kbps.

Syntax

systemsetting maxrxbandwidth [speed]
systemsetting get maxrxbandwidth

Parameter	Description
speed	Sets the maximum speed for receiving calls.
get	Returns the current setting.

Feedback Examples

- *systemsetting maxrxbandwidth 1920*
  returns
  systemsetting maxrxbandwidth 1920
- *systemsetting get maxrxbandwidth*
  returns
  systemsetting maxrxbandwidth 1920

systemsetting maxtxbandwidth

Specifies the maximum transmit line speed between 64 kbps and 4096 kbps.

Syntax

systemsetting maxtxbandwidth [speed]
systemsetting get maxtxbandwidth

Parameter	Description
speed	Sets the maximum speed for placing calls.
get	Returns the current setting.

Feedback Examples

- *systemsetting maxtxbandwidth 1920*
  returns
  systemsetting maxtxbandwidth 1920
- *systemsetting get maxtxbandwidth*
  returns
  systemsetting maxtxbandwidth 1920

systemsetting mediainlevel

Specifies the volume level for the media audio input.

Syntax

systemsetting mediainlevel <auto|0..10>
systemsetting get mediainlevel

Parameter	Description
auto	Allows the system software to adjust the input level.
0..10	Sets the volume level of the media input to the specified value.
get	Returns the current setting.

Feedback Examples

- *systemsetting mediainlevel 5*
  returns
  systemsetting mediainlevel 5
- *systemsetting get mediainlevel*
  returns
  systemsetting mediainlevel 5

systemsetting model

Returns the model of the RealPresence Group system.

Syntax

systemsetting get model

Parameter	Description
get	Returns the current setting.

Feedback Examples

systemsetting get model
returns
systemsetting model "RPG 500"

systemsetting primarycamera

Specifies which camera is the main camera.

Syntax

systemsetting primarycamera {1..4}
systemsetting get primarycamera

Parameter	Description
1..4	Sets the specified input as the primary camera (numbering convention matches the numbering in the on-screen user interface). Camera 3 and Camera 4 are available on Polycom RealPresence Group 700 systems only.
get	Returns the current setting.

Feedback Examples

- *systemsetting primarycamera 1*
  returns
  systemsetting primarycamera 1
- *systemsetting get primarycamera*
  returns
  systemsetting primarycamera 1

Comments

This command causes the system to restart.

The primary camera is active when the Polycom RealPresence Group system initializes. Its source is automatically set to People.

systemsetting remotechannelid

Specifies the IR identification channel to which the Polycom RealPresence Group system responds.

Syntax

systemsetting remotechannelid {0..15}
systemsetting get remotechannelid

Parameter	Description
0..15	Sets the channel ID to be used with the remote control.
get	Returns the current setting.

Feedback Examples

- *systemsetting remotechannelid 7*
  returns
  systemsetting remotechannelid 7
- *systemsetting get remotechannelid*
  returns
  systemsetting remotechannelid 7

systemsetting sipaccountname

Sets or returns the SIP user account name.

Syntax

systemsetting sipaccountname <"sipuser">
systemsetting get sipaccountname

Parameter	Description
"sipuser"	Specifies the user account name.
get	Returns the current setting.

Feedback Examples

- *systemsetting sipaccountname polycom_user*
  returns
  systemsetting sipaccountname polycom_user
- *systemsetting get sipaccountname*
  returns
  systemsetting sipaccountname polycom_user

systemsetting sipdebug

Sets or retrieves the state of SIP debug tracing in the system log.

Syntax

systemsetting sipdebug <True|False>
systemsetting get sipdebug

Parameter	Description
True	Enables SIP debug tracing in the system log.
False	Disables SIP debug tracing in the system log.
get	Returns the current setting.

Feedback Examples

- *systemsetting sipdebug True*
  returns
  systemsetting sipdebug True
- *systemsetting get sipdebug*
  returns
  systemsetting sipdebug True

systemsetting sipenable

Enables or disables SIP calling.

Syntax

systemsetting sipenable <True|False>
systemsetting get sipenable

Parameter	Description
True	Enables SIP calling.
False	Disables SIP calling.
get	Returns the current setting.

Feedback Examples

- *systemsetting sipenable True*
  returns
  systemsetting sipenable True
- *systemsetting get sipenable*
  returns
  systemsetting sipenable True

systemsetting sippassword

Sets the SIP server password.

Syntax

systemsetting sippassword <"password">

Parameter	Description
"password"	Password used to register with SIP server.

Feedback Examples

- *systemsetting sippassword secret*
  returns
  systemsetting sippassword secret

systemsetting sipproxyserver

Sets or retrieves the address of the SIP proxy server.

Syntax

systemsetting sipproxyserver <address>
systemsetting get sipproxyserver

Parameter	Description
address	Address of the proxy server. Format can be either an actual IP address or a valid DNS hostname (PQP or FQP).
get	Returns the current setting.

Feedback Examples

- *systemsetting sipproxyserver pserver.abc.com*
  returns
  systemsetting sipproxyserver pserver.abc.com
- *systemsetting get sipproxyserver*
  returns
  systemsetting sipproxyserver pserver.abc.com

systemsetting sipregistrarserver

Sets or retrieves the address of the SIP registrar server.

Syntax

systemsetting sipregistrarserver <address>
systemsetting get sipregistrarserver

Parameter	Description
address	Address of the registrar server. Format can be either an actual IP address or a valid DNS hostname (PQP or FQP).
get	Returns the current setting.

Feedback Examples

- *systemsetting sipregistrarserver pserver.abc.com*
  returns
  systemsetting sipregistrarserver pserver.abc.com
- *ssystemsetting get sipregistrarserver*
  returns
  systemsetting sipregistrarserver pserver.abc.com

systemsetting siptransportprotocol

Indicates the protocol the system uses for SIP signaling.

Syntax

systemsetting siptransportprotocol <Both|TCP|UDP>
systemsetting get siptransportprotocol

Parameter	Description
Both	Specifies to use both TCP and UDP as the SIP protocol.
TCP	Specifies to use TCP as the SIP protocol.
UDP	Specifies to use UDP as the SIP protocol.
get	Returns the current setting.

Feedback Examples

- *systemsetting siptransportprotocol TCP*
  returns
  systemsetting siptransportprotocol TCP
- *systemsetting get siptransportprotocol*
  returns
  systemsetting siptransportprotocol TCP

systemsetting sipusername

Specifies the system's SIP name.

Syntax

systemsetting sipusername ["name"]
systemsetting get sipusername

Parameter	Description
"name"	Specifies to use both TCP and UDP as the SIP protocol.
get	Returns the current setting.

Feedback Examples

- *systemsetting sipusername Polycom*
  returns
  systemsetting sipusername Polycom
- *systemsetting get sipusername*
  returns
  systemsetting sipusername Polycom

systemsetting stereoenable

Specifies that Polycom StereoSurround is used for all calls.

Syntax

systemsetting stereoenable <True|False>
systemsetting get stereoenable

Parameter	Description
True	Enables Polycom stereo.
False	Disables Polycom stereo.
get	Returns the current setting.

Feedback Examples

- *systemsetting stereoenable True*
  returns
  systemsetting sstereoenable True
- *systemsetting get stereoenable*
  returns
  systemsetting stereoenable True

systemsetting telnetenabled

Sets or gets the telnet ports.

Syntax

systemsetting telnetenabled <on|off|port24only>
systemsetting get telnetenabled

Parameter	Description
get	Returns the current setting.
on	Enables port 23 and port 24.
off	Disables port 23 and port 24.
port24only	Enables port 24 and disables port 23.

Feedback Examples

- *systemsetting telnetenabled on*
  returns
  systemsetting telnetenabled on
- *systemsetting get telnetenabled*
  returns
  systemsetting telnetenabled on

Comments

After making a change, you must restart the system for the setting to take effect.

systemsetting transcodingenabled

Specifies whether the system allows each far-site system to connect at the best possible call rate and audio/video algorithm.

Syntax

systemsetting transcodingenabled <True|False>
systemsetting get transcodingenabled

Parameter	Description
True	Enables transcoding.
False	Disables transcoding.
get	Returns the current setting.

Feedback Examples

- *systemsetting transcodingenabled True*
  returns
  systemsetting transcodingenabled True
- *systemsetting get transcodingenabled*
  returns
  systemsetting transcodingenabled True

systemsetting uspairingenabled

Detects and pair a RealPresence Group system from the RealPresence Mobile application on an Apple® iPad tablet.

Syntax

systemsetting uspairingenabled <Disabled|Manual|Auto>
systemsetting get uspairingenabled

Parameter	Description
Disabled	Disables SmartPairing in automatic mode. You can still enter the IP address and admin password in the RealPresence Mobile application in order to pair with the system.
Manual	Enables SmartPairing in manual mode. You must enter the admin password in the RealPresence Mobile application in order to pair with the system.
Auto	Enables a RealPresence Mobile application to automatically detect and pair with the system when in range. The application automatically unpairs when out of range.
get	Returns the current setting.

Feedback Examples

- *systemsetting uspairingenabled Manual*
  returns
  systemsetting uspairingenabled Manual
- *systemsetting get uspairingenabled*
  returns
  systemsetting uspairingenabled Auto

systemsetting webenabled

Specifies whether to allow remote access to the system using the web interface.

Syntax

systemsetting webenabled <True|False>
systemsetting get webenabled

Parameter	Description
True	Enables remote access from the web interface.
False	Disables remote access from the web interface.
get	Returns the current setting.

Feedback Examples

- *systemsetting webenabled True*
  returns
  systemsetting webenabled True
- *systemsetting get webenabled*
  returns
  systemsetting webenabled True

systemsetting whitebalancemode

Sets or returns the user white balance mode for a Polycom camera on Camera port 1.

Syntax

systemsetting whitebalancemode <atw|indoor|outdoor|awc>
systemsetting whitebalancemode <3680K|4160K|4640K|5120K>
systemsetting get whitebalancemode

Parameter	Description
<atw|indoor|outdoor|*awc>*	*atw*–Manual one touch white balance indoor–Indoor lighting outdoor–Outdoor lighting *awc*–Automatic white balance
<3680K|4160K|4640K|5120K>	*3680K*--3680° Kelvin *4160K*--4160° Kelvin *4640K*--4640° Kelvin *5120K*--5120° Kelvin
get	Returns the current setting.

Feedback Examples

- *systemsetting whitebalancemode awc*
  returns
  systemsetting whitebalancemode awc
- *systemsetting get whitebalancemode*
  returns
  systemsetting whitebalancemode awc

systemsetting whitebalancemode1

Sets or returns the user white balance mode for a Polycom camera on Camera port 2.

Syntax

systemsetting whitebalancemode1
<atw|indoor|3680K|4160K|4640K|5120K|outdoor|awc>
systemsetting get whitebalancemode1

Parameter	Description
<atw|indoor|*3680K*|*4160K*|*4640K*|*5120K*|outdoor|*awc>*	*atw*–Manual one touch white balance indoor—Indoor lighting *3680K*—3680° Kelvin *4160K*—4160° Kelvin *4640K*—4640° Kelvin *5120K*–5120° Kelvin outdoor—Outdoor lighting *awc*—Automatic white balance
get	Returns the current setting.

Feedback Examples

- *systemsetting whitebalancemode1 awc*
  returns
  systemsetting whitebalancemode1 awc
- *systemsetting get whitebalancemode1*
  returns
  systemsetting whitebalancemode1 awc

usegatekeeper

Sets or gets the gatekeeper mode.

Syntax

usegatekeeper <get|off|specify|auto>

Parameter	Description
get	Returns the current setting. Note: A gatekeeper is not required to make IP-to-IP LAN calls. In these situations, select the *off* option.
off	Select this option if no gatekeeper is required or if you make IP-to-IP LAN calls.
specify	Specifies a gatekeeper. If this option is selected, you must enter the gatekeeper IP address or name using the gatekeeperip command on page 125.
auto	Sets the system to automatically find an available gatekeeper.

Feedback Examples

- *usegatekeeper off*
  returns
  usegatekeeper off
- *usegatekeeper specify*
  returns
  usegatekeeper specify
- *usegatekeeper auto*
  returns
  usegatekeeper auto
- *usegatekeeper get*
  returns
  usegatekeeper auto

See Also

See the gatekeeperip command on page 125.

vcbutton

Controls a content video source. It can also register or unregister the API session to receive notification of content events.

Syntax

vcbutton play {1..4}
vcbutton <get|stop|register|unregister>
vcbutton map <get|{1..4}>
vcbutton source get

Parameter	Description
play	Starts sending the content from the specified content video source. If no content video source is specified, starts sending content from the default content video source. Starts content from any content video source without the need to change source mapping and without needing to stop the currently playing content video source. Fails and does not stop the current content video source if the specified content video source is not valid. Stops the current content video source if the specified content video source is valid but is currently unavailable.
{1..4}	Specifies a content video source. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
get	Returns the current setting (play or stop).
stop	Stops sending content from the content video source that is currently playing.
register	Registers the API session to receive notifications about content events.
unregister	Unregisters the API session to receive notifications about content events.
map get	Gets the content video source currently specified for control.
map {1..4}	Specifies the content video source to control. Note: This parameter is only necessary if no video source was specified when using the vcbutton play command. Camera 3 and Camera 4 are available on RealPresence Group 700 systems only.
source get	Gets the content video source that is currently playing.

Feedback Examples

If not registered for notifications:

- *vcbutton play 4*
  returns
  vcbutton play 4
  vcbutton play succeeded
  camera near 4

If registered for notifications:

- *vcbutton play 4*
  returns
  Control event: vcbutton play
  Control event: vcbutton source 4
  Control event: vcbutton play
  vcbutton play 4
  vcbutton play succeeded
  camera near 4
- *vcbutton play 3*
  returns
  vcbutton play failed
- *vcbutton play*
  returns
  Control event: vcbutton play
  vcbutton play succeeded
- *vcbutton play*
  returns
  vcbutton play failed
- *vcbutton play 2*
  returns
  error: input 2 is not a content source
  vcbutton play failed
- *vcbutton play 5*
  returns
  error: invalid value! (valid ranges 1..4)
  vcbutton play failed
- *vcbutton register*
  returns
  vcbutton registered
- *vcbutton stop*
  returns
  Control event: vcbutton stop
  Camera near none
  vcbutton stop
  vcbutton stop succeeded

- *vcbutton get*
  returns
  vcbutton stop
  vcbutton get succeeded
- *vcbutton source get*
  returns
  vcbutton source get 1
  vcbutton source get succeeded
- *vcbutton source get*
  returns
  vcbutton source get none
  vcbutton source get succeeded

Polycom recommends registering for notifications. If vcbutton register is used for notifications, the following responses occur.

- Pressing the play button at the far site
  returns
  Control event: vcbutton farplay
- Pressing the stop button on the local system
  returns
  Control event: vcbutton stop

version

Returns the current system's version information.

Syntax

version

Feedback Examples

- *version*
  returns
  version "release 4.0 - 30Nov2012 11:30"

vgaqualitypreference

Sets or gets the bandwidth split for people and content video.

Syntax

vgaqualitypreference get
vgaqualitypreference <content|people|both>

Parameter	Description
get	Returns the current setting.
content	Sets the VGA quality preference to content video.
people	Sets the VGA quality preference to people video.
both	Sets the VGA quality preference to both people and content video.

Feedback Examples

- *vgaqualitypreference people*
  returns
  vgaqualitypreference people
- *vgaqualitypreference content*
  returns
  vgaqualitypreference content
- *vgaqualitypreference both*
  returns
  vgaqualitypreference both
- *vgaqualitypreference get*
  returns
  vgaqualitypreference both

videocallorder

Sets the video call order of the specified protocol to the specified slot.

Syntax

videocallorder <h323|sip> <1|2|3|4>

Parameter	Description
h323	Specifies IP protocol.
sip	Specifies SIP protocol.
1|2|3|4	Sets the order in which the specified protocol is attempted when a video call is placed.

Feedback Examples

- *videocallorder h323 1*
  returns
  videocallorder h323 1
- *videocallorder sip 2*
  returns
  videocallorder sip 2

See Also

To set the dialing order for audio-only protocols, use the volume command on page 229.

volume

Sets or gets the call audio volume (not sound effects) on the system or registration for volume changes.

Syntax

volume <register|unregister>
volume <get|up|down|set {0..50}>
volume range

Parameter	Description
register	Registers to receive notification when the volume changes.
unregister	Disables register mode.
get	Returns the current volume level.
up	Increases the audio volume by 1.
down	Decreases the audio volume by 1.
set	Sets the volume to a specified level. Requires a volume setting from *{0..50}*.
range	Returns the valid volume range available to the user.

Feedback Examples

- *volume register*
  returns
  volume registered
- If entered again,
  volume register
  returns
  info: event/notification already active:volume
- *volume set 23*
  returns
  volume 23
- *volume up*
  returns
  volume 24
- *volume get*
  returns
  volume 24

Comments

Changes the call audio volume (not sound effects) on the system.

wake

Wakes the system from sleep mode.

Syntax

wake

Feedback Examples

- *wake*
  returns
  wake
  and wakes the system from sleep mode

See Also

To put the system in sleep mode, use the sleep command on page 174.

wanipaddress

Sets or gets the WAN IP address.

Syntax

wanipaddress get
wanipaddress set ["xxx.xxx.xxx.xxx"]

Parameter	Description
set	Sets the WAN IP address when followed by the *"xxx.xxx.xxx.xxx"* parameter. To erase the current setting, omit the *"xxx.xxx.xxx.xxx"* parameter.
get	Returns the WAN IP address.
"xxx.xxx.xxx.xxx"	WAN IP address.

Feedback Examples

- *wanipaddress set 192.168.1.101*
  returns
  wanipaddress 192.168.1.101
- *wanipaddress get*
  returns
  wanipaddress 192.168.1.101

Comments

The **NAT Configuration** option on the Firewall screen must be set to **Auto**, **Manual**, or **UPnP** for this option to be available.

webmonitoring

Enables or disables the ability to view video from a Polycom Real Presence Group system via the web interface. This command is available in serial API sessions only.

Syntax

webmonitoring "remoteaccesspasswd" <yes|no>

Parameter	Description
"remoteaccesspasswd"	Current remote access password.
yes	Allows Polycom Real Presence Group video to be viewed via the web interface.
no	Disables Polycom Real Presence Group video from being viewed via the web interface.

Feedback Examples

- *webmonitoring "1234" yes*
  returns
  webmonitoring yes
- *webmonitoring "1234" no*
  returns
  webmonitoring no

Comments

The *webmonitoring* setting can be controlled by a provisioning server. For this reason, provisioned systems do not allow modification to the *webmonitoring* setting.

webmonitoring has no 'get' operation. Use the remotemonenable command on page 164 instead.

If the system has no remote access password, enter a pair of single quotes ('') to denote an empty password.

whoami

Displays the same initial banner information as when the RS-232/Telnet session was started with the system.

Syntax

whoami

Feedback Examples

- *whoami*
  returns
  ```
  Hi, my name is: Polycom Group Series Demo
  Here is what I know about myself:
  Model: Group Series 500
  Serial Number: 82065205E72E1
  Software Version: 1.0
  Build Information: root on domain.polycom.com
  Contact Number: <empty>
  Time In Last Call: 0:43:50
  Total Time In Calls: 87:17:17
  Total Calls: 819
  SNTP Time Service: auto insync ntp1.polycom.com
  Local Time is: Wed, 30 Nov 2008 10:41:46
  Network Interface: NONE
  IP Video Number: 192.168.1.101
  MP Enabled:  AB1C-2D34-5EF6-7890-GHI1
  H323 Enabled: True
  HTTP Enabled: True
  SNMP Enabled: True
  ```

Comments

The response can vary depending on your system configuration.

A

Room Design and Layout

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For clarity of discussion, we have divided this section into the following sub-sections:

- Room construction, including wall construction, windows and window treatments, ceilings and HVAC;
- Interior design and finishes;
- Furniture design, including placement and layout;
- Room acoustics and acoustic treatment; and
- Room lighting.

The initial layout and construction of the space affects all the elements that are discussed in other sections of this book [*Basics of Audio and Visual Systems Design*], including acoustic characteristics and performance, general and ambient light control, and overall comfort.

Room Requirements

We begin with general room requirements. The total floor space required for VC is much greater than we have become used to for general local presentation and meeting. In architectural terms it is not uncommon to find a rule-of-thumb applied that allows for up to 15 square feet of floor space per participant in a traditional presentation or meeting room. If there is a front-of-room presenter position at a podium, and if there is some use of in-room technology (projection devices, whiteboards, etc.), then this figure may increase to as much as 20 square feet of floor space per participant, but rarely any more than that.

It is here that we have our first conflict. In videoconferencing we have to consider not only the issues related to local viewing and hearing but also the issues of being seen and heard by people at the far-end of the connection. This

means that we must consider sight lines and angles of participant interaction that go beyond traditional presentation environments. As a rule we should allow not less than 30 square feet and generally not more than 45 square feet of floor space per participant in a videoconference space. Though two to three times what we are used to allowing, this amount ensures that local participants will see one another and the display of local and remote electronic images. It also ensures that participants at the far-end will see and hear everyone arriving at their location via the connection, and that all will see and hear at a level of quality that does not detract and, in the best deployment, even enhances the communications.

Having determined the required size of the space, we can move on to the actual renovation or construction of the space itself. Again the requirements here are generally less forgiving than those applied in local-only meeting spaces. In the most basic sense this is because, by sheer definition, at least some of the participants in a conference-based meeting are not actually in the room. As such, we cannot count on the typical human mechanisms (the human ears and brain and our ability to locate sound in three-dimensional space) to manage any acoustic anomalies.

If we are, for example, in a room that is adjacent to a double-door entry to the building, then knowing this we can take the inevitable doorway noise into account as we filter the sounds we hear both inside the meeting room and coming from that adjacent entryway. Within our own physical and local environment we have the ability to isolate local unwanted noise from local "sound of interest" (voices of other people, etc.), and place the unwanted noise in an inferior position in our conscious thought pattern. We are able to do this because we know where the noise is coming from and (usually) what is causing it. We may be annoyed by the noise, but we generally are able to ignore it. As soon as we add conferencing to the meeting equation, however, we add the element of electronic pickup and reproduction of all sounds. For the people at the far-end, the unwanted noise is much more difficult (if not impossible) to ignore. They do not have the ability to isolate it in three-dimensional space (the microphones eliminate the spatial reference) and they often do not know what is making the noise. The brain of the far-end participant will devote more and more conscious observation and thought energy to trying to work out these elements, in an attempt to isolate and finally "ignore" the unwanted sound. We have already stated that they cannot do this, however, due to the electronic separation between the locations. Thus they are left with an impossible task that takes up more and more thought energy, eroding the perceived quality of the spoken communication over time. Frustration and exasperation quickly set in, and the communication flow quickly falls apart.

This, then, is one reason we must pay even greater attention to the acoustic and visual issues for any presentation space that will be connected via conference to another. Minor, seemingly insignificant anomalies we often ignore in the local environment become significant impediments to smooth communication with people at the far-end of any connection. In short, we must always ask ourselves, "What does this look like and sound like to the people at the farend?"

In order to guarantee that the final conference environment will have a solid foundation, we begin with the construction of the walls, floors and ceilings for videoconference spaces.

Walls

Conference room walls should be built from slab to slab. That is, there should be no gaps from the concrete of one floor to the concrete of the next floor. Resilient, gypsum board mountings should be used to close any gaps. The thickness of the gypsum board should be 5/8″ or more (one layer of 5/8″ and one layer of 1/2″ bonded together would be ideal) on the inside of the room, with 1/2″ thick (or as required by local building codes) appropriate for the outside of the walls. There should always be a difference in thickness between the materials used on the inner versus the outer walls. That difference in thickness subdues mechanical coupling (vibration) between the two layers. A good overall wall thickness is 6″. It is recommended that "offset stud" construction be used, typically a 6″ header and footer with 3.5″ verticals attached in an alternating pattern one toward the outside of the footer, the next toward the inside and so on.

Fiberglass dense batting or mineral rock wool, 4″ to 6″ thick (the equivalent of R-11 to R-13) should be placed in the wall space. The thickness of the batting is not critical. The critical aspect is that it must be loosely placed in the wall space, not compacted to fit. The resultant wall will have excellent acoustic isolation from the outside world. More significant acoustic isolation can be achieved by placing an additional barrier layer within the wall space. Typically this barrier will be made of a dense polymer material, about 1/8″ thick, and the improvement regarding loss of sound transmitted through the wall will be roughly a factor of 10. These materials are available from a variety of manufacturers.

Windows

Windows usually present the equivalent of an acoustic nightmare (as well as altering the way a camera renders colors and brightness). They not only transmit room sound, but also allow unwanted outside noise to intrude on the conference space. In the event that windows cannot be avoided, it becomes essential that window treatment of some sort be used. This treatment should match the interior look and feel of the space, while providing a high level of sound and light block. Typically a heavyweight drape (24 ounces or more) of heavy fullness (not less than 6″ fullness on not less than 8″ centers per fold) is preferred. In all cases, the use of sheer draperies or standard vertical or horizontal blinds should be avoided, due to their inherent inefficiency in blocking sound and light, and the fine lines they create within the camera field of view.

Ceiling Tiles

These should be high-quality acoustic tiles, ideally 1"- thick compressed densecore fiberglass. An added benefit of this kind of ceiling tile is that it works well with the indirect lighting as specified elsewhere in this section. To reduce any extraneous noise from leaving or entering the room via the ceiling space, the ceiling tiles can be blanketed completely from the plenum side, with a minimum of 6"- thick unfaced dense fiberglass batting or mineral rock wool, (the equivalent of R-15 to R-19). Here again, a barrier layer will improve the performance, but all local building codes must be followed for allowable materials in the various aspects of room acoustic modifications. To make entry and exit from the ceiling space easier, the blanket and barrier do not need to rest on the ceiling tiles, but may be suspended above it.

Air Conditioning

It is critical that all air-handling equipment (blowers, heat exchangers, solenoid valves, etc.) be located outside the physical meeting room space. This will prevent the noise burden associated with such equipment from affecting the participants of any meetings held in the room. Location of air-handling equipment within the ceiling space of a conference room often renders that room unusable for video or audio-only conferencing.

The air vents should be of open construction to eliminate "wind noise" while the system is running. These vents normally are specified as "low-velocity" diffusers. The number of air vents within the room should be sufficient to maintain a consistent temperature throughout the space. All HVAC ducts and diffusers should be oversized for the general application in the space, with minimum 2' diameter insulated flexible ducts and matching 2' noise dampening diffusers generally best. All ducts should be installed with gradual bends and curves rather than rigid 90-degree corners. This will minimize "thunder" sounds as the initial air pushes through the ductwork and into the room.

There should be a thermostat to control this specific room system independently of the rest of the building, and that control should be located within the room.

Important: Allow an additional 5,000 BTU of cooling capacity for a standard "roll-about" singlemonitor VC system with extended in-room peripherals (PC, document camera, scan converter, etc.) and a minimum of 10,000 BTU for a dual display multimedia presentation system with large screen displays. For the comfort of the participants, the room must accommodate these heat loads, plus the heat load of a room full of people, with minimal temperature rise.

Interior Design and Finishes

Wall colors within the field of view of the camera have a significant impact on the far-end perception of the room video quality. Certain colors are better suited to video rooms than others. The electronics and software of the videoconferencing system "builds" the images at the far-end from a gray/blue reference image. When there is a minimal difference between the room background and the reference image color, the codec has an easier time turning the image into numbers, with the result that the far-end will see a much higher quality video presentation. In general, light gray with just a touch of blue seems to work best. For rooms that have marginal lighting, slightly darker colors are quite useful.

In keeping with these color recommendations, the acoustic panels (discussed elsewhere in this section) should be ordered in light colors such as silver-gray, quartz or champagne for panels within the camera field of view. For aesthetics, however, panels may be alternated in color along the wall.

Furniture

As we have noted, VC rooms should be slightly on the large side for the typical number of attendees. The placement of furniture should present a natural rapport with the videoconference system, but shouldn't preclude the local interaction of conference participants. Doorways used for access to the space usually should be within the view of one of the camera presets to prevent the perception from the far-end that people could come into their meeting unseen. Doorways should not, however, be in constant, direct view of the camera system, as this may cause unwanted distractions and movement of people in the picture field.

Any tables within the conference environment should have a light top surface. Glossy tops should be avoided, as should strong colors or any bold wood grain. If glossy or saturated color surfaces are unavoidable, then proper lighting can help reduce (but not necessarily eliminate) their ill effects. The best table surface color is a flat satin finish, in neutral gray. In cases where the worst possible surfaces are present, the proper surface color effect can be achieved by using a table covering, put in place only when the room is being used for videoconferencing. This will, however, create problems related to the use of access ports in the tables or movement of end-user items across the surface.

Acoustics

Additional general elements related to the interior finish details for the space include acoustics. In terms of ambient noise level, the acoustic design goal for any conference- enabled room is at least NC-30 (NoiseCriteria-30). This level of specification dictates a very quiet space (somewhere around 40-dBCSPL

ambient noise level). A room built to the description found elsewhere in this section will usually fall between NC-30 and NC-35. The actual NC value is not critical; what is important is that the room be built with the intent and care required to achieve the low noise rating. Typically in architectural design, a site evaluation and analysis are required to certify the noise performance of a given space. The quieter the room, the easier it is to hear others in the same room as well as be heard by others who are participating via conference connection to a far-end location (or locations).

Almost every conference room of medium to large size (larger than 12'x15') requires some level of acoustic treatment to provide good speech-rendering to other conference sites. The quality differences lie in the areas of intelligibility and consistency of loudness as presented to the far-end. While the people at the far-end may hear the sounds coming to them, it may be hard for them clearly to distinguish all of the vowels, consonants, inflections and nuances of actual human speech communication. (We all know that it is not simply what you say but how you say it—i.e., the inflections and intonations—that makes the difference in perceived meaning in human communications.)

Good audio practice dictates that the treated surfaces be composed of at least two nonparallel walls. And, as the VCS hardware is a potential source of distracting fan noises, the walls to be treated should include the wall immediately behind the VCS hardware, whenever this hardware is within the conference room proper. To help prevent meeting audio from leaking into adjoining hallways or offices, the walls along those areas also should be treated.

Approximately 50 percent of the wall area needs be covered with acoustic panels. The type recommended is 1" thick compressed, dense-core fiberglass, fabric-covered, or equivalent, with a SABIN (sound absorption index) value of 0.9 average. This specification is sometimes referred to as NRC (noise reduction coefficient). If reduction of sound passing through is required, then an additional barrier layer is laminated to the dense-core material, usually 3/8" thick fiber compression board. The barrier layer is placed against the existing wall material, then the acoustic absorption panels are placed on the interior-room side of that. The barrier panels will have a SABIN of 0.9, but will have an additional specification of an STC (sound transmission coefficient) of 20. STC is a measure of the amount of reduction in loudness of sound passing through the material. Having an STC rating of 20 means there is a factor of 10 reduction in the amount of sound passing through that material. A high-quality conference room wall usually has an STC of 60 or more—that is, less than 1/1,000 of the sound in the room leaks through the wall.

Room Lighting

The brightness of the lighting in a videoconference room plays an important role in determining the far-end view of the meeting. When there are low to moderate amounts of light—20fc to 35fc (footcandles), typical office lighting—the distance range of "in focus" objects (depth-of-field) usually is

only 2′ or 3′ from nearest in-focus to furthest in-focus. With bright light (70fc or more) the range of in-focus objects can more than double. Participants at the far-end will see more people in sharp focus, and the codec will have an easier time encoding the image.

Bright standard direct fluorescent lighting has the undesirable side effect of being harsh for the local participants. In addition, the direct down lighting casts significant "drop shadows." The result is undue stress among participants.

The best plan for videoconferencing is to use indirect lighting for 80 to 85 percent of the light, and evenly distributed direct lighting for the remaining 15 to 20 percent. The indirect light will help minimize shadows on the faces of the participants, and make the room more comfortable for viewing the far-end on the TV monitor. The direct light can be used to create backlight separation between foreground and background objects or surfaces.

There should be not less than 55fc and ideally as much as 75fc of light (770lux) on the faces of the participants in the facial field as viewed by the camera in the conference space. The light should be completely even across the field of measure or view, and of one consistent color temperature.

To best meet these requirements, indirect fluorescent lighting most often is recommended. This type of lighting works by using the upper walls and ceiling as diffuse reflectors for the light. The usual recommended color temperature for these is 3,000 to 3,800 degrees Kelvin. If there is a significant quantity of outdoor light entering the room, the lamps should be more than 5,500 degrees Kelvin.

Light Fixtures

The light fixtures generally recommended for indirect lighting are available from a number of manufacturers. They typically are three-tube, 8" oval indirect up-lights, though they may take the form of chandelier-style pendant lights, wall sconces, cove lights or flushmounted specialized troughs. Many manufacturers work closely with contractors and lighting designers to ensure that the correct light levels and shadow-free zones are designed into the room, especially when used for videoconferencing. Lamps for these fixtures are available in a variety of specified color temperatures from numerous manufacturers, including Sylvania, General Electric and Osram/Phillips. Indirect fixtures are available in a number of different designs or "looks," and can be purchased in configurations that will complement and not detract from the interior design of the space.

Lighting layout recommendations and determination of the number of fixtures needed are handled either by the architectural design firm or by submitting a complete floor plan, including reflected ceiling, walls and furniture placement, to fixture vendors. The vendors will analyze the plans and return a finished lighting layout to the customer, detailing the number of fixtures, placement and required wiring.

It is important to remember that the use of traditional meeting room downcans—even those that have color-corrected light sources—for any lighting in the field of view that may include human faces is to be avoided at all costs. These will result in extremely uneven fields of light, or pools, and heavy, unnatural shadows on the faces of the participants.

Room Preparation Conclusion

When we follow the above guidelines we dramatically improve the odds for success in the final deployment of live bi-directional conference-based human communications. An added benefit is that this approach dramatically enhances the effectiveness of the room as it operates for more traditional meetings and presentations. The environment is more comfortable and flexible, and less dependent on specialized electronics for "fixing" deficiencies in the environment.

Audio Elements

Once the space is prepared, we can focus on integration of the various audiovisual tools within the environment: audio, video and control.

Audio Input

The primary input device for the audio portion of any conference system is the microphone. Elsewhere in this book [*Basics of Audio and Visual Systems Design*] we have discussed how these devices operate within a given acoustic environment. We turn now to a short discussion of how these elements operate within a conference environment, where such factors as "three-to-one" rules and "critical distance" often are pushed to the limit or violated entirely.

When sound travels in a room, it follows "the inverse square law." This means that the sound level heard at a microphone drops by a factor of four every time the distance doubles. Another important consideration in room audio design is the concept of "critical distance," or the distance at which the loudness of the room background noise plus reverberation is less than one tenth of the loudness of voices getting to a particular microphone. (This definition is the result of research conducted by Don and Carolyn Davis. that is referenced in the chapter "Designing for Intelligibility" in the Handbook for Sound Engineers.[1])

1. Davis, Don and Carolyn. "Designing for Intelligibility" in Handbook for Sound Engineers: The New Audio Cyclopedia, ed. Glen Ballou (Indianapolis: Howard Sams & Co., 1991), 1279-1297.

As an example, we will work with a room having an ambient noise level of approximately 60dBA-SPL. A person speaking in a normal voice is 72dBA-SPL at about 2' distance. At 4' the loudness drops to approximately 66dBA-SPL. This already is farther than the critical distance criteria allow, given the ambient noise level. At 8' distance, a normal speaking voice is approximately 60dBA-SPL. Now the voice energy and the room background noise are about equal. For "send" audio systems in a room to work correctly, therefore, the room noise level would have to be below 40-45dBA-SPL at the microphones at all times. This gives us some measure by which we can begin to plan the microphone array within a space, including selection based on pickup pattern, sensitivity, noise rejection and signal-to-noise in relation to the ambient noise floor or level within the space. The good news is that a room designed and built as described in this section will provide an acoustic space where almost any properly configured and installed audio system can operate with very good results.

Perhaps the most difficult issue for any room designer or system planner is actual microphone placement within the space. Given the fact that many people view conference table space as sacred (to be used for papers, laptops, coffee cups and other end-user items), there often is a great deal of pressure to place the local microphones on the ceiling instead of on the table surface. But this approach must be taken with great caution. We have already seen the dramatic impact of changes in the distance between people (their mouths) and the microphone. Ceiling systems generally place microphones farther away from the participants' mouths, not closer; critical distance calculations may eliminate ceiling placement from consideration for this reason alone. In addition, the ceiling surface generally is one of the noisiest areas of the room. Proximity to HVAC ducts and vents, attachment of tiles and runners to building members that are prone to vibration and shaking, and proximity to noise from other spaces migrating through the plenum make this area one of the least desirable for placement of microphones. This doesn't, however, keep people from looking at this broad open surface as the best place for microphones, to "get them off the table."

If ceiling placement is chosen, the system planner must select the components with great care from a manufacturer that specializes in this type of audio voice reinforcement. The manufacturer must be skilled in live audio and capable of installing the components (that is, being both able and willing to locate microphones at precisely measured distances from speakers, and locating those speakers at precisely measured intervals from each other and from the walls) to extremely tight tolerances. The system provider must fully inform the endusers of the potential downside effects of this approach. In any event, simply mounting a standard tabletop microphone on the ceiling tiles or implementing this solution in an ambient noise environment of 45dBA-SPL or greater will all but guarantee costly failure. No amount of post-microphone processing will fix the problems.

Audio Output

For conference communication we do not really care about producing the thundering roar of jet aircraft engines, or other sounds reproduced on TV or in the movies. We are interested in reproducing the human voice. The tone, intonation, pitch and level of people speaking from the far-end should sound as much as possible like the sound they would make if they were speaking in the room. Given what has been covered in other sections of this book [*Basics of Audio and Visual Systems Design*], we will touch base here on a couple of simple, basic elements of the speaker technology we deploy in the conference room. These basics fall into three subcategories: direction, power and range/frequency response.

Direction

As human beings, we feel most comfortable when the voice we hear appears to come from the same direction as the image of the person speaking. This means that reliance on ceiling speakers alone is not an ideal practice when the system is used for videoconferencing. In many small and medium-sized systems, front-firing speakers alone can provide proper direction and adequate coverage. Larger rooms (greater than 12'x15') probably need both front-firing and side or top-fill speakers in order to maintain proper coverage at nominal power levels.

In planning systems for larger rooms, we need to take advantage of the HAAS effect. Basically stated, this is the human brain's interpretation of sound direction when the same sound arrives at the ear from two or more directions within a certain time period. We attribute the direction of the sound to the direction from which the sound is first perceived, even if it is mixed with that same sound arriving from a completely different direction, as long as the two (or more) instances of the sound are within about 30ms of one another. Since sound travels faster electronically than it travels through the open air we may need to add audio delay to the side firing or ceiling speaker arrays in order to keep the primary perceived point source as the front of room/front-firing speakers.

Power

Power is a function of loudspeaker efficiency and total available system power. Most speakers operate in a power range that is broader than the range in which they operate without distortion. For the purpose of conference communication, we are interested in sound that has little or no distortion. Sound that is reproduced accurately (with no distortion) will most accurately represent the voice of the people from the far-end (our primary goal). Accurate reproduction also will aid the echo-cancellation circuitry in the system, minimizing the amount of echo that the system sends back to the people at the far-end, and thereby increasing perceived ease of intelligibility and understanding. Remember that any distortions present in the playback audio system—whether harmonic, amplitude (gain compression) or temporal (time

delays)—will be recognized by the echo canceller as "new audio information," and it will send those distortions to the far-end, perhaps wreaking havoc on the system audio quality. In short, speaker power should be matched to overall audio subsystem power. The speakers should provide adequate coverage and be able to present approximately 80 to 85dBA-SPL (continuous) at the local site with the system operating at nominal power utilization, and have a peak reserve of 15 to 20dB before distortion.

Range/Frequency Response

The human ear is able to hear sounds in a very wide range of frequencies (as low as 70Hz and as high as 12,000Hz). The human voice is able to produce sounds in a narrower range (100Hz to 8,000Hz). Most spoken communication occurs, however, in a range that is only 150Hz to about 6,000Hz. This means that we need to select speakers that operate with ideal performance in a fairly narrow range for human voice (as opposed to speakers used for music, that may have ranges of 20Hz to 20,000Hz). We must also be alert to the crossover characteristics of the speakers we select. Many coaxial and paraxial speakers have their crossover within the middle audio frequencies, thereby inducing potential distortion within the spoken frequency range and creating anomalies within the system that hinder voice communication.

Video Elements

As a general rule, any display used in a videoconferencing environment should be sized for the number of attendees, the physical distances involved and the type of material presented onscreen. The screen size should allow for clear and easy viewing at the various distances experienced within the room. A measure of required screen size that often is applied to projection technology is: no closer than 1.5 times the diagonal measure and no farther than 7 times that measure. Nobody should have to sit closer than 2 times the screen diagonal measure, nor farther than 8 times that measure.

Direct viewed tube-type displays (monitors) almost always are sharpest and brightest in a videoconferencing environment. "Retro-projector cabinet" displays (which look like largescreen TVs) are next in sharpness and brightness, and "front-screen" projectors come in last. Glare and uncontrolled ambient room lighting adversely affect the quality of the image most with front-screen projectors and least with direct view tubes. A very limited number of frontscreen projection systems have sufficient brightness and contrast to be useful in a properly lit videoconference room.

Video Projection for Use in Videoconference

Many installations make use of video projection devices. The most important thing to remember in the planning of video projection for a videoconference space is that front projection is vastly inferior to rear projection. Front projection systems are less expensive and easier to implement, but the conflicting interest between the camera and the projection display makes this form of display a very poor choice. Front projection setups operate best when the lighting in the room is dimmed or doused. When this is done, the videoconference cameras can no longer operate, since they require even, bright, color-corrected light. A direct conflict between these two technologies is clear. In the event that a rear projection room cannot be set aside, retro-projection units can be purchased from a number of manufacturers. These units normally are available in sizes ranging from 40" to 72" diagonal measure. To display high-quality video while maintaining optimum lighting for interactive video meetings will require a projector of the "light-valve" or DLP™ class.

Regardless of the exact type of projector selected and the exact nature of "front versus rear," there are certain essential rules for projector placement. The goal in projection is to get the image beam to aim directly into the audience's eyes. In Western cultures the average distance from the floor to a seated person's eye is 4'. That distance becomes the target for the direct beam of the projector. Again keep in mind that front projection should be avoided except in the most extreme cases. If it is employed at all it must be used with an extremely bright projector (2,500 lumens or greater for any space smaller than 25'x40').

Cameras

There usually is a "main" or "local people" camera positioned on top center of the display, so that it can "see" the participants and anything necessary at the sides of the room, using pan and tilt features. If individual presentations may be made from the side or "front of audience" area of the room, an additional camera should be located at the back of the room, also mounted to allow a view of the presenters when necessary. Some cameras contain an active camera pointing system that also can be used effectively, given proper care in the mounting of the camera assembly. The area immediately surrounding the camera assembly needs to be acoustically "dead" to ensure that the voice tracking and pointing algorithms work correctly. This is another reason to pay close attention to the acoustic environment and acoustic treatment of any space intended for use with this type of camera system.

If local presentation is blended with VC for any events, we must consider the needs of the presenter who will not be "facing" the local image or inbound image displays used by the main body of the local audience. One or two monitors (and a camera) should be mounted at the back of the "audience-end" of the room, with the horizontal centerline at approximately 5' from the floor for ease of presentation interaction between the presenter and the group(s) at the farend(s). Remember that, with the exception of PC-based information that is not in a standard composite narrowband video format, any information we

wish to “show” or “view” must be translated to video, most often with some sort of camera mechanism. Document cameras, 35mm slide-to-video units, video scanners and scan conversion devices all are designed to take one format of source material and convert it to a standard video signal that can be digitized, shipped to the far-end(s), and converted back to composite video for display. Which devices are selected and how they are used depends entirely on the needs and goals of the end-users of the system(s) and the format of their source materials.

Room Control Elements

To give all participants the easiest use of the room for any and all presentation or conference purposes, a fully integrated room controller is recommended. It is important that one controller operate all devices in the room so that only one user interface needs to be learned by those managing the facility. The common controller also makes it much easier to expand and enhance room capabilities over time by adding or upgrading equipment. A proper room controller can operate and coordinate the use of lighting, curtains, displays, audio devices, VCRs and slide projectors, as well as all the conferencing equipment, including any network-related control needed. In lieu of a complete control system, a limited functionality controller can be located at the presentation interface panel to control the switching and routing of the computer graphics and configure the overhead camera video paths.

It is strongly advised that at least 20 percent of the time spent developing a videoconferencing room be devoted to this important sub-system, as it will complete the integration of the conference and presentation environment.

And remember that simpler is always better. People do not pay for technology. They pay for the benefits that technology can bring. The doorway to those benefits is a simple, straightforward and intuitive user control.

B

Polycom RealPresence Group Series Specifications

Back Panel Information

Refer to the *Administrator's Guide for the Polycom RealPresence Group Series* at support.polycom.com for back panel views of Polycom RealPresence Group systems and for details about the various connections available on each Polycom RealPresence Group back panel connector.

Inputs/Outputs

Audio Specifications for Polycom RealPresence Group 500 systems

Characteristic	Value
Maximum Input Level 0 dBFS, Analog Inputs	0 dBV (1.0 V_{RMS}), ± 1 dB
Input Impedance Analog Inputs	20kΩ, ± 5%
Maximum Output Level Line Output (≥600 Ω load):	+6 dBV (2.0 V_{RMS}), 1 dB
Output Impedance Line Output	150, ±5% Ohms
Signal-to-Noise Ratio Either analog audio input routed to Main Output: Any digital audio input routed to any digital output:	 >85 dB, A-weighted >95 dB, A-weighted

Characteristic	Value
Dynamic Range Either analog audio input routed to Main Output: Any digital audio input routed to any digital output:	 >85 dB, A-weighted >95 dB, A-weighted
Crosstalk and Feed-Through Any input or output channel to any other channel	≤–80 dB, 20 Hz to 20 kHz
Frequency Response Any input to any output, Relative to 997 Hz	 +1, –3 dB, 50 Hz to 20 kHz
Total Harmonic Distortion + Noise vs. Frequency -1 dBFS Input Level -20 dBFS Input Level –1 dBFS input level –20 dBFS input level	 –60 dB, 50 Hz to 20 kHz –65 dB, 50 Hz to 20 kHz –95 dB, 50 Hz to 20 kHz –75 dB, 50 Hz to 20 kHz

Audio Specifications for Polycom RealPresence Group 700 systems

Characteristic	Value
Maximum Input Level 0 dBFS, Analog Inputs 0 dBFS for Line Inputs	 0 dBV (1.0 V_{RMS}), ± 1 dB +6 dBV (2.0 V_{RMS}), ± 1 dB
Input Impedance Analog Inputs	 20kΩ, ± 5%
Maximum Output Level Line Output (≥600 Ω load):	 +6 dBV (2.0 V_{RMS}), 1 dB
Output Impedance Line Output	 150 Ω, ± 5%
Signal-to-Noise Ratio Any analog audio input routed to the analog output Any digital audio input routed to any digital output:	 >90 dB, >95 dB, A-weighted

Characteristic	Value
Dynamic Range Either analog audio input routed to Main Output: Any digital audio input routed to any digital output:	 >90 dB >95 dB
Crosstalk and Feed-Through Any input or output channel to any other channel	 ≤–90 dB, 20 Hz to 20 kH
Frequency Response Any input to any output, Relative to 997 Hz	 +1, –3 dB, 20 Hz to 20 kHz
Total Harmonic Distortion + Noise vs. Frequency -1 dBFS Input Level -20 dBFS Input Level –1 dBFS input level –20 dBFS input level	 –80 dB, 50 Hz to 20 kHz –70 dB, 50 Hz to 20 kHz –95 dB, 50 Hz to 20 kHz –75 dB, 50 Hz to 20 kHz

DTMF Dialing

The Polycom RealPresence Group series systems generate the following tip/ring signal levels:

- Low-frequency tone: -10.2 dBV, -8.0 dBm when AC termination of the line is 600 Ohms
- High-frequency tone: -8.2 dBV, -6.0 dBm when AC termination of the line is 600 Ohms
- The system seizes the line and waits 1.5 seconds. The number is then dialed with a 80 ms tone period followed by a 80 ms silence period for each digit.

Remote Control

This section provides information about the IR signals for Polycom RealPresence Group systems.

This information is provided for reference only. Polycom claims no responsibility or liability for programmed third-party remote control devices.

Notes

- Wake up – 2.6 ms on; 2.6 ms off
- 0–559 µs (22 pulses at 38 KHz) on; 845 µs (33 pulses at 38 KHz) off
- 1–845 µs (33 pulses at 38 KHz) on; 1192 µs (46 pulses at 38 KHz) off
- EOM–559 µs (22 pulses at 38 KHz) on
- System Code consists of a User ID field (upper nibble) and the Polycom Vender Code (lower nibble) with value 0x5. The default User ID value is 0x3, so the default System Code value is 00110101 or 0x35.
- Parity is a 2-bit field consisting of a parity bit (b1) and a toggle bit (b0). Parity is even.
- Inter-burst timing is 2200 pulse times at 38.062 KHz or 57.8 ms
- 38.062 KHz signal is at 1/3 duty cycle to LED
- Multi-bit fields are transmitted most significant bit first
- Bits are labeled b0..bn, where b0 is the least significant bit

Protocol is: <Wake up> + <System Code> + <Key Code> + <Parity> + <EOM>

Key Name	Key Code	Key Code	Parity
#	1100	0CH	Even
*	1011	0BH	Odd
0	110000	30H	Even
1	110001	31H	Odd
2	110010	32H	Odd
3	110011	33H	Even
4	110100	34H	Odd
5	110101	35H	Even
6	110110	36H	Even

Key Name	Key Code	Key Code	Parity
7	110111	37H	Odd
8	111000	38H	Odd
9	111001	39H	Even
Auto	11001	19H	Odd
Call	100101	25H	Odd
Call/Hang Up	11	03H	Even
Delete	100010	22H	Even
Down Arrow	110	06H	Even
Home	11011	1BH	Even
Left Arrow	1001	09H	Even
Low Battery	10111	17H	Even
Menu (Back)	10011	13H	Odd
Mute	111010	3AH	Even
Return	111	07H	Odd
Right Arrow	1010	0AH	Even
Up Arrow	101	05H	Even
Volume Down	111100	3CH	Even
Volume Up	111011	3BH	Odd
Zoom In	1101	0DH	Odd
Zoom Out	1110	0EH	Odd

RS-232 Serial Interface

The RS-232 serial port is implemented by an FPGA-based UART (Universal Asynchronous Receiver/Transmitter) that supports the following values.

Mode	Baud Rate	Parity	Stop Bits	Data Bits	Flow Control
Control	9600 (default), 14400, 19200, 38400, 57600, 115200	None	1	8	Off

C

Categorical List of API Commands

You can view the table of contents for this book to see an alphabetical list of available API commands. These commands are categorized into the following sections:

- Directory Commands on page 256
- Call Function Commands on page 256
- Conference Setting Commands on page 257
- Global Services Commands on page 257
- LAN, WAN, and IP Commands on page 258
- Video and Audio Commands on page 259
- Registration Commands on page 261
- System Commands on page 261

Directory Commands

LDAP Commands

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- gaddrbook on page 116

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- gendial on page 126
- hangup on page 131
- speeddial on page 182

Call Status Request

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SAMSUNG

User Manual

QM49F QM55F QM65F

The color and the appearance may differ depending on the product, and the specifications are subject to change without prior notice to improve the performance.

Recommended hours of use per day of this product is under 24 hours.

If the product is used for longer than 24 hours a day, the warranty may be void.

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Chapter 01
Before Using the Product

Copyright

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Microsoft, Windows are registered trademarks of Microsoft Corporation.

VESA, DPM and DDC are registered trademarks of the Video Electronics Standards Association.

Ownership of all other trademarks is attributed to their due owner.

- An administration fee may be charged if either
  - (a) an engineer is called out at your request and there is no defect in the product (i.e. where you have failed to read this user manual).
  - (b) you bring the unit to a repair center and there is no defect in the product (i.e. where you have failed to read this user manual).
- The amount of such administration charge will be advised to you before any work or home visit is carried out.

Safety Precautions

Caution

RISK OF ELECTRIC SHOCK DO NOT OPEN

Caution : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. (OR BACK)

THERE ARE NO USER SERVICEABLE PARTS INSIDE.

REFER ALL SERVICING TO QUALIFIED PERSONNEL.

This symbol indicates that high voltage is present inside.

It is dangerous to make any kind of contact with any internal part of this product.

This symbol alerts you that important literature concerning operation and maintenance has been included with this product.

Symbols

Warning

A serious or fatal injury may result if instructions are not followed.

Caution

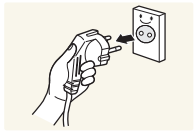
Personal injury or damage to properties may result if instructions are not followed.

Activities marked by this symbol are prohibited.

Instructions marked by this symbol must be followed.

Cleaning

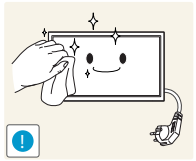
- Exercise care when cleaning as the panel and exterior of advanced LCDs are easily scratched.
- Take the following steps when cleaning.
- The following images are for reference only. Real-life situations may differ from what is shown in the images.



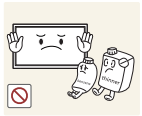
1 Power off the product and computer.

2 Disconnect the power cord from the product.

- Hold the power cable by the plug and do not touch the cable with wet hands. Otherwise, an electric shock may result.



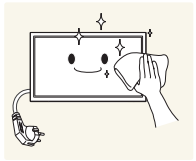
3 Wipe the product with a clean, soft and dry cloth.



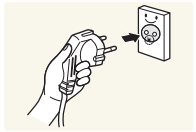
- Do not use detergents that contain alcohol, solvent or surface-active agents.



- Do not spray water or detergent directly on the product.



4 Wet a soft and dry cloth in water and wring thoroughly to clean the exterior of the product.



5 Connect the power cord to the product when cleaning is finished.

6 Power on the product and computer.

Storage

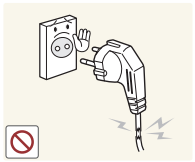
Due to the characteristics of high-glossy products, using a UV humidifier nearby may create white-colored stains on the product.

— Contact Customer Service Center if the inside of the product needs cleaning (service fee will be charged).

Electricity and Safety

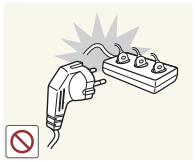
— The following images are for reference only. Real-life situations may differ from what is shown in the images.

Warning



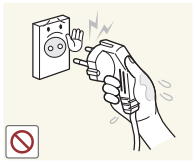
Do not use a damaged power cord or plug, or a loose power socket.

- An electric shock or fire may result.

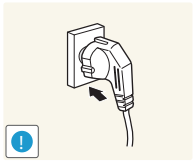


Do not use multiple products with a single power socket.

- Overheated power sockets may cause a fire.

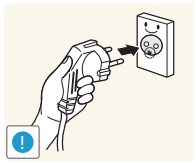


Do not touch the power plug with wet hands. Otherwise, an electric shock may result.



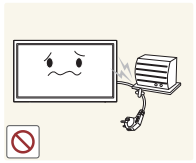
Insert the power plug all the way in so it is not loose.

- An unsecure connection may cause a fire.



Connect the power plug to a grounded power socket (type 1 insulated devices only).

- An electric shock or injury may result.



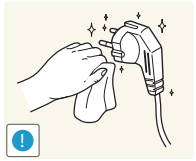
Do not bend or pull the power cord with force. Be careful not to leave the power cord under a heavy object.

- Damage to the cord may result in a fire or electric shock.



Do not place the power cord or product near heat sources.

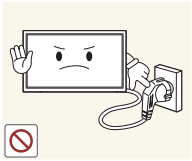
- A fire or electric shock may result.



Clean any dust around the pins of the power plug or the power socket with a dry cloth.

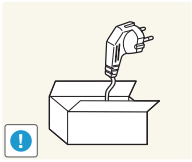
- A fire may result.

Caution



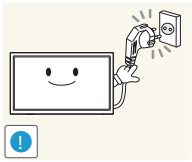
Do not disconnect the power cord while the product is being used.

- The product may become damaged by an electric shock.



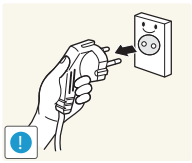
Only use the power cord provided with your product by Samsung. Do not use the power cord with other products.

- A fire or electric shock may result.



Keep the power socket where the power cord is connected unobstructed.

- The power cord must be disconnected to cut off power to the product when an issue occurs.
- Note that the product is not completely powered down by using only the power button on the remote.



Hold the plug when disconnecting the power cord from the power socket.

- An electric shock or fire may result.

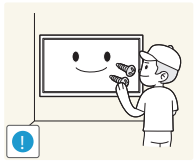
Installation

Warning



DO NOT PLACE CANDLES, INSECT REPELLANTS OR CIGARETTES ON TOP OF THE PRODUCT. DO NOT INSTALL THE PRODUCT NEAR HEAT SOURCES.

- A fire may result.



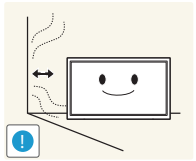
Have a technician install the wall-mount hanger.

- Installation by an unqualified person can result in an injury.
- Only use approved cabinets.



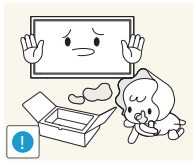
Do not install the product in poorly ventilated spaces such as a bookcase or closet.

- An increased internal temperature may cause a fire.



Install the product at least 10 cm away from the wall to allow ventilation.

- An increased internal temperature may cause a fire.



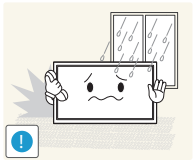
Keep the plastic packaging out of the reach of children.

- Children may suffocate.



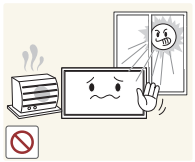
Do not install the product on an unstable or vibrating surface (insecure shelf, sloped surface, etc.)

- The product may fall and become damaged and/or cause an injury.
- Using the product in an area with excess vibration may damage the product or cause a fire.



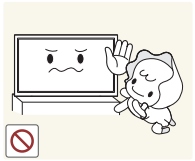
Do not install the product in a vehicle or a place exposed to dust, moisture (water drips, etc.), oil, or smoke.

- A fire or electric shock may result.



Do not expose the product to direct sunlight, heat, or a hot object such as a stove.

- The product lifespan may be reduced or a fire may result.



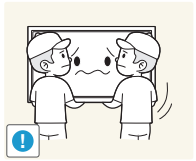
Do not install the product within the reach of young children.

- The product may fall and injure children.
- As the front is heavy, install the product on a flat and stable surface.



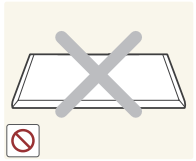
Edible oil, such as soybean oil, can damage or deform the product. Do not install the product in a kitchen or near a kitchen counter.

Caution



Do not drop the product while moving.

- Product failure or personal injury may result.



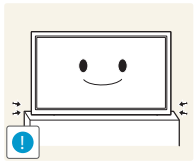
Do not set down the product on its front.

- The screen may become damaged.



When installing the product on a cabinet or shelf, make sure that the bottom edge of the front of the product is not protruding.

- The product may fall and become damaged and/or cause an injury.
- Install the product only on cabinets or shelves of the right size.



Set down the product gently.

- Product failure or personal injury may result.

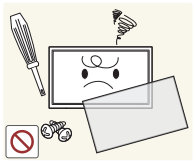


Installing the product in an unusual place (a place exposed to a lot of fine dust, chemical substances, extreme temperatures or a significant presence of moisture, or a place where the product will operate continuously for an extended period of time) may seriously affect its performance.

- Be sure to consult Samsung Customer Service Center if you want to install the product at such a place.

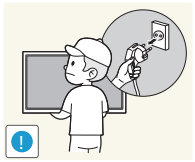
Operation

Warning



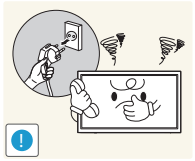
There is a high voltage inside the product. Never disassemble, repair or modify the product yourself.

- A fire or electric shock may result.
- Contact Samsung Customer Service Center for repairs.



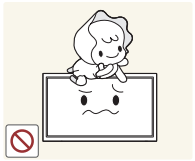
Before moving the product, turn off the power switch and disconnect the power cable and all other connected cables.

- Damage to the cord may result in a fire or electric shock.



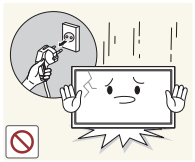
If the product generates abnormal sounds, a burning smell or smoke, disconnect the power cord immediately and contact Samsung Customer Service Center.

- An electric shock or fire may result.



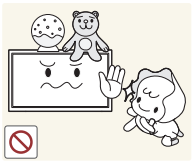
Do not let children hang from the product or climb on top of it.

- Children may become injured or seriously harmed.



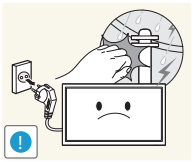
If the product is dropped or the outer case is damaged, turn off the power switch and disconnect the power cord. Then contact Samsung Customer Service Center.

- Continued use can result in a fire or electric shock.



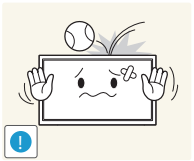
Do not leave heavy objects or items that children like (toys, sweets, etc.) on top of the product.

- The product or heavy objects may fall as children try to reach for the toys or sweets resulting in a serious injury.



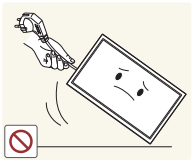
During a lightning or thunderstorm, power off the product and remove the power cable.

- A fire or electric shock may result.



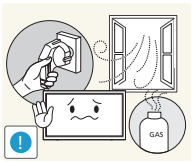
Do not drop objects on the product or apply impact.

- A fire or electric shock may result.



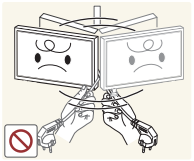
Do not move the product by pulling the power cord or any cable.

- Product failure, an electric shock or fire may result from a damaged cable.



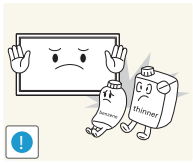
If a gas leakage is found, do not touch the product or power plug. Also, ventilate the area immediately.

- Sparks can cause an explosion or fire.



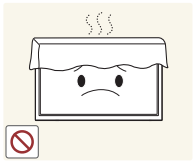
Do not lift or move the product by pulling the power cord or any cable.

- Product failure, an electric shock or fire may result from a damaged cable.



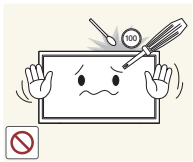
Do not use or keep combustible spray or an inflammable substance near the product.

- An explosion or fire may result.



Ensure the vents are not blocked by tablecloths or curtains.

- An increased internal temperature may cause a fire.



Do not insert metallic objects (chopsticks, coins, hairpins, etc) or objects that burn easily (paper, matches, etc) into the product (via the vent or input/output ports, etc).

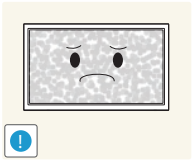
- Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.
- Product failure, an electric shock or fire may result.



Do not place objects containing liquid (vases, pots, bottles, etc) or metallic objects on top of the product.

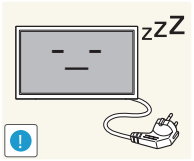
- Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.
- Product failure, an electric shock or fire may result.

Caution



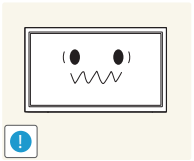
Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.

- Activate power-saving mode or a moving-picture screen saver if you will not be using the product for an extended period of time.



Disconnect the power cord from the power socket if you do not plan on using the product for an extended period of time (vacation, etc).

- Dust accumulation combined with heat can cause a fire, electric shock or electric leakage.



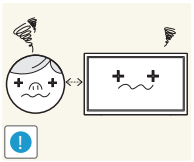
Use the product at the recommended resolution and frequency.

- Your eyesight may deteriorate.

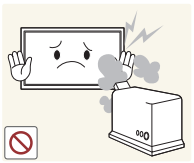


Do not hold the product upside-down or move it by holding the stand.

- The product may fall and become damaged or cause an injury.

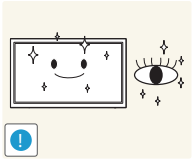


Looking at the screen too close for an extended period of time can deteriorate your eyesight.



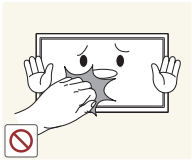
Do not use humidifiers or stoves around the product.

- A fire or electric shock may result.

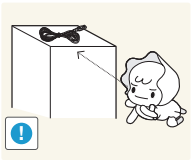


Rest your eyes for more than 5 minutes for every 1 hour of product use.

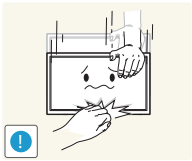
- Eye fatigue will be relieved.



Do not touch the screen when the product has been turned on for an extended period of time as it will become hot.



Store small accessories out of the reach of children.



Exercise caution when adjusting the product angle or stand height.

- Your hand or finger may get stuck and injured.
- Tilting the product at an excessive angle may cause the product to fall and an injury may result.



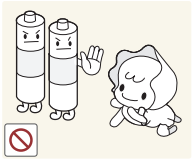
Do not place heavy objects on the product.

- Product failure or personal injury may result.



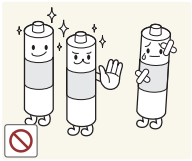
When using headphones or earphones, do not turn the volume too high.

- Having the sound too loud may damage your hearing.



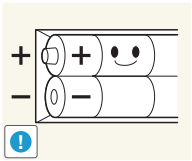
Be careful that children do not place the battery in their mouths when removed from the remote control. Place the battery in a location that children or infants cannot reach.

- If children have had the battery in their mouths, consult your doctor immediately.



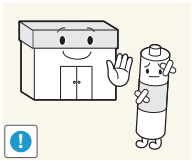
When replacing the battery, insert it with the right polarity (+, -).

- Otherwise, the battery may become damaged or it may cause fire, personal injury or damage due to leakage of the internal liquid.



Use only the specified standardized batteries, and do not use a new battery and a used battery at the same time.

- Otherwise, the batteries may be damaged or cause fire, personal injury or damage due to a leakage of the internal liquid.



The batteries (and rechargeable batteries) are not ordinary refuse and must be returned for recycling purposes. The customer is responsible for returning the used or rechargeable batteries for recycling.

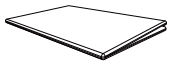
- The customer can return used or rechargeable batteries to a nearby public recycling center or to a store selling the same type of the battery or rechargeable battery.

Chapter 02
Preparations

Checking the Components

Components

– Components may differ in different locations.



Quick setup guide



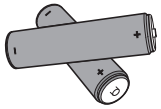
Warranty card
(Not available in some locations)



Regulatory guide



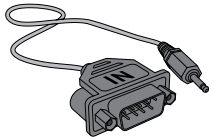
Power cord



Batteries
(Not available in some locations)



Remote Control

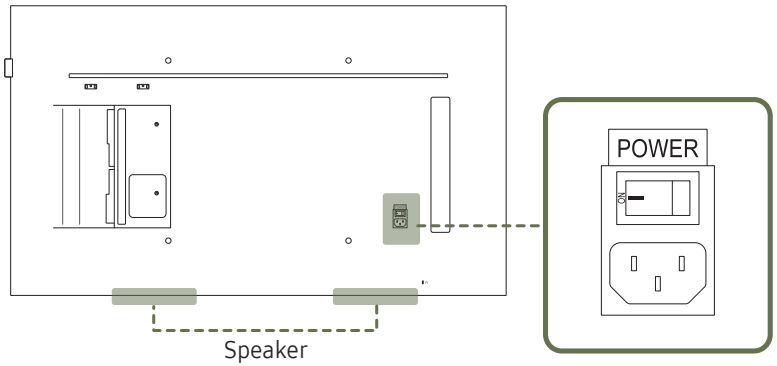


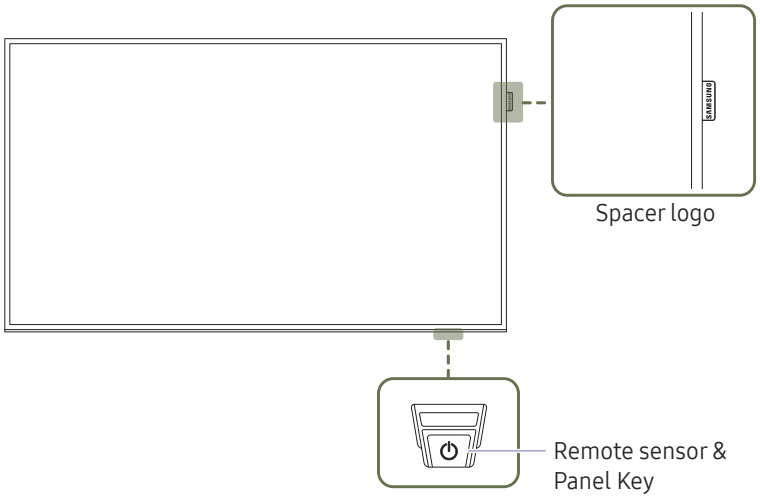
RS232C(IN) adapter

– Contact the vendor where you purchased the product if any components are missing.
– The appearance of the components may differ from the images shown.
– A stand is not provided with the product. To install a stand, you can purchase one separately.
– The RS232C adapter can be used to connect to another monitor using the D-SUB (9-pin) type RS232C cable.

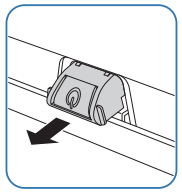
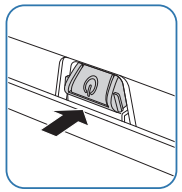
Parts

Control Panel





— The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

Parts	Description
Spacer logo	Do not pull on the spacer logo using force. The logo may tear or break off.
Remote sensor	Press a button on the remote control pointing at the bottom of the product face to perform the function. The remote control sensor is located on the bottom of the product. — Using other display devices in the same space as the remote control of this product can cause the other display devices to be inadvertently controlled.  To use remote/eco sensor, make sure the sliding panel key is protruding from the bottom of the product.
Panel Key	 To use the panel key, make sure the sliding panel key is not protruding from the bottom of the product.

Use the remote control within 7 m to 10 m from the sensor on the product at an angle of 30˚ from the left and right.

— Store used batteries out of reach of children and recycle.

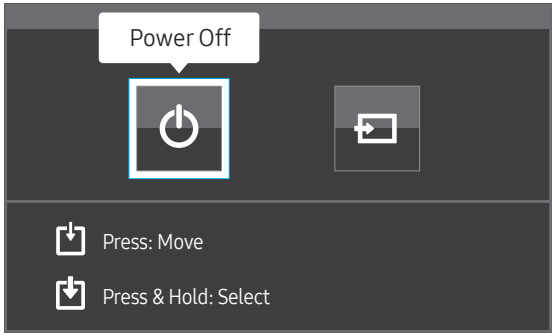
— Do not use a new and used battery together. Replace both batteries at the same time.

— Remove batteries when the remote control is not to be used for an extended period of time.

— The panel key is located on the bottom right front of the product.

— If you press the ⏻ button on the panel key when the product is turned on, the control menu will be displayed.

Control menu



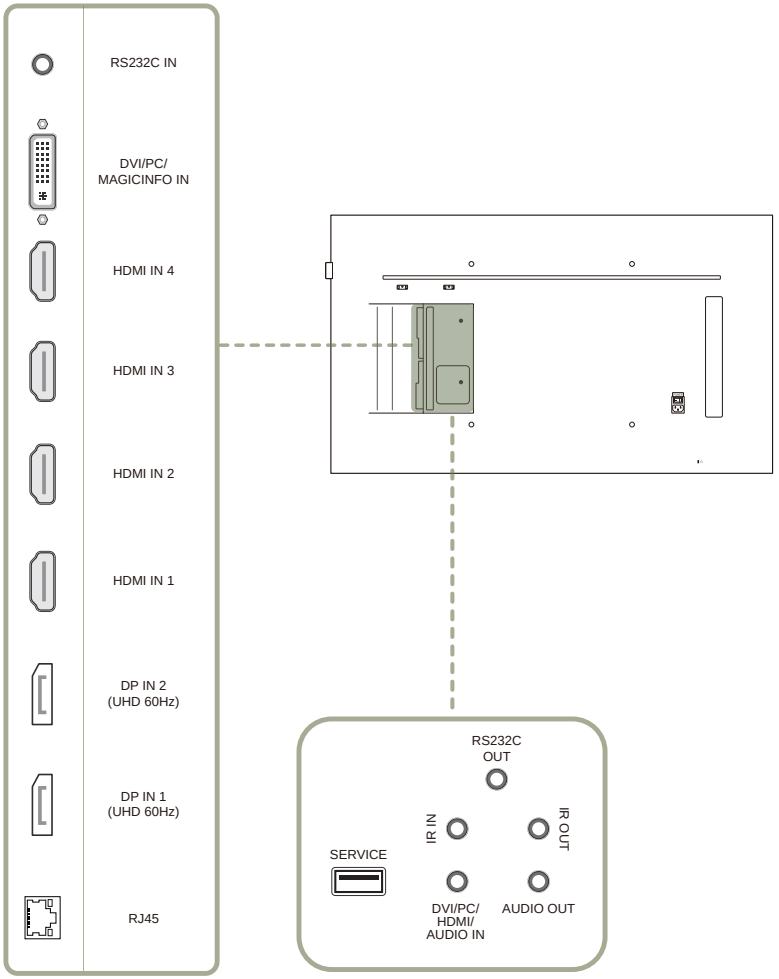
Buttons		Description
	Power Off	Power off the product. With the control menu screen displayed, briefly press the panel key to move the cursor to Power Off, and then press and hold the panel key to turn off the product.
	Source	Select the connected input source. With the control menu screen displayed, briefly press the panel key to move the cursor to Source, and then press and hold the panel key to display the input source screen. With the input source screen displayed, press and hold the panel key to switch to the desired input source.

— The panel key can only be used for Power Off and Source.

— To exit from the control menu screen, wait for 3 seconds or more without pressing the panel key.

Reverse Side

— The color and shape of parts may differ from what is shown.
Specifications are subject to change without notice to improve quality.

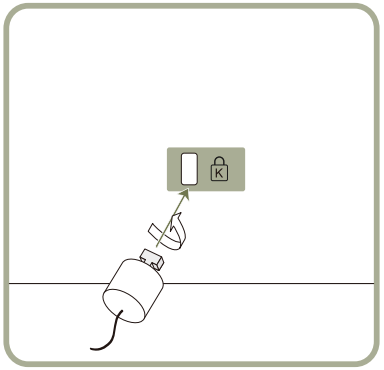


Port	Description
RS232C IN	Connects to MDC using an RS232C adapter.
DVI/PC/MAGICINFO IN	DVI: Connects to a source device using a DVI cable or HDMI-DVI cable. PC: Connects a D-SUB cable (via a DVI-RGB adapter) or a DVI-RGB cable to a PC. MAGICINFO IN: To use MagicInfo, make sure to connect the DP-DVI cable.
HDMI IN 1, HDMI IN 2, HDMI IN 3, HDMI IN 4	Connects to a source device using a HDMI cable or HDMI-DVI cable. — Obtain sharp picture quality when viewing UHD content at 30Hz.
DP IN 2 (UHD 60Hz) DP IN 1 (UHD 60Hz)	Connects to a PC using a DP cable. — Obtain sharp picture quality when viewing UHD content at 60Hz.
RJ45	Connects to MDC using a LAN cable.
RS232C OUT	Connects to MDC using an RS232C adapter.
IR IN	Supplies power to the external sensor board or receives the external remote control sensor signal.
IR OUT	Receives the remote control signal via the external sensor board and outputs the signal via LOOP OUT.
SERVICE	Connects to a USB device when upgrading software.
DVI/PC/HDMI/AUDIO IN	Receives sound from a PC via an audio cable.
AUDIO OUT	Connects to the audio of a source device.

Anti-theft Lock

- An anti-theft lock allows you to use the product securely even in public places.
- The locking device shape and locking method depend on the manufacturer. Refer to the user guide provided with your anti-theft locking device for details.
- The following images are for reference only. Real-life situations may differ from what is shown in the images.

To lock an anti-theft locking device:



1 Fix the cable of your anti-theft locking device to a heavy object such as a desk.

2 Put one end of the cable through the loop on the other end.

3 Insert the locking device into the anti-theft lock slot at the back of the product.

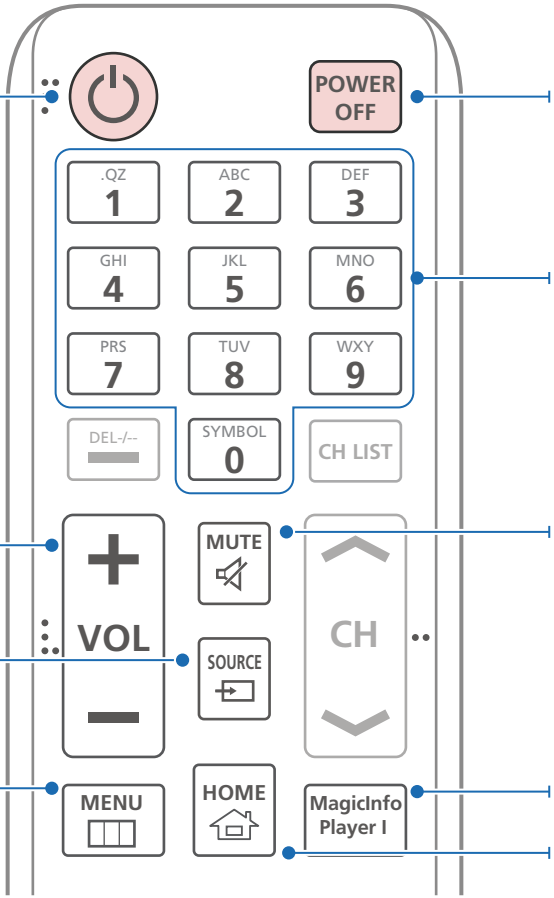
4 Lock the locking device.

- An anti-theft locking device can be purchased separately.
- Refer to the user guide provided with your anti-theft locking device for details.
- Anti-theft locking devices can be purchased at electronics retailers or online.

Remote Control

— Using other display devices in the same space as the remote control of this product can cause the other display devices to be inadvertently controlled.

— A button without a description in the image below is not supported on the product.



Power on the product.

Power off the product.

Number buttons

Enter the password in the OSD menu.

Adjust the volume.

Mute the sound.

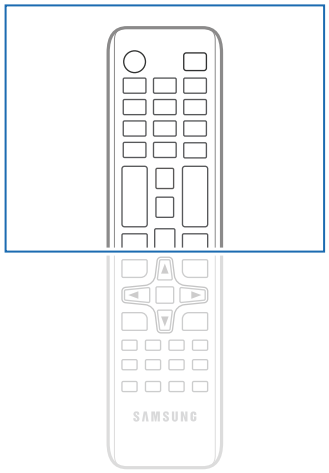
Unmuting the sound: Press **MUTE** again or press the volume control(+ VOL -) button.

Change the input source.

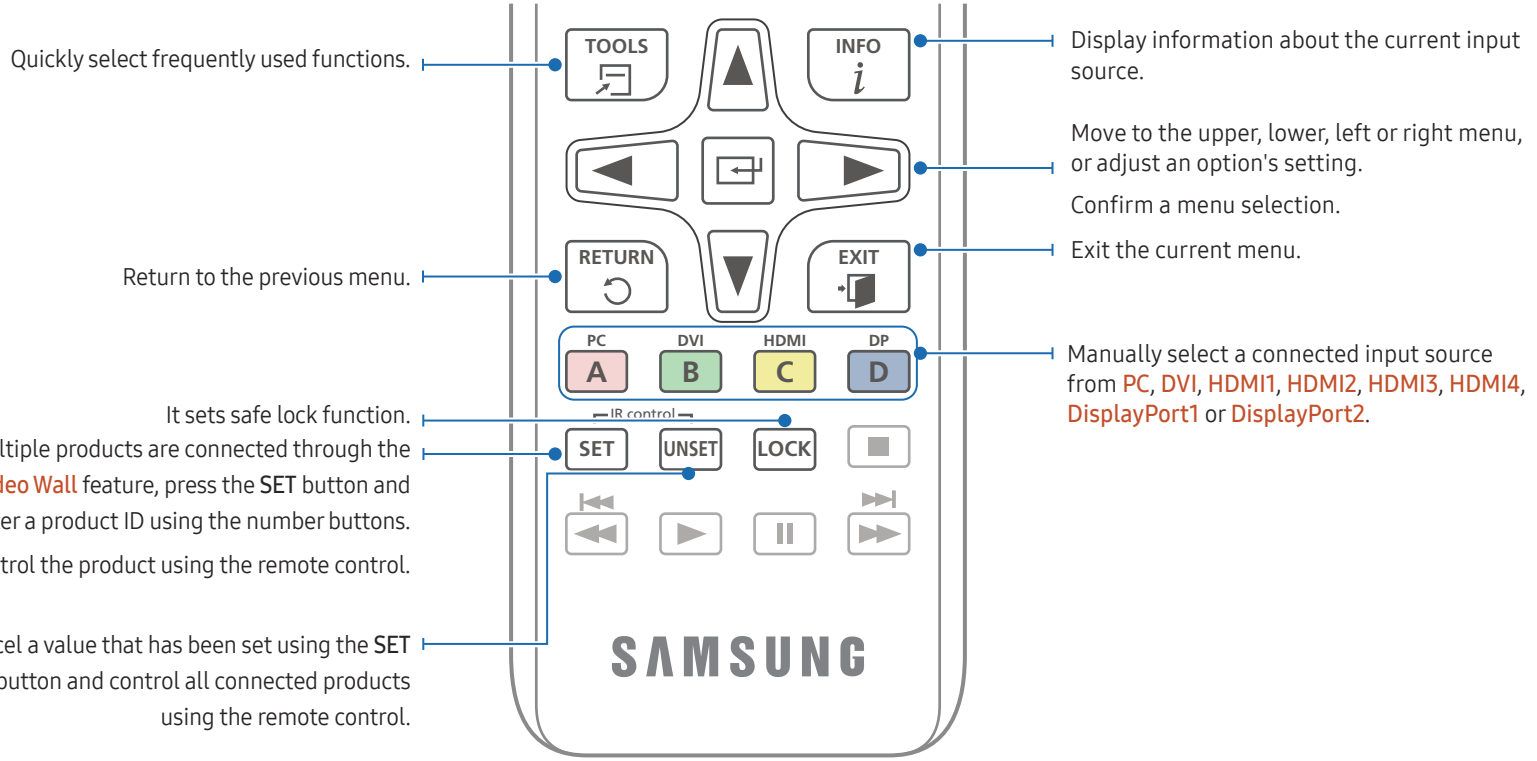
Use this hotkey to directly access MagicInfo. This hotkey is available when a network box is connected.

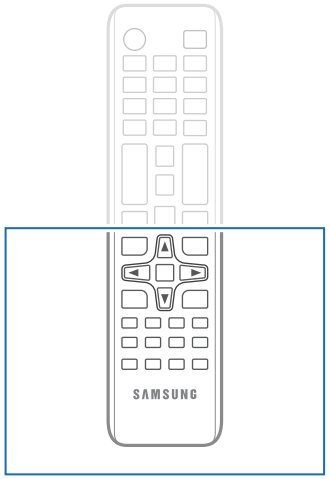
Display or hide the onscreen display menu, or return to the previous menu.

Go to Home Launch Button.



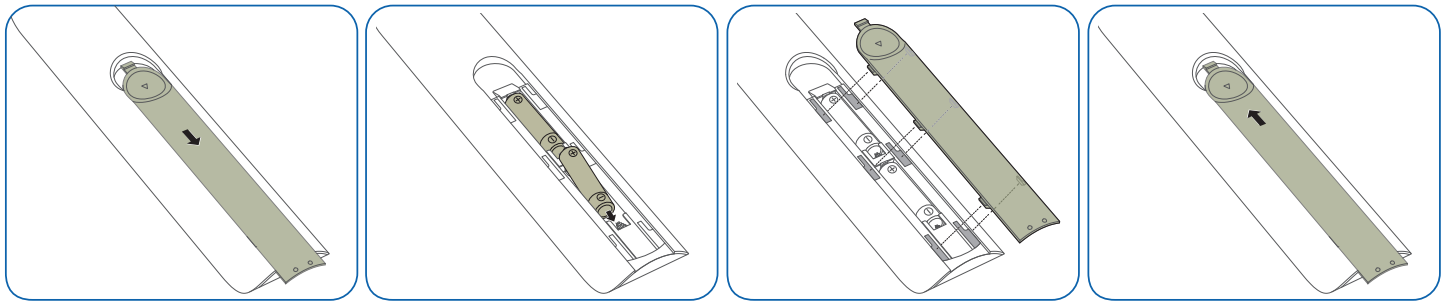
– Remote control button functions may differ for different products.





– Remote control button functions may differ for different products.

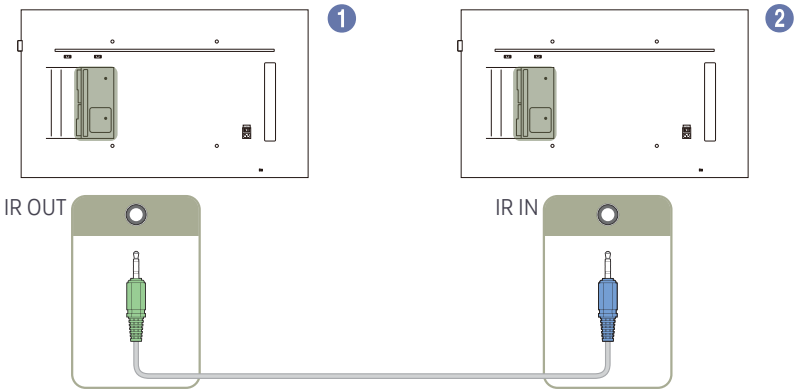
To place batteries in the remote control



Connection Using an IR Stereo Cable (sold separately)

Make sure to connect the external remote control sensor while the product is powered off. Then, power on the product.

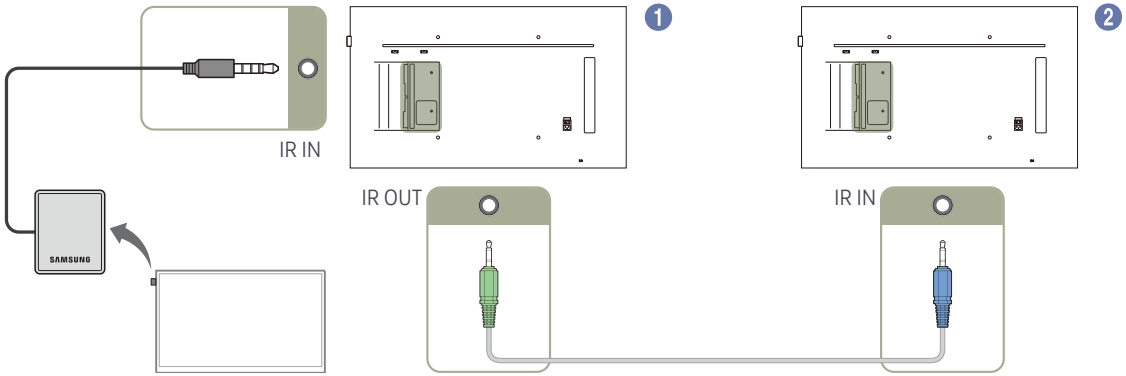
Controlling more than one display product using your remote control



- Connect the **IR OUT** port on the product to the **IR IN** port on the other display product using the dedicated stereo cable.
- A command sent from the remote control pointed at product 1 will be received by both display products 1 and 2.

— The appearance may differ depending on the product.

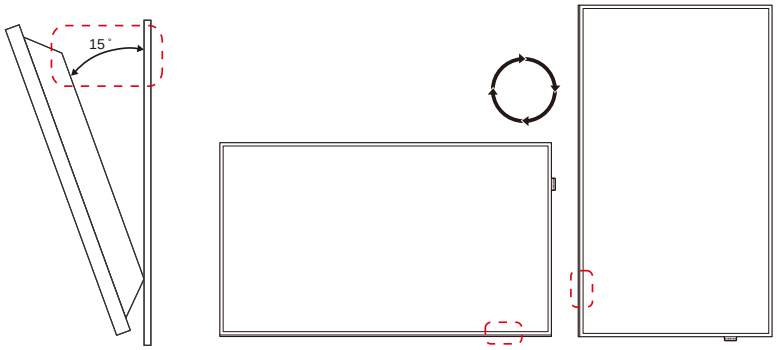
Controlling more than one display product using an external remote control sensor (sold separately)



- A command sent from the remote control pointed at product 1 (to which the external remote control sensor is connected) will be received by both display products 1 and 2.

— The appearance may differ depending on the product.

Before Installing the Product (Installation Guide)



To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

- Ensure that an authorized installation company installs the wall mount.
- Otherwise, it may fall and cause personal injury.
- Make sure to install the specified wall mount.

Tilting Angle and Rotation

— Contact Samsung Customer Service Center for further details.

- The product can be tilted at a maximum angle of 15˚ from a perpendicular wall surface.
- To use the product vertically (portrait), turn it clockwise so that the LED is pointing down.

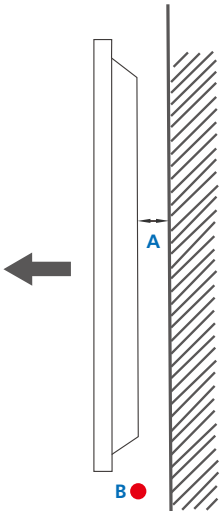


Figure 1.1 Side view

Ventilation

Installation on a Perpendicular Wall

A Minimum 40 mm

B Ambient temperature: Under 35˚C

- When installing the product on a perpendicular wall, allow at least 40 mm of space between the product and wall surface for ventilation and ensure that the ambient A temperature is kept below 35˚C.

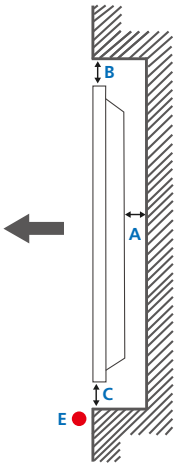
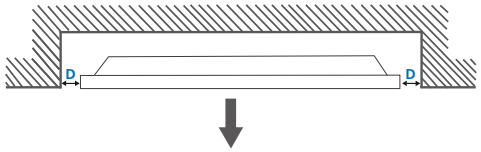


Figure 1.2 Side view

Figure 1.3 Side view



Installation on an Indented Wall

— Contact Samsung Customer Service Center for further details.

Plane view

A Minimum 40 mm

B Minimum 70 mm

C Minimum 50 mm

D Minimum 50 mm

E Ambient temperature: Under 35˚C

— When installing the product on an indented wall, allow at least the space specified above between the product and wall for ventilation and ensure that the ambient temperature is kept below 35˚C.

Installing the Wall Mount

Installing the Wall Mount

The wall mount kit (sold separately) allows you to mount the product on the wall.

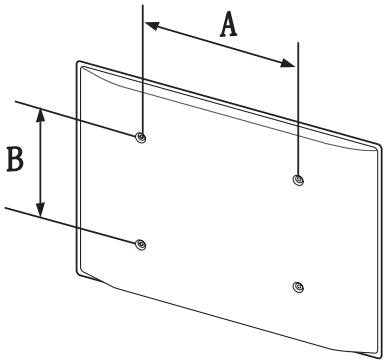
For detailed information on installing the wall mount, see the instructions provided with the wall mount.

We recommend you contact a technician for assistance when installing the wall mount bracket.

Samsung Electronics is not responsible for any damage to the product or injury to yourself or others if you elect to install the wall mount on your own.

Wall Mount Kit Specifications (VESA)

— Install your wall mount on a solid wall perpendicular to the floor. Before attaching the wall mount to surfaces other than plaster board, please contact your nearest dealer for additional information.
If you install the product on a slanted wall, it may fall and result in severe personal injury.



- Samsung wall mount kits contain a detailed installation manual and all parts necessary for assembly are provided.
- Do not use screws that are longer than the standard length or do not comply with the VESA standard screw specifications. Screws that are too long may cause damage to the inside of the product.
- For wall mounts that do not comply with the VESA standard screw specifications, the length of the screws may differ depending on the wall mount specifications.
- Do not fasten the screws too firmly. This may damage the product or cause the product to fall, leading to personal injury. Samsung is not liable for these kinds of accidents.
- Samsung is not liable for product damage or personal injury when a non-VESA or non-specified wall mount is used or the consumer fails to follow the product installation instructions.
- Do not mount the product at more than a 15 degree tilt.
- Always have two people mount the product on a wall.
- Standard dimensions for wall mount kits are shown in the table below.

Unit: mm (inches)

Model name	VESA screw hole specs (A * B) in millimeters	Standard Screw	Quantity
QM49F / QM55F / QM65F	400 × 400 (15.7 × 15.7)	M8	4

— Do not install your Wall Mount Kit while your product is turned on. It may result in personal injury due to electric shock.

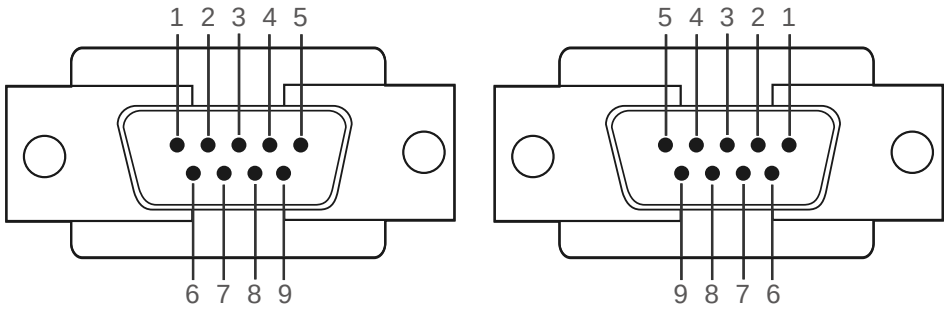
Remote Control (RS232C)

Cable Connection

RS232C Cable

Interface	RS232C (9 pins)
Pin	TxD (No.2), RxD (No.3), GND (No.5)
Bit rate	9600 bps
Data bits	8 bit
Parity	None
Stop bit	1 bit
Flow control	None
Maximum length	15 m (only shielded type)

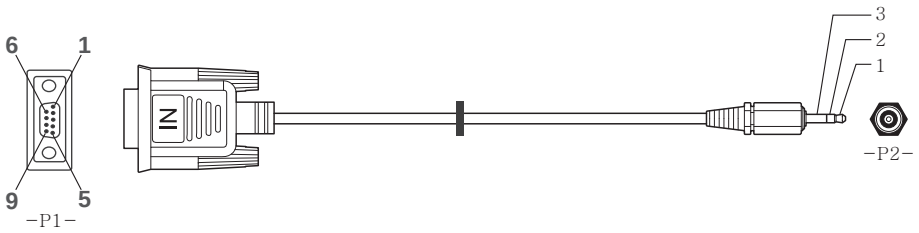
- Pin assignment



‹Male type› ‹Female type›

Pin	Signal
1	Detect data carrier
2	Received data
3	Transmitted data
4	Prepare data terminal
5	Signal ground
6	Prepare data set
7	Send request
8	Clear to send
9	Ring indicator

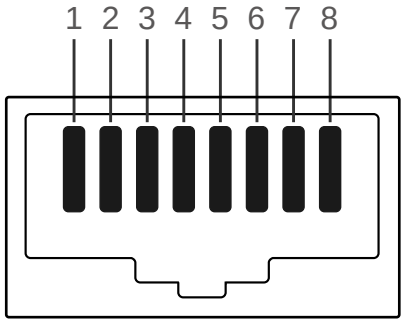
- RS232C cable
  Connector: 9-Pin D-Sub to Stereo Cable



-P1-		-P1-		-P2-		-P2-
Male type	Rx	3	----------	2	Tx	STEREO
	Tx	2	----------	1	Rx	PLUG
	Gnd	5	----------	3	Gnd	(3.5ø)

LAN Cable

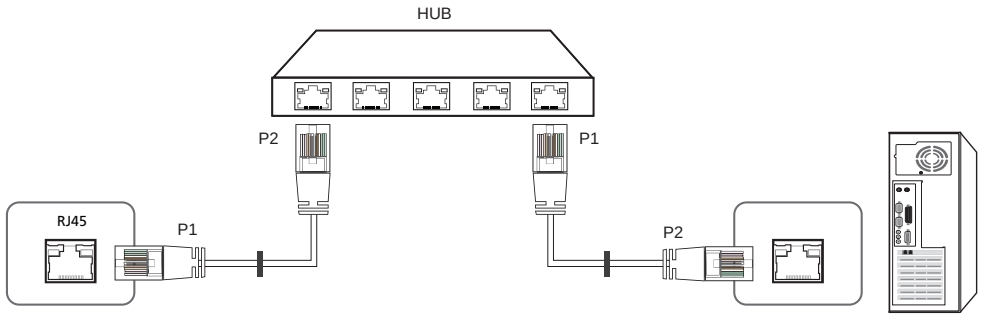
- Pin assignment



Pin No	Standard Color	Signal
1	White and orange	TX+
2	Orange	TX-
3	White and green	RX+
4	Blue	NC
5	White and blue	NC
6	Green	RX-
7	White and brown	NC
8	Brown	NC

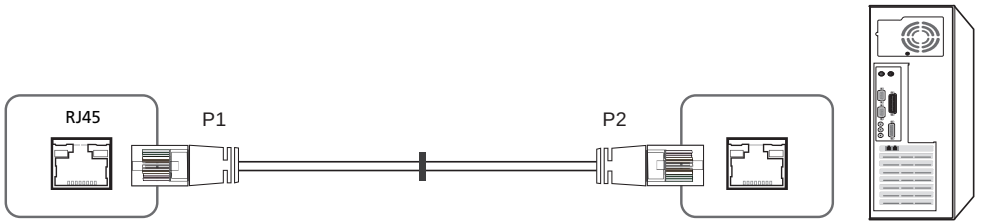
- Connector : RJ45

Direct LAN cable (PC to HUB)



Signal	P1		P2	Signal
TX+	1	<-------->	1	TX+
TX-	2	<-------->	2	TX-
RX+	3	<-------->	3	RX+
RX-	6	<-------->	6	RX-

Cross LAN cable (PC to PC)

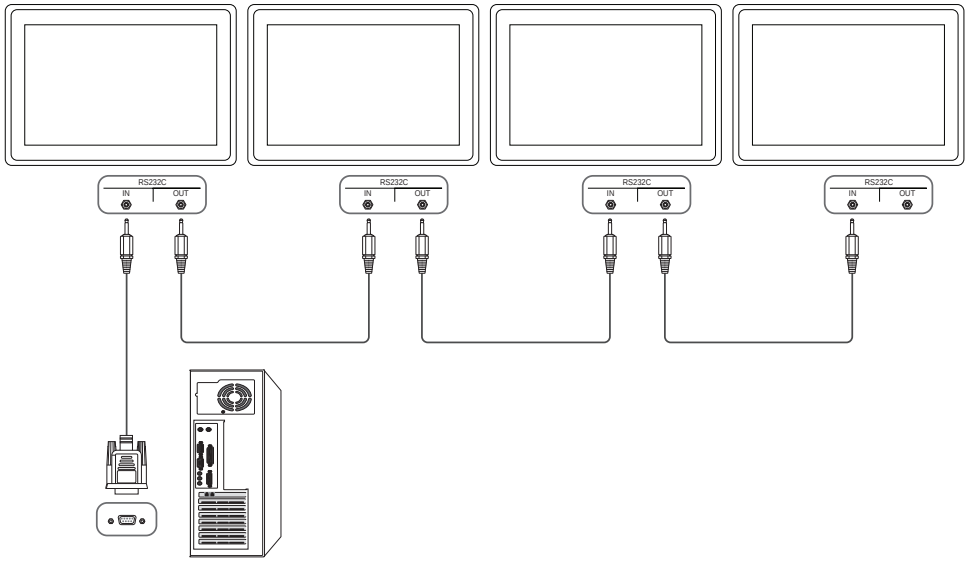


Signal	P1		P2	Signal
TX+	1	<-------->	3	RX+
TX-	2	<-------->	6	RX-
RX+	3	<-------->	1	TX+
RX-	6	<-------->	2	TX-

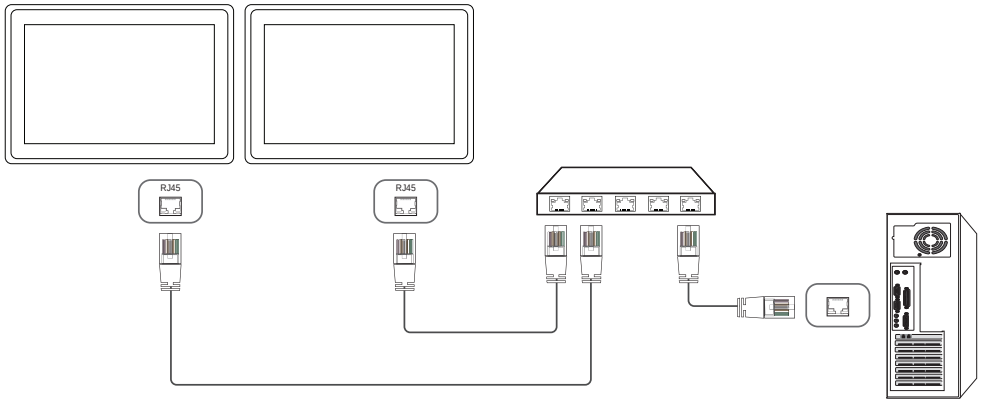
Connection

— Ensure you connect each of the adapters to the correct RS232C IN or OUT port on the product.

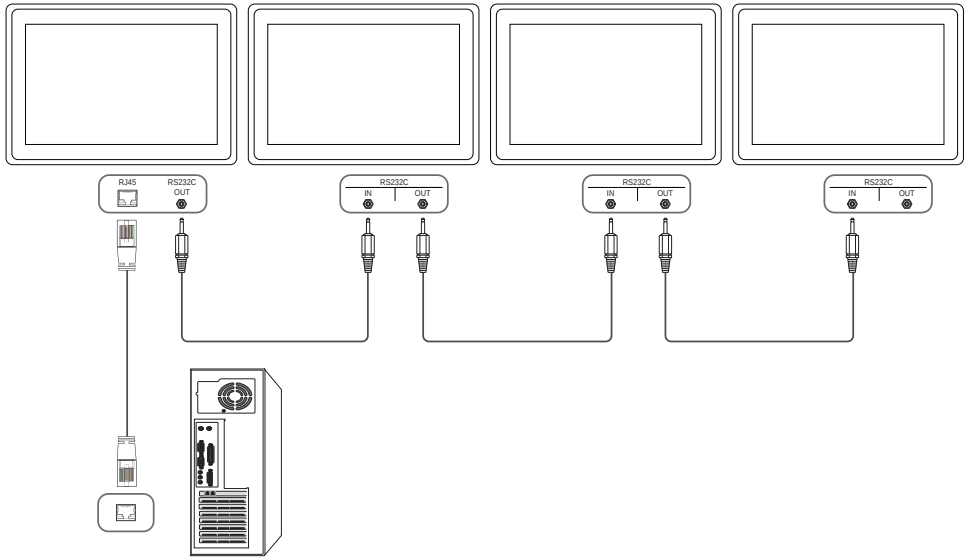
- Connection 1



- Connection 2



- Connection 3



Control Codes

Viewing control state (Get control command)

Header	Command	ID	Data length	Checksum
0xAA	Command type		0	

Controlling (Set control command)

Header	Command	ID	Data length	Data	Checksum
0xAA	Command type		1	Value	

Command

No.	Command type	Command	Value range
1	Power control	0x11	0~1
2	Volume control	0x12	0~100
3	Input source control	0x14	-
4	Screen mode control	0x18	-
5	Screen size control	0x19	0~255
6	PIP on/off control	0x3C	0~1
7	Auto adjustment control (PC and BNC only)	0x3D	0
8	Video wall mode control	0x5C	0~1
9	Safety Lock	0x5D	0~1
10	Video Wall On	0x84	0~1
11	Video Wall User Control	0x89	-

- All communications take place in hexadecimals. The checksum is calculated by adding up all values except the header. If a checksum adds up to be more than 2 digits as shown below (11+FF+01+01=112), the first digit is removed.

E.g. Power On & ID=0

Header	Command	ID	Data length	Data 1	Checksum
0xAA	0x11		1	"Power"	

Header	Command	ID	Data length	Data 1	12
0xAA	0x11		1	1	

- To control all devices connected by a serial cable simultaneously irrespective of IDs, set the ID as "0xFE" and transmit commands. Commands will be executed by each device but ACK will not respond.

Power control

- Function
  A product can be powered on and off using a PC.
- Viewing power state (Get Power ON / OFF Status)

Header	Command	ID	Data length	Checksum
0xAA	0x11		0	

- Setting power ON/Off (Set Power ON / OFF)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x11		1	"Power"	

"Power": Power code to be set on a product.

1: Power ON

0: Power OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x11	"Power"	

"Power": Power code to be set on a product.

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x11	"ERR"	

"ERR" : A code showing what error has occurred.

Volume control

- Function
  The volume of a product can be adjusted using a PC.
- Viewing volume state (Get Volume Status)

Header	Command	ID	Data length	Checksum
0xAA	0x12		0	

- Setting the volume (Set Volume)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x12		1	"Volume"	

"Volume": Volume value code to be set on a product. (0-100)

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x12	"Volume"	

"Volume": Volume value code to be set on a product. (0-100)

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x12	"ERR"	

"ERR" : A code showing what error has occurred.

Input source control

- Function
  The input source of a product can be changed using a PC.
- Viewing input source state (Get Input Source Status)

Header	Command	ID	Data length	Checksum
0xAA	0x14		0	

- Setting the input source (Set Input Source)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x14		1	"Input Source"	

"Input Source": An input source code to be set on a product.

0x14	PC
0x18	DVI
0x0C	Input source
0x08	Component
0x20	MagicInfo
0x1F	DVI_video
0x30	RF(TV)
0x40	DTV
0x21	HDMI1
0x22	HDMI1_PC
0x23	HDMI2
0x24	HDMI2_PC
0x25	DisplayPort

— DVI_video, HDMI1_PC and HDMI2_PC cannot be used with the Set command. They only respond to "Get" commands.

— This model does not support HDMI1, HDMI1_PC, HDMI2 and HDMI2_PC ports.

— MagicInfo is only available with models that contain the MagicInfo function.

— RF(TV), DTV are only available with models that include a TV.

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x14	"Input Source"	

"Input Source": An input source code to be set on a product.

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x14	"ERR"	

"ERR" : A code showing what error has occurred.

Screen mode control

- Function
  The screen mode of a product can be changed using a PC.
  Screen mode cannot be controlled when the Video Wall function is enabled.

  — This control can only be used on models that include a TV.

- Viewing screen status (Get Screen Mode Status)

Header	Command	ID	Data length	Checksum
0xAA	0x18		0	

- Setting the picture size (Set Picture Size)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x18		1	"Screen Mode"	

"Screen Mode": A code that sets the product status

0x01	16 : 9
0x04	Zoom
0x31	Wide Zoom
0x0B	4 : 3

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x18	"Screen Mode"	

"Screen Mode": A code that sets the product status

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x18	"ERR"	

"ERR": A code showing what error has occurred

Screen size control

- Function
  The screen size of a product can be changed using a PC.
- Viewing the screen size (Get Screen Size Status)

Header	Command	ID	Data length	Checksum
0xAA	0x19		0	

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x19	"Screen Size"	

"Screen Size": product screen size (range: 0 – 255, unit: inch)

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x19	"ERR"	

"ERR": A code showing what error has occurred

PIP On/Off control

- Function
  The PIP mode of a product can be turned on or off using a PC.
  - Only available on models that have the PIP function.
  - The mode cannot be controlled if Video Wall is set to On.
  - This function is not available in MagicInfo.
- Viewing PIP on/off state (Get the PIP ON / OFF Status)

Header	Command	ID	Data length	Checksum
0xAA	0x3C		0	

- Setting PIP on/off (Set the PIP ON / OFF)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x3C		1	"PIP"	

"PIP": A code used to turn the PIP mode of a product on or off

1: PIP ON

0: PIP OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x3C	"PIP"	

"PIP": A code used to turn the PIP mode of a product on or off

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x3C	"PIP"	

"ERR": A code showing what error has occurred

Auto adjustment control (PC and BNC only)

- Function
  Automatically adjust the PC system screen using a PC.
- Viewing auto adjustment state (Get Auto Adjustment Status)
  None
- Setting auto adjustment (Set Auto Adjustment)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x3D		1	"Auto Adjustment"	

"Auto Adjustment" : 0x00 (at all times)

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x3D	"Auto Adjustment"	

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x3D	"ERR"	

"ERR": A code showing what error has occurred

Video Wall Mode Control

- Function
  Video Wall mode can be activated on a product using a PC.
  This control is only available on a product whose Video Wall is enabled.
- Viewing video wall mode (Get Video Wall Mode)

Header	Command	ID	Data length	Checksum
0xAA	0x5C		0	

- Setting the video wall (Set Video Wall Mode)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x5C		1	"Video Wall Mode"	

"Video Wall Mode": A code used to activate Video Wall mode on a product

1: Full

0: Natural

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x5C	"Video Wall Mode"	

"Video Wall Mode": A code used to activate Video Wall mode on a product

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x5C	"ERR"	

"ERR": A code showing what error has occurred

Safety Lock

- Function
  PC can be used to turn the Safety Lock function on or off on a product.
  This control is available regardless of whether or not the power is turned on.
- Viewing the safety lock state (Get Safety Lock Status)

Header	Command	ID	Data length	Checksum
0xAA	0x5D		0	

- Enabling or disabling safety lock (Set Safety Lock Enable / Disable)

Header	Command	ID	Data length	Data	Checksum
0xAA	0x5D		1	"Safety Lock"	

"Safety Lock": Safety lock code to be set on a product

1: ON

0: OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x5D	"Safety Lock"	

"Safety Lock": Safety lock code to be set on a product

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x5D	"ERR"	

"ERR": A code showing what error has occurred

Video Wall On

- Function
  Turn Video Wall on or off on the product from your computer.
- Get Video Wall On/Off Status

Header	Command	ID	Data length	Checksum
0xAA	0x84		0	

- Set Video Wall On/Off

Header	Command	ID	Data length	Data	Checksum
0xAA	0x84		1	V.Wall_On	

- V.Wall_On: Video Wall code to be assigned to the product

1: Video Wall ON

0: Video Wall OFF

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'A'	0x84	V.Wall_On	

V.Wall_On : Same as above

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x84	ERR	

"ERR": A code showing what error has occurred

Video Wall User Control

- Function
  Turn the Video Wall function on or off on the product from your computer.
- Get Video Wall Status

Header	Command	ID	Data length	Checksum
0xAA	0x89		0	

- Set Video Wall

Header	Command	ID	Data length	Val1	Val2	Checksum
0xAA	0x89		2	Wall_Div	Wall_SNo	

Wall_Div: Video Wall Divider code assigned to the product

10x10 Video Wall Model

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Off	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
1	0x11	0x12	0x13	0x14	0x15	0x16	0x17	0x18	0x19	0x1A	0x1B	0x1C	0x1D	0x1E	0x1F
2	0x21	0x22	0x23	0x24	0x25	0x26	0x27	0x28	0x29	0x2A	0x2B	0x2C	0x2D	0x2E	0x2F
3	0x31	0x32	0x33	0x34	0x35	0x36	0x37	0x38	0x39	0x3A	0x3B	0x3C	0x3D	0x3E	0x3F
4	0x41	0x42	0x43	0x44	0x45	0x46	0x47	0x48	0x49	0x4A	0x4B	0x4C	0x4D	0x4E	0x4F
5	0x51	0x52	0x53	0x54	0x55	0x56	0x57	0x58	0x59	0x5A	0x5B	0x5C	0x5D	0x5E	0x5F
6	0x61	0x62	0x63	0x64	0x65	0x66	0x67	0x68	0x69	0x6A	0x6B	0x6C	0x6D	0x6E	0x6F
7	0x71	0x72	0x73	0x74	0x75	0x76	0x77	0x78	0x79	0x7A	0x7B	0x7C	0x7D	0x7E	N/A
8	0x81	0x82	0x83	0x84	0x85	0x86	0x87	0x88	0x89	0x8A	0x8B	0x8C	N/A	N/A	N/A
9	0x91	0x92	0x93	0x94	0x95	0x96	0x97	0x98	0x99	0x9A	0x9B	N/A	N/A	N/A	N/A
10	0xA1	0xA2	0xA3	0xA4	0xA5	0xA6	0xA7	0xA8	0xA9	0xAA	N/A	N/A	N/A	N/A	N/A
11	0xB1	0xB2	0xB3	0xB4	0xB5	0xB6	0xB7	0xB8	0xB9	N/A	N/A	N/A	N/A	N/A	N/A
12	0xC1	0xC2	0xC3	0xC4	0xC5	0xC6	0xC7	0xC8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	0xD1	0xD2	0xD3	0xD4	0xD5	0xD6	0xD7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	0xE1	0xE2	0xE3	0xE4	0xE5	0xE6	0xE7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	0xF1	0xF2	0xF3	0xF4	0xF5	0xF6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Wall_SNo: Product Number code assigned to the product

10x10 Video Wall Model : (1 ~ 100)

Set Number	Data
1	0x01
2	0x02
...	...
99	0x63
100	0x64

- Ack

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Val2	Checksum
0xAA	0xFF		4	'A'	0x89	Wall_Div	Wall_ SNo	

- Nak

Header	Command	ID	Data length	Ack/Nak	r-CMD	Val1	Checksum
0xAA	0xFF		3	'N'	0x89	ERR	

"ERR": A code showing what error has occurred

Chapter 03
Connecting and Using a Source Device

Before Connecting

Pre-connection Checkpoints

— Before connecting a source device, read the user manual provided with it.
The number and locations of ports on source devices may differ from device to device.

— Do not connect the power cable until all connections are completed.
Connecting the power cable during connection may damage the product.

— Connect the sound ports correctly: left = white and right = red.

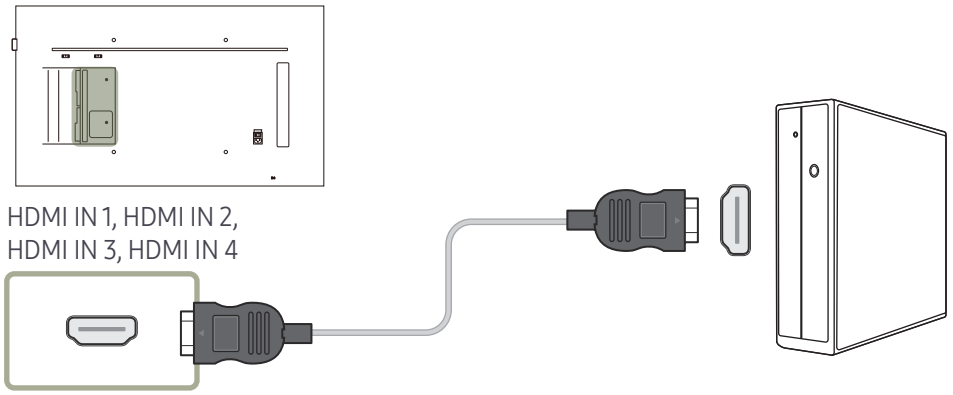
— Check the types of ports at the back of the product you want to connect.

Connecting to a PC

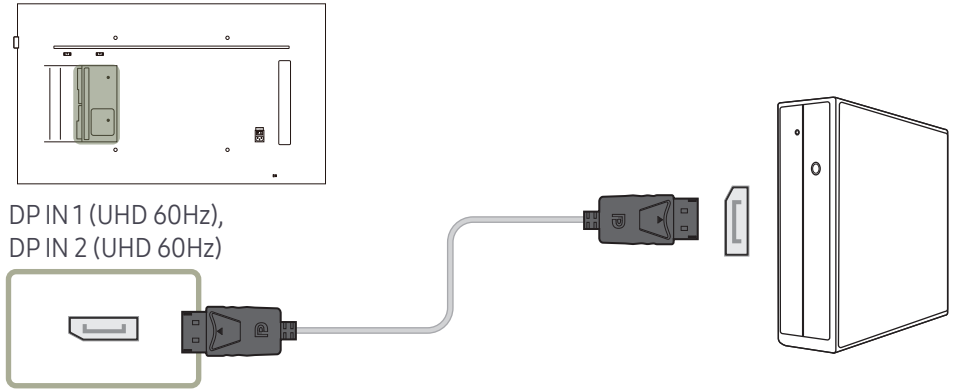
- Do not connect the power cable before connecting all other cables.
  Ensure you connect a source device first before connecting the power cable.
- A PC can be connected to the product in a variety of ways.
  Select a connection method suitable for your PC.

— Connecting parts may differ in different products.

Connection Using an HDMI Cable

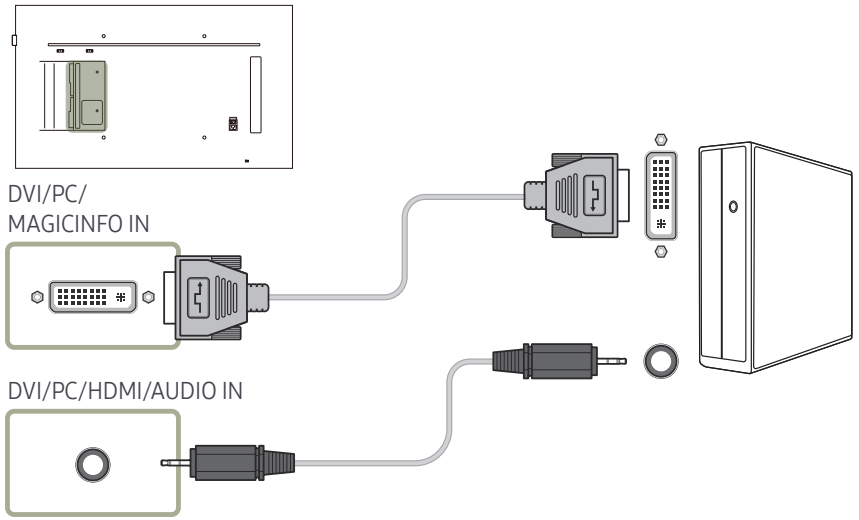


Connection Using an DP Cable

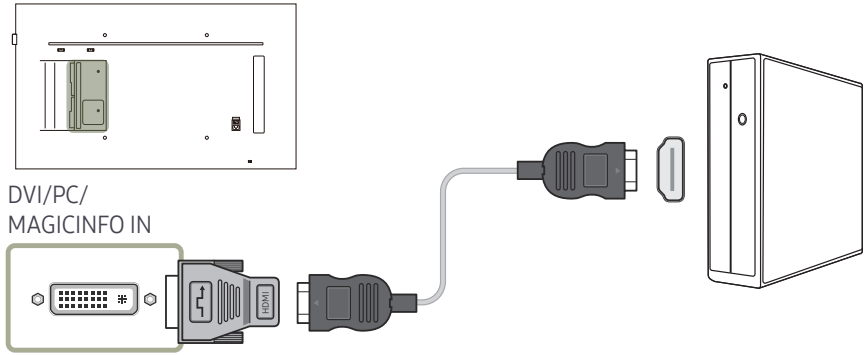


- Precautions for using DP
  - Some graphics cards that are not compliant with the DP standard may prevent the Windows Booting/Bios screen from being displayed when the product is in power-saving mode. If this is the case, make sure to turn on the product first before turning on your PC.
  - The interface **DP IN 1 (UHD 60Hz), DP IN 2 (UHD 60Hz)** on the product and the provided DP cable are designed based on the VESA standards. Using a DP cable that is not VESA compliant may cause the product to function improperly. Samsung Electronics shall not be held responsible for any issues from using a cable that is not VESA compliant.
    Make sure to use a DP cable that is VESA compliant.
  - To use the optimal resolution (3840x2160 @ 60Hz) when the input source is DisplayPort1 or DisplayPort2, using a DP cable shorter than 5m is recommended.
  - Disabling power-saving mode when the input source is DisplayPort1 or DisplayPort2 may import new resolution information and reset the task window size or location.

Connection using a DVI cable (Digital type)



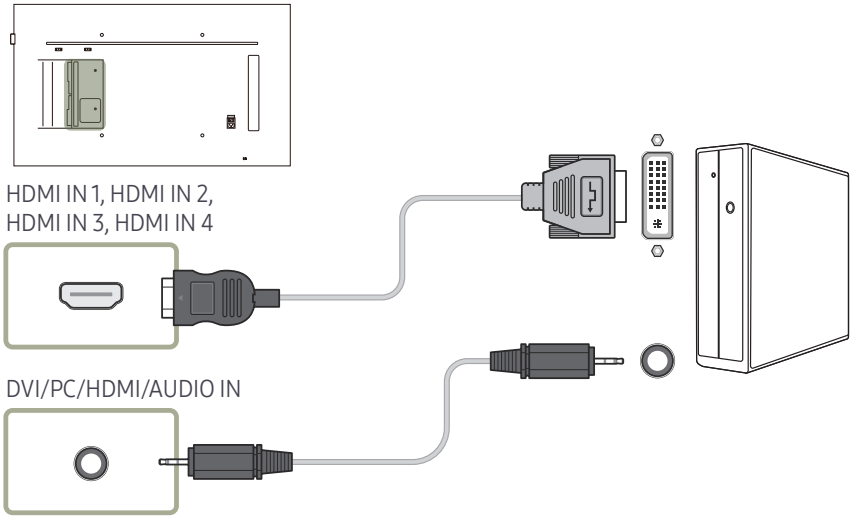
- You can use the DVI port on the product as an HDMI port by using a DVI-HDMI adapter.
- Audio is not available if the DVI port on the product is connected to the HDMI port on the PC using a DVI-HDMI adapter.



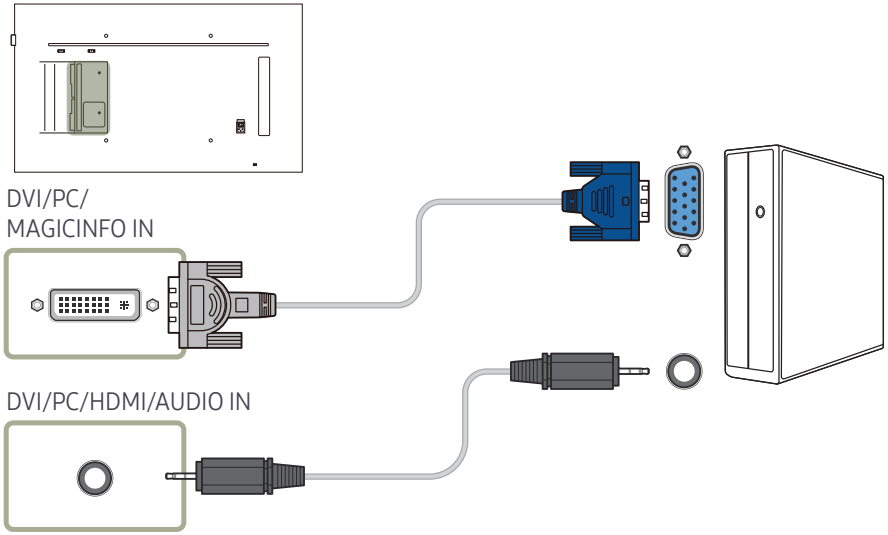
Connection Using an HDMI-DVI Cable

After connecting a computer to the product with an HDMI-DVI cable, make sure to configure the settings as shown below to enable the video and audio from the computer.

- Sound → set HDMI Sound to PC(DVI)
- Picture → set each screen mode to Text under Picture Mode
- System → General → set HDMI Hot Plug to Off



Connection using the DVI-RGB cable

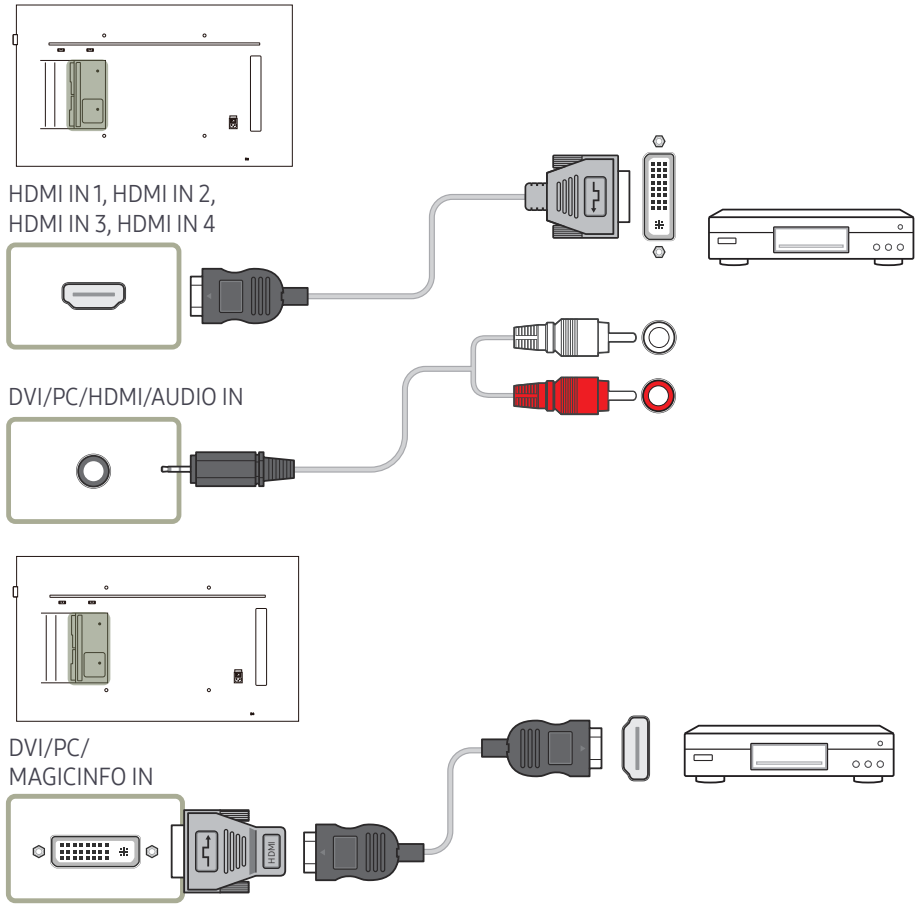


Connecting to a Video Device

- Do not connect the power cable before connecting all other cables.
  Ensure you connect a source device first before connecting the power cable.
- You can connect a video device to the product using a cable.
  - Connecting parts may differ in different products.
  - Press the **SOURCE** button on the remote control to change the source.

Connection Using an HDMI-DVI Cable

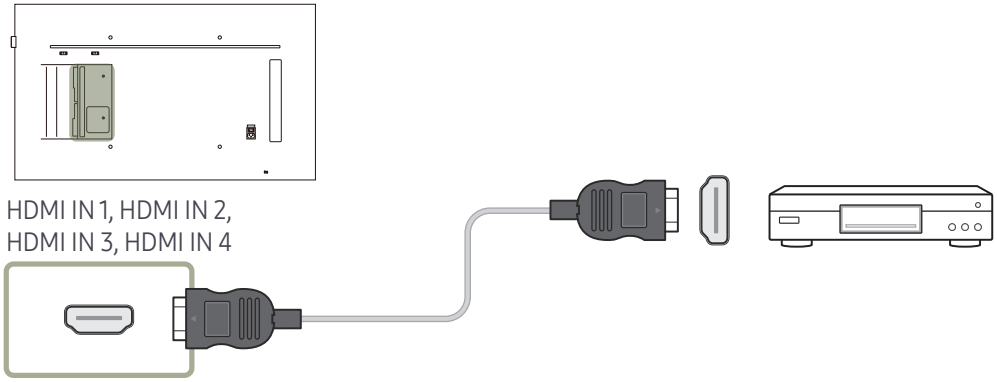
- Audio will not be enabled if the product is connected to a video device using an HDMI-DVI cable. To resolve this, additionally connect an audio cable to the audio ports on the product and video device.
- After connecting a video device to the product with an HDMI-DVI cable, make sure to configure the settings as shown below to enable the video and audio from the video device.
  You can use the DVI port on the product as an HDMI port by using a DVI-HDMI adapter. Audio is not available if the DVI port on the product is connected to the HDMI port on the PC using a DVI-HDMI adapter.
  - Sound → set HDMI Sound to AV(HDMI)
  - Picture → set each screen mode to Video/Image under Picture Mode
  - System → General → set HDMI Hot Plug to On
- Supported resolutions include 1080p (50/60Hz), 720p (50/60Hz), 480p, and 576p.



Connection Using an HDMI Cable

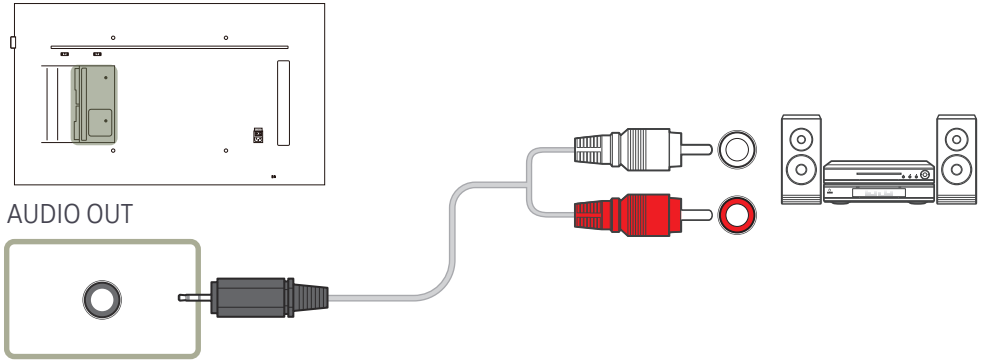
Using an HDMI cable or HDMI to DVI Cable (UHD 30Hz)

- For better picture and audio quality, connect to a digital device using an HDMI cable.
- An HDMI cable supports digital video and audio signals, and does not require an audio cable.
  - To connect the product to a digital device that does not support HDMI output, use an HDMI-DVI and audio cables.
- The picture may not display normally (if at all) or the audio may not work if an external device that uses an older version of HDMI mode is connected to the product. If such a problem occurs, ask the manufacturer of the external device about the HDMI version and, if out of date, request an upgrade.
- Be sure to use an HDMI cable with a thickness of 14 mm or less.
- Be sure to purchase a certified HDMI cable. Otherwise, the picture may not display or a connection error may occur.
- A basic high-speed HDMI cable or one with ethernet is recommended.
  This product does not support the ethernet function via HDMI.

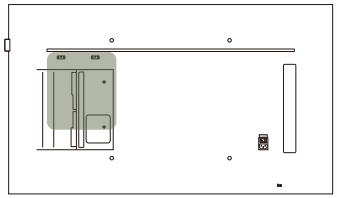


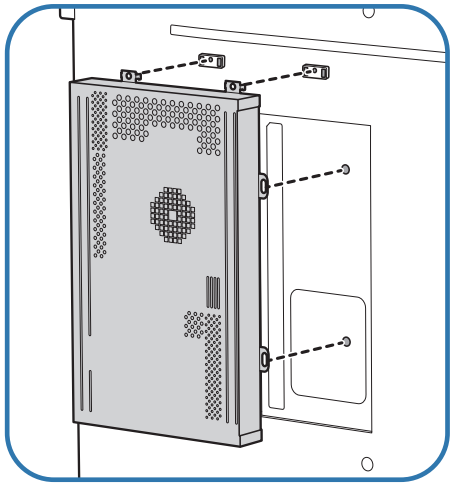
Connecting to an Audio System

— Connecting parts may differ in different products.

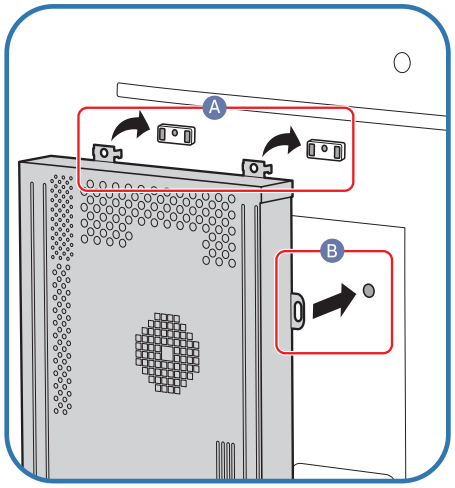


Attaching the Network box (Sold separately)

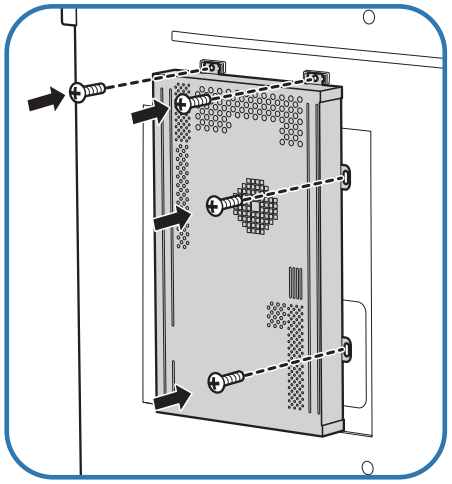




1 Place the network box as shown.



2 First insert the tabs of the network box into the slots marked (A) on the attachment frame. The tabs should hook onto the frame. Then, align the holes marked (B).



3 Attach the network box to the fixed attachment frames.

Connecting the Network box (Sold separately)

— For details on how to connect to a network box, refer to the user's manual provided with the network box upon purchase.

MagicInfo

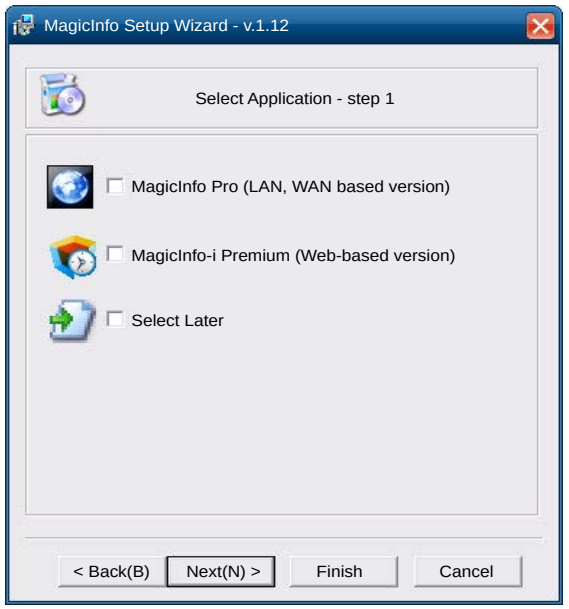
To use MagicInfo, a network box (sold separately) must be connected to the product.

— To change the MagicInfo settings, run "MagicinfoSetupWizard" on the desktop.

— For details on how to use MagicInfo, refer to the DVD provided with the network box.

— The information in this section is subject to change without notice for quality improvement.

— If a problem occurs after installing an operating system other than the one provided with the network box, restoring the previous version of the operating system, or installing software that is not compatible with the operating system provided, you will not be able to benefit from technical support and will be charged a fee for a visit from a service technician. A product exchange or refund will also not be available.



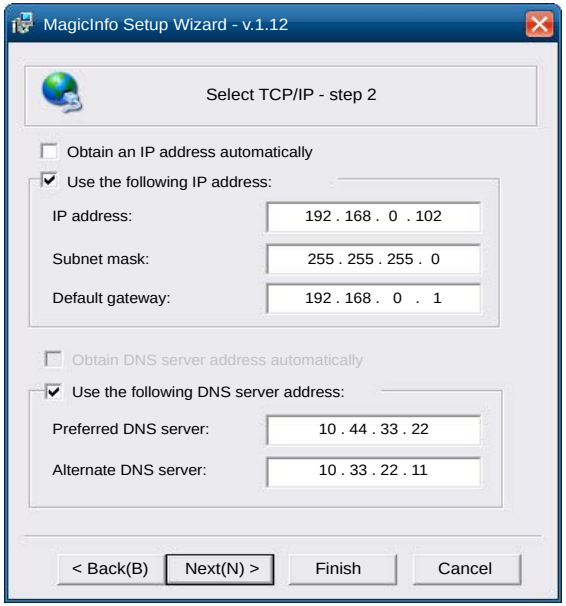
Entering MagicInfo mode

1 After installing and connecting the network box (sold separately) to the product, power on the product.

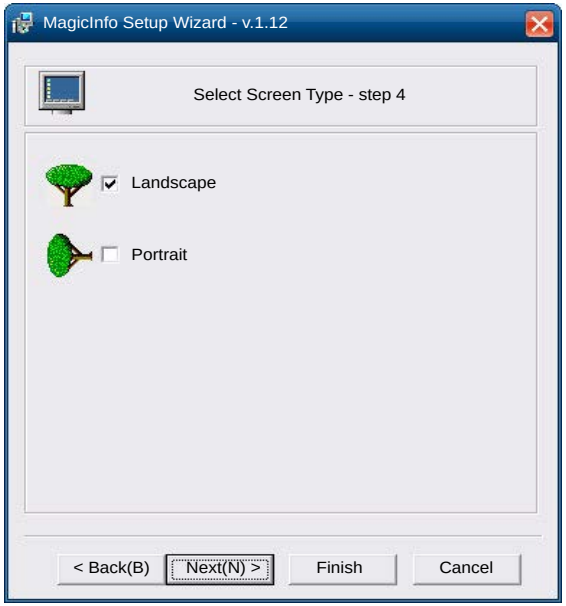
2 Press SOURCE on the remote control, and select MagicInfo.

— Connecting the network box to the DVI/PC/MAGICINFO IN port on the product will change Source from DVI to MagicInfo.

3 Select the default application you want to run when MagicInfo starts.



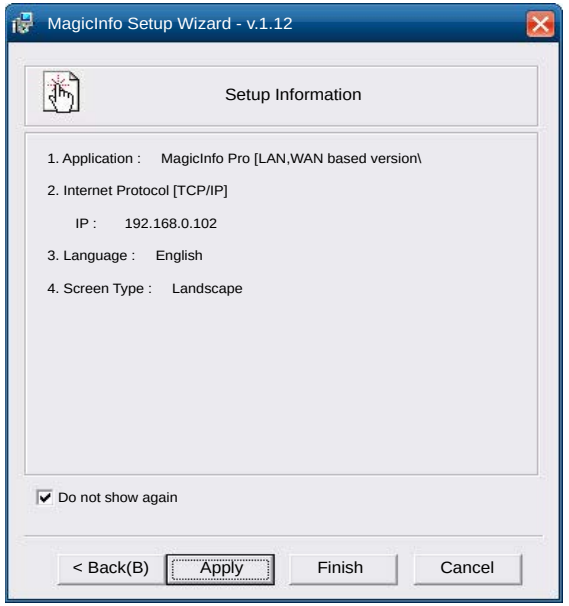
4 Enter the IP information.



6 Select a display mode.



5 Select a language. (The default language is **English**.)



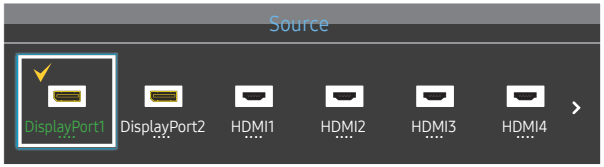
7 Double-check the settings you have just configured.

— If the execution icon does not appear, double-click the MagicInfo icon on the desktop. The icon will appear at the bottom right of the screen.

Changing the Input source

Source

SOURCE → Source



– The displayed image may differ depending on the model.

Source allows you to select a variety of sources and change source device names.

You can display the screen of a source device connected to the product. Select a source from source list to display the screen of the selected source.

— The input source can also be changed by using the SOURCE button on the remote control.

— The screen may not display correctly if an incorrect source is selected for the source device you want to convert to.

Edit Name

SOURCE → Source → TOOLS → Edit Name → ENTER

Customize the name of a connected external device.

— The list can include the following source devices. Source devices on the list differ depending on the selected source.
VCR / DVD / Cable STB / Satellite STB / HD STB / AV Receiver / DVD Receiver / Game / Camcorder / DVD Combo / DHR / PC / DVI PC / DVI Devices

Chapter 04
Using MDC

Multiple display control "MDC" is an application that allows you to easily control multiple display devices simultaneously using a PC.
For details on how to use the MDC program, refer to Help after installing the program. The MDC program is available on the website.

After you press the On button following the Off button, the product checks its status for about a minute. To run a command, try it after a minute.

MDC Program Installation/Uninstallation

Installation

— MDC installation can be affected by the graphics card, mother board and network conditions.

1 Click the **MDC Unified** installation program.

2 Select a language for installation. Next, click "OK".

3 When the "Welcome to the InstallShield Wizard for MDC_Unified" screen appears, click "Next".

4 In the "License Agreement" window displayed, select "I accept the terms in the license agreement" and click "Next".

5 In the displayed "Customer Information" window, fill out all the information fields and click "Next".

6 In the displayed "Destination Folder" window, select the directory path you want to install the program in and click "Next".

— If the directory path is not specified, the program will be installed in the default directory path.

7 In the displayed "Ready to Install the Program" window, check the directory path to install the program in and click "Install".

8 Installation progress will be displayed.

9 Click "Finish" in the displayed "InstallShield Wizard Complete" window.

— Select "Launch MDC Unified" and click "Finish" to run the MDC program immediately.

10 The **MDC Unified** shortcut icon will be created on the desktop after installation.

— The MDC execution icon may not be displayed depending on the PC system or product specifications.

— Press F5 if the execution icon is not displayed.

Uninstallation

1 Select **Settings** › **Control Panel** on the **Start** menu and double-click **Add/Delete Program**.

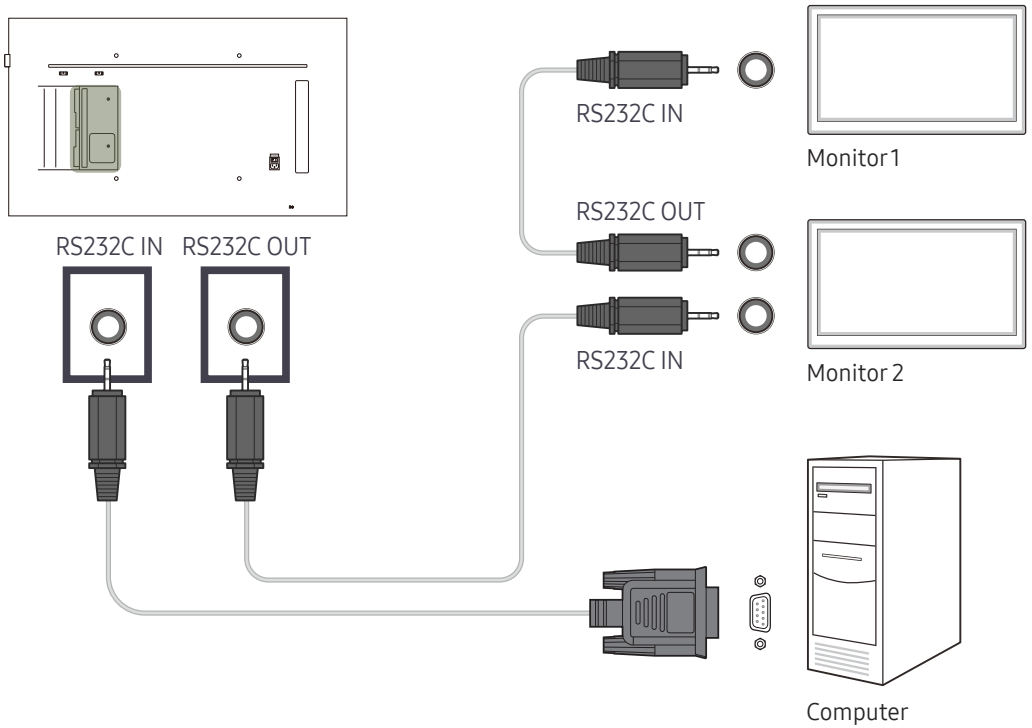
2 Select **MDC Unified** from the list and click **Change/Remove**.

Connecting to MDC

Using MDC via RS-232C (serial data communications standards)

An RS-232C serial cable must be connected to the serial ports on the PC and monitor.

— The appearance may differ depending on the product.



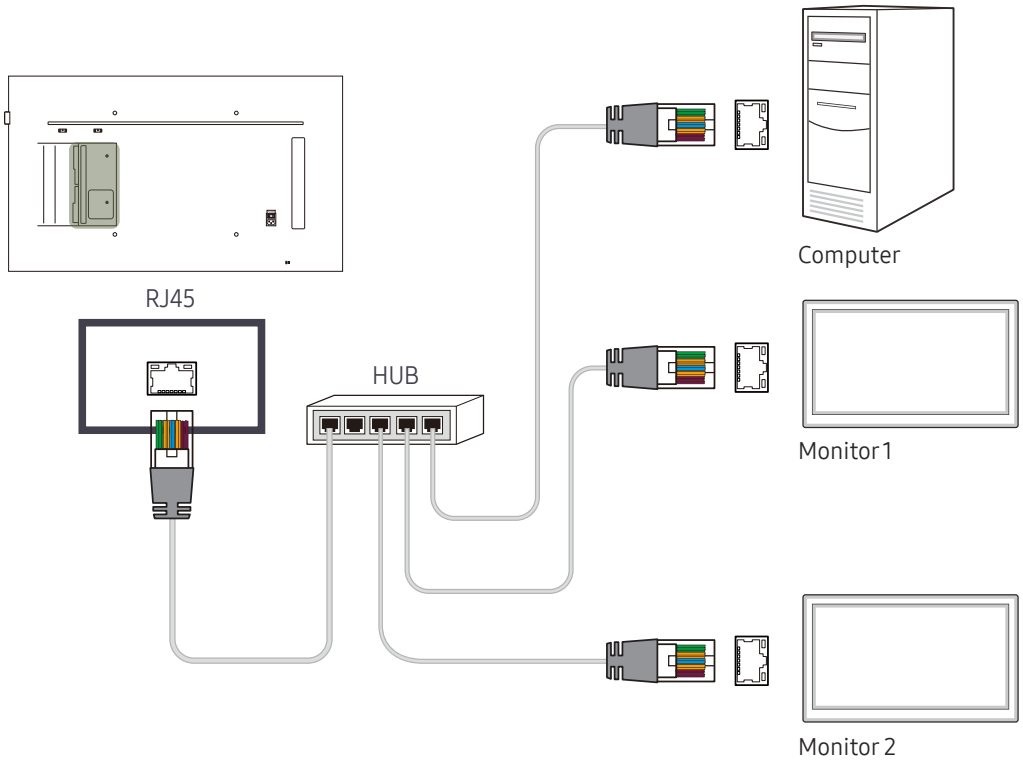
Using MDC via Ethernet

Enter the IP for the primary display device and connect the device to the PC. Display devices can be connected to each other using a LAN cable.

Connection using a direct LAN cable

— The appearance may differ depending on the product.

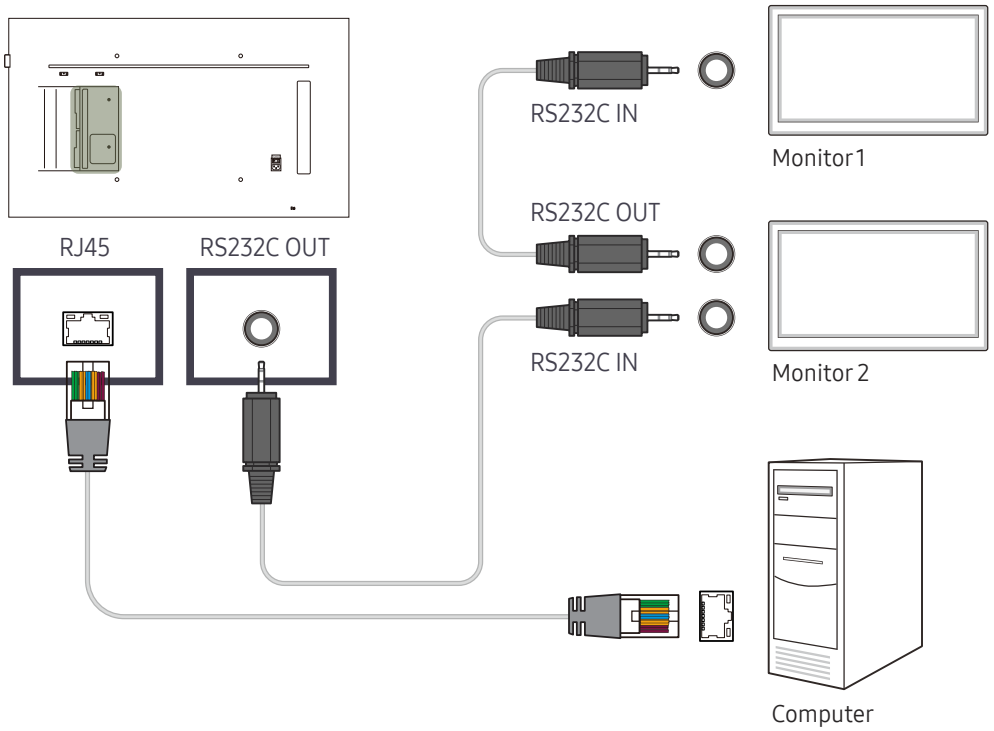
— Multiple products can be connected using the **RJ45** port on the product and the LAN ports on the HUB.



Connection using a cross LAN cable

— The appearance may differ depending on the product.

— Multiple products can be connected using the **RS232C IN / OUT** port on the product.



Chapter 05
Home feature

This feature is provided in Support → Go to Home.
Accessible using the HOME button on the remote control.

Multi Screen

HOME → Multi Screen → ENTER



– The displayed image may differ depending on the model.

– Refer to Multi Screen under the chapter OnScreen Display for more information on sub-features.

View several sources on the screen at the same time.

- Off
- PIP: The picture from the external video source will be in the main screen and the picture from the product will be in the PIP sub-picture screen.
- Triple Screen: When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as two sub-screens.
- Four Screen: When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as three sub-screens.

Picture Mode

HOME → Picture Mode → ENTER



– The displayed image may differ depending on the model.

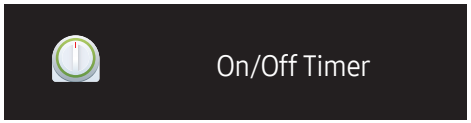
Select a picture mode (Picture Mode) suitable for the environment where the product will be used.

Video/Image mode improves the picture quality of the video device. Text mode improves the picture quality of the computer.

- Shop & Mall
  Suitable for shopping malls.
  – Select either Video/Image or Text depending on the picture mode.
- Office & School
  Suitable for offices and schools.
  – Select either Video/Image or Text depending on the picture mode.
- Terminal & Station
  Suitable for bus terminals and train stations.
  – Select either Video/Image or Text depending on the picture mode.
- Video Wall
  Suitable for environments where videowall display are used.
  – Select either Video/Image or Text depending on the picture mode.
- Calibration
  In this mode, the brightness, color, gamma and uniformity settings customized using the color calibration program **Advanced Color Management** are applied.
  – To apply the Calibration mode properly, make sure you configure the picture quality settings, such as brightness, color, gamma and uniformity, using the color calibration program **Advanced Color Management**.
  – To download the **Advanced Color Management** program, visit www.samsung.com/displaysolutions.

On/Off Timer

HOME → On/Off Timer → ENTER



– The displayed image may differ depending on the model.

– You must set the clock before you can use Clock Set.

On Timer

Set On Timer so that your product turns on automatically at a time and on a day of your choosing.

The power is turned on with the specified volume or input source.

On Timer: Set the on timer by making a selection from one of the seven options. Ensure you set the current time first.

(On Timer 1 ~ On Timer 7)

- Setup: Select Off, Once, Everyday, Mon~Fri, Mon~Sat, Sat~Sun or Manual.
  If you select Manual, you can choose the days you want On Timer to turn on your product.
  – The check mark indicates days you've selected.
- Time: Set the hour and minute. Use the number buttons or the up and down arrow keys to enter numbers. Use the left and right arrow buttons to change entry fields.
- Volume: Set the desired volume level. Use the left and right arrow buttons to change the volume level.
- Source: Select the input source of your choice.

Off Timer

Set the off timer (Off Timer) by making a selection from one of the seven options. (Off Timer 1 ~ Off Timer 7)

- Setup: Select Off, Once, Everyday, Mon~Fri, Mon~Sat, Sat~Sun or Manual.
  If you select Manual, you can choose the days you want Off Timer to turn off your product.
  – The check mark indicates days you've selected.
- Time: Set the hour and minute. Use the number buttons or the up and down arrow keys to enter numbers. Use the left and right arrow buttons to change entry fields.

Holiday Management

Timer will be disabled during a period specified as a holiday.

- Add Holiday: Specify the period you want to add as a holiday.
  Select the start and end dates of the holiday you want to add using the ▲/▼ buttons, and click the Save button.

  The period will be added to the list of holidays.
  - Start: Set the start date of the holiday.
  - End: Set the end date of the holiday.

  — Edit: Select a holiday item and then change the date.

  — Delete: Delete selected items from the list of holidays.
- Set Applied Timer: Set the On Timer and Off Timer to not activate on public holidays.
  - Press ↵ to select the On Timer and Off Timer settings you do not want to activate.
  - The selected On Timer and Off Timer will not activate.

Network Settings

HOME → Network Settings→ ENTER

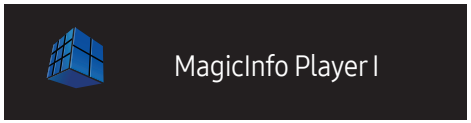


– The displayed image may differ depending on the model.

View the network settings.

MagicInfo Player I

HOME → MagicInfo Player I → ENTER



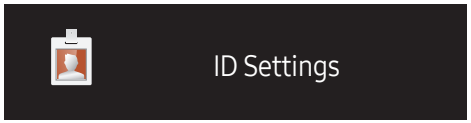
– The displayed image may differ depending on the model.

Change source to MagicInfo Player I.

MagicInfo Player I publishes and plays a variety of content, including created content and multimedia content (images, videos and audio content), from the server or a connected device.

ID Settings

HOME → ID Settings → ENTER



– The displayed image may differ depending on the model.

Assign an ID to a set.

Device ID

Enter the ID number of the product connected to the input cable for input signal reception. (Range: 0~224)

— Press ▲/▼ to select a number, and press .

— Enter the number you want using the number buttons on the remote control.

PC Connection Cable

Select a method to connect to MDC to receive the MDC signal.

- RS232C cable
  Communicate with MDC via the RS232C-stereo cable.
- RJ45(LAN) cable
  Communicate with MDC via the RJ45 cable.

Video Wall

HOME → Video Wall → ENTER



– The displayed image may differ depending on the model.

Customize the layout of multiple displays that are connected to form a video wall.

In addition, display part of a whole picture or repeat the same picture on each of the connected multiple displays.

To display multiple images, refer to MDC Help or the MagicInfo user guide. Some models may not support the MagicInfo function.

Video Wall

You can activate or deactivate Video Wall.

To organize a video wall, select On.

- Off / On

Horizontal x Vertical

This feature automatically splits a videowall display based on a videowall matrix configuration.

Enter the videowall matrix.

The videowall display is split based on the configured matrix. The number of vertical or horizontal display devices can be set within the range 1 and 15.

— A videowall display can be split into a maximum of 225 screens.

— The Horizontal x Vertical option is only enabled when Video Wall is set to On.

Screen Position

To rearrange split screens, adjust the number for each product in the matrix using the Screen Position feature.

Selecting Screen Position will display the videowall matrix with the numbers assigned to the products that form the videowall.

To change the order of a display device, change the device number and press the ↵ button.

— A maximum of 255 displays can be arranged in Screen Position.

— The Screen Position option is only enabled when Video Wall is set to On.

— To use the function, make sure Horizontal x Vertical is configured.

Format

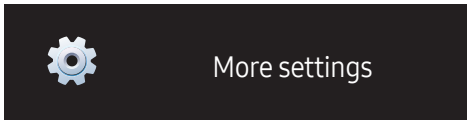
Select how to display images on the videowall display.

- Full: Display images in full screen.
- Natural: Display images in the original aspect ratio.

— The Format option is only enabled when Video Wall is set to On.

More settings

HOME → More settings → ENTER



– The displayed image may differ depending on the model.

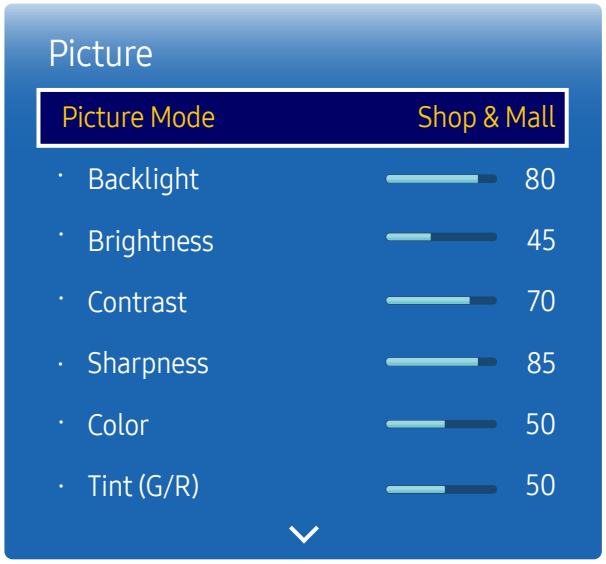
The picture settings menu appears.

Chapter 06
Screen Adjustment

Configure the Picture settings (Backlight, Color Tone, etc.).
The layout of the Picture menu options may vary depending on the product.

Picture Mode

MENU → Picture → Picture Mode → ENTER



– The displayed image may differ depending on the model.

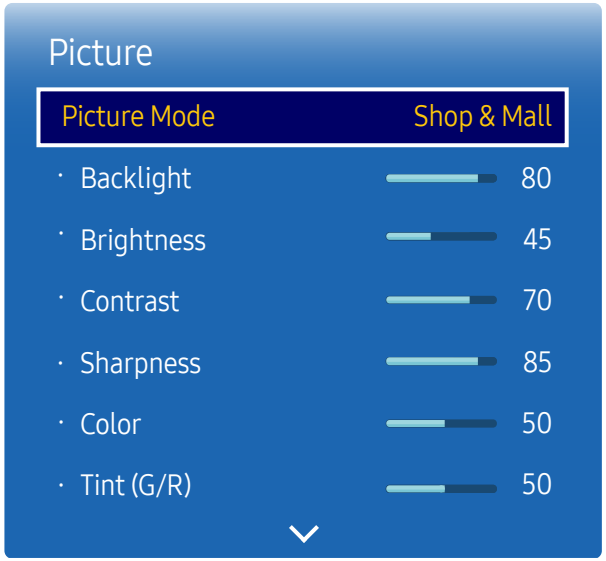
Select a picture mode (Picture Mode) suitable for the environment where the product will be used.

Video/Image mode improves the picture quality of the video device. Text mode improves the picture quality of the computer.

- Shop & Mall
  Suitable for shopping malls.
  – Select either Video/Image or Text depending on the picture mode.
- Office & School
  Suitable for offices and schools.
  – Select either Video/Image or Text depending on the picture mode.
- Terminal & Station
  Suitable for bus terminals and train stations.
  – Select either Video/Image or Text depending on the picture mode.
- Video Wall
  Suitable for environments where videowall display are used.
  – Select either Video/Image or Text depending on the picture mode.
- Calibration
  In this mode, the brightness, color, gamma and uniformity settings customized using the color calibration program **Advanced Color Management** are applied.
  – To apply the Calibration mode properly, make sure you configure the picture quality settings, such as brightness, color, gamma and uniformity, using the color calibration program **Advanced Color Management**.
  – To download the **Advanced Color Management** program, visit www.samsung.com/displaysolutions.

Backlight / Brightness / Contrast / Sharpness / Color / Tint (G/R)

MENU → Picture → ENTER



– The displayed image may differ depending on the model.

Your product has several options for adjusting picture quality.

Picture Mode	Picture Mode settings	Adjustable options
Shop & Mall, Office & School, Terminal & Station, Video Wall	Video/Image	Backlight / Brightness / Contrast / Sharpness / Color / Tint (G/R)
	Text	Backlight / Brightness / Contrast / Sharpness
Calibration		Backlight

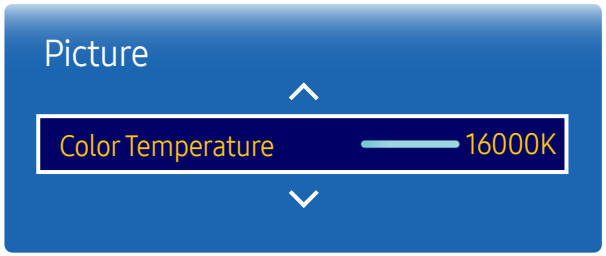
— When you make changes to Backlight, Brightness, Contrast, Sharpness, Color or Tint (G/R), the OSD will be adjusted accordingly.

— You can adjust and store settings for each external device you have connected to an input on the product.

— Lowering picture brightness reduces power consumption.

Color Temperature

MENU → Picture → Color Temperature → ENTER



– The displayed image may differ depending on the model.

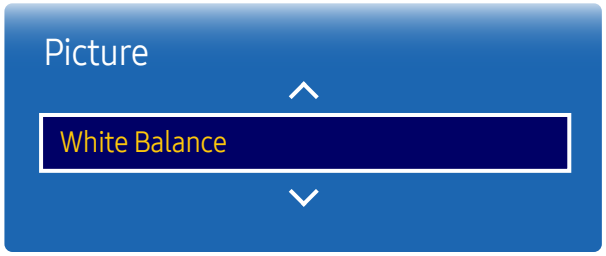
Adjust the color temperature (Red / Green / Blue). (Range: 2800K–16000K)

— Enabled when Color Tone is set to Off.

— If Picture Mode is set to Calibration, Color Temperature is disabled.

White Balance

MENU → Picture → White Balance → ENTER



– The displayed image may differ depending on the model.

Adjust the color temperature for a more natural picture.

- R-Gain / G-Gain / B-Gain: Adjust each color's (red, green, blue) brightness.
- R-Offset / G-Offset / B-Offset: Adjust each color's (red, green, blue) darkness.
- Reset: Suitable for environments where videowall display are used.

Gamma

MENU → Picture → Gamma → ENTER



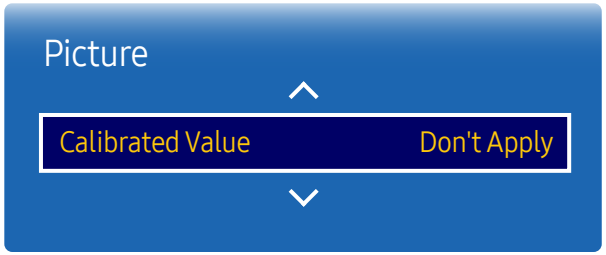
– The displayed image may differ depending on the model.

Adjust the primary color intensity.

— If Picture Mode is set to Calibration, Gamma is disabled.

Calibrated Value

MENU → Picture → Calibrated Value → ENTER



– The displayed image may differ depending on the model.

Select whether to apply the brightness, color, gamma and uniformity settings customized using the color calibration program **Advanced Color Management** to the Information and Advertisement modes.

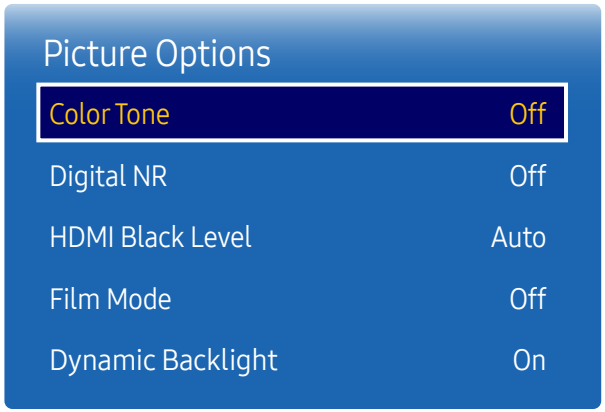
- Don't Apply / Apply

— To download the **Advanced Color Management** program, visit www.samsung.com/displaysolutions.

— If Picture Mode is set to Calibration, Calibrated Value is disabled.

Picture Options

MENU → Picture → Picture Options → ENTER



– The displayed image may differ depending on the model.

Picture Mode	Picture Mode settings	Adjustable options
Shop & Mall, Office & School, Terminal & Station, Video Wall	Video/Image	Color Tone / Digital NR / HDMI Black Level / Film Mode / Dynamic Backlight
	Text	Color Tone / Digital NR / HDMI Black Level / Dynamic Backlight
Calibration		Digital NR / HDMI Black Level / Dynamic Backlight



– The displayed image may differ depending on the model.

Color Tone

If Picture Mode is set to Text

- Off / Cool / Normal / Warm

If Picture Mode is set to Video/Image

- Off / Cool / Normal / Warm1 / Warm2

— If Picture Mode is set to Calibration, Color Tone is disabled.

— Settings can be adjusted and stored for each external device connected to an input on the product.

Digital NR

Reduces the noise of the picture to avoid distracting flickering.

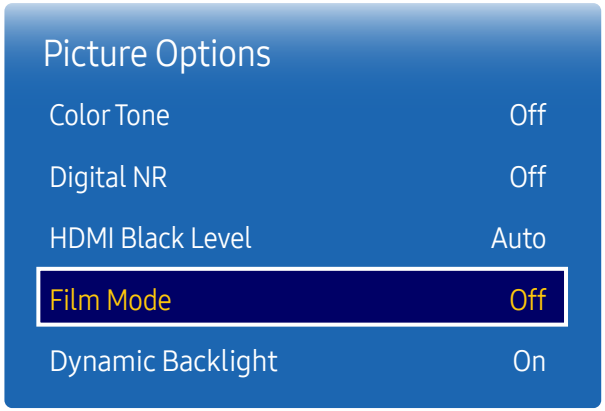
- Off /On

HDMI Black Level

Selects the black level on the screen to adjust the screen depth.

- Auto / Low / Normal

— This option is not available if the input source is set to PC.



– The displayed image may differ depending on the model.

Film Mode

This mode is suitable to view movies.

Sets the product to automatically sense and process film signals from all sources and adjust the picture for optimum quality.

- Off / Auto

— This option can be configured if the input source supports 480i, 576i or 1080i.

— This option is not supported when a PC is connected.

Dynamic Backlight

Automatically adjust the backlight to provide the best possible screen contrast under the current conditions.

- Off / On

— The Dynamic Backlight is not available when the input source is set to PC while Video Wall is On.

Picture Size

MENU → Picture → Picture Size → ENTER



– The displayed image may differ depending on the model.

choose size and aspect ratio picture displayed on screen.

Picture Size

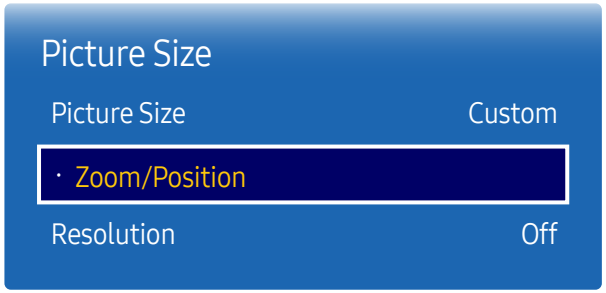
Different screen adjustment options are displayed depending on the current input source.

Available Picture Size options can vary depending on whether the Picture Mode is Video/Image or Text.

- 16:9: Sets the picture to 16:9 wide mode.
- Zoom1: Use for moderate magnification. Cuts off the top and sides.
- Zoom2: Use for a stronger magnification.
- Smart View 1: Reduces the 16:9 picture by 50%.
- Smart View 2: Reduces the 16:9 picture by 25%.
- Wide: Enlarges the aspect ratio of the picture to fit the entire screen.
- 4:3: Sets the picture to basic (4:3) mode.

  — Do not set your product to 4:3 format for a long time.
  The borders displayed on the left and right, or top and bottom of the screen may cause image retention (screen burn) which is not covered by the warranty.
- Screen Fit: Displays the full image without any cut-off when HDMI1, HDMI2, HDMI3, HDMI4 (720p / 1080i / 1080p) signals are inputted.
- Custom: Changes the resolution to suit the user's preferences.
- Original: Display images in the original picture quality.

  — Available ports may differ depending on the model.



– The displayed image may differ depending on the model.

Zoom/Position

Adjust the screen size and position.

This option can be configured if the input source supports 1080i or 1080p and the Picture Size is Custom.

— This option is not supported when a PC is connected.

— From the Zoom/Position screen, follow the steps below.

1 Press the ▼ button to select Zoom/Position. Press the ↵ button.

2 Select the Zoom or Position. Press the ↵ button.

3 Press the ▲/▼/◀/▶ button to move the picture.

4 Press the ↵ button.

— If you want to reset the picture to its original position, select Reset in the Zoom/Position screen. The picture will be set to its default position.

Resolution

If the picture is not normal even when the resolution of the graphics card is one of the following, you can optimize the picture quality by selecting the same resolution for the product as the PC using this menu.

Available resolutions: Off / 1024 x 768 / 1280 x 768 / 1360 x 768 / 1366 x 768

Auto Adjustment

MENU → Picture → Auto Adjustment → ENTER



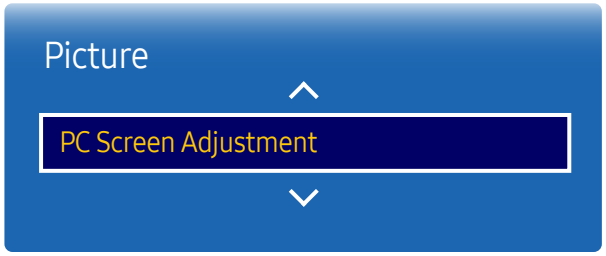
Adjust frequency values/positions and fine tune the settings automatically.

– Available in PC mode only.

– The displayed image may differ depending on the model.

PC Screen Adjustment

MENU → Picture → PC Screen Adjustment → ENTER



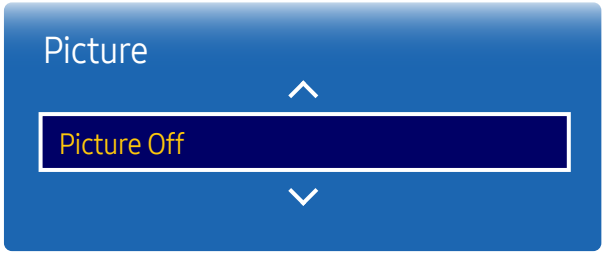
- Coarse / Fine
  Removes or reduces picture noise.
  If the noise is not removed by Fine-tuning alone, use the Coarse function to adjust the frequency as best as possible (Coarse) and Fine-tune again. After the noise has been reduced, re-adjust the picture so that it is aligned with the Center of screen.
- Position
  To adjust the PC's screen position if it is not Centered or does not fit the product screen.
  Press the ▲ or ▼ button to adjust the Vertical Position. Press the ◀ or ▶ button to adjust the Horizontal Position.
- Image Reset
  Resets the image to the default settings.

– Available in PC mode only.

– The displayed image may differ depending on the model.

Picture Off

MENU → Picture → Picture Off → ENTER



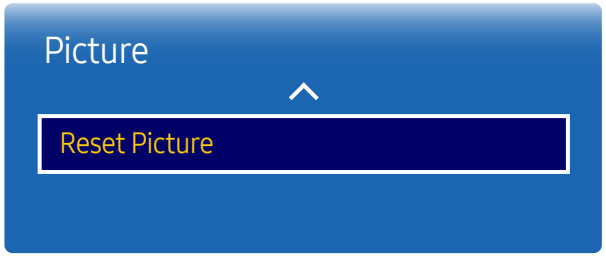
– The displayed image may differ depending on the model.

Selecting Picture Off switches off the screen. The volume is not disabled.

To switch the screen on, press any button other than the volume button.

Reset Picture

MENU → Picture → Reset Picture → ENTER



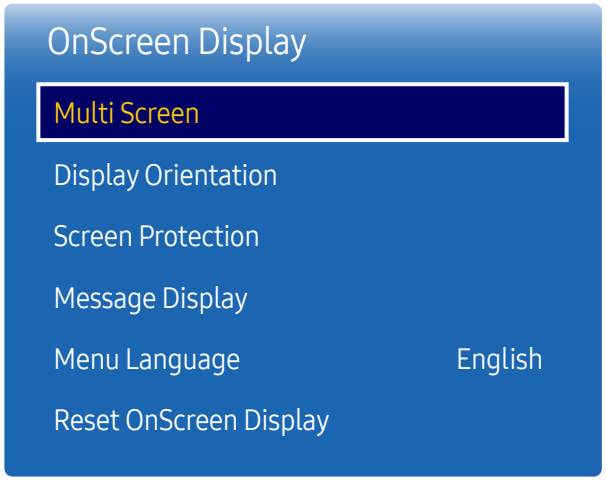
– The displayed image may differ depending on the model.

Resets your current picture mode to its default settings.

Chapter 07
OnScreen Display

Multi Screen

MENU → OnScreen Display → Multi Screen → ENTER



– The displayed image may differ depending on the model.

Multi Screen

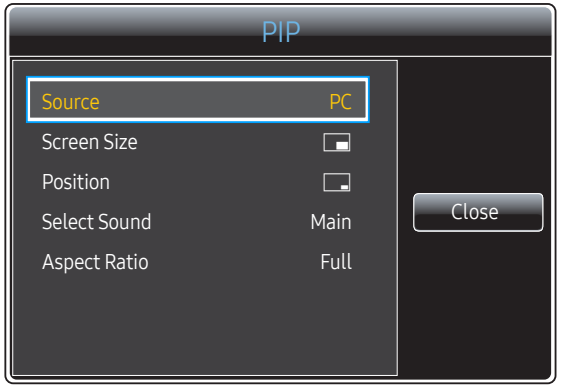
- Off
- PIP: The picture from the external video source will be in the main screen and the picture from the product will be in the PIP sub-picture screen.
- Triple Screen: When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as two sub-screens.
- Four Screen: When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as three sub-screens.

— For Multi Screen sound, refer to the Select Sound instructions.

— If you turn the product off while watching in the Multi Screen mode, Multi Screen mode will remain after power Off/On.

— You may notice that the picture in the PIP screen becomes slightly unnatural when you use the main screen to view a game or karaoke.

— Multi Screen mode supports two UHD resolution screens (3840 x 2160 @ 30 Hz (HDMI) / 60 Hz (DP)). When using this mode, screen burn in (picture quality degradation) may occur.



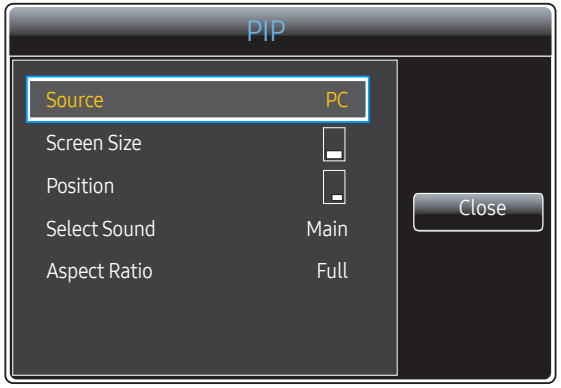
– The displayed image may differ depending on the model.

PIP (Landscape)

The picture from the external video source will be in the main screen and the picture from the product will be in the PIP sub-picture screen.

- Source: You can select a source of the sub picture.
- Screen Size: Select a size for the subpicture.
- Position: Select a position for the sub-picture.

  — In double mode, you cannot select Position.
- Select Sound (Main / Sub): Select a sound source to enable in PIP mode.
- Aspect Ratio (Original / Full): Set the screen mode to either Full or Original.



– The displayed image may differ depending on the model.

PIP (Portrait)

The picture from the external video source will be in the main screen and the picture from the product will be in the PIP sub-picture screen.

— Available only when Source Content Orientation is set to Portrait.

- Source: You can select a source of the sub picture.
- Screen Size: Select a size for the subpicture.
- Position: Select a position for the sub-picture.

  — In double mode, you cannot select Position.
- Select Sound (Main / Sub): Select a sound source to enable in PIP mode.
- Aspect Ratio (Original / Full): Set the screen mode to either Full or Original.

Restrictions

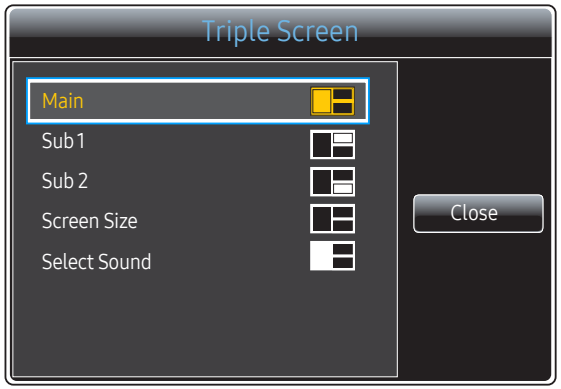
- Divided screens cannot use the same input source simultaneously. Assign a different input source to each of the divided screens.
- If the screen is split, the input sources HDMI4 and DVI cannot be used simultaneously.

When a Network box (Sold separately) is not connected

Main picture	Sub picture
DisplayPort1	DisplayPort2, HDMI1, HDMI2, HDMI3, HDMI4, DVI, PC
DisplayPort2	DisplayPort1, HDMI1, HDMI2, HDMI3, HDMI4, DVI, PC
HDMI1	DisplayPort1, DisplayPort2, HDMI2, HDMI3, HDMI4, DVI, PC
HDMI2	DisplayPort1, DisplayPort2, HDMI1, HDMI3, HDMI4, DVI, PC
HDMI3	DisplayPort1, DisplayPort2, HDMI1, HDMI2, HDMI4, DVI, PC
HDMI4	DisplayPort1, DisplayPort2, HDMI1, HDMI2, HDMI3, PC
DVI	DisplayPort1, DisplayPort2, HDMI1, HDMI2, HDMI3
PC	DisplayPort1, DisplayPort2, HDMI1, HDMI2, HDMI3, HDMI4

When a Network box (Sold separately) is connected

Main picture	Sub picture
DisplayPort1	PC, MagicInfo, HDMI1, HDMI2, HDMI3, HDMI4, DisplayPort2
DisplayPort2	PC, MagicInfo, HDMI1, HDMI2, HDMI3, HDMI4, DisplayPort1
HDMI1	PC, MagicInfo, HDMI2, HDMI3, HDMI4, DisplayPort1, DisplayPort2
HDMI2	PC, MagicInfo, HDMI1, HDMI3, HDMI4, DisplayPort1, DisplayPort2
HDMI3	PC, HDMI1, HDMI2, HDMI4, DisplayPort1, DisplayPort2
HDMI4	PC, MagicInfo, HDMI1, HDMI2, HDMI3, DisplayPort1, DisplayPort2
MagicInfo	HDMI1, HDMI2, DisplayPort1, DisplayPort2
PC	HDMI1, HDMI2, HDMI3, HDMI4, DisplayPort1, DisplayPort2



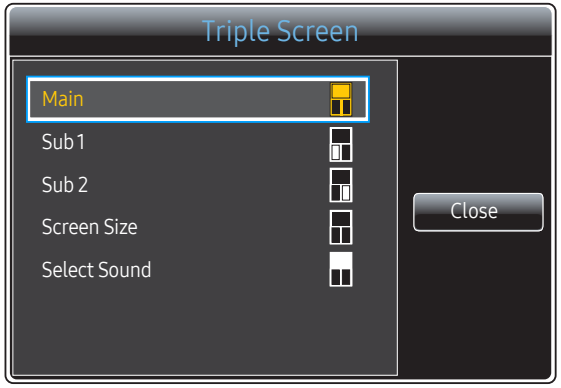
– The displayed image may differ depending on the model.

Triple Screen (Landscape)

When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as two sub-screens.

— Divided screens cannot use the same input source simultaneously. Assign a different input source to each of the divided screens.

- Main: Specify Source and Aspect Ratio for the Main screen in Triple Screen mode.
- Sub 1: Specify Source and Aspect Ratio for the Sub 1 screen in Triple Screen mode.
- Sub 2: Specify Source and Aspect Ratio for the Sub 2 screen in Triple Screen mode.
- Screen Size: Set the sizes of the Main, Sub 1 and Sub 2 screens.
- Select Sound: Select a sound source to enable in Triple Screen mode.



– The displayed image may differ depending on the model.

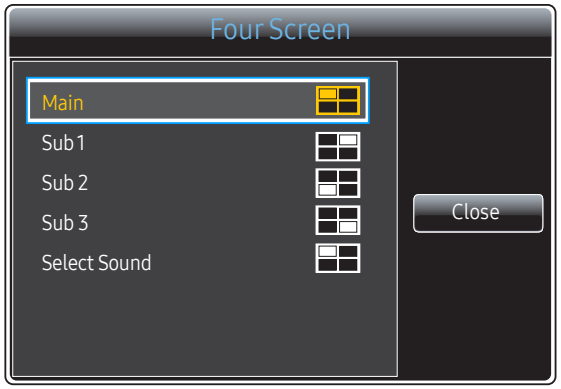
Triple Screen (Portrait)

When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as two sub-screens.

— Available only when Source Content Orientation is set to Portrait.

— Divided screens cannot use the same input source simultaneously. Assign a different input source to each of the divided screens.

- Main: Specify Source and Aspect Ratio for the Main screen in Triple Screen mode.
- Sub 1: Specify Source and Aspect Ratio for the Sub 1 screen in Triple Screen mode.
- Sub 2: Specify Source and Aspect Ratio for the Sub 2 screen in Triple Screen mode.
- Screen Size: Set the sizes of the Main, Sub 1 and Sub 2 screens.
- Select Sound: Select a sound source to enable in Triple Screen mode.



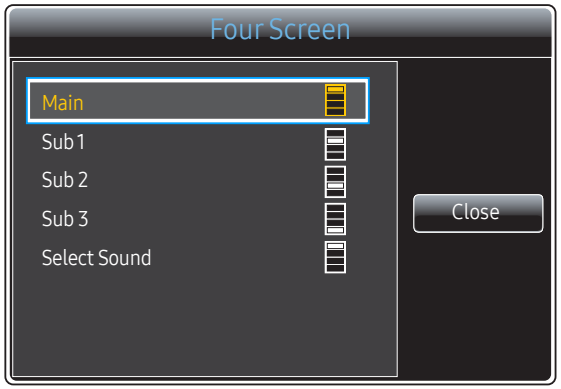
– The displayed image may differ depending on the model.

Four Screen (Landscape)

When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as three sub-screens.

— Divided screens cannot use the same input source simultaneously. Assign a different input source to each of the divided screens.

- Main: Specify Source and Aspect Ratio for the Main screen in Four Screen mode.
- Sub 1: Specify Source and Aspect Ratio for the Sub 1 screen in Four Screen mode.
- Sub 2: Specify Source and Aspect Ratio for the Sub 2 screen in Four Screen mode.
- Sub 3: Specify Source and Aspect Ratio for the Sub 3 screen in Four Screen mode.
- Select Sound: Select a sound source to enable in Four Screen mode.



– The displayed image may differ depending on the model.

Four Screen (Portrait)

When the screen of an external device or PC is displayed, view pictures from other devices at the same time. The pictures will be displayed as three sub-screens.

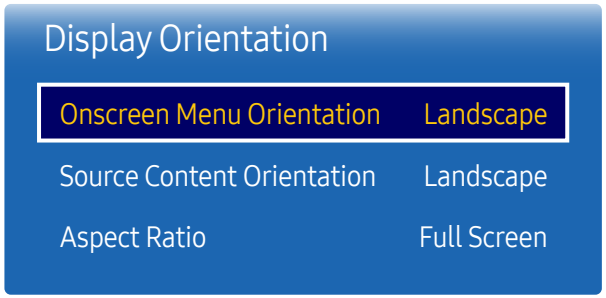
— Available only when Source Content Orientation is set to Portrait.

— Divided screens cannot use the same input source simultaneously. Assign a different input source to each of the divided screens.

- Main: Specify Source and Aspect Ratio for the Main screen in Four Screen mode.
- Sub 1: Specify Source and Aspect Ratio for the Sub 1 screen in Four Screen mode.
- Sub 2: Specify Source and Aspect Ratio for the Sub 2 screen in Four Screen mode.
- Sub 3: Specify Source and Aspect Ratio for the Sub 3 screen in Four Screen mode.
- Select Sound: Select a sound source to enable in Four Screen mode.

Display Orientation

MENU → OnScreen Display → Display Orientation → ENTER



– The displayed image may differ depending on the model.

– The Display Orientation feature is not available in Interlace signal mode.

Onscreen Menu Orientation

Configure the menu screen.

- Landscape: Display the menu in landscape mode (default).
- Portrait: Display the menu in portrait mode on the right side of the product screen.

Source Content Orientation

Set the orientation of content from external devices connected to the product.

- Landscape: Display the screen in landscape mode (default).
- Portrait: Display the screen in portrait mode.

Aspect Ratio

Set the rotated screen to be either full screen or original.

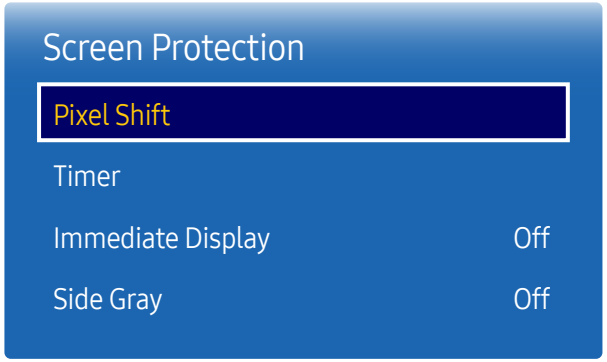
- Full Screen: Display the rotated screen in full screen.
- Original: Display the rotated screen in the original aspect ratio.

— Available only when Source Content Orientation is set to Portrait.

— If Multi Screen is set to Triple Screen, Four Screen is disabled.

Screen Protection

MENU → OnScreen Display → Screen Protection → ENTER



– The displayed image may differ depending on the model.

To reduce the possibility of screen burn, this unit is equipped with Pixel Shift screen burn prevention technology.

Pixel Shift moves the picture slightly on the screen.

The Pixel Shift time setting allows you to program the time between movements of the picture in minutes.

Pixel Shift

Minimize image retention by finely moving pixels horizontally or vertically.

- Pixel Shift (Off / On)

  — Horizontal, Vertical and Time are enabled only when Pixel Shift is set to On.
- Horizontal: Sets how many pixels the screen moves horizontally.
- Vertical: Sets how many pixels the screen moves vertically.
- Time: Set the time interval for performing the horizontal or vertical movement, respectively.

Available Pixel Shift Settings and Optimum Settings.

	Available Settings	Optimum Settings
Horizontal (pixels)	0 ~ 4	4
Vertical (pixels)	0 ~ 4	4
Time (minute)	1 min. ~ 4 min.	4 min.

— The Pixel Shift value may differ depending on the product size (inches) and mode.

— Displaying a still image or a 4:3 output for an extended period of time may cause image retention. This is not a defect in the product.

Timer

You can set the timer for Screen Protection.

The Screen Protection feature stops automatically after a specified period of time.

- Timer (Off / Repeat / Interval)
  - Off
  - Repeat: Display the anti-burn in pattern at a specified interval.
  - Interval: Display the anti-burn in pattern for a specified period of time (from the starting to finishing time).

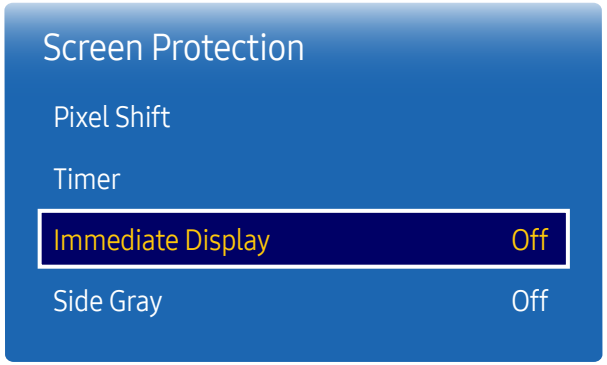
  — When Clock Set is configured, Interval will be enabled.

  — Period, Start Time and End Time are enabled only when Timer is set to Repeat or Interval.
- Period: Specify the time interval to activate the Screen Protection function.

  — The option is enabled when Repeat is selected for Timer.
- Start Time: Set the start time to activate the screen protection function.

  — The option is enabled when Interval is selected for Timer.
- End Time: Set the end time to deactivate the screen protection function.

  — The option is enabled when Interval is selected for Timer.



– The displayed image may differ depending on the model.

Immediate Display

Select the screen saver you want to display immediately.

- Off / Fading Screen

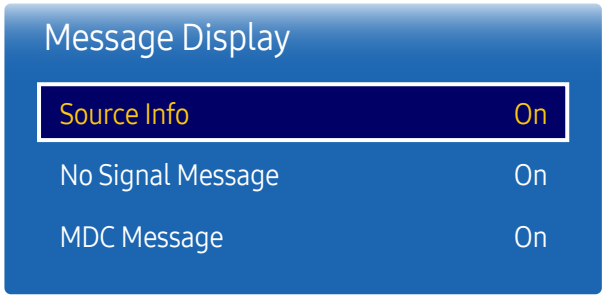
Side Gray

When the screen is set to 4:3 aspect ratio, adjust the brightness of white margins on sides to protect the screen.

- Off / Light / Dark

Message Display

MENU → OnScreen Display → Message Display → ENTER



– The displayed image may differ depending on the model.

Source Info

Select whether to display the source OSD when the input source changes.

- Off / On

No Signal Message

Select whether to display the no-signal OSD when no signal is detected.

- Off / On

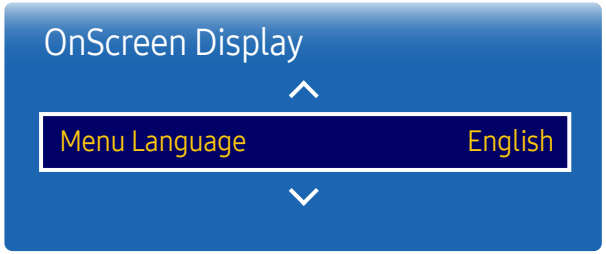
MDC Message

Select whether to display the MDC OSD when the product is controlled by the MDC.

- Off / On

Menu Language

MENU → OnScreen Display → Menu Language → ENTER



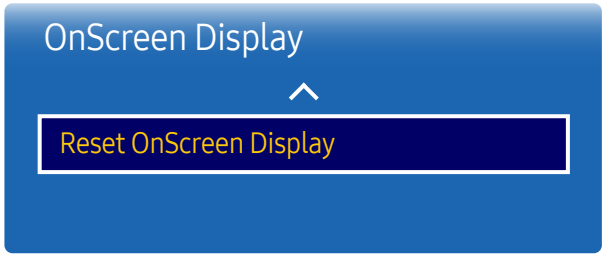
– The displayed image may differ depending on the model.

Set the menu language.

— A change to the language setting will only be applied to the onscreen menu display. It will not be applied to other functions on your PC.

Reset OnScreen Display

MENU → OnScreen Display → Reset OnScreen Display → ENTER



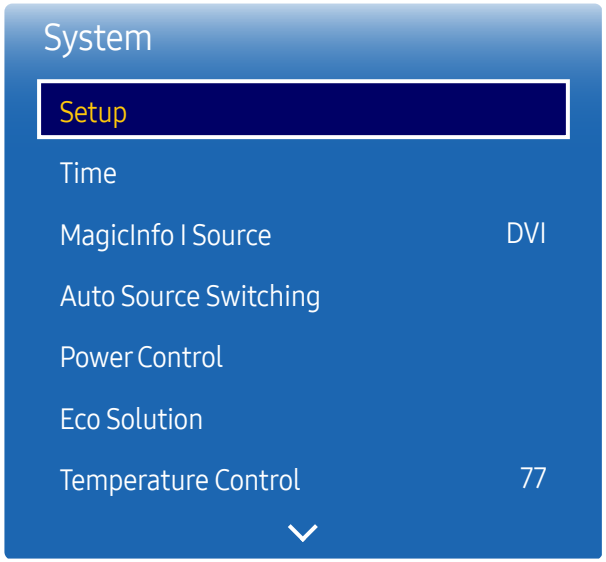
– The displayed image may differ depending on the model.

This option returns the current settings under OnScreen Display to the default factory settings.

Chapter 08
System

Setup

MENU → System → Setup → ENTER



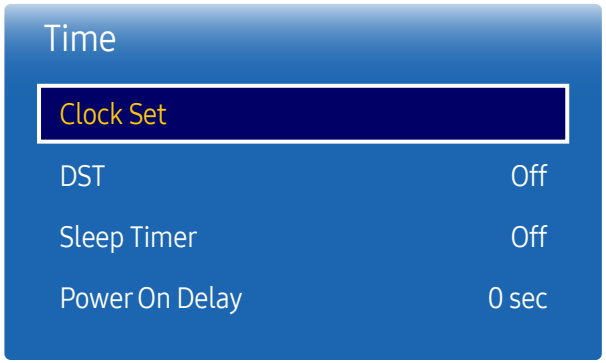
– The displayed image may differ depending on the model.

Initial settings (System)

Go through the initial setup steps like you did the first time you used this product.

Time

MENU → System → Time → ENTER



– The displayed image may differ depending on the model.

You can configure Clock Set or Sleep Timer. You can also set the product to automatically turn on or off at a specified time using the Timer function.

— Press the INFO button if you want to view the current time.

Clock Set

Select Clock Set. Select Date or Time, and then press ↵.

Use the number buttons to enter numbers or press the up and down arrow buttons. Use the left and right arrow buttons to move from one entry field to the next. Press ↵ when done.

— You can set the Date and Time directly by pressing the number buttons on the remote control.

DST

Switches the DST (Daylight Saving Time) function on or off.

Off / On

- Start Date: Set the start date of Daylight Saving Time.
- End Date: Set the end date of Daylight Saving Time.
- Time Offset: Select the correct time offset your timezone.

Sleep Timer

Automatically shuts off the product after a preset period of time.

(Off / 30 min. / 60 min. / 90 min. / 120 min. / 150 min. / 180 min.)

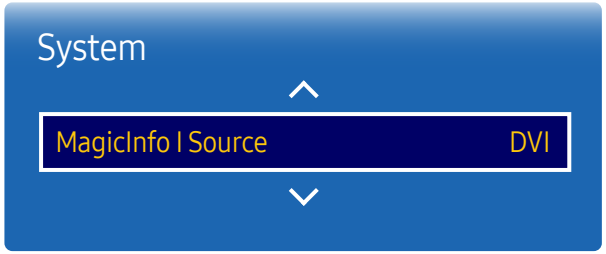
— Use the up and down arrows to select a period of time, and then press ↵. To cancel Sleep Timer, select Off.

Power On Delay

When connecting multiple products, adjust the power-on time for each product to prevent power overload (within the range 0–50 seconds).

MagicInfo I Source

MENU → System → MagicInfo I Source → ENTER



– The displayed image may differ depending on the model.

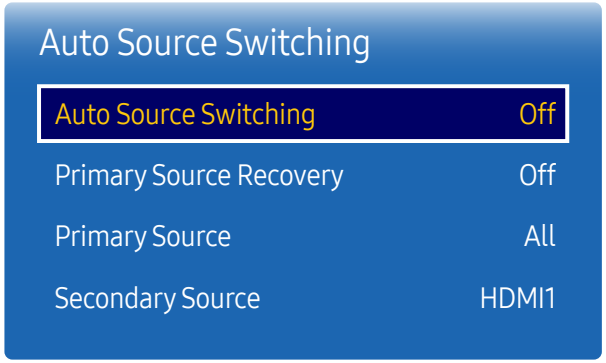
– The MagicInfo I Source feature is available if a network box (sold separately) is connected.

Pressing **MagicInfo Player I** on the remote control displays content connected to the network box (sold separately).

- DVI / DisplayPort1

Auto Source Switching

MENU → System → Auto Source Switching → ENTER



– The displayed image may differ depending on the model.

Turning on the display with Auto Source Switching On, and the previous video source selection is not active, the display will automatically search the different video input sources for active video.

Auto Source Switching

When the Auto Source Switching is On, the display video source will automatically be searched for active video.

The Primary Source selection will be activated, if the current video source is not recognized.

Secondary Source selection will become active, if no primary video source is available.

If both the primary and secondary input sources are not recognized, the display will perform two searches for an active source, each search checking the primary and then secondary source. If both searches fail, the display will return to the first video source and display a message indicating that there is no signal.

When the Primary Source selection is set to All, the display will search all the video source inputs twice in sequence looking for an active video source, returning back to the first video source in the sequence if no video is found.

Primary Source Recovery

Select whether to restore the selected primary input source when a primary input source is connected.

— The Primary Source Recovery function is disabled if Primary Source is set to All.

Primary Source

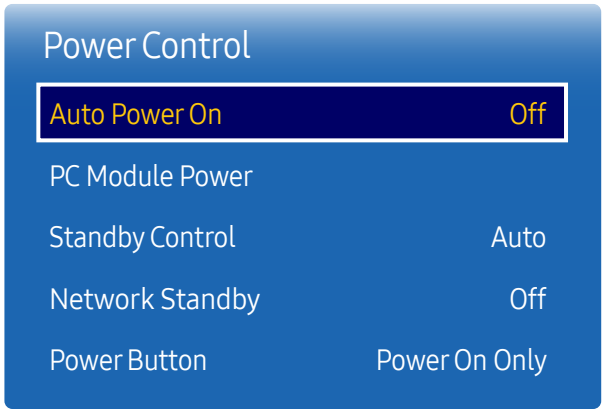
Specify Primary Source for the automatic input source.

Secondary Source

Specify Secondary Source for the automatic input source.

Power Control

MENU → System → Power Control → ENTER



– The displayed image may differ depending on the model.

Auto Power On

This feature automatically turns on the product as soon as it is plugged in. Pressing the power button is not needed.

- Off / On

PC Module Power

The PC module can be turned on/off separately from the LFD.

Synced Power-On

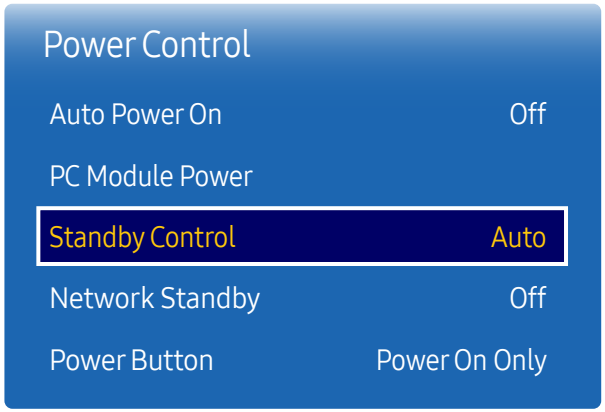
To turn off the LFD without turning off the PC module, select Off.

- Off / On

Synced Power-Off

To turn on the PC module without turning on the LFD, select Off.

- Off / On



– The displayed image may differ depending on the model.

Standby Control

You can set the screen standby mode to be applied when an input signal is received.

- Auto
  Power-saving mode will activate if no input signals are detected even though a source device is connected to the display.
  The message No Signal will appear if no source device is connected.
- Off
  The message No Signal will appear if no input signals are detected.
  — If No Signal is displayed although a source device is connected, check the cable connection.
  — If No Signal Message is set to Off, the No Signal message does not appear.
  If this is the case, set No Signal Message to On.
- On
  Power-saving mode will activate if no input signals are detected.

Network Standby

This feature keeps the network power on when the product turns off.

- Off / On

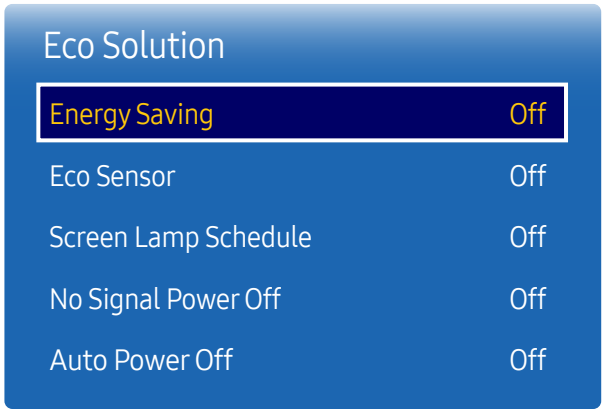
Power Button

The power button can be set to either turn on the power or turn on/off the power.

- Power On Only: Set the power button to turn on the power.
- Power On/Off: Set the power button to turn on/off the power.

Eco Solution

MENU → System → Eco Solution → ENTER



– The displayed image may differ depending on the model.

Energy Saving

Reduce the power consumption by adjusting the screen brightness.

- Off / Low / Medium / High

Eco Sensor

To enhance your power savings, the picture settings will automatically adapt to the light in the room.

- Off / On

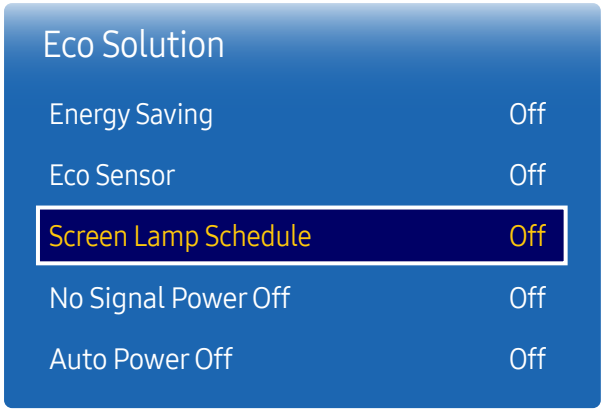
— Adjusting the Backlight setting under Picture while Eco Sensor is on will disable the Off.

— If the screen contrast is not sufficient, set the Eco Sensor to Off.
If the Eco Sensor is Off, it may not comply with energy standards.

Min. Backlight

When Eco Sensor is On, you can manually adjust the minimum screen brightness. Min. Backlight is the darkest backlight mode. Make sure the Min. Backlight setting is lower than the Backlight setting.

— If Eco Sensor is On, the display brightness may change (become slightly darker or brighter) depending on the surrounding light intensity.



– The displayed image may differ depending on the model.

Screen Lamp Schedule

— This option is enabled when Clock Set is configured.

Screen Lamp Schedule

Enable or disable the lamp schedule.

- Off / On

Schedule1, Schedule2

Time

The panel brightness will change to the brightness set in Lamp at a specified time.

Lamp

Adjust the panel brightness. A value closer to 100 makes the panel brighter.

- 0 ~ 100

No Signal Power Off

Save power by turning the device off when no signal is received from any source.

- Off / 15 min. / 30 min. / 60 min.

— Disabled when an attached PC is in power saving mode.

— The product will automatically power off at a specified time. The time can be changed as required.

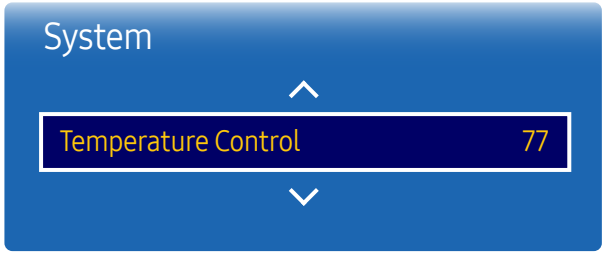
Auto Power Off

The product will automatically turn off if you don’t press a button on the remote or touch a button on product front panel within select hours to prevent overheating.

- Off / 4 hours / 6 hours / 8 hours

Temperature Control

MENU → System → Temperature Control → ENTER



– The displayed image may differ depending on the model.

This function detects the internal temperature of the product. You can specify the temperature range that is acceptable.

The default temperature is set to 77˚C.

Recommended temperature for Temperature Control is 75˚C~ 80˚C (provided that the surrounding temperature is 40˚C).

— The screen will become darker if the current temperature exceeds the specified temperature limit. If the temperature continues to rise, the product will power off to prevent overheating.

Change PIN

MENU → System → Change PIN → ENTER



– The displayed image may differ depending on the model.

The Change PIN screen will appear.

Choose any 4 digits for your PIN and enter it in Enter a new PIN.. Reenter the same 4 digits in Enter the PIN again..

When the Confirm screen disappears, press the Close button. The product has memorized your new PIN.

— Default password: 0 - 0 - 0 - 0

General

MENU → System → General → ENTER



– The displayed image may differ depending on the model.

Security

Enter your 4 digit PIN number. The default PIN number is “0-0-0-0".

If you want to change the PIN number, use the Change PIN function.

Safety Lock

It sets safe lock function.

- Off / On

All the menus and buttons of the product and remote control, except for the LOCK button on the remote control, will be locked by the Safety Lock function.

To unlock the menus and buttons, press the LOCK button and then enter the password (default password: 0-0-0-0).

Button Lock

This menu can be used to lock the buttons on the product.

Only the remote control can control the product if Button Lock is set to On.

- Off / On

HDMI Hot Plug

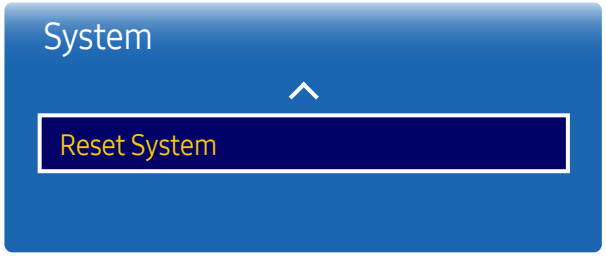
This feature is used to activate the time delay to turn on a DVI/HDMI source device.

- Off / On

— Depending on the type of external device, the screen may not display properly. In this case, connect it with the HDMI Hot Plug function turned On.

Reset System

MENU → System → Reset System → ENTER



– The displayed image may differ depending on the model.

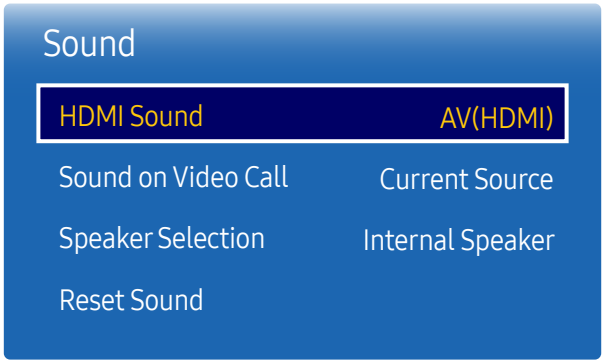
This option returns the current settings under system to the default factory settings.

Chapter 09
Sound Adjustment

Configure the sound (Sound) settings for the product.

HDMI Sound

MENU → Sound → HDMI Sound → ENTER



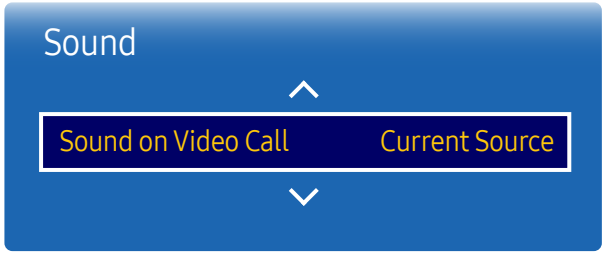
– The displayed image may differ depending on the model.

Select whether to hear from AV(HDMI) or PC(DVI).

- AV(HDMI) / PC(DVI)

Sound on Video Call

MENU → Sound → Sound on Video Call → ENTER



– The displayed image may differ depending on the model.

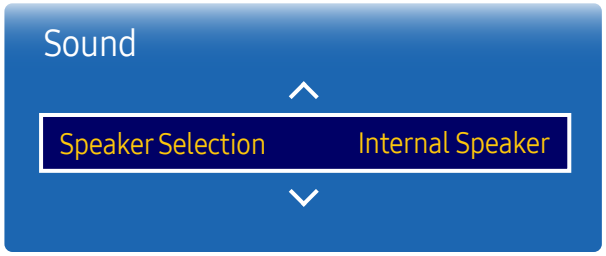
Select sound output to listen to during a video call.

- Current Source / Video Call

— If Speaker Selection is set to External Speaker, Sound on Video Call is disabled.

Speaker Selection

MENU → Sound → Speaker Selection → ENTER



– The displayed image may differ depending on the model.

If you are listening to the sound track of a broadcast or movie through an external receiver, you may hear a sound echo caused by the difference in decoding speed between the products speakers and the speakers attached to your audio receiver. If this occurs, set the product to External Speaker.

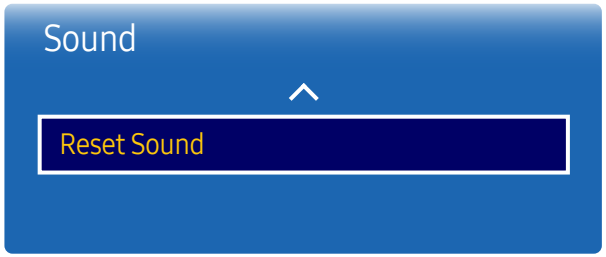
- Internal Speaker / External Speaker

— When you set Speaker Selection to External Speaker, the products speakers are turned off.
You will hear sound through the external speakers only. When the Speaker Selection is set to Internal Speaker, both the product speakers and the external speakers are on. You will hear sound through both.

— If there is no video signal, both the products speakers and the external speakers will be mute.

Reset Sound

MENU → Sound → Reset Sound → ENTER



– The displayed image may differ depending on the model.

The displayed image may differ depending on the model. Reset all sound settings to the factory defaults.

Chapter 10
Support

Software Update

MENU → Support → Software Update → ENTER

The Software Update menu lets you upgrade your product software to the latest version.

— Be careful not to turn off the power until the upgrade is complete. The product will turn off and on automatically after completing the software upgrade.

— When you upgrade software, all video and audio settings you have made will return to their default settings. We advise you to write down your settings so that you can easily reset them after the upgrade.

Contact Samsung

MENU → Support → Contact Samsung → ENTER

View this information when your product does not work properly or when you want to upgrade the software.

You can find information regarding our call centers and how to download products and software.

— Contact Samsung and find the product Model Code and Software Version.

Go to Home

MENU → Support → Go to Home → ENTER

Accessible using the HOME button on the remote control.

Go to Home to play a variety of content from a memory device or a connected network.

Reset All

MENU → Support → Reset All → ENTER

This option returns all the current settings for a display to the default factory settings.

Chapter 11
Troubleshooting Guide

Requirements Before Contacting Samsung Customer Service Center

– Before calling Samsung Customer Service Center, test your product as follows. If the problem persists, contact Samsung Customer Service Center.

Testing the Product

Check if your product is operating normally by using the product test function.

If the screen remains blank while the power LED blinks even when the product is correctly connected to a PC, perform product testing.

1 Power off both the PC and product.

2 Disconnect all the cables from the product.

3 Power on the product.

4 If No Signal is displayed, the product is operating normally.

– If the screen remains blank, check the PC system, video controller and cable.

Checking the Resolution and Frequency

Not Optimum Mode will briefly be displayed if a mode that exceeds a supported resolution is selected (refer to Supported Resolutions).

Check the followings.

Installation issue (PC mode)

The screen keeps switching on and off.	Check the cable connection between the product and PC, and ensure the connection is secure.
Blank spaces are found on all four sides of the screen when an HDMI or HDMI-DVI cable is connected to the product and PC.	The blank spaces found on the screen have nothing to do with the product.
	Blank spaces on the screen are caused by the PC or graphics card. To resolve the problem, adjust the screen size in the HDMI or DVI settings for the graphics card.
	If the graphics card settings menu does not have an option to adjust the screen size, update the graphics card driver to the latest version. (Please contact the graphics card or computer manufacturer for further details about how to adjust the screen settings.)
PC is shown in Source when a PC is not connected.	PC is always shown in Source irrespective of whether or not a PC is connected.

Screen issue

The power LED is off. The screen will not switch on.	Make sure that the power cord is connected.
No Signal is displayed on the screen.	Check that the product is connected correctly with a cable.
	Check that the device connected to the product is powered on.
	Depending on the type of external device, the screen may not display properly. In this case, connect it with the HDMI Hot Plug function turned On.
Not Optimum Mode is displayed.	This message is displayed when a signal from the graphics card exceeds the product's maximum resolution and frequency.
	Refer to the Standard Signal Mode Table and set the maximum resolution and frequency according to the product specifications.

Screen issue

The images on the screen look distorted.	Check the cable connection to the product.
The screen is not clear. The screen is blurry.	Adjust Coarse and Fine.
	Remove any accessories (video extension cable, etc) and try again.
	Set the resolution and frequency to the recommended level.
The screen appears unstable and shaky.	Check that the resolution and frequency of the PC and graphics card are set within a range compatible with the product. Then, change the screen settings if required by referring to the Additional Information on the product menu and the Standard Signal Mode Table.
There are shadows or ghost images left on the screen.	
The screen is too bright. The screen is too dark.	Adjust Brightness and Contrast.
White does not really look white.	Go to Picture and adjust the White Balance settings.
There is no image on the screen and the power LED blinks every 0.5 to 1 second.	The product is in power-saving mode.
	Press any key on the keyboard or move the mouse to return to the previous screen.
The product will turn off automatically.	Go to System and make sure Sleep Timer is set to Off.
	If a PC is connected to the product, check the power status of the PC.
	Make sure the power cable is connected properly to the product and power outlet.
	If the signal from a connected device is not detected, the product automatically turns off after 10 to 15 minutes.
Picture quality of the product is different from the dealer shop where it was purchased.	Use an HDMI cable to obtain high-definition (HD) picture quality.
The screen display does not look normal.	Encoded video content may cause the display to appear corrupted in scenes featuring fast moving objects such as in a sports event or action video.
	Low signal level or low picture quality may cause the display to appear corrupted. This does not mean the product is defective.
	A cell phone within a distance of one-meter radius may cause static on analog and digital products.

Screen issue

The brightness and color do not look normal.	Go to Picture and adjust the screen settings such as Picture Mode, Color, Brightness and Sharpness.
	Go to System and adjust the Energy Saving settings.
	Reset the screen settings to the default settings.
Broken lines are displayed on the edges of the screen.	If Picture Size is set to Screen Fit, change the setting to 16:9.
Lines (red, green or blue) are displayed on the screen.	These lines are displayed when there is a defect in DATA SOURCE DRIVER IC on the monitor. Contact a Samsung Service Center to resolve the issue.
The display looks unstable and then freezes.	The screen may freeze when a resolution other than the recommended resolution is used or if the signal is not stable. To resolve the issue, change the PC resolution to the recommended resolution.
The screen cannot be displayed in full screen.	A scaled SD (4:3) content file can cause black bars on both sides of an HD channel screen.
	A video with an aspect ratio different from the product can cause black bars at the top and bottom of the screen.
	Change the screen size setting to full screen on the product or source device.

Sound issue

There is no sound.	Check the connection of the audio cable or adjust the volume.
	Check the volume.
The volume is too low.	Adjust the volume.
	If the volume is still low after turning it up to the maximum level, adjust the volume on your PC sound card or software program.

Sound issue

Video is available but there is no sound.	If an HDMI cable is connected, check the audio output settings on the PC.
	Go to Sound and change Speaker Selection to Internal Speaker.
	If a source device is used • Make sure the audio cable is properly connected to the audio input port on the product. • Check the audio output settings for the source device. (For example, if an HDMI cable is connected to the monitor, the audio setting for the cable box may need to be changed to HDMI.)
	If a DVI-HDMI cable is used, a separate audio cable is required.
	If the product has a headphone port, make sure nothing is connected to it.
	Reconnect the power cable to the device and then reboot the device.
There is static coming from the speakers.	Check the cable connection. Make sure a video cable is not connected to an audio input port.
	Check the signal strength after connecting a cable.
	Low signal level can cause corrupted sound.
There is audible sound when the volume is muted.	When Speaker Selection is set to External Speaker, the volume button and mute function are disabled. Adjust the volume for the external speakers.
	Audio settings for main speakers are separate from the internal speakers on the product. Changing or muting the volume on the product does not affect an external amplifier(decoder).
There is an echo sound coming from the speakers.	Different decoding speeds between the product speakers and external speakers can cause an echo. In this case, set Speaker Selection to External Speaker.

Remote control issue

The remote control does not work.	Make sure that the batteries are correctly in place (+/-).
	Check if the batteries are flat.
	Check for power failure.
	Make sure that the power cord is connected.
	Check for any special lighting or neon signs switched on in the vicinity.

Source device issue

A beeping sound is heard when my PC is booting.	If a beeping sound is heard when your PC is booting, have your PC serviced.

Other issue

The product smells like plastic.	The plastic smell is normal and disappears over time.
The monitor appears tilted.	Remove and then attach the stand again to the product.
Audio or video cuts out intermittently.	Check the cable connection and connect it again if required.
	Using a very hard or thick cable may corrupt audio and video files. Make sure cables are flexible enough to ensure durability. When mounting the product onto a wall, it is recommended to use right-angle cables.
Small particles are found on the edges of the product.	The particles are part of the product design. The product is not defective.
The Multi Screen menu is not available.	The menu is enabled or disabled depending on the Source mode.
When I try to change the PC resolution, a message "The defined resolution is not currently supported." appears.	The message "The defined resolution is not currently supported." appears if the input source resolution exceeds the maximum resolution of the display. To resolve the issue, change the PC resolution to a resolution supported on the display.

Other issue

There is no sound from the speakers in HDMI mode when a DVI-HDMI cable is connected.

DVI cables do not transmit sound data.

Make sure to connect the audio cable to the correct input jack to enable audio.

HDMI Black Level is not functioning properly on an HDMI device with YCbCr output.

This function is available only when a source device, such as a DVD player and STB, is connected to the product via an HDMI (RGB signal) cable.

There is no sound in HDMI mode.

Displayed picture colors may not look normal. Video or sound may not be available. This can occur if a source device that only supports an older version of the HDMI standard is connected to the product.

If these issues occur, connect an audio cable along with the HDMI cable.

Some PC graphics cards may not automatically recognize HDMI signals that do not include sound. In this case, manually select a sound input.

	Sound input	Screen mode
PC	Auto	PC settings
DVI PC	Audio In (Stereo ports)	PC settings

HDMI-CEC does not work.

This product does not support the HDMI-CEC feature.

To use several external devices compatible with the HDMI-CEC feature that are connected to the HDMI1, HDMI2 and HDMI3 ports on the product, turn off the HDMI-CEC features on all the external devices. External devices include Blu-ray and DVD players.

Operating an external device when its HDMI-CEC feature is enabled may automatically stop other external devices.

To change HDMI-CEC settings, refer to the device user guide or contact the device manufacturer for assistance.

Other issue

The IR sensor is not functioning.	Make sure the sensor light turns on when a button is pressed on the remote control.
	If the sensor light does not turn on, turn the power switch off and then on again on the back of the product. (The power LED lights up red when the screen is switched off.) If the sensor light still does not turn on after the power switch is turned off and then on again, an internal jack may be disconnected. Contact your nearest service Center to have the product serviced.
	If the sensor light that is on does not flash red when a button is pressed on the remote control, the IR sensor may be defective. Contact your nearest service center to have the product serviced.
	This function is available only when a source device, such as a DVD player and STB, is connected to the product via an HDMI (RGB signal) cable.
When booting the PC with the input source set to DisplayPort1, DisplayPort2, the BIOS and booting screens do not appear.	Boot the PC when the set is turned on or when the input source is not DisplayPort1, DisplayPort2.

Q & A

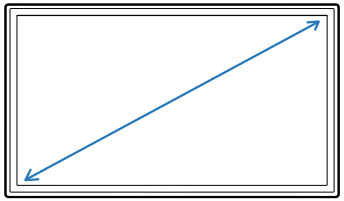
Question	Answer
How can I change the frequency?	Set the frequency on your graphics card. • Windows XP: Go to **Control Panel** → **Appearance and Themes** → **Display** → **Settings** → **Advanced** → **Monitor** and adjust the frequency in **Monitor Settings**. • Windows ME/2000: Go to **Control Panel** → **Display** → **Settings** → **Advanced** → **Monitor** and adjust the frequency in **Monitor Settings**. • Windows Vista: Go to **Control Panel** → **Appearance and Personalization** → **Personalize** → **Display Settings** → **Advanced Settings** → **Monitor** and adjust the frequency in **Monitor Settings**. • Windows 7: Go to **Control Panel** → **Appearance and Personalization** → **Display** → **Adjust resolution** → **Advanced Settings** → **Monitor** and adjust the frequency in **Monitor Settings**. • Windows 8: Go to **Settings** → **Control Panel** → **Appearance and Personalization** → **Display** → **Adjust resolution** → **Advanced Settings** → **Monitor** and adjust the frequency in **Monitor Settings**. • Windows 10: Go to **Settings** → **System** → **Display** → **Advanced display settings** → **Display adapter properties** → **Monitor**, and adjust **Screen refresh rate** under **Monitor settings**.
How can I change the resolution?	• Windows XP: Go to **Control Panel** → **Appearance and Themes** → **Display** → **Settings** and adjust the resolution. • Windows ME/2000: Go to **Control Panel** → **Display** → **Settings** and adjust the resolution. • Windows Vista: Go to **Control Panel** → **Appearance and Personalization** → **Personalize** → **Display Settings** and adjust the resolution. • Windows 7: Go to **Control Panel** → **Appearance and Personalization** → **Display** → **Adjust Resolution** and adjust the resolution. • Windows 8: Go to **Settings** → **Control Panel** → **Appearance and Personalization** → **Display** → **Adjust Resolution** and adjust the resolution. • Windows 10: Go to **Settings** → **System** → **Display** → **Advanced display settings**, and adjust the resolution.

– Refer to the user manual for your PC or graphics card for further instructions on adjustment.

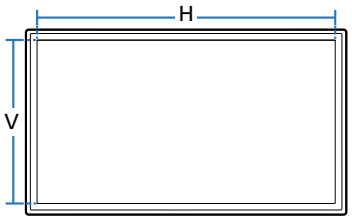
Question	Answer
How do I set powersaving mode?	• Windows XP: Set power-saving mode in **Control Panel** → **Appearance and Themes** → **Display** → **Screen Saver Settings** or BIOS SETUP on the PC. • Windows ME/2000: Set power-saving mode in **Control Panel** → **Display** → **Screen Saver Settings** or BIOS SETUP on the PC. • Windows Vista: Set power-saving mode in **Control Panel** → **Appearance and Personalization** → **Personalize** → **Screen Saver Settings** or BIOS SETUP on the PC. • Windows 7: Set power-saving mode in **Control Panel** → **Appearance and Personalization** → **Personalize** → **Screen Saver Settings** or BIOS SETUP on the PC. • Windows 8: Set power-saving mode in **Settings** → **Control Panel** → **Appearance and Personalization** → **Personalize** → **Screen Saver Settings** or BIOS SETUP on the PC. • Windows 10: Set power-saving mode in **Settings** → **Personalization** → **Lock screen** → **Screen timeout settings** → **Power & sleep** or BIOS SETUP on the PC.

Chapter 12
Specifications

– Size



– Display area



General

Model Name		QM49F	QM55F	QM65F
Panel	Size	49 CLASS (48.5 inches / 123.2 cm)	55 CLASS (54.6 inches / 138.7 cm)	65 CLASS (64.7 inches / 164.3 cm)
	Display area	1073.78 mm (H) x 604.00 mm (V) 42.3 inches (H) x 23.8 inches (V)	1209.60 mm (H) x 680.40 mm (V) 47.6 inches (H) x 26.8 inches (V)	1428.48 mm (H) x 803.52 mm (V) 56.2 inches (H) x 31.6 inches (V)
Power Supply		AC 100 to 240 VAC (+/- 10%), 60 / 50 Hz ± 3 Hz Refer to the label at the back of the product as the standard voltage can vary in different countries.		
Environmental considerations	Operating	Temperature : 32 °F – 104 °F (0 °C – 40 °C) * For installing the housing, keep the internal temperature at 40 °C or below. Humidity : 10% – 80%, non-condensing		
	Storage	Temperature : -4 °F – 113 °F (-20 °C – 45 °C) Humidity : 5% – 95%, non-condensing		

— Plug-and-Play
This monitor can be installed and used with any Plug-and-Play compatible systems. Two-way data exchange between the monitor and PC system optimizes the monitor settings. Monitor installation takes place automatically. However, you can customize the installation settings if desired.

— Due to the nature of the manufacturing of this product, approximately 1 pixel per million (1ppm) may appear brighter or darker on the panel. This does not affect product performance.

— This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

— For detailed device specifications, visit the Samsung Electronics website.

(USA only)

Dispose unwanted electronics through an approved recycler.

To find the nearest recycling location, go to our website: www.samsung.com/recyclingdirect or call, (877) 278 - 0799

Preset Timing Modes

— This product can be set to only one resolution for each screen size to obtain the optimum picture quality due to the nature of the panel. Using a resolution other than the specified resolution may degrade the picture quality. To avoid this, it is recommended that you select the optimum resolution specified for your product.

— Check the frequency when you exchange a CDT product (connected to a PC) for an LCD product. If the LCD product does not support 85Hz, change the vertical frequency to 60Hz using the CDT product before you exchange it with the LCD product.

Model Name		QM49F / QM55F / QM65F
Synchronization	Horizontal Frequency	30 - 81 kHz, 30 - 134 kHz (DisplayPort), 30 - 90 kHz (HDMI)
	Vertical Frequency	48 - 75 Hz, 56 - 75 Hz (DisplayPort), 24 - 75 Hz (HDMI)
Resolution	RGB Analog, DVI(Digital Visual Interface) Compliant Digital RGB	
	Optimum resolution	1920 x 1080 @ 60 Hz, 3840 x 2160 @ 60 Hz (DisplayPort1, DisplayPort2)
	Maximum resolution	1920 x 1080 @ 60 Hz, 3840 x 2160 @ 30 Hz (HDMI1, HDMI2, HDMI3, HDMI4)
Maximum Pixel Clock		148.5 MHz (Analog, Digital), 533 MHz (DisplayPort), 297 MHz (HDMI)

The screen will automatically be adjusted if a signal that belongs to the following standard signal modes is transmitted from your PC. If the signal transmitted from the PC does not belong to the standard signal modes, the screen may be blank with the power LED on. In such a case, change the settings according to the following table by referring to the graphics card user manual.

– Horizontal Frequency
The time required to scan a single line from the left to the right side of the screen is called a horizontal cycle. The reciprocal number of a horizontal cycle is called horizontal frequency. Horizontal frequency is measured in kHz.

– Vertical Frequency
The product displays a single image multiple times per second (like a fluorescent light) to display what the viewer sees. The rate of a single image being displayed repeatedly per second is called vertical frequency or refresh rate. Vertical frequency is measured in Hz.

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	31.469	59.940	25.175	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 x 720	45.000	60.000	74.250	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 1280 x 1024	63.981	60.020	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
VESA, 1366 x 768	47.712	59.790	85.500	+/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1600 x 900	60.000	60.000	108.000	+/+
VESA, 1680 x 1050	65.290	59.954	146.250	-/+
VESA, 1920 x 1080	67.500	60.000	148.500	+/+
VESA, 2560 x 1440	88.787	59.951	241.500	+/-
VESA, 3840 x 2160	133.313	59.997	533.250	+/-
CEA, 3840 x 2160	133.313	59.997	533.250	+/-

Chapter 13
Appendix

Responsibility for the Pay Service (Cost to Customers)

— When the service is requested, in spite of in warranty, we may charge you for a visit from a service technician in the following cases.

Not a product defect

Cleaning of the product, Adjustment, Explanation, Re-installation and etc.

- If a service technician gives instructions on how to use product or simply adjusts options without disassembling product.
- If a defect is caused by external environmental factors (Internet, Antenna, Wired Signal, etc.)
- If a product is reinstalled or devices are connected additionally after installing the purchased product for the first time.
- If a product is reinstalled to move to a different spot or to move to a different house.
- If customer requests instructions on how to use because of another company's product.
- If customer requests instructions on how to use the network or another company's program.
- If customer requests software installation and setup for the product.
- If a service technician removes/cleans dusts or foreign materials inside of the product.
- If customer requests an installation additionally after purchasing a product through home-shopping or online.

A Product damage caused by customer's fault

Product damage caused by customer's mishandling or wrong repair

If a product damage is caused by;

- External impact or drop.
- Use of supplies or separatly sold product unspecified by Samsung.
- Repair from a person besides an engineer of outsourcing service company or partner of Samsung Electronics Co., Ltd.
- Remodeling or repairing the product by customer.
- Using it with incorrect voltage or non-authorised electrical connections.
- Not following the "cautions" in User Manual.

Others

- If product fails by natural disaster. (lightning, fire, earthquake, flood damage, etc)
- If consumable components are all used up. (Battery, Toner, Fluorescent lights, Head, Vibrator, Lamp, Filter, Ribbon, etc.)

— If customer requests a service in case the product has no defect, service fee may be charged. So please read User Manual first.

Optimum Picture Quality and Afterimage Burn-in Prevention

Optimum Picture Quality

- Due to the nature of the manufacturing of this product, approximately 1 pixel per million (1ppm) may be brighter or darker on the panel. This does not affect product performance.
  - The number of sub-pixels by panel type: 24,883,200
- Run Auto Adjustment to improve the picture quality. If noise is still found even after auto adjustment, adjust Coarse or Fine.
- Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.
  - Activate power-saving mode or a dynamic screen saver if you will not be using the product for an extended period of time.

Prevention of Afterimage Burn-in

Setting the anti-screen burn-in pattern

The anti-screen burn-in pattern automatically operates in standby mode.

- Disabling the anti-screen burn-in pattern
  On the remote control, press 2 → 2 → 7 → CH∨ → 0.
  If the remote control sensor blinks once, the pattern is disabled.
- Enabling the anti-screen burn-in pattern
  On the remote control, press 2 → 2 → 7 → CH∧ → 0.
  If the remote control sensor blinks twice, the pattern is enabled.

— When the screen is turned off, the anti-screen burn-in pattern will operate for two hours.

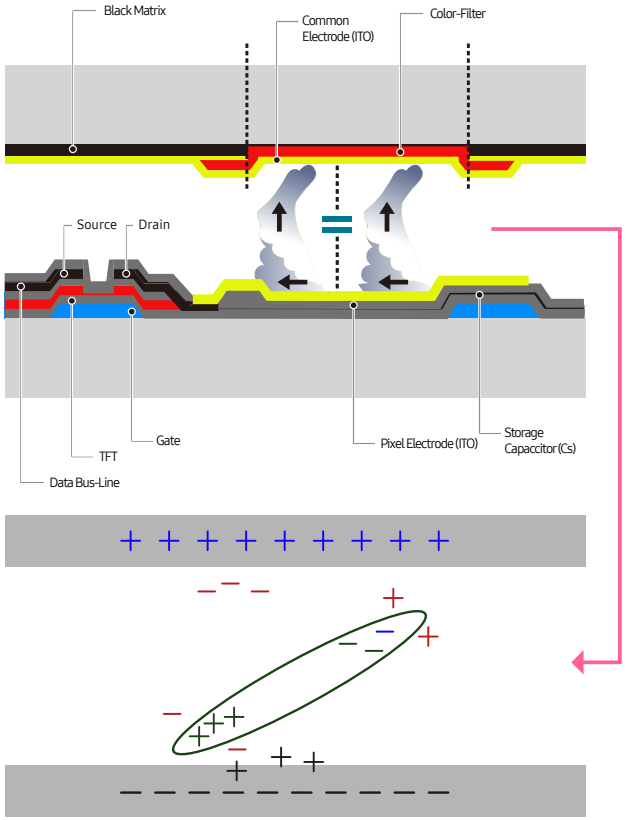
— Keeping the anti-screen burn-in pattern on requires extra power consumption.

What is afterimage burn-in?

Afterimage burn-in should not occur when the LCD panel is operating normally. Normal operation refers to a continuously changing video pattern. If the LCD panel displays a fixed pattern for an extended period of time (more than 12 hours), a slight voltage difference may occur between the electrodes in pixels that control the liquid crystals.

Such a voltage difference between electrodes increases with time and makes the liquid crystals thinner. When this occurs, a previous image can remain on the screen when the pattern changes. To prevent this, the accumulated voltage difference should be reduced.

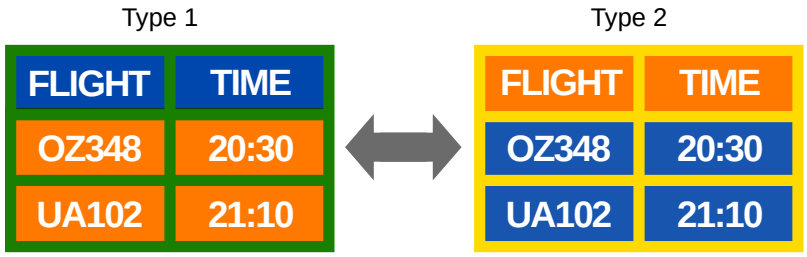
— Afterimage burn-in should not occur when an LCD panel is operating in proper conditions.



Preventing afterimage burn-in

— The best way to protect the product from afterimage burn-in is switching the power off or setting the PC or system to run a screen saver when not in use. Also, Warranty service may be limited depending on instruction guide.

- Powering Off, Screen Saver and Power Saving Mode
  - Power off the product for 2 hours after using it for 12 hours.
  - Go to Display Properties › Power Supply on your PC and set the product to power off as required.
  - Using a screen saver is recommended.
    It is best to use a single-color or moving-image screen saver.
- Regular color Change
  - Use 2 colors
    Switch between 2 colors every 30 minutes as shown above.



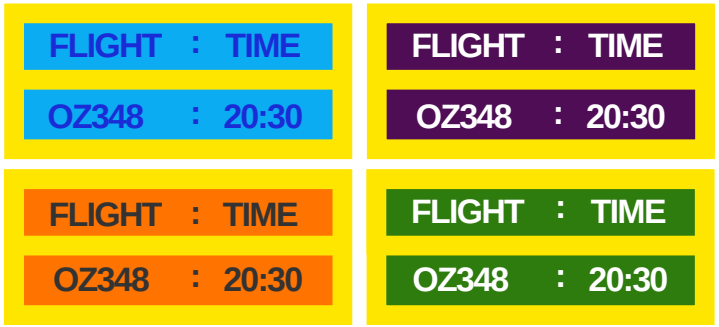
- Avoid combinations of a text color and background color of contrasting brightness. (Brightness: refers to the lightness or darkness of a color which varies depending on the amount of light emitted.)

— Avoid using grey as it may contribute to afterimage burn-in.

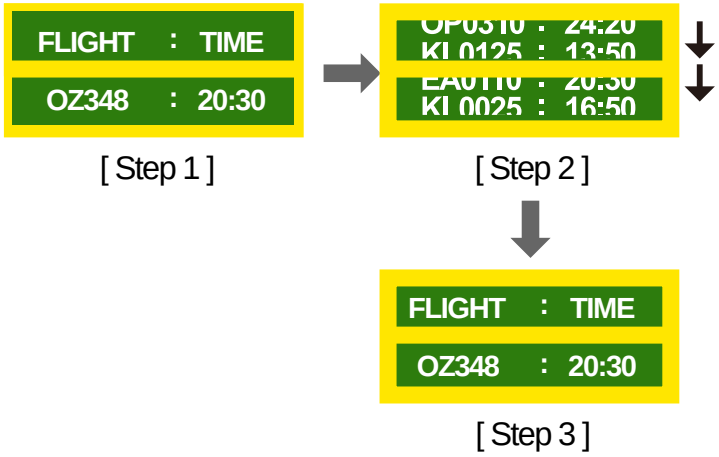
— Avoid using colors of contrasting brightness (black and white; grey).



- Regular Text color Change
  - Use bright colors of similar brightness.
    Interval: Change text color and background color every 30 minutes



  - Move and change text every 30 minutes as shown below.



  - Regularly display a moving image along with a logo.
    Interval: Display a moving image along with a logo for 60 seconds after using for 4 hours.

License

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Terminology

480i / 480p / 720p / 1080i / 1080p____ Each of the scanning rates above refers to the number of effective scanning lines that decides the screen resolution. The scanning rate may be indicated in i (interlaced) or p (progressive), depending on the scanning method.

- Scanning

Scanning refers to a process of sending pixels that form an image progressively. A larger number of pixels will deliver a clearer and more vivid picture.

- Progressive

In progressive scan mode, all lines of pixels are scanned one by one (progressively) on the screen.

- Interlaced

In interlaced scan mode, every other line of pixels is scanned from top to bottom first and then the remaining lines of pixels (that were not scanned) are scanned.

Non-interlace Mode and Interlace Mode____ Non-interlace mode (progressive scan) displays a horizontal line from the top to the bottom of a screen progressively. Interlace mode displays the odd number lines first and the even number lines next. Non-interlace mode is mainly used in monitors as it produces screen clarity and interlace mode is mainly used in TVs.

Dot Pitch____ The screen consist of red, green and blue dots. A shorter distance between the dots produces a higher resolution. Dot pitch refers to the distance between the shortest distance between dots of the same color. Dot pitch is measured in millimeters.

Vertical Frequency____ The product displays a single image many times per second (like a fluorescent light that flickers) to display an image for a viewer to see. The rate of a single image being displayed repeatedly per second is called vertical frequency or refresh rate. Vertical frequency is measured in Hz.

E.g. 60Hz refers to a single image being displayed 60 times in one second.

Horizontal Frequency____ The time required to scan a single line from the left to the right side of the screen is called a horizontal cycle. The reciprocal number of a horizontal cycle is called horizontal frequency. Horizontal frequency is measured in kHz.

Source____ Input source refers to a video source device connected to the product such as a camcorder or video or DVD player.

Plug & Play____ Plug & Play is a function that allows the automatic exchange of information between a monitor and PC to produce an optimum display environment. The product uses VESA DDC (international standard) to execute Plug & Play.

Resolution____ Resolution is the number of horizontal dots (pixels) and vertical dots (pixels) that form a screen. It represents the level of display detail. A higher resolution enables more data to be displayed on the screen and is useful to perform multiple tasks simultaneously.

E.g. A resolution of 1920 X 1080 consists of 1,920 horizontal pixels (horizontal resolution) and 1,080 vertical pixels (vertical resolution).

DVD (Digital Versatile Disc)____ DVD refers to a CD-sized mass storage disk where you can save multimedia (audio, video or game) applications using MPEG-2 video compression technology.

HDMI (High Definition Multimedia Interface)____ It is an interface that can be connected to a digital audio source as well as a high-definition video source by using a single cable without compression.

Multiple Display Control (MDC)____ MDC (Multiple Display Control) is an application that allows multiple display devices to be controlled simultaneously using a PC. Communication between a PC and monitor takes place using RS232C (serial data transmission) and RJ45 (LAN) cables.

SAMSUNG

User Manual

S22F350FH* S22F352FH* S22F354FH* S24F350FH* S24F352FH* S24F354FH* S24F356FH* S24F359FH*
S27F350FH* S27F352FH* S27F354FH* S27F358FW* S27F359FH* S32F351FU*

The color and the appearance may differ depending on the product, and the specifications are subject to change without prior notice to improve the performance.

The contents of this manual are subject to change without notice to improve quality.

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- An administration fee may be charged if either
  - (a) an engineer is called out at your request and there is no defect in the product (i.e. where you have failed to read this user manual).
  - (b) you bring the unit to a repair center and there is no defect in the product (i.e. where you have failed to read this user manual).
- The amount of such administration charge will be advised to you before any work or home visit is carried out.

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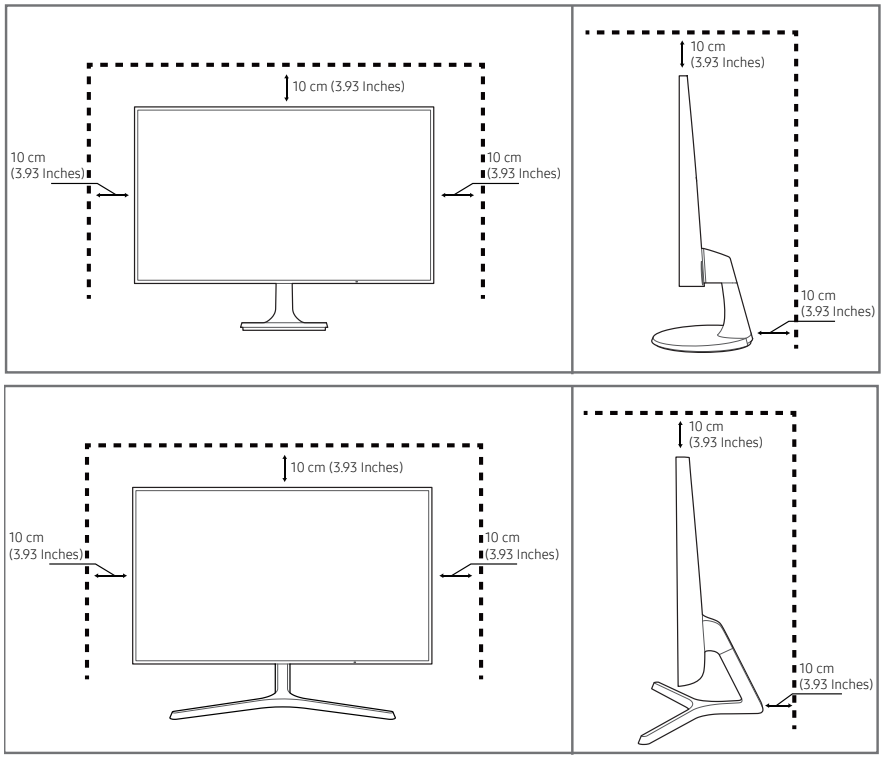
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Chapter 01
Before Using the Product

Securing the Installation Space

Ensure some space around the product for ventilation. An internal temperature rise may cause fire and damage the product. Be sure to allow the amount of space as shown below or greater when installing the product.

― The exterior may differ depending on the product.



Precautions for storage

High-glossy models can develop white stains on the surface if an ultrasonic wave humidifier is used nearby.

― Contact your nearest Samsung Customer Service Center if you want to clean the inside of the product (Service fee will be charged.)

Safety Precautions

Caution

RISK OF ELECTRIC SHOCK DO NOT OPEN

Caution : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. (OR BACK)

THERE ARE NO USER SERVICEABLE PARTS INSIDE.

REFER ALL SERVICING TO QUALIFIED PERSONNEL.

This symbol indicates that high voltage is present inside.

It is dangerous to make any kind of contact with any internal part of this product.

This symbol alerts you that important literature concerning operation and maintenance has been included with this product.

Symbols

Warning — A serious or fatal injury may result if instructions are not followed.

Caution — Personal injury or damage to properties may result if instructions are not followed.

Cleaning

¯ Exercise care when cleaning as the panel and exterior of advanced LCDs are easily scratched.

¯ Take the following steps when cleaning.

1 Power off the product and computer.

2 Disconnect the power cord from the product.

¯ Hold the power cable by the plug and do not touch the cable with wet hands. Otherwise, an electric shock may result.

3 Wipe the monitor with a clean, soft and dry cloth.

– Do not apply a cleaning agent that contains alcohol, solvent, or surfactant to the monitor.

– Do not spray water or detergent directly on the product.

4 Wet a soft and dry cloth in water and wring thoroughly to clean the exterior of the product.

5 Connect the power cord to the product when cleaning is finished.

6 Power on the product and computer.

Electricity and Safety

Warning

- Do not use a damaged power cord or plug, or a loose power socket.
- Do not use multiple products with a single power socket.
- Do not touch the power plug with wet hands.
- Insert the power plug all the way in so it is not loose.
- Connect the power plug to a grounded power socket (type 1 insulated devices only).
- Do not bend or pull the power cord with force. Be careful not to leave the power cord under a heavy object.
- Do not place the power cord or product near heat sources.
- Clean any dust around the pins of the power plug or the power socket with a dry cloth.

Caution

- Do not disconnect the power cord while the product is being used.
- Only use the power cord provided with your product by Samsung. Do not use the power cord with other products.
- Keep the power socket where the power cord is connected unobstructed.
  – The power cord must be disconnected to cut off power to the product when an issue occurs.
- Hold the plug when disconnecting the power cord from the power socket.

Installation

Warning

- DO NOT PLACE CANDLES, INSECT REPELLANTS OR CIGARETTES ON TOP OF THE PRODUCT. DO NOT INSTALL THE PRODUCT NEAR HEAT SOURCES.
- Do not install the product in poorly ventilated spaces such as a bookcase or closet.
- Install the product at least 10 cm away from the wall to allow ventilation.
- Keep the plastic packaging out of the reach of children.
  - Children may suffocate.
- Do not install the product on an unstable or vibrating surface (insecure shelf, sloped surface, etc.)
  - The product may fall and become damaged and/or cause an injury.
  - Using the product in an area with excess vibration may damage the product or cause a fire.
- Do not install the product in a vehicle or a place exposed to dust, moisture (water drips, etc.), oil, or smoke.
- Do not expose the product to direct sunlight, heat, or a hot object such as a stove.
  - The product lifespan may be reduced or a fire may result.
- Do not install the product within the reach of young children.
  - The product may fall and injure children.
- Edible oil (such as soybean oil) may damage or distort the product. Keep the product away from oil pollution. And do not install or use the product in the kitchen or near the kitchen stove.

Caution

- Do not drop the product while moving.
- Do not set down the product on its front.
- When installing the product on a cabinet or shelf, make sure that the bottom edge of the front of the product is not protruding.
  - The product may fall and become damaged and/or cause an injury.
  - Install the product only on cabinets or shelves of the right size.
- Set down the product gently.
  - Product failure or personal injury may result.
- Installing the product in an unusual place (a place exposed to a lot of fine dust, chemical substances, extreme temperatures or a significant presence of moisture, or a place where the product will operate continuously for an extended period of time) may seriously affect its performance.
  - Be sure to consult Samsung Customer Service Center if you want to install the product at such a place.

Operation

Warning

- There is a high voltage inside the product. Never disassemble, repair or modify the product yourself.
  - Contact Samsung Customer Service Center for repairs.
- To move the product, first disconnect all the cables from it, including the power cable.
- If the product generates abnormal sounds, a burning smell or smoke, disconnect the power cord immediately and contact Samsung Customer Service Center.
- Do not let children hang from the product or climb on top of it.
  - Children may become injured or seriously harmed.
- If the product is dropped or the outer case is damaged, turn off the power and disconnect the power cord. Then contact Samsung Customer Service Center.
  - Continued use can result in a fire or electric shock.
- Do not leave heavy objects or items that children like (toys, sweets, etc.) on top of the product.
  - The product or heavy objects may fall as children try to reach for the toys or sweets resulting in a serious injury.
- During a lightning or thunderstorm, power off the product and remove the power cable.
- Do not drop objects on the product or apply impact.
- Do not move the product by pulling the power cord or any cable.
- If a gas leakage is found, do not touch the product or power plug. Also, ventilate the area immediately.
- Do not lift or move the product by pulling the power cord or any cable.
- Do not use or keep combustible spray or an inflammable substance near the product.
- Ensure the vents are not blocked by tablecloths or curtains.
  - An increased internal temperature may cause a fire.
- Do not insert metallic objects (chopsticks, coins, hairpins, etc) or objects that burn easily (paper, matches, etc) into the product (via the vent or input/output ports, etc).
  - Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.
- Do not place objects containing liquid (vases, pots, bottles, etc) or metallic objects on top of the product.
  - Be sure to power off the product and disconnect the power cord when water or other foreign substances have entered the product. Then contact Samsung Customer Service Center.

Caution

- Leaving the screen fixed on a stationary image for an extended period of time may cause afterimage burn-in or defective pixels.
  - Activate power-saving mode or a moving-picture screen saver if you will not be using the product for an extended period of time.
- Disconnect the power cord from the power socket if you do not plan on using the product for an extended period of time (vacation, etc).
  - Dust accumulation combined with heat can cause a fire, electric shock or electric leakage.
- Use the product at the recommended resolution and frequency.
  - Your eyesight may deteriorate.
- Do not put AC/DC adapters together.
- Remove the plastic bag from the AC/DC adapter before you use it.
- Do not let water enter the power device or get the device wet.
  - An electric shock or fire may result.
  - Avoid using the product outdoors where it can be exposed to rain or snow.
  - Be careful not to get the AC/DC adapter wet when you wash the floor.
- Do not put the AC/DC adapter near to any heating apparatus.
  - Otherwise, a fire may result.
- Keep the AC/DC adapter in a well-ventilated area.
- If you place the AC/DC power adapter so that it is hanging with the cord input facing upwards, water or other foreign substances could enter the Adapter and cause the Adapter to malfunction.

  Make sure to rest the AC/DC power adapter flat on a table or the floor.
- Do not hold the product upside-down or move it by holding the stand.
  - The product may fall and become damaged or cause an injury.
- Looking at the screen too close for an extended period of time can deteriorate your eyesight.
- Do not use humidifiers or stoves around the product.
- Rest your eyes for more than 5 minutes for every 1 hour of product use.
- Do not touch the screen when the product has been turned on for an extended period of time as it will become hot.
- Store small accessories out of the reach of children.
- Exercise caution when adjusting the product angle or stand height.
  - Your hand or finger may get stuck and injured.
  - Tilting the product at an excessive angle may cause the product to fall and an injury may result.
- Do not place heavy objects on the product.
  - Product failure or personal injury may result.

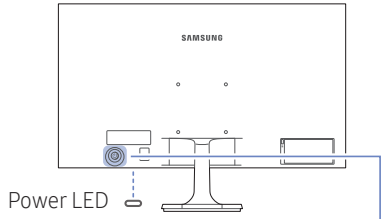
Chapter 02
Preparations

Parts

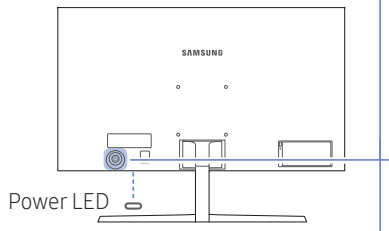
Control Panel

― The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

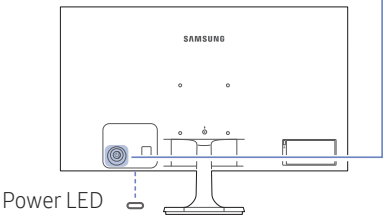
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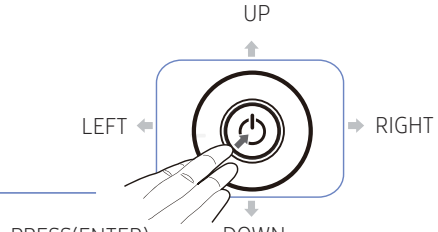


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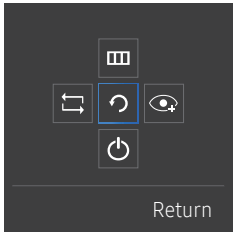


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JOG Button



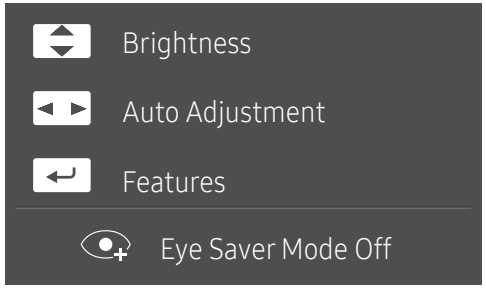
Function Key Guide

Icons	Description
JOG Button	Multi directional button that helps navigate. ― The JOG button is located on the rear left side of the product. The button can be used to move up, down, left or right, or as Enter.
Power LED	This LED is power status indicator and works as • Power On (Power button): Off • Power saving mode: Blinking • Power Off (Power button): On ― The power Indicator operation can be swapped by changing in the menu. (System ⟶ Power LED On) Actual models because of functional variation maybe haven't this function.
Function Key Guide	Press the JOG button when the screen is turned on. The Function Key Guide will appear. To access the onscreen menu when the guide is displayed, press the corresponding direction button again. ― Function Key Guide may vary depending on the function or product model. Please refer to the actual product.

Direct Key guide

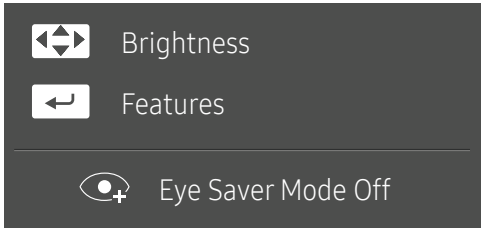
- The shortcut button screen (OSD menu) shown below is displayed only when the monitor screen is turned on, the computer resolution changes, or the input source changes.
- The function buttons page shows if **Eye Saver Mode** is enabled.
  - : On
  - : Off

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- / : Adjust **Brightness**, **Contrast**, **Sharpness**.
- : Adjust **Auto Adjustment**.
  - Changing the resolution in Display Properties will activate the **Auto Adjustment** function.
  - This function is only available in **Analog** mode.
- : Display Function Key Guide.

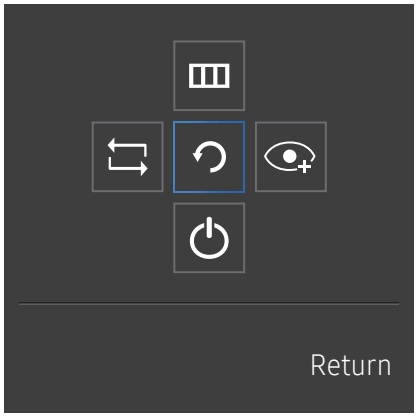
S32F351FU*/S27F358FW*



- / / / : Adjust **Brightness**, **Contrast**, **Sharpness**.
- : Display Function Key Guide.

Function Key Guide

― To enter the main menu or to use other items, press the JOG button to display the Function Key Guide. You can exit by pressing the JOG button again.



UP/DOWN/LEFT/RIGHT: Move to the item you want. The description for each item will appear when the focus changes.

PRESS(ENTER): The selected item will be applied.

Icons	Description
	Selects ⮌ to change the input signal by moving the JOG button in the Function Key Guide screen. A message will appear on the top left corner of the screen if the input signal has been changed.
	Selects ☰ by moving the JOG button in the function key guide screen. The OSD (On Screen Display) of your Monitor's feature appears. OSD control lock: Maintain the current settings, or lock the OSD control to prevent unintended changes to settings. Enable/Disable: To lock/unlock the OSD control, press the LEFT button for 10 seconds when the main menu displayed. ― If the OSD control is locked, Brightness and Contrast can be adjusted. Eye Saver Mode is available. System ⟶ Power LED On is available. Information can be viewed.
	Selects 👁 by moving the JOG button in the function key guide screen. Press to enable or disable Eye Saver Mode. The items below are not available if the Eye Saver Mode function is enable. • Picture ⟶ SAMSUNG MAGIC Bright, Brightness, Color, Game Mode • System ⟶ Eco Saving Plus
	Selects ⏻ to turn the Monitor off by moving the JOG button in the function key guide screen.

― Actual models because of functional variation, Function key guide options will be different.

When the monitor displays nothing (i.e. Power saving mode or Non-signal mode), 2 direct keys for control source and power could be used as below.

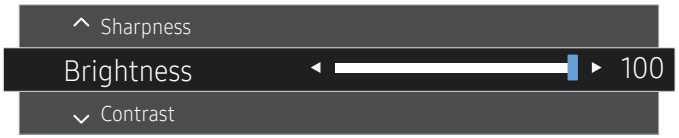
JOG Button	Power saving/Non-signal mode
UP	Source Change
Down	
PRESS(ENTER) for 2 seconds	Power Off

When the monitor displays the Main menu the JOG Button could be used as below.

JOG Button	Action
UP/DOWN	Move the option
LEFT	Exit the Main menu. Close Sublist without saving value. Value decreases in the slider.
RIGHT	Move to next depth. Value increases in the slider.
PRESS(ENTER)	Move to next depth. Save the value and close Sublist.

Changing Brightness, Contrast and Sharpness settings

You can adjust Brightness, Contrast or Sharpness by moving the JOG button up or down, if no OSD menu is displayed.



— The displayed image may differ depending on the model.

Brightness

— This menu is not available when SAMSUNG MAGIC Bright is set to Dynamic Contrast mode.

— This menu is not available when Eco Saving Plus is enabled.

— This menu is not available when Eye Saver Mode is enabled.

Contrast

— This menu is not available when SAMSUNG MAGIC Bright is in Cinema or Dynamic Contrast mode.

— This menu is not available when Game Mode is enabled.

Sharpness

— This menu is not available when SAMSUNG MAGIC Bright is in Cinema or Dynamic Contrast mode.

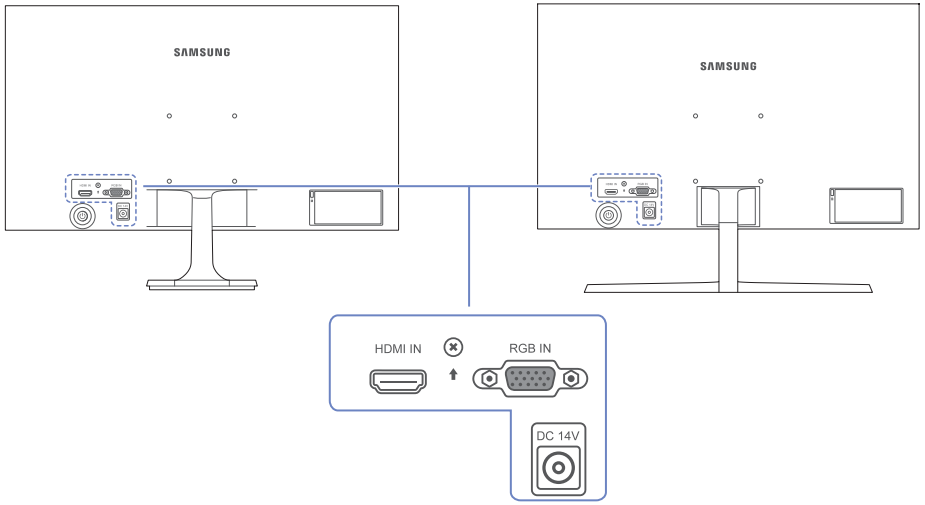
— This menu is not available when SAMSUNG MAGIC Upscale is in Mode1 or Mode2 mode.

— This menu is not available when Game Mode is enabled.

Reverse Side

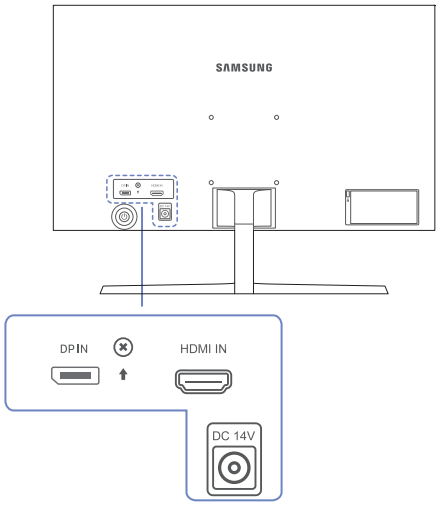
The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

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S24F352FH*/S24F354FH*/S24F359FH*/S27F350FH*/
S27F352FH*/S27F354FH*/S27F359FH*

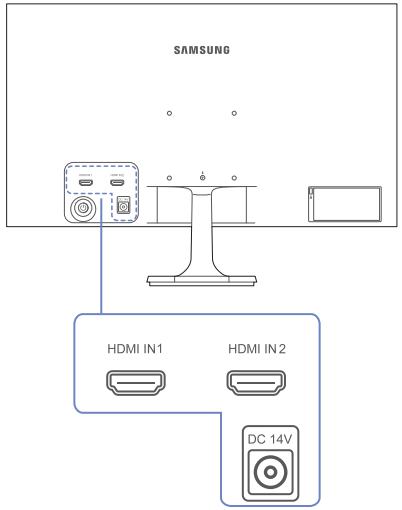


S24F356FH*

S27F358FW*



S32F351FU*



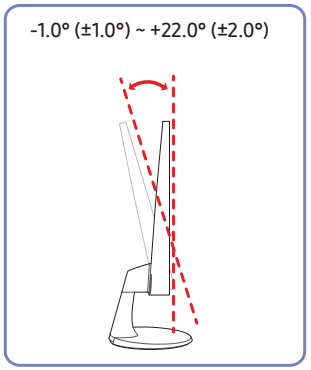
Port	Description
HDMI IN / HDMI IN 1 / HDMI IN 2	Connects to a source device using an HDMI cable or HDMI-DVI cable.
RGB IN	Connect to a PC using the D-SUB cable.

Port	Description
DP IN	Connects to a PC using a DP cable.
DC 14V	Connects to the AC/DC adapter.

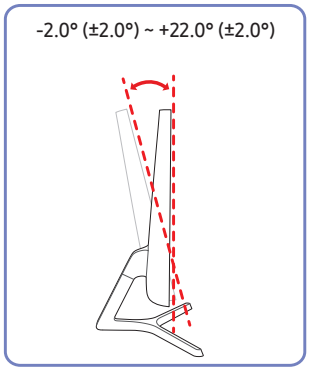
Adjusting the Product Tilt

— The color and shape of parts may differ from what is shown. Specifications are subject to change without notice to improve quality.

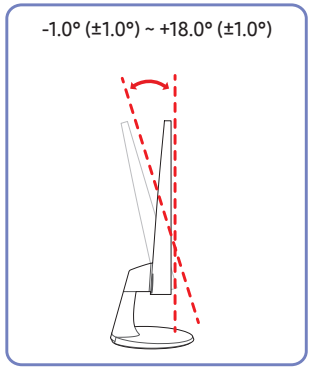
S22F350FH*/S22F352FH*/
S22F354FH*/S24F350FH*/
S24F352FH*/S24F354FH*/
S24F359FH*/S27F350FH*/
S27F352FH*/S27F354FH*/
S27F359FH*



S24F356FH*/S27F358FW*



S32F351FU*



- You can adjust the product tilt.
- Hold the lower part of the product and adjust the tilt carefully.

Anti-theft Lock

— An anti-theft lock allows you to use the product securely even in public places.

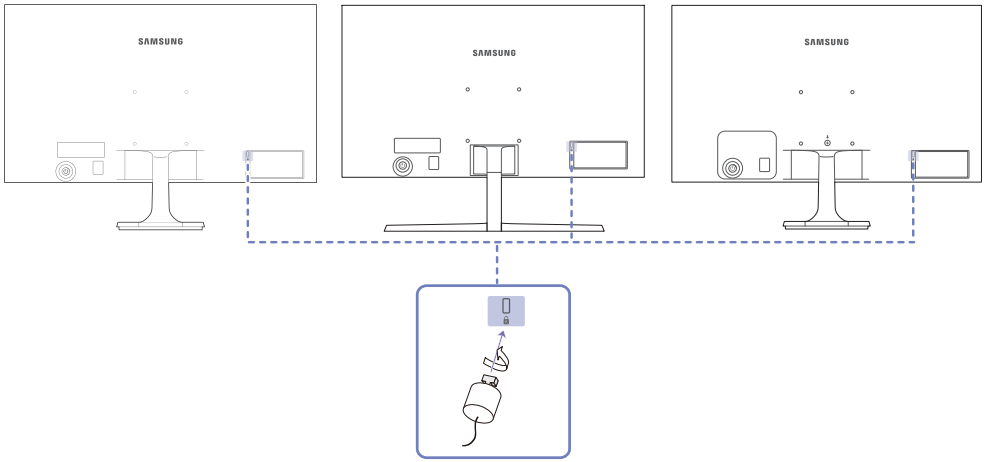
— The locking device shape and locking method depend on the manufacturer. Refer to the user guide provided with your anti-theft locking device for details.

To lock an anti-theft locking device:

S22F350FH*/S22F352FH*/
S22F354FH*/S24F350FH*/
S24F352FH*/S24F354FH*/
S24F359FH*/S27F350FH*/
S27F352FH*/S27F354FH*/
S27F359FH*

S24F356FH*/S27F358FW*

S32F351FU*



1 Fix the cable of your anti-theft locking device to a heavy object such as a desk.

2 Put one end of the cable through the loop on the other end.

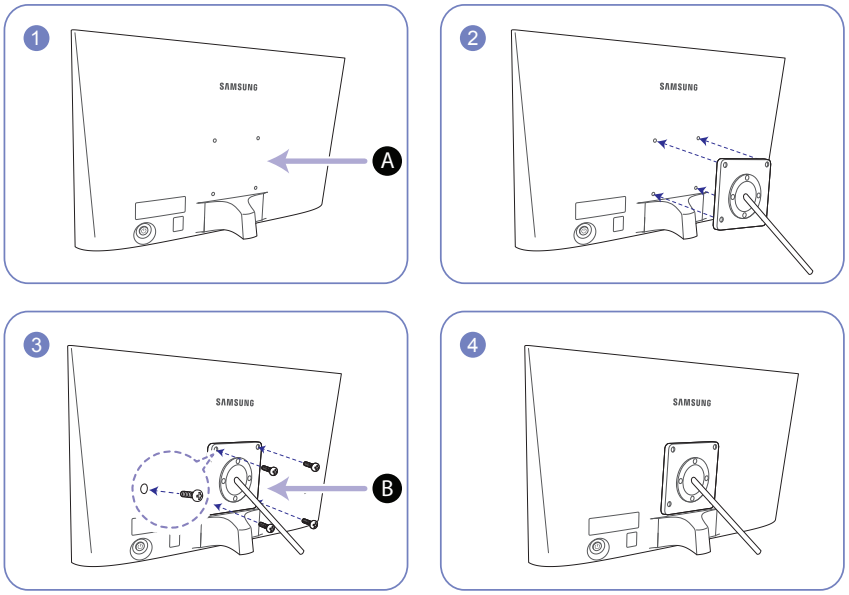
3 Insert the locking device into the anti-theft lock slot at the back of the product.

4 Lock the locking device.

- An anti-theft locking device can be purchased separately.
- Refer to the user guide provided with your anti-theft locking device for details.
- Anti-theft locking devices can be purchased at electronics retailers or online.

Installing a Wall-mount Kit or Desktop Stand (S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F356FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F358FW*/S27F359FH*)

— Power the product off and remove the power cable from the power socket.



Ⓐ Attach the wall-mount kit or desktop stand here

Ⓑ Bracket (sold separately)

Align the grooves and tightly fasten the screws on the bracket on the product with the corresponding parts on the wall-mount kit or desktop stand you want to attach.

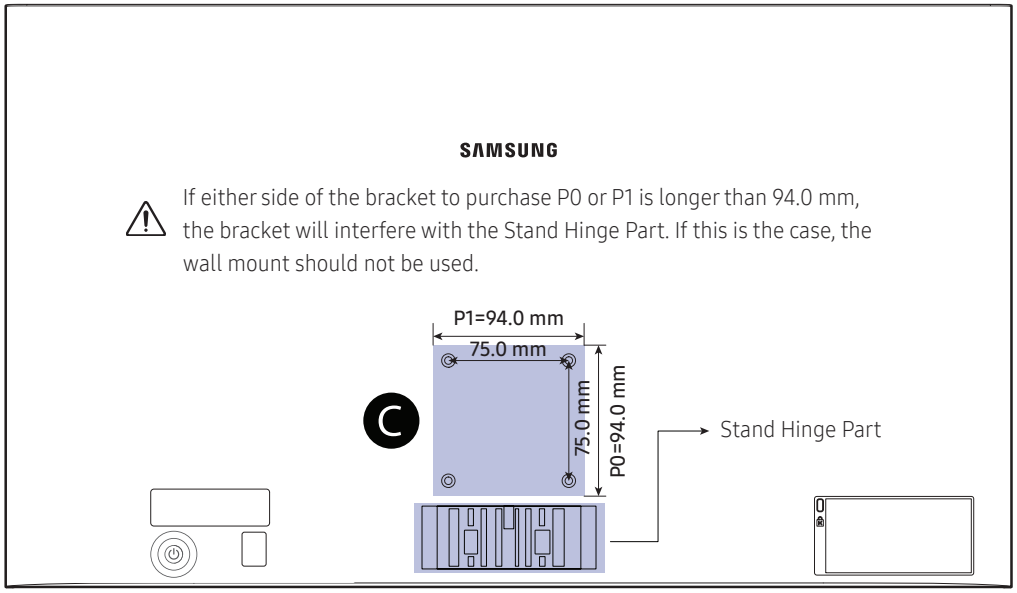
- Notes
  - Using a screw longer than the standard length can damage the internal components of the product.
  - The length of screws required for a wall mount that does not comply with the VESA standards may vary depending on the specifications.
  - Do not use screws that do not comply with the VESA standards. Do not attach the wall-mount kit or desktop stand using excessive force. The product may get damaged or fall and cause personal injury. Samsung shall not be held liable for any damage or injury caused by using improper screws or attaching the wall-mount kit or desktop stand using excessive force.
  - Samsung shall not be held liable for any product damage or personal injury caused by using a wall-mount kit other than the one specified or from an attempt to install the wall-mount kit on your own.
  - To mount the product on a wall, ensure you purchase a wall-mount kit that can be installed 10 cm or farther away from the wall.
  - Be sure to use a wall-mount kit that complies with the standards.
  - To install the monitor using a wall mount, disconnect the stand base from the monitor.

Unit: mm (inches)

Model name	VESA screw hole specs (A * B) in millimeters	Standard Screw	Quantity
S22F350FH*/S22F352FH*/ S22F354FH*/S24F350FH*/ S24F352FH*/S24F354FH*/ S24F356FH*/S24F359FH*/ S27F350FH*/S27F352FH*/ S27F354FH*/S27F358FW*/ S27F359FH*	75.0 x 75.0 (3.0 x 3.0)	M4	4

— Do not install your Wall Mount Kit while your product is turned on. It may result in personal injury due to electric shock.

S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F356FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F358FW*/S27F359FH*

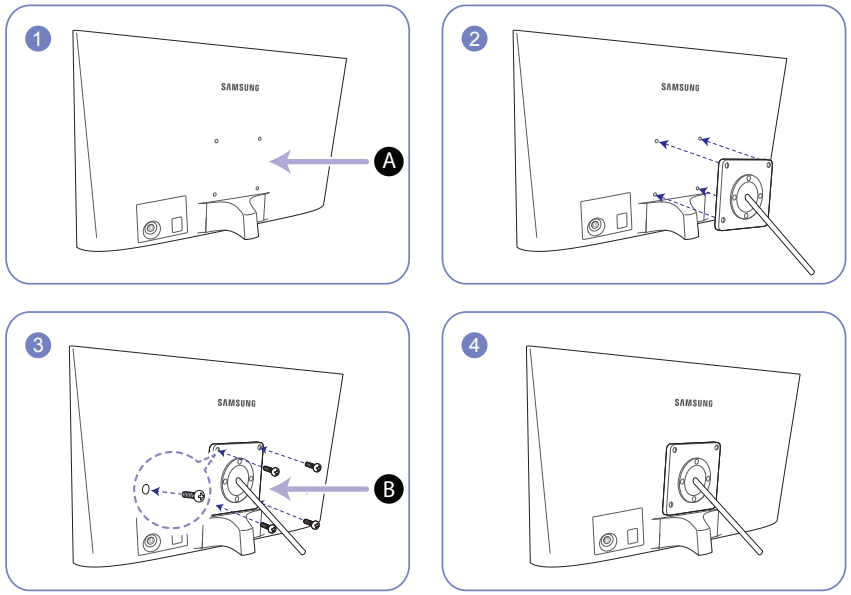


Refer to the area C in the image

- The dimensions of this model required by VESA are 75.0 x 75.0 mm. Please purchase the wall-mount tailored to the dimensions of 75.0 x 75.0 mm, and its external dimension required by VESA shall be less than 94.0 mm.
- Some wall mounts available in the market that have a 100.0 x 100.0 mm or 75.0 x 75.0 mm mounting hole pattern may not be compatible.

Installing a Wall-mount Kit or Desktop Stand (S32F351FU*)

— Power the product off and remove the power cable from the power socket.



Ⓐ Attach the wall-mount kit or desktop stand here

Ⓑ Bracket (sold separately)

Align the grooves and tightly fasten the screws on the bracket on the product with the corresponding parts on the wall-mount kit or desktop stand you want to attach.

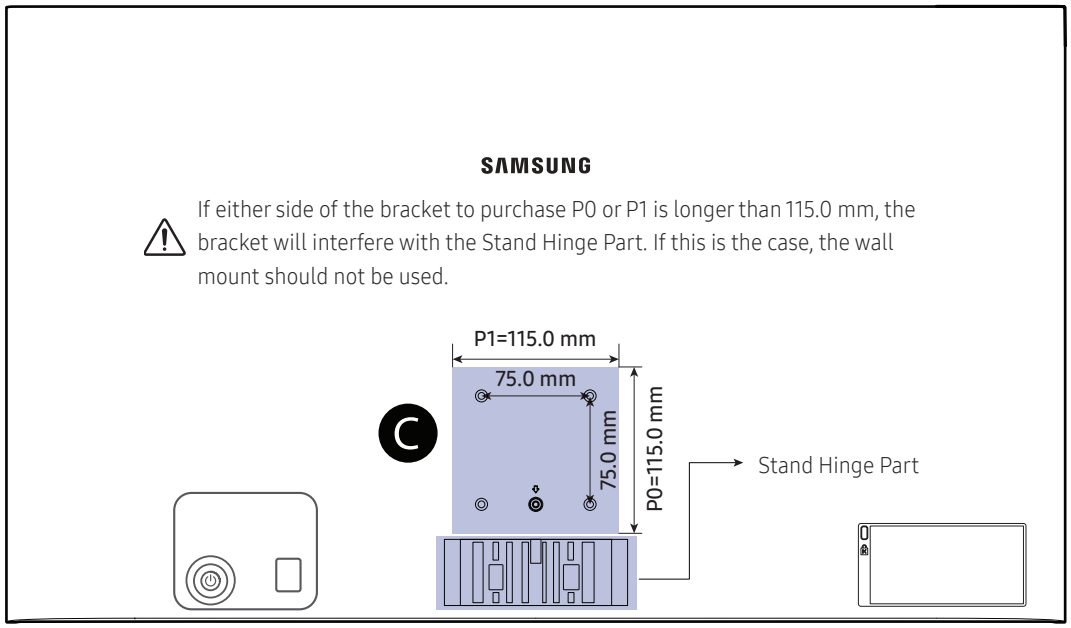
- Notes
  - Using a screw longer than the standard length can damage the internal components of the product.
  - The length of screws required for a wall mount that does not comply with the VESA standards may vary depending on the specifications.
  - Do not use screws that do not comply with the VESA standards. Do not attach the wall-mount kit or desktop stand using excessive force. The product may get damaged or fall and cause personal injury. Samsung shall not be held liable for any damage or injury caused by using improper screws or attaching the wall-mount kit or desktop stand using excessive force.
  - Samsung shall not be held liable for any product damage or personal injury caused by using a wall-mount kit other than the one specified or from an attempt to install the wall-mount kit on your own.
  - To mount the product on a wall, ensure you purchase a wall-mount kit that can be installed 10 cm or farther away from the wall.
  - Be sure to use a wall-mount kit that complies with the standards.
  - To install the monitor using a wall mount, disconnect the stand base from the monitor.

Unit: mm (inches)

Model name	VESA screw hole specs (A * B) in millimeters	Standard Screw	Quantity
S32F351FU*	75.0 x 75.0 (3.0 x 3.0)	M4	4

— Do not install your Wall Mount Kit while your product is turned on. It may result in personal injury due to electric shock.

S32F351FU*



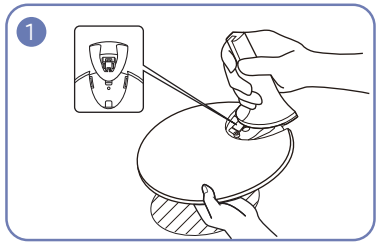
Refer to the area C in the image

- The dimensions of this model required by VESA are 75.0 x 75.0 mm. Please purchase the wall-mount tailored to the dimensions of 75.0 x 75.0 mm.
- If you use a wall-mount used for the dimensions of both 100.0 x 100.0 mm and 75.0 x 75.0 mm, please ensure that its external dimensions are less than 115.0 x 115.0 mm.
- Some wall-mounts with special shapes and with their dimensions being greater than 115.0 x 115.0 mm may be unusable.

Installation

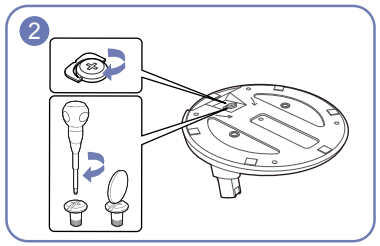
Attaching the Stand (S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F359FH*/S32F351FU*)

- Before assembling the product, place the product down on a flat and stable surface so that the screen is facing downwards.
- The exterior may differ depending on the product.

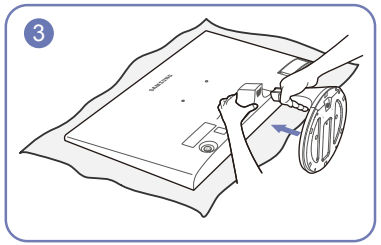


Insert the stand neck into the stand base in the direction shown in the figure.

Check that the stand neck is firmly connected.



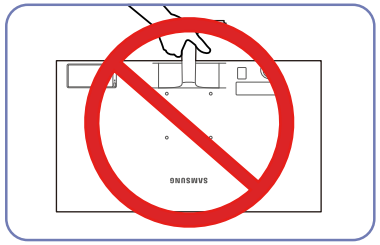
Tightly fasten the connecting screw at the bottom of the stand base.



Place a soft cloth over the table to protect the product and place the product onto the cloth so that the front of the product is facing downwards.

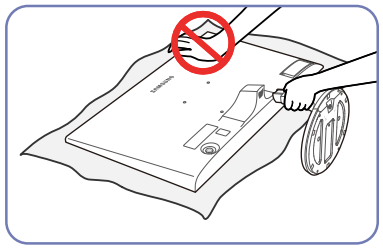
Hold the back of the monitor as shown in the figure.

Push the assembled stand into the main body in the direction of the arrow as shown in the figure.



- **Caution**

Do not hold the product upside down only by the stand.

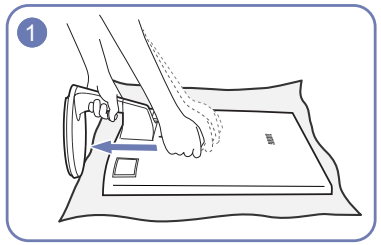


- **Caution**

Do not press down on the monitor. There is a risk of damaging the monitor.

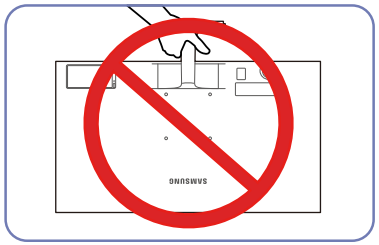
Removing the Stand (S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F359FH*/S32F351FU*)

- Before assembling the product, place the product down on a flat and stable surface so that the screen is facing downwards.
- The exterior may differ depending on the product.



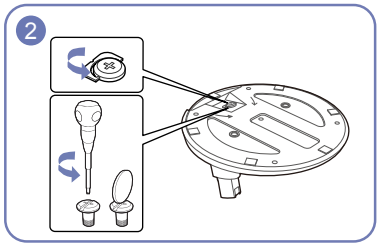
Place a soft cloth over the table to protect the product and place the product onto the cloth so that the front of the product is facing downwards.

While holding the stand neck with one hand, pound the other fisted hand down onto the top of the stand base in the direction of the arrow to detach the stand base.

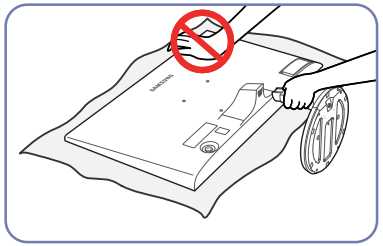


- **Caution**

Do not hold the product upside down only by the stand.

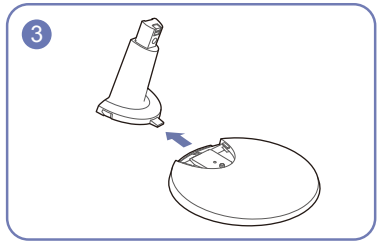


Turn the connecting screw at the bottom of the stand base to separate it.



- **Caution**

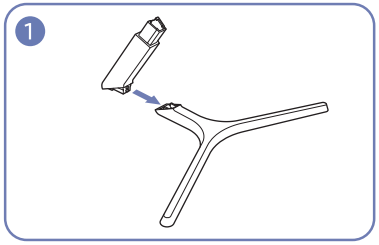
Do not press down on the monitor. There is a risk of damaging the monitor.



Remove the stand neck from the stand base by pulling it in the direction of the arrow as shown in the figure.

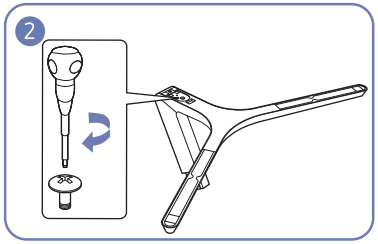
Attaching the Stand (S24F356FH*/S27F358FW*)

- Before assembling the product, place the product down on a flat and stable surface so that the screen is facing downwards.
- The exterior may differ depending on the product.

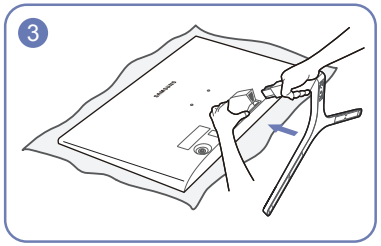


Insert the stand neck into the stand base in the direction shown in the figure.

Check that the stand neck is firmly connected.



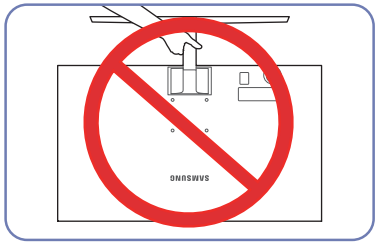
Tightly fasten the connecting screw at the bottom of the stand base.



Place a soft cloth over the table to protect the product and place the product onto the cloth so that the front of the product is facing downwards.

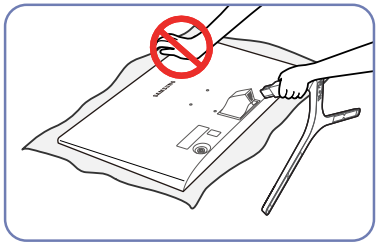
Hold the back of the monitor as shown in the figure.

Push the assembled stand into the main body in the direction of the arrow as shown in the figure.



- Caution

Do not hold the product upside down only by the stand.

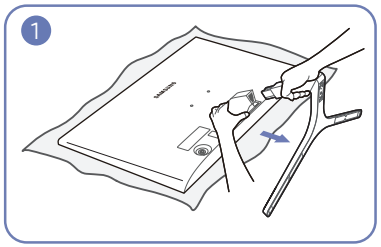


- Caution

Do not press down on the monitor. There is a risk of damaging the monitor.

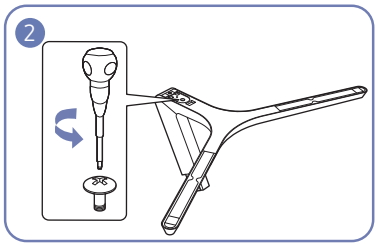
Removing the Stand (S24F356FH*/S27F358FW*)

- Before assembling the product, place the product down on a flat and stable surface so that the screen is facing downwards.
- The exterior may differ depending on the product.

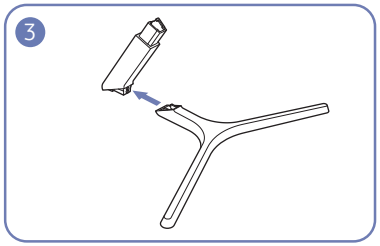


Place a soft cloth over the table to protect the product and place the product onto the cloth so that the front of the product is facing downwards.

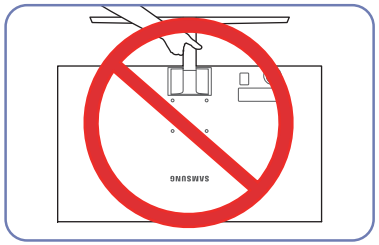
While holding the monitor with one hand, pull the stand neck with your other hand to in detach the stand as shown in the figure.



Turn the connecting screw at the bottom of the stand base to separate it.

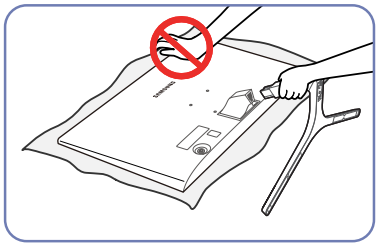


Remove the stand neck from the stand base by pulling it in the direction of the arrow as shown in the figure.



- Caution

Do not hold the product upside down only by the stand.



- Caution

Do not press down on the monitor. There is a risk of damaging the monitor.

Chapter 03
Connecting and Using a Source Device

Pre-connection Checkpoints

- Before connecting a source device, read the user manual provided with it.
  The number and locations of ports on source devices may differ from device to device.
- Do not connect the power cable before connecting all other cables.
  Ensure you connect a source device first before connecting the power cable.
  Connecting the power cable during connection may damage the product.
- Check the types of ports at the back of the product you want to connect.

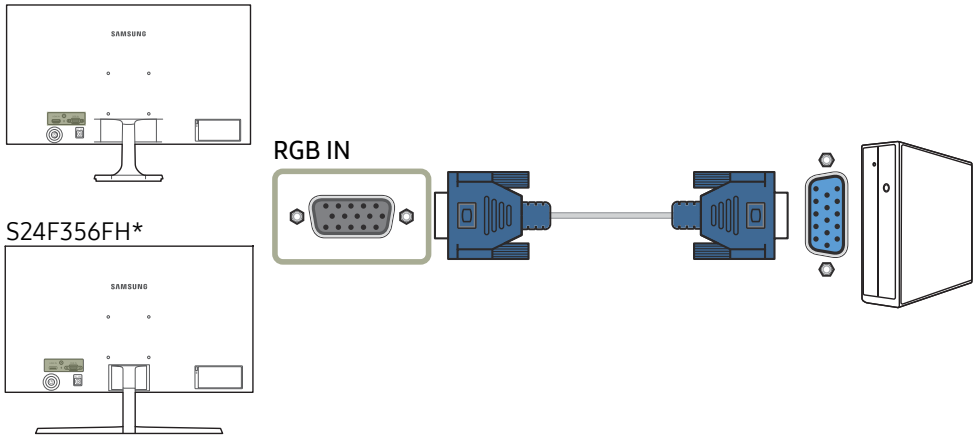
Connecting and Using a PC

Select a connection method suitable for your PC.

- Connecting parts may differ in different products.
- Provided ports may vary depending on the product.

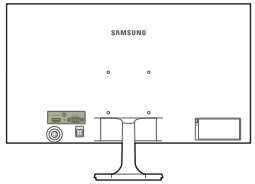
Connection Using the D-SUB Cable (Analog Type)

S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/
S24F354FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F359FH*

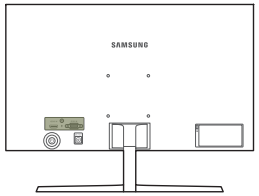


Connection Using the HDMI or HDMI-DVI Cable

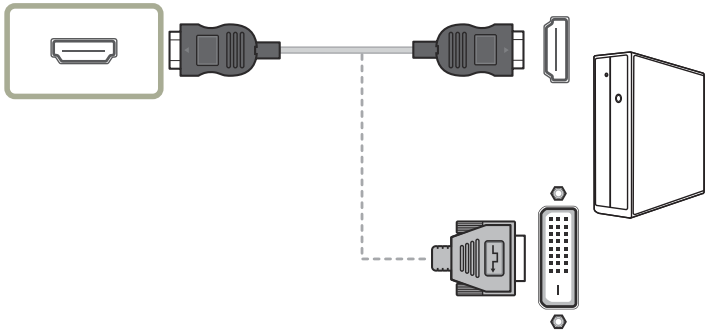
S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/
S24F354FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F359FH*



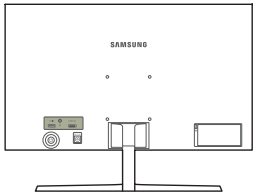
S24F356FH*



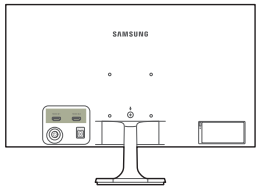
HDMI IN



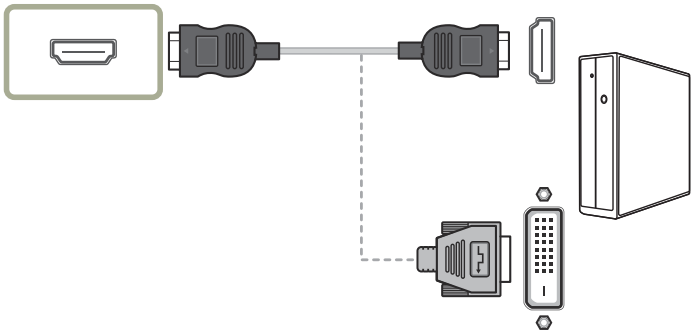
S27F358FW*



S32F351FU*

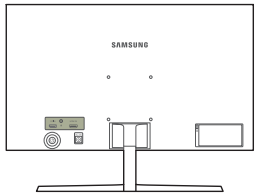


HDMI IN 1, HDMI IN 2

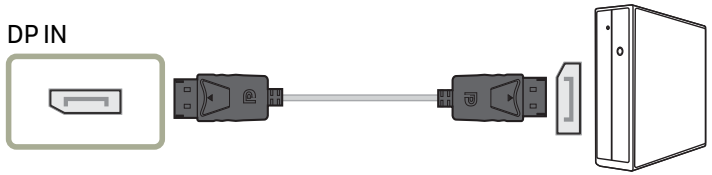


Connection Using an DP Cable

S27F358FW*



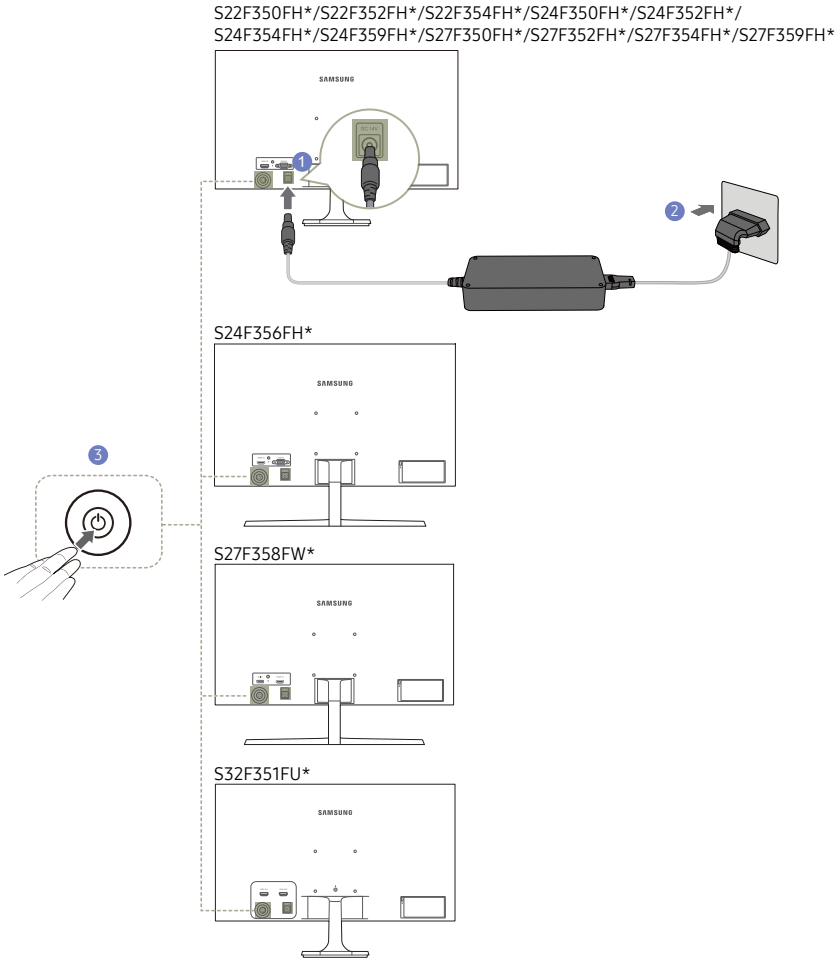
DP IN



― A DP cable shorter under 1.5m in length is recommended. Using a cable longer than 1.5m can affect the picture quality.

Connecting the Power

Optional



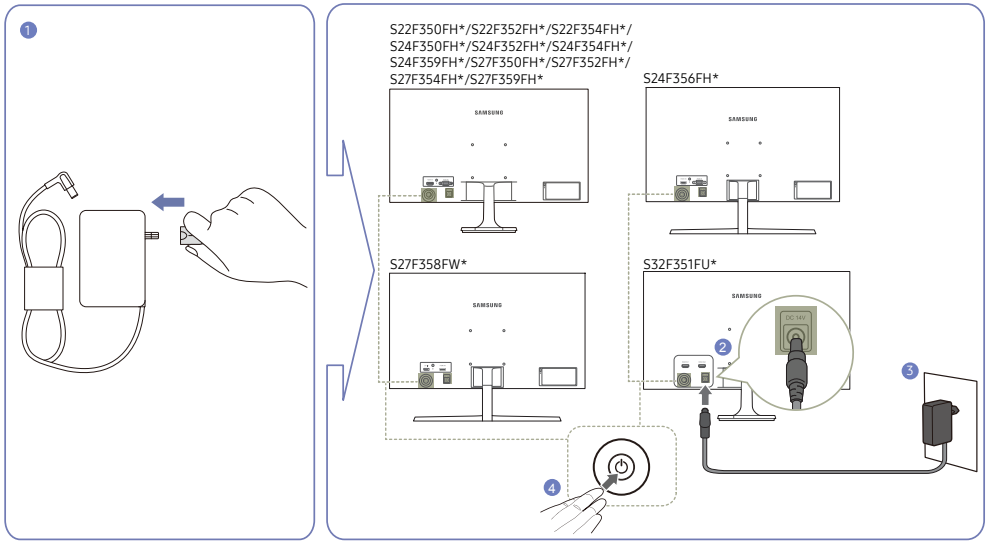
1 Connect the power cable to the AC/DC adapter. Then, connect the AC/DC adapter to the **DC 14V** port on the back of the product.

2 Next, connect the power cable to the power outlet.

3 Press the JOG button on the back of the monitor to turn it on.

— The input voltage is switched automatically.

Optional



1 Connect the power plug to the AC/DC adapter. (Optional)

2 Connect the AC/DC adapter cable to the **DC 14V** port on the back of the monitor.

3 Plug the AC/DC adapter into the power outlet.

4 Press the JOG button on the back of the monitor to turn it on.

— The input voltage is switched automatically.

Correct posture to use the product



Use the product in the correct posture as follows:

- Straighten your back.
- Adjust the angle so light does not reflect on the screen.
- Keep your forearms perpendicular to your upper arms and level with the back of your hands.
- Keep your elbows at about a right angle.
- Adjust the height of the product so you can keep your knees bent at 90 degrees or more, your heels attached to the floor, and your arms lower than your heart.

Driver Installation

— You can set the optimum resolution and frequency for this product by installing the corresponding drivers.

— To install the latest version of the product driver, download it from the Samsung Electronics website at http://www.samsung.com.

Setting Optimum Resolution

An information message about setting optimum resolution will appear if you power on the product for the first time after purchase.

Select a language on the product and change the resolution on your PC to the optimum setting.

— If the optimum resolution is not selected, the message will appear up to three times for a specified time even when the product is turned off and on again.

— The optimum resolution can also be selected in **Control Panel** on your PC.

Chapter 04
Screen Setup

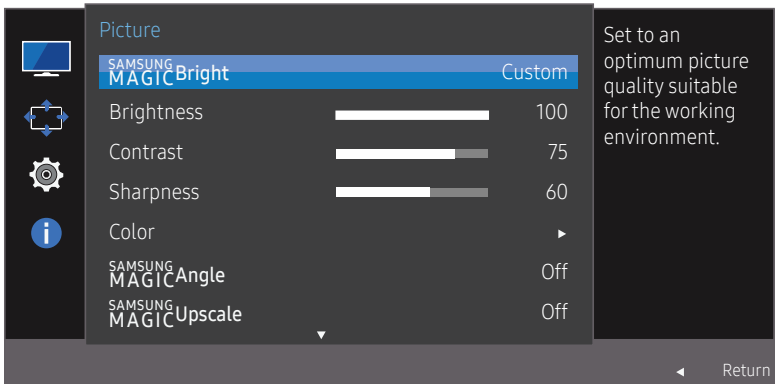
Configure the screen settings such as brightness.
A detailed description of each function is provided. Refer to your product for details.
The functions available on the monitor may vary depending on the model. Refer to the actual product.

SAMSUNG MAGIC Bright

This menu provides an optimum picture quality suitable for the environment where the product will be used.

- This menu is not available when **Eco Saving Plus** is enabled.
- This menu is not available when **Game Mode** is enabled.
- This menu is not available when **Eye Saver Mode** is enabled.

You can customize the brightness to suit your preferences.



- The displayed image may differ depending on the model.

In PC mode

- **Custom**: Customize the contrast and brightness as required.
- **Standard**: Obtain a picture quality suitable for editing documents or using Internet.
- **Cinema**: Obtain the brightness and sharpness of TVs suitable for enjoying video and DVD content.
- **Dynamic Contrast**: Obtain balanced brightness through automatic contrast adjustment.

In AV mode

When the external input is connected through HDMI/DP and **PC/AV Mode** is set to **AV**, SAMSUNG MAGIC **Bright** has four automatic picture settings (**Dynamic**, **Standard**, **Movie** and **Custom**) that are preset at the factory. You can activate either **Dynamic**, **Standard**, **Movie** or **Custom**. You can select **Custom** which automatically recalls your personalized picture settings.

- **Dynamic**: Select this mode to view a sharper image than in **Standard** mode.
- **Standard**: Select this mode when the surroundings are bright. This also provides a sharp image.
- **Movie**: Select this mode when the surroundings are dark. This will save power and reduce eye fatigue.
- **Custom**: Select this mode when you want to adjust the image according to your preferences.

Brightness

You can adjust the general brightness of the picture. (Range: 0~100)

A higher value will make the picture appear brighter.

— This menu is not available when SAMSUNG MAGIC Bright is set to Dynamic Contrast mode.

— This menu is not available when Eco Saving Plus is enabled.

— This menu is not available when Eye Saver Mode is enabled.

Contrast

Adjust the contrast between the objects and background. (Range: 0~100)

A higher value will increase the contrast to make the object appear clearer.

— This option is not available when SAMSUNG MAGIC Bright is in Cinema or Dynamic Contrast mode.

— This menu is not available when Game Mode is enabled.

Sharpness

Make the outline of objects more clear or blurry. (Range: 0~100)

A higher value will make the outline of objects clearer.

— This option is not available when SAMSUNG MAGIC Bright is in Cinema or Dynamic Contrast mode.

— This menu is not available when SAMSUNG MAGIC Upscale is in Mode1 or Mode2 mode.

— This menu is not available when Game Mode is enabled.

Color

Adjust the tint of the screen.

— This menu is not available when SAMSUNG MAGIC Bright is set to Cinema or Dynamic Contrast mode.

— This menu is not available when Game Mode is enabled.

— This menu is not available when Eye Saver Mode is enabled.

- Red: Adjust the red saturation level. Values closer to 100 mean greater intensity for the color.
- Green: Adjust the green saturation level. Values closer to 100 mean greater intensity for the color.
- Blue: Adjust the blue saturation level. Values closer to 100 mean greater intensity for the color.
- Color Tone: Select a color tone that best suits your viewing needs.
  - Cool 2: Set the color temperature to be cooler than Cool 1.
  - Cool 1: Set the color temperature to be cooler than Normal mode.
  - Normal: Display the standard color tone.
  - Warm 1: Set the color temperature to be warmer than Normal mode.
  - Warm 2: Set the color temperature to be warmer than Warm 1.
  - Custom: Customize the color tone.

  — When the external input is connected through HDMI/DP and PC/AV Mode is set to AV, Color Tone has four color temperature settings (Cool, Normal, Warm and Custom).
- Gamma: Adjust the middle level of luminance.
  - Mode1 / Mode2 / Mode3

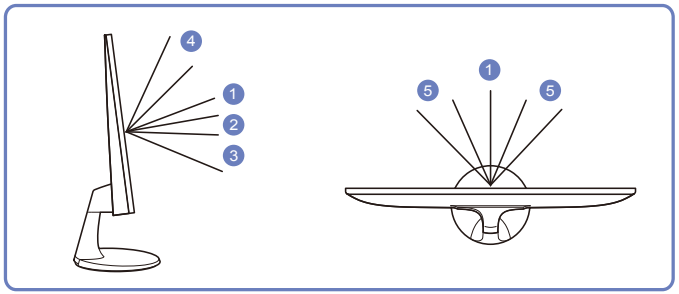
SAMSUNG MAGIC Angle (S22F350FH*/ S22F352FH*/S22F354FH*)

SAMSUNG MAGIC**Angle** allows you to configure the settings to obtain the optimum picture quality according to your viewing angle.

— This menu is not available when SAMSUNG MAGIC**Bright** is set to **Cinema** or **Dynamic Contrast** mode.

— This menu is not available when **Game Mode** or **Eye Saver Mode** is enabled.

You can customize the angle to suit your preferences.



- **Off** 1 : Select this option to view directly in front of the product.
- **Lean Back Mode 1** 2 : Select this option to view from a place slightly lower than the product.
- **Lean Back Mode 2** 3 : Select this option to view from a place lower than **Lean Back Mode 1**.
- **Standing Mode** 4 : Select this option to view from a place higher than the product.
- **Side Mode** 5 : Select this option to view from either side of the product.
- **Group View**: Select this option for more than one viewer to view from places 1 , 4 , and 5 .
- **Custom**: **Lean Back Mode 1** will be applied by default if **Custom** is selected.

SAMSUNG MAGIC Upscale

SAMSUNG MAGIC**Upscale** function can enhance the layers of the picture details and the vividness of the picture.

The function has more obvious effects on low-resolution pictures.

— This menu is not available when SAMSUNG MAGIC**Bright** is set to **Cinema** or **Dynamic Contrast** mode.

— This menu is not available when **Game Mode** is enabled.

- **Off** / **Mode1** / **Mode2**

  — Comparing with **Mode1**, **Mode2** has a stronger effect.

HDMI Black Level

If a DVD player or set-top box is connected to the product via HDMI, image quality degradation (contrast/ color degradation, black level, etc.) may occur, depending on the connected source device. In such case, **HDMI Black Level** can be used to adjust the image quality.

If this is the case, correct the degraded picture quality using **HDMI Black Level**.

— This function is only available in **HDMI** mode.

- **Normal**: Select this mode when there is no contrast ratio degradation.
- **Low**: Select this mode to reduce the black level and increase the white level when there is a contrast ratio degradation.

— **HDMI Black Level** may not be compatible with some source devices.

— The **HDMI Black Level** feature is only activated at a certain **AV** resolution, such as 720P and 1080P.

Eye Saver Mode

Set to an optimum picture quality suitable for eye relaxation.

TÜV Rheinland “Low Blue Light Content” is a certification for products which meet requirements for lower blue light levels. When Eye Saver Mode is 'On', the blue light that wavelength is around 400nm will decrease, and it will provide an optimum picture quality suitable for eye relaxation. At the same time, the blue light level is lower than in the default settings, and it was tested by TÜV Rheinland and certified as it met the requirements of TÜV Rheinland “Low Blue Light Content” standards.

Game Mode

Configure the product screen settings for game mode.

Use this feature when playing games on a PC or when a game console such as PlayStation™ or Xbox™ is connected.

— This menu is not available when Eye Saver Mode is enabled.

— When the monitor turns off, enters power-saving mode or changes input sources, Game Mode turns Off even if it is set to On.

— If you want to keep Game Mode enabled all the time, select Always On.

Response Time (S24F350FH*/S24F352FH*/ S24F354FH*/S24F356FH*/S24F359FH*/ S27F350FH*/S27F352FH*/S27F354FH*/ S27F358FW*/S27F359FH*/S32F351FU*)

Accelerate the panel response rate to make video appear more vivid and natural.

— It is best to set Response Time to Standard or Faster when you are not viewing a movie.

Picture Size

Change the picture size.

— This option is not available when FreeSync is enabled.

In PC mode

- Auto: Display the picture according to the aspect ratio of the input source.
- Wide: Display the picture in full screen regardless of the aspect ratio of the input source.

In AV mode

- 4:3: Display the picture with an aspect ratio of 4:3. Suitable for videos and standard broadcasts.
- 16:9: Display the picture with an aspect ratio of 16:9.
- Screen Fit: Display the picture with the original aspect ratio without cutting off.

— The function may not be supported depending on the ports provided with the product.

— Changing the screen size is available when the following conditions are satisfied.

  — A digital output device is connected using the HDMI/DP cable.

  — The input signal is 480p, 576p, 720p, or 1080p and monitor can display normally (Not every model can support all of these signals.).

  — This can only be set when the external input is connected through HDMI/DP and PC/AV Mode is set to AV.

Screen Adjustment

— This menu is available in **Analog** mode only.

— This menu is only available when **Picture Size** is set to **Screen Fit** in **AV** Mode.
When a 480P or 576P or 720P or 1080P signal is input in **AV** mode and the monitor can display normally, select **Screen Fit** to adjust horizontal position in 0-6 levels.

Configuring H-Position & V-Position

H-Position: Move the screen to the left or right.

V-Position: Move the screen up or down.

Configuring Coarse

Adjust the screen frequency.

— S27F358FW*/S32F351FU* models are not supported.

— This menu is available in **Analog** mode only.

Configuring Fine

Fine-adjust the screen to obtain a vivid picture.

— S27F358FW*/S32F351FU* models are not supported.

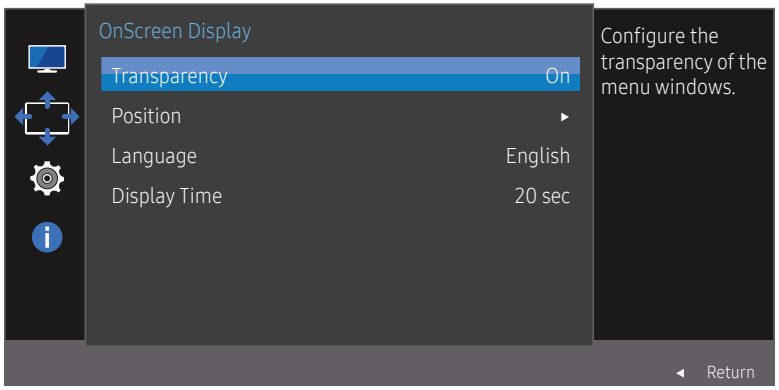
— This menu is available in **Analog** mode only.

Chapter 05
Adjusting OSD (On Screen Display) settings

A detailed description of each function is provided. Refer to your product for details.
The functions available on the monitor may vary depending on the model. Refer to the actual product.

Transparency

Set the transparency for the menu windows.



― The displayed image may differ depending on the model.

Position

Adjust the menu position.

Language

Set the menu language.

― A change to the language setting will only be applied to the onscreen menu display.

― It will not be applied to other functions on your PC.

Display Time

Set the on-screen display (OSD) menu to automatically disappear if the menu is not used for a specified period of time.

Display Time can be used to specify the time after which you want the OSD menu to disappear.

Chapter 06
Setup and Reset

A detailed description of each function is provided. Refer to your product for details.
The functions available on the monitor may vary depending on the model. Refer to the actual product.

FreeSync (S24F350FH*/S24F352FH*/ S24F354FH*/S24F356FH*/S24F359FH*/ S27F350FH*/S27F352FH*/S27F354FH*/ S27F358FW*/S27F359FH*)

FreeSync technology is solution that eliminates screen tearing without all the usual lag and latency.

This feature will eliminate screen tearing and lag during game play. Improve your gaming experience.

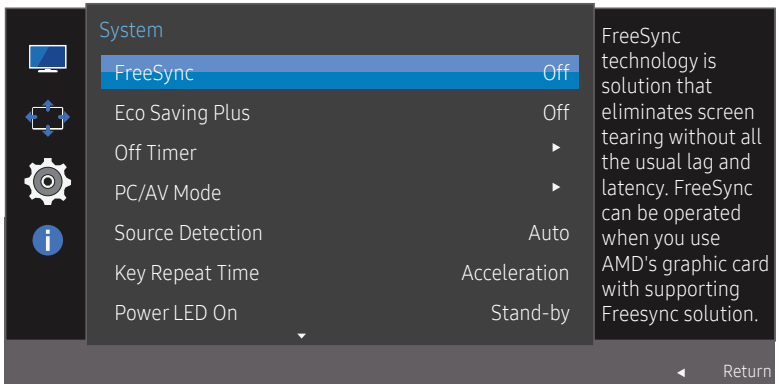
FreeSync is only available in HDMI or DisplayPort mode.

- Off: Disable FreeSync.
- Standard Engine: Enable the basic FreeSync functions of the AMD graphics card.
- Ultimate Engine: Enable the FreeSync feature with a higher screen frame rate. Screen tearing (abnormal sync between the screen and content) is reduced in this mode. Note that screen flickering may occur during game play.

When enable FreeSync function, please use maximum screen refresh rate for optimal freesync effect.

The refresh rate setting method please refer to **Q & A → How can I change the frequency?**

― When using the FreeSync function, use the HDMI/DP cable provided by the monitor manufacturer.



― The displayed image may differ depending on the model.

If the FreeSync function is enabled, the following may occur:

- The screen may flicker when you play games depending on the game option settings. Decreasing the game setting values might help to remove the flicker. Installing the latest drivers from the AMD website may also fix this issue.
- The response rate during the game may fluctuate depending on the resolution. A higher resolution generally decreases the response rate.

― If you encounter any issues when using the function, contact the Samsung Service Center.

The models in the Graphic Cards list supports FreeSync

FreeSync can only be used with specific AMD graphics card models. Refer to the following list for supported graphics cards:

Make sure to install the latest official graphics drivers from AMD that support FreeSync.

— For additional AMD graphics card models that support the FreeSync feature, visit the official AMD website.

— Select FreeSync Off if you are using a graphics card from a different manufacturer.

- AMD Radeon R9 300 Series
- AMD Radeon R9 Fury X
- AMD Radeon R7 360
- AMD Radeon R9 295X2
- AMD Radeon R9 290X
- AMD Radeon R9 290
- AMD Radeon R9 285
- AMD Radeon R7 260X
- AMD Radeon R7 260

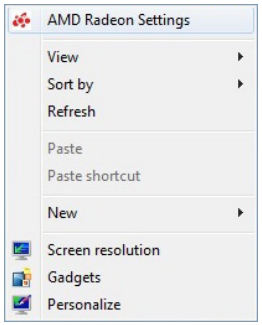
How do you enable FreeSync?

1 Set FreeSync to Standard Engine or Ultimate Engine in the OSD menu.

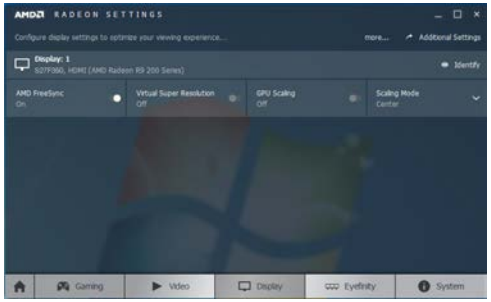
2 Enable FreeSync in **AMD Radeon Settings**:

Right-click the mouse ⟶ AMD Radeon Settings ⟶ Display

The "**AMD FreeSync**" feature should be set to "On". Select to "On" if not already enabled.







Eco Saving Plus

The Eco Saving Plus function reduces power consumption by controlling the electric current used by the monitor panel.

— This option is not available when SAMSUNG MAGICBright is in Dynamic Contrast mode.

— This menu is not available when Game Mode is enabled.

— This menu is not available when Eye Saver Mode is enabled.

- Off: Deactivate the Eco Saving Plus function.
- Auto: The power consumption will automatically be reduced by about 10% over the current setting. (The reduction of power consumption depends on the customer screen brightness condition.)
- Low: The power consumption will be reduced by 25% over the default setting.
- High: The power consumption will be reduced by 50% over the default setting.

Off Timer

Off Timer: Turn on Off Timer mode.

Turn Off After: The off timer can be set within a range of 1 to 23 hours. The product will automatically power off after the specified number of hours.

— This option is only available when Off Timer is set to On.

— For products for the market in some regions, the Off Timer is set to automatically activate 4 hours after the product powers on. This is done in accordance with power supply regulations. If you do not want the timer to activate, go to MENU ⟶ System and set Off Timer to Off.

PC/AV Mode

Set PC/AV Mode to AV. The picture size will be enlarged.

This option is useful when you view a movie.

- Set to PC when connected to a PC.
- Set to AV when connected to an AV device.

— This function is only available in Analog mode.

— Supplied for the wide models only such as 16:9 or 16:10.

— If the monitor is in HDMI/DisplayPort mode and the screen says Check Signal Cable or power saving mode activates, press the JOG button to display the function-button screen and then select the icon. You can select PC or AV.

Source Detection

Select either Auto or Manual as the method to recognize input signal.

Key Repeat Time

Control the response rate of a button when the button is pressed.

Acceleration, 1 sec, or 2 sec can be selected. If No Repeat is selected, a command responds only once when a button is pressed.

Power LED On

Configure the settings to enable or disable the power LED located at the lower part of the product.

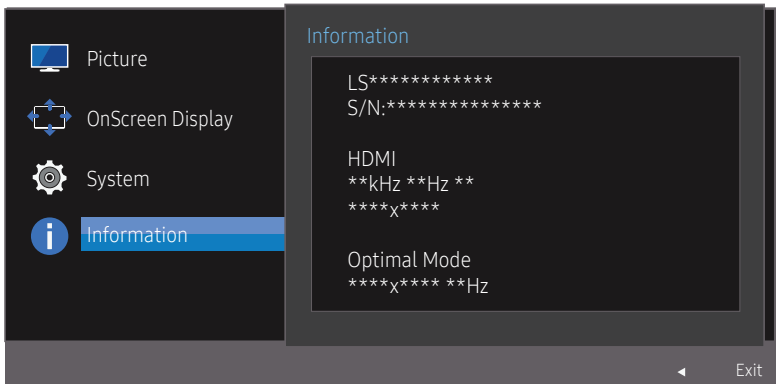
- Working: The power LED is on when the product is turned on.
- Stand-by: The power LED is on when the product is turned off.

Reset All

Return all the settings for the product to the default factory settings.

Information

View the current input source, frequency and resolution.



― The displayed image may differ depending on the model.

Chapter 07
Installing the Software

Easy Setting Box



Easy Setting Box enables users to use the monitor by partitioning multiple sections.

To install the latest version of **Easy Setting Box**, download it from the Samsung Electronics website at http://www.samsung.com.

- The software may not work properly if you do not restart the computer after the installation.
- The **Easy Setting Box** icon may not appear depending on the computer system and the product specifications.
- If the shortcut icon does not appear, press the F5 key.

Restrictions and Problems with the Installation

The **Easy Setting Box** installation may be affected by the Graphics Card, Motherboard and the Networking Environment.

System Requirements

OS	Hardware
• Windows XP 32Bit/64Bit • Windows Vista 32Bit/64Bit • Windows 7 32Bit/64Bit • Windows 8 32Bit/64Bit • Windows 8.1 32Bit/64Bit • Windows 10 32Bit/64Bit	• At least 32MB of memory • At least 60MB of free space on the hard disk drive

Chapter 08
Troubleshooting Guide

Requirements Before Contacting Samsung Customer Service Center

— Before calling Samsung Customer Service Center, test your product as follows. If the problem persists, contact Samsung Customer Service Center.

Testing the Product

Check if your product is operating normally by using the product test function.

If the screen is turned off and the power indicator blinks even though the product is properly connected to a PC, perform a self-diagnosis test.

1 Power off both the PC and product.

2 Disconnect the cables from the product.

3 Power on the product.

4 If the message Check Signal Cable appears, the product is working normally.

— If the screen remains blank, check the PC system, video controller and cable.

Checking the Resolution and Frequency

For a mode that exceeds the supported resolution(refer to Standard Signal Mode Table), the message Not Optimum Mode will appear for a short time.

— The displayed resolution may vary, depending on the computer system settings and cables.

Check the following.

Installation issue (PC mode)

The screen keeps switching on and off.

Check the cable connection between the product and PC, and ensure the connectors are locked.

Blank spaces are found on all four sides of the screen when an HDMI or HDMI-DVI cable is connected to the product and PC.

The blank spaces found on the screen have nothing to do with the product.

Blank spaces on the screen are caused by the PC or graphics card. To resolve the problem, adjust the screen size in the HDMI or DVI settings for the graphics card.

If the graphics card settings menu does not have an option to adjust the screen size, update the graphics card driver to the latest version.

(Please contact the graphics card or computer manufacturer for further details about how to adjust the screen settings.)

Screen issue

The power LED is off. The screen will not switch on.

Check that the power cable is connected properly.

The message Check Signal Cable appears.

Check that the cable is properly connected to the product.

Check that the device connected to the product is powered on.

Not Optimum Mode is displayed.

This message appears when the signal from the graphics card exceeds the maximum resolution or frequency for the product.

Change the maximum resolution and frequency to suit the product performance, referring to Standard Signal Mode Table (P.42).

The images on the screen look distorted.

Check the cable connection to the product.

The screen is not clear. The screen is blurry.

Adjust Coarse and Fine.

Remove any accessories (video extension cable, etc.) and try again.

Set the resolution and frequency to the recommended level.

The screen appears unstable and shaky. There are shadows or ghost images left on the screen.

Check that the resolution and frequency for the PC are within the range of resolution and frequency compatible with the product. Next, if required, change the settings, referring to Standard Signal Mode Table (P.42) in this manual and the Information menu on the product.

The screen is too bright. The screen is too dark.

Adjust Brightness and Contrast.

Screen color is inconsistent.

Change the Color settings.

The colors on the screen have a shadow and are distorted.

Change the Color settings.

White does not really look white.

Change the Color settings.

There is no image on the screen and the power LED blinks every 0.5 to 1 second.

The product is operating in power-saving mode.

Press any key on the keyboard or move the mouse to return to normal operating mode.

Text is blurry.

If using a Windows OS (e.g. Windows 7, Windows 8, Windows 8.1 or Windows 10): Go to **Control Panel** ⟶ **Fonts** ⟶ **Adjust ClearType text** and change **Turn on ClearType**.

Video playback is choppy.

Playback of high-definition large video files can be choppy. This may be because the video player is not optimized for the computer resource.

Try playing the file on another video player.

Source device issue

A beeping sound is heard when my PC is booting.

If a beeping sound is heard when your PC is booting, have your PC serviced.

― The LED lights on the frame of the product may be seen depending on the user's viewing angle. The light is harmless to people and has no bearing on product features and performance. The product is safe to use.

Q & A

¯ Refer to the user manual for your PC or graphics card for further instructions on adjustment.

How can I change the frequency?

Set the frequency on your graphics card.

- Windows XP: Go to **Control Panel** ⟶ **Appearance and Themes** ⟶ **Display** ⟶ **Settings** ⟶ **Advanced** ⟶ **Monitor**, and adjust **Refresh rate** under **Monitor settings**.
- Windows ME/2000: Go to **Control Panel** ⟶ **Display** ⟶ **Settings** ⟶ **Advanced** ⟶ **Monitor**, and adjust **Refresh rate** under **Monitor settings**.
- Windows Vista: Go to **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Personalization** ⟶ **Display Settings** ⟶ **Advanced Settings** ⟶ **Monitor**, and adjust **Refresh rate** under **Monitor settings**.
- Windows 7: Go to **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Display** ⟶ **Screen Resolution** ⟶ **Advanced settings** ⟶ **Monitor**, and adjust **Refresh rate** under **Monitor settings**.
- Windows 8(Windows 8.1): Go to **Settings** ⟶ **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Display** ⟶ **Screen Resolution** ⟶ **Advanced settings** ⟶ **Monitor**, and adjust **Refresh rate** under **Monitor settings**.
- Windows 10: Go to **Settings** ⟶ **System** ⟶ **Display** ⟶ **Advanced display settings** ⟶ **Display adapter properties** ⟶ **Monitor**, and adjust **Screen refresh rate** under **Monitor settings**.

How can I change the resolution?

- Windows XP: Go to **Control Panel** ⟶ **Appearance and Themes** ⟶ **Display** ⟶ **Settings**, and adjust the resolution.
- Windows ME/2000: Go to **Control Panel** ⟶ **Display** ⟶ **Settings**, and adjust the resolution.
- Windows Vista: Go to **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Personalize** ⟶ **Display Settings**, and adjust the resolution.
- Windows 7: Go to **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Display** ⟶ **Adjust Resolution**, and adjust the resolution.
- Windows 8(Windows 8.1): Go to **Settings** ⟶ **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Display** ⟶ **Adjust Resolution**, and adjust the resolution.
- Windows 10: Go to **Settings** ⟶ **System** ⟶ **Display** ⟶ **Advanced display settings**, and adjust the resolution.

How do I set power-saving mode?

- Windows XP: Set power-saving mode in **Control Panel** ⟶ **Appearance and Themes** ⟶ **Display** ⟶ **Screen Saver Settings** ⟶ **Power options** or BIOS SETUP on the PC.
- Windows ME/2000: Set power-saving mode in **Control Panel** ⟶ **Display** ⟶ **Screen Saver Settings** ⟶ **Power options** or BIOS SETUP on the PC.
- Windows Vista: Set power-saving mode in **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Personalize** ⟶ **Screen Saver Settings** ⟶ **Power options** or BIOS SETUP on the PC.
- Windows 7: Set power-saving mode in **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Personalize** ⟶ **Screen Saver Settings** ⟶ **Power options** or BIOS SETUP on the PC.
- Windows 8(Windows 8.1): Set power-saving mode in **Settings** ⟶ **Control Panel** ⟶ **Appearance and Personalization** ⟶ **Personalize** ⟶ **Screen Saver Settings** ⟶ **Power options** or BIOS SETUP on the PC.
- Windows 10: Set power-saving mode in **Settings** ⟶ **Personalization** ⟶ **Lock screen** ⟶ **Screen timeout settings** ⟶ **Power & sleep** or BIOS SETUP on the PC.

Chapter 09
Specifications

General

Model Name	S22F350FH*/S22F352FH*/S22F354FH*	S24F350FH*/S24F352FH*/S24F354FH*/ S24F356FH*/S24F359FH*	S27F350FH*/S27F352FH*/S27F354FH*/ S27F358FW*/S27F359FH*	S32F351FU*
Size	22 Class (21.5 Inches / 54.6 cm)	24 Class (23.5 Inches / 59.8 cm)	27 Class (27.0 Inches / 68.6 cm)	32 Class (31.5 Inches / 80.1 cm)
Display area	476.64 mm (H) x 268.11 mm (V)	521.28 mm (H) x 293.22 mm (V)	597.9 mm (H) x 336.3 mm (V)	698.40 mm (H) x 392.85 mm (V)
	18.8 Inches (H) x 10.6 Inches (V)	20.5 Inches (H) x 11.5 Inches (V)	23.5 Inches (H) x 13.2 Inches (V)	27.5 Inches (H) x 15.5 Inches (V)
Pixel Pitch	0.2482 mm (H) x 0.2482 mm (V)	0.2715 mm (H) x 0.2715 mm (V)	0.3114 mm (H) x 0.3114 mm (V)	0.36375 mm (H) x 0.36375 mm (V)
	0.009772 Inches (H) x 0.009772 Inches (V)	0.010689 Inches (H) x 0.010689 Inches (V)	0.01226 Inches (H) x 0.01226 Inches (V)	0.014321 Inches (H) x 0.014321 Inches (V)
Maximum Pixel Clock	148.5 MHz			
Power Supply	AC 100 - 240 V – (+/- 10%), 50/60 Hz ± 3 Hz			
	Refer to the label at the back of the product as the standard voltage can vary in different countries.			
Signal connectors	D-SUB, HDMI			
	HDMI (Applicable only to models S32F351FU*)			
	HDMI, DisplayPort (Applicable only to models S27F358FW*)			
Environmental conditions	**Operating**			
	Temperature: 50 ˚F – 104 ˚F (10 ˚C – 40 ˚C) / Humidity: 10% – 80%, non-condensing			
	Storage			
	Temperature: -4 ˚F – 113 ˚F (-20 ˚C – 45 ˚C) / Humidity: 5% – 95%, non-condensing			

- Plug-and-Play
  This monitor can be installed and used with any Plug-and-Play compatible systems. Two-way data exchange between the monitor and PC system optimizes the monitor settings. Monitor installation takes place automatically. However, you can customize the installation settings if desired.
- Panel Dots (Pixels)
  Due to the nature of the manufacturing of this product, approximately 1 pixel per million (1ppm) may be brighter or darker on the LCD panel. This does not affect product performance.
- The above specifications are subject to change without notice to improve quality.
- This device is a Class B digital apparatus.
- For detailed device specifications, visit the Samsung Electronics website.

(USA only)
Dispose unwanted electronics through an approved recycler.
To find the nearest recycling location, go to our website: www.samsung.com/recyclingdirect or call, (877) 278 - 0799

Standard Signal Mode Table

Model Name		S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/ S24F352FH*/S24F354FH*/S24F356FH*/S24F359FH*/ S27F350FH*/S27F352FH*/S27F354FH*/S27F358FW*/ S27F359FH*	S32F351FU*
Synchronization	Horizontal Frequency	30 – 81 kHz	30 – 81 kHz
	Vertical Frequency	56 – 75 Hz	56 – 61 Hz
Resolution	Optimum Resolution	1920 x 1080 @ 60 Hz	1920 x 1080 @ 60 Hz
	Maximum Resolution	1920 x 1080 @ 60 Hz	1920 x 1080 @ 60 Hz

If a signal that belongs to the following standard signal modes is transmitted from your PC, the screen will automatically be adjusted. If the signal transmitted from the PC does not belong to the standard signal modes, the screen may be blank even though the power LED turns on. In such a case, change the settings according to the following table by referring to the graphics card user manual.

S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F356FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F358FW*/S27F359FH*

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA DMT, 640 x 480	31.469	59.940	25.175	-/-
VESA DMT, 640 x 480	37.861	72.809	31.500	-/-
VESA DMT, 640 x 480	37.500	75.000	31.500	-/-
VESA DMT, 800 x 600	35.156	56.250	36.000	+/+
VESA DMT, 800 x 600	37.879	60.317	40.000	+/+
VESA DMT, 800 x 600	48.077	72.188	50.000	+/+
VESA DMT, 800 x 600	46.875	75.000	49.500	+/+
VESA DMT, 1024 x 768	48.363	60.004	65.000	-/-
VESA DMT, 1024 x 768	56.476	70.069	75.000	-/-
VESA DMT, 1024 x 768	60.023	75.029	78.750	+/+
VESA DMT, 1152 x 864	67.500	75.000	108.000	+/+
VESA DMT, 1280 x 720	45.000	60.000	74.250	+/+

S22F350FH*/S22F352FH*/S22F354FH*/S24F350FH*/S24F352FH*/S24F354FH*/S24F356FH*/S24F359FH*/S27F350FH*/S27F352FH*/S27F354FH*/S27F358FW*/S27F359FH*

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA DMT, 1280 x 800	49.702	59.810	83.500	-/+
VESA DMT, 1280 x 1024	63.981	60.020	108.000	+/+
VESA DMT, 1280 x 1024	79.976	75.025	135.000	+/+
VESA DMT, 1440 x 900	55.935	59.887	106.500	-/+
VESA DMT, 1600 x 900	60.000	60.000	108.000	+/+
VESA DMT, 1680 x 1050	65.290	59.954	146.250	-/+
VESA DMT, 1920 x 1080	67.500	60.000	148.500	+/+

S32F351FU*

Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA DMT, 640 x 480	31.469	59.940	25.175	-/-
VESA DMT, 800 x 600	35.156	56.250	36.000	+/+
VESA DMT, 800 x 600	37.879	60.317	40.000	+/+
VESA DMT, 1024 x 768	48.363	60.004	65.000	-/-
VESA DMT, 1280 x 720	45.000	60.000	74.250	+/+
VESA DMT, 1280 x 800	49.702	59.810	83.500	-/+
VESA DMT, 1280 x 1024	63.981	60.020	108.000	+/+
VESA DMT, 1440 x 900	55.935	59.887	106.500	-/+
VESA DMT, 1600 x 900	60.000	60.000	108.000	+/+
VESA DMT, 1680 x 1050	65.290	59.954	146.250	-/+
VESA DMT, 1920 x 1080	67.500	60.000	148.500	+/+

- Horizontal Frequency
  The time required to scan a single line from the left to the right side of the screen is called a horizontal cycle. The reciprocal number of a horizontal cycle is called horizontal frequency. Horizontal frequency is measured in kHz.
- Vertical Frequency
  Repeating the same picture dozens of times per second allows you to view natural pictures. The repeat frequency is called "vertical frequency" or "refresh rate" and is indicated in Hz.
- This product can be set to only one resolution for each screen size to obtain the optimum picture quality due to the nature of the panel. Using a resolution other than the specified resolution may degrade the picture quality. To avoid this, it is recommended that you select the optimum resolution specified for your product.
- Check the frequency when you exchange a CDT monitor (connected to a PC) for an LCD monitor. If the LCD monitor does not support 85 Hz, change the vertical frequency to 60 Hz using the CDT monitor before you exchange it with the LCD monitor.

Chapter 10
Appendix

Responsibility for the Pay Service (Cost to Customers)

When the service is requested, in spite of in warranty, we may charge you for a visit from a service technician in the following cases.

Not a product defect

Cleaning of the product, Adjustment, Explanation, Re-installation and etc.

- If a service technician gives instructions on how to use product or simply adjusts options without disassembling product.
- If a defect is caused by external environmental factors (Internet, Antenna, Wired Signal, etc.)
- If a product is reinstalled or devices are connected additionally after installing the purchased product for the first time.
- If a product is reinstalled to move to a different spot or to move to a different house.
- If customer requests instructions on how to use because of another company's product.
- If customer requests instructions on how to use the network or another company's Program.
- If customer requests software installation and setup for the product.
- If a service technician removes/cleans dusts or foreign materials inside of the product.
- If customer requests an installation additionally after purchasing a product through home-shopping or online.

A Product damage caused by customer's fault

Product damage caused by customer's mishandling or wrong repair

If a product damage is caused by;

- External impact or drop.
- Use of supplies or separatly sold product unspecified by Samsung.
- Repair from a person besides an engineer of outsourcing service company or partner of Samsung Electronics Co., Ltd.
- Remodeling or repairing the product by customer.
- Using it with incorrect voltage or non-authorised electrical connections.
- Not following the "cautions" in User Manual.

Others

- If product fails by natural disaster. (lightning, fire, earthquake, flood damage, etc)
- If consumable components are all used up. (Battery, Toner, Fluorescent lights, Head, Vibrator, Lamp, Filter, Ribbon, etc.)

If customer requests a service in case the product has no defect, service fee may be charged. So please read User Manual first.

SHURE

LEGENDARY
PERFORMANCE™

ULX-D

ULXD4D Dual Receiver
ULXD4Q Quad Receiver



ULX-D Digital Wireless Microphone System

©2012 Shure Incorporated
27A20228 (Rev. 1)

General Description

Shure ULX-D™ Digital Wireless offers uncompromising 24-bit audio quality and RF performance, with intelligent, encryption-enabled hardware, flexible receiver options, and advanced rechargeability options for professional sound reinforcement.

A breakthrough in wireless audio quality, Shure digital processing enables ULX-D to deliver the purest reproduction of source material ever available in a wireless system, with a wide selection of trusted Shure microphones to choose from. Extended 20 Hz – 20 kHz frequency range and flat response captures every detail with clarity, presence, and incredibly accurate low end and transient response. With greater than 120 dB, ULX-D delivers wide dynamic range for excellent signal-to-noise performance. Optimized for any input source, ULX-D eliminates the need for transmitter gain adjustments.

ULX-D sets a new and unprecedented standard for spectral efficiency and signal stability. The intermodulation performance of ULX-D is an incredible advancement in wireless performance, enabling a dramatic increase in the number of simultaneous active transmitters on one TV channel. Rock-solid RF signal with zero audio artifacts extends over the entire range. For applications where secure wireless transmission is required, ULX-D offers Advanced Encryption Standard (AES) 256-bit encrypted signal for unbreakable privacy.

For scalability and modular flexibility, ULX-D receivers come in single, dual, and even quad channel versions. The dual and quad channel receivers offer conveniences such as RF cascade, internal power supply, bodypack frequency diversity, audio output channel summing, and Dante™ digital networking for multi-channel audio over Ethernet. All receivers offer High-Density mode for applications where high channel counts are needed, greatly increasing the amount of simultaneous channels possible over one frequency band.

Advanced Lithium-ion rechargeability provides extended transmitter battery life over alkaline batteries, battery life metering in hours and minutes accurate to within 15 minutes, and detailed tracking of battery health status.

Generations ahead of any other available system in its class, ULX-D brings a new level of performance to professional sound reinforcement.

Features

Uncompromising Digital Wireless Audio

- 24-bit/48 kHz digital audio that delivers incredibly clear and accurate reproduction of the source material
- 20 Hz – 20 kHz frequency range with flat response
- Greater than 120 dB dynamic range through the analog outputs
- Built-in limiter circuitry prevents digital audio clipping from excessive signal levels.
- 130 dB dynamic range (typical) using Dante™ digital networked audio
- 60 dB of adjustable system gain easily accessible from the receiver front panel
- No transmitter gain adjustments needed - optimized for any input source
- Wide selection of trusted Shure Microphones

Extremely Efficient and Reliable RF Performance

- Up to 72 MHz overall tuning range (region dependent)
- Up to 17 active transmitters in one 6 MHz TV channel (22 on an 8 MHz TV channel)
- High Density mode enables up to 47 active transmitters in one 6 MHz TV channel (63 in one 8 MHz TV channel), with no audio quality degradation
- Rock-solid signal stability with no audio artifacts over the entire 100 meter line-of-sight range using standard supplied ½ wave antennas
- Selectable 1, 10, and 20 mW transmitter RF output power
- Optimized scanning automatically finds, prioritizes, and selects the cleanest frequencies available

Scalable, Intelligent Hardware

- Single (half-rack), Dual and Quad (full-rack) receiver form factors for any size installation
- AES 256-bit encryption on all channels
- Ethernet networking for streamlined setup across multiple receivers
- Wireless Workbench® 6 software compatible for advanced frequency coordination, monitoring, and control
- AMX/Crestron control
- AXT600 Axient™ Spectrum Manager compatibility
- Rugged metal housing on both transmitters and receiver
- Dual and Quad receivers additionally feature:
  - RF cascade ports, internal power supply, and dual Ethernet ports
  - Dante™ digital networked audio over Ethernet
  - Bodypack Frequency Diversity ensures uninterrupted audio for mission-critical applications
  - Audio summing routes audio signal to multiple outputs

Shure Advanced Power Management

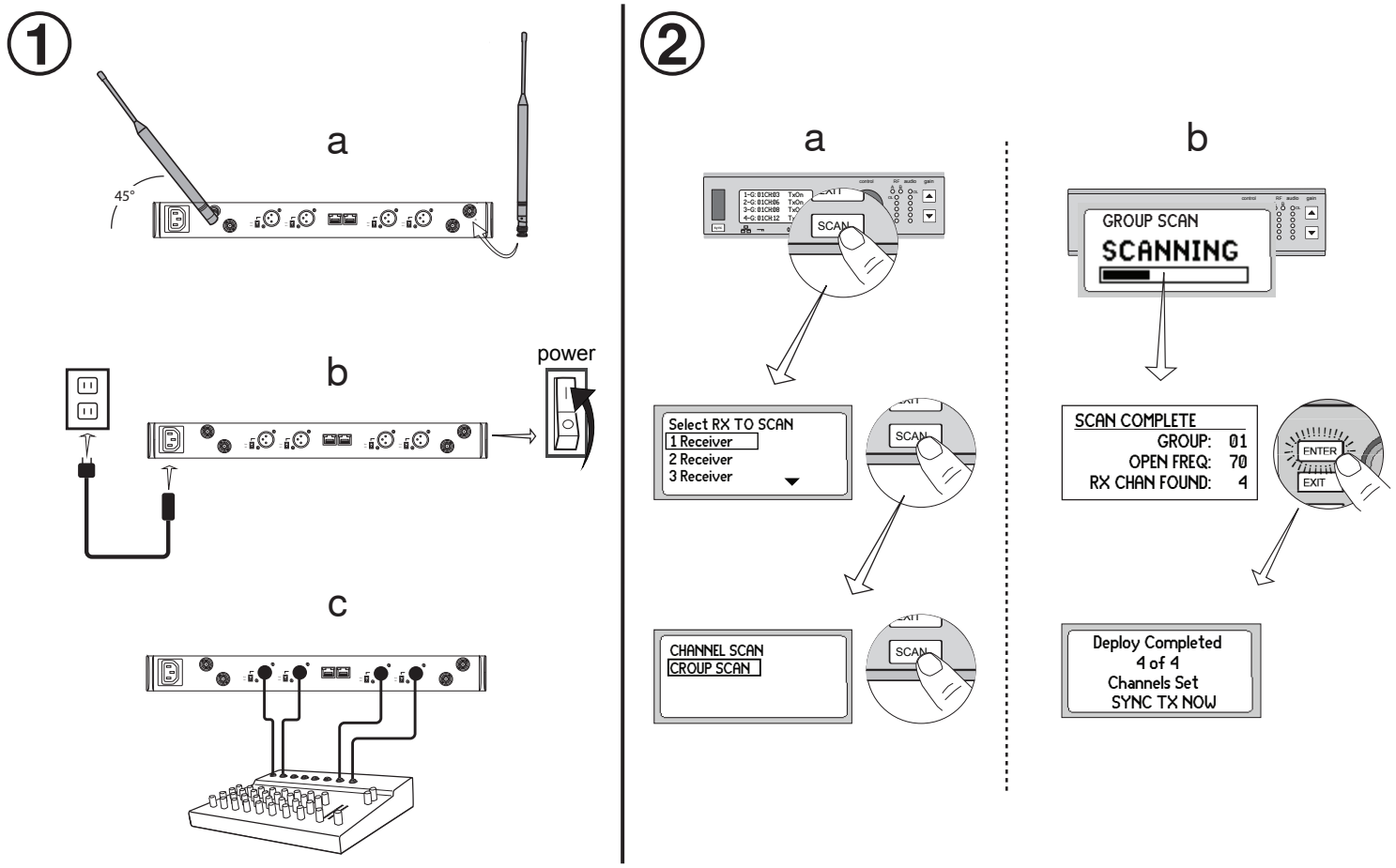
- Adapted from industry-leading Axient™ rechargeable technology
- Lithium-Ion chemistry and intelligent Shure battery circuitry results in rechargeable batteries with zero memory effect and precision metering
- Provides ULX-D transmitters with unmatched 11+ hours of performance time
- Transmitters and receivers display remaining battery life in hours and minutes accurate to within 15 minutes
- AA backwards compatibility

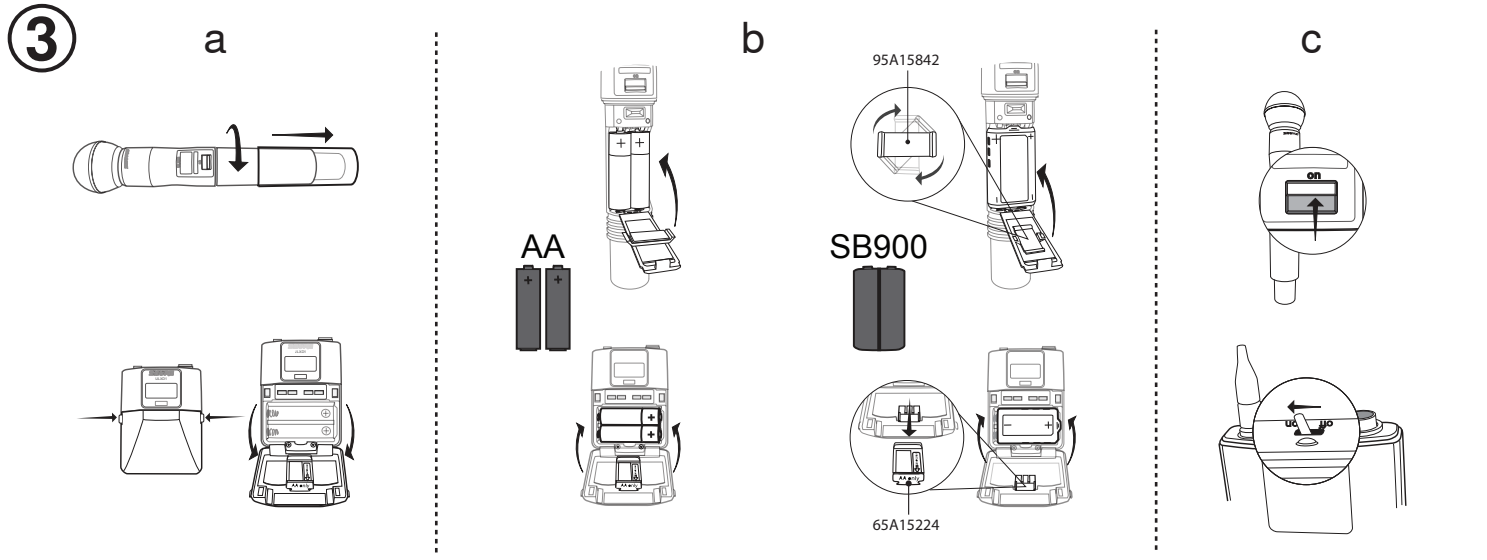
Dual and Quad Receiver Models

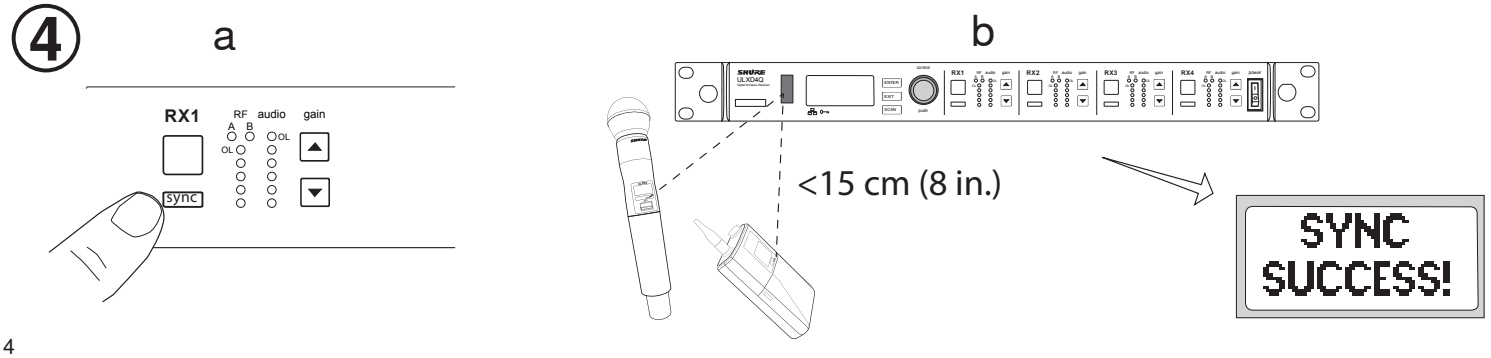
The ULXD4 receiver is available in dual channel and quad channel models. Both models share the same feature set and functionality, but differ in the number of channels available and the number of audio outputs.

The descriptions and procedures in this guide are applicable to either the dual or the quad receiver.

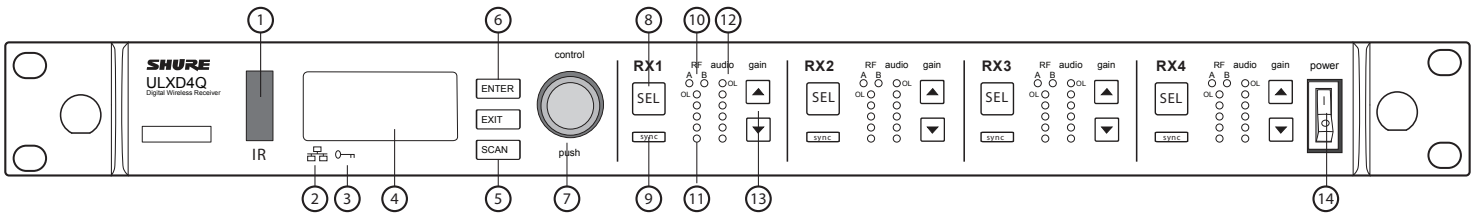
Quickstart Instructions







Receiver



Front Panel

① Infrared (IR) Sync Window
Sends IR signal to the transmitter for sync.

② Network Icon
Illuminates when the receiver is connected with other Shure devices on the network. IP Address must be valid to enable networked control.

③ Encryption Icon
Illuminates when AES-256 encryption is activated.

④ LCD Panel
Displays settings and parameters.

⑤ Scan Button
Press to find the best channel or group.

⑥ Menu Navigation Buttons
Use to navigate and select parameter menus.

⑦ Control Wheel
- Push to select a channel or menu item
- Turn to scroll through menu items or to edit a parameter value

⑧ Channel Select Button
Press to select a channel.

⑨ Sync Button
Press the **sync** button while the receiver and transmitter IR windows are aligned to transfer settings from the receiver to the transmitter.

⑩ RF Diversity LEDs
Indicate antenna status:
- Blue = normal RF signal between the receiver and transmitter
- Red = interference detected
- Off = No RF connection between the receiver and transmitter

Note: the receiver will not output audio unless one blue LED is illuminated.

⑪ RF Signal Strength LEDs
Indicate the RF signal strength from the transmitter:
- Amber = Normal (-90 to -70 dBm)
- Red = Overload (greater than -25 dBm)

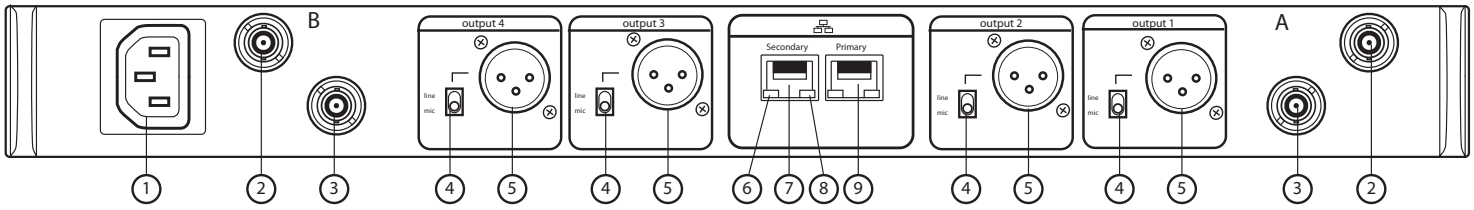
⑫ Audio LEDs
Indicate average and peak audio levels:

LED	Audio Signal Level	Description
Red (6)	-0.1 dBFS	Overload/ limiter
Yellow (5)	-6 dBFS	Normal peaks
Yellow (4)	-12 dBFS	
Green (3)	-20 dBFS	Signal Present
Green (2)	-30 dBFS	
Green (1)	-40 dBFS	

Note: In Frequency Diversity mode, simultaneous blinking of the red and yellow audio LEDs indicates that diversity audio has been routed to this channel.

⑬ Gain Buttons
Press the ▲▼ **gain** buttons on the front of the receiver to incrementally adjust gain from -18 to +42 dB.

⑭ Power Switch
Powers the unit on or off.



Back Panel

① AC Power Input
IEC Connector, 100 - 240 V AC.

② RF Antenna Diversity Input Jack (2)
For antenna A and antenna B.

③ RF Cascade Jack (2)
Passes the RF signal from Antenna A and Antenna B to one additional receiver.

④ Mic/Line Switch (one per channel)
Applies a 30 dB pad in **mic** position.

⑤ Balanced XLR Audio Output (one per channel)
Connect to a mic or line level input.

⑥ Network Status LED (Green)
One per network port.
- Off = no link
- On = network link
- Flashing = network link active

⑦ Ethernet/Dante Network Secondary Port
Connect to an Ethernet network to enable remote device control via WWB6 software. Also carries Dante digital audio and control signals for audio distribution, monitoring, and recording - see Dante Network topic.

⑧ Network Speed LED (Amber)
One per network port.
- Off = 10/100 Mbps
- On = 1 Gbps

⑨ Ethernet/Dante Network Primary Port
Connect to an Ethernet network to enable remote device control via WWB6 software. Also carries Dante digital audio and control signals for audio distribution, monitoring, and recording - see Dante Network topic.

Transmitters

① Power LED

- Green = unit is powered on
- Red = low battery or battery error (see Troubleshooting)
- Amber = power switch is disabled

② On/Off Switch

Powers the unit on or off.

③ SMA Connector

Connection point for RF antenna.

④ LCD Display:

View menu screens and settings. Press any control button to activate the backlight.

⑤ Infrared (IR) Port

Align with the receiver IR port during an IR Sync for automated transmitter programming.

⑥ Menu Navigation Buttons

Use to navigate through parameter menus and change values.

exit	Acts as a 'back' button to return to previous menus or parameters without confirming a value change
enter	Enters menu screens and confirms parameter changes
▼▲	Use to scroll through menu screens and to change parameter values

⑦ Battery Compartment

Requires Shure SB900 rechargeable battery or 2 AA batteries.

⑧ AA Battery Adapter

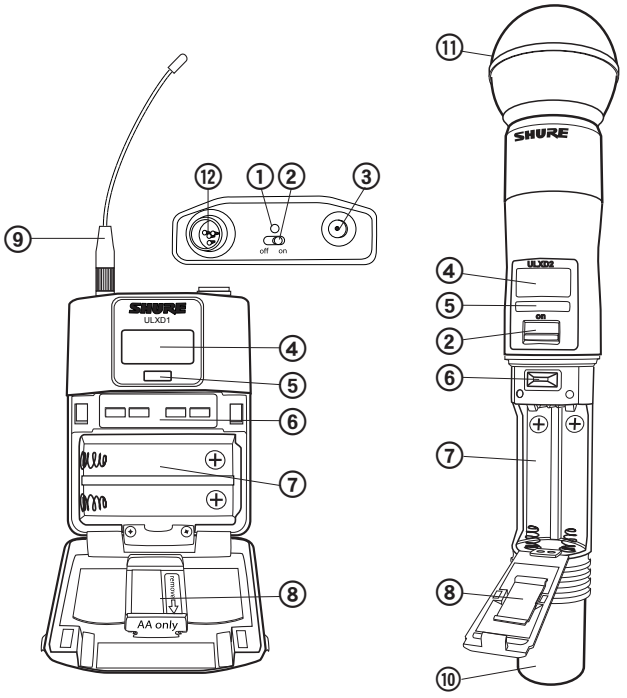
- Handheld: rotate and store in the battery compartment to use a Shure SB900 battery
- Bodypack: remove to accommodate a Shure SB900 battery

⑨ Bodypack Antenna

For RF signal transmission.

⑩ Integrated Antenna

For RF signal transmission.



⑪ Microphone Cartridge

See Optional Accessories for a list of compatible cartridges.

⑫ TA4M Input Jack

Connects to a 4-Pin Mini Connector (TA4F) microphone or instrument cable.

Advanced Transmitter Features

RF MUTE

Use this to turn on a transmitter without interfering with the RF spectrum.

Press and hold the **exit** button during power-on until **RF MUTED** is displayed. To un-mute, restart the transmitter.



Transmitter Input Clip

The following warning displays on the receiver LCD panel when the transmitter input is clipped:



To correct, set **MIC.OFFSET** to 0 dB and if necessary, attenuate the signal source.

If the source cannot be attenuated while using a bodypack transmitter, select **INPUT PAD** from the main menu to attenuate the input signal by 12 dB.

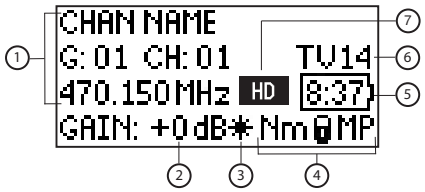
MIC.OFFSET

MIC.OFFSET compensates for signal level differences between transmitters that share the same receiver channel.

Set the offset gain on a low signal level transmitter to match a louder transmitter: **UTILITY** > **MIC.OFFSET**

Note: For normal gain adjustments, use the receiver gain buttons.

Menu Screens



Receiver Channel

① Receiver Information
Use **DEVICE UTILITIES** > **HOME INFO** to change the home screen display.

② Gain Setting
–18 to +42 dB, or Mute.

③ Mic. Offset Indicator
Indicates offset gain is added to the transmitter.

④ Transmitter Settings
The following information cycles when a transmitter is tuned to the receiver's frequency:

- Transmitter Type
- Input Pad (Bodypack only)
- RF Power Level
- Transmitter Lock Status

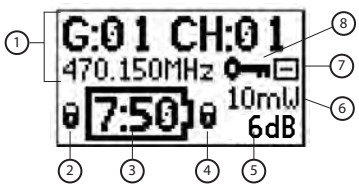
⑤ Battery Runtime Indicator
Shure SB900 battery: runtime is displayed in minutes remaining.
AA batteries: runtime is displayed with a 5-bar indicator.

⑥ TV Channel
Displays the TV channel that contains the tuned frequency.

⑦ High Density Mode Icon
Displayed when High Density mode is enabled.

Transmitter Setting Icons

Display Icon	Transmitter Setting
⊟	Bodypack input is attenuated 12 dB
✳	Offset gain is added to the transmitter
Lo	1 mW RF power level
Nm	10 mW RF power level
Hi	20 mW RF power level
M	Menu is locked
P	Power is locked
-No Tx-	No RF connection between a receiver and transmitter or transmitter OFF



Transmitter

① Transmitter Information
Scroll ▲▼ at the home screen to change the display.

② Power Lock Indicator
Indicates power switch is disabled.

③ Battery Runtime Indicator
Shure SB900 battery: runtime is displayed in minutes remaining.
AA Batteries: runtime is displayed with a 5-bar indicator.

④ Menu Lock Indicator
Indicates menu navigation buttons are disabled.

⑤ Mic. Offset
Displays microphone offset gain value.

⑥ RF Power
Displays RF power setting or High Density mode icon (if enabled).

⑦ Bodypack Input Pad
The input signal is attenuated 12 dB.

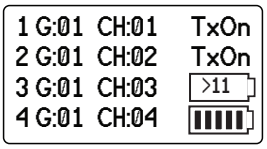
⑧ Encryption Icon
Indicates encryption is enabled on the receiver and has been transferred to the transmitter from a sync.

Receiver Home Screen

The home screen displays the following information for each receiver channel:

- Group and Channel
- Transmitter Status: **NoTx** or **TxOn**, battery icon/remaining battery life

Press the **SEL** button to access a channel menu screen.



Home Screen Display Options

Receiver

The **HOME INFO** menu provides options to change the information shown on the receiver home screen:

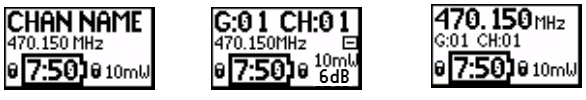
DEVICE UTILITIES > **HOME INFO**

Use the control wheel to select one of the following screen displays.



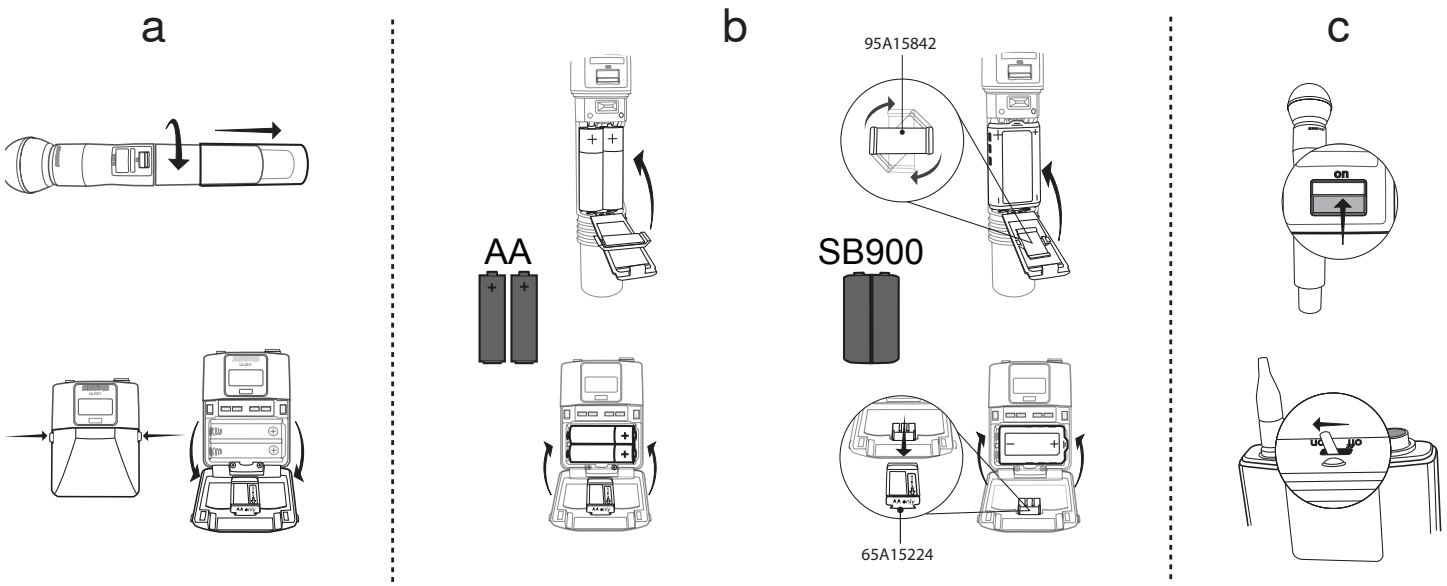
Transmitter

Home Screen: Press the ▲▼ arrows at the home menu to display one of the following screens:



Batteries

The transmitter runs on two AA batteries or the Shure SB900 rechargeable battery. Use the included AA battery adapter when using batteries other than the Shure SB900.



AA Batteries

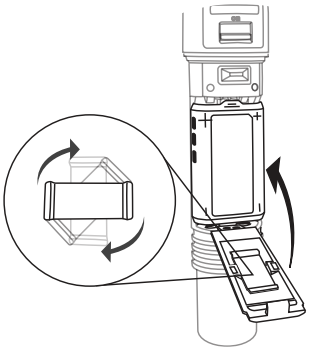
A 5-segment icon on the receiver and transmitter menu screens indicates battery charge.

For accurate battery runtime monitoring, set the transmitter to the appropriate battery type: **UTILITY** > **BATTERY** > **SET.AA.TYPE**.

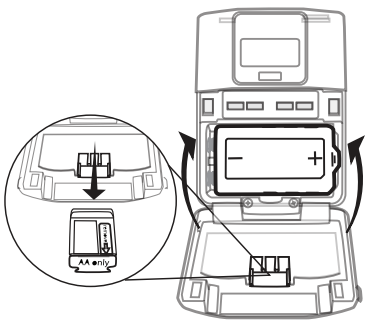
AA Alkaline Battery Runtime Chart (h:mm)

Battery Indicator	RF Power Setting	
	1/10 mW	20 mW
	11:00 to 9:35	5:30 to 4:55
	9:35 to 7:15	4:55 to 4:00
	7:15 to 4:45	4:00 to 2:30
	4:45 to 2:25	2:30 to 1:45
	2:25 to 00:45	1:45 to 0:25
	00:45 to 00:20	00:25 to 00:10

AA Battery Adapter



Handheld: Rotate and store the adapter in battery door when using Shure SB900



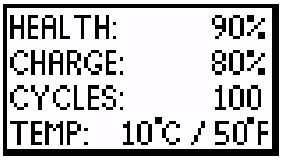
Bodypack: Remove the adapter when using the Shure SB900

Shure SB900 Rechargeable Battery

8:37 When using an SB900 rechargeable battery, the receiver and transmitter home screens display the number of hours and minutes remaining.

Detailed information for the SB900 is displayed in the receiver **BATTERY INFO** menu and the transmitter menu: **UTILITY** > **BATTERY** > **BATT. STATS**

HEALTH: Displays battery health as a percentage of the charge capacity of a new battery.
CHARGE: Percentage of a full charge
CYCLES: Number of times the battery has been charged
TEMP: Battery temperature in Celsius and Fahrenheit



Note: For additional rechargeable battery information, visit www.shure.com.

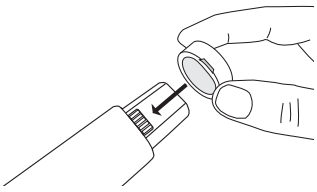
Shure SB900 Runtime

1 mW	10 mW	20 mW
>11 hours	>11 hours	>7 hour

Installing the Battery Contact Cover

Install the included battery contact cover (65A15947) on the handheld transmitter to prevent light reflection in broadcast and performance situations.

1. Align the cover as shown.
2. Slide the cover over the battery contacts until it is flush with the transmitter body.



Note: Slide the cover off before inserting the transmitter in the battery charger.

Setting Gain

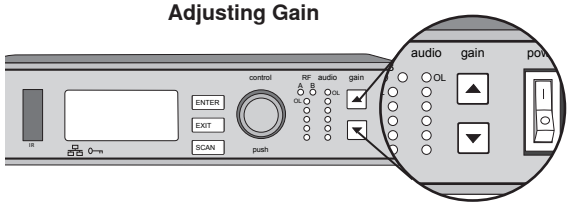
Adjust gain at the receiver so that the average signal levels are solid green and yellow with peaks that occasionally trigger the red overload LED. Attenuate the gain if the signal overloads repeatedly.

Set the XLR output to line-level when possible to optimize sound system noise performance.

System Gain Control

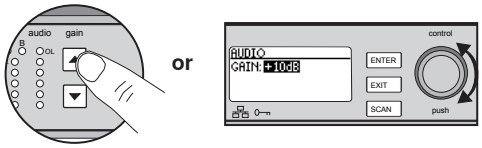
The gain control on the receiver sets the audio signal level for the entire system. This allows adjustments to be made during a live performance. It is not necessary to change the gain on the transmitter (mic offset) to optimize the gain structure. Any required changes to gain should be made from the receiver.

Adjusting Gain



Press the ▲▼ **gain** buttons on the front of the receiver to incrementally adjust gain from -18 to +42 dB.

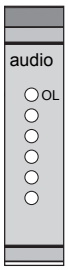
Large Gain Adjustments



Press and hold a gain button

Use the control wheel in the **AUDIO** menu

Reading the Audio Meter



Audio peaks illuminate the LEDs for 1 second hold time. The RMS signal is displayed in real time.

OL (Overload) LED: Illuminates red when the internal limiter is engaged, preventing digital clipping.

Mute

To mute the audio, use Shure Wireless Workbench® software or a third-party control device.

Receiver Output Level

The following table describes the typical total system gain from the audio input to the receiver outputs:

Output Jack	System Gain (gain control = 0dB)
XLR (line setting)	+24 dB
XLR (mic setting)	-6 dB*

*This setting matches a typical wired SM58 audio signal level.

RF

Transmitter RF Power

Reference the following table for setting RF Power:

RF Power Setting	System Range	Application
1 mW	33 m (100 ft.)	For increased channel reuse at close distances
10 mW	100 m (330 ft.)	Typical setups
20 mW	>100 m (330 ft.)	For hostile RF environments or long-distance applications

Note: Using the 20 mW setting decreases the transmitter battery runtime and reduces the number of compatible systems.

Interference Detection

Interference Detection monitors the RF environment for potential sources of interference which can cause audio dropouts.

When interference is identified, the RF LEDs illuminate red and the following warning displays on the receiver LCD panel.



If the warning display persists or the audio drops out repeatedly, perform a Scan and Sync at the first opportunity to find a clear frequency.

Scan and Sync

Use this procedure to tune a receiver and transmitter to the best open channel.

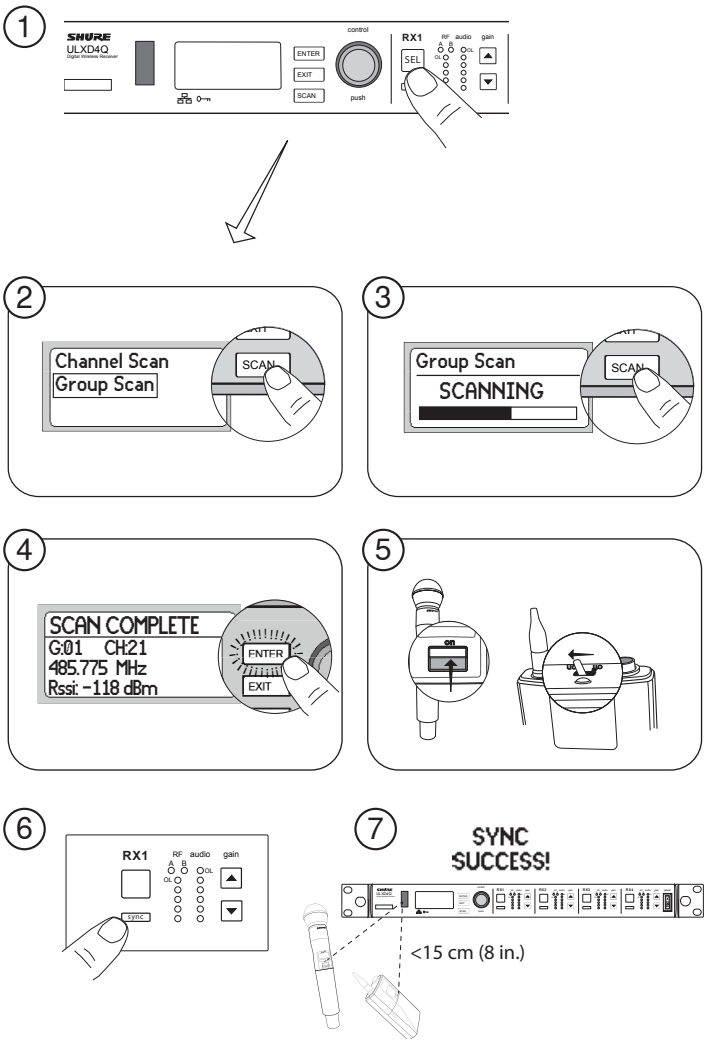
Important! Before you begin:

Turn off all transmitters for the systems you are setting up. (This prevents them from interfering with the frequency scan.)

Turn on the following potential sources of interference so they are operating as they would be during the presentation or performance (the scan will detect and avoid any interference they generate).

- Other wireless systems or devices
- Computers
- CD players
- Large LED panels
- Effects processors

1. Press the **SEL** button to select a channel.
2. Perform a channel scan on the receiver: **SCAN** > **GROUP SCAN**.
3. Press **SCAN** to start the scan. **SCANNING** appears on the LCD during the scan.
4. After the scan completes, the receiver displays the group with the most available frequencies. Press the flashing **ENTER** button to deploy frequencies to each receiver channel.
5. Power on the ULXD transmitter.
6. Press the **sync** button on the receiver.
7. Align the IR windows until the receiver IR port illuminates red.
8. When complete, **SYNC SUCCESS!** appears. The transmitter and receiver are now tuned to the same frequency.



Manual Frequency Selection

To manually adjust group, channel, or frequency:

1. Press **SEL** to choose a receiver channel and navigate to the RADIO menu.
2. Use the control wheel to adjust the group, channel, or frequency.
3. Press **ENTER** to save changes.

Multiple System Setup

A setup using networked receivers is the fastest and easiest way to distribute the best open channel to each system. See Networking ULX-D Receivers for networking details.

Note: Networked receivers must all be within the same frequency band.

Networked Receivers

1. Turn on all receivers.
2. Conduct a group scan on the first receiver to find available frequencies in each group: **SCAN** > **GROUP SCAN**.
3. Press **ENTER** to accept the group number and automatically assign the next best channel to each receiver on the network. The receiver LEDs will flash when a frequency has been assigned.
4. Turn on a transmitter and sync to the receiver.

   Important! Leave the transmitter on and repeat this step for each additional system.

Non-networked Receivers

1. Turn on all receivers.
2. Conduct a group scan on the first receiver to find available frequencies in each group: **SCAN** > **SCAN** > **GROUP SCAN** > **SCAN**
3. When the scan is complete, use the control wheel to scroll through each group. Press **ENTER** to select a group that has enough available frequencies for all channels in the system.
4. Sync a transmitter to each receiver channel.

Important! Leave all transmitters on use the following steps to set up additional receiver channels:

1. Set each additional receiver channel to the same group as the first receiver: **RADIO** > **G:**
2. Conduct a channel scan to find available frequencies within the group: **SCAN** > **SCAN** > **CHANNEL SCAN** > **SCAN**
3. When the scan is complete, press **ENTER** to assign frequencies to each receiver channel.
4. Sync a transmitter to each receiver channel.

High Density Mode

High Density mode creates additional bandwidth for more channels in crowded RF environments. Frequency efficiency is optimized by running at 1 mW RF transmit power and narrowing the modulation bandwidth, allowing for the channel spacing to be reduced from 350 kHz to 125 kHz. Transmitters can be positioned on adjacent channels with unsubstantial intermodulation distortion (IMD).

High Density mode is ideal for applications where many channels are needed in a confined area, transmission distances are short, and the number of available frequencies is limited. Up to 30 meters of range is available in High Density mode.

Setting the Receiver to High Density Mode

To set the receiver to High Density mode:

DEVICE UTILITIES > **ADVANCED RF** > **HIGH DENSITY**

Use the control wheel to set **HIGH DENSITY** to **ON**.

When prompted, sync the transmitter and receiver to enable **HIGH DENSITY** mode.

Note: When the receiver is in **HIGH DENSITY** mode, the following indicators are shown on the receiver display:

- The **HD** icon will appear on the receiver display
- The receiver band name will be shown with an "HD" added. (example: The G50 band will appear as G50HD)
- The transmitter group and channel are assigned letters instead of numbers (example: G:AA CH:AA)

Best Practices for High Density Mode

- When band planning, position ULX-D High Density channels in a range of frequencies separated from other devices.
- Use a separate RF zone for ULX-D High Density channels to prevent intermodulation distortion from other devices.
- During High Density channel scanning, turn on all other transmitters and move them to their intended position.
- Perform a walk test to verify transmitter range
- If using custom groups, the groups loaded into the receiver must be compatible with High Density mode

Frequency Diversity

Frequency Diversity is an advanced ULX-D receiver feature that safeguards against loss of audio signal caused by RF interference or by power loss in a transmitter.

In Frequency Diversity mode, the signals from two transmitters from a common audio source are routed to the outputs of 2 receiver channels. In the event of interference or power loss, the audio from the good channel is switched to both outputs to preserve the audio signal. Switching between channels is seamless and inaudible.

When the receiver senses that the signal quality has improved, audio routing is restored without interrupting the audio signal.

Note: WWB6 software offers an option to selectively lock the diversity audio source to a specific transmitter (see Wireless Workbench 6 section).

Best Practices for Frequency Diversity

- Use the same microphone type and model for each transmitter
- Place microphones within close proximity to the source
- Use the gain controls to match the output levels for each receiver channel
- If Audio Summing is active, use a Y-cable (Shure AXT652) to connect the bodypacks to a single audio source to prevent comb filtering

Choosing Diversity Output Routing

The following receiver channel routing output options are available:

- **1 + 2**
- **3 + 4** (quad only)
- **1 + 2 / 3 + 4** (quad only)

To enable Frequency Diversity and select a routing option:

DEVICE UTILITIES > **FREQ DIVERSITY**

Use the control wheel to choose a routing option, and then press **ENTER**.

Note: Choose **OFF** to disable Frequency Diversity.

Frequency Diversity and Encryption

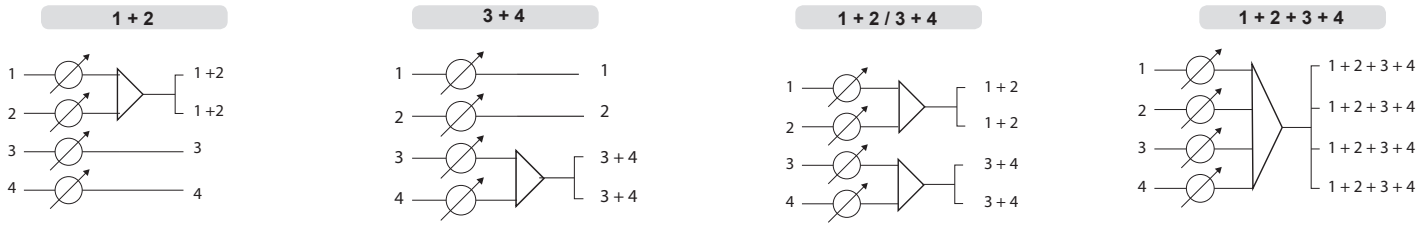
Enabling Encryption while in Frequency Diversity mode provides an additional layer of protection by only passing audio from the most recently synced encrypted transmitter for each receiver channel.

Audio Summing

Audio summing allows the dual and quad receivers to function as a 2 or 4 channel mixer, respectively. All XLR outputs of the selected channels provide the summed audio. For example, when **1 + 2** is selected (see diagram), the XLR outputs of channels 1 and 2 supply the summed audio of the two channels.

Choosing an Audio Summing Mode

The following Audio Summing mode options are available:



To select an Audio Summing mode:

1. Menu: **DEVICE UTILITIES** > **AUDIO SUMMING**
2. Use the control wheel to select an option, and then press **Enter**.

Note: When set to **OFF**, Audio Summing is disabled.

Adjusting Gain for Summed Outputs

Use the gain controls for each channel to create the overall mix balance. The front panel LEDs indicate the audio level for each channel. If an overload occurs, the red LEDs will illuminate indicating that the internal limiter is active and the display will show an overload message. To correct, adjust the overall gain balance.

Firmware

Firmware is embedded software in each component that controls functionality. Periodically, new versions of firmware are developed to incorporate additional features and enhancements. To take advantage of design improvements, new versions of the firmware can be uploaded and installed using the Firmware Update Manager tool available in Shure's Wireless Workbench® 6 (WWB6) software. Software is available for download from http://www.shure.com/wwb.

Firmware Versioning

When updating receiver firmware, update transmitters to the same firmware version to ensure consistent operation.

The firmware of all ULX-D devices has the form of MAJOR.MINOR.PATCH (e.g., 1.2.14). At a minimum, all ULX-D devices on the network (including transmitters), must have the same MAJOR and MINOR firmware version numbers (e.g., 1.2.x).

Updating the Receiver

CAUTION! Ensure that receiver power and network connections are maintained during a firmware update. Do not turn off the receiver until the update is complete.

Once the download is complete, the receiver automatically begins the firmware update, which overwrites the existing firmware.

1. From Shure Wireless Workbench software, open the Firmware Update Manager: **Tools** > **Firmware Update Manager**.
2. Click **Check Now** to view new versions available for download.
3. Select the updates and click **download**.
4. Connect the receiver and computer to the same network.
5. Download the latest firmware to the receiver.

Updating the Transmitter

1. To upload the firmware to the transmitter, go to **DEVICE UTILITIES** > **TX FW UPDATE** on the receiver.
2. Place the transmitter on its side and align the IR ports.
3. Press **ENTER** on the receiver to begin the download to the transmitter. IR ports must be aligned for the entire download, which can take 50 seconds or longer.

Transmitter Presets

Use the **TX SYNC SETUP** menu to configure transmitter settings on the receiver to transfer to the transmitter during a sync. Each parameter has the default value **KEEP**, which leaves that setting unaffected by a sync.

Feature	Setting
BP PAD	0 dB, -12 dB
LOCK	Power, Menu, All, None
RF POWER	10mW=Nm, 1mW=Lo, 20mW=Hi
BATT	Alkaline, NiMH, Lithium
BP OFFSET	0 dB to +21 dB (in 3 dB increments)
HH OFFSET	0 dB to +21 dB (in 3 dB increments)
Cust. Group	OFF, ON

Note: When **Cust. Group** is set to **ON**, it may take up to 30 seconds to complete an IR sync. Select **OFF** if Custom Groups are not in use for faster IR sync.

Creating a System Preset

System Presets allow a current receiver setup to be saved and restored. Presets store all receiver settings to provide a quick way to configure a receiver or switch between several different setups. Up to 4 presets can be stored in receiver memory.

To save the current receiver setup as a new preset: **DEVICE UTILITIES** > **SYSTEM RESET** > **SAVE** > **CREATE NEW PRESET**

Use the control wheel to name the preset, and then press Enter to save.

To recall a saved preset: **DEVICE UTILITIES** > **SYSTEM RESET** > **RESTORE**

Use the control wheel to select the preset name, and then press Enter.

Locking Controls and Settings

Use the **LOCK** feature to prevent accidental or unauthorized changes to the hardware.

Receiver

Menu path: **DEVICE UTILITIES** > **LOCK**

Use the control wheel to select and lock any of the following receiver functions.

- **MENU**: All menu paths are inaccessible
- **GAIN**: Gain adjustment is locked
- **POWER**: Power switch is disabled
- **SCN/SYC**: Cannot perform a Scan and Sync

Tip: To unlock, press the **EXIT** button, turn the control wheel to select **UNLOCKED**, and then press **ENTER** to save.

Transmitter

Menu path: **UTILITY** > **LOCK**

Use the transmitter controls to select and lock any of the following transmitter functions.

- **MENU LOCK**: All menu paths are inaccessible.
- **POWER LOCK**: Power switch is disabled

Quick-Lock Option: To turn on the transmitter with its power and menu navigation buttons locked, press and hold the ▲ button during power-on until the locked message is displayed.

Tip: To unlock the **MENU LOCK**, press the **ENTER** button 4 times to pass through the following screens: **UTILITY** > **LOCK** > **MENU UNLOCK**

To unlock the **POWER LOCK**, set the power switch to the **off** position, then press and hold the ▲ button while resetting the power switch to the **on** position.

Encryption

ULX-D features Advanced Encryption Standard (AES-256) to ensure that only the receiver that is keyed to the transmitter can monitor the audio content.

Note: When enabled, encryption is applied to all receiver channels. Encryption does not affect Dante audio signals, audio quality, or channel spacing.

1. Enable encryption on the receiver: **DEVICE UTILITIES** > **ENCRYPTION**. The encryption symbol illuminates and the LCD displays **SYNC NOW FOR ENCRYPTION**.
2. Sync the transmitter to the receiver. The encryption symbol displays on the transmitter.

Note: Any change to the encryption status on the receiver such as enabling/disabling encryption or requesting a new encryption key, requires a sync to send the settings to the transmitter. **ENCRYPTION MISMATCH** warning will display on the receiver LCD panel if the transmitter and receiver do not share the same encryption key.

Custom Groups

Use this feature to create and export up to 6 groups of manually selected frequencies to networked receivers prior to a group scan to simplify system set up.

Tip: Use Wireless Workbench or Wireless Frequency Finder to select the best compatible frequencies. See www.shure.com for more information.

To create a custom group: **DEVICE UTILITIES** > **ADVANCED RF** > **CUSTOM GROUPS** > **SETUP**

Use the control wheel to choose group, channel and frequency values. Press **ENTER** to save.

Prior to performing a group scan, export a custom group to networked receivers:

1. Go to **DEVICE UTILITIES** > **ADVANCED RF** > **CUSTOM GROUPS** > **EXPORT**
2. Press the flashing **ENTER** button to export all custom groups to all receivers on the network.

Note: Use the **CLEAR ALL** option to remove all custom group settings.

System Reset

System Reset clears the current receiver settings and restores the factory default settings.

To restore factory default settings:

1. Go to **DEVICE UTILITIES** > **SYSTEM RESET** > **RESTORE**.
2. Scroll to the **DEFAULT SETTINGS** option and press **ENTER**.
3. Press the flashing **ENTER** button to return the receiver to the default settings.

RF Cascade Ports

The receiver has 2 RF cascade ports on the rear panel to share the signal from the antennas with 1 additional receiver.

Use a shielded coaxial cable to connect the RF cascade ports from the first receiver to the antenna inputs of the second receiver.

Important! The frequency band must be the same for both receivers.

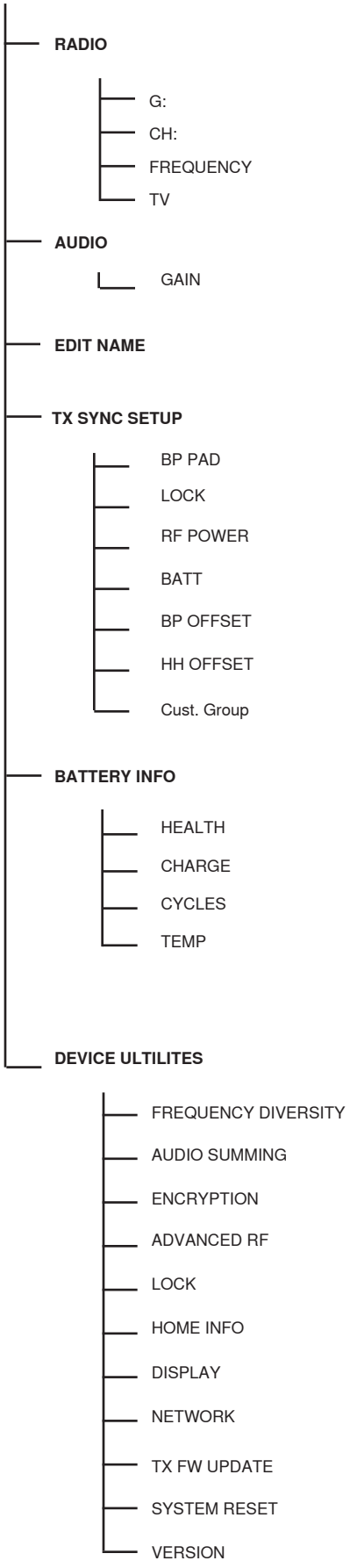
Antenna Bias

Antenna ports A and B provide a DC bias to power active antennas. Set the DC power to off when using passive (non-powered) antennas.

To turn bias off: **DEVICE UTILITIES** > **ADVANCED RF** > **ANTENNA BIAS** > **OFF**

Receiver Menu Descriptions

Channel Home Screen



RADIO

Displays Group, Channel, Frequency, and TV information. Use the control wheel to edit values

G:
Group for the selected frequency

CH:
Channel for the selected frequency

FREQUENCY
Selected frequency (MHz)

TV:
Displays the TV channel for the selected frequency

AUDIO

GAIN
Use the control wheel or gain buttons to adjust the channel gain from -18 to 42 dB, in 1 dB increments.

EDIT NAME

Use the control wheel to assign and edit the selected receiver channel name.

TX SYNC SETUP

BP PAD
Sets the audio input attenuation options: **KEEP**, **0**, **-12**.

LOCK
Sets the lock options: **KEEP**, **Power**, **Menu**, **All**, **None**

RF POWER
Sets the transmitter RF power level: **KEEP**, **10mW=Nm**, **1mW=Lo**, **20mW=Hi**.

BATT
Sets the transmitter battery type to ensure accurate metering: **KEEP**, **Alkaline**, **NiMH**, **Lithium**

BP OFFSET
Adjustable gain to compensate for signal level difference between transmitters: **KEEP**, 0 to 21 dB in 3 dB increments

HH OFFSET
Adjustable gain to compensate for signal level difference between transmitters: **KEEP**, 0 to 21 dB in 3 dB increments

Cust. Group
Create Custom Groups of up to 6 frequencies and export to networked receivers

BATTERY INFO

HEALTH
Percentage of charge capacity compared to a new battery

CHARGE
Percentage of charge capacity

CYCLES
Number of charge cycles logged by the battery

TEMP
Battery temperature: °C/°F

DEVICE UTILITIES

FREQ DIVERSITY
- **OFF** (default)
- **1 + 2**
- **3 + 4** (quad only)
- **1 + 2 / 3 + 4** (quad only)

AUDIO SUMMING
- **OFF** (default)
- **1 + 2**
- **3 + 4** (quad only)
- **1 + 2 / 3 + 4** (quad only)
- **1 + 2 + 3 + 4** (quad only)

ENCRYPTION
Set encryption: ON/OFF

ADVANCED RF
- HIGH DENSITY: ON/OFF
- CUSTOM GROUPS: SETUP/EXPORT/CLEAR
- ANTENNA BIAS: ON/OFF
- SWITCH BAND (Japan AB band only)

LOCK
- MENU: LOCKED/UNLOCKED
- GAIN: LOCKED/UNLOCKED
- POWER: LOCKED/UNLOCKED
- SCN/SYC: LOCKED/UNLOCKED

HOME INFO
Select screen options for Home Menu.

DISPLAY
- CONTRAST
- BRIGHTNESS: LOW/MEDIUM/HIGH

NETWORK
- CONFIGURATION: SWITCHED/REDUNDANT AUDIO/SPLIT
- SHURE CONTROL: DEVICE ID, Network Mode, Set IP and Subnet values for Ethernet network
- DANTE: DANTE DEVICE ID, AUDIO & CNTRL, REDUNDANT AUDIO, Set IP and Subnet values for Dante™ network

Note: Additional information can be accessed from the selected networking option.

TX FW UPDATE
IR DOWNLOAD, Tx Firmware Version

SYSTEM RESET
- RESTORE: Default Settings, Presets
- SAVE: Create New Preset
- DELETE: Delete Preset

VERSION
- Model
- Band
- S/N (serial number)
- Ver
- Mcu
- FPGA
- Boot

Networking ULX-D Receivers

ULX-D Dual and Quad receivers feature a Dante dual-port network interface. Dante technology provides an integrated solution to distribute digital audio, manage control signals, and carry Shure Control (WWB and AMX/Crestron) signals. Dante uses standard IP over Ethernet and safely coexists on the same network as IT and control data. Selectable Dante networking modes route port signals for flexible network set up.

Network Control Software

The ULX-D receivers can be controlled by Shure Control (WWB6) for remote management and monitoring and the Dante Controller to manage digital audio routing. Signals for AMX and Crestron controllers are carried on the same network as Shure Control.

Shure Control

Wireless Workbench 6 (WWB6) software provides comprehensive control for wireless audio systems. Wireless Workbench enables live remote adjustments to networked receivers for real-time changes to gain, frequency, RF power, and control locks. A familiar channel strip interface displays audio meters, transmitter parameters, frequency settings and network status.

Wireless Workbench 6 is available for Windows or Mac and can be downloaded at: www.shure.com/wwb

Dante

The Dante controller is a free software program created by Audinate™ to configure and manage a network of Dante enabled devices. Use the controller to create audio routes between networked components and to monitor the status of online devices.

Visit www.audinate.com for download and installation instructions.

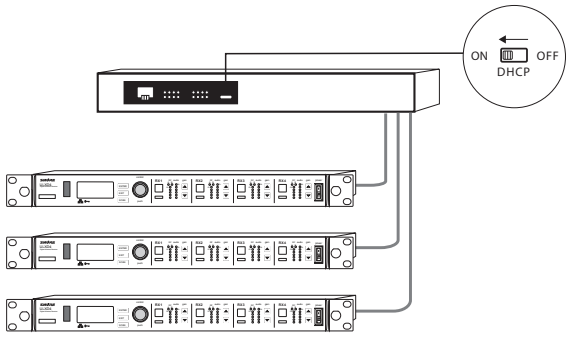
IP Address Configuration

An IP address must be assigned to each device in the network to ensure communication and control between components. Valid IP addresses can assigned automatically using a DHCP server or manually from a list of valid IP addresses. If using Dante audio, a separate Dante IP address must also be assigned to the receiver.

Automatic IP Addressing

1. If using a DHCP capable Ethernet switch, set the DHCP switch to ON.
2. Set the IP Mode to Automatic for all receivers: **DEVICE UTILITIES** > **NETWORK** > **SHURE CONTROL** > **NETWORK**
3. Use the control wheel to set the mode to **Automatic**, press **ENTER** to save.

Note: Use only one DHCP server per network.



Manual IP Addressing

1. Connect the receivers to an Ethernet switch.
2. Set the IP Mode to Manual for all devices: **DEVICE UTILITIES** > **NETWORK** > **SHURE CONTROL** > **NETWORK**
3. Use the control wheel to set the mode to **Manual**.
4. Set valid IP addresses and subnet values for all devices, press **ENTER** to save.

Dante IP Addressing

IP addresses for a Dante network can assigned automatically using a DHCP server or manually from a list of valid IP addresses

To select the Dante IP addressing mode (Automatic or Manual): **DEVICE UTILITIES** > **NETWORK** > **DANTE** > **AUDIO & CNTRL**

Use the control wheel to select the mode, and then press **ENTER** to save.

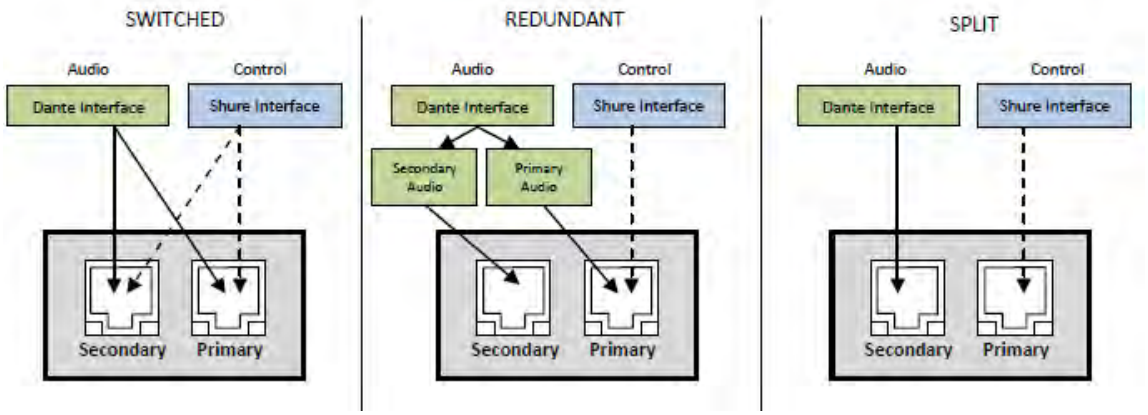
Networking Acronyms

DHCP: Dynamic Host Configuration Protocol
LAN: Local Area Network
MCU: Micro Controller Unit
RJ45: Ethernet Connection
RX: Receiver
TX: Transmitter
WWB6: Wireless Workbench 6 Software
VLAN: Virtual Local Area Network
MAC: Machine Access Code

Overview of Dante Network Modes

The Dante network interface has two ports (Primary and Secondary) to provide flexible routing and configuration options for network signals.

Three selectable Dante network modes are available to control signal routing from the receiver ports to the Dante network.



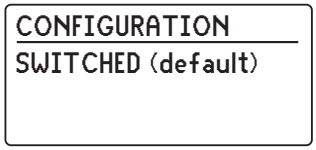
Network Mode	Port Function and Signals		Application
	Secondary	Primary	
SWITCHED	Shure Control Dante Audio and Control	Shure Control Dante Audio and Control	For single network Installations of star or daisy-chained networks.
REDUNDANT AUDIO	Dante Redundant Audio	Shure Control Dante Audio and Control	Primary and Secondary ports are configured are 2 separate networks. The Secondary port carries a backup copy of the Primary digital audio signal.
SPLIT	Dante Audio and Control	Shure Control	Primary and Secondary ports are configured are 2 separate networks to provide isolation between control signals and audio signals.

Setting the Dante Networking Mode

Select a Dante mode to configure network signal routing on the Primary and Secondary ports.
Set all receivers on the network to the same mode.

Note: Remove network connections from the receiver before changing the mode.

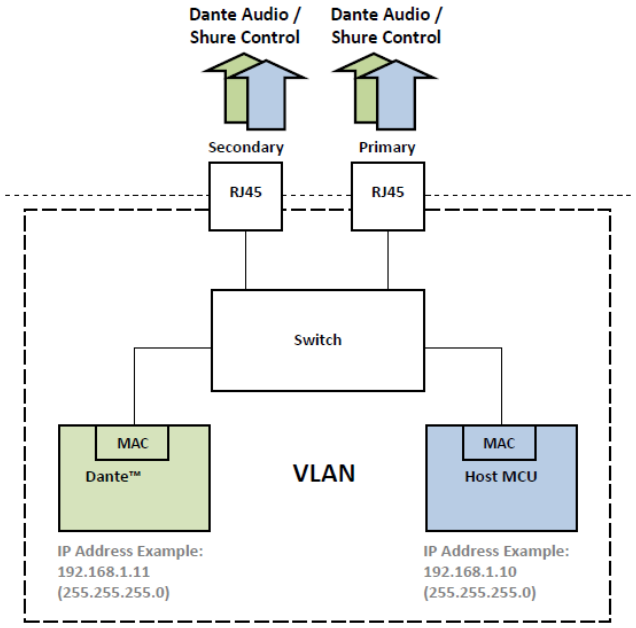
1. From the receiver menu: **DEVICE UTILITIES** > **NETWORK** > **CONFIGURATION**
2. Use the control wheel to select a mode (**SWITCHED**, **REDUNDANT AUDIO**, **SPLIT**)
3. Press **ENTER** to save.
4. Cycle receiver power to enable the mode change.



Network Connection and Configuration Examples

Note: Use shielded Cat5e cable for network connections to ensure reliable performance.

Switched Mode



Switched mode is typically used for single network installations of star or daisy-chained networks. Switched mode is recommended for installations that don't require Dante audio.

Network Characteristics:

- Dante Audio and Shure Control are present on both the Primary and Secondary ports
- The Dante IP address and the Shure Control IP address must be on the same subnet. The computer running WWB6 must also be on this subnet.

Network Example (Dante Audio + WWB6)

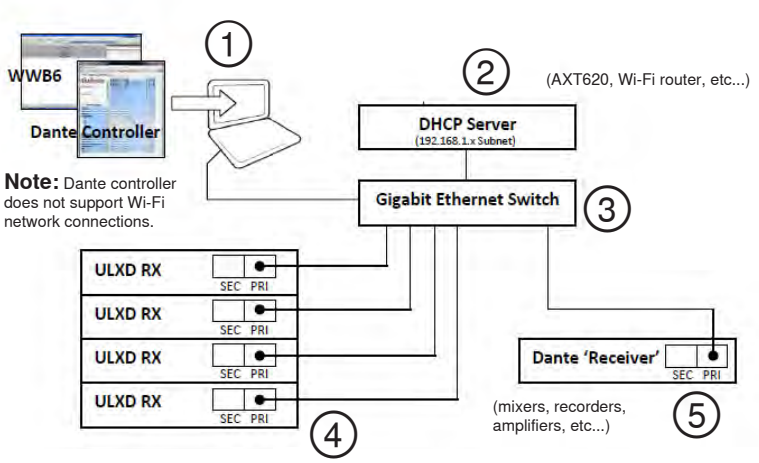
① Computer
Connect the computer running the Dante controller and WWB6 to the Primary port.

② DHCP Server
Can be configured with or without a DHCP server. Do not route audio through the server.

③ Gigabit Ethernet Switch
- Do not connect both network ports to the same Ethernet switch
- Use a star network topology to minimize audio latency

④ Receiver Connection
Connect receivers to the Primary port

⑤ Dante Receiver
Connect Dante receivers (mixers, recorders, amplifiers) to the Primary port.



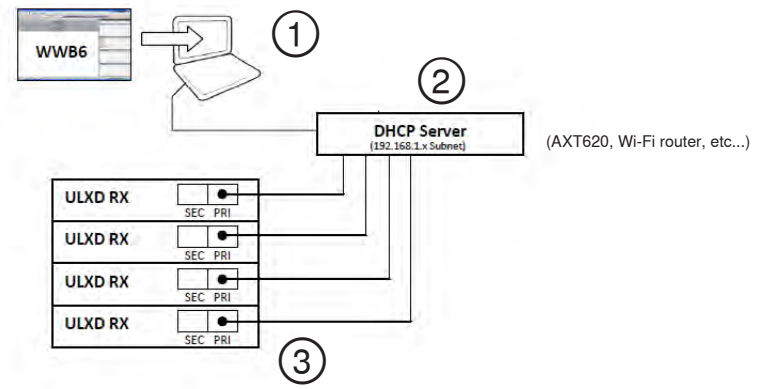
Note: Dante controller does not support Wi-Fi network connections.

Network Example (WWB6 Only)

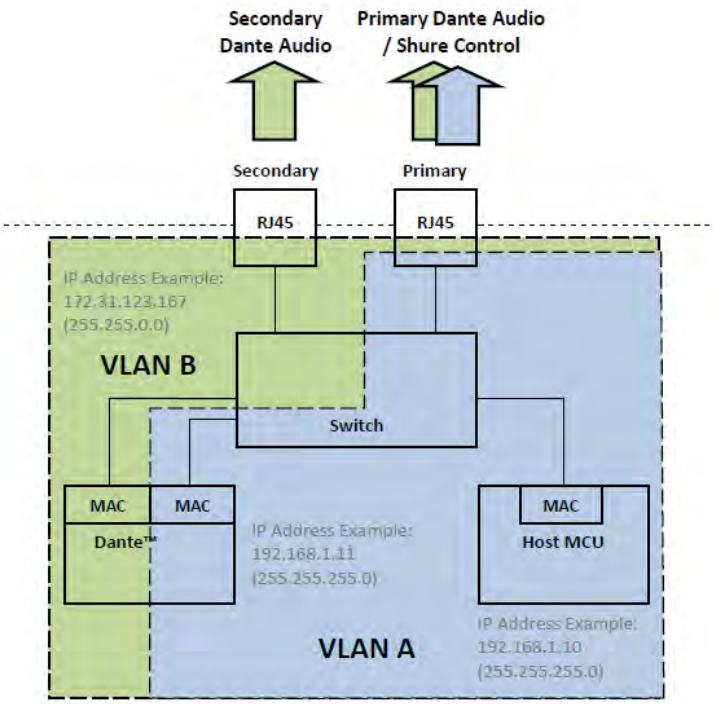
① Computer
Connect the computer running WWB6 to the Primary port.

② DHCP Server
Can be configured with or without a DHCP server.

③ Receiver Connection
Connect receivers to the Primary port



Redundant Audio Mode



Use Redundant mode to carry a backup copy of the Dante audio on the Secondary network in case the audio on the primary network is interrupted.

Network Characteristics:

- Dante Primary Audio and Shure Control are present on the Primary port
- Backup Dante audio is present on the Secondary port
- The Primary Dante IP address and the Shure Control IP address must be on the same subnet. The computer running WWB6 must also be on this subnet.
- The Secondary Dante IP Address must be set to a different subnet

Note: Devices connected to the Redundant network must be compatible with Redundant audio.

Network Example

① Computer

Connect the computer running the Dante controller and WWB6 to the Primary port.

② DHCP Server

Can be configured with or without a DHCP server. Do not route audio through the server.

③ Gigabit Ethernet Switches

- Use dedicated switches for the Primary and Secondary networks
- Do not connect both network ports to the same Ethernet switch
- Use a star network topology to minimize audio latency

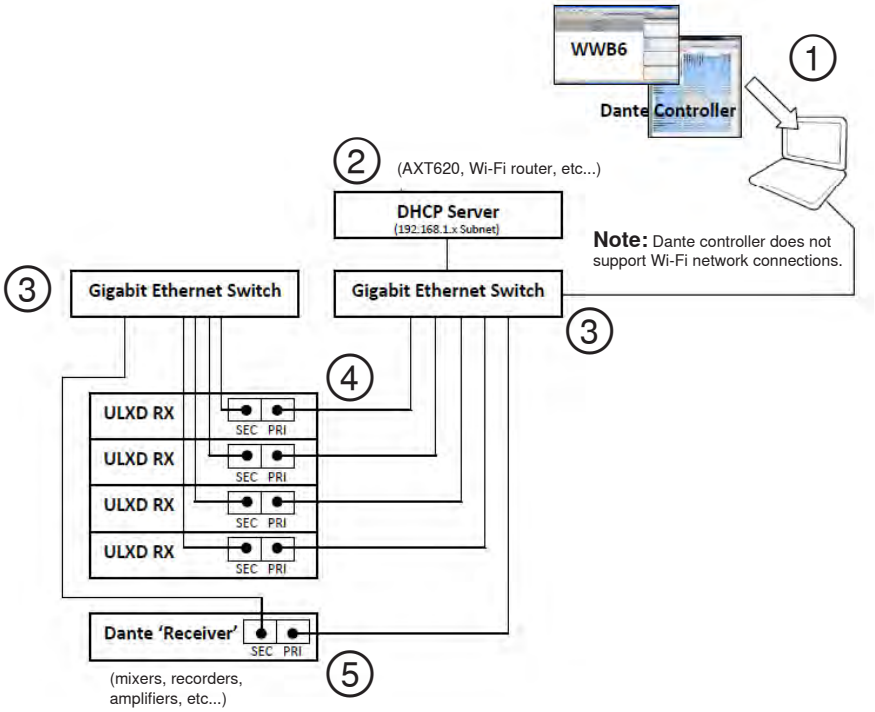
④ Receiver Connection

Connect Primary and Secondary ports to dedicated switches.

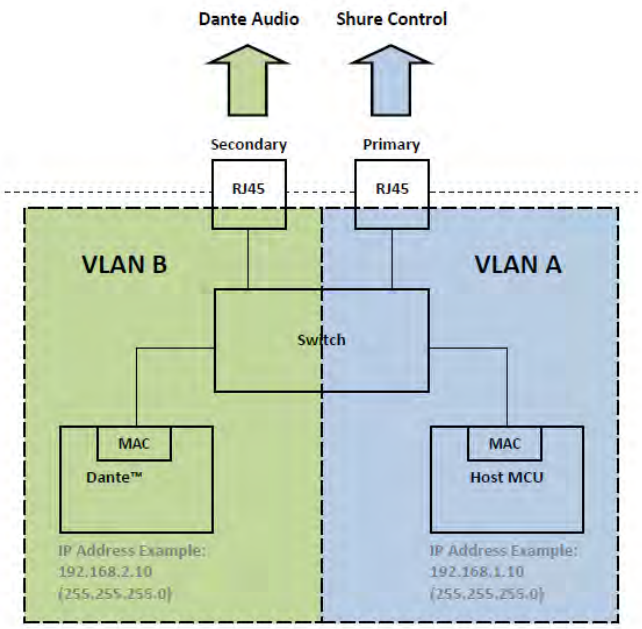
Note: The Secondary port only supports manual IP or automatic Link-Local configuration. The Link-Local Dante Secondary address subnet is preset to 172.31.x.x (255.255.0.0)

⑤ Dante Receiver

Connect Dante receivers (mixers, recorders, amplifiers) to the Primary or Secondary ports.



Split Mode



Use Split Mode to isolate control signals from audio signals by placing them on two separate networks.

Network Characteristics:

- Shure Control is present on the Primary port
- Dante Audio is present on the Secondary port
- The IP addresses for Dante and Shure Control must be on different subnets

Network Example

① Computer (Dante Controller)
Connect the computer running the Dante controller to the Secondary port.

② DHCP Server (Secondary Network)
Can be configured with or without a DHCP server. Do not route audio through the server.

③ Gigabit Ethernet Switch (Secondary Network)
- Use dedicated switches for the Primary and Secondary networks
- Do not connect both network ports to the same Ethernet switch
- Use a star network topology to minimize audio latency

④ Receiver Connections (Dante Audio)
Connect the Secondary ports to the Secondary network switch.

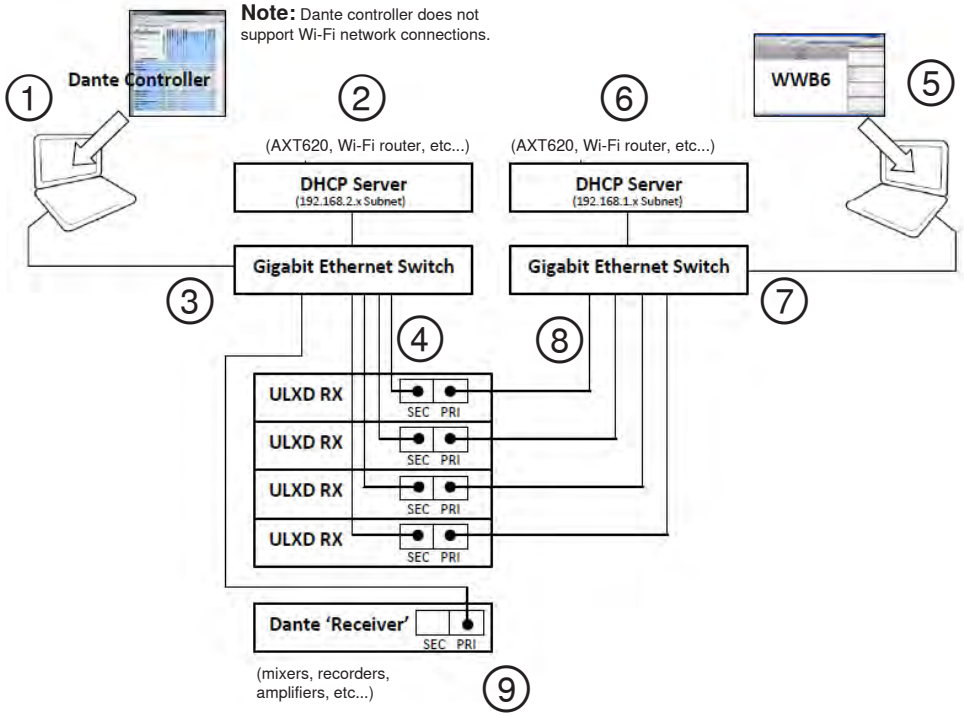
⑤ Computer (Shure Control)
Connect the computer running the Shure Control to the Primary port.

⑥ DHCP Server (Primary Network)
Can be configured with or without a DHCP server. Do not route audio through the server.

⑦ Gigabit Ethernet Switch (Primary Network)
- Use dedicated switches for the Primary and Secondary networks
- Do not connect both network ports to the same Ethernet switch
- Use a star network topology to minimize audio latency

⑧ Receiver Connections (Shure Control)
Connect the Primary ports to the Primary network switch.

⑨ Dante Receiver
Connect Dante receivers (mixers, recorders, amplifiers) to the Primary port.



Assigning Network Device IDs for Shure Control and Dante Control

When using the receiver in a network with Shure Control (WWB6) and a Dante Controller, two Device IDs are required: one for Shure Control and one for Dante Control. Device IDs are used to identify devices on the network and for creating Dante digital audio routes.

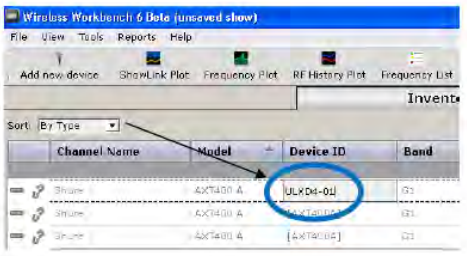
Best Practices

Using the following best practices will help to organize network setup and ease troubleshooting.

- For consistency, convenience, and easy troubleshooting, use the same device ID for both WWB6 (Shure Control) and for the Dante network.
- The Dante network requires unique Dante device IDs to prevent a loss of audio signal routing. Any duplicate IDs on the network will be tagged with a number such as -1, -2, -3, etc.... and must be changed to a unique value.
- WWB6 (Shure Control) does not require unique device IDs and duplicates do not affect the Dante network; however, a best practice is to use unique device IDs.

Setting the Shure Control Device ID

1. Launch WWB6.
2. Open the Inventory View.
3. Click on the Device ID to enable editing.



Tip: Click on the device icon next to the channel name to identify the receiver using the Flash function.

Optionally, the Shure Control Device ID can be entered from the receiver front panel:

1. From the receiver menu: **DEVICE UTILITIES** > **NETWORK** > **SHURE CONTROL** > **Dev. ID**
2. Use the control wheel to edit the ID.
3. Press **ENTER** to save.

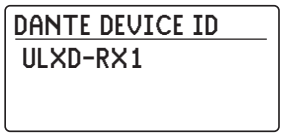
Setting the Dante Device ID

The Dante ID can be set from the ULXD receiver menu or from the Dante controller.

Note: Changing the Dante ID will cause a loss of audio signal. After an ID has been changed, use the Dante controller to restore audio route subscriptions using the new ID.

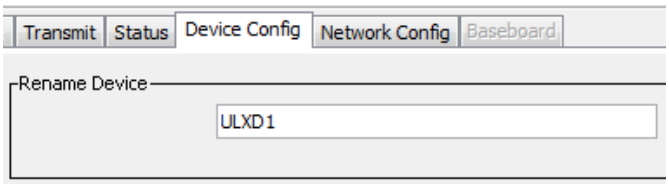
From the receiver menu:

1. **DEVICE UTILITIES** > **NETWORK** > **DANTE** > **Dev. ID**
2. Use the control wheel to enter a unique ID.
3. Press **ENTER** to save.



From the Dante controller:

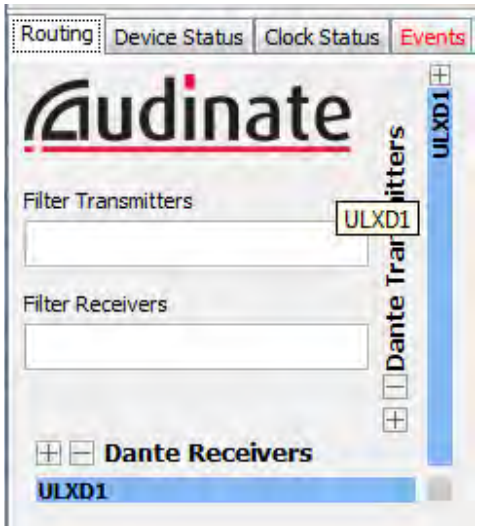
1. Open the **Device View** and select the receiver from the pulldown menu.
2. Click on the **Device Config** tab.
3. Enter the ID in the **Rename Device** box and press ENTER.



Viewing Dante Device IDs in the Dante Controller

Dante device IDs are displayed in the **Network View** window in the Dante Controller.

1. Launch the Dante controller and open the **Network View** window.
2. Verify that the Dante device IDs match the IDs entered in the receiver.



Identify Device Feature

The Dante controller's Identify Device feature flashes the front panel LEDs of a selected receiver to provide identification when multiple receivers are in use.

Open the **Device View** in the Dante controller and click on the identify icon (eye). The front panel LEDs of the selected receiver will respond by flashing.



Configuring Audio Routes with the Dante Controller

Devices that appear in the Dante controller are categorized as "Transmitters" and "Receivers"

In order for audio to flow in the network, audio routes (subscriptions) must be configured between transmitters and receivers.

Note: ULX-D receivers will appear in the Dante controller as a Transmitter. Devices that have both inputs and outputs commonly appear as both transmitters and receivers.

Dante Transmitters

Devices that send or add audio into the network such as:

- Receiver Outputs
- Amplifier Outputs
- Mixer Outputs
- Signal Processor Outputs
- Recorder Playback Outputs

Dante Receivers

Devices that receive audio from the network such as:

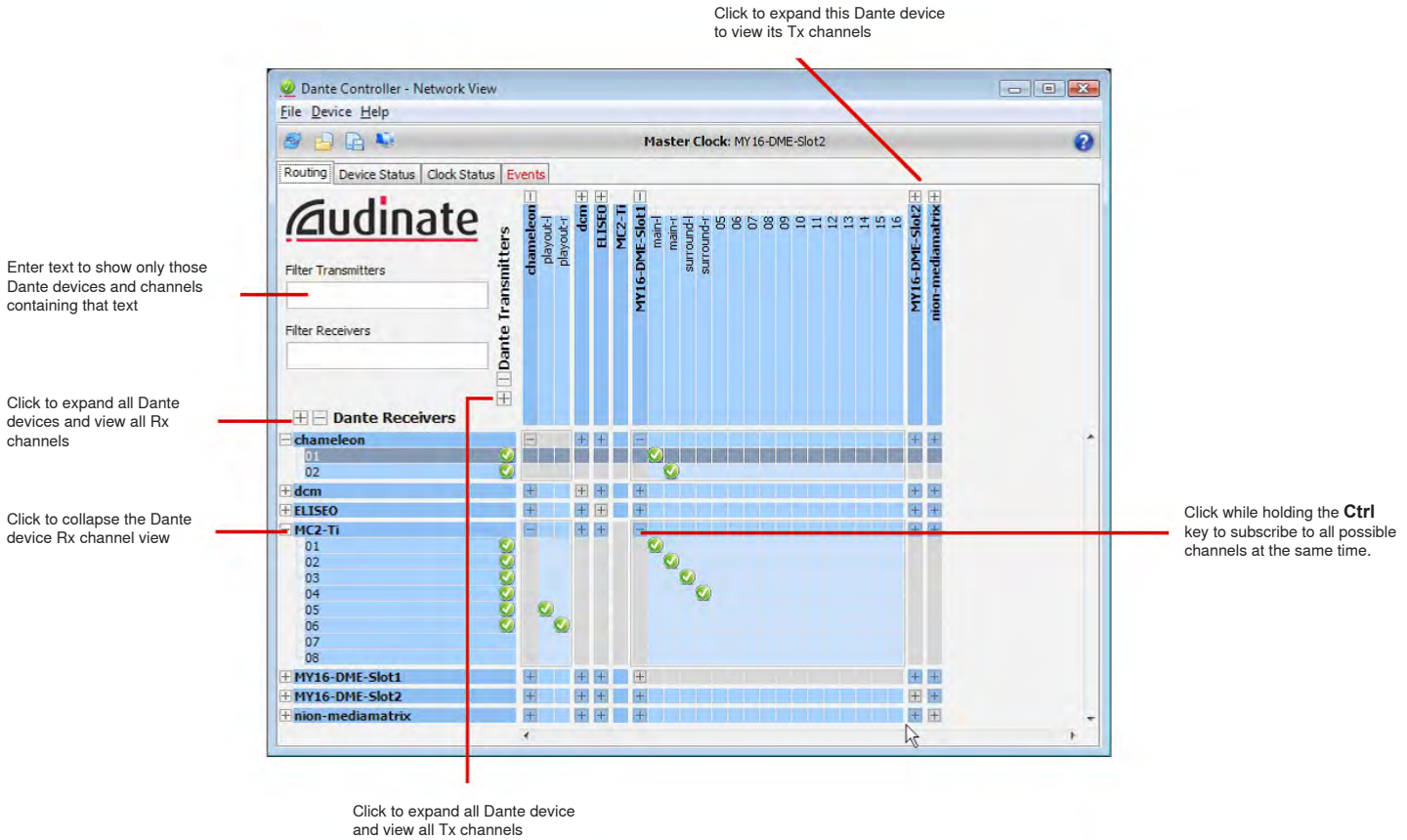
- Amplifier Inputs
- Mixer Inputs
- Signal Processor Inputs
- Recorder Inputs

Forming an Audio Route

Launch the Dante Controller and click on the intersection point between components to form an audio route. The audio route is also referred to as a Subscription.

1. Find the intersection between the transmitter and receiver channels.
2. Click on the + where the components meet.
3. A green checkmark indicates that the audio route has been established.
4. Check the audio to verify that the audio route has been formed.

For additional information about the Dante controller, visit www.audinate.com.



Restoring Dante Factory Settings

The receiver and the Dante network card can be reset to restore factory Dante settings. Performing a reset is helpful for clearing existing data before setting up a system.

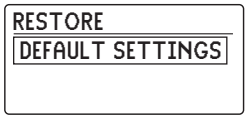
Caution! Performing a reset on either the Dante network card or on the ULX-D receiver will interrupt the Dante audio.

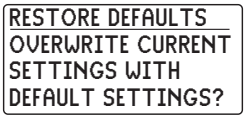
Tip: Prior to performing a factory reset, note the current Dante network mode and IP settings. After a reset, the Dante network mode reverts to **SWITCHED**, and the IP address mode revert to **AUTO**.

Restoring Receiver and Dante Card Factory Settings

Performing a reset from the receiver restores the factory settings and configures the Shure Control and Dante IP address mode to AUTO.

1. From the receiver menu: **DEVICE UTILITIES** > **SYSTEM RESET** > **RESTORE DEFAULT SETTINGS**
2. Press **ENTER** to complete the reset.

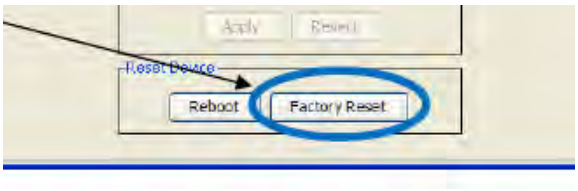




Restoring the Dante Network Card Factory Settings

The **Factory Reset** option within the Dante controller restores the Dante card to the factory settings and configures the Dante IP address mode to AUTO.

1. From the Dante controller, select a receiver and open the **Network Config** tab.
2. Click on **Factory Reset**.
3. Allow the Dante controller to refresh before making any additional changes.



Connecting to an AMX or Crestron System

The ULX-D receiver connects to an AMX or Crestron control system via the Ethernet, using on the same cables used to carry Shure Control (WWB6). Use only one controller per system to avoid messaging conflicts.

- Connection: Ethernet (TCP/IP; ULX-D receiver is the client)
- Port: 2202

For a comprehensive list of ULX-D command strings, visit: http://shure.custhelp.com/app/answers/detail/a_id/4976

Network Troubleshooting

- Use only one DHCP server per network
- All devices must share the same subnet mask
- All receivers must have the same level of firmware revision installed
- Look for the illuminated network icon on the front panel of each device:

  If the icon is not illuminated, check the cable connection and the LEDs on the network jack.

  If the LEDs are not on and the cable is plugged in, replace the cable and recheck the LEDs and network icon.

To check connectivity of WWB6 to the network:

1. Start WWB6 software and use Inventory view to see devices connected to the network.
2. If not, find the IP address from one of the devices on the network (such as a ULX-D receiver) and see if you can ping it from the computer running WWB6.
3. From a WINDOWS/MAC command prompt, type ‘ping IPADDRESS’ of the device (e.g. "ping 192.168.1.100").
4. If the ping returns success (no packet loss), then the computer can see the device on the network. If the ping returns failure (100% packet loss), then check the IP address of the computer to ensure it’s on the same subnet.
5. If the pings are successful and the devices still do not show up in the WWB6 inventory, check to ensure all firewalls are either disabled or allow the WWB network traffic to pass to the application. Check that firewall settings are not blocking network access.

Managing the ULXD Receiver with Wireless Workbench 6

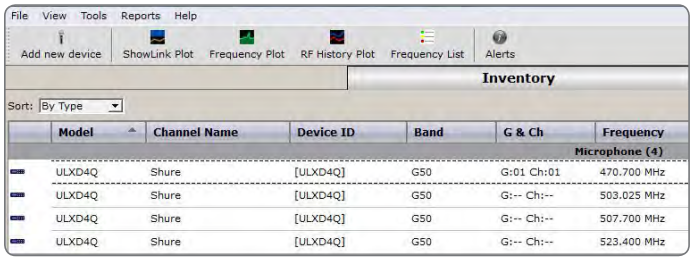
Adding a computer running Wireless Workbench® 6 to the network allows for remote control and monitoring of the receiver.

Visit: www.shure.com/wwb to download Wireless Workbench 6 software.

Viewing the Receiver in WWB6 Inventory

Click on the Inventory tab to view the receiver channels. Double-click on parameters to enable editing.

Tip: Clicking on the receiver Icon next to the Model flashes the front panel LEDs for remote identification.



Managing and Monitoring Receiver Settings

Manage and monitor receiver settings by opening the Monitor tab in Wireless Workbench. Click on the **Settings** button to show or hide the full Properties window.

1. Click on the Monitor tab to view the Device Chooser.
2. From the Device Chooser, click on a channel to select.
3. Click on Properties to open the Properties window.



① **RF and Audio Meters**
Displays: current levels, band, TV, and TX Overload

② **Transmitter Settings**
Displays: RF Power, Tx Type, Tx Offset, Tx Lock

③ **Frequency Settings**
Use drop-down to edit value

④ **Encryption Icon**
Illuminates when Encryption is enabled

⑤ **Receiver Output Mute**
Click on the mute button to enable mute

⑥ **Receiver Gain Setting**
Use drop-down to edit value

⑦ **Custom Groups**
Click to enter custom group settings

⑧ **IR Presets**
Click to configure transmitter IR presets

⑨ **Utilities Tab**
Accesses Utility settings

⑩ **Network Tab**
Set network mode, view: IP address, Subnet, MAC, Firmware version

⑪ **Advanced RF Settings**
Enable High Density mode or Antenna Bias

⑫ **Encryption**
Enable/Disable Encryption

⑬ **Frequency Diversity Mode**
Enable and Select Frequency Diversity mode

⑭ **Audio Summing**
Enable and Select Audio Summing mode

⑮ **Locks**
Lock/Unlock: Menu, Gain, Power, Scan/Sync

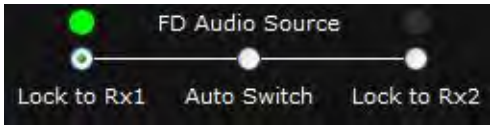
Locking the Audio Source in Frequency Diversity Mode

WWB6 software offers an option to selectively lock the Frequency Diversity audio source to a specific transmitter.

Lock the audio source to select the best audio if a problem develops with one of the channels.

1. Open the monitoring tab.
2. Under **FD Audio Source**, click on "Lock to" option to select a transmitter as the audio source.

To restore Frequency Diversity switching, click on the **Auto Switch** option.



Troubleshooting

Issue	See Solution...
No Sound	Power, Cables, Radio Frequency, or Encryption Mismatch
Faint sound or distortion	Gain
Lack of range, unwanted noise bursts, or dropouts	RF
Cannot turn transmitter off or change frequency settings, or can't program receiver	Interface locks
Encryption Mismatch message	Encryption Mismatch
Firmware Mismatch message	Firmware Mismatch
Antenna Fault message	RF

Power

Make sure that the receiver and transmitter are receiving sufficient voltage. Check the battery indicators and replace the transmitter batteries if necessary.

Gain

Adjust the system gain on the front of the receiver. Ensure the output level (XLR output only) on the back of the receiver corresponds to the input of the mixing console, amplifier, or DSP.

Cables

Check that all cables and connectors are working correctly.

Interface Locks

The transmitter and the receiver can be locked to prevent accidental or unauthorized changes. A locked feature or button will produce the **Locked** screen on the LCD panel.

Encryption Mismatch

Re-sync all receivers and transmitters after enabling or disabling encryption.

Firmware Mismatch

Paired transmitters and receivers must have the same firmware version installed to ensure consistent operation. See Firmware topic for firmware update procedure.

Radio Frequency (RF)

RF LEDs

If neither blue **RF** Diversity LED is illuminated, then the receiver is not detecting the presence of a transmitter.

The amber **RF** Signal Strength LEDs indicate the amount of RF power being received. This signal could be from the transmitter, **or it could be from an interfering source, such as a television broadcast**. If more than one or two of the amber **RF** LEDs are still illuminated while the transmitter is off, then that channel has too much interference, and you should try a different channel.

The red **RF** LED indicates RF overload. This will usually not cause a problem unless you are using more than one system at the same time, in which case, it can cause interference **in the other system**.

Compatibility

- Perform a Scan and Sync to ensure the transmitter and receiver are set to the same group and channel.
- Look at the label on the transmitter and receiver to make sure they are in the same band (G50, J50, L50, etc...).

Reducing Interference

- Perform a group or channel scan to find the best open frequency. Perform a sync to transfer the setting to the transmitter.
- For multiple systems, check that all systems are set to channels in the same group (systems in different bands do not need to be set to the same group).
- Maintain a line of sight between transmitter and receiver antennas.
- Move receiver antennas away from metal objects or other sources of RF interference (such as CD players, computers, digital effects, network switches, network cables and Personal Stereo Monitor (PSM) wireless systems).
- Eliminate RF overload (see below).

Increasing Range

If the transmitter is more than 6 to 60 m (20 to 200 ft) from the receiver antenna, you may be able to increase range by doing one of the following:

- Reduce interference (see above).
- Increase transmitter RF power level.
- Use Normal mode instead of High Density mode.
- Use an active directional antenna, antenna distribution system, or other antenna accessory to increase RF range.

Eliminating RF Overload

If you see the red RF LED on a receiver, try the following:

- Reduce the transmitter RF power level
- Move the transmitter further away from the receiver—at least 6 m (20 ft)
- If you are using active antennas, reduce antenna or amplifier gain.
- Use omnidirectional antennas

Antenna Faults

The **Antenna Fault** message indicates a short circuit condition at an antenna port.

- Check antennas and cables for damage
- Ensure that antenna ports are not overloaded
- Check antenna bias voltage setting. Turn off voltage if using passive antennas.

ULX-D Specifications

RF Carrier Frequency Range
470–932 MHz, varies by region (See Frequency Range and Ouput Power table)

Working Range
100 m (330 ft)
Note: Actual range depends on RF signal absorption, reflection and interference.

RF Tuning Step Size
25 kHz, varies by region

Image Rejection
>70 dB, typical

RF Sensitivity
–98 dBm at 10^{-5} BER

Latency
<2.9 ms

Audio Frequency Response

ULXD1	20 – 20 kHz (±1 dB)
ULXD2	Note: Dependent on microphone type

Audio Dynamic Range
A-weighted, typical, System Gain @ +10

XLR Analog Output	>120 dB
Dante Digital Output	130 dB

Total Harmonic Distortion
–12 dBFS input, System Gain @ +10
<0.1%

System Audio Polarity
Positive pressure on microphone diaphragm produces positive voltage on pin 2 (with respect to pin 3 of XLR output) and the tip of the 6.35 mm (1/4-inch) output.

Operating Temperature Range
-18°C (0°F) to 50°C (122°F)
Note: Battery characteristics may limit this range.

Storage Temperature Range
-29°C (-20°F) to 74°C (165°F)
Note: Battery characteristics may limit this range.

ULXD4D & ULXD4Q

Dimensions
44 x 482 x 274 mmH x W x D

Weight

ULXD4D	3.36 kg (7.4 lbs), without antennas
ULXD4Q	3.45 kg (7.6 lbs), without antennas

Housing
steel; Extruded Aluminum

ULXD4 Power Requirements

ULXD4D	100 to 240 V AC, 50-60 Hz, 0.26 A max.
ULXD4Q	100 to 240 V AC, 50-60 Hz, 0.32 A max.

RF Input

Spurious Rejection
>80 dB, typical

Connector Type
BNC

Impedance
50 Ω

Bias Voltage
12 to 13 V DC, 150 mA maximum, per antenna
switchable on/off

Cascade Output

Connector Type
BNC
Note: For connection of one additional receiver in the same band

Configuration
Unbalanced, passive

Impedance
50 Ω

Insertion Loss
0 dB

Audio Output

Gain Adjustment Range
–18 to +42 dB in 1 dB steps (plus Mute setting)

Configuration

XLR	balanced (1=ground, 2=audio +, 3=audio –)

Impedance
100 Ω

Full Scale Output

LINE setting	+18 dBV
MIC setting	–12 dBV

Mic/Line Switch
30 dB pad

Phantom Power Protection
Yes

Networking

Network Interface
Dual Port Ethernet 10/100 Mbps, 1Gbps, Dante Digital Audio

Network Addressing Capability
DHCP or Manual IP address

Maximum Cable Length
100 m (328 ft)

ULXD1

MIc Offset Range
0 to 21 dB (in 3 dB steps)

Battery Type
Shure SB900 Rechargeable Li-Ion or LR6 AA batteries 1.5 V

Battery Runtime
@ 10 mW

Shure SB900	>11 hours
alkaline	11 hours

See Battery Runtime Chart

Dimensions
86 mm x 66 mm x 23 mm (3.4 in. x 2.6 in. x 0.9 in.) H x W x D

Weight
142 g (5.0 oz.), without batteries

Housing
Cast aluminum

Audio Input

Connector
4-Pin male mini connector (TA4M), See drawing for details

Configuration
Unbalanced

Impedance
1 MΩ, See drawing for details

Maximum Input Level
1 kHz at 1% THD

Pad Off	8.5 dBV (7.5 Vpp)
Pad On	20.5 dBV (30 Vpp)

Preamplifier Equivalent Input Noise (EIN)
System Gain Setting ≥ +20
-120 dBV, A-weighted, typical

RF Output

Connector
SMA

Antenna Type
1/4 wave

Impedance
50 Ω

Occupied Bandwidth
<200 kHz

Modulation Type
Shure proprietary digital

Power
1 mW, 10 mW, 20 mW
See Frequency Range and Ouput Power table, varies by region

ULXD2

Mic Offset Range
0 to 21 dB (in 3 dB steps)

Battery Type
Shure SB900 Rechargeable Li-Ion or LR6 AA batteries 1.5 V

Battery Runtime
@ 10 mW

Shure SB900	>11 hours
alkaline	11 hours

See Battery Runtime Chart

Dimensions
256 mm x 51 mm (10.1 in. x 2.0 in.) L x Dia.

Weight
340 g (12.0 oz.), without batteries

Housing
Machined aluminum

Audio Input

Configuration
Unbalanced

Maximum Input Level
1 kHz at 1% THD
145 dB SPL (SM58), typical
Note: Dependent on microphone type

RF Output

Antenna Type
Integrated Single Band Helical

Occupied Bandwidth
<200 kHz

Modulation Type
Shure proprietary digital

Power
1 mW, 10 mW, 20 mW
See Frequency Range and Ouput Power table, varies by region

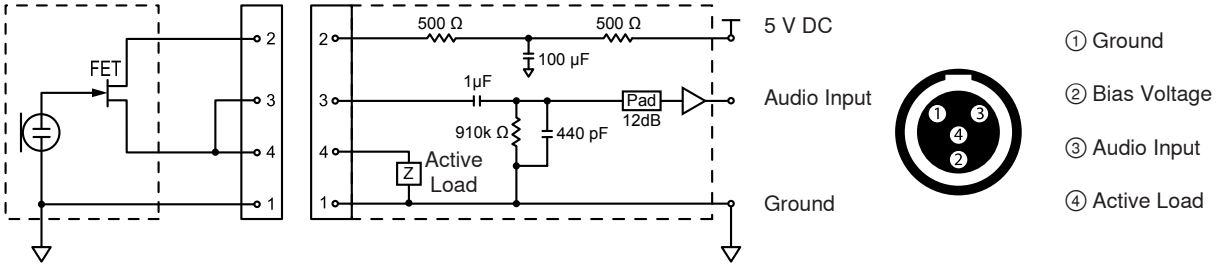
Battery Runtime

Battery Type	1 mW	10 mW	20 mW
SB900	>11 hours	>11 hours	>7 hours
Alkaline	<11 hours	<11 hours	<5.5 hours
NiMH	<11 hours	<11 hours	<8 hours
Li-primary	12.5-18 hours	12.5-18 hours	9.5-12 hours

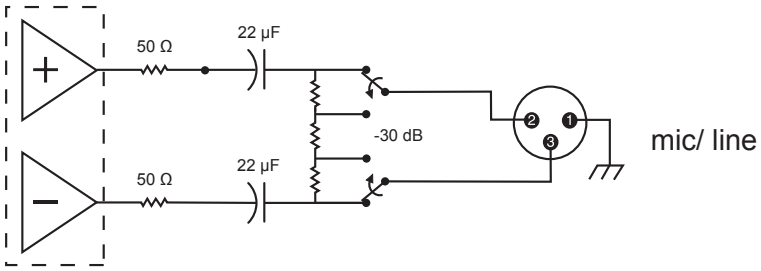
The values in this table are typical of fresh, high quality batteries. Battery runtime varies depending on the manufacturer and age of the battery.

Tables and Diagrams

TA4M Connector

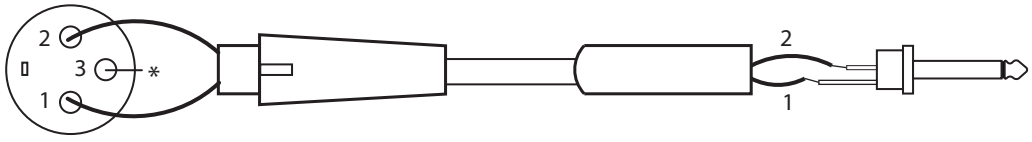


XLR Receiver Output



XLR to ¼ Output

Use the following wiring diagram to convert the XLR output to a ¼ output.



* No Connection

Frequency Range and Transmitter Output Power

Band	Frequency Range (MHz)	Power (mW)
G50	470 to 534	1/10/20
G51	470 to 534	1/10/20
G52	479 to 534	1/10
H51	534 to 598	1/10/20
H52	534 to 565	1/10
J50	572 to 636	1/10/20
K51	606 to 670	1/10
L50	632 to 696	1/10/20
L51	632 to 696	1/10/20

Band	Frequency Range (MHz)	Power (mW)
P51	710 to 782	1/10/20
R51	800 to 810	1/10/20
JB (Tx only)	806 to 810	1/10
AB (Rx and Tx)	770 to 810	"A" band (770.250-805.750): 1/10/20 "B" band (806.125-809.750): 1/10
Q51	794 to 806	1/10/20
X50	925 to 932	1/10

Furnished Accessories

All Systems

Receiver	ULXD4D (Dual Receiver), ULXD4Q (Quad Receiver)
1/2-Wave Antenna (2)	Varies by band (see Antennas table for band-specific part numbers)
Hardware Kit (1)	90XN1371
2' BNC Cable (2)	95K2035
BNC Bulkhead Adapters (2)	95A8994
3' Ethernet Cable (1)	95B15103

Handheld Systems

Handheld Transmitter	ULXD2
Cartridge	see options below
Microphone Clip	95T9279
Zipper Bag	95B2313
AA Alkaline batteries (2)	80B8201
Battery Contact Cover	65A15947

Choice of one (1) of the following:

SM58	RPW112
SM86	RPW114
SM87A	RPW116
Beta 58A	RPW118
Beta 87A	RPW120
Beta 87C	RPW122

Bodypack System

Bodypack Transmitter	ULXD1
1/4-Wave Antenna	Varies by band (see Antennas table for band-specific part numbers)
Zipper Bag	95A2313
AA Alkaline batteries (2)	80B8201

Choice of one (1) of the following:

Instrument cable	WA302
Instrument Clip-on microphone	Beta 98H/C
Lavalier microphone	MX150, MX153, WL183, WL184, WL185
Headset microphone	WH30TQG

Antennas

Band	1/2-Wave Receiver Antennas	1/4-Wave Transmitter Antennas
G50	95AA9279	95G9043 (Yellow)
G51	95AA9279	95G9043 (Yellow)
G52	95AA9279	95G9043 (Yellow)
H51	95AL9279	95D9043 (Gray)
H52	95AL9279	95D9043 (Gray)
J50	95AK9279	95E9043 (Black)
K51	95AJ9279	95E9043 (Black)
L50	95AD9279	95E9043 (Black)
L51	95AD9279	95E9043 (Black)
P51	95AF9279	95F9043 (Blue)
R51	95M9279	95F9043 (Blue)
AB	95M9279	N/A
Q51	95M9279	N/A
X50	95V9279	95H9043 (Red)

Optional Accessories

Shure Rechargeable Battery	SB900
8-Bay Battery Charger	SBC800
Dual Docking Battery Charger	SBC200
Carrying Case	WA610
Y-Cable for Bodypack Transmitters	AXT652
Active Antenna Spitter	UA845SWB
Passive Antenna Splitter/Combiner Kit	UA221
UHF Line Amplifier	UA830WB
UHF Antenna Power Distribution Amplifier (U.S.A.)	UA844SWB
UHF Antenna Power Distribution Amplifier (Europe)	UA844SE
Front Mount Antenna Kit (Includes 2 cables and 2 bulkhead	UA600
Remote Antenna Bracket with BNC Bulkhead Adapter	UA505

UHF Powered Directional Antenna	UA874WB
Passive Directional Antenna	PA805SWB
Coaxial Cable, BNC-BNC, RG58C/U type, 50 Ohm, 2 ft length (0.6 m)	UA802
Coaxial Cable, BNC-BNC, RG58C/U type, 50 Ohm, 6 ft length (2 m)	UA806
Coaxial Cable, BNC-BNC, RG8X/U type, 50 Ohm, 25 ft length (7.5 m)	UA825
Coaxial Cable, BNC-BNC, RG8X/U type, 50 Ohm, 50 ft length (15 m)	UA850
Coaxial Cable, BNC-BNC, RG213/U Type, 50 Ohm, 100 ft length (30 m)	UA8100

Certifications

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

ULXD1, ULXD2, ULXD4D, ULXD4Q

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

Meets requirements of the following standards: EN 300 422 Parts 1 and 2, EN 301 489 Parts 1 and 9.

ULXD1, ULXD2

Certified under FCC Part 74.

Certified by IC in Canada under RSS-123 and RSS-102.

IC: 616A-ULXD1 G50, 616A-ULXD1 J50, 616A-ULXD1 L50; 616A-ULXD2 G50, 616A-ULXD2 J50, 616A-ULXD2 L50.

FCC: DD4ULXD1G50, DD4ULXD1J50, DD4ULXD1L50; DD4ULXD2G50, DD4ULXD2J50, DD4ULXD2L50.

ULXD4D, ULXD4Q

Approved under the Declaration of Conformity (DoC) provision of FCC Part 15.

Certified in Canada by IC to RSS-123.

IC: 616A-ULXD4D G50, 616A-ULXD4D J50, 616A-ULXD4D L50; 616A-ULXD4Q G50, 616A-ULXD4Q J50, 616A-ULXD4Q L50.

Conforms to electrical safety requirements based on IEC 60065.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Note: EMC conformance testing is based on the use of supplied and recommended cable types. The use of other cable types may degrade EMC performance.

The CE Declaration of Conformity can be obtained from Shure Incorporated or any of its European representatives. For contact information please visit www.shure.com

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:
Shure Europe GmbH
Headquarters Europe, Middle East & Africa
Department: EMEA Approval
Jakob-Dieffenbacher-Str. 12
75031 Eppingen, Germany
Phone: 49-7262-92 49 0
Fax: 49-7262-92 49 11 4
Email: EMEAsupport@shure.de

LICENSING INFORMATION

Licensing: A ministerial license to operate this equipment may be required in certain areas. Consult your national authority for possible requirements. Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate the equipment. Licensing of Shure wireless microphone equipment is the user's responsibility, and licensability depends on the user's classification and application, and on the selected frequency. Shure strongly urges the user to contact the appropriate telecommunications authority concerning proper licensing, and before choosing and ordering frequencies.

Information to the user

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Danger of explosion if battery incorrectly replaced. Operate only with Shure compatible batteries.

Note: Use this receiver only with the included power supply or a Shure-approved equivalent.

WARNING

- Battery packs may explode or release toxic materials. Risk of fire or burns. Do not open, crush, modify, disassemble, heat above 140°F (60°C), or incinerate
- Follow instructions from manufacturer
- Never put batteries in mouth. If swallowed, contact your physician or local poison control center
- Do not short circuit; may cause burns or catch fire
- Do not charge or use battery packs with other than specified Shure products
- Dispose of battery packs properly. Check with local vendor for proper disposal of used battery packs
- Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like

FREQUENCIES FOR EUROPEAN COUNTRIES

ULXD-G51 470 - 534 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	470 - 534 MHz *
F, GB, GR, H, I, IS, L, LT	470 - 534 MHz *
NL, P, PL, S, SK, SLO	470 - 534 MHz *
DK, FIN, M, N	*
HR, E, IRL, LV, RO, TR	*
All other countries	*

ULXD-P51 710 - 782 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST, F, GB,	710 - 782 MHz *
GR, H, I, IS, L, LT, NL, P, PL, S, SK, SLO	710 - 782 MHz *
RO	“718-719; 726-727; 734-743; 750-751; 758-759 MHz*”
DK, E, FIN, HR, IRL, LV, M, N, TR	*
all other countries	*

ULXD-H51 534 - 598 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	534 - 598 MHz *
F, GB, GR, H, I, IS, L, LT	534 - 598 MHz *
NL, P, PL, S, SK, SLO	534 - 598 MHz *
DK, FIN, M, N	*
HR, E, IRL, LV, RO, TR	*
All other countries	*

ULXD-R51 800 - 810 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
N	800 - 810 MHz*
A, B, BG, CH, CY, CZ, D, DK, E, EST	*
F, FIN, GB, GR, H, HR, I, IRL, IS, L, LT	*
LV, M, N, NL, P, PL, S, SK, SLO, TR	*
All other countries	*

ULXD-K51 606 - 670 MHz, max. 20 mW	
Country Code	**Frequency Range**
Code de Pays	**Gamme de frequences**
Codice di paese	**Gamme di frequenza**
Código de país	**Gama de frequencias**
Länder-Kürzel	**Frequenzbereich**
A, B, BG, CH, CY, CZ, D, EST	606 - 670 MHz *
F, GB, GR, H, I, IS, L, LT	606 - 670 MHz *
NL, P, PL, S, SK, SLO	606 - 670 MHz *
RO	646-647;654-655;662-663 MHz*
DK, E, FIN, HR, IRL, LV, M, N, TR	*
All other countries	*

* IMPORTANT

NOTE: THIS EQUIPMENT MAY BE CAPABLE OF OPERATING ON SOME FREQUENCIES NOT AUTHORIZED IN YOUR REGION. PLEASE CONTACT YOUR NATIONAL AUTHORITY TO OBTAIN INFORMATION ON AUTHORIZED FREQUENCIES AND RF POWER LEVELS FOR WIRELESS MICROPHONE PRODUCTS IN YOUR REGION.

A ministerial license may be required to operate this equipment in certain areas. Consult your national authority for possible requirements.

* WICHTIG

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*IMPORTANT

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PERFORMANCE™

WIRED MICROPHONE
MICROFLEX SERIES

MX200 SERIES USER GUIDE

Le Guide de l'Utilisateur

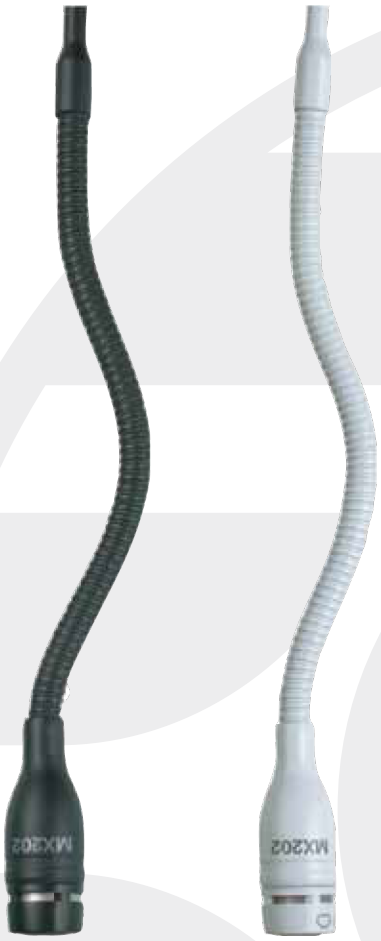
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Guia del Usuario

Guida dell'Utente

Manual do Usuário

取扱説明書



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Printed in U.S.A.

MX200
Overhead Microphones

Shure Microflex® MX200 Series microphones are miniature electret condenser microphones designed for miking choirs and performance groups. They are typically suspended over the heads of the performers. Their high sensitivity and wide frequency range make them suitable for recording, as well as sound reinforcement applications. An attached 101 mm (4 in.) gooseneck allows them to be easily aimed at the sound source.

- Wide dynamic range and frequency response for accurate sound reproduction
- Interchangeable cartridges that provide a choice of polar pattern for each application
- White or black finish that blends unobtrusively with most surroundings
- RF filtering

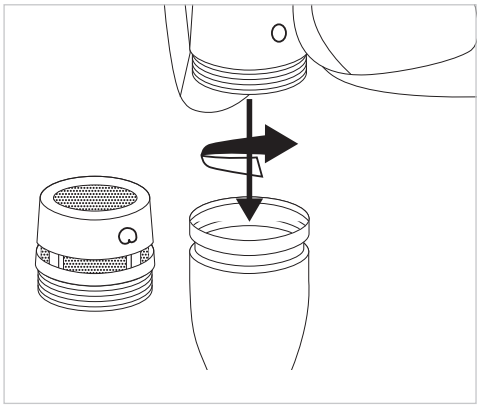
Model Variations

Microflex MX202 microphones are available in black or white with a choice of in-line preamplifier or plate-mount preamplifier.

The polar pattern of the included cartridge is indicated by a model number suffix:

/**C** Cardioid
/**S** Supercardioid
/**N** Cartridge not included

Interchangeable Cartridges



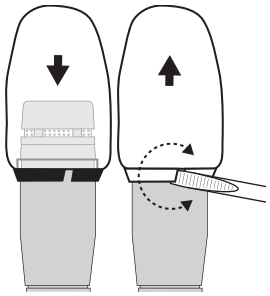
Microflex microphones use interchangeable cartridges that allow you to choose the polar pattern for different installations.



Cartridge Polar Patterns

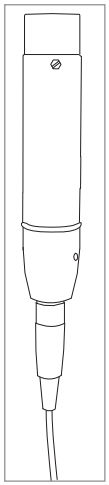
Snap-Fit Windscreen

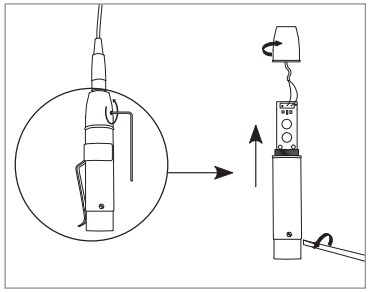
- Snap into the groove below the cartridge.
- To remove, spread the gap with a screwdriver or thumbnail.
- Provides 30 dB of "pop" protection.

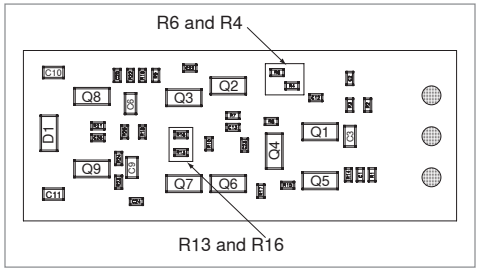


Preamp Gain

If necessary, the preamplifier gain can be reduced by 12 dB. Contact an authorized Shure service center for information.







GAIN SETTING		
	12 dB	0 dB
R6	10k	0 Ω
R4	10k	20k
R16	0 Ω	10M
R13	DNP	301 Ω

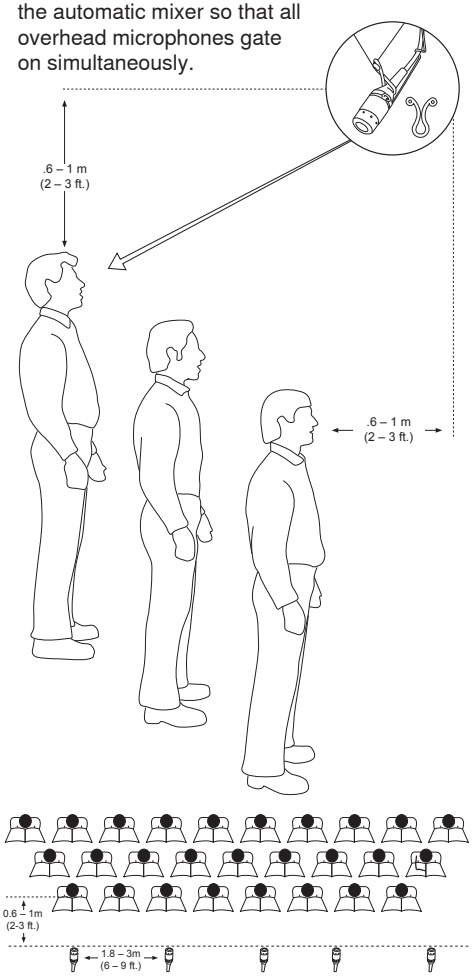
RFI Filtering

Important: Microphones must be used with the RK100PK and RK202PK plate-mounted preamp to optimize RF immunity.

Microphone Placement

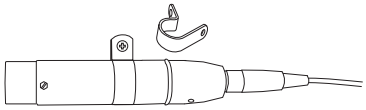
The microphone is most stable when the gooseneck is bent into a "lazy S" shape. Use the supplied hanging clip and heavy thread or monofilament fishing line to suspend the microphone at a specific location.

- For choir installations, hang a microphone 0.6 to 0.9m (2 to 3 ft.) in front of the first row, and 0.6 to 0.9m (2 to 3 ft.) over the heads of the singers in the last row. Aim the microphone at the back row.
- When miking groups that move or vary in size, use a boom stand and the supplied stand adapter.
- If four or more microphones will be open at once, an automatic mixer, such as the Shure SCM810 or SCM410, is recommended. Set up the automatic mixer so that all overhead microphones gate on simultaneously.



Permanent Installation

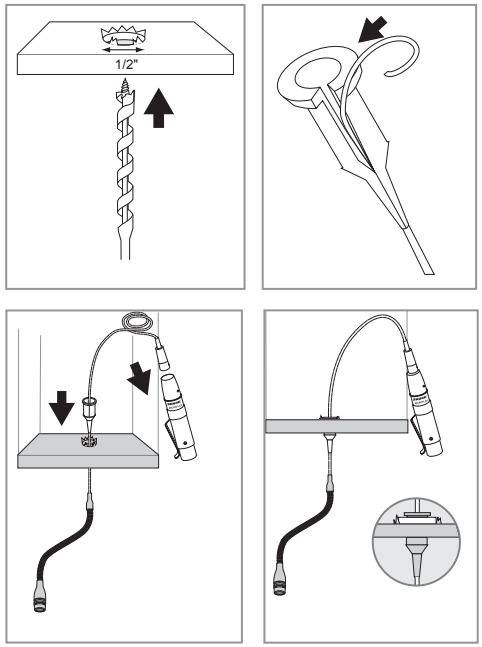
Installing the In-Line Preamp



Use the two supplied mounting clamps to hold the preamp in place on a wall or ceiling.

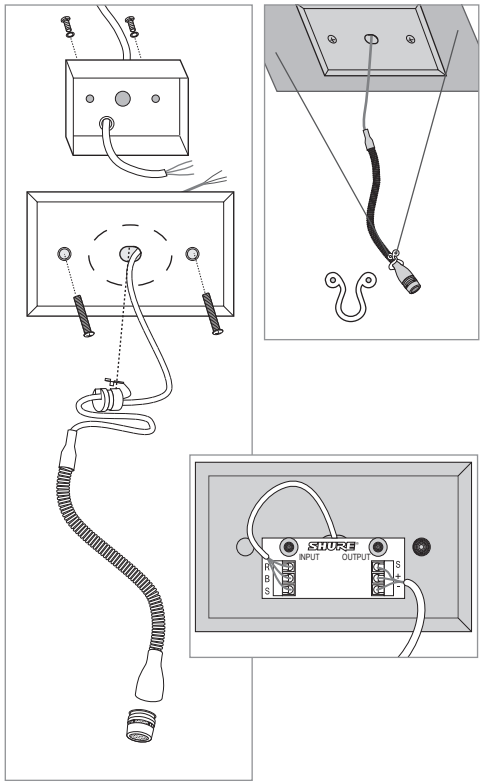
Ceiling Tile Installation

1. Drill a 1/2 in. hole into the ceiling tile. CAUTION: To avoid tile damage, use a 1/2 in. augur bit and drill very slowly.
2. Unplug the mini 4-pin connector from the preamp and feed the cable through the hole.
3. Place the rubber grommet, tip down, over the cable and position it to suspend the microphone at the appropriate height.
4. Fit the grommet securely into the hole. For 5/8 in. ceiling tile, use the suppled washer.
5. Reconnect the preamp.



The plate-mounted preamp allows you to mount the preamp in an electical box and use conduit to run cable through ceilings and walls.

1. Remove preamp housing by removing two phillips head screws.
2. Remove knock-out from the hole in the center of the cover plate (if present).
3. Cut cable to desired hanging length, allowing for a 76 to 101 mm (3 to 4 in.) service loop.
4. Clamp strain relief around cable and insert strain relief into hole in plate.
5. Connect cable leads to input terminal block (B = Black, R = Red, S = Shield).
6. Using professional-quality, two-conductor, shielded microphone cable, thread output cable from outside of preamp through hole with black bushing.
7. Connect cable to output terminal block (Pin 2 = +, Pin 3 = –, Shield = S).
8. Reattach the preamplifier housing.



Specifications

Type
Condenser (electret bias)

Frequency Response
50–17000 Hz

Polar Pattern
MX202B/C, MX202W/C: Cardioid
MX202B/S, MX202W/S: Supercardioid

Output Impedance
EIA Rated at 150 Ω (180 Ω actual)

Output Configuration
Active balanced

Sensitivity (at 1 kHz , open circuit voltage)
Cardioid: –35 dBV/Pa (18 mV)
Supercardioid: –34 dBV/Pa (21 mV)
1 Pascal=94 dB SPL

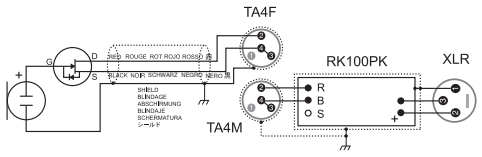
Maximum SPL (1 kHz at 1% THD, 1 kΩ load)
Cardioid: 124 dB
Supercardioid: 123 dB

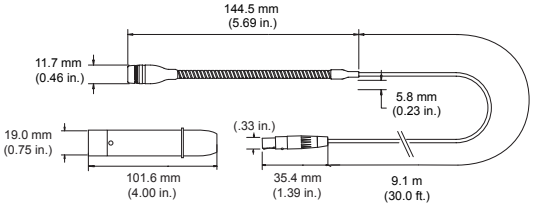
Equivalent Output Noise (A-weighted)
Cardioid: 28 dB SPL
Supercardioid: 27 dB SPL

Signal-to-Noise Ratio (referenced at 94 dB SPL at 1 kHz)
Cardioid: 66 dB
Supercardioid: 68 dB

Dynamic Range (1 kΩ load at 1 kHz)
96 dB

Common Mode Rejection (10 Hz to 100 kHz)
45 dB minimum





Preamplifier Output Clipping Level (1% THD)
–6 dBV (0.5 V)

Polarity
Positive sound pressure on diaphragm produces positive voltage on pin 2 relative to pin 3 of output XLR connector.

Cable
9 m (30 ft)

Environmental Conditions
Operating Temperature: -18–57 °C (0–135 °F)
Storage Temperature: -29–74 °C (-20–165 °F)
Relative Humidity: 0–95%

Power Requirements
11–52 Vdc phantom, 2.0 mA

Note: Yellowing of any plastic material can be caused from cigarette smoke, ultra violet rays, and other chemical interactions. Once plastic has yellowed, there typically is no cleaning method that will restore the whiteness.

Certifications

Meets essential requirements of all applicable European Directives.

Eligible for CE marking.

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:
Shure Europe GmbH
Headquarters Europe, Middle East & Africa
Department: EMEA Approval
Jakob-Dieffenbacher-Str. 12
75031 Eppingen, Germany
Phone: 49-7262-92 49 0
Fax: 49-7262-92 49 11 4
Email: info@shure.de

Accessories

Furnished Accessories

Black Snap-Fit Foam Windscreens (4) for Beta 98, Beta 98A, Beta 98/S, Beta 98D/S, Beta 98H/C, MX183, MX184, MX185, MX202, WH30, WL183, WL184 and WL185	**RK183WS**
White Snap-Fit Windscreen	**95B2064**
Preamplifier Kit, Plate Mounted, White (MX202BP and MX202WP)	**RK202PK**
Stand Adaptor (MX202B and MX202W)	**65B1752**

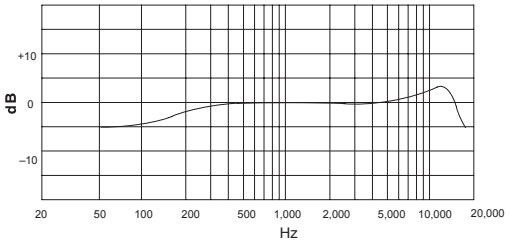
Optional Accessories

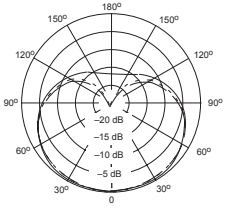
Small Black Desk/Table Stand for MX202 Microphones	**A202BB**

Replacement Parts

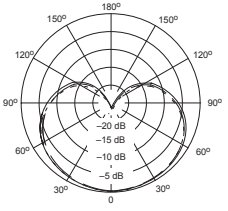
RFI Resistant, Inline Preamp for all MX Models (Black)	**RK100PK**
RFI Resistant, Inline Preamp for all MX Models (White)	**RK100PKW**
Black or White Omnidirectional Cartridge for all MX- (Microflex®) Models and WL183	**R183B**
White Omnidirectional Cartridge for MX- (Microflex®) Models	**R183W**
Black or White Supercardioid Cartridge for all MX- (Microflex®) and WL183, WL184 and WL185 Models	**R184B**
White Supercardioid Cartridge for MX- (Microflex®) Models	**R184W**
Black or White Cardioid Cartridge for WL185 and all MX- (Microflex®) Models	**R185B**
White Cardioid Cartridge for MX- (Microflex®) Models	**R185W**
Strain Relief (MX202BP and MX202WP)	**80A479**
Clamp (MX202B and MX202WP)	**80A476**
Hang Clip	**80B489**

CARDIOID



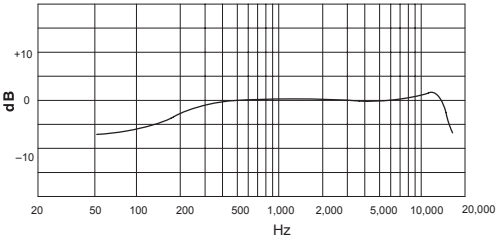


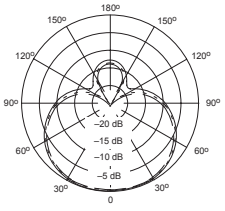
250 Hz
500 Hz
1000 Hz



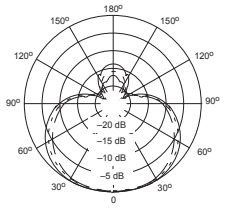
2500 Hz
6400 Hz
10000 Hz

SUPERCARDIOID



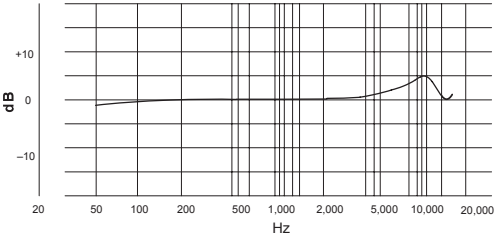


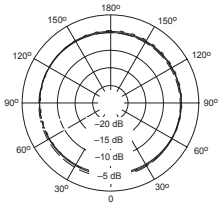
250 Hz
500 Hz
1000 Hz



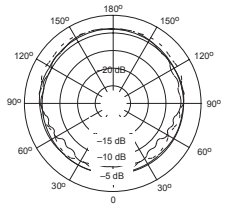
2500 Hz
6400 Hz
10000 Hz

OMNIDIRECTIONAL





250 Hz
500 Hz
1000 Hz



2500 Hz
6400 Hz
10000 Hz

SHURE®

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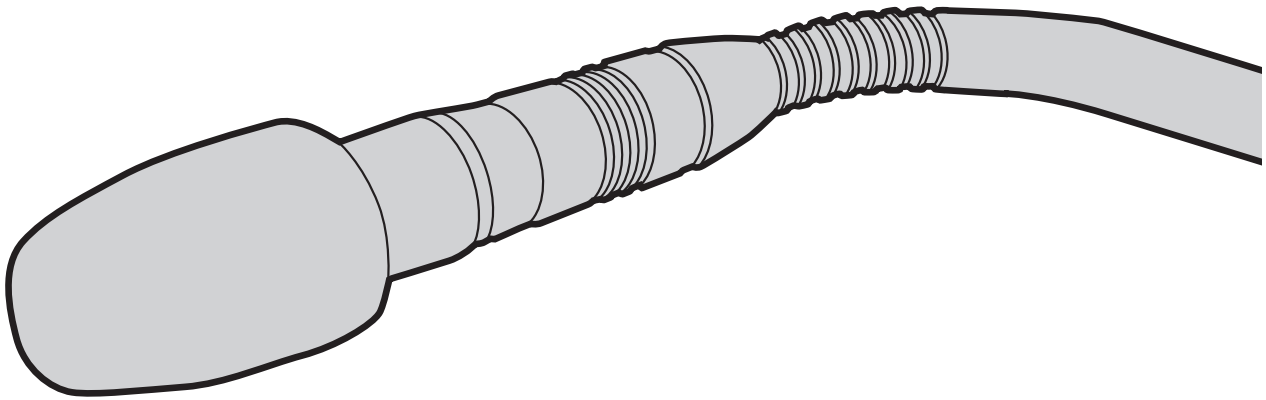
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Fax: +49-7262-9249114
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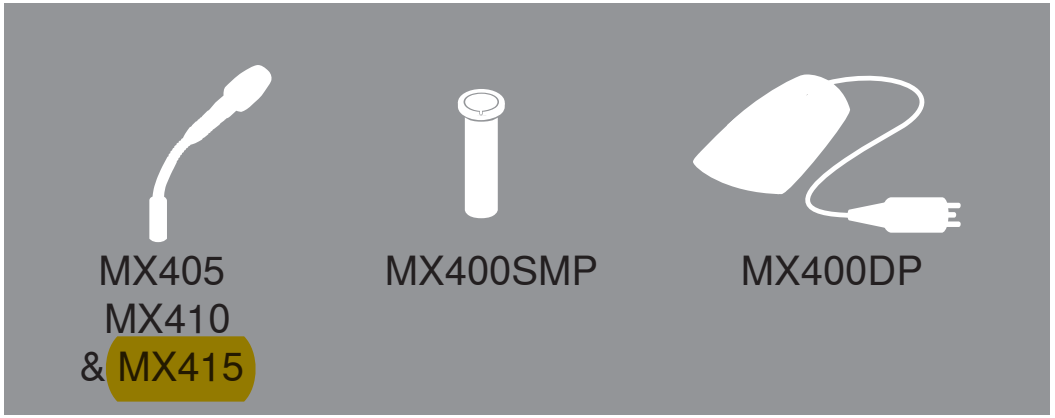
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Microflex®

Gooseneck Microphones and Accessories





SHURE®

www.shure.com

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27A15587 (Rev. 2)

Gooseneck Microphones and Accessories

General Description

Shure MX405, MX410, and MX415 miniature gooseneck microphones are suitable for boardrooms and other sites where aesthetics are important. Permanently mount them at conference tables or lecterns using the MX400SMP surface mount, or use the MX400DP moveable desktop base, which includes a configurable mute button with logic output. Also compatible with the MX890 wireless desktop base.

Features

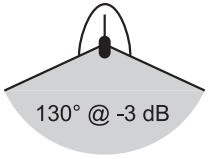
- Low profile, aesthetic design
- Choice of bi-color indicator or light ring
- Wide dynamic range and smooth frequency response
- RF filtering with CommShield® technology
- Logic input for external LED control

Model Variations

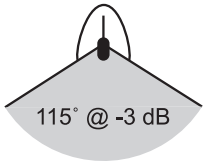
These gooseneck microphones are available in different lengths with a cardioid or supercardioid cartridge and either a bi-color LED status indicator or a light ring.

Coverage and Placement

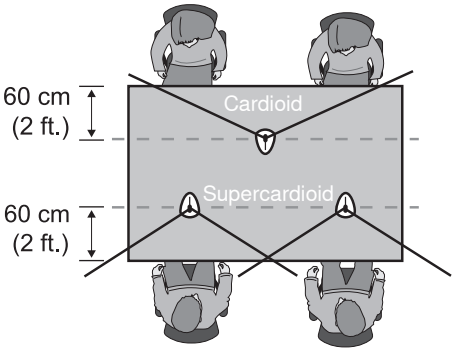
- **Cardioid:** One microphone for one or two people.
- **Supercardioid:** One microphone for each person.



Cardioid



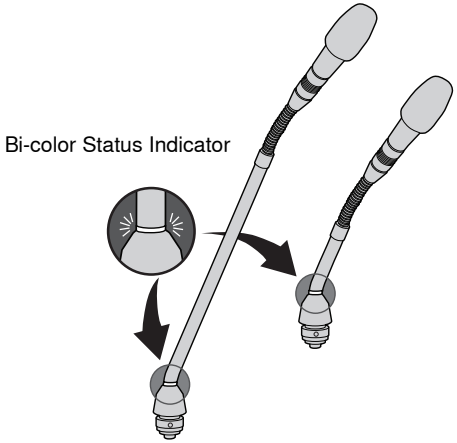
Supercardioid



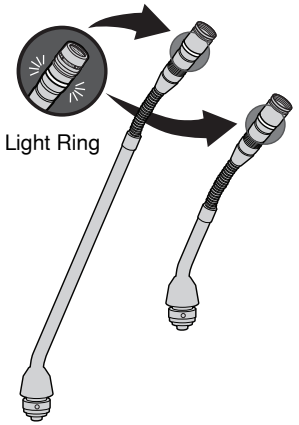
Mic Placement

Status Indicators

MX405, MX410, MX415

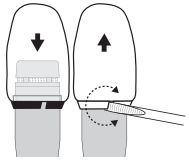


MX405R, MX410R, MX415R

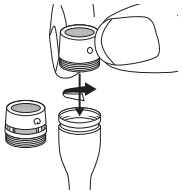


Snap-Fit Windscreen

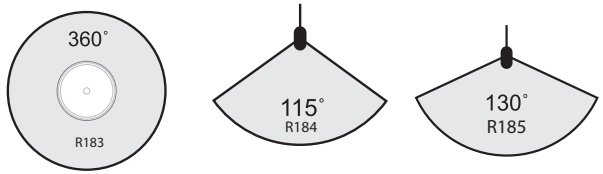
- Snap into the groove below the cartridge.
- To remove, spread the gap with a screwdriver or thumbnail.
- Provides 30 dB of "pop" protection.



Interchangeable Cartridges



Microflex microphones use interchangeable cartridges that allow you to choose the polar pattern for different installations.



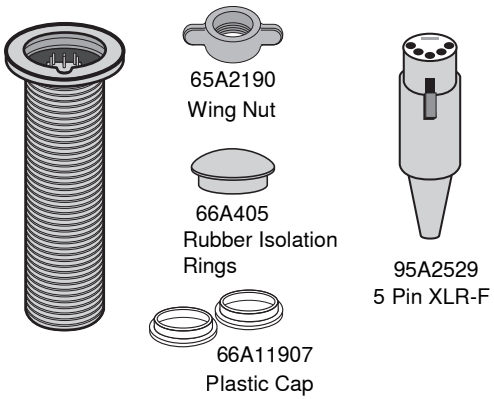
Omnidirectional | Supercardioid | Cardioid

Cartridge Polar Patterns

MX400SMP Surface Mount Preamp

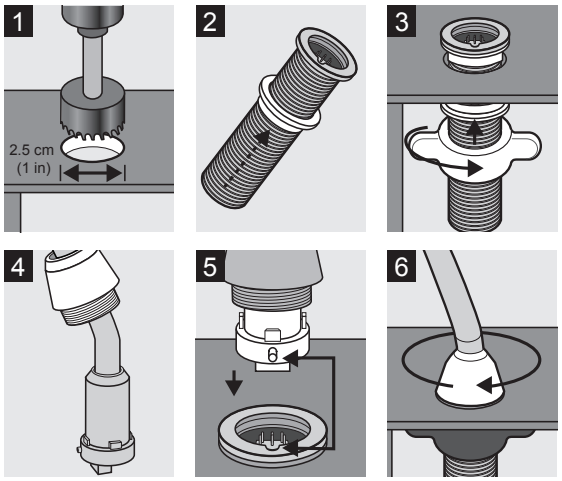
Permanent mount for conference tables or lecterns. Includes LED logic input.

Furnished Accessories



MX400SMP Surface Mount Kit

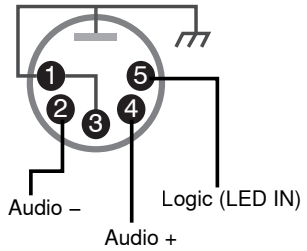
Installation



Note: Over tightening the wing nut reduces shock isolation.

Caution: To prevent bending pins, line up key with notch and seat connector fully before twisting to lock.

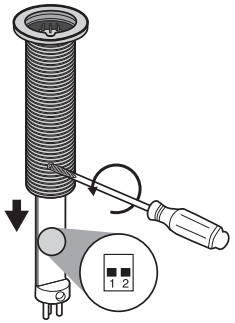
MX400SMP Pin Assignments



5-Pin XLR

DIP Switches

Set DIP Switch 1 up to engage the low cut filter, which attenuates frequencies by 6 dB per octave below 150 Hz.



Switch	Down (default)	Up
1	Full frequency response	Low cut filter
2	LED steady	LED flashes

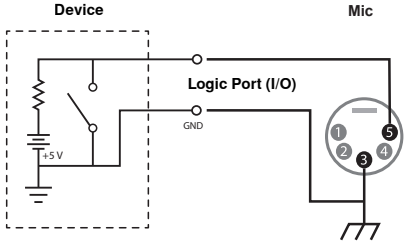
LED Logic

To operate the LED indicator, use the included 5-pin XLR connector to wire the microphone to an automatic mixer or other logic device.

Note: Connect the LED IN to the gate output to illuminate the LED when the channel is gated on.

Do not use the relay ports on Crestron and AMX devices. Use the I/O logic ports instead.

The LED logic may not function when connecting to devices that do not have internal "pull-up resistor" logic circuits, such as ClearOne DSP products. External pull-up resistor circuits can be added for each microphone. Visit www.shure.com/FAQ for detailed instructions.



Logic Connection

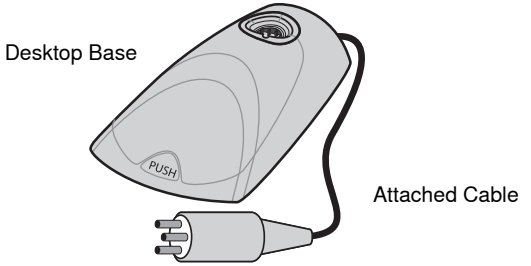
Connection to device with internal "pull-up resistor" logic circuit

MX405, 410, 415	
Logic LOW (0 V)	Logic HIGH (+5 V)
	
Green	Red

MX405R, 410R, 415R	
Logic LOW (0 V)	Logic HIGH (+5V)
	
Red	Off/flashing

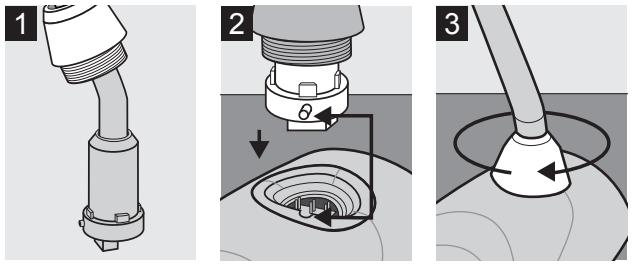
MX400DP Desktop Base

The MX400DP moveable desktop base includes a configurable mute button with logic output.



MX400DP Desktop Base

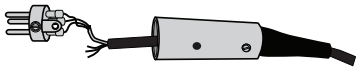
Installation



Caution: To prevent bending pins, line up key with notch and seat connector fully before twisting to lock.

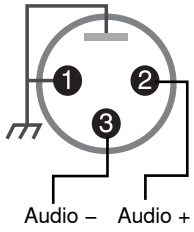
Cable

The 20 ft. attached cable is terminated with a 3-pin XLR connector. For logic applications, open the XLR connector to access the three unterminated logic conductors.



Wire Color	Function
Red	Audio +
Black	Audio –
White	SWITCH OUT
Orange	LED IN
Green	Logic Ground
Shield	Mic Common Ground

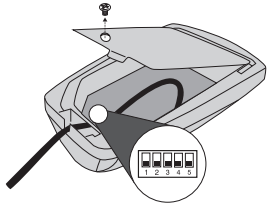
MX400DB Pin Assignments



3-Pin XLR

MX400DP DIP Switches

Caution: Failure to reinstall the setscrew will reduce RF immunity.

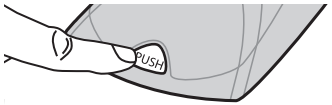


Switch	Down (default)	Up
1	Momentary	Toggle
2	Push-to-Mute	Push-to-Talk
3	Local Mute	Logic Control
4	Full Frequency Range	Low Cut Filter (attenuates 6dB per octave below 150 Hz)
5	LED Steady	LED Flashes

Local Mute Control

The microphone ships configured for local (manual) mute control (**DIP Switch 3 down**). In this mode, the PUSH button on the microphone mutes the audio signal at the microphone. Audio is not sent to the audio outputs when muted.

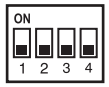
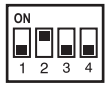
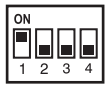
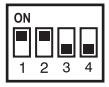
In this configuration, the LED color reflects the microphone state, as controlled by the user with the PUSH button.



Microphone Status	MX405, 410, 415	MX405R, 410R, 415R
Active	Green	Red
Muted	Red	Off/flashing

Button Configuration

For local mute control operation, use DIP Switches 1 and 2 to configure the button behavior.

Button Behavior	SWITCH OUT Logic Signal	DIP Switch Setting
Momentary: push-to-mute (as shipped).	When pushed, SWITCH OUT (red wire) falls to 0 V. When released, SWITCH OUT returns to +5 V.	
Momentary: push-to-talk		
Toggle: Push and release to toggle the microphone on or off. Mic is **active** when powered on.	Push and release sets SWITCH OUT to 0 V. Push again to toggle back to +5 V.	
Toggle: Push and release to toggle the microphone on or off. Mic is **mute** when powered on		

Logic Mute Control (Automatic Mixing)

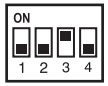
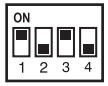
Set **DIP Switch 3 up** to configure the microphone for logic control applications where audio from the microphone is muted by an external device, such as an automatic mixer. In this mode, the local mute function of the PUSH button is bypassed (the microphone always sends audio) and the LED does not respond directly from pushing the button.

As required by the installation specifications, wire the SWITCH OUT conductor in the microphone cable to the automatic mixer or other TTL logic device. When the talker presses the button on the microphone, it changes the voltage level at the SWITCH OUT conductor, which signals the device to mute audio for that channel or perform some other function.

To control the LED on the microphone, wire the LED IN conductor to the gate output on the automatic mixer (or any TTL logic device).

Button Configuration

For logic control operation, DIP Switch 1 determines the button behavior (DIP Switch 2 has no effect).

Button Behavior	DIP Switch Setting
Momentary: When pushed, SWITCH OUT (red wire) falls to 0 V. When released, SWITCH OUT returns to +5 V.	
Toggle: Push and release sets SWITCH OUT to 0 V. Push again to toggle back to +5 V.	

Controlling the LED Using Logic LED IN

When configured for logic mute control, connect the LED IN conductors to an external switch, relay, or a TTL gate (gate out) on an automatic mixer. The MX400DB contains an internal pull-up resistor circuit.

- The LED illuminates **green**/**red** when the MX396 LED IN is **grounded** (orange wire connected to the green wire).
- The LED illuminates **red**/**off** when LED IN is **lifted** (orange wire is NOT connected to the green wire).

Preamp Gain

If necessary, the preamplifier gain can be reduced by 12 dB. Contact an authorized Shure service center for information.

Specifications

Cartridge Type

Electret Condenser

Frequency Response

50–17000 Hz

Polar Pattern

MX405/C, MX410/C, MX415/C	Cardioid
MX405/S, MX410/S, MX415/S	Supercardioid

Output Impedance

170 Ω

Output Configuration

Active Balanced

Sensitivity
@ 1 kHz, open circuit voltage

Cardioid	–35 dBV/Pa (18 mV)
Supercardioid	–34 dBV/Pa (21 mV)

1 Pa=94 dB SPL

Maximum SPL
1 kHz at 1% THD, 1 kΩ load

Cardioid	121 dB
Supercardioid	120 dB

Equivalent Output Noise
A-weighted

Cardioid	28 dB SPL
Supercardioid	27 dB SPL

Signal-to-Noise Ratio
Ref. 94 dB SPL at 1 kHz

Cardioid	66 dB
Supercardioid	68 dB

Dynamic Range
1 kΩ load, @ 1 kHz

93 dB

Common Mode Rejection
10 to 100,000 kHz

45 dB, minimum

Preamplifier Output Clipping Level
at 1% THD

–8 dBV (0.4 V)

Polarity

3-pin XLR	Positive sound pressure on diaphragm produces positive voltage on pin 2 relative to pin 3 of output XLR connector
5-pin XLR	Positive sound pressure on diaphragm produces positive voltage on pin 4 relative to pin 2 of output XLR connector

Net Weight

MX405	0.054 kg (0.119 lbs)
MX410	0.068 kg (0.150 lbs)
MX415	0.07 kg (0.154 lbs)
MX400DP	0.516 kg (1.138 lbs)
MX400SMP	0.125 kg (0.275 lbs)

Logic Connections

LED IN	Active low (≤1.0V), TTL compatible. Absolute maximum voltage: -0.7V to 50V.
LOGIC OUT	Active low (≤1.0V), sinks up to 20mA, TTL compatible. Absolute maximum voltage: -0.7V to 50V (up to 50V through 3kΩ).

Mute Switch Attenuation

-50 dB minimum

Cable
MX400DP

6.1 m (20 ft) attached cable with shielded audio pair terminated at a 3-pin male XLR and three unterminated conductors for logic control

Environmental Conditions

Operating Temperature	–18–57°C (0–135°F)
Storage Temperature	–29–74°C (–20–165°F)
Relative Humidity	0–95%

Power Requirements
Phantom Power

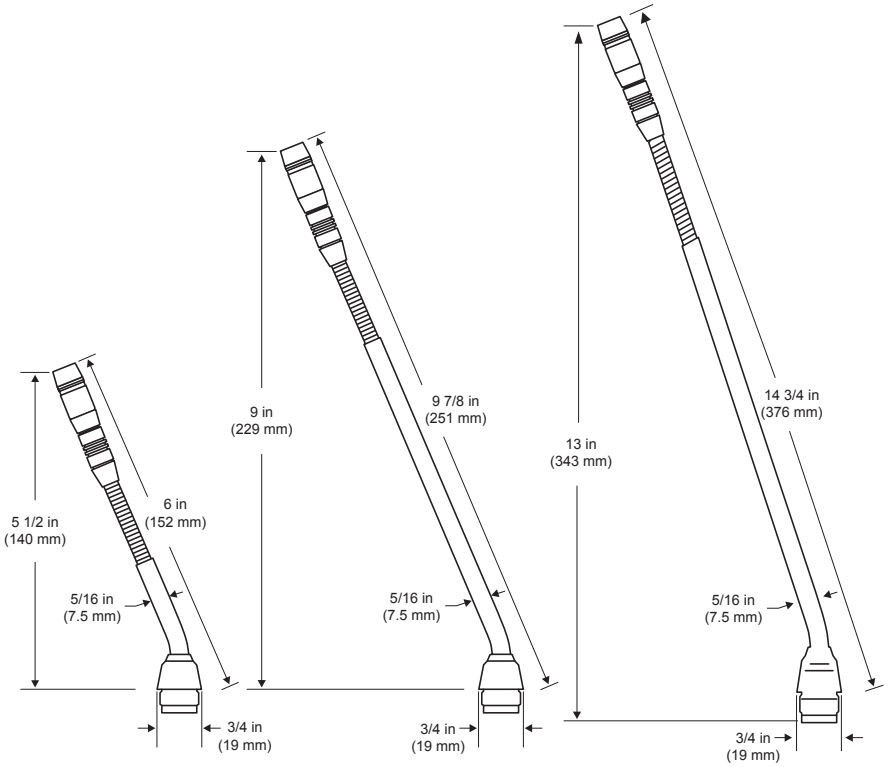
48–52 V DC, 8.0 mA

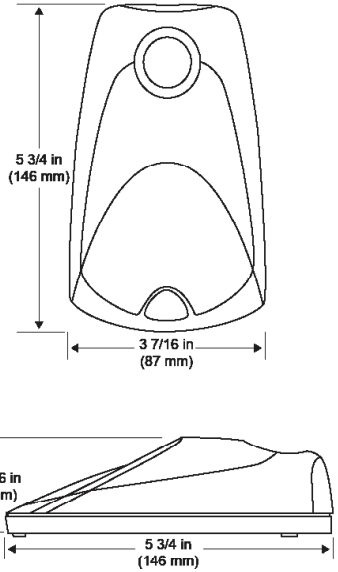
Certifications

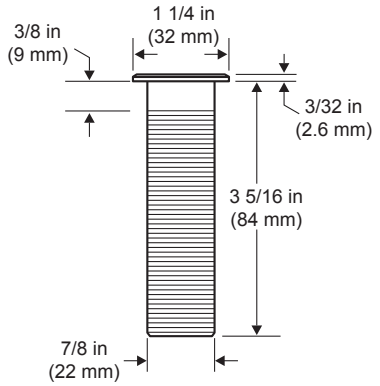
This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

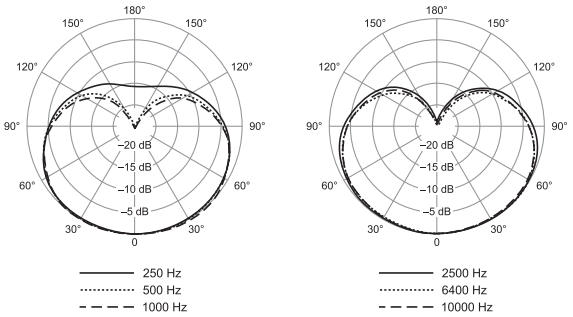
The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

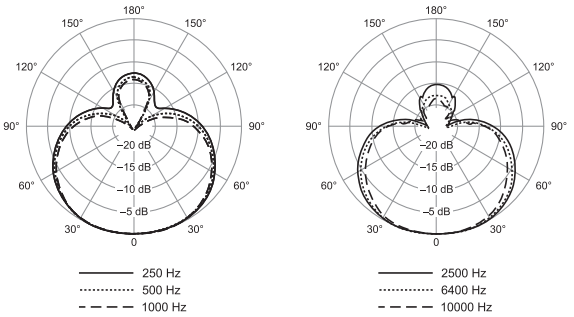
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