

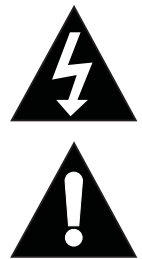
SP-SW5X2 Installation and Operation Guide



Important Safety Instructions

- » Please completely read and verify you understand all instructions in this manual before operating this equipment.
- » Keep these instructions in a safe, accessible place for future reference.
- » Heed all warnings.
- » Follow all instructions.
- » Do not use this apparatus near water.
- » Clean only with a dry cloth.
- » Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- » Use only accessories specified or recommended by SP Controls.
- » Explanation of graphical symbols:

- ◊ Lightning bolt/flash symbol: the lightning bolt/flash and arrowhead within an equilateral triangle symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product enclosure which may be of sufficient magnitude to constitute a risk of shock to a person or persons.
- ◊ Exclamation point symbol: the exclamation point within an equilateral triangle symbol 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 APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.**
- » Use the mains plug to disconnect the apparatus from the mains.
- » **THE MAINS PLUG OF THE POWER CORD MUST REMAIN READILY ACCESSIBLE.**
- » Do not defeat the safety purpose 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 is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of your obsolete outlet. **Caution! To reduce the risk of electrical shock, grounding of the center pin of this plug must be maintained.**
- » Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and the point where they exit from the apparatus.
- » Do not block the air ventilation openings. Only mount the equipment per SP Controls’ instructions.
- » Use only with the cart, stand, table, or rack specified by SP Controls or sold with the equipment. When/ if a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.
- » Unplug this apparatus during lightning storms or when unused for long periods of time.
- » **Caution! Shock Hazard.** Do not open the unit.
- » Refer 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.



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Product Overview

The SP Controls SP-SW5X2 allows the integration of multiple analog and digital devices into a high-definition environment. Mounting options include under table or resting on a shelf.

The SP-SW5X2 allows selection of five different sources, and will simultaneously scale the selected video to HDMI and HDBaseT outputs. The unit features three HDCP compliant HDMI inputs and two VGA inputs with discrete analog audio inputs for each input connection. The VGA inputs can be configured to support YPbPr (component video), YC (S-video), and C (composite video) video formats. There are seven fixed output resolutions to pick from, and several aspect ratio modes, which will ensure your content is displayed properly. The HDBaseT output will allow you to extend audio, video, and control signals up to 60m away.

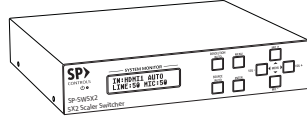
The SP-SW5X2 offers unique audio options designed to simplify your installation. All audio inputs are embedded into the HDMI and HDBaseT streams, so you can use your display speakers for audio. Additionally, the line level output can be used for reinforcement. A balanced input is provided (line or microphone level) which is mixed with the source audio to provide voice lift capabilities; while the volumes of the mic and source can be individually controlled.

The SP-SW5X2 can be controlled in many different ways. When the VGA inputs are defined as PC signal inputs, the SP-SW5X2 can be configured to automatically switch to an input once connected to the switcher; once a device is removed, the SP-SW5X2 will switch to the first active input with HDMI inputs taking priority. The front panel offers source selection, output resolution, and volume control. Third party control systems can utilize RS232 rear panel, RS232 extended (with a compatible HDBaseT receiver), and rear panel IR control. CEC enabled source devices can be controlled from a CEC enabled display.

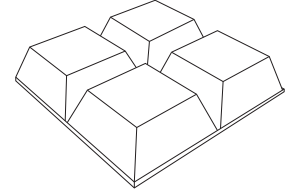
Package Contents

Please verify the following items are in the shipping box prior to installation of the SP-SW5X2.

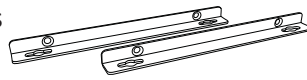
SP-SW5X2 Switching Scaler
1 ea



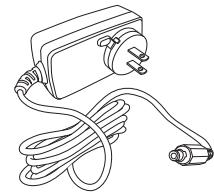
Rubber Shelf Feet
4 ea



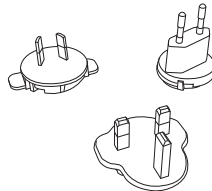
Mounting Rails with Screws
2 ea



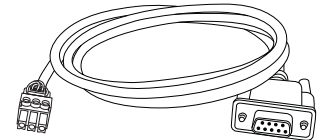
12V DC 2A Power Supply
1 ea



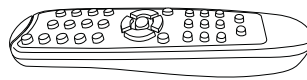
AU, EU, and UK AC
Adapters
1 ea



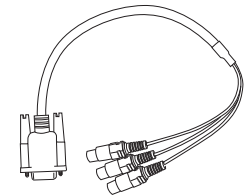
RS232 Cable
1 ea



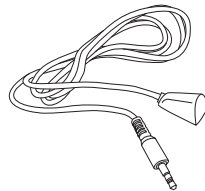
Infrared Remote Control
with 2 AAA Batteries
1 ea



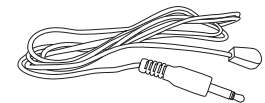
VGA to YPbPR Cables
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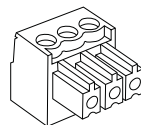
IR Receiver
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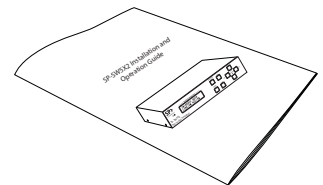
IR Emitter
1 ea



Removable Terminal Blocks
(installed on scaler)
7 ea

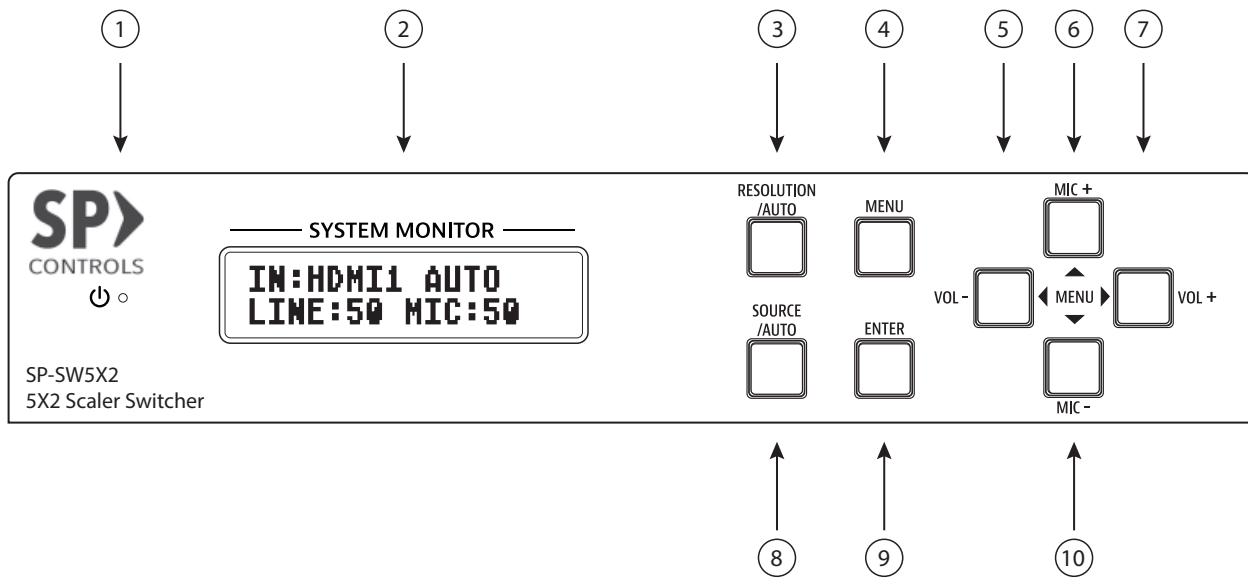


SP-SW5X2 Installation
and Operation Guide
1 ea



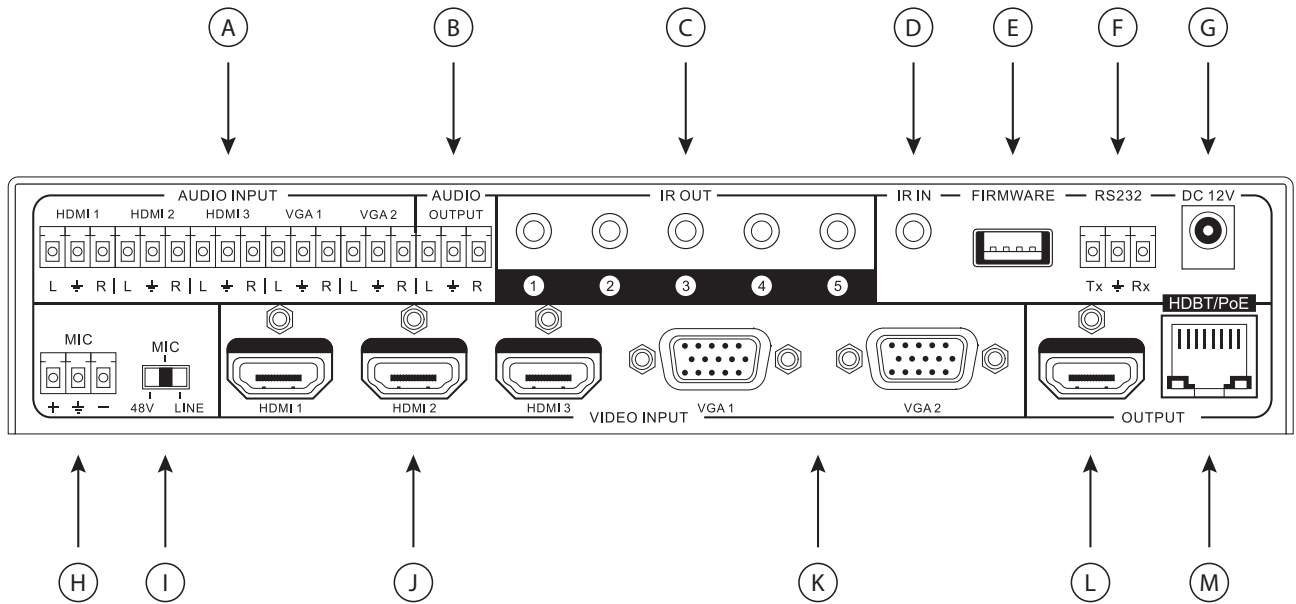
Front and Rear Panels

Front Panel



1. Power indicator LED
2. LCD screen
3. Resolution selection button
4. Menu button
5. Source volume down button (Menu Left)
6. Microphone volume up button (Menu Up)
7. Source volume up button (Menu Right)
8. Source select button
9. Menu "Enter" button
10. Microphone volume down button (Menu Down)

Rear Panel

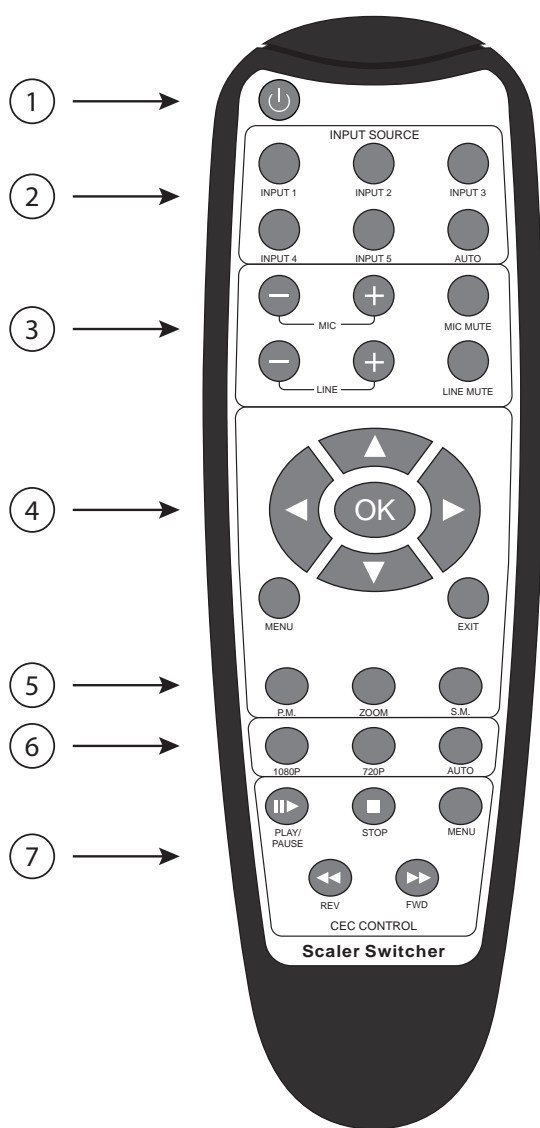


- A. Unbalanced analog audio inputs
- B. Unbalanced analog audio output
- C. IR outputs
- D. IR input
- E. Firmware update port
- F. RS232 input
- G. 12V DC input
- H. Microphone input
- I. Microphone input selector
- J. HDMI inputs
- K. VGA/analogue video inputs
- L. HDMI output
- M. HDBaseT with PoE output

IR Remote

The included IR remote performs all of the functions available on the front panel of the SP-SW5X2 plus CEC control for compatible sources. Please see page 18 for information on controlling the switching scaler from the front panel and the IR remote.

The remote control requires two AAA batteries, which are included.



1. Power on/off
2. Input source select buttons
3. Microphone and source volume controls
4. Menu controls
5. Video and audio preset select buttons
6. Video output mode select buttons
7. CEC control buttons

Installation Instructions

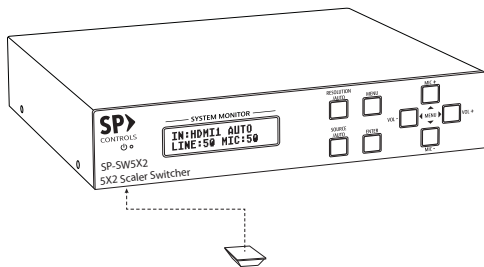
Quick Start

1. Mount the switching scaler
2. Connect sources
3. Connect audio inputs (optional)
4. Connect displays
5. Connect microphone input (optional)
6. Connect audio output (optional)
7. Connect control (optional)
8. Apply power

Mount the Switching Scaler

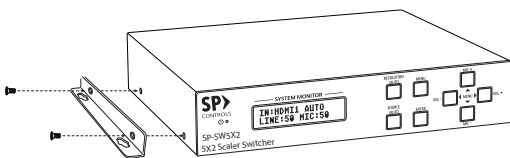
At least 2 inches of free air space is required on both sides of the SP-SW5X2 for proper side ventilation. Avoid mounting the SP-SW5X2 near a power amplifier or any other source of significant heat.

Shelf Mounting Instructions



Attach the supplied shelf feet to the bottom of the SP-SW5X2.

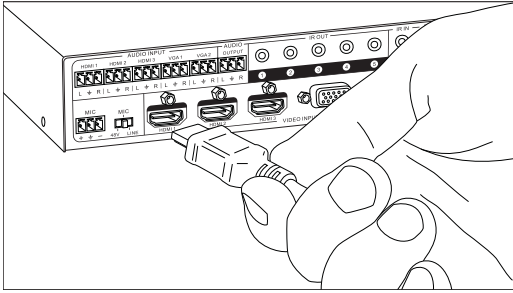
Table Mounting Instructions



Attach the supplied mounting rails to the sides of the SP-SW5X2. Once the rails are installed, the scaler is ready to be mounted under a table.

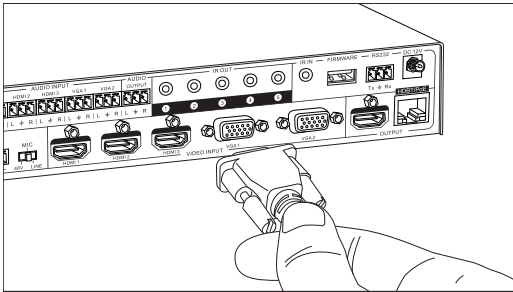
Connect Sources

HDMI Inputs



Connect the source devices to HDMI inputs using HDMI cables that are less than or equal to 5 meters in length. For source devices that are further away, an HDMI extension device will be required to complete the connection.

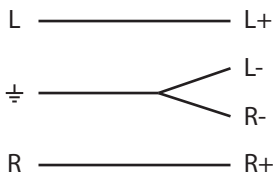
VGA/Analog Video Inputs



Connect the source devices to VGA inputs using VGA cables that are less than or equal to 5 meters in length. For source devices that are further away, a VGA extension device will be required to complete the connection.

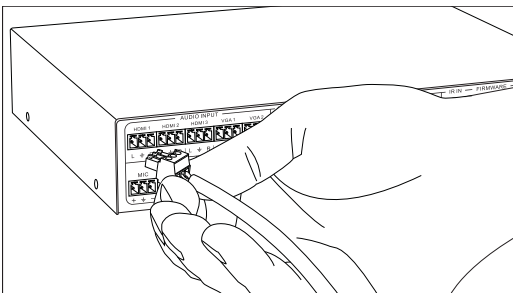
Use the supplied adapter cable (VGA to YPbPr) if the source is an analog video signal such as component or composite video (yellow connector on source to red connector on VGA to YPbPr).

Connect Audio Inputs (Optional)



If the analog audio inputs are to be used in the installation, connect the Left, Right, and Ground reference wires to the removable 3-pole terminal block.

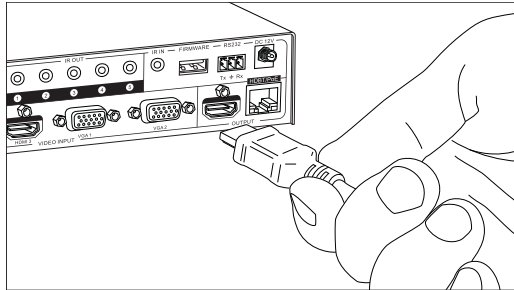
Please see page 21 to configure the analog audio inputs for HDMI source devices.



Insert the removable 3-pole terminal block to the appropriate input zone terminal.

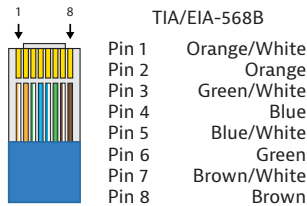
Connect Displays

HDMI Output



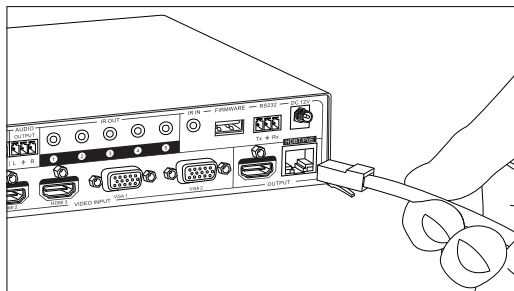
Connect the display devices to HDMI outputs using HDMI cables that are less than or equal to 5 meters in length. For display devices that are further away, it is highly recommended to utilize the HDBaseT output.

HDBaseT Output



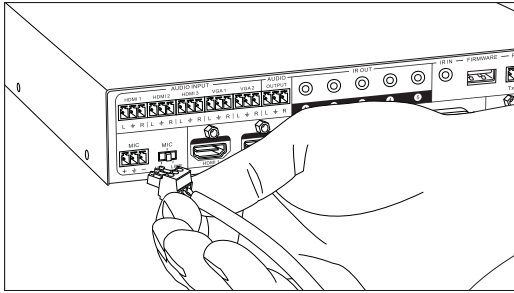
For all HDBaseT cabling, the EIA/TIA-568B crimp pattern must be used on Category 6 or greater cable. In areas with large amounts of electromagnetic (EM) or radio frequency (RF) interference, a shielded variety of Category 5e or greater cable is recommended with shielded connectors on both ends of the selected cable.

The HDBaseT output provides 15 watts of Power over Ethernet, which eliminates the need for a power supply with a compatible HDBaseT receiver. SP Controls recommends using the SP-HDBT60-SWR for installations which require remote power.

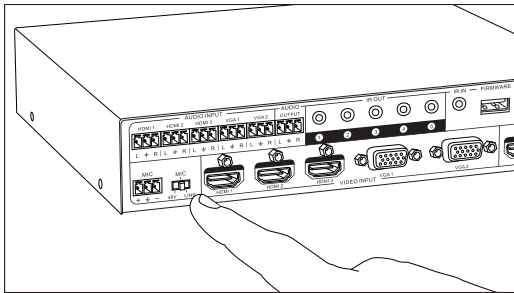


Connect the HDBaseT receiver to the display per the manufacturer's instructions. Connect the HDBaseT cable to the scaler and the HDBaseT receiver.

Connect Microphone Input (Optional)



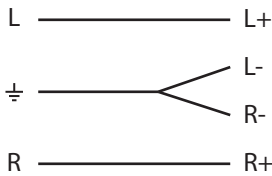
Insert the removable 3-pole terminal block to the MIC input terminal.



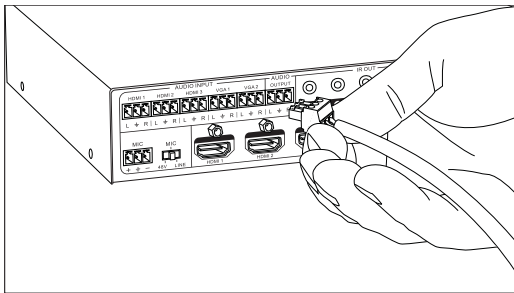
Set the MIC switch to the proper setting for the microphone input source.

48V	48V phantom power
MIC	No phantom power
LINE	No gain needed

Connect Audio Output (Optional)



If the analog audio output is to be used in the installation, connect the Left, Right, and ground reference wires to the removable 3-pole terminal block.



Insert the removable 3-pole terminal block to the output zone terminal.

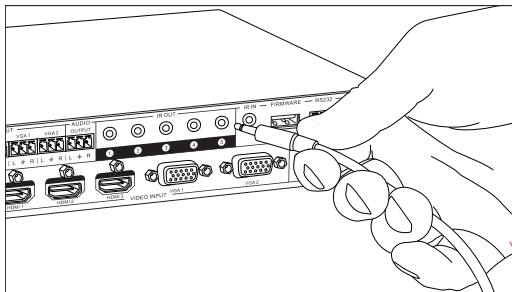
Connect IR Control (Optional)

The SP-SW5X2 has an advanced bidirectional IR control protocol through the HDBaseT output port, which allows for the control of the sources, displays, and presentation switcher. SP Controls recommends using the SP-HDBT60-SWR for installations which require IR extension.

Only use the included IR components, IR transmitter or IR receiver with the SP-SW5X2. Third party 12V DC IR components are not compatible with the SP-SW5X2.

Source Device and Scaler Control via Remote IR

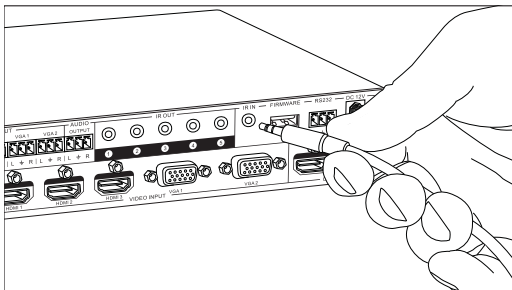
An IR signal passed from the display location through the HDBaseT connection can provide control of the source device. The IR signal from the remote display location can also control the switching of the scaler.



Attach the plastic end of the IR receiver to the source device. Insert the TS 3.5 mm plug of the IR receiver to the IR output port (IR OUT) of the switching scaler for the source device to control.

Remote Display and Scaler Control via Local IR

An IR signal may be passed to a remote display location through the HDBaseT connection. In order to control the SP-SW5X2 via IR or extend an IR signal to a remote display, the included IR receiver must be connected to the IR input port (IR IN) of the scaler.



Insert the TRS 3.5 mm plug of the IR receiver to the IR input port (IR IN) of the scaler.

Connect RS232 Control (Optional)

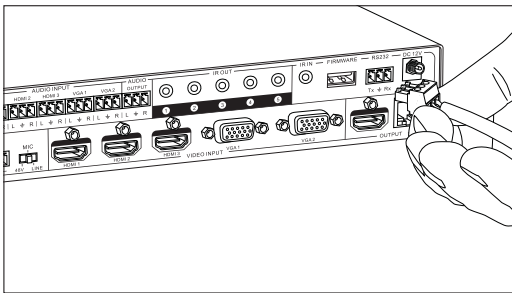
In addition to traditional RS232 control, the SP-SW5X2 has an advanced RS232 control mechanism which allows RS232 tunneling through the HDBaseT output port to control remote devices. This same signal path allows the SP-SW5X2 to be controlled from a remote location. SP Controls recommends using the SP-HDBT60-SWR for installations which require RS232 extension.

See page 25 for all available control commands for the SP-SW5X2.

Scaler and Remote Device Control via Local RS232

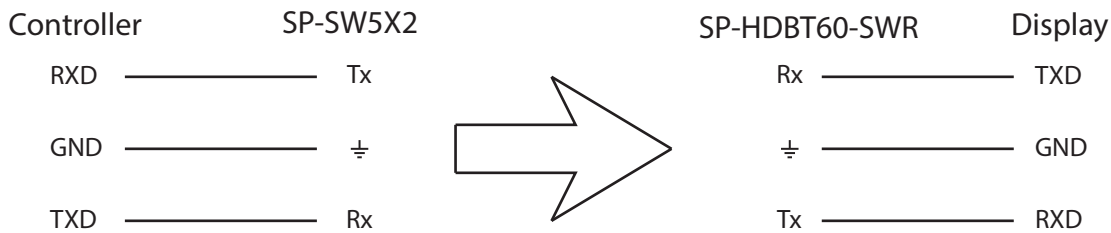
The RS232 control port requires a standard straight-through serial cable for operation, which is included with the product. The default settings for the RS232 port are:

- 9600 baud
- 8 Data Bits
- 1 Stop Bit
- Parity = none



Connect the included straight-through serial cable between the RS232 port on the SP-SW5X2 and the controller.

To use the RS232 extension capabilities of the SP-SW5X2, simply send the RS232 command of the remote display to the SP-SW5X2. Consult the manual of the control device(s) to determine which pins the TX/RX signals are carried on. Be sure to always connect TX to RX and RX to TX.



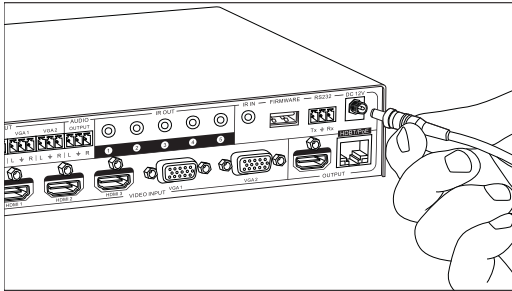
Remote Scaler RS232 Control via HDBaseT

The SP-SW5X2 may be controlled from a remote location via a compatible HDBaseT receiver with RS232 control pass-through. To enable this feature, send the following command to the local RS232 input of the SP-SW5X2:

50788%

To return to default RS232 functionality, send 50787% to the local RS232 input port.

Apply Power

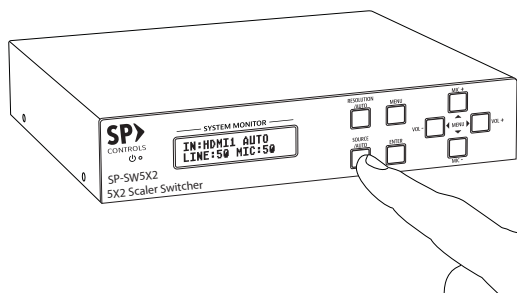


Plug the power supply into the power input port on the rear of the switching scaler. Twist the locking ring clockwise to prevent accidental disconnection of power.

Front Panel and IR Remote Operation

Source Selection

When set to Auto Switch mode, the SP-SW5X2 will automatically switch a newly added input connection. When that connection is removed, it will automatically switch to the lowest numbered input with an active video connection where HDMI takes priority over VGA. The SP-SW5X2 will track which inputs have active video signals to reduce the delay when automatically switching to an input when an active video source is removed.

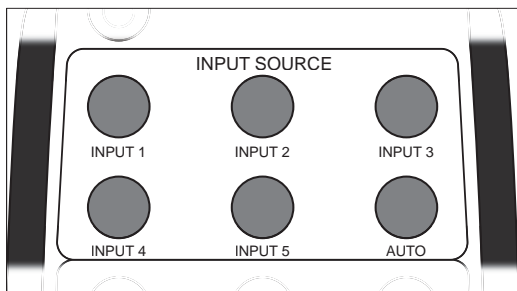


Auto Switch Selection:

Press and hold the Source/Auto button for 15 seconds to enable the Auto Switching mode of the SP-SW5X2. This function will not be available if either of the VGA ports are set to an alternate analog video format.

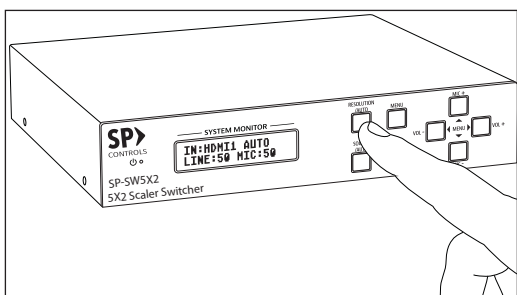
Manual Selection:

Press the Source/Auto button to select the desired input.



The included IR remote features discrete input selection buttons. The Auto button on the IR remote will cycle between Auto and Manual operation.

Output Resolution Selection

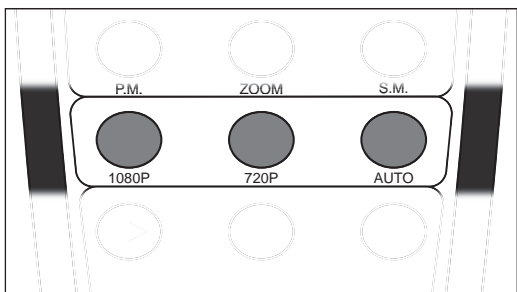


Auto Selection:

Press and hold the Resolution/Auto button for 15 seconds to enable the SP-SW5X2 to scale the output resolution to the preferred settings of the display.

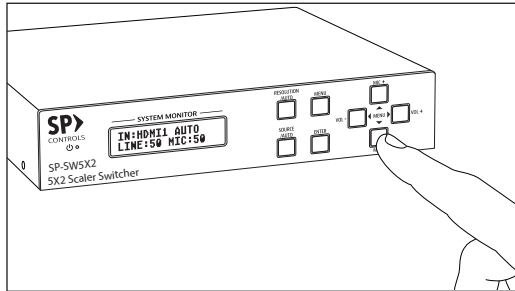
Manual Selection:

Press the Resolution/Auto button to cycle through the preset video output resolutions.

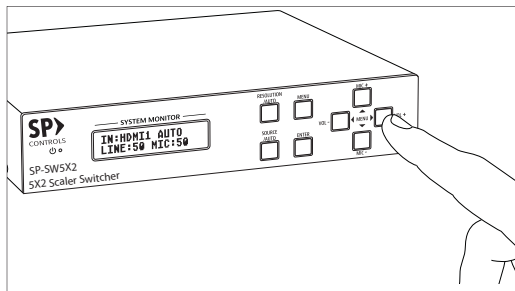


The IR remote features discrete output resolutions for 720p and 1080p. The Auto button on the IR remote will scale the output resolution to the preferred settings of the display.

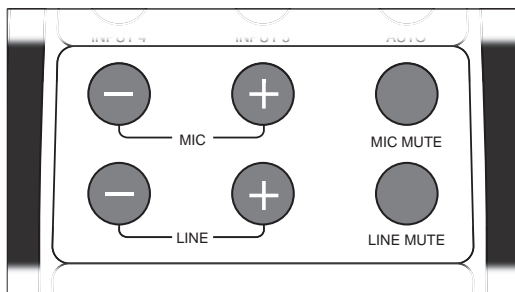
Volume Control



Press VOL- and VOL+ to adjust the audio level of the source volume control.

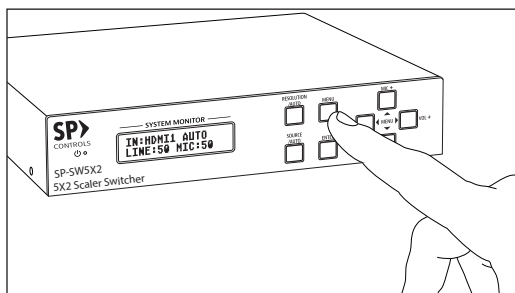


Press MIC- and MIC+ to adjust the audio level of the microphone volume control.



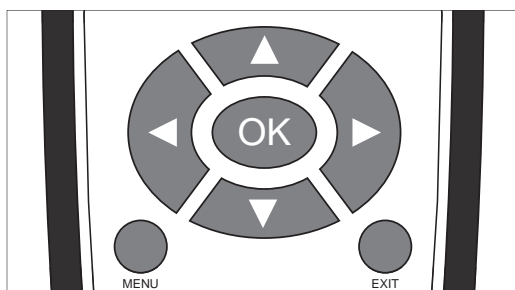
In addition to source (LINE) and microphone (MIC) volume control adjustments, the IR remote features mute buttons for the audio sources.

System Menu



Press the MENU button to enter the system menu. The source and microphone volume controls also function as menu arrows while in the system menu. Press the ENTER button to make a selection within the interface.

After a few seconds of no interaction, the menu will go away.

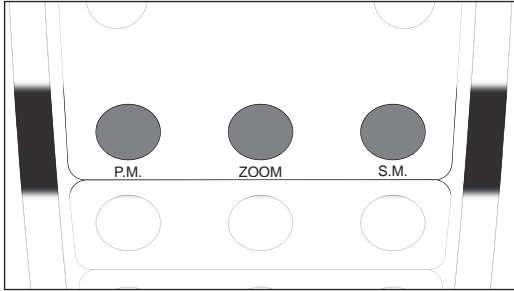


Press the MENU button to enter the system menu. The arrows surrounding the OK button allow navigation within the system menu. Press the OK button to make a selection within the interface.

After a few seconds of no interaction, the menu will go away. The EXIT button will immediately terminate the menu.

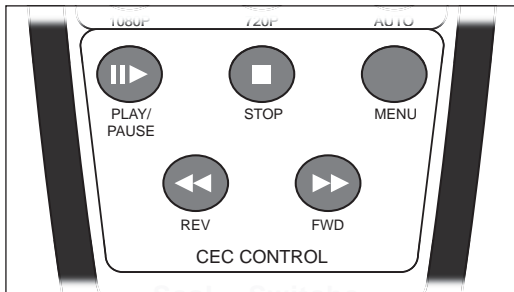
Additional IR Remote Functions

Picture, Zoom, and Sound Modes



- P.M. Cycles through all Picture Modes (see page 22).
- ZOOM Cycles through all Aspect Ratios (see page 22).
- S.M Cycles through all Sound Modes (see page 23).

CEC Control



The IR remote includes CEC control commands for CEC-enabled HDMI source devices.

Menu Navigation

The menu system of the SP-SW5X2 provides a wide array of options to customize the installation of the product regardless of customer needs.

Upon entering the menu, navigating left or right will provide four different submenus: *Options*, *Picture*, *Sound*, and *Setup*. Pressing ENTER on the front panel or OK on the remote will cycle through options or enter another menu if multiple configuration settings are available.

Options Menu

The Options menu features output image adjustment, analog video input configuration, HDMI audio configuration, and software update.

Output Adjust

Selecting Output Adjust will open another menu which will change the vertical and horizontal position, width, and height of the output image. The default value is Off. Pressing right or left will cycle to On. Values range from 0 to 100. Pressing MENU will exit the submenu.

Off	On
Position X 50	Position X 0-100
Position Y 50	Position Y 0-100
Width 50	Width 0-100
Height 50	Height 0-100

Analog Video Input Configuration

Pressing ENTER or OK will cycle the analog video input modes: VGA, YPbPr (component video), and AV (composite video).

HDMI Audio Configuration

Pressing ENTER or OK will cycle the HDMI audio modes: Embedded or Line (analog audio input).

Software Update

A separate document will provide usage instructions once a new software update is available.

Picture Menu

The Picture menu features per input image adjustments: picture mode, color temperature, aspect ratio, noise reduction (HDMI only), screen settings (VGA only), and color range (HDMI only).

Picture Mode

Selecting Picture Mode will open another menu which will change the contrast, brightness, color, and sharpness of the input image. The default value is Standard. Values range from 0 to 100. Pressing MENU will exit the submenu.

Standard	Mild	User	Dynamic
Contrast 50	Contrast 45	Contrast 0-100	Contrast 60
Brightness 50	Brightness 48	Brightness 0-100	Brightness 50
Color 50	Color 45	Color 0-100	Color 60
Sharpness 10	Sharpness 25	Sharpness 0-100	Sharpness 12
Tint 50	Tint 50	Tint 50	Tint 50

Color Temperature

Selecting Color Temperature will open another menu which will change the color temperature of the input image. The default value is Medium. Values range from 0 to 100. Pressing MENU will exit the submenu.

Cool	Medium	Warm	User
Red 43	Red 50	Red 60	Red 0-100
Green 50	Green 50	Green 50	Green 0-100
Blue 68	Blue 55	Blue 25	Blue 0-100

Aspect Ratio (Zoom)

Selecting Aspect Ratio will open another menu which will change the aspect ratio of the input image. The default value is Native. While VGA only has three aspect ratio selections available, HDMI has seven. Pressing MENU will exit the submenu.

VGA and HDMI: Native, 4:3, 16:9

HDMI only: Zoom 1, Zoom 2, Just Scan, Panorama

Noise Reduction (HDMI Only)

Selecting Noise Reduction will open another menu which will compensate for compression noise of the input image. Available selections are: Off, Low, Middle, High, and Default. Pressing MENU will exit the submenu.

Screen (VGA Only)

Selecting Screen will open another menu which will adjust the input signal processing to clear up various analog distortion issues. Auto Adjust will automatically correct for any input signal issues. Manual adjustments include Horizontal Position, Vertical Position, Size, and Phase where values range from 0 to 100. Pressing MENU will exit the submenu.

Color Range (HDMI Only)

Selecting Color range will cycle between two options: 0-255 (deep color) and 16-235 (standard color).

Sound Menu

The Sound menu features audio adjustments: sound mode, surround sound, and equalizer (EQ).

Sound Mode

Selecting Sound Mode will open another menu which will change the treble and bass levels of the audio output. The default value is Standard. Values range from 0 to 100. Pressing MENU will exit the submenu.

Standard	Music	Movie	Sports	User
Treble 50	Treble 75	Treble 75	Treble 35	Treble 0-100
Bass 50	Base 75	Bass 90	Bass 35	Bass 0-100

Surround Sound

Selecting Surround Sound will open another menu which will present options for surround sound output. Available selections are: Off (stereo audio), Surround (5.1 surround audio), and SRS TruSurround XT (simulated surround sound). Pressing MENU will exit the submenu.

EQ (Equalizer)

Selecting EQ will open another menu which will present options to adjust levels using five frequency bands. Available frequencies are 120Hz, 500Hz, 1.5KHz, 5KHz, and 10KHz where adjustable values range from 0 to 100. Pressing MENU will exit the submenu.

Setup Menu

The Setup menu features on-screen display (OSD) language selection, OSD blending (transparency), HDMI CEC, and OSD duration.

OSD Language

Selecting OSD Language will open another menu which will change the menu language of the SP-SW5X2. The available languages are: English, German, Russian, Chinese, French, Spanish, and Swedish. The default language is English. Pressing MENU will exit the submenu.

Blending

Selecting Blending will open another menu which will present options the menu transparency. The available options are Off, Low, Middle, and High where the default is Off. Pressing MENU will exit the submenu.

HDMI CEC

Selecting HDMI CEC will open another menu which will present options to adjust the operation of CEC. Device List will show which HDMI devices support CEC. Cycling HDMI CEC in the submenu will turn on or off CEC support. Cycling Auto Standby will enable or disable this feature. Pressing MENU will exit the submenu.

OSD Duration

Selecting OSD Duration will open another menu to select the period of time the input name will be visible after switching sources. Available times are Off, 5Sec, 10Sec, and 15Sec. The default is Off. Pressing MENU will exit the submenu.

RS232 Commands

RS232 Settings: 9600 baud, 8 Data bits, 1 Stop bit, Parity = None

There are no spaces between any of the characters in the command string.

<CR> = Carriage return (Hex 0D)

<LF> = Line Feed (Hex 0A)

Video Input Switching and Configuration

Description	Command	Response
Select HDMI 1 input (input 1)	50701%	Switch to HDMI 1<CR><LF>
Select HDMI 2 input (input 2)	50702%	Switch to HDMI 2<CR><LF>
Select HDMI 3 input (input 3)	50703%	Switch to HDMI 3<CR><LF>
Select VGA 1 input (input 4)	50704%	Switch to VGA 1<CR><LF>
Select VGA 2 input (input 5)	50705%	Switch to VGA 2<CR><LF>
Auto switch inputs on	50785%	Auto Switching<CR><LF>
Auto switch inputs off	50786%	Manual Switching<CR><LF>
Set VGA 1 (Input 4) for VGA video	50680%	Input 4 Set & Switch to VGA 1<CR><LF> AND
		Switch to VGA 1<CR><LF>
Set VGA 1 (Input 4) for YPbPr video	50681%	Input 4 Set & Switch to YPbPr 1<CR><LF> AND
		Switch to YPbPr 1<CR><LF>
Set VGA 1 (Input 4) for composite video	50682%	Input 4 Set & Switch to AV 1<CR><LF> AND
		Switch to AV 1<CR><LF>
Set VGA 2 (Input 5) for VGA video	50683%	Input 5 Set & Switch to VGA 2<CR><LF> AND
		Switch to VGA 2<CR><LF>
Set VGA 2 (Input 5) for YPbPr video	50684%	Input 5 Set & Switch to YPbPr 2<CR><LF> AND
		Switch to YPbPr 2<CR><LF>
Set VGA 2 (Input 5) for composite video	50685%	Input 5 Set & Switch to AV 2<CR><LF> AND
		Switch to AV 2<CR><LF>
VGA auto adjust	50606%	VGA Input Auto<CR><LF>

Video Input Customization

Description	Command	Response
Cycle aspect ratio	50608%	Aspect Ratio : 16:9<CR><LF> OR
		Aspect Ratio : 4:3<CR><LF> OR
		Aspect Ratio : auto<CR><LF> OR
		Aspect Ratio : panorama<CR><LF> OR
		Aspect Ratio : justscan<CR><LF> OR
		Aspect Ratio : zoom2<CR><LF> OR
		Aspect Ratio : zoom1<CR><LF>
Set brightness to XX; XX = 00 to 99	502XX%	Brightness: 50<CR><LF>
Set contrast to XX; XX = 00 to 99	503XX%	Contrast: 50<CR><LF>
Set saturation to XX; XX = 00 to 99	504XX%	Saturation: 50<CR><LF>
Set sharpness to XX; XX = 00 to 07	505XX%	Sharpness: 50<CR><LF>
Cycle color temperature	50607%	Color Temperature: medium<CR><LF> OR
		Color Temperature: warm<CR><LF> OR
		Color Temperature: user<CR><LF> OR
		Color Temperature: cool<CR><LF>
Cycle picture mode	50614%	Picture Mode : standard<CR><LF> OR
		Picture Mode : mild<CR><LF> OR
		Picture Mode : user<CR><LF> OR
		Picture Mode : dynamic<CR><LF>

Video Input HDCP Compliance

Description	Command	Response
Turn on HDCP compliance, input HDMI1	50915%	HDMI 1 input HDCP Manual enable<CR><LF>
Turn off HDCP compliance, input HDMI1	50916%	HDMI 1 input HDCP Manual disable<CR><LF>
Turn on HDCP compliance, input HDMI2	50917%	HDMI 2 input HDCP Manual enable<CR><LF>
Turn off HDCP compliance, input HDMI2	50918%	HDMI 2 input HDCP Manual disable<CR><LF>
Turn on HDCP compliance, input HDMI3	50919%	HDMI 3 input HDCP Manual enable<CR><LF>
Turn off HDCP compliance, input HDMI3	50920%	HDMI 3 input HDCP Manual disable<CR><LF>

Video Output Configuration

Description	Command	Response
1360x768 output	50619%	Resolution: 1360x768<CR><LF>
1920x1200 output	50620%	Resolution: 1920x1200<CR><LF>
1600x1200 output	50621%	Resolution: 1600x1200<CR><LF>
1024x768 output	50626%	Resolution: 1024x768<CR><LF>
1280x720 output	50627%	Resolution: 1280x720<CR><LF>
1280x800 output	50628%	Resolution:1280x800<CR><LF>
1920x1080 output	50629%	Resolution: 1920x1080<CR><LF>
Auto adjust output resolution based on display	50782%	modify input hdmi preferred timing<CR><LF> AND rotarySwitch==57<CR><LF> AND Manage HDMI input with preferred timing<CR><LF> AND timing table=[1]<CR><LF> AND Resolution: 1920x1080<CR><LF> AND

Video Output Adjustment

Description	Command	Response
Enable OSD for image adjustments	50678%	Enter Output Position Adjust<CR><LF>
Disable OSD for image adjustments	50679%	Exit Output Position Adjust<CR><LF>
Shift image left	50670%	Output Position Adjust X 50 <CR><LF>
Shift image right	50671%	Output Position Adjust X 50 <CR><LF>
Shift image up	50672%	Output Position Adjust Y 50<CR><LF>
Shift image down	50673%	Output Position Adjust Y 50<CR><LF>
Decrease image width	50674%	Output Width Adjust 50<CR><LF>
Increase image width	50675%	Output Width Adjust 50<CR><LF>
Decrease image height	50676%	Output Height Adjust 50<CR><LF>
Increase image height	50677%	Output Height Adjust 50<CR><LF>

Freeze Video Output

Description	Command	Response
Freeze output image	50655%	Freeze: enable<CR><LF>
Un-Freeze output image	50656%	Freeze: disable<CR><LF>

Audio Input Configuration and Adjustment

Description	Command	Response
Use embedded audio for HDMI 1	50706%	HDMI 1 Audio from Embedded<CR><LF>
Use external audio for HDMI 1	50707%	HDMI 1 Audio from LINE<CR><LF>
Use embedded audio for HDMI 2	50708%	HDMI 2 Audio from Embedded<CR><LF>
Use external audio for HDMI 2	50709%	HDMI 2 Audio from LINE<CR><LF>
Use embedded audio for HDMI 3	50710%	HDMI 3 Audio from Embedded<CR><LF>
Use external audio for HDMI 3	50711%	HDMI 3 Audio from LINE<CR><LF>
Enable HDMI embedded audio output	50648%	Embedded Audio Output: enable<CR><LF>
Disable HDMI embedded audio output	50649%	Embedded Audio Output: disable<CR><LF>
Cycle sound mode	50615%	Sound Mode: standard<CR><LF> OR
		Sound Mode: music<CR><LF> OR
		Sound Mode: movie<CR><LF> OR
		Sound Mode: sports<CR><LF> OR
		Sound Mode: user<CR><LF>

Audio Output Control

Description	Command	Response
Mute AV Audio	50600%	LINE Mute<CR><LF>
Unmute AV Audio	50601%	LINE Unmute<CR><LF>
AV Audio volume up	50602%	LINE Volume: XX<CR><LF>
AV Audio volume down	50603%	LINE Volume: XX<CR><LF>
Set AV Audio to XX; XX = 00 to 60	501XX%	LINE Volume: XX<CR><LF>
Mute MIC audio	50722%	MIC Mute<CR><LF>
Unmute MIC audio	50723%	MIC Unmute<CR><LF>
MIC volume up	50724%	MIC Volume: XX<CR><LF>
MIC volume down	50725%	MIC Volume: XX<CR><LF>
Set MIC volume to XX; XX = 00 to 60	508XX%	MIC Volume: XX<CR><LF>
Mute AV and MIC audio	50720%	LINE Mute<CR><LF> AND
		MIC Mute<CR><LF>
Unmute AV and MIC audio	50721%	LINE Unmute<CR><LF> AND
		MIC Unmute<CR><LF>

CEC Setup and Control

Description	Command	Response
Enable CEC	50686%	HDMI CEC ON<CR><LF>
Disable CEC	50687%	HDMI CEC OFF<CR><LF>
CEC Play/pause	50901%	CEC cmd: play&pause<CR><LF>
CEC Stop	50902%	CEC cmd: stop<CR><LF>
CEC Menu	50903%	CEC cmd: menu<CR><LF>
CEC Reverse (rewind)	50904%	CEC cmd: rev<CR><LF>
CEC Forward	50905%	CEC cmd: fwd<CR><LF>
CEC Up	50906%	CEC cmd: up<CR><LF>
CEC Down	50907%	CEC cmd: down<CR><LF>
CEC Left	50908%	CEC cmd: left<CR><LF>
CEC Right	50909%	CEC cmd: right<CR><LF>
CEC Select	50910%	CEC cmd: select<CR><LF>
CEC Exit	50911%	CEC cmd: exit<CR><LF>

Menu Navigation

Description	Command	Response
Menu OK	50609%	Key: ok<CR><LF>
Menu LEFT	50610%	Key: left<CR><LF>
Menu RIGHT	50611%	Key: right<CR><LF>
Menu UP	50612%	Key: up<CR><LF>
Menu DOWN	50613%	Key: down<CR><LF>
Enter device menu	50616%	OSD: Enter<CR><LF>
Menu EXIT	50618%	OSD: Exit <CR><LF>

OSD Visibility

Description	Command	Response
Enable OSD for MIC volume bar	50646%	Volume Icon: enable<CR><LF>
Disable OSD for MIC volume bar	50647%	Volume Icon: disable<CR><LF>
Hide mute icon of AV audio in OSD	50761%	LINE Mute Icon: disable<CR><LF>
Display mute icon of AV audio in OSD	50762%	LINE Mute Icon: enable<CR><LF>
Hide mute icon of MIC audio in OSD	50763%	MIC Mute Icon: disable<CR><LF>
Display mute icon of MIC audio in OSD	50764%	MIC Mute Icon: enable<CR><LF>
Hide freeze icon in OSD	50765%	Freeze Icon: enable<CR><LF>
Display freeze icon in OSD	50766%	Freeze Icon: disable<CR><LF>
Enable OSD for input switching	50644%	Input Icon: enable<CR><LF>
Disable OSD for input switching	50645%	Input Icon: disable<CR><LF>

System Query

Description	Command	Response
Check volume level	50630%	LINE Volume: XX<CR><LF> AND MIC Volume: XX<CR><LF>
Check input source	50631%	Input: HDMI 1<CR><LF> OR Input: HDMI 2<CR><LF> OR Input: HDMI 3<CR><LF> OR Input: VGA 1<CR><LF> OR Input: VGA 2<CR><LF>
Check output resolution	50632%	Resolution: 1360x768<CR><LF> OR Resolution: 1920x1200<CR><LF> OR Resolution: 1600x1200<CR><LF> OR Resolution: 1024x768<CR><LF> OR Resolution: 1280x720<CR><LF> OR Resolution: 1280x800<CR><LF> OR Resolution: 1920x1080<CR><LF>
Check picture mode	50633%	Picture Mode : standard<CR><LF> OR Picture Mode : mild<CR><LF> OR Picture Mode : user<CR><LF> OR Picture Mode : dynamic<CR><LF>
Check sound mode	50634%	Sound Mode: standard<CR><LF> OR Sound Mode: music<CR><LF> OR Sound Mode: movie<CR><LF> OR Sound Mode: sports<CR><LF> OR Sound Mode: user<CR><LF>
Check aspect ratio	50635%	Aspect Ratio : 16:9<CR><LF> OR Aspect Ratio : 4:3<CR><LF> OR Aspect Ratio : auto<CR><LF> OR Aspect Ratio : panorama<CR><LF> OR Aspect Ratio : justscan<CR><LF> OR Aspect Ratio : zoom2<CR><LF> OR Aspect Ratio : zoom1<CR><LF>
Check brightness	50636%	Brightness: 50<CR><LF>
Check contrast	50637%	Contrast: 50<CR><LF>
Check saturation	50638%	Saturation: 50<CR><LF>
Check sharpness	50639%	Sharpness: 50<CR><LF>
Check color temperature	50640%	Color Temperature: medium<CR><LF>
Check Line audio mute status	50751%	LINE Mute<CR><LF> OR LINE Unmute<CR><LF>
Check MIC mute status	50752%	MIC Mute<CR><LF> OR MIC Unmute<CR><LF>

System Query (continued)

Check HDMI audio inputs	50712%	HDMI1 Audio from XXXX port AND
		HDMI2 Audio from XXXX port AND
		HDMI3 Audio from XXXX port
Check Freeze output image status	50753%	Freeze: enable<CR><LF>
		Freeze: disable<CR><LF>
Check front panel lock status	50754%	Front Panel Lock<CR><LF> OR
		Front Panel Unlock<CR><LF>
Check volume bar display status	50651%	Volume Icon: enable<CR><LF> OR
		Volume Icon: disable<CR><LF>
Check HDMI embedded audio output status	50652%	Embedded Audio Output: enable<CR><LF> OR
		Embedded Audio Output: disable<CR><LF>
Check system status	50783%	Line Volume:XX AND
		Mic Volume:XX AND
		Source:XXXX AND
		Resolution:XXXX AND
		Digital Sound Output: XXXX AND
		Switch status: XXXX
Check input source in OSD	50650%	Input Icon: enable<CR><LF> OR
		Input Icon: disable<CR><LF>
Check HDCP compliance status of HDMI input	50921%	HDMI 1 input HDCP manual enable<CR><LF> OR
		HDMI 1 input HDCP manual disable<CR><LF> AND
		HDMI 2 input HDCP manual: enable<CR><LF> OR
		HDMI 2 input HDCP manual disable<CR><LF> AND
		HDMI 3 input HDCP manual: enable<CR><LF> OR
		HDMI 3 input HDCP manual disable<CR><LF>

Troubleshooting

Presentation Switcher does not power on

- » Verify power outlet is active.
- » Verify the power supply connector is secured to the rear of the switcher.

No video from HDBaseT output

- » Verify the green link LED on the HDBaseT output is lit solid.
- » Verify the Category 6 cable is continuous between the scaler and HDBaseT receiver.
- » Verify the HDBaseT receiver has power if it cannot accept power via PoE.

Distorted or no video output

- » Verify the video output resolution is compatible with the display.

Cannot hear HDMI input audio

- » Verify HDMI input audio settings.
- » If using a DisplayPort device with a DisplayPort to HDMI adapter, verify source can pass audio via DisplayPort connection.

Cannot hear surround sound audio

- » Verify output can broadcast surround sound audio.
- » Verify source device is configured to output surround sound audio.
- » Verify the audio output is configured to output surround sound audio.

Presentation Switcher does not automatically switch

- » Verify switcher is not in manual mode.
- » Verify VGA inputs are not set to composite video (AV) or component video (YPbPr).

Technical Specifications

Input Connections	
HDMI Inputs	Three (3) HDMI type A
VGA Inputs	Two (2) HD15-F
Analog Audio Inputs	Five (5) 3-Pole/3.5mm Euroblock
Microphone Input	One (1) 3-Pole/3.5mm Euroblock
Control (Front Panel)	Push Button
Control (Rear Panel)	RS232 via 3-Pole/3.5mm Euroblock, RS232 via HDBaseT Output (8P8C-F), IR via 3.5 mm TRS
12V DC Power	One (1) Threaded Barrel (5.5 mm OD; 2.6 mm ID)
Firmware Upgrade	USB Type A Female
IR Input	One (1) 3.5 mm jack (TRS)
Output Connections	
HDMI Output	One (1) HDMI type A
Stereo Analog Audio	One (1) 3-Pole/3.5mm Euroblock
HDBaseT Output	One (1) 8P8C-F
IR Outputs	Five (5) 3.5 mm jack (TS)
Video Performance	
HDMI Input Bandwidth	4.95Gbps (1.65Gbps per color)
HDMI Input Resolutions	640x480: 60/72/75/85 Hz, 800x600: 56/60/72/75/85 Hz, 1024x768: 60/70/75/85 Hz, 1280x768: 60 Hz, 1280x1024: 60/75Hz, 1360x768: 60 Hz, 720x480i/p (4:3 and 16:9), 720x576i/p (4:3 and 16:9), 1280x720p: 50/60 Hz, 1360x768: 60Hz, 1440x900: 60 Hz, 1600x1200: 60 Hz, 1680x1050: 60 Hz, 1920x1080i: 25/30 Hz, 1920x1080p: 50/60 Hz, 1920x1200: 60 Hz
HDMI Input Compatibility	HDMI 1.3, DVI-D
HDMI Input Compliance	HDCP Compliant
VGA Input Bandwidth	375MHz
VGA Input Resolutions	640x480: 60/72 Hz, 720x400: 60 Hz, 800x600: 60/72/75 Hz, 1024x768: 60/70/75 Hz, 1280x720: 60 Hz, 1280x768: 60Hz, 1280x960: 60 Hz, 1280x1024: 60/75Hz, 1360x768: 60Hz, 1440x900: 60 Hz, 1600x1200: 60 Hz, 1680x1050: 60 Hz, 1920x1080: 60 Hz, 1920x1200 60 Hz
VGA Input Video Impedance	75ohm
VGA Input Maximum Pixel Clock	145MHz
VGA Input Video Gain	0dB
VGA Input Signal Level	0.5V~2.0Vp-p
Output Resolutions	1920x1200, 1920x1080 (1080p), 1600x1200, 1360x768, 1280x720 (720p), 1280x800, 1024x768
Audio Performance	
Analog Input Signal Level	-10dBv Nominal
Analog Input Impedance	>10k ohm
MIC Input Signal Level	-48dB Nominal (Mic input), +4dBu Nominal (Line Input)
MIC Input Impedance	600 ohm (Mic input), >10k ohm (Line input)
MIC Phantom Power	48V DC @ 350mA
ADC Format	24bit, 48kHz, 2ch LPCM
Line Level Output Impedance	50 ohm
Frequency Response	20Hz-20kHz
Stereo Channel Separation	>80dB @ 1kHz
Common Mode Rejection	>90dB @ 20Hz-20kHz

Control Parameters	
RS232 Baud	9600 baud
HDBaseT Signal Characteristics	
Maximum Distance	60 m
Cable Requirements	Solid core shielded Category 5e, Category 6 or greater with TIA/EIA-568B crimp pattern
Bandwidth	10.2 Gbps
Gain	0 dB – 10 dB at 100 MHz
Signal to Noise Ratio (SNR)	> 70 dB at 100 MHz over 100 m
Return Loss	< -30 dB at 5 KHz
Total Harmonic Distortion (THD)	< 0.005% at 1 KHz
Min-Max Signal Level	< 0.3 V – 1.45 Vp-p
Differential Phase Error	±10° at 135 MHz over 100 m
Chassis and Environmental	
Enclosure	Painted Aluminum
Dimensions	44 mm x 220 mm x 148 mm (1.73 in x 8.66 in x 5.83 in) – 1RU
Shipping Weight	0.67 kg (1.48 lbs.)
Operating Temperature	0° to +48° C (+32° to +120° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-20° to +70° C (+14° to +158° F)
Storage Humidity	10% to 85%, Non-condensing
Power and Regulatory	
Power Supply Input	100V-240VAC / 50-60 Hz / 0.8A
Power Supply Output	12VDC / 2.0A
Power Consumption	24 watts (max)
ESD Protection	±15 kV
Product Regulatory	FCC, CE, RoHS
Power Supply Regulatory	UL, CUL, CE, PSE, GS, RoHS
Other	
Warranty	2 years
Included Accessories	IR Remote, IR Receiver, Wall Mount Power Supply, Power Supply Adapters (US, EU, UK, AU), Four (4) Rubber Feet, Serial Cable (DE9-F to Euroblock), Seven (7) 3-Pole/3.5mm Euroblock Connectors (installed on product), Two (2) VGA to YPbPr Cables (40 mm (15.75 in.) Male HD15 to Three (3) Female RCA Connectors (Red, Green, Blue)), Two (2) Mounting Rails with Chassis Screws, Installation Guide
Compatible Receiver (A/V and PoE)	SP-HDBT60-SWR (power supply sold separately: SP-HDBT60-PS)

Distances and picture quality may be affected by cable grade, cable quality, source and destination equipment, RF and electrical interference, and cable patches.

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