4 Input Scaling Smart Switch with CEC and HDBaseT Out

SW-0401-HDBT

WyreStorm

Quickstart Guide

💡 WyreStorm recommends reading through this document in its entirety to become familiar with the product's features prior to starting the installation process.

4K UHD · **HDMI** · **HDBaseT** · **HDCP** · **CEC**

⚠️ **IMPORTANT! Installation Requirements**

- Visit the product page to download the latest document version, additional documentation, firmware, and configuration tools.
- Install the latest firmware to ensure that all features described in this document are available during and after installation.
- Read through the Wiring and Connections section for important wiring guidelines before creating or choosing premade cables.
- An HDBaseT receiver is required to use this product.
- See Recommended Products for guidelines on choosing a receiver.
- While this product supports CEC, WyreStorm cannot guarantee compatibility with all forms of CEC communication.
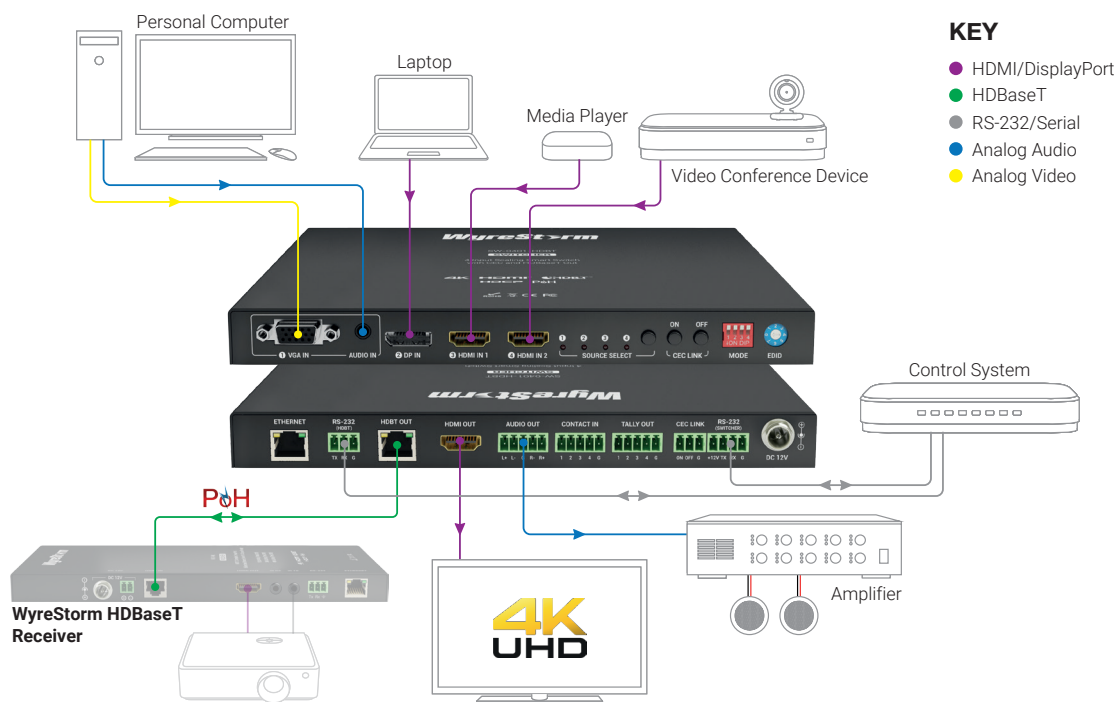
Recommended Products

To take full advantage of the features of this switcher, WyreStorm recommends the following products be used to complete the installation.

RX-70-4K HDBaseT Receiver – This Class A PoH receiver can be used for general purpose transmission where IR and RS-232 routing maybe required.

RX-70-4K-ARC HDBaseT Receiver – This Class A PoH receiver can be used for general purpose transmission where IR and RS-232 routing or Audio Breakout maybe required.

Note: If CEC control of displays is required, the RX-70-4K-ARC cannot be used as it does not support this feature.

In the Box

1x SW-0401-HDBT Switcher
1x 12V DC 3A Power Supply
1x AC Power Cord with US Plug
1x AC Power Cord with UK Plug
1x AC Power Cord with EU Plug
2x 3-pin Male Phoenix Connector
1x 4-pin Male Phoenix Connector
3x 5-pin Male Phoenix Connector
2x Mounting Brackets
1x Quickstart Guide (This Document)

Additional Information

Visit the product page at wyrestorm.com for additional content regarding this product.

- Product API for configuring control via a 3rd party control system.
- Firmware updates – We consistently improve our products and may supply firmware updates in the future to improve the operation.

Basic Wiring Diagram

KEY
- ● HDMI/DisplayPort
- ● HDBaseT
- ● RS-232/Serial
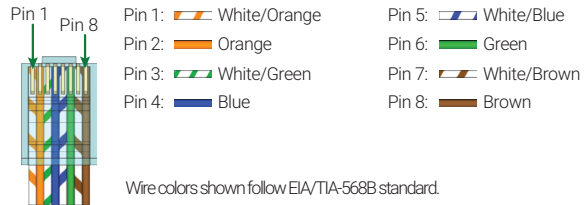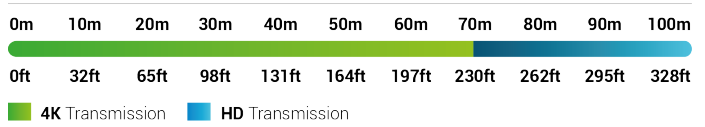- ● Analog Audio
- ● Analog Video

Wiring and Connections

WyreStorm recommends that all wiring for the installation is run and terminated prior to making connections to the switcher. Read through this section in this entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

HDMI/HDBaseT Wiring

⚠️ **IMPORTANT! HDMI/HDBaseT Wiring Guidelines**

- The use of patch panels, wall plates, cable extenders, kinks in cables, and electrical or environmental interference will have an adverse effect on HDMI and Ethernet transmission limiting performance. Steps should be taken to minimize or remove these factors completely during installation for best results.
- WyreStorm recommends using high quality HDMI cables such as WyreStorm Active Optical or Express to ensure the highest content performance available.
- The type of category cable and length used can restrict the available video resolution. While Cat5e can be used, WyreStorm recommends using Cat6 or higher to ensure the highest content performance available. See **Video Resolutions** in the Specifications table before determining cable type and length.

Cat6 Cable Performance Guide

0m	10m	20m	30m	40m	50m	60m	70m	80m	90m	100m
0ft	32ft	65ft	98ft	131ft	164ft	197ft	230ft	262ft	295ft	328ft

■ **4K** Transmission   ■ **HD** Transmission

Pin 1   Pin 8

Pin 1:	White/Orange	Pin 5:	White/Blue
Pin 2:	Orange	Pin 6:	Green
Pin 3:	White/Green	Pin 7:	White/Brown
Pin 4:	Blue	Pin 8:	Brown

Wire colors shown follow EIA/TIA-568B standard.

RS-232 Communication

Most control systems and computers are DTE where pin 2 is RX, this can vary from device to device. Refer to the documentation for the connected device for pin functionally to ensure that the correct connections can be made.

See SW-0401-HDBT API located on the website for commands and configuration of communication ports.

RS-232 Switcher Control

WyreStorm Connector			3rd Party Device
Pin 1	12V DC Out	---> To --->	12V DC In
Pin 2	TX (Transmit)	---> To --->	RX (Receive)
Pin 3	RX (Receive)	---> To --->	TX (Transmit)
Pin 4	G (Ground)	---> To --->	G (Ground)

RS-232 HDBT to Zone

WyreStorm Connector			3rd Party Device
Pin 1	TX (Transmit)	---> To --->	RX (Receive)
Pin 2	RX (Receive)	---> To --->	TX (Transmit)
Pin 3	G (Ground)	---> To --->	G (Ground)

CEC Link Control

The CEC link allows for a hard wire contact closure connection to turn CEC On and Off to control the standby mode of the display.

WyreStorm Connector			3rd Party Device
Pin 1	CEC On	---> To --->	CEC On
Pin 2	CEC Off	---> To --->	CEC Off
Pin 3	G (Ground)	---> To --->	G (Ground)

Contact In/Tally Out

Contact connections are provided to allow for switching sources and feedback to a contact closure button on a desk or wall plate.

WyreStorm Connector			3rd Party Device
Pin 1	Source 1	---> To --->	Source 1
Pin 2	Source 2	---> To --->	Source 2
Pin 3	Source 3	---> To --->	Source 3
Pin 4	Source 4	---> To --->	Source 4
Pin 5	G (Ground)	---> To --->	G (Ground)

Audio Out

The Audio Out supports both balanced and unbalanced connections. Wiring may vary on the 3rd party device, refer to the documentation for the device being connected.

Balanced Connections

WyreStorm Connector			3rd Party Device
Pin 1	Left Positve (L+)	---> To --->	Left Positive (L+)
Pin 2	Left Negative (L-)	---> To --->	Left Negative (L-)
Pin 3	Ground (G)	---> To --->	Ground (G)
Pin 4	Right Positive (R+)	---> To --->	Right Positive (R+)
Pin 5	Right Negative (R-)	---> To --->	Right Negative (R-)

Unbalanced Connections

WyreStorm Connector			3rd Party Device
Pin 1	Left Positve (L+)	---> To --->	Left Positive (L+)
Pin 2	Left Negative (L-)	---> To --->	No Connection
Pin 3	Ground (G)	---> To --->	Left Negative (L-) Right Negative (R-
Pin 4	Right Positive (R+)	---> To --->	Right Positive (R+)
Pin 5	Right Negative (R-)	---> To --->	No Connection

UK: +44 (0) 1793 230 343 | ROW: 844.280.WYRE (9973)
support@wyrestorm.com

EDID/Scaler Settings

The SW-0401-HDBT handles EDID differently than other switchers and has direct settings for EDID. When connected to a source and display the EDID is still passed to the source, however the output of the switcher can be scaled to match the resolution of the display and maintain the highest output from the sources. This allows for HD sources to be scaled up to UHD and UHD sources to be scaled down to maintain a consistent picture quality.

EDID/Scaler Dial

Scaling Resolution	Rotary Switch
Auto Scaling	0
1024x768p @60Hz	1
1280x720p @60Hz	2
1280x800p @60Hz	3
1366x768p @60Hz	4
1600x1200p @60Hz	5
1920x1080p @60Hz	6
1920x1200p @60Hz	7
3840x2160p @30Hz	8
API Control	9

Audio De-Embed/Control Method

The SW-0401-HDBT has modes available to control how the audio is handled from the source HDMI, how sources are switched, and how CEC controls display standby. These are configured via a 4 position dip switch as defined in the table.

Mode Selection

Function	Operation	
Audio De-Embed Switch 1	Audio De-Embedded from HDMI Out (Default) - OFF	
	No Function - On	
Source Selection Mode Switch 2	Auto and Manual Switching Enabled (Default) - OFF	
	Manual Switching Only - On	
CEC Control Switch 3	Auto and Manual CEC Control (Default) - OFF	
	Manual CEC Control Only	
Control Method Switch 4	API and Manual Control (Default) - OFF	
	Manual Control Only - On	

Troubleshooting

No or Poor Quality Picture (snow or noisy image)
- Verify that power is being supplied to all devices in the system and that they are powered On.
- Verify that all source and HDBaseT connections are not loose and are functioning properly.
- Verify that all HDMI/HDBaseT Wiring is properly terminated.
- Verify that the EDID/Scaler Settings are set to a resolution that the display can receive.
- Verify that the switcher, receiving device, and display support the output resolution of the source.
  Refer to **Video Resolutions (Max)** in the Specifications table.
- If transmitting 3D or 4K, verify that the HDMI cables used are 3D or 4K rated.

Troubleshooting Tips:
- WyreStorm recommends using a cable tester or connecting the cable to other devices to verify functionality.
- Use a flashlight to locate the IR receiver behind any tinted panels on the device being control

Specifications

Audio and Video	
Inputs	1x VGA In: 15-pin Component Video 1x DP In: DisplayPort 1.3 2x HDMI In: 19-pin type A
Outputs	1x HDMI Out: 19-pin type A 1x HDBT Out (Class A): 8-pin RJ-45 Female 1x Audio Out (Analog): 5-pin Phoenix
Output Video Encoding	HDBaseT Class A
Encoding Data Rate	9.2Gbps
End to End Latency	10μs
Audio Formats	2ch PCM | Multichannel: Up to Dolby Digital and DTS 5.1ch
Video Resolutions (Max)	**HDMI/DisplayPort** 1920x1080p @60Hz 12bit (15m/49ft) 1920x1200p @60Hz 12bit (15m/49ft) 3840x2160p @30Hz 4:4:4 8bit (7m/23ft) **Using Cat6** 1920x1080p @30Hz 12bit (100m/328ft) 1920x1200p @60Hz 12bit (100m/328ft) 3840x2160p @30Hz 4:4:4 8bit (70m/230ft) **Using Cat6a/7** 1920x1080p @30Hz 12bit (100m/328ft) 1920x1200p @60Hz 12bit (100m/328ft) 3840x2160p @30Hz 4:4:4 8bit (100m/328ft)
Color Depth	1080p: 12bit | 4K: 8bit
Maximum Pixel Clock	297MHz
Communication and Control	
HDMI	HDMI 1.4 | HDCP 1.4 | EDID | CEC | DVI/D supported with adapter (not included)
HDBaseT	HDMI 1.4 | HDCP 1.4 | EDID | CEC | RS-232 | Ethernet
Contact Closures	1x Tally Out: 5-pin Phoenix | 1x Contact In: 5-pin Phoenix
RS-232	1x RS-232 (Switcher): 4-pin Phoenix | 1x RS-232 (HDBT): 3-pin Phoenix (Bidirectional)
Ethernet	1x Ethernet: 8-pin RJ-45 Female | 10/100Mbps | Bidirectional over HDBaseT
CEC Link	1x CEC Link: 3-pin Phoenix
Power	
Power Supply	12V DC 3A
PoH	IEEE 802.3af 15.4W
Max Power Consumption	22w (Includes PoH)
Environmental	
Operating Temperature	0 to + 45°C (32 to + 113 °F), 10% to 90%, non-condensing
Storage Temperature	-20 to +70°C (-4 to + 158 °F), 10% to 90%, non-condensing
Maximum BTU	76 BTU/hr
Dimensions and Weight	
Rack Units/Wall Box	<1U
Heigh	21mm/0.83in
Width	220mm/8.67in
Depth	164.2mm/6.47in
Weight	0.82kg/1.8lbs
Regulatory	
Safety and Emission	CE | FCC | RoHS

Note: WyreStorm reserves the right to change product specification, appearance or dimensions of this product at any time without prior notice.

Warranty Information

This product is covered by a 3 year limited parts and labor warranty. During this period there will be no charge for unit repair, component replacement or complete product replacement in the event of malfunction. The decision to repair or replace will be made by the manufacturer. This limited warranty only covers defects in materials or workmanship and excludes normal wear and tear or cosmetic damage. Visit the product page located at wyrestorm.com for additional information on this product including important technical information not provided in this document and warranty terms & conditions.