4K UHD HDCP2.2 HDBaseT Extender Set with 2-way PoH, IR and RS-232 (4K: 70m/230ft | 1080p: 100m/328ft)

EX-70-H2

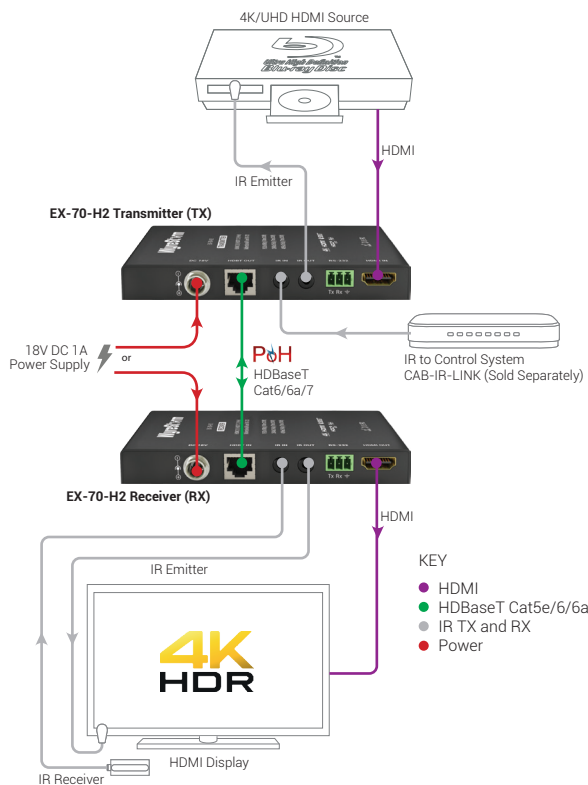**WyreStorm**

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.

In the Box

1x EX-70-H2 Transmitter
1x EX-70-H2 Receiver
1x 18V DC 1A Power Supply (US/UK/EU)
2x 3-pin Screw Down Phoenix Connectors
2x Wide-band IR Emitters
2x Wide-band IR Receivers (30-50KHz)
4x Mounting Brackets (1pr for TX and 1pr for RX)
1x Quickstart Guide (this document)

Basic Wiring Diagram

⚠ IMPORTANT!

Disconnecting and connecting (hot plugging) HDMI or HDBaseT while devices are powered on may cause damage. WyreStorm recommends powering off devices before disconnecting these connections.

Additional Information

This Quickstart Guide provides the basic steps for the common uses of this product. Detailed installation and configuration information may be found in the download tab located on the product page.

Installation

Before Beginning

• WyreStorm recommends visiting the product page before installing this product for updates to this Quickstart Guide as well as other information about the product.
• Verify that all items are included in the packaging per the In the Box list.

Pre Wire

1. Run a Cat5e/6/6a cable from the matrix location to the receiver location. Terminate the cable per the HDMI/HDBaseT Wiring section.
2. If using 3rd party IR emitters or connecting blocks at either the transmitter or receiver, run the wire and terminate per the IR TX (Emitter) Wiring section.
3. (Optional) If using RS-232 pass-through, run the wire and terminate per the RS-232 Wiring section.
4. (Optional) If using 3rd party IR receivers at either the transmitter or receiver, run the wire and terminate per the IR RX (Receiver) Wiring section.

Transmitter Installation

1. Connect an HDMI source to the **HDMI In** on the transmitter using an HDMI cable from a high quality brand such as WyreStorm Express.
2. (Optional) Place an IR emitter onto the source device near the device's IR receiver and connect it the **IR TX** port.
3. Connect the cable created in Pre Wire step 1 to the **HDBT Out**.
4. (Optional) Connect the 3-pin connector to the **RS-232** port on the transmitter and the opposite end to a port on a control system.
5. If using PoH from the transmitter to power the receiver, connect the included 18V DC 1A power supply to the 18V DC 1A jack.

Receiver Installation

1. Connect the **HDMI Out** on the receiver to an input on the display using an HDMI cable from a high quality brand such as WyreStorm Express.
2. (Optional) Place an IR emitter onto the source device near the device's IR receiver and connect it the **IR TX** port.
3. Connect the cable created in Pre Wire step 1 to the **HDBT In**.
4. (Optional) If using RS-232 pass-through, connect the 3-pin connector to the **RS-232** port on the receiver and the opposite end to a port on the device being controlled.
5. If not using PoH from the transmitter to power the receiver, connect the included 18V DC 1A power supply to the 18V DC 1A jack.

Front Panel (TX/RX)

EX-70-H2 Transmitter

EX-70-H2 Receiver
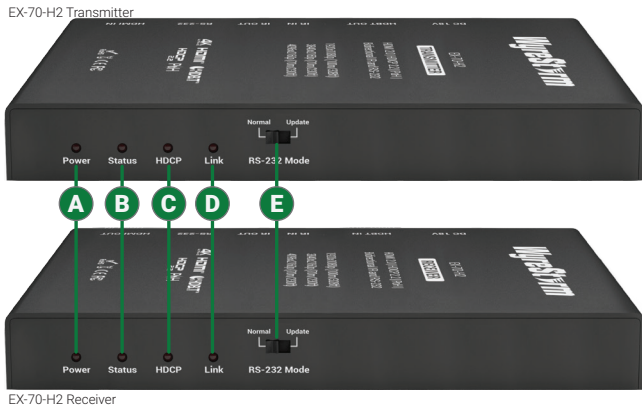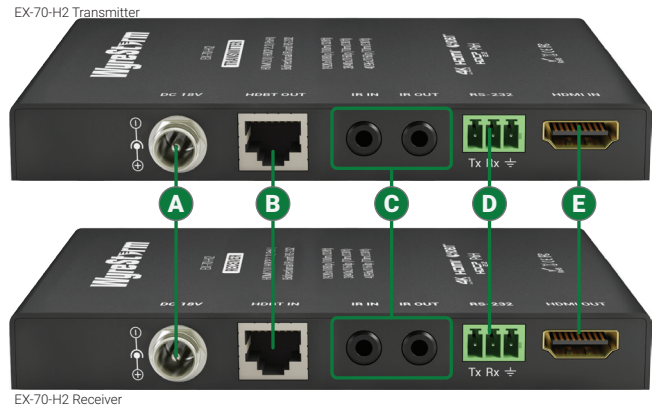
A	**Power LED**	**Solid:** The receiver is powered On **Off:** The receiver is powered Off
B	**Status LED**	**Flashing:** The receiver is operating normally. **Off:** The receiver is Not operating normally.
C	**HDCP LED**	**Solid:** HDCP content is present. **Flashing:** HDCP content is not present. **Off:** No signal.
D	**LINK LED**	**Solid:** Link to receiver has been established. **Flashing:** Link to receiver has not been established.
E	**RS-232 Mode**	Switches the mode for the RS-232 port. **Normal:** RS-232 HDBaseT pass-through. **Update:** RS-232 firmware update.

Rear Panel (TX/RX)

EX-70-H2 Transmitter

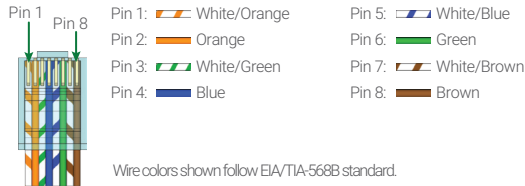EX-70-H2 Receiver

A	**Power Input**	5.5mm Screw Down Barrel Jack 2-pin Phoenix Connecter Connect to the included 18V DC 1A power supply to the transmitter. A power supply is not required on the receiver as it will be powered using PoH. See Power Supply Wiring for important information.
B	**Status LED**	8-pin RJ-45 female | 10/100 Mbps auto-negotiating Connect the transmitter **HDBT Out** to receiver **HDBT In** using the cable created in Pre Wire step 1.
C	**HDCP LED**	**IR TX** - 3.5mm (1/8in) Mono Jack: Connect to the supplied IR emitter to control a local device from the remote display location via HDBaseT. **IR RX** - 3.5mm (1/8in) Stereo Jack: Connect to the supplied IR receiver to send IR to the remote display location via HDBaseT. See IR Wiring for more information.
D	**LINK LED**	19-pin type A HDMI female Supports HDMI and DVI/D with adapter
E	**RS-232 Mode**	3-pin Phoenix Connector Used to transmit RS-232 over HDBaseT to the remote location and for firmware updates. See RS-232 Wiring for more information.

HDMI/HDBaseT Wiring

⚠ IMPORTANT! Wiring Guidelines

- The use of patch panels, wall plates, cable extenders, kinks in cables, and electrical or environmental interference can have an adverse effect on HDMI and HDBaseT transmission limiting performance. Steps should be taken to minimize these factors (or remove completely) during installation for best results.
- While similar in nature, the HDBaseT protocol is different than Ethernet and voltages provided for PoH can be higher than those provided by PoE. For this reason, never connect an HDBaseT link to an Ethernet router or switch to avoid damaging the connected devices.

Wiring for HDBaseT follows the EIA T568B standard.

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.

Resolutions Distances

The type of category cable used and the distance between the matrix and receiver can restrict the available video resolution.

Refer to **Video Resolutions** in the Specifications table for the max distance based on resolution.

IR Wiring

IR TX (Emitter) Wiring

Connection for IR TX (transmit) uses a 3.5mm (1/8in) mono plug.

Tip: IR Signal
Sleeve: Ground (GND)
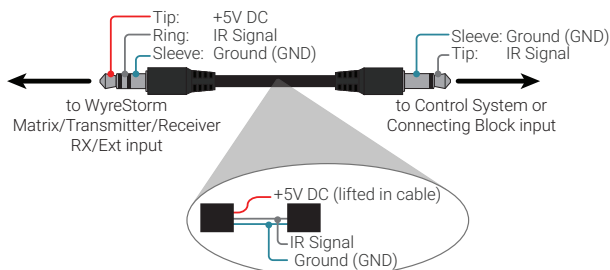
IR RX (Receiver) Wiring

Connection for IR RX (receive) uses a 3.5mm (1/8in) stereo jack that outputs +5V DC to power the included IR receiver.

⚠ IMPORTANT! IR TX Connection Guidelines

- 3rd party IR receivers may require a different voltage, refer to the documentation provided with the IR receiver before making any connections to avoid damaging the device.

Tip: +5V DC
Ring: IR Signal
Sleeve: Ground (GND)

- When connecting to an IR control system use the WyreStorm CAB-IR-LINK cable to remove the sleeve +5V DC.

Tip: +5V DC
Ring: IR Signal
Sleeve: Ground (GND)

Sleeve: Ground (GND)
Tip: IR Signal

to WyreStorm
Matrix/Transmitter/Receiver
RX/Ext input

to Control System or
Connecting Block input

+5V DC (lifted in cable)
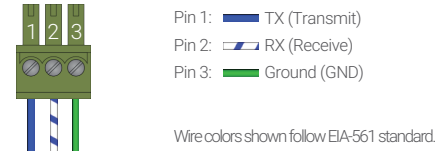
IR Signal
Ground (GND)

RS-232 Wiring

RS-232 Connection Guidlines

The following wiring diagram shows the pinouts for the extender set. While not shown, connect the TX (transmit) to RX (receive) pins at the control system or PC side of the cable.

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.

Pin 1:	TX (Transmit)
Pin 2:	RX (Receive)
Pin 3:	Ground (GND)

Wire colors shown follow EIA-561 standard.

RS-232 Mode Settings

The RS-232 connector is used to transmit RS-232 over HDBaseT to the remote location and for firmware updates. Ensure that the RS-232 Mode switch in the proper position for the operation being performed.

Set the mode switch to Normal to transmit RS-232 signals from the TX to the RX for controlling devices in the remote location.

RS-232 Mode

Normal   Update
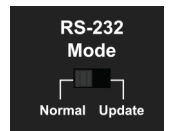
Set the mode switch to the Update position to install a firmware update in either the TX or RX.

RS-232 Mode

Normal   Update
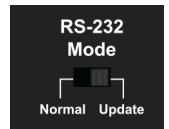
Power Supply Wiring

The EX-70-H2 can supply power from the transmitter to the receiver using PoH on the same category cable that transmits audio and video. The included power must be connected to the transmitter in order to power the receiver. Should distance of the category cable or other factors prevent PoH from being used, connect an 18V DC 1A power supply to both devices. Additional power supplies may be purchased from WyreStorm.

Specifications

Audio and Video	
Inputs	Transmitter: 1x HDMI 19-pin type A	Receiver: 1x HDBaseT 8-pin RJ-45 female
Outputs	Transmitter: 1x HDBaseT 8-pin RJ-45 female	Receiver: 1x HDMI 19-pin type A
Audio Formats	2ch PCM	Up to DTS-X and Dolby Atmos
Video Resolutions (Max)	**HDMI** 1920x1080p @60Hz 12bit (15m/50ft)	16bit (7m/23ft) 3840x2160p @30Hz 4:4:4 8bit (7m/23ft)	@24Hz 4:2:0 HDR 10bit (3m/9.8ft) 4096x2160p @60Hz 8bit 4:2:0/4:4:4 (7m/23ft) **Using Cat6** 1920x1080 @60Hz 12bit (100m/328ft)	16bit (70m/230ft) 3840x2160p @30Hz 4:4:4 8bit (70m/230ft)	@24Hz 4:2:0 HDR 10bit (70m/230ft) 4096x2160p @60Hz 4:2:0 8bit (70m/230ft) **Using Cat6a/7** 1920x1080 @60Hz 12bit (100m/328ft)	16bit (100m/328ft)3840x2160p @30Hz 4:4:4 8bit (100m/328ft)	@24Hz 4:2:0 HDR 10bit (100m/328ft) 4096x2160p @60Hz 4:2:0 8bit (100m/328ft)
Color Depth	1080p: 16bit	4K UHD: 8bit	HDR @24p: 10bit BT.2020
Maximum Pixel Clock	297MHz

Communication and Control	
HDMI	HDMI 2.0	HDCP 2.2	EDID	DVI/D supported with adapter (not included)
HDBaseT	HDMI 2.0	HDCP 2.2	EDID	2-way PoH	Bidirectional IR and RS-232
IR	1x IR TX 3.5mm (1/8in) Mono	Bidirectional over HDBaseT	1x IR RX 3.5mm (1/8in) Stereo	Bidirectional over HDBaseT
RS-232	1x 3-pin Screw Down Phoenix Connector	Bidirectional over HDBaseT

Power	
Power Supply	Input: 100~240V AC 50/60Hz	Output: 18V DC 1A
Max Power Consumption	9.5W
Non-standard PoH	18V 9W

Environmental	
Operating Temperature	32°F ~ 113°F (0°C ~ 45°C) 10% ~ 90%, non-condensing
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C) 10% ~ 90%, non-condensing
Maximum BTU	32.4 BTU/hr

Dimensions and Weight	
Rack Units/Wall Box	1U
Height	17mm/0.67in
Width	140mm/5.52in
Depth	90.2mm/3.56in
Weight (Each Unit)	0.36kg/0.79lbs

Regulatory	
Safety and Emission	CE

Troubleshooting

No or Poor Quality Picture (snow or noisy image)
- Verify that power is being supplied to the transmitter and receiving device and that both devices are powered on.

Note:
When using PoH, to power the receivers, verify that the HDBaseT cable is properly terminated per the HDMI/HDBaseT Wiring section.

- Verify that the matrix supports the output resolution of the source. See Supported Video Resolutions.
- Verify that the matrix, receiver, and display support the output resolution of the source. Refer to **Video Resolutions** in the Specifications table.
- Verify that the receiving device and display support the output resolution of the source.
- If transmitting 3D or 4K, verify that the HDMI cables used are 3D or 4K rated.
- Verify that the HDBaseT cable is properly terminated per the HDMI/

HDBaseT Wiring section.
- Verify that all source and HDBaseT connections are not loose and are functioning properly.

No or Intermittent 3rd party Device Control
Verify that the IR cable(s) is properly terminated. See IR Wiring.
- Verify that the IR emitter is located near the IR receiver on the device.

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.

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.

3 YEARS WARRANTY
WYRESTORM®