4K UHD HDBaseT 5-Play Extender Set with 1-way PoH, Ethernet, IR and RS-232 (4K: 70m/230ft | 1080p: 100m/328ft)

EX-70-H2X-ARC

WyreStorm

Quickstart Guide

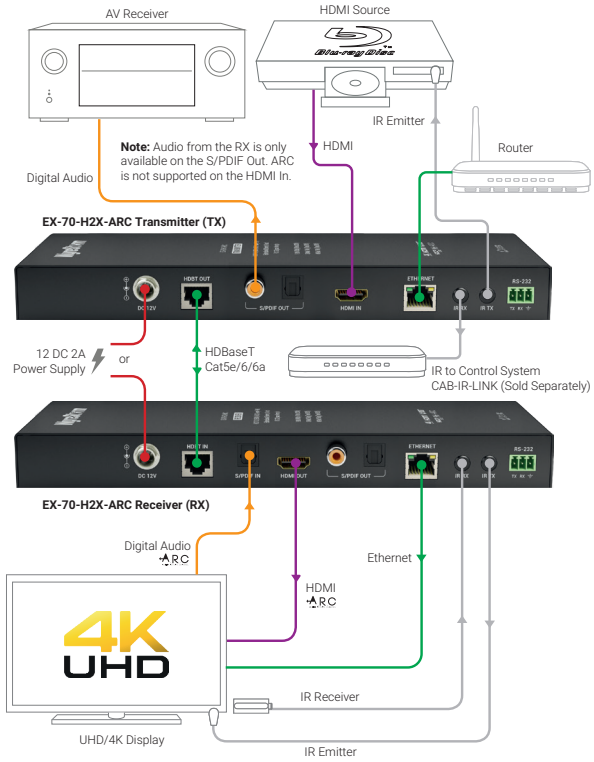
Extends UHD and HDR content up to 70m/230ft (1080p to 100m/328ft) and features a revised chipset for improved compatibility with 4K UHD sources. Additional features include 2-way PoH, bidirectional Ethernet, IR & RS-232 pass-through.

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-H2X-ARC Transmitter
1x EX-70-H2X-ARC Receiver
1x 12V DC 2A Power Supply (US/UK/EU)
2x 3-pin Screw Down Phoenix Connectors
2x 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!

Do not connect or disconnect (hot plug) the HDMI, or HDBaseT connections while the transmitter or receiver is powered on. Doing so may cause damage to the units or connected devices.

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.

- WebUI Reference Guide – Setup for advanced Matrix features such as IP and testing of connections
- H2 Matrix Operation User Guide – Single page document showing the operation via front panel and included IR remote.
- Drivers and API – Preconfigured drivers for popular control systems and API document.

Installation

Before Beginning

- 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 transmitter location to the receiver location. Terminate the cable per the HDBaseT Wiring section.
2. (Optional) 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. (Optional) If using the ARC function to return audio from the remote display, connect a digital input on an AV Receiver to the **S/PDIF Out**.
4. Connect the cable created in Pre Wire step 1 to the **HDBT Out**.
5. (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.
6. If using PoH from the transmitter to power the receiver, connect the included 12V DC 2A power supply to the **DC 12V** jack.
7. If using ARC or the audio inputs and outputs, see ARC and Audio In/Out Settings for switch configuration

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 using PoH from the receiver to power the transmitter, connect the included 12V DC 2A power supply to the **DC 12V** jack.
6. If using ARC or the audio inputs and outputs, see ARC and Audio In/Out Settings for switch configuration.

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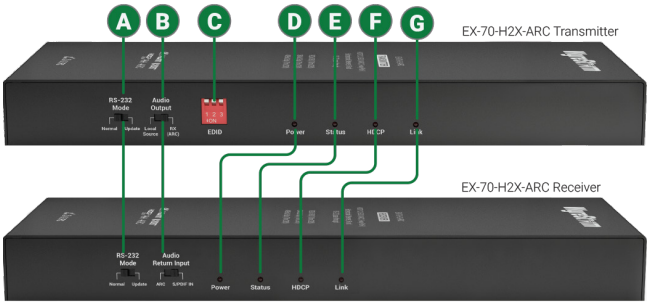
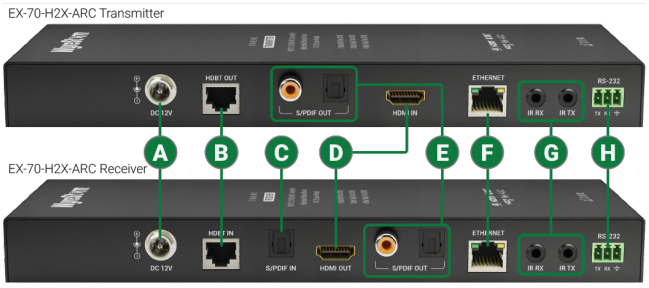
Front Panel (TX/RX)



A	**RS-232 Mode**	Switches the mode for the RS-232 port. **Normal:** RS-232 HDBaseT pass-through. **Update:** RS-232 firmware update.
B	**Audio Output (TX)** **Audio Control (RX)**	Sets the source to use for the transmitters S/PDIF output. See ARC and Audio In/Out Settings.
C	**EDID Settings (TX Only)**	3 Position Dipswitch: Used to set EDIDs to correct resolution conflicts between the source and the display. See EDID Settings.
D	**Power LED**	**Solid:** The transmitter is powered On **Off:** The transmitter is powered Off
E	**Status LED**	**Flashing:** The transmitter is operating normally. **Off:** The transmitter is Not operating normally.
F	**HDCP LED**	**Solid:** Audio and Video signal is HDCP protected. **Flashing:** Audio and Video signal is not HDCP protected. **Off:** No Audio and Video signal.
G	**LINK LED**	**Solid:** Link to receiver has been established. **Flashing:** Link to receiver has not been established.

Rear Panel (TX/RX)



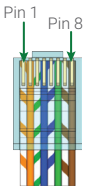
A	**Power In**	5.5mm Screw Down Barrel Jack Connect to the included 12V DC 2A power supply. Only connect to either the transmitter or receiver when using PoH. See Power Supply Wiring.
B	**HDBT Out (TX)** **HDBT In (RX)**	8-pin RJ-45 female Connect the transmitter **HDBT Out** to receiver **HDBT In** using the cable created in Pre Wire step 1.
C	**S/PDIF In (RX Only)**	TOSLink (Digital Optical) Connect to the S/PDIF audio output of the display when ARC is not supported.
D	**HDMI In (TX)** **HDMI Out (RX)**	19-pin type A HDMI female digital video/ audio: Supports HDMI and DVI/D (requires adapter-not included). Limited to 297MHz pixel clock
E	**S/PDIF Out**	RCA Female (Digital Coax) TOSLink (Digital Optical) Outputs audio signal from local source or ARC audio from remote display. See ARC and Audio In/Out Settings.
F	**Ethernet**	8-pin RJ-45 female | 10/100 Mbps auto-negotiating Connect to the Ethernet port on a network enabled display.
G	**IR TX/RX**	3.5mm (1/8in) Mono Plug **IR TX:** Connect to the supplied IR emitter to control a local device from the remote display location via HDBaseT. **IR RX:** Connect to the supplied IR receiver to send IR to the remote display via HDBaseT. See IR Wiring.
H	**RS-232**	3-pin Screw Down Phoenix Connector Used to send and receive RS-232 signals to/ from the source location via HDBaseT and firmware updates. See RS-232 Wiring.

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

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

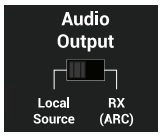
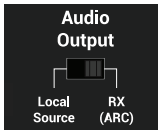
Resolutions Distances

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.

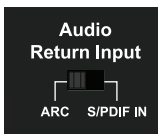
ARC and Audio In/Out Settings

ARC and the audio inputs and outputs can be configured to send audio over HDMI or to local devices. Set the switches based on the connected devices.

TX Audio Output

Set the switch to Local to use the audio from the source connected to the transmitters **HDMI In**	
Set the switch to the **RX (ARC)** to use the audio from the receivers **HDMI** or **SP/DIF In**.	

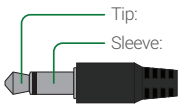
RX Audio Return Input

Set the switch to ARC to send the audio returned from the display connected to the receivers **HDMI Out** back to the transmitter.	
Set the switch to the **S/PDIF In** to send the audio from the displays S/PDIF Out back to the transmitter.	

IR Wiring

IR TX (Emitter) Wiring

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



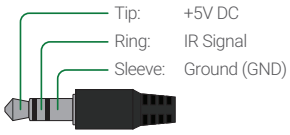
Tip: IR Signal
Sleeve: Ground (GND)

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.



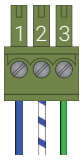
Tip: +5V DC
Ring: IR Signal
Sleeve: Ground (GND)

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.

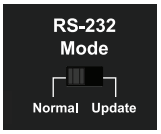
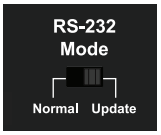


Pin 1: TX (Transmit)
Pin 2: RX (Receive)
Pin 3: Ground (GND)

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

Power Supply Wiring

The EX-70-H2-ARC can supply power via PoH to the receiver or transmitter. The included power supply must be used on either the transmitter or receiver in order for PoH to power the opposite device.

EDID Settings

EDIDs can be configured to resolve issues with video output on displays that may not accept the maximum resolution available from the source.

1080p 2ch		1080i 2ch	
Use EDID from connected display		1080p 5.1ch	
4K 2ch		1080p 7.1ch	

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: 48bit | 4K UHD: 24bit
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, RS-232, and Ethernet
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
Ethernet	1x 8-pin RJ-45 female | 10/100 Mbps auto-negotiating | Bidirectional over HDBaseT

Power	
Power Supply	Input: 100~240V AC 50/60Hz | Output: 12V DC 2A
Max Power Consumption	26.5W
PoH	48V 15.4W (each HDBT out)
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	90.42 BTU/hr

Dimensions and Weight	
Rack Units/Wall Box	1U
Height	24.9mm/0.99in
Width	220mm/8.67in
Depth	89.9mm/3.54in
Weight	0.58kg/1.28lbs
Regulatory	
Safety and Emission	CE | FCC | RoHS

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 transmitter, verify that the HDBaseT cable is properly terminated per the HDBaseT Wiring section.

- Verify that the transmitter supports the output resolution of the source. Refer to **Video Resolutions** in the Specifications table for the max distance based on resolution.
- Verify that the receiving device and display support the output resolution of the source.
- Configure EDID Settings to a lower resolution.
- 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 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.