

# 4K UHD HDCP 2.2 HDBaseT 5-Play Extender Set with 2-way PoH, Ethernet, IR and RS-232 (4K: 70m/230ft | 1080p: 100m/328ft)

EX-70-H2X v1

**WyreStorm**

## Quickstart Guide

Note: The following information applies to version 1 of this product as identified by v1 after the model number on the product label.

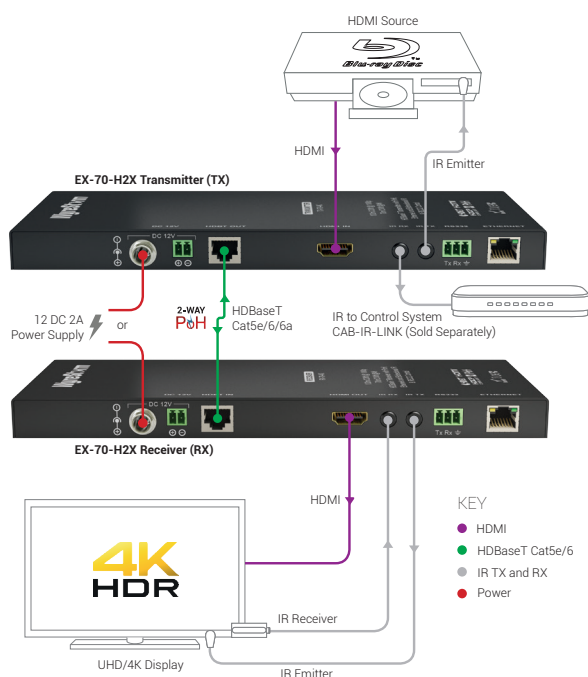
WyreStorm recommends reading through this document in its entirety to become familiar with the product's features prior to starting the installation process.



### In the Box

- 1x EX-70-H2X Transmitter
- 1x EX-70-H2X Receiver
- 1x 12V DC 2A Power Supply (US/UK/EU)
- 2x 2-pin Screw Down Phoenix Connectors
- 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. Refer to the Installation Guide and other documentation on the product page for additional information.

## 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

- Run a Cat5e/6/6a cable from the transmitter location to the receiver location. Terminate the cable per the **HDMI/HDBaseT Wiring** section.
- (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.
- (Optional) If using RS-232 pass-through, run the wire and terminate per the **RS-232 Wiring** section.
- (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.

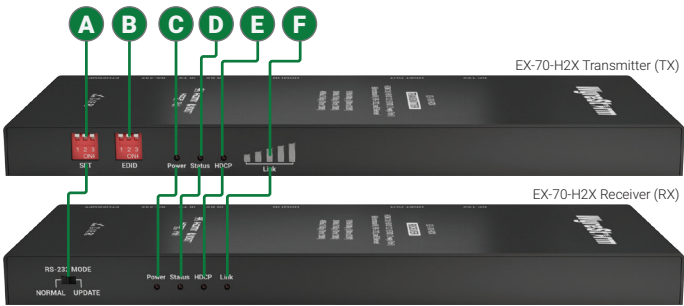
### Transmitter Installation

- Connect an HDMI source to the **HDMI In** on the transmitter using an HDMI cable from a high quality brand such as **WyreStorm Express**.
- (Optional) Place an IR emitter onto the source device near the device's IR receiver and connect it the **IR TX** port.
- Connect the cable created in **Pre Wire** step 1 to the **HDBT In**.
- (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.
- If using PoH from the transmitter to power the receiver, connect the included 18V DC 1A power supply to the **DC 12V** jack.

### Receiver Installation

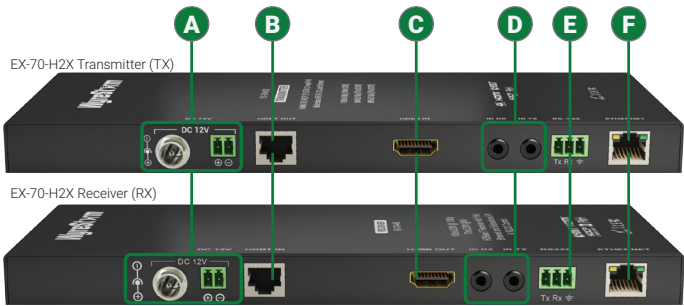
- Connect the **HDMI Out** on the receiver to an input on the display using an HDMI cable from a high quality brand such as **WyreStorm Express**.
- (Optional) Place an IR emitter onto the source device near the device's IR receiver and connect it the **IR TX** port.
- Connect the cable created in **Pre Wire** step 1 to the **HDBT In**.
- (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.
- If not using PoH to power either the transmitter or receiver, connect the included 18V DC 1A power supply to the **18V DC 1A** jack on the either device.

Front Panel (TX/RX)



<b>SET (TX)</b>	3 Position Dipswitch Used to enable/disable long cable mode and configure RS-232 port operation. See <a href="#">Transmitter Set Switch</a> for operation.
<b>A</b>	
<b>RS-232 Mode (RX)</b>	Used to configure RS-232 port operation. See <a href="#">Receiver RS-232 Mode</a> for operation.
<b>B</b>	
<b>EDID</b>	3 Position Dipswitch Used to set EDIDs to correct resolution conflicts between the source and the display. See <a href="#">EDID Settings</a> for operation.
<b>C</b>	
<b>Power LED</b>	<b>Solid:</b> The transmitter is powered On <b>Off:</b> The transmitter is powered Off
<b>D</b>	
<b>Status LED</b>	<b>Flashing:</b> The transmitter is operating normally. <b>Off:</b> The transmitter is Not operating normally.
<b>E</b>	
<b>HDCP LED</b>	<b>Solid:</b> Audio and Video signal is HDCP protected. <b>Flashing:</b> Audio and Video signal is not HDCP protected. <b>Off:</b> No Audio and Video signal.
<b>F</b>	
<b>LINK LED</b>	<b>Solid:</b> Link to receiver has been established. <b>Flashing:</b> Link to receiver has not been established.

Rear Panel (TX/RX)



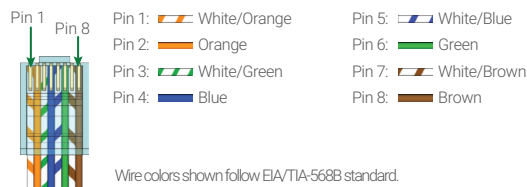
<b>A</b>	<b>Power In</b> 5.5mm Screw Down Barrel Jack 2-pin Phoenix Connector Connect to the included 18V DC 1A power supply to the transmitter. A power supply is not required on the receiver as it will be powered using PoH. See <a href="#">Power Supply Wiring</a> for important information.
<b>B</b>	<b>HDBT Out (TX) HDBT In (RX)</b> 8-pin RJ-45 female   10/100 Mbps auto-negotiating Connect the transmitter HDBT Out to receiver HDBT In using the cable created in <a href="#">Pre Wire</a> step 1.
<b>C</b>	<b>HDMI In (TX) HDMI Out (RX)</b> 19-pin type A HDMI female digital video/ audio: Supports HDMI and DVI/D (requires adapter-not included). Limited to 297MHz pixel clock
<b>D</b>	<b>IR TX/RX</b> 3.5mm (1/8in) Mono Plug <b>IR TX:</b> Connect to the supplied IR emitter to control a local device from the remote display location via HDBaseT. <b>IR RX:</b> Connect to the supplied IR receiver to send IR to the remote display via HDBaseT. See <a href="#">IR Wiring</a> .
<b>E</b>	<b>RS-232</b> 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 <a href="#">RS-232 Wiring</a> .
<b>F</b>	<b>Ethernet</b> 8-pin RJ-45 female   10/100 Mbps auto-negotiating Connect to a Local Area Network or network device for Ethernet pass-through via HDBaseT.

## 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.



### 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.



### 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

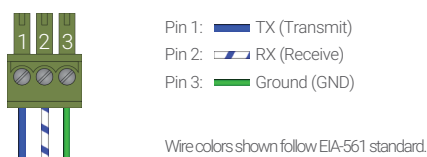
- 3<sup>rd</sup> party IR receivers may require a different voltage, refer to the documentation provided with the IR receiver before making any connections to avoid damaging the device.



## RS-232 Wiring

### RS-232 Connection Guidelines

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 functionality to ensure that the correct connections can be made.

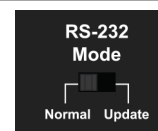


### RS-232 Mode Settings

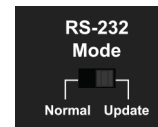
The RS-232 connector is used to transmit RS-232 over HDBaseT to the remote location and for firmware updates. Ensure that the RS-232 Mode and Set switches are in the proper position for the operation being performed.

#### Receiver RS-232 Mode

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.



#### Transmitter Set Switch

RS-232 Pass-through (default)



HDBaseT Update Updates to the HDBT chip



Firmware Updates  
Allows for updating the extenders firmware.



Long Cable Mode On  
Extends transmission of HDBT up to 140m/439ft



Long Cable Mode Off  
Maintains standard HDBT distances.



### 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.

- Ensure that a display is connected and powered On to the selected output before copying EDIDs or the copy will fail. When this occurs, EDID will be set to 4K@30Hz 2ch.
- Power to the matrix must be cycled (Off/On) after changing dip switches in order for the setting to take effect.

EDID Copy



4K @60Hz 2ch



1080p @60Hz 2ch



1080i @60Hz 2ch



1080p @60Hz 5.1ch



1080p @60Hz 7.1ch



### Power Supply Wiring

The EX-70-H2X 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)	<b>HDMI</b> 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)
	<b>Using Cat6</b> 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)
	<b>Using Cat6a/7</b> 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, 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
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	25mm/1in
Width	232mm/9.14in
Depth	93.3mm/3.68in
Weight	0.52kg/1.14lbs
Regulatory	
Safety and Emission	CE   FCC

## 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 receiver, verify that the HDBaseT cable is properly terminated per the [HDMI/HDBaseT Wiring](#) section.

- Verify that the transmitter, receiving device and display support 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.
- Verify that the HDBaseT cable is properly terminated per the [HDMI/HDBaseT Wiring](#) section.

## 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](http://wyrestorm.com) for additional information on this product including important technical information not provided in this document and warranty terms & conditions.



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

### No or Intermittent 3<sup>rd</sup> 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.