

# 4x4 4K UHD HDBaseT Matrix with HDCP 2.2 and 4x Low Profile PoH Receivers

## MX-0404-HDBT-H2-KIT v2.1



## Quickstart Guide

WyreStorm's latest 4x4 'Kit'; this PoH matrix with 4 receivers ensures compatibility with the latest 4K sources that require HDCP 2.2 encryption.

**Note:** The following information applies to version 2.1 of this product as identified by v2.1 after the model number on the product label.

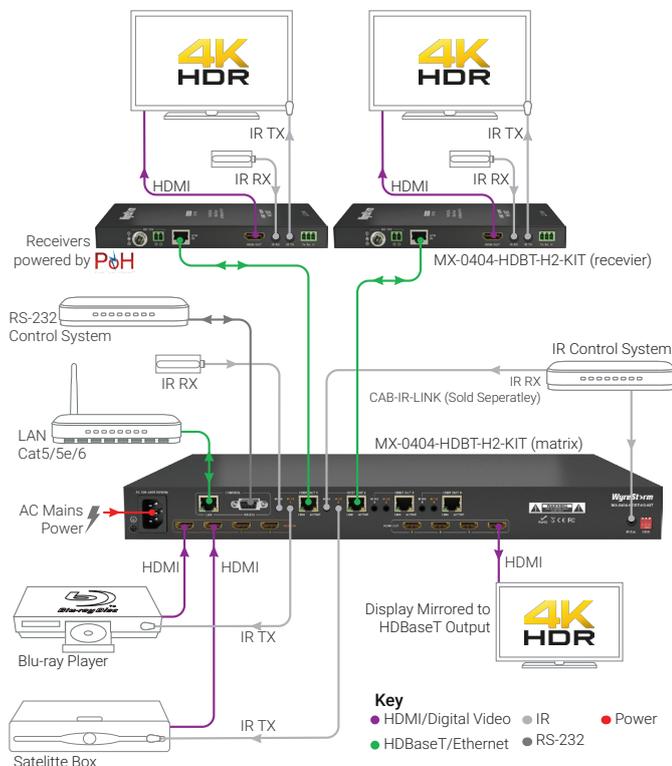
WyreStorm recommends reading through this document in its entirety to become familiar with the product's features prior to starting the installation process.



### In the Box

- 1x MX-0404-HDBT-H2-KIT Matrix
- 1x Matrix Switcher
- 4x HDBaseT Receivers
- 1x IR Remote Handset
- 8x IR Receivers (30KHz to 50KHz)
- 8x IR Emitters
- 1x IR Extension Cable
- 1x USB to DB9 RS-232 Cable
- 1x 100~240V AC 50/60Hz Power Cord with US Plug
- 1x 100~240V AC 50/60Hz Power Cord with UK Plug
- 1x 100~240V AC 50/60Hz Power Cord with EU Plug
- 4x 3-pin Screw Down Phoenix Connector
- 4x 2-pin Screw Down Phoenix Connector
- 2x Matrix Mounting Brackets
- 8x Receiver Mounting Brackets
- 1x Matrix Quickstart Guide
- 1x Receiver Quickstart Guide

### 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.

- 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 - Pre-configured drivers for popular control systems and API document.

### 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.

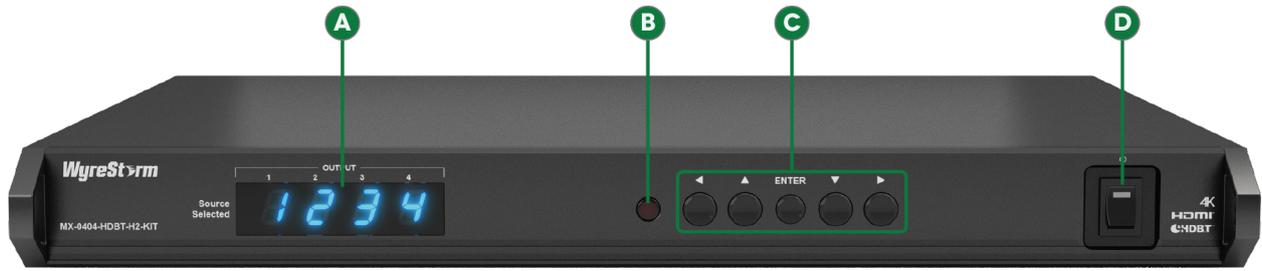
### Pre Wire

1. Run a Cat5e/6/6a cable from the matrix location to the receiver location no longer than 35m/114ft (4K) and 70m/230ft (1080p). Terminate the cable per the **HDMI/HDBaseT Wiring** section.
2. (Optional) If using IR emitters, run the wire and terminate per the **IR TX (Emitter) Wiring** section.
3. (Optional) If using IR receivers or an IR control system, run the wire and terminate per the **IR RX/IR EXT (Receiver) Wiring** section.
4. (Optional) If using RS-232 to control the matrix, run the wire and terminate per the **RS-232 Wiring** section.

### Matrix Installation

1. Connect an HDMI source to an HDMI In on the matrix using an HDMI cable from a high quality brand such as **WyreStorm Express**. See **HDMI/HDBaseT Wiring** for important wiring guidelines. Repeat for all sources.
2. Using the cable created in **Pre Wire** step 1, connect the 8-pin RJ-45 female plug to an HDBT Out jack on the switcher. Repeat for additional HDBaseT receivers.
3. (Optional) Connect an HDMI display to an HDMI Out on the matrix using an HDMI cable from a high quality brand such as **WyreStorm Express**. Repeat for additional displays.
4. (Optional) Using the included IR emitter or the cable created in **Pre Wire** step 2, place an IR emitter onto the source device near the device's IR sensor and connect the 3.5mm (1/8in) Mono Plug to an IR TX port. Repeat for additional sources.
5. (Optional) Using one of the included IR receivers, connect the 3.5mm (1/8in) stereo plug to the switcher's IR RX port. If using a control system, connect an IR out port on the control system to an IR RX port on the switcher using the **WyreStorm CAB-IR-LINK** or the cable created in **Pre Wire** step 3.
6. (Optional) Using the cable created in **Pre Wire** step 4, connect the 9-pin DB9 Female connector to the RS-232 port on the matrix and the opposite end to a port on a control system. Set update switch on rear panel to Normal in order to use RS-232 control.
7. Configure EDIDs following the information in the **EDID Settings** section.
8. Install the receivers following the instructions provided in the **MX-0404-HDBT-H2-KIT RX Quickstart Guide**.

## Front Panel



- |          |                                 |   |
|----------|---------------------------------|---|
| <b>A</b> | <b>Output Channel Indicator</b> | Displays the source input number currently selected for the corresponding output number.                              |
| <b>B</b> | <b>IR Sensor</b>                | Receives IR signals from included handheld IR remote or attached emitter from IR control system for switcher control. |
| <b>C</b> | <b>Source/Output Navigation</b> | <b>Left/Right:</b> Output Selection<br><b>Up/Down:</b> Input Selection<br><b>Enter:</b> Confirm Selection             |
| <b>D</b> | <b>Power Switch</b>             | <b>Up:</b> Power On matrix<br><b>Down:</b> Power Off matrix   |

## Rear Panel



- |          |                     |  |
|----------|---------------------|--|
| <b>A</b> | <b>Power In</b>     | IEC 3-prong<br>Connect to 100~240V AC 50/60Hz using the included IEC power cord.   |
| <b>B</b> | <b>HDMI In 1-4</b>  | 19-pin type A HDMI female:<br>Supports HDMI and DVI/D (requires adapter-not included). See <a href="#">HDMI/HDBaseT Wiring</a> for important wiring guidelines.  |
| <b>C</b> | <b>LAN</b>          | 8-pin RJ-45 female   10/100 Mbps auto-negotiating<br>Connect to a network router or switch for accessing the Web UI or control via an IP based control system.   |
| <b>D</b> | <b>RS-232</b>       | 9-pin DB9 Female<br>Connect to an RS-232 control system to control the matrix or a PC for testing and firmware updates. See <a href="#">RS-232 Wiring</a> .  |
| <b>E</b> | <b>IR TX/IR RX</b>  | IR TX: 3.5mm (1/8in) Mono Plug: Connect to the supplied IR emitter to control a local device from the remote display location via HDBaseT.<br>IR RX: 3.5mm (1/8in) Stereo Plug: Connect to the supplied IR receiver to send IR to the remote display via HDBaseT. See <a href="#">IR Wiring</a> .  |
| <b>F</b> | <b>HDBT Out 1-4</b> | 8-pin RJ-45 female<br>Connect the HDBT Out to the HDBT In on an HDBaseT receiver. See <a href="#">HDMI/HDBaseT Wiring</a> .<br>HDBT Out LED Operation<br><b>Green Solid:</b> HDBaseT link has been established with the receiver.<br><b>Green Flashing or Off:</b> HDBaseT link has NOT been established with the receiver.<br><b>Amber Solid:</b> HDCP content is present.<br><b>Amber Flashing:</b> HDCP content is not present.<br><b>Amber Off:</b> No signal. |
| <b>G</b> | <b>HDMI Out 1-4</b> | 19-pin type A HDMI female:<br>Supports HDMI and DVI/D (requires adapter-not included). See <a href="#">HDMI/HDBaseT Wiring</a> for important wiring guidelines.  |
| <b>H</b> | <b>IT Ext</b>       | 3.5mm (1/8in) Stereo Jack<br>Connect to an IR receiver (not included) or IR control system (using CAB-IR-LINK) to control the matrix when placed in a hidden location such as a cabinet or closet.   |
| <b>I</b> | <b>EDID</b>         | 3 Position Dipswitch:<br>Used to set EDIDs to correct resolution conflicts between the source and the display.<br>See <a href="#">EDID Settings</a> .  |

## HDMI/HDBaseT Wiring

### ⚠️ IMPORTANT! HDMI/HDBaseT Wiring Guidelines

- 4K UHD resolutions require more bandwidth than 1080p, for this reason WyreStorm recommends using Cat6 or higher to ensure proper 4K UHD transmission.
- 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.
- If a patch panel is being used, Cat6a or higher cable must be used from the matrix to the receiver as well as inside the panel to avoid loss of signal.
- 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.

### RS-232 Wiring

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.



### IR Wiring

#### IR TX (Emitter) Wiring

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



#### IR RX/IR EXT (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.
- When connecting to an IR control system use the **WyreStorm CAB-IR-LINK** cable to remove the sleeve +5V DC.



### 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.

- When set to Smart EDID (default) the matrix will scan all selected displays for the lowest resolution.
- When EDID Copy or a direct EDID is being used, SmartEDID is turned Off.
- 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.



Smart EDID - Display Lowest Resolution - 2ch (default)		4K@30Hz 5.1ch with HDR Support	
EDID Copy		4K@30Hz 7.1ch with HDR Support	
Front Panel, Web UI or API EDID Control		4K@30Hz 2ch with HDR Support	
4K@60Hz 2ch with HDR Support		4K@30Hz (8bit only) 2ch with HDR Support	

### Copying EDIDs

1. Set the EDID dipswitch to the **Front Panel, Web UI or API EDID Control** (all switches up).
2. Reboot the matrix.
3. Using the front navigation buttons, select the input port for the output. Example: Input 2 for Output 2
4. Once the output port indicator blinks, press and hold Enter for 5 seconds. **OK** indicates that the copy was successful, **FL-2** indicates that the copy failed.
5. Reboot the matrix.

**Note:** EDID Copy feature is not available when Matrix in Smart EDID mode.

## Specifications

Audio and Video		
<b>Inputs</b>	4x HDMI 19-pin type A female	
<b>Outputs</b>	4x HDMI 19-pin type A female (mirrors HDBT) 4x HDBaseT 8-pin RJ-45 female	
<b>Audio Formats</b>	2ch PCM   Up to 7.1 DTS-X and Dolby Atmos	
<b>Video Resolutions (Max)</b>	<b>HDMI</b>	
	1920x1080p @60Hz 36bit (15m/50ft)	3840x2160p @24Hz 4:2:0 HDR 10bit per channel (3m/9.8ft)
	1920x1080p @60Hz 48bit (7m/23ft)	4096x2160p @60Hz 24bit 4:2:0 (7m/23ft)
	3840x2160p @24/25/30Hz 4:4:4 24bit (7m/23ft)	4096x2160p @60Hz 24bit 4:4:4 (7m/23ft)
	<b>Using Cat6</b>	
	1920x1080 @60Hz 36bit (60m/196ft)	3840x2160p @24Hz 4:2:0 HDR 10bit per channel (35m/114ft)
	1920x1080 @60Hz 48bit (35m/114ft)	4096x2160p @60Hz 4:2:0 24bit (35m/114ft)
	3840x2160p @24/25/30Hz 4:4:4 24bit (35m/114ft)	
	<b>Using Cat6a/7</b>	
1920x1080 @60Hz 36bit (70m/230ft)	3840x2160p @24Hz 4:2:0 HDR 10bit per channel (40m/131ft)	
1920x1080 @60Hz 48bit (40m/131ft)	4096x2160p @60Hz 4:2:0 24bit (40m/131ft)	
3840x2160p @24/25/30Hz 4:4:4 24bit (40m/131ft)		
<b>Color Depth</b>	1080p: 48bit   4K UHD: 24bit   HDR @24p: 10bit per channel BT.2020	
<b>Maximum Pixel Clock</b>	HDMI: 600mHz   HDBaseT: 297mHz	
Communication and Control		
<b>HDMI</b>	HDMI 2.0   HDCP 2.2   EDID   DVI/D with adapter (not included)	
<b>HDBaseT</b>	4x 8-pin RJ-45 female   HDCP 2.2   EDID   PoH (1-way)   Bidirectional IR	
<b>IR</b>	1x Front Panel IR Sensor   Matrix Control   1x IR Ext 3.5mm (1/8in) Stereo   Matrix Control 4x IR TX 3.5mm (1/8in) Mono   Bidirectional via HDBaseT   4x IR RX 3.5mm (1/8in) Stereo   Bidirectional via HDBaseT	
<b>RS-232</b>	1x 9-pin DB9 Female   Matrix Control-Telnet commands supported	
<b>Ethernet</b>	1x 8-pin RJ-45 female   10/100 Mbps auto-negotiating   Built-in Web UI   IP Control	
Power		
<b>Power Supply</b>	100~240V AC 50/60Hz	
<b>Max Power Consumption</b>	70W	
<b>PoH (1-way)</b>	48V 15.4W (each HDBT output)	
Environmental		
<b>Operating Temperature</b>	32°F ~ 113°F (0°C ~ 45°C) 10% ~ 90%, non-condensing	
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C) 10% ~ 90%, non-condensing	
<b>Maximum BTU</b>	239 BTU/hr	
Dimensions and Weight		
<b>Rack Units/Wall Box</b>	1U	
<b>Height</b>	43.5mm/1.72in	
<b>Width</b>	440mm/17.33in	
<b>Depth</b>	300mm/11.82in	
<b>Weight</b>	4.96kg/10.91lbs	
Regulatory		
<b>Safety and Emission</b>	CE   FCC   RoHS	

## Troubleshooting

### No or Poor Quality Picture (snow or noisy image)

- Verify that power is being supplied to the matrix and HDBaseT receivers 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.

## 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.



- 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.

### 🔍 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.