MX-0404-POH-KIT

WyreStorm HDBaseT PoH 4x4 HD Matrix with 4 x 70m HDBaseT PoH HD Display Receivers

WyreStorm HDBaseT Matrix Solutions

HDBT PoH HDMI Full HD 1080P HDCP COMPLIANT 3D

Instruction Manual

CE RoHS

Thank you for choosing this WyreStorm product.
Please read these instructions carefully before installing to avoid complications later.

Contents

1. Introduction

Flexible, powerful, convenient and affordable; the Wyrestorm mx-0404-poh-kit offers the integrator the best of all worlds with a combined HDBaseT™ matrix switching and display receiver solution offering remote powering of display zones for plug-and-play simplicity for small-to-medium sized distribution and control integrations.

The MX-0404-POH-KIT features high quality, low latency Hdbaset Class B technology for 4x4 distribution and matrix switching over a single Cat5e/6 cable with four matching slim-line Poh display receivers of just 15mm height for the lowest form factor available on the market, more than capable of installation behind even the slimmest display wall plates.

Allowing connected HDMI inputs to be distributed independently and simultaneously over distances of up to 70m/230ft to any display receivers connected to the matrix, regardless of HDCP encryption, the MX-0404-POH-KIT offers HDBaseT signal stability for the transmission of lossless 1080p HD Video up to 60Hz / 36bit, HD multichannel audio, bidirectional control via IR from a centralised AV location to displays using unshielded or shielded Cat5e/6 cable*, with further control via RS232 including full compatibility with leading control systems.

PoH (Power-over-HDBaseT) enables power to be passed along the cable along with transmissions from the matrix to power receivers at display zones without the need for local mains power for greater flexibility and convenience during installation as well as improved energy efficiency compared to a permanent mains connection.

The system offers flexibility and reliability of signal distribution, combined with innovative features and an ease of use to deliver HD audio and video and power, controlled via IR, RS232 or LAN, all on a single Cat5e/6 cable that removes the need for additional control, video cables and power supplies on installations, whether in a residential or commercial setting.

All of which guarantees a quick, hassle-free installation, whatever the application, for the very best in reliable and affordable single cable AV distribution and control.

***When using shielded cable, please ensure you use shielded RJ45 connectors and terminate the grounding wire at both ends of the cable. This is standard practice when using FTP shielded cable.**

For further information on this product and other WyreStorm ranges, visit our website or download our latest product guide. **wyrestorm.com**

2. Features

MATRIX

• 4x4 HDBaseT Matrix HD Switcher and 4 HDBaseT Display Receivers - quick and easy installation straight out of the box
• Input: 4x HDMI Output: 4x HDBaseT with integrated RJ45 connectors for a single Cat5e/6 UTP cable to each display point for ease of installation*
• Enables up to 4 HDMI video/audio devices to be independently switched through up to 4 HDMI displays or projectors for uncompressed digital distribution
• Class B HDBaseT - same robust HDBaseT transmission technology far more resistant to electrostatic interference than conventional UTP distribution
• Power-over-HDBaseT (PoH) - low-voltage power passed directly along Cat5e/6 up to 70m/230ft from matrix to all connected PoH-enabled receivers so no additional power supply is required at display locations
• Capable of 1080p HD video @60Hz and HD multichannel audio distribution, bidirectional control via IR and RS232 up to 70m/230ft per output (under recommended transmission conditions)**
• Supports all high definition resolutions up to and including 1080p and standard video formats
• 2K resolution
• Each output able to show any connected source simultaneously regardless of whether the input carries HDCP encryption.
• Each HDMI port also supports DVI inputs
• 36bit Deep Colour supported
• HDMI v1.4 with full 3D compatibility with frame packing/ sequential (Blu-ray) and interlaced stereoscopic (satellite/ cable broadcasts)
• HDCP compliant with constant feed to prevent screen drop-outs
• Reads and copies EDID from connected devices with additional EDID configuration through customisable DIP switch settings if necessary
• Central RS232 control – fully compatible with all market leading control systems with full integration protocols available - check website for listing
• LAN control – with Control 4 LAN protocols
• Wide range, bidirectional discrete IR control between source and display and vice versa (30 KHz to 56 KHz frequency)
• 6.75 Gbps bandwidth range/signalling rate
• Choose from 6 Matrix switching methods – infrared remote control, front panel buttons, local IR, IR call-back, RS232 and LAN
• Simple switching matrix remote control included, which can also be learned into a universal remote handset to allow the control of multiple devices from one handset
• 4 x IR 3.5mm mini-jack ports for each output
• 4 x IR 3.5mm mini-jack ports for each source
• Additional infrared extension for local matrix control if unit is out of IR handset line-of-sight
• Suitable for residential or commercial installation
• Conforms to IEEE-568B standards

ADDITIONAL FEATURES ON RECEIVERS

• Low profile 18mm chassis height for convenient installation at display zones, even behind the slimmest wall plates.
• Multichannel audio supports 7.1 DT Master HD and Dolby True HD
• Power-over-HDBaseT (PoH) - low-voltage power passed directly along Cat5e/6 up to 70m/230ft from matrix to all connected PoH-enabled receivers so no additional power supply is required at display locations
• Additional power connectivity via threaded bushings for both standard and locking DC power plugs and phoenix connector
• Automatically adjusts feedback, equalization and amplification of signal for easy installation.
• Switchable RS232 for firmware updates or third party control of matrix switching from display zones with open source integration protocols available for market leading control systems
• LED indication for visual power supply to receiver via PoH or mains, signal status to show established connection to display, HDBaseT link to matrix and HDCP confirmation to illustrate the presence of encryption within a signal

***While our equipment is tested and graded to Cat5e cable standard; tests have shown that even better results are achieved using Cat6 cable, with the lower gauge and thicker copper cores of Cat6 ensuring a better signal transfer. Newly installed cabling should always conform to Part P Regulation and BS 7671 (17th Edition), and should be terminated to 568B standard.**

****Recommended transmission conditions denote cable run is within specified distance range of product, no electrical interference, the use of straight cable runs with no bends or kinks and no patch panels or wall outlets used. Please be advised that the presence of any of these factors in your installation may compromise bandwidth and signal strength. For longer transmission distances, LAN control and Ethernet pass-through, see other models in the WyreStorm HDBaseT range of matrices, transmitters, receivers and extender sets.**

WyreStorm reserves the right to change hardware, software, packaging and any accompanying documentation without prior written notice.

3. Safety Precautions

WARNING
To reduce the risk of fire, electric shock or product damage:

1. Do not expose this apparatus to rain, moisture, sprays, drips or splashes and ensure that no objects containing liquids are placed on the apparatus, including cups, glasses and vases.
2. Do not place this unit in a confined space such as enclosed shelving, cabinets or bookshelves. Ensure the unit is adequately ventilated.
3. To prevent the risk of electric shock or fire hazard due to overheating, do not cover the unit or obstruct ventilation openings with material, newspaper, cardboard or anything that may restrict airflow into the unit.
4. Do not install near external heat sources such as radiators, heat registers, boilers or any device that produces heat such as amplifiers or computers and do not place near sources of naked flame.
5. Unplug apparatus from power supply during lightening storms or when unused for long periods of time.
6. Protect the power cable from being walked on, pinched or restricted in any way, especially at plug connections.
7. Only use attachments/accessories specified by the manufacturer.
8. Units contain non-servicable parts - Refer all servicing to qualified service personnel

4. Package Contents

1 x 4x4 HDBaseT POH matrix
4 x HDBaseT POH display receivers
1 x Printed quickstart guide (quickstart and full instruction manual downloadable on the product page at wyrestorm.com)
1 x (pair) mounting brackets (matrix)
4 x (pairs) mounting brackets (receivers)
8 x IR TX emitters (matrix/receivers)
9 x IR RX receivers (8 for matrix/receivers, 1 for matrix IR EXT connection)
1 x MX-0404-PP-POH-KIT remote control (matrix) - size/type: CR2025 3V
1 x 24V DC US/UK/EU power cable (matrix)
Accessories (mounting bracket screws, matrix HDMI port dust covers)

5. Specifications

TECHNICAL	
I/O Connections	**MATRIX** 4 x HDMI IN 4 x HDBaseT OUT 1 x RS232 1 x IR EXT 1 x EDID DIP switch **RECEIVER** 1 x HDBaseT IN 1 x HDMI OUT
Output Signal Type	HDMI1.3 with HDCP
Output Bandwidth Signalling Rate	6.75Gb/s
Input Video Signal	0.5-1.2V p-p
Input DDC Signal	5 volts p-p (TTL)
Maximum Single Link Range	1080p 36bit Deep Colour
Transmission distance	1080p @60Hz signal up to 70m/230ft using WyreStorm 70m HDBaseT receivers behind each display (Under recommended transmission conditions including straight cable runs with no electrical interference, bends, kinks, patch panels or wall outlets)

WyreStorm

Single Cat5e/6 Display Receiver (70m/230ft)

Part Number	RX-70-POH

Maximum Pixel Clock	225 MHz
Video Impedance	100 Ω
Power Supply	24V DC
Power Consumption	**MATRIX** 27.5w max (without PoH), 55.6w max. (with PoH) **RECEIVER** 6.6w
BTU Rating	93.6 (without PoH), 189.7 (with PoH)
Video Format Supported	480i, 576i, 480p, 576p, 720p @ 50, 720p @ 60, 1080p @ 24, 1080i @ 25, 1080i @ 30, 1080p @ 30, 1080p @ 50, 1080p @ 60 (Resolution @ Hz)
Audio Format Supported	Multichannel audio - DTS-HD 5.1 / 7.1, Dolby HD 5.1 / 7.1
Output Video	HDMI 1.3 with HDCP + full 3D (up to 1080p) - frame packing (Blu-ray) & stereoscopic (satellite/cable)
Control Method	IR control / Front panel buttons / RS232 / LAN
Operating Temperature	32°F ~ 113°F (0°C ~ 45°C) 10% ~ 90%, non-condensing
Storage Temperature	-4°F ~ 140°F (-20°C ~ 70°C) 10% ~ 90%, non-condensing
ESD Protection	±8kV (air-gap discharge) ±4kV (contact discharge)
Surge Protection	Voltage: ±1kV

CABLE		
NOTE: Cable types below are for reference only. This product is tested using WyreStorm HDMI cables - we recommend use of WyreStorm cables for guaranteed quality and reliability of transmission when dealing with UHD 4K content. Ensure cables and connections are in good condition, with no bends or kinks and no patch panels or wall outlets used. The presence of any of these factors may compromise bandwidth and signal strength.		
Cable Type	Range	Supported Video
HDMI 1.3 Cat5e/6 Cat56a/7	15m/49ft 70m/230ft 70m/230ft	1080p @ 60Hz with 36bit Deep Color including 3D.

GENERAL	
Dimensions (WxHxD)	**MATRIX** 440mm x 43.5mm x 171.4mm / 17.3” x 1.7” x 6.7” **RECEIVER** 181.7mm x 18mm x 94mm / 7.15” x 0.71” x 3.70”
Weight (Main unit)	**MATRIX** 2kg / 4.4lbs **RECEIVER (EACH)** 0.4kg / 2.2lbs
Rack space required	1U
Certification	CE, FCC, RoHS

6i. Panel Description - Matrix

Front

1 Input select button (click to scroll numerically)

2 Input selection per output (lit to show input currently selected for output)

3 IR Sensor

4 Power Switch

Rear

1. RS232 Port - Matrix only
2. LAN port
3. EDID DIP Switch (for manual EDID setting)
4. 24V DC power input
5. IR Extension port (IR EXT)
6. UTP Output ports 1-4 (RJ45 Cat5e/6)
7. IR TX Emitter ports (corresponds to inputs)
8. Input ports (HDMI)
9. IR RX Receiver ports (corresponds to outputs)

6ii. Panel Description - Receiver

Front

1. Receiver Mode — **Normal:** unit operation and RS232 control
   Update: RS232 firmware update mode used to update the firmware of the receiver

   Note: When used with the MX-0404-POH-KIT the RS232 port can only be used for firmware update – serial control of the receiver itself is not possible

2. Power LED — **On:** Receiver powered (either by PoH or mains)
   Off: **Receiver not powered (no power supply detected)**

3. Status LED — **Slow Flashing**: Receiver functioning correctly
   Off: Receiver not functioning correctly – investigation and troubleshooting recommended

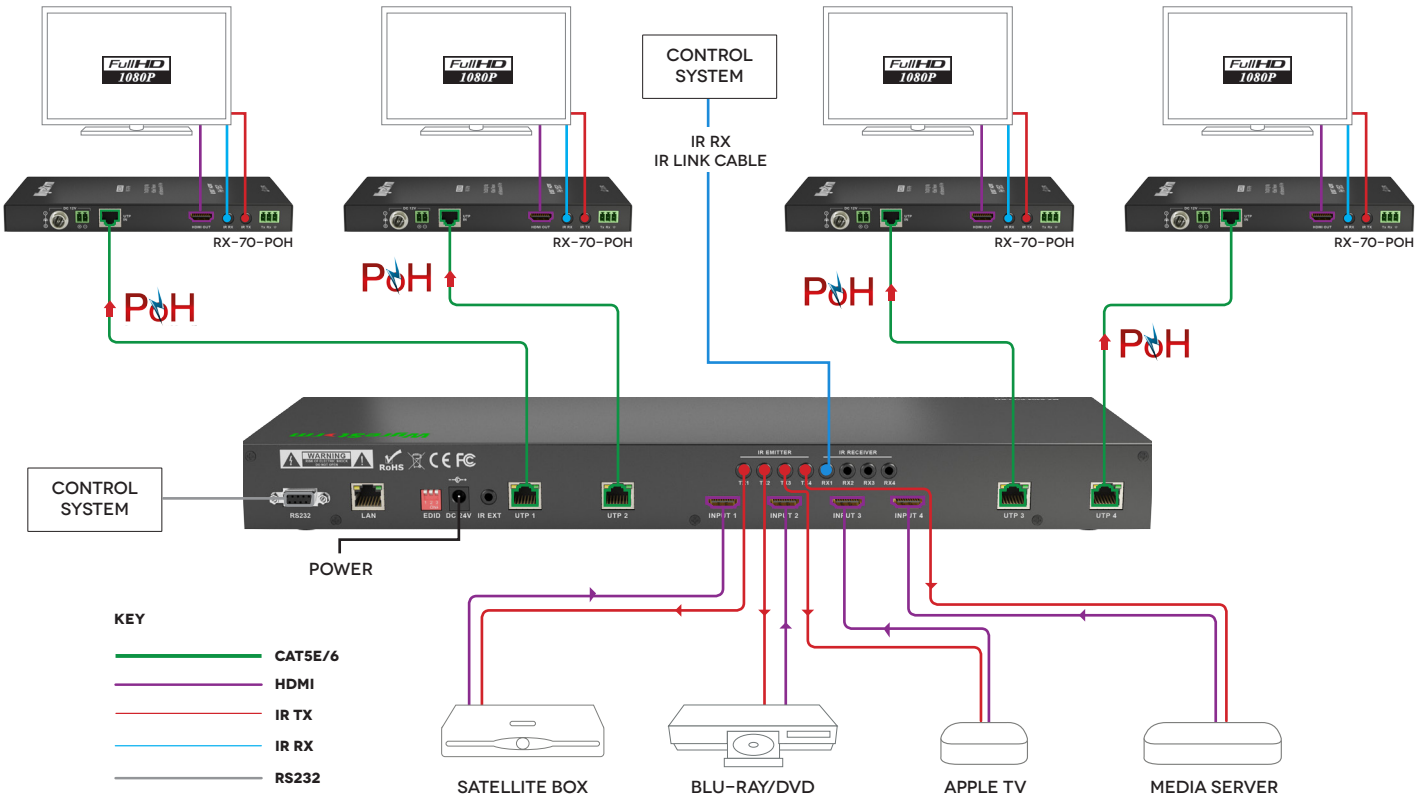
4. HDCP LED — **On:** HDCP video being transmitted
   Rapid Flashing: Non-HDCP video being transmitted

5. Link LED — **On:** Receiver and matrix linked and transmitting correctly
   Off/Blinking: Connection issues exist between receiver and matrix – investigation and troubleshooting recommended

Rear

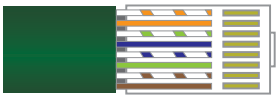
1	Power	12V DC power input: - threaded port for standard or locking connection - two-pin phoenix port for additional power connection
2	UTP IN	Connects to HDBaseT transmission device, such as an MX-0404-POH-KIT Matrix
3	HDMI OUT	Connects to display device
4	IR RX	Connects to IR receiver positioned near display device to enable control of source from display location
5	IR TX	Connects to IR emitter to display device to enable control of source from display location
6	RS232	3 pin RS232 for firmware update

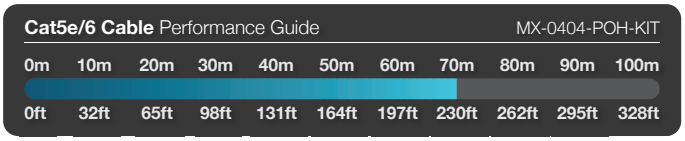
7. Typical Application



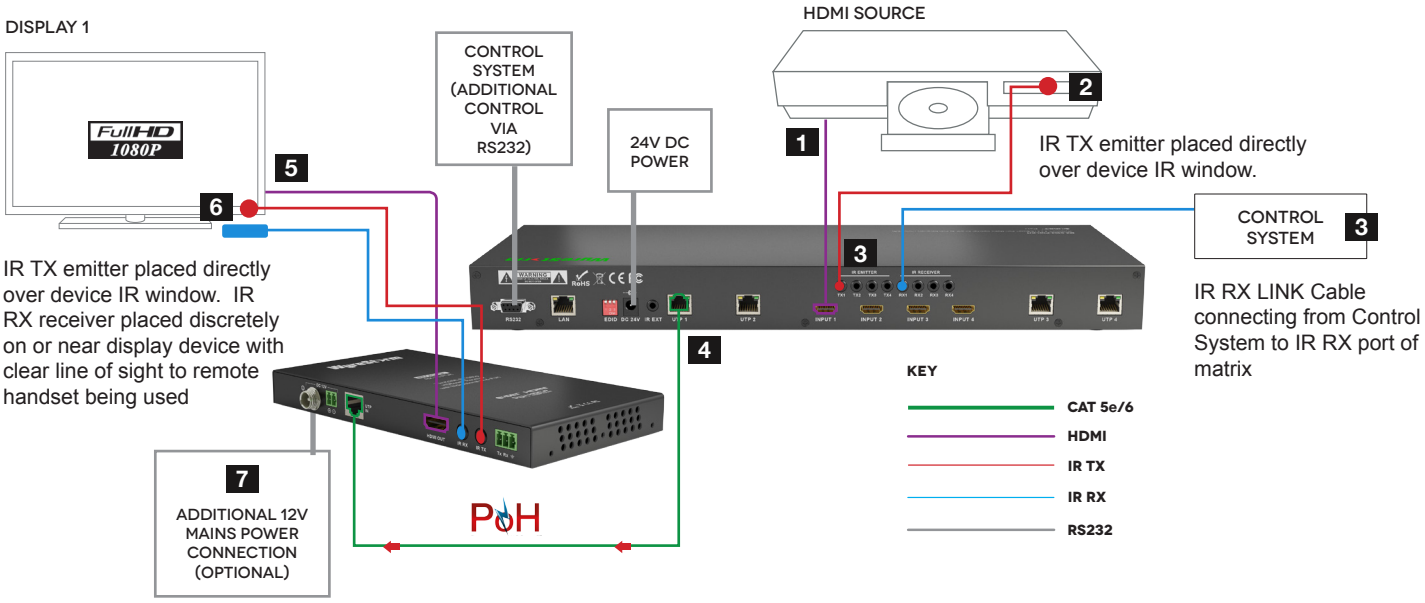
Cat5e/6 Wiring Guide

The quality of termination for every RJ45 is essential. Poor terminations leads to intermittent performance and longer install times.





8. Connection



1 Connect HDMI sources (such as HD-DVD, Blu-ray, games console, AppleTV, satellite/cable etc.) to HDMI inputs 1 – 4 of the MATRIX.

Attention **Do Not Hotplug! - Please insert and extract cables carefully with the power SWITCHED OFF. Connecting and disconnecting while the unit is powered can result in damage to circuitry.**

2 Attach the IR emitter directly over the infrared receiving sensor of the input source using the adhesive backing. You may need to adjust the position of the emitter after installation to achieve the best results. Sometimes moving the sensor to different areas of the source can improve IR performance.

3 Plug the 3.5mm jack of the IR emitter into your chosen number IR TX port on the rear panel of the MATRIX.

For two-way IR control of the display from the matrix or connection to a control system, connect an IR Link cable to the control system or plug an IR RX receiver cable into the corresponding IR RX port on the rear panel of the MATRIX, ensuring the receiver is placed in clear view to receive an IR signal.

NOTE Make sure the IR jacks are in the same number ports.

HINT **Locate the infrared sensor on devices by shining a flashlight onto the display panel of sources and look for a small sensor.**

4 Connect a good quality, well terminated Cat5e/6 cable with an RJ45 connector wired to 568B standard at both ends from the UTP Output port of the MATRIX to the UTP In of the display receiver. If cascading an output, connect the UTP to the UTP IN of the transmission device.

Ensure both RJ45 connectors are pushed securely into each port and supported by the connector strain relief clip to prevent them from becoming loose. The quality of termination for your RJ45 is essential. Poor quality terminations lead to intermittent performance and longer install times.

HINT **Although all WyreStorm products are tested using Cat5e as standard, we suggest using Cat6 as the preferred cable due to its improved distribution capabilities.**

Attention **We strongly recommend using the supplied mounting brackets to secure the MATRIX and the accompanying DISPLAY RECEIVER. Any sudden movement of these devices could lead to loss of picture and sound if connections become loose or strained, resulting in unnecessary service call backs.**

5 Connect the HDMI OUT of the DISPLAY RECEIVER to the HDMI IN of the display.

6 Connect an IR RX cable to IR RX port of the display receiver. Place the IR RX receiver discretely on the front or near of the display with care taken to achieve a clear line of sight with the remote control to be used.

For two-way IR control of the display from the matrix end, connect an IR TX emitter from corresponding IR TX port on the display receiver directly onto the display, ensuring the emitter is placed directly over the infrared receiving sensor of the display using the adhesive backing.

Again, you may need to adjust the position of both receiver and emitter to achieve the best IR signal distribution.

7 Ensure the display receiver is fixed firmly in place behind the display.

Display receivers are powered remotely from the matrix so no mains power is required. In instances where cable quality, length or placement impacts on successful PoH delivery, receivers can also be powered locally via threaded or phoenix 12V DC mains supply.

8 Switch on the power to your input sources, displays, and any display receivers connected. Finally, power up the MATRIX. Your MX-0404-POH-KIT should now be fully connected and ready for use.

Attention **Remember, always switch off the matrix before unplugging any inputs or outputs – follow last on, first off protocol.**

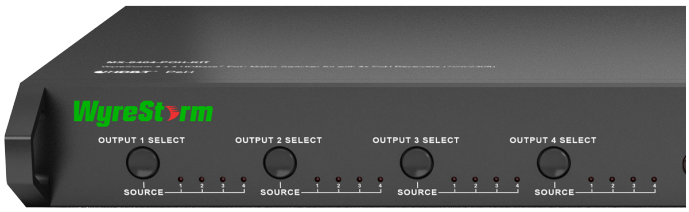
If your IR emitters and receivers are correctly placed you should now be able control both sources and displays discretely from either location.

If you do not have IR control:

- Check your cables are straight with jacks firmly connected to ports.
- Check your IR sensors are unobstructed and able to receive infrared signals.
- Check direct sunlight on the emitters/receivers is not affecting the infrared signal.

9. Basic Operation

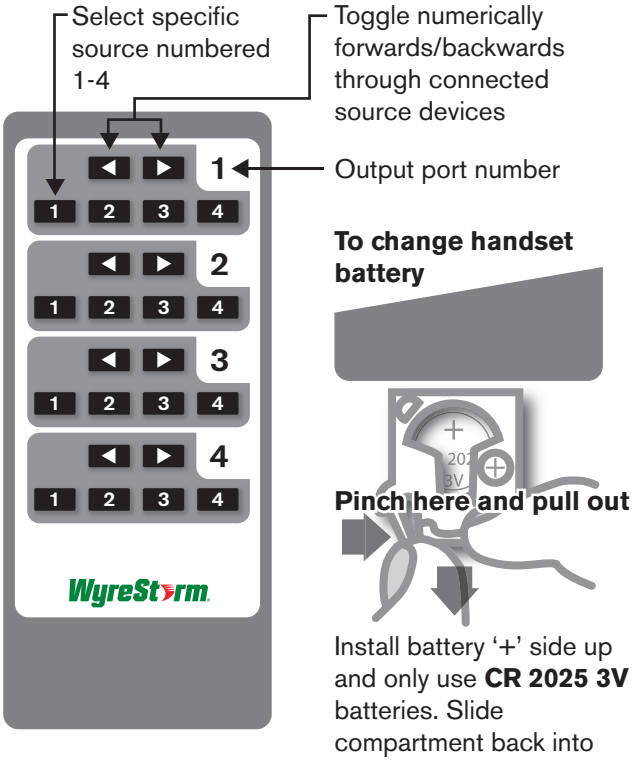
Front Panel Control



Basic switching of various source inputs to output displays can be achieved via the front panel control of the matrix.

Outputs are numbered 1 – 4 with an input select button below. Repeated pressing of the select button of a specific output scrolls numerically through the HDMI source devices connected to the matrix, with the corresponding LEDs illustrating when a device has been selected for that particular output. The chosen input will automatically store for the output so, even when the matrix is powered off and on, on resumption the last selected input/output combination will remain.

Remote Control (Local IR)



To change handset battery

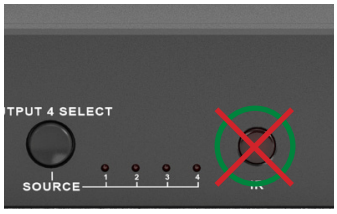
Install battery '+' side up and only use **CR 2025 3V** batteries. Slide compartment back into the handset.

The same basic switching functions can also be accessed via the remote control.

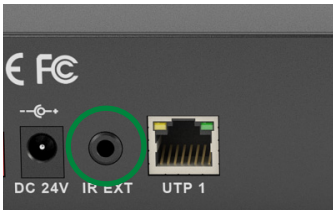
Operation of the handset is the same regardless of location – locally (source/IR emitter) or remotely (display/ IR receiver).

Simply toggle through the input sources connected to the matrix by either pressing the left/right arrow buttons or buttons numbered 1 – 4 for each output.

IR Extender Control

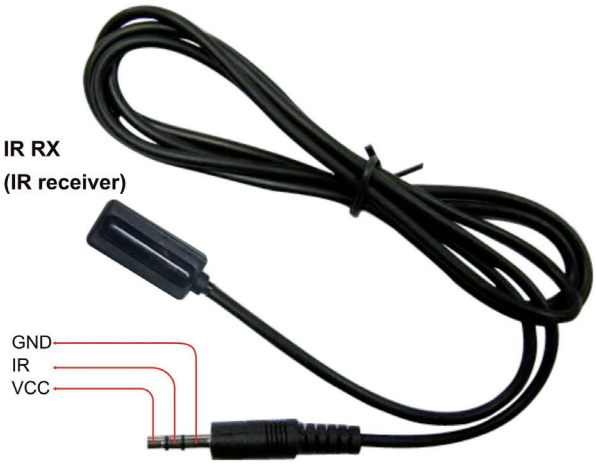


Front



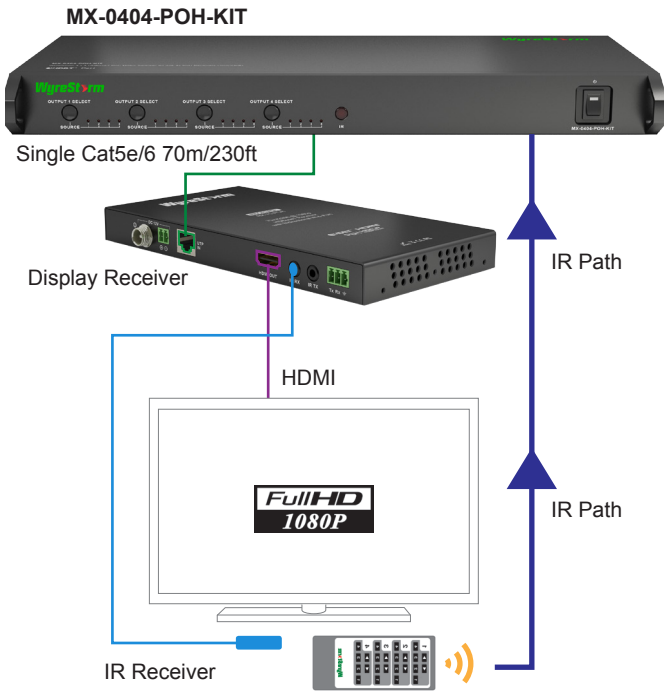
Rear

Should local control of the Matrix via the front panel IR sensor be an issue, for example if the sensor is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR receiver included can be inserted into the IR EXT port at the rear to extend the IR sensor range and enable local control of the matrix. Make sure the receiver itself is located with a clear line of sight to the remote handset controlling it.



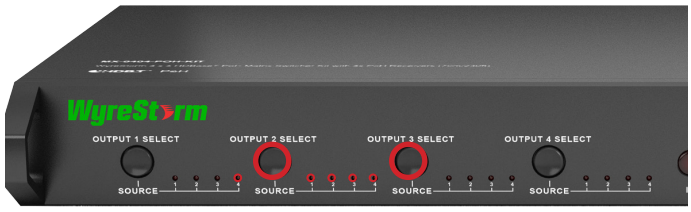
IR Call-back of Matrix and Source Devices

The MX-0404-POH-KIT is not only a switcher and extender of multiple HDMI signals to multiple HDMI receivers located remotely, it also passes IR control signals through the IR call-back system to the matrix and HDMI sources for full, independent control of all connected inputs from output locations.



The IR call-back function can be turned on and off as required. See below

Setting: To enable IR call-back press and hold **OUTPUT 2** and **OUTPUT 4** together for 3 seconds until the LED lights **FLASH** on **OUTPUT 1** and **OUTPUT 2**. Call-back is now activated and control of the Matrix is now possible from remote locations.

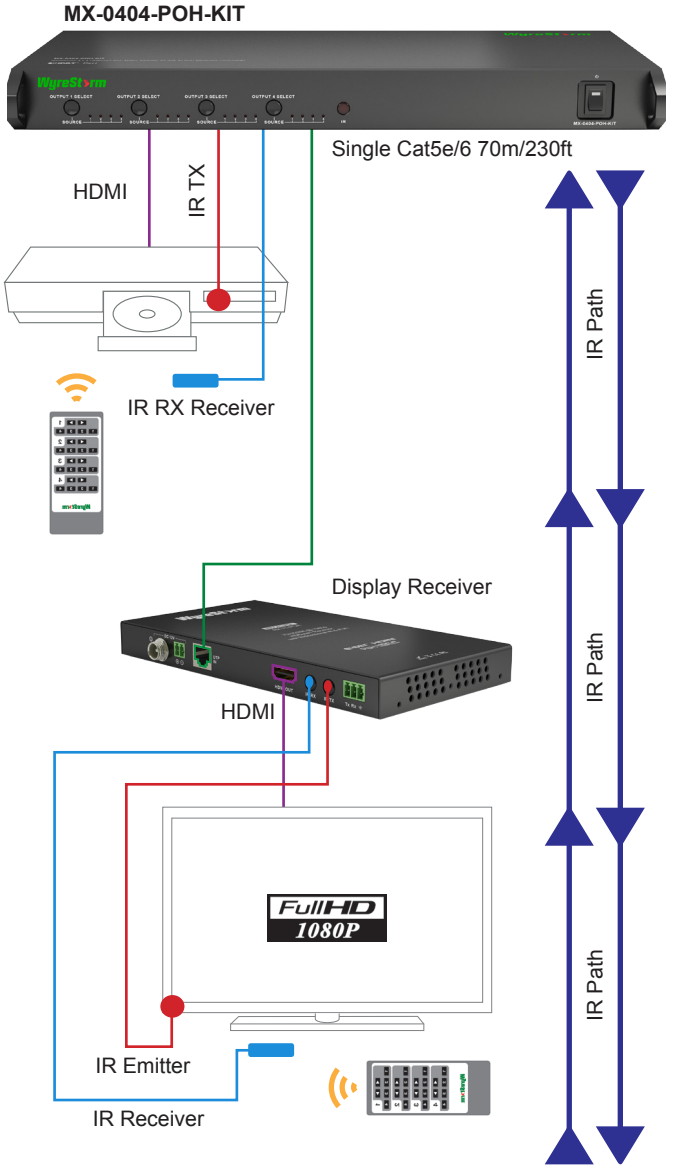


To disable the call-back function, repeat the process until the LED lights flash again.

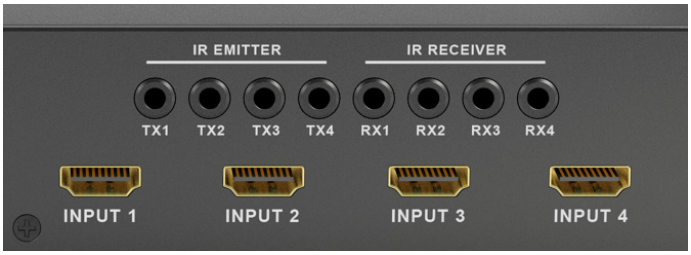
Two-way IR Call-back Between Matrix, Sources and Displays from Multiple Locations

A key feature on our HDBaseT Matrix range is discrete IR control of the matrix, sources and displays from any location – so inputs at the matrix end can be controlled at a display location and displays can be controlled at the matrix location.

This is accomplished by placing a series of IR emitters on devices to control and IR receivers at all locations you wish to control from to enable the IR signal to travel both ways via the single Cat5e/6 cable.



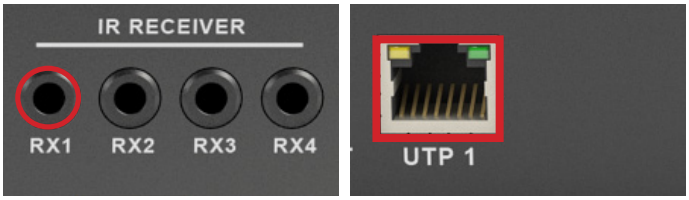
1 **At Matrix end:** Insert the 3.5mm jacks of the IR TX included with the unit into the IR TX ports at the rear of the matrix according to input. The IR signal is added to the HDMI of the input device so, for example, if the user is watching Blu-ray on input 3, the IR signal will be directed through the IR TX3 socket to control the device.



As each IR TX port is allocated to an individual HDMI input port, if the user is unable to establish IR control of the device, care should be taken to check firstly, that the IR emitter and HDMI input ports match (Input 1-TX1, Input2-TX2 etc.) with plugs secured in correct ports, and secondly, that the IR emitter sensors are firmly attached directly to the front of inputs and covering infrared sensor windows of the source devices.

Some later adjustment may be needed to the location of the sensor to achieve the best performance results - sometimes moving the sensor to different areas on the source can improve IR performance.

NOTE Infrared receiving areas of devices can be located by shining a flashlight onto the front of the device – the sensor should be able to be seen through the plastic as a small, round object inside.



As with the IR TX, the IR RX ports are allocated to their respective UTP OUTPUT ports (Output1-RX1, Output2 -RX2) with the IR signal converted to HDMI and carried along the single Cat5e/6 cable.

Insert 3.5mm jacks of IR receivers into RX ports, making sure the receivers themselves are placed in clear view to receive an infrared signal from the remote handset used to control the display outputs.

Setting: For the Matrix to enable two-way IR control between inputs and outputs, press and hold **OUTPUT 1** and **OUTPUT 4** together for **3 seconds** until **ALL** output LED lights flash, signalling the unit is in **Two-way IR Mode.**
Repeat the process to disable **Two-way IR Mode.**

2 **At display end:** Insert the IR receiver jack into the IR RX port of the display receiver balun, with the receivers themselves placed in clear view on or near the displays to receive an infrared signal from the remote handset used to control inputs.

Insert the IR emitter jack into the IR TX port of the display receiver balun, ensuring that the emitter sensor is securely attached to infrared sensor window of the display.

Follow the same connection and positioning for all baluns/ displays connected to the matrix. If all IR emitters and IR receivers are positioned and connected correctly with sources, displays and display receivers fully powered and the matrix set to IR call-back enabled and IR TX Switch mode activated, two-way IR will now be possible.

NOTE Misplaced or poorly secured IR emitters and receivers may result in intermittent IR control signals passed to and from the matrix. Check your placement and adjust if necessary.

10. Advanced Operation

Typically, unless alternative methods of controlling the matrix are chosen or problems with device communication through the matrix encountered, basic operation is all that is required to operate your MX-0404-POH-KIT. However, the following information on advanced operation will detail how the matrix system can be configured and for advanced control and settings can be altered or data manually input should such problems arise, as well as configuring the system for third party control.

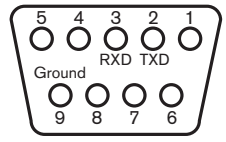
RS232 Remote Control

Control of the matrix is possible through RS232 using third party control systems or the dedicated WyreStorm control software included with your purchase - downloadable from product page on **wyrestorm.com**

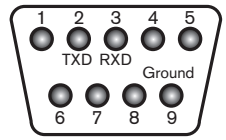
Market leading control systems RS232 and IP integration protocols are also available for download on the product page. See website for compatible control systems.

i. RS232 Control

Should third party control be required, please see below for control system configuration and hex code input. The RS232 connection on the matrix is female DB9 Users can use a USB to RS232 cable or a direct male to female serial cable.



Female connector - 9 holes



Male connector - 9 pins

RXD Receive serial data from PC
TXD Transmit serial data to PC

Com Port Setting

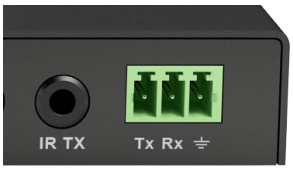
Baud rate	9600bps
Data bits	8bits
Parity	None
Stop bits	1
Flow control	None

ii. Updating RS232 Settings

To update the firmware on the RX-70-POH Receiver:

1 Move the RS232 MODE switch on the Receiver to the UPDATE setting to enter Firmware Update Mode.

2 Connect a Serial-to-USB cable from the RS232 port of the RX-70-POH to a computer and run VS010 RX Firmware Update batch file available from **wyrestorm.com**.



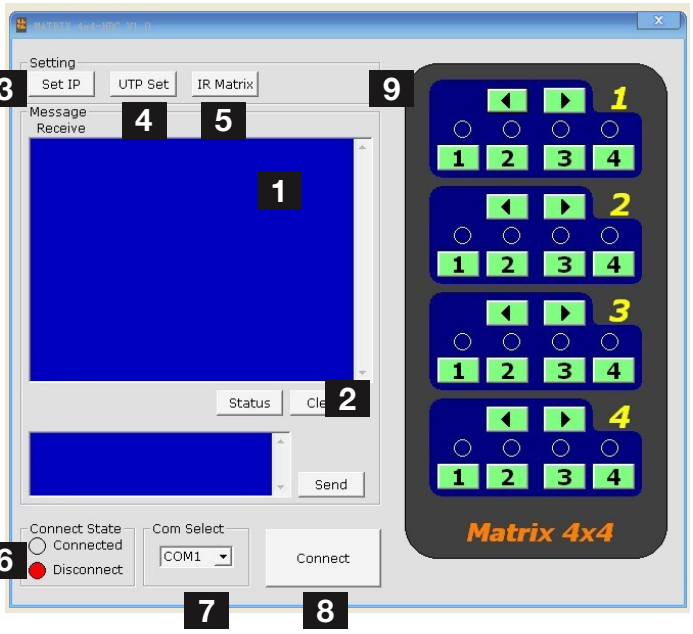
3 Once the update has been completed, be sure to return the MODE switch to the NORMAL position for RS232 control signal transmission to be passed.

NOTE Connect RS232 cables to the RS232 port of the Receiver to form one extension cable.

Attention Ensure the RS232 MODE switch on the Receiver is returned to Normal after updating. Although the extenders will transmit audio/video signals, RS232 control between the devices of will not be possible when the switch is set to Update mode.

iii. COM CTL Control

After fully connecting all inputs and outputs to the matrix and installing the software, on opening the program the control window will display information from the matrix, such as messages received from the switch such as input/output details, firmware version and control commands/HEX codes that allow the system to be controlled remotely, as well as buttons used to navigate the screen.



1 **Receive Message Window** – displays messages received from the matrix, such as input/output settings and command selections. You can view the current condition of all input/output ports by pressing the

Status button.

Pressing

Clear

will delete the previous message received in the window.

2 **Send Message Window** – Input your serial commands for the matrix in the **Send Message Window** - such as instructions for outputs or to enter update mode – and click the **Send** button to deliver the message to the Matrix.

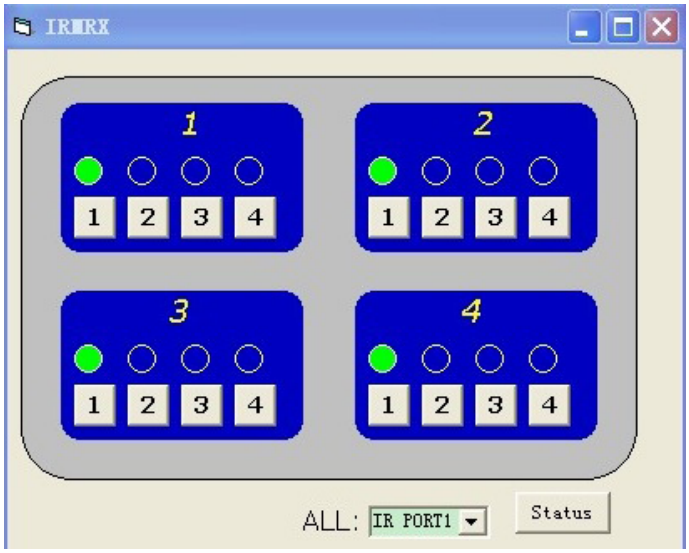
NOTE To see the firmware version currently used in the system – power off and repower while the matrix is connected to COM CTL. The firmware version and creation date will be displayed together with the normal output state of the matrix.

3 **Set IP button non-functional** – To set your IP, please refer to Smart Set GUI on p.14 section 4

4 **UTP Set** – Default setting is OFF for normal Matrix operation to obey device EDID/HDCP commands and high hotplug settings when outputting a signal. Switching output settings to ON instructs the matrix to output a signal regardless of device EDID/HDCP or hotplug data – such information is circumvented to encourage communication in the event of problems between sync devices.

We recommend this setting for system debugging by the installer and not for operation by the end user.

5 **IR Matrix**



Select the

Status

button to check current settings attached to the IR port.

6 **Com Connect State** - Shows if the matrix is **connected** or **disconnected** to the **Com Port** and communication is enabled. Selection between ports is available by pressing the **Com Port Select** button. **7** When connected, the only option will be to **Disconnect** and vice versa. Press **8** to connect/disconnect the matrix from the software control.

- Connected for matrix communication enabled
- Disconnected for matrix communication disabled

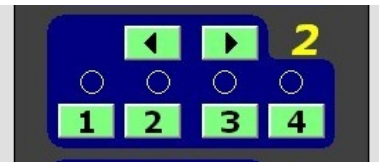
7 **Com Select**

8 **Connect/Disconnect**

Click the Com Select dropdown to see all Com ports available. Select your chosen Com port number and press

the **CONNECT** button. You will notice the button change toshow 'disconnect' and **CONNECT STATE** change to green for 'connected'. Pressing the button again will disconnect the Com port and the **CONNECT** state will show red.

9 **Input/Output Switch -** Switches connected inputs per output.
Operation as with remote control handset – select the chosen input to be displayed on each output by either clicking the left/right arrow buttons to scroll through inputs numerically, or pressing the input number 1-4.



iv. LAN Control with SmartSet Gui

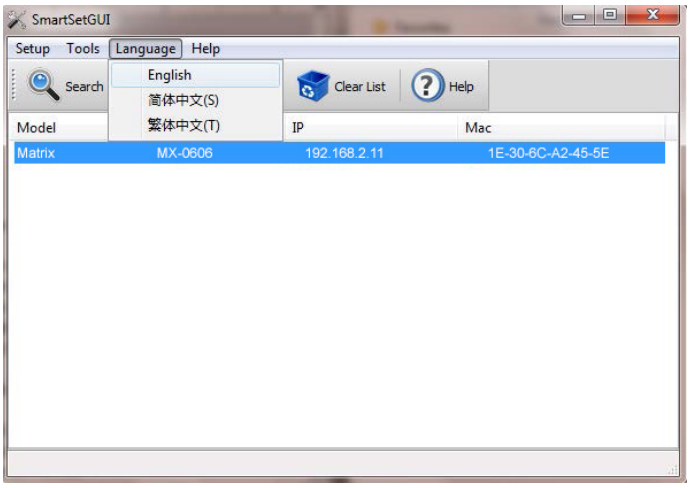
The matrix can also be controlled via LAN over a network/ web browser using the supplied WyreStorm software or LAN protocols from third party companies, such as Control 4.

Attention **Use a 'straight through' ethernet cable for switch/router connection and a 'cross-over' cable for connection to a PC. Using the incorrect cable will not damage your equipment, but it may result in poor/no connection. Make sure that your LAN cable is correctly terminated and firmly connected to ports before running the software**

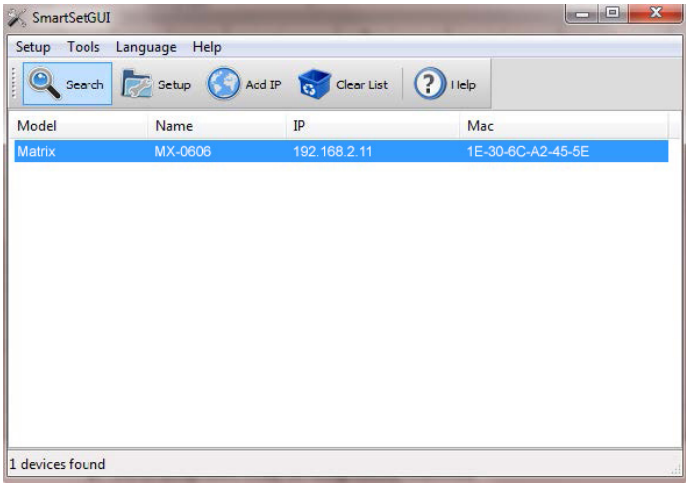
1 Unzip the file WS IP Device Scanner (NEW LAN BOARD) and double click on the SmartSetGui application

2 Initially the document is in Chinese. To change this, click on the characters on the top of the tool bar with a (L) next to it, and select English from the menu options.

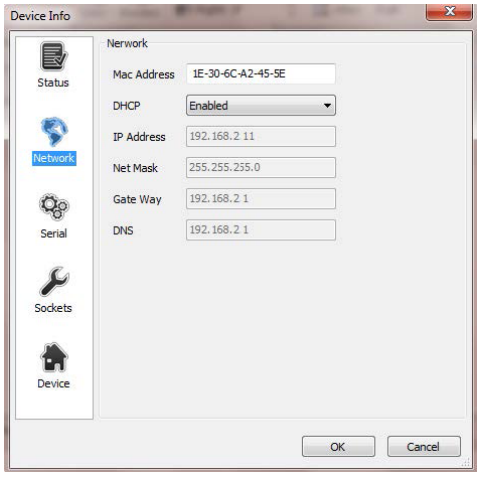
You may have to exit and re-enter the application for the change to take effect.



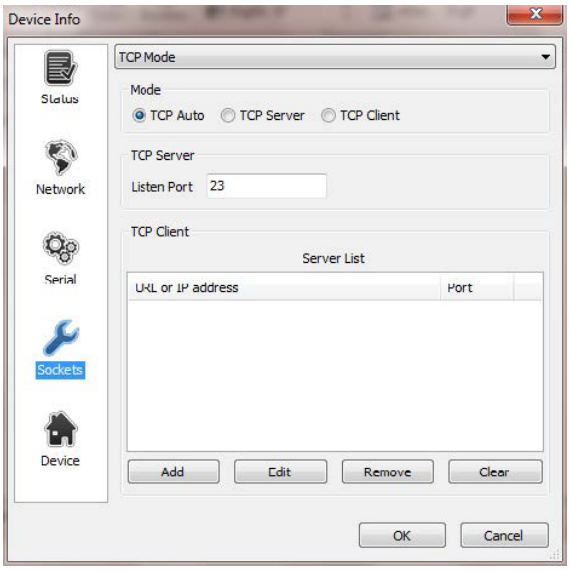
3 If you do not initially see your matrix being connected, click on the SEARCH button
a. If it is recognized, it may show up as the default Matrix 8:8 setting rather than MX-0404-POH-KIT



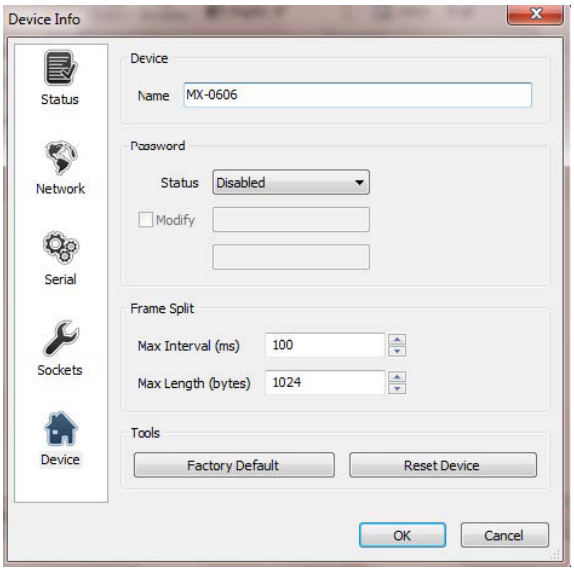
4 Select the matrix and click on SET-UP. From here you can change settings on the network card
- Network: Enable DHCP to set a static IP, etc.



Sockets: Drivers are built around the use of Port 23. If you see that the Port is set to 1984, change to Port 23



Device: change name of matrix
If the default setting reflects an 8x8 matrix model, use this page to manually change name of your matrix to better reflect the model you have.

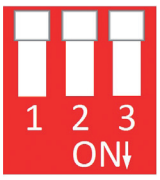


iv. EDID DIP Switch setting
Distribution of HD signals through the matrix requires mutual communication or 'handshake' between source and display. If there is any disparity between the two, successful transmission becomes problematic.

This matrix comes equipped with an EDID DIP switch for manual adjustment of matrix settings to encourage communication between INPUT and OUTPUT devices. If installation compatibility issues arise, check the settings on your connected devices and adjust the DIP settings as required.

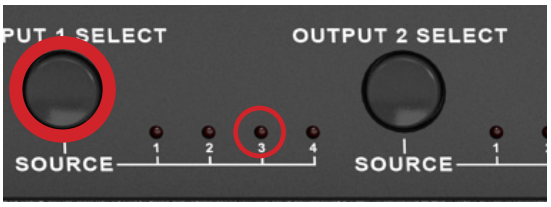
Attention Changes to the DIP switch settings should be made with the matrix OFF, ideally with all power cables and HDMI leads and UTP cables removed to guard against electrostatic build up that may damage your system. DO NOT HOTSWAP your cables when changing DIP SETTINGS.

ALL changes to the DIP settings become effective upon powering ON the matrix.



EDID Copy from Output display to Input port (Force Signal Output mode)

To copy the EDID from an OUTPUT display to a specific INPUT port, first set the DIP switch to this position. Then select the INPUT by pressing and holding the chosen OUTPUT SELECT button for 3 seconds for the EDID to be copied from the DISPLAY to the INPUT port.



AVR 7.1 Audio EDID COPY to Blu-ray source (AV Receiver copy)

For users who wish to copy EDID from an AV Receiver with 7.1 channel audio to a specific input port containing a Blu-ray player, follow a variation on the instructions above:

1. Set the DIP switch to the above position with the matrix in the OFF position.
2. Connect the AVR to your desired OUTPUT port on the matrix (for example, OUTPUT 2)
3. Power ON the matrix and select your INPUT on the AVR, making sure your chosen SOURCE is connected to (for example, INPUT 3 – Blu-ray)
4. Press and hold the OUTPUT SELECT button for 3 seconds for the EDID data to be copied from OUTPUT 2 (AVR) to INPUT 3 (Blu-ray).

1080p 3D Video / Stereo Audio

Setting the DIP switch to this position will instruct the matrix to use embedded 1080p 3D video and Stereo audio to encourage communication between the matrix and 3D sources/3D displays if handshake problems are encountered.
After setting the DIP switch, reconnect and turn on for the changes to take effect.

1080p Stereo using embedded EDID (Default Factory Setting)

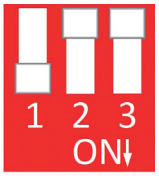
The matrix will use embedded 1080p video and stereo audio in this DIP setting. After setting the DIP switch, reconnect and turn on for EDID settings to take effect.

RESETTING TO FACTORY DEFAULT:
As 1080p-3D-Stereo is the default factory setting for the matrix, to reset EDID of all ports, simply set the DIP switch to the above position when the matrix is powered OFF. On powering ON, all ports will revert to 1080p-3D-Stereo and DIP switches can be adjusted as necessary.

1080i Stereo (using embedded EDID)

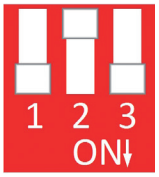
In instances where a connected display is unable to achieve 1080p resolution (such as using older or cheaper models), this DIP setting will instruct the matrix to use embedded 1080i video and stereo audio to output a signal.

After setting the DIP switch, reconnect and turn on for EDID settings to take effect.



1080p 5.1 Audio (using embedded EDID)

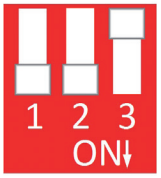
When set to this DIP position the matrix will use embedded 1080p video with 5.1ch Audio. After setting the DIP switch, reconnect and turn on for EDID settings to take effect.



1080p 7.1ch Audio (using embedded EDID)

When set to this DIP position the matrix will use embedded 1080p video with 7.1ch Audio. After setting the DIP switch, reconnect and turn on for EDID settings to take effect.

Remaining settings no function (reserved for future update



11. Troubleshooting

Generally, the majority of HD distribution installation issues are either caused by minor connection errors, communication problems between devices, or when the transmission of high signal bandwidth is attempted using insufficient cable. Should you encounter any technical difficulties when installing and configuring the matrix, we are confident solutions can be found by working through the following troubleshooting checklist before seeking alternative technical support.

No Picture or poor quality picture

1) Power – is your matrix mains powered and powering connected receivers with correct LED indication?

The MX-0404-POH-KIT features PoH to remotely power receivers so no additional power supplies are required at display locations – Please use matrix power supply included. If cable quality, length or environmental issues are preventing PoH powering of receivers from the matrix, local 12V DC power should be used for each receiver.

Are all sources definitely powered and firmly connected?

2) It is highly recommended to always use test equipment prior to installation and to troubleshoot any problems.

3) Check display device supports HDCP, is switched to the correct source input mode and is compatible with the receiver - if any issue is suspected, replace display device with another model.

4) Distance – Is the cable too long for the signal to be transmitted effectively? The HDBaseT classification used within the transmission device and RX-70-POH allow transmission of 1080p up to 70m/230ft. Ensure the cable distance matches the project requirements and is well within the maximum transmission distance of the signal. Note: If approaching the limits of the transmission capabilities, transmission should be extended by using another extender set to ensure the signal reaches its destination effectively.

5) Cable joins? Joins in your cable run can impact on signal strength, resulting in reduced transmission that may manifest itself in poor picture quality or a complete lack of picture.

6) Cable Choice and Signal Reduction – Are stranded patch leads being used as interconnects between patch panels or wall outlets? CCA (Copper Clad aluminium) cables being used? These can reduce transmission rates by up to 40% – we recommend solid core straight through with minimum connections used wherever possible.

7) Resolution – If you reduce the resolution of the source, do you get a picture? If so, this suggests a discrepancy between source and display resolution or a bandwidth capacity issue with your cable. Check that your inputs and outputs share the same resolution and that the signal is being successfully transmitted along your cable run.

8) Correct connection – It may seem obvious but double check all UTP, HDMI, power and IR cables are connected to the correct ports.

Note: Even a fraction off can be the difference between a perfect picture and a blank screen. Double check all connections are firmly made in the correct ports.

9) C

heck LED indication on Receiver for confirmed operation. Are LEDs lit and/or behaving properly (static or flashing - see Panel Description for details on LED indication). If LEDs are not correctly lit, connections, cable/terminations, interference , distance etc. should be investigated. Swap cables out if necessary.

10) Cable wired to 568B standard? Is your cable wired and terminated correctly and are those terminations connected to the correct ports?

11) Electrical interference – HD transmissions are susceptible to electrostatic interference so locations of cables and devices should be considered

HDBaseT technology is more resistant to interference compared to regular transmissions but care should still be taken during installation - could any form of interference be generated? If so, attempt to remove the source of electrical interference or move the cable run to decrease the effects of the interference.

12) Is a picture achieved when connecting the source directly to the display? If not then the problem could lie with the input or output device rather than the means of distribution i.e. the display rather than cable, matrix or receiver itself.

13) HDMI lead condition and quality – HDMI cables and connectors are delicate and can be easily damaged. Furthermore, lead quality varies dramatically, particularly in lower price brackets. Swap your HDMI leads for high speed rated HDMI cables and check operation. If in doubt, replace them. Always take care inserting and extracting your HDMI cables. Keep cables lengths as short as possible.

14) Picture snow/HD 'noise' – represents a poorly established signal that may be caused by poor quality terminations or excessive cable lengths. Try swapping the display adaptors from a location you know is functioning properly or swapping the outputs of the matrix switch used.

If the problem remains on the same screen this may be caused by a connection problem between matrix and display – turn off all equipment and swap the signal carrying cables at both ends to ascertain if the cable or termination is at fault.

Breaks in the lines of transmission e.g patch panels, wall outlets, stranded cable use or excessive cable length are likely to reduce stability and range.

15) HD Noise (NO image) may be an HDCP Issue between the source and display but poor cabling can also cause this due to poor communication.

16) Blu-ray: Deep Colour – Deep Colour, 1080p and 3D is supported by the line of transmission in your installation.

17) Blu-ray: Resolution – if a reduction of resolution to 720/1080i produces an image, cable issues such as interference, patch panels, wall outlets, stranded cable use or excessive cable length are likely restricting transmission of a full 1080p signal.

Transmissions should support 1920x1080p @60Hz - if problems are experienced at 60Hz, try lowering to 50Hz.

18) Blu-ray: 3D – is the equipment used 3D enabled/ compatible? Is a 3D disc being played in a 3D enabled Blu-ray player or through a compatible amplifier?

19) 4K - Are you trying to pass a 4K signal? This device does not support UHD 4K resolutions

20) Colour distortion – a pink or green screen indicates an incompatibility between colour spacing formats – the commonly used RGB or YUV used by older displays. Some sources allow switching between RGB and YUV

which may solve any colour problems. If not, try changing the HDMI cable between the source and the matrix to rule out defective cabling.

No sound or poor quality audio

Audio is transmitted within the video signal – there is no separate audio track – so generally a problem with sound will be accompanied by a problem with picture. However, if technical issues with audio are experienced, the cause is typically communication between sources, displays and/or AV receiver settings.

1) Have specific speaker sets or zones been enabled? Some AV receivers allow individual speaker selections assigned to specific zones in the set up so check the speakers used are fully connected to the amplifier and correctly assigned within the system set up. It may be an EDID issue in that the source reads the audio EDID from the display and only requests two channel audio and EDID copy from the AVR may be required or use an embedded EDID in the matrix.

Note: If problems are experienced when an AV receiver is used, the cause is usually the settings of the AVR itself. Refer to the AVR manufacturer's guidelines on the correct settings to use for your requirements.

2) Consistency of audio output between devices – Is there any discrepancy between the audio output of the source, the audio or zonal settings of the AV receiver and the speaker configuration used needed for successful audio replication? If outputting 7.1, make sure all devices connected are also outputting 7.1

Note: Occasionally with some sources, the device settings allow the specification of audio output through a TV or an HDMI port. If using an AV receiver, check the HDMI output option is selected.

3) Do all the local sources work through the AV receiver? Check the operation of each source individually.

Bandwidth

1) If using a graphics-based source (such as a PC/Mac/ media server), make sure the source resolution is set to a maximum of 1080p, 60Hz. Higher resolutions available for graphics-based systems require higher bandwidth that may affect transmission of signals as well as incompatibility with devices.

IR

1) Check you are using emitters at the IR TX transmitter end and receivers at the IR RX receiver end – are they connected to the correct ports on the matrix and display receiver.

2) Is the emitter correctly positioned on the source? Fix the emitter directly over the infrared sensor of the source and attach using the adhesive backing.
Note: Locate the infrared source sensor by using a flashlight to find s small sensor within the facia of the source display. If necessary, secure the emitter over the sensor with a small amount of contact adhesive.

3) Is your remote powered and sending a signal? Note: IR is invisible to the naked eye, so use a digital camera/ phone camera to check the remote signal – point the camera at the remote control when pressing a button. You should see the remote transmitter flashing to indicate a signal being sent. Replace batteries if flashing is not seen on the digital camera screen.

4) IR dropout issues can be due to exterior influences emitting infrared radiation that can interrupt IR signals. Ensure emitters and receivers are away from the following causes of IR interference.

- **Direct sunlight**
- **Halogen lighting**
- **Plasma screens**

6) UTP Termination Issues – ensure cables and RJ45 terminations are correct and in good condition at both transmitter and receiver ends to see if control is established. If so, a possible re-termination of the cable could remedy the problem.

7) Are WyreStorm emitters and receivers being used? The use of third party products/magic eyes may not be compatible. Always use WyreStorm components included with your purchase or check compatibility of third party control systems with your WyreStorm dealer.

8) If problems persist, swap out the IR emitters and receivers to rule out faults with the units themselves. Use emitters you know are fully operational to test working condition.

9) Reactivate the IR callback function on your matrix and swap IR ports on the matrix to rule out a fault with the matrix or connection ports.

10) Should IR remain unresponsive, turn off and disconnect all cables from the matrix and reconnect zones one at a time to assess if one location in particular is the problem. If so, run new cables directly to the display – if this fixes the problem, it is likely that electromagnetic interference /damage to the cable somewhere along the run is causing the IR signal to drop out. Investigate and remove EM interference from the run or replace damaged UTP cable.

12. FAQ

Cat5e or 6?

While our equipment is tested and graded to Cat5e cable standard; tests have shown that better results are achieved when using Cat6 cable. The lower gauge, thicker copper cores ensure higher signal transfer rates. Newly installed cabling should always conform to Local Regulations and should be terminated to 568B standard.

Can I use a single Cat5e cable?

Although conventional transmission used to be considered two Cat5e cables for video, audio and control, HDBaseT transmission only requires a single cable.

All features found with dual cable transmissions are supported with HDBaseT, with addition of RS232 serial control, Power and Ethernet passed along a single Cat5e/6/7, depending on feature set/model of product

How far can the signal travel?

Under recommended transmission conditions Class B HDBaseT transmissions of 1080p video are capable of distances up to 70m/230ft. Recommended conditions denote no electrical interference, straight cable runs with no bends or kinks and no patch panels or wall outlets.

If any of the above are factors in your installation then signal strength and bandwidth can be compromised.

If a cable run is reaching the upper limit of the receivers' capabilities, then the signal can be boosted by way of an extender set. Typically transmission signals can be repeated up to 7 times (700m) using HDBaseT technology.

What about 3D?

All of our matrix switches and most of our extender products will pass-through a 3D Blu-ray signal. Coax extender sets do not support frame sequential 3D (Blu-ray), but will still pass-through interlaced stereoscopic 3D (Satellite etc.)

How do I control the sources?

All of our HDMI distribution products support IR pass-through from point-to-point extender sets to AMP and HDBaseT matrices. Most of the range now supports wideband IR meaning it is compatible with any IR device available on the market. Our PP and HDBaseT matrix range (Cat 5e/Cat6) has IR pass-through from each of the outputs and has discrete IR outputs at the switch end, meaning you can have multiple identical sources yet the IR would be routed only to the applicable source.

Do I need power at the TV end?

It depends on the WyreStorm device. Products with one-way PoH or PoE technology require local power at the Transmission end to power the receiver remotely, but products with two-way PoH or PoE can be locally powered at either the Transmitter OR Receiver ends, depending on which location offers best power availability.

Products without PoH or PoE technology require local 12v or 5v DC power at both ends for both units to operate. Check your instructions carefully for details.

Are WyreStorm products compatible with high speed HDMI cables?

HDMI 1.4 refers to a list of 'features' that a device is capable of supporting, including Ethernet channel, return audio channel, 3Detc. Due to the continuously evolving nature of the technology, HDMI Licensing LLC have now decided to simplify terminology by testing and referring to cable in terms of STANDARD or HIGH-SPEED rather than in generations 1.3, 1.4 etc.

• STANDARD (or "category 1") HDMI cables perform at speeds of 75Mhz or up to 6.75Gbps, which is the equivalent to a 720p/1080i signal – These HDMI cables are NOT recommended.

• All WyreStorm equipment support HIGH-SPEED (or "category 2") HDMI cables that have been tested to perform at speeds of 340Mhz or up to 10.2Gbps, which is the highest bandwidth currently utilised over an HDMI cable and can successfully handle 1080p signals including those at increased colour depths and/ or increased refresh rates from the Source. High-Speed cables are also able to accommodate higher resolution displays, such as WQXGA cinema monitors (resolution of 2560 x 1600).

What about screens with different resolution capabilities?

When sending a signal point to point a TV will communicate it's capabilities to the source, then the source will output a suitable signal that compatible (i.e. 1080p Stereo audio). If you were to use a matrix switch with three 1080p screens and one 1080i screen, the resultant image would be 1080i across all screens. The matrix switches do not scale per output but instead negotiate with the source a signal that all screens are capable of supporting.

How does the Matrix cope with HDCP?

HDCP (High Definition Copyright Protection) is a feature built in to HDMI devices to prevent theft of or illegal distribution of HD content. Unlike competing products, WyreStorm equipment are legal and comply with HDCP regulations.

They do this by assigning a "key" to any display connected to the device. HDCP "keys" are assigned to a display when connected to a HDMI device normally. This doesn't change when connecting to an extender, receiver or matrix switch; rather keys are duplicated or more are assigned.

I can get 1080i but not 1080p at a TV location

Firstly ensure that both the source is capable of outputting the higher resolution and that the TV supports that screen resolution.

If this is the case then the distribution device may require EDID management setting up using the DIP switches. This useful feature provides a successful "send and receive" to ensure swift and stable EDID negotiation between the source and display.

See Troubleshooting section for more tips on problem solving section for more tips on problem solving.

13. Maintenance

Clean this unit with a soft, dry cloth only. Never use alcohol, paint thinner or other harsh chemicals.

14. Provided Service

Provided Service:

1. Damage requiring service: This unit should be serviced by a qualified service personnel if:

- The DC power supply or AC adaptor has been damaged.
- Objects or liquid have gotten into the unit.
- The unit has been exposed to rain.
- The unit does not operate normally or exhibits a marked change in performance.
- The unit has been dropped or the cabinet damaged.

2. Servicing Personnel: Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorised servicing personnel.

3. Replacement Parts: When parts need replacing, ensure parts approved by the manufacturer are used – either those specified by the manufacturer or parts possessing the same characteristics as the original parts. Be aware – unauthorised substitutes may result in fire, electric shock, or other hazards and will invalidate your warranty.

4. Safety Check: After repairs or service, ask the service personnel to perform safety checks to confirm the unit is in proper working condition.

15. Mail-in-service

When shipping the unit, carefully pack and send it prepaid, with adequate insurance and preferably in the original packaging. Please include a document or letter detailing the reason for return and include a daytime telephone number and/or email address where you can be contacted.

If repair is required during the limited warranty period, the purchaser will be required to provide a sales receipt or other proof of purchase, indicating date and location of purchase as well as the price paid for the product. The customer will be charged for the repair of any unit received unless such information is provided.

16i. Warranty

Should you feel your product does not function adequately due to defects in materials or workmanship,

we (referred to as “the warrantor”) will, for the length of the period indicated below (starting from the original date of purchase) either:

a) Repair the product with new or refurbished parts.
or
b) Replace it with a new or refurbished product.

Limited warranty period:
All WyreStorm products are covered by a 2 or 3 year PARTS and LABOUR warranty. During this period there will be no charge for unit repair, replacement of unit components or replacement of product if necessary. The decision to repair or replace will be made by the warrantor. The purchaser must mail-in the product during the warranty period. This limited warranty only covers the product purchased as new and is extended to the original purchaser only. It is non-transferable to subsequent owners, even during the warranty period.

A purchase receipt or other proof of original purchase date is required for the limited warranty service.

16ii. Warranty Limits & Exclusions

1. This Limited Warranty ONLY COVERS failures due to defects in materials or workmanship and DOES NOT COVER normal wear and tear or cosmetic damage.

The limited warranty also DOES NOT COVER damage that occurs in shipment or failures caused by products not supplied by the warrantor, failures resulting from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, incorrect installation, set-up adjustment, implementation of/to consumer controls, improper maintenance, power line surge, lightening damage, modification, service by anyone other than a manufacturer-approved service centre or factory-authorised personnel, or damage attributable to acts of God.

2. There are no express warranties except as listed under “limited warranty coverage.” The warrantor is not liable for incidental or consequential damage resulting from the use of this product or arising out of any breach of this warranty.

For example: damages for lost time, the cost of having a person/persons remove or re-install previously installed equipment, travel to and from service location, loss of or damage to media, images, data or other recorded/stored content. The items listed here are not exclusive, but are for illustration only.

Parts and service not covered by this limited warranty are not the responsibility of the warrantor and should be considered the responsibility of the individual.

17. Disclaimer

WYRESTORM PUBLICATION DISCLAIMER

The material contained in this document consists of information that is the sole property of WyreStorm. This document is intended to provide information to allow interfacing to the relevant WyreStorm equipment by third party products.

WYRESTORM IS NOT RESPONSIBLE FOR MALFUNCTIONS AND/OR THE IN-OPERABILITY WHICH MAY BE CAUSED BY THE APPLICATION OF THIS INFORMATION, WHETHER EXPECTED OR NOT.

WyreStorm reserves the right to change software, control codes and specifications without notice.

WyreStorm will not be liable for any use of this information or any changes it may make to those products. The use of this information constitutes an agreement by the user to these limitations and exclusions.

18. Installation Notes

WyreStorm MX-0404-POH-KIT Installation Reference Log (INPUT)

INPUT				
Input number on Matrix	Source Location	Source Details	Source resolution & audio settings	Cable Number
1				
2				
3				
4				

WyreStorm MX-0404-POH-KIT Installation Reference Log (OUTPUT)

OUTPUT				
Output number on Matrix	Output Location	Display Details	Display Resolution & Audio Settings	Cable Number
1				
2				
3				
4				

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