



Extending 4K & 1080p HDMI
using single Cat5e/6

RX-70-4K

WyreStorm Low Profile 4K HDBaseT 5-Play
Display Receiver with 2-Way IR, RS232, POH &
Ethernet (4K: 70m/230ft - 1080p: 100m/328ft)

Instruction Manual



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

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1. Introduction

Get Real. Think Thin.

Pushing technology and design to the limit, the RX-70-4K display receiver brings 5-Play compliance to long distance 4K HDBaseT distribution and control within an incredibly low profile chassis of just 18mm for a greatly reduced form factor behind even the slimmest wall plates to make installation a dream.

Featuring powerful Class A HDBaseT technology, the RX-70-4K supports a full 5-Play feature set including 100m/328ft transmissions of 1080p@60Hz and 48bit deep color HD audio, discrete two-way control via IR

and RS232, Ethernet passthrough and two-way 100W power to remotely power receivers at display zones from a compatible PoH transmission device such as MX-0808-PP-POH-4K matrix - all along a single cat5e/6 cable.

UltraHD 4K transmissions are supported up to 70m/230ft over Cat6 at 30fps with 4K chroma sub-sampling color palette of 4:2:2 and internal EDID management using pre-set, stored or recalled settings to negotiate communication between connected source/ display devices.

Including serial control support with compatibility with leading control systems and switchable RS232 selection for firmware updates, improved 12v power connectivity is also offered via phoenix port and threaded DC power port for standard and locking DC power plugs should you need it.

Operation status is illustrated by panel LED indicators for power supply, signal status for display connection, HDCP in signal, and a HDBaseT link indicator to assess the presence of transmissions and help identify potential issues.

WyreStorm 4K HDBaseT solutions offer the features, flexibility and compatibility demanded by modern integrations while future-proofing for tomorrow, combined with an ease of use and cost-efficiency for reliable distribution and control of digital content over distance whether in a residential or commercial setting.

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

2. Features

- Low profile chassis of 18mm / 0.7" for easier, more convenient installations behind screens at display zones.
- Display Receiver capable of receiving HDMI transmissions using single cable Cat5e/6*
 - 70m/230ft: 3840x2160 4K video@30Hz / 24bit True Colour with Chroma subsampling 4:2:2
 - 100m/328ft: 1920x1080p HD video@60Hz / 48bit Deep Color
- 5-Play support - distribution of video (4K & 1080HD), multichannel audio, two-way IR, 100w power and 10/100 Ethernet over single Cat5e/6
- PoH (Power over HDBaseT) - to remotely power receiver from compatible PoH transmission device - no local power required at display location
- Multichannel audio supports 7.1 DTS Master HD and Dolby True HD

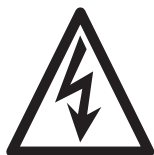
- Transmits discrete wide-band two-way IR control signal serial commands together within the HDMI signal over a single Cat5e/6
- Robust Class A HDBaseT technology for stable transmission resistant to electrostatic and environmental interference compared to conventional UTP distribution
- Supports all high definition resolutions: 4K, 1080p, 1080i, 720p with screen refresh rates support of 24Hz, 30Hz (4K) 50Hz, 60Hz (1080p)
- Full 3D compatibility up to 1080p - frame packing/ sequential (Blu-Ray) and interlaced stereoscopic (satellite/cable broadcasts)
- Switchable RS232 for firmware update

Note: Serial control via RS232 only supported when connected to a compatible HDBaseT transmission device with routed RS232. Check website for compatibility

- Receivers cascable up to 7 times within a single output zone using compatible transmission devices
- Threaded bushings allow use of both standard and locking DC power plugs
- Phoenix port for additional power connection
- Visual LED indication for power supply to units, signal status to show established display connection, HDCP presence in signal and HDBaseT link
- Cable termination follows IEEE-568B standards
- HDMI 1.4v
- HDCP compliant
- Automatically adjusts feedback, equalization and amplification of signal for easy installation
- Energy efficient universal power supply included

***Recommended transmission conditions - cable run 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.**

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 persone

4. Package Contents

- 1 x WyreStorm RX-70-4K Display Receiver
- 1 x 12V/1.5A DC power supply
- 1 x 3.5mm Phoenix male connector (2 pin)
- 1 x 3.5mm Phoenix male connector (3 pin)
- 1 x Wide-band IR Emitter
- 1 x Wide-band IR Receiver (30-50KHz)
- 1 x Pair of RX-70-4K mounting brackets
- 1 x Printed Quickstart guide*

*Quickstart and full manual downloadable from product page at wyrestorm.com

5. Specifications

Technical

| | |
|---------------------------------|---|
| Input | 1 x HDBaseT |
| Input Signal Type | HDBaseT |
| Input Resolution Support | 480i, 576i, 480p, 576p, 720p, 1080i, 1080p @ up to 60Hz 3840x2160 @ 30Hz, 4096 x 2160 @ 30Hz |
| Input Video Level | 0.5 - 1.2V p-p |
| Input DDC Signal | 5 volts p-p (TTL) |
| Output | 1 x HDMI |
| Output Signal Type | HDMI 1.4a with 4K |
| Output Resolution Support | 480i, 576i, 480p, 576p, 720p, 1080i, 1080p @ up to 60Hz 3840x2160 @ 30Hz, 4096 x 2160 @ 30Hz |
| Video Impedance | 100Ω |
| Maximum Pixel Clock | 297MHz |
| Audio | Multichannel digital audio supporting 7.1 DTS Master HD and Dolby True HD |
| 3D | Frame packing/sequential (Blu-ray), Interlaced stereoscopic (satellite/cable broadcasts) |
| Operating Temperature | 32°F to 95°F (0°C to 35°C) 10% to 90%, non-condensing |
| Storage Temperature | -4°F to 140°F (-20°C to 70°C) 10% to 90%, non-condensing |
| Power Supply | Single 12v 1.5A PSU with UK, US & EU pins |
| Power Consumption | ≤11.8W |
| ESD Protection | ±8 kV (Air-gap discharge) ±4 kV (Contact discharge) |
| Surge Protection | Voltage: ±1 kV (Ten times respectively positive / negative voltage) |
| Electrical Fast Transient/Burst | Data communication cord: 1 kV Power cord : 2 kV |

Cable Specifications

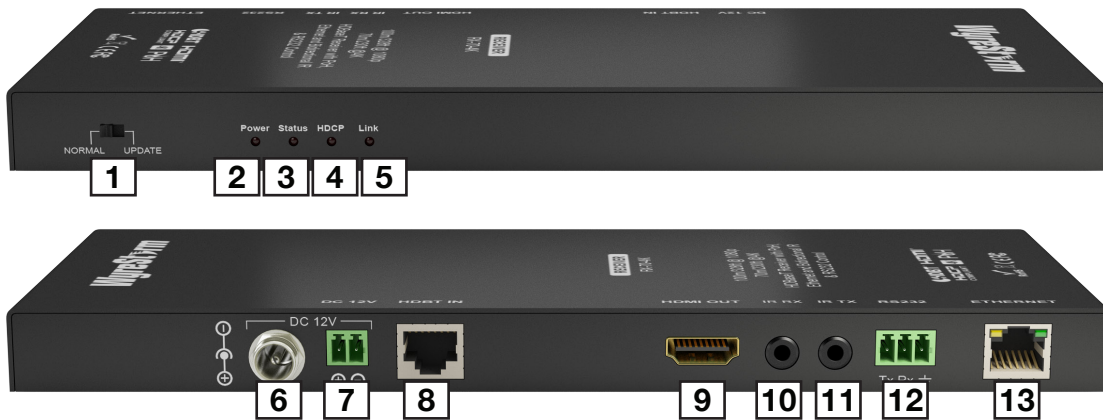
NOTE: WyreStorm recommends use of straight-through Category cables wired to T568B standard.

| Cable Type | Range | Supported Video |
|------------|-------------------------|--|
| Cat5e/6 | 100m/328ft 70m/230ft | 1080p @ 60Hz 36bit 1080p @ 60Hz 48bit 1080p @ 60Hz 3D 4K @ 30Hz / Chroma sub rate 4:2:2 |
| Cat6a/7 | 70m/230ft | 1080p @ 60Hz 36bit 1080p @ 60Hz 48bit 1080p @ 60Hz 3D 4K @ 30Hz / Chroma sub rate 4:2:2 |

General

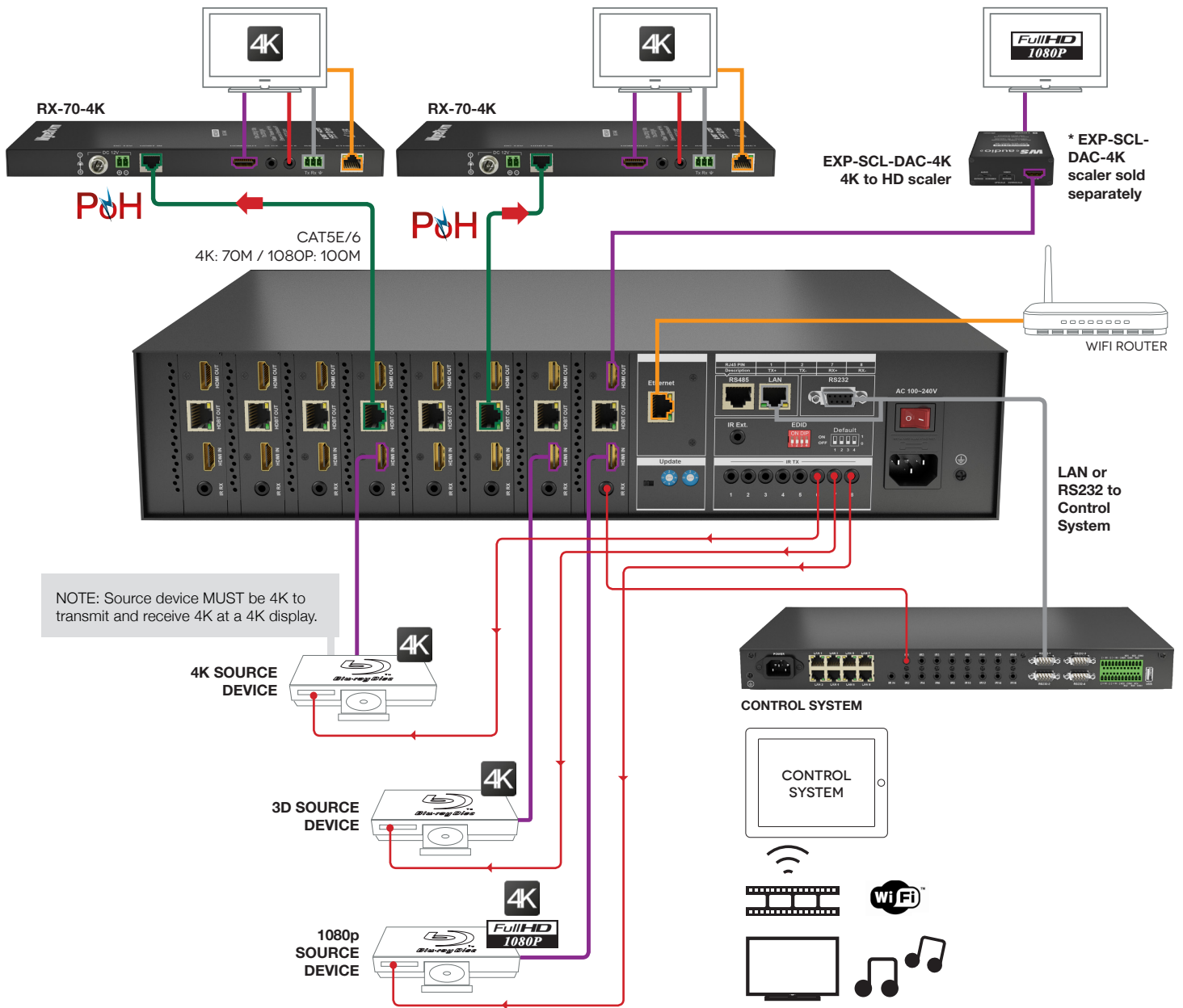
| | |
|--------------------|---|
| Dimensions (WxHxD) | 172mm × 18mm × 94mm / 6.7" × 0.71" × 3.7" (depth excludes connectors) |
| Weight | 200g/7oz |
| Certification | CE, FCC, RoHS |

6. Panel Description



- 1** RS232 Mode Select:
 - Normal - unit operation and RS232 control (recommended)
 - Update - unit operation and RS232 firmware update mode (control functionality will not be possible on this setting. Return to Normal after updating)
 - 2** Power indication - unit power either locally or remotely (static light for powered)
 - 3** Status indication - shows connection to display (blinking light)
 - 4** HDCP indication - shows presence of HDCP within signal (blinking light)
 - 5** HDBaseT Signal Link indication - shows confirmation of transmission between HDBaseT devices
 - 6** 12v DC Power input - threaded port for standard or locking connection*
 - 7** 12v DC Power input - two-pin phoenix port for additional power connection*
 - 8** HDBaseT IN - connects to HDBaseT transmission device, such as an MX-PP-4K matrix
 - 9** HDMI OUT - connects to display device
 - 10** IR TX - connecting IR Emitter to display device to enable control of display from source location
 - 11** IR RX - connecting IR Receiver positioned near display device to enable control of source from display location
 - 12** RS232 - 3 pin RS232 for serial control and firmware update
 - 13** Ethernet - for internet connection to display
- * Optional power connectivity if PoH function is unavailable due to cable quality, distance or environmental conditions.**

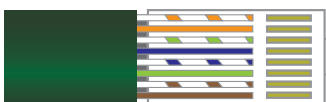
7i. Typical Application



NOTE Serial control at display end requires a compatible model HDBaseT transmission device with routable RS232.

RS232 offers firmware updates only if connected to non-routed RS232 models.

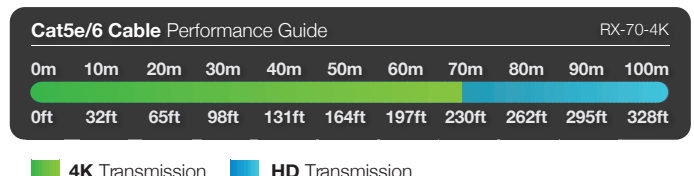
7ii. RJ45 Termination and Cat5e/6 Cable Distance



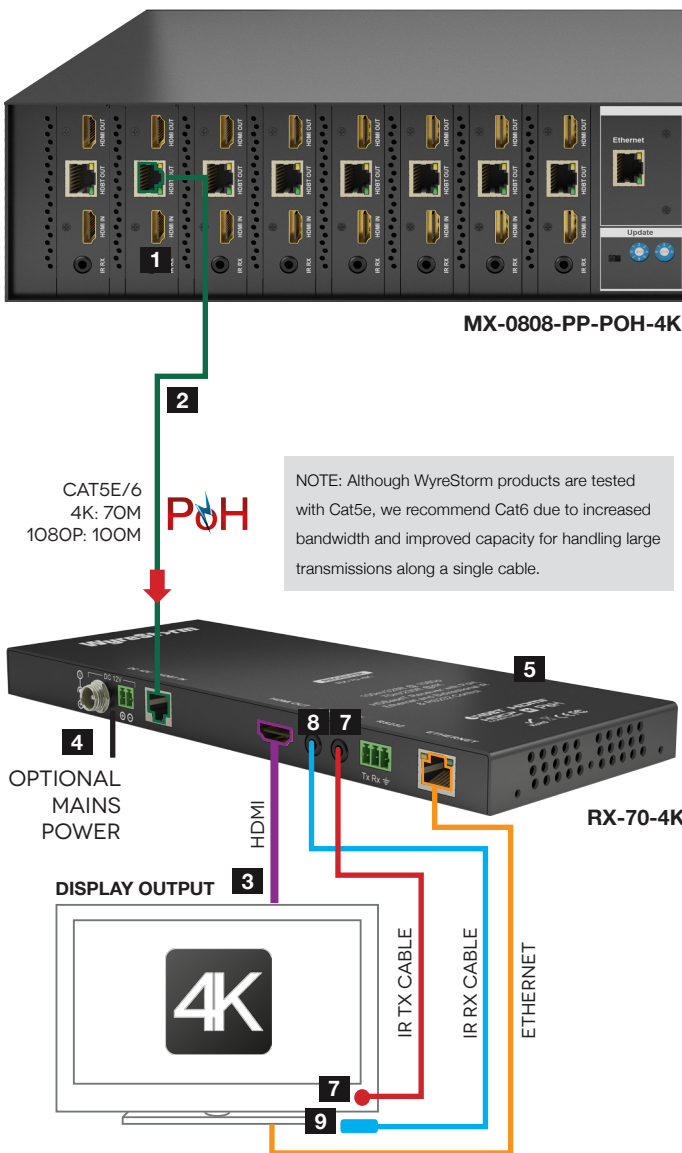
Cat5e/6 Wiring Guide

The quality of termination for every RJ45 is essential.

Poor terminations leads to intermittent performance and longer install times.



7iii. Connection & Operation



Please be mindful of cable type and distance limitations stated in Specification (Section 5 of this manual)
4K: 70m/230ft 1080p:100m/328ft

- PoH functionality of the matrix requires a compatible PoH-enabled transmission device. For use with non-PoH transmission devices, local 12v power is required at display zones to power receivers. Non-WyreStorm transmission devices may not be compatible with this receiver product.
- Use of straight-through Ethernet cables wired to T568B standards is advised to achieve best results as recommended by HDBaseT
- Connect/disconnect all cables gently during installation and ensure power supplies are disconnected from all devices before installation

- Ensure that any 4K sources and 4K display devices used are compatible and outputting the correct resolutions for EDID to be successfully negotiated and signals received.

NOTE: Both 4K and 1080p HD sources and displays may be contained within the same distribution—to combine 4K and HD sources and displays a WyreStorm EXP-SCL-DAC-4K to HD/HD to 4K scaler must be used between connected HDMI devices.

Visit wyrestorm.com for more information on 4K/HD scaling and Dolby downmixing.

CONNECTION

1 Using quality HDMI cables, connect an HDMI source (such as Blu-Ray, games console, satellite/cable TV, media server etc.) to the HDMI IN of the 4K HDBaseT PoH Transmission device, such as a transmission module of a MX-PP-4K matrix.

NOTE Ensure source and display are 4K compatible if attempting to transmit an UltraHD signal - check all devices are correctly configured for input/output compatibility.

2 Connect a good quality, well-terminated Cat5e/6 cable of no more than 70m/230ft for 4K or 100m/328ft for 1080p between the HDBT OUT of the Transmission device to the HDBT IN Input of the RX-70-4K Receiver.

! 70m/230ft @ 4K and 100m/328ft @ 1080p are maximum recommended transmission distances for this model and denotes recommended transmission conditions - including straight cable runs with no electrical interference, bends, kinks, patch panels or wall outlets.

If any of the above is a factor in your installation, transmission range may be affected – take care to avoid where possible.

3 Connect the HDMI display device (LED/LCD display or projector) to the HDMI OUT of the RX-70-4K Receiver.

NOTE Combined 4K and 1080p HD distributions require a WyreStorm EXP-SCL-DAC-4K scaler between receiver and display to scale down 4K transmissions to 1080p 24fps for HD screens and upscale 1080p to 4K 30Hz for UHD displays.

See wyrestorm.com for more details

! We strongly recommend using supplied mounting brackets to secure the receiver to a flat surface behind/near the display device. Sudden

movement of these devices could lead to loss of picture/sound if connections become loose or strained, resulting in unnecessary service call-backs.

4 Connect the power supply to the PoH-enabled Transmission device and power on. The PoH function carries power along the length of the cable to power the Receiver so no additional power supply is required at display locations.

NOTE **Optional 12v power input is available if required. For example, if the Cat5e/6 cable used is too weak to carry the power.**

5 Check POWER, STATUS & LINK lights are illuminated on the RX-70-4K receiver to indicate successful connection, with a lit HDCP light illustrating the presence of encryption within the signal. STATUS and HDCP indicators blink to show correct activity while POWER and LINK will be static.

6 Repeat process for all receivers used in the distribution.

NOTE **If daisy-chaining receivers along a single output, an HDMI cable should be connected from the HDMI OUT of the receiver to the HDMI IN of an EX-70-4K extender set to extend transmission a further 70m/230ft to another receiver.**

COMBINED 4K AND HD DISTRIBUTION

If your distribution contains both 4K and 1080p sources and displays, the matrix will search for the most compatible EDID screen resolution between all connected devices, (typically the highest resolution ALL displays can support), which will in most cases result in resolution disparity and automatic downscaling 4K content to 1080p across all screens.

To maintain 4K resolutions to 4K screens in distributions containing lower resolution legacy displays, a WyreStorm EXP-SCL-DAC-4K scaler and Dolby downmixer should be used in-line between HDMI devices to scale down 4K transmissions to 1080p HD 24fps, upscale 1080p HD to 4K at 30Hz or allow signal pass-through.

Furthermore, Dolby downmixing to stereo PCM enables multichannel audio up to 5.1 to be distributed to zones that can support it and automatically scaled down to compatible stereo PCM for those that cannot without sacrificing the integrity of the distribution.

Visit wyrestorm.com for more information on 4K/HD scaling and Dolby downmixing

7iv. IR/RS232 Control

7 For two-way IR control of connected sources and displays from either location, first, connect IR emitters to IR TX ports of the 4K PoH HDBaseT Transmission device used and connected RX-70-4K Receivers.

Firmly attach the IR emitter eye directly over the infrared receiving sensors of the devices to be controlled (sources at Transmitter device location, and display device at receiver location). Location of the emitter eye on the device may need to be adjusted later to achieve best IR performance.

! **If unsure of positioning, IR sensors can be located on devices by shining a flashlight onto the fascia of the device - the IR sensor should be identifiable as a small round sensor behind the panel. Consult your device manufacturer handbook if difficulties are experienced.**

8 Insert IR receivers into IR RX ports of the RX-70-4K Receiver and 4K PoH HDBaseT Transmission device.

9 At both display and source locations, position the IR RX receiver on or near the device to be controlled, ensuring a clear line of sight to the remote handset used to control it.

10 For serial control a WyreStorm IR Integration Cable (CAB-IR-LINK) should be used to connect the IR RX port of the Transmission device and the control system to be used.

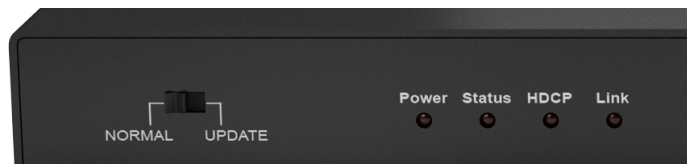
11 For an RS232-based control system, RS232 cables should be connected between RS232 ports of the Transmission device and control system, and RS232 ports of the RX-70-4K Receiver and the display device to enable fully routed serial control between devices.

! **For serial control via the RS232 port, please ensure the RS232 MODE switch on the Receiver is set to NORMAL. The UPDATE setting is reserved for firmware updates only - Although the receiver will still pass an AV signal, RS232 control of devices will not be possible when the switch is set to UPDATE. See below.**

7v. Update RS232 Settings

To update the firmware on the RX-70-4K 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-PP to a computer and run VS010 R X Firmware Update batch file.



- 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.

! 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 will not be possible when the switch is set to Update mode.

8. Troubleshooting

Generally, the majority of AV 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 Transmission device and Receiver powered with correct LED indication?

The RX-70-4K features PoH to remotely power the Receiver from a mains powered compatible Transmission device so no additional power supply is required at display locations – Please use power supply included.

- 2) If possible, 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-70-4K allow transmission of 4K up to 70m/230ft and 1080p up to 100m/328ft. 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 the cable run or RJ45 connectors can impact on signal strength, resulting in reduced transmission that may manifest itself in incorrect picture quality, picture dropping out 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) **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.

- 8) Check LED indication on Receiver for confirmed operation. Are LEDs on and/or behaving properly (static or blinking - 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.

9) Cable wired to 568B standard? Is the cable wired and terminated correctly and are those terminations connected to the correct ports? Incorrect wiring and termination will result in unstable operation or a blank screen.

10) Electrical interference – HDBaseT is less susceptible to interference compared to regular transmissions but the location of cables and devices should be considered - 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.

11) 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, transmission device or receiver itself.

12) HDMI lead condition and quality – HDMI cables and connectors are delicate and can be damaged much easier than component or coax cable. Furthermore, lead quality varies dramatically, particularly in lower price brackets. Swap HDMI leads and check operation – damage to or quality of your leads could be the problem. If in doubt, swap them over. Always take care inserting and extracting your HDMI from matrix ports so as not to damage the connectors or ports.

13) Picture speckles/HD 'noise' – represents a poorly established signal that may be caused by poor quality or excessive HDMI cable lengths. Try swapping the display adaptors from a location that 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.

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.

14) 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 AV receiver?

15) 4K - Are you trying to pass a 4K signal? Ensure connected devices are 4K enabled, correctly configured and outputting compatible transmissions.

4K resolution - ensure all connected devices are compatible with the UHD or DCI resolutions being transmitted. See Specification section for more details

1080p - 1920x1080p, 60Hz (if problems are experienced at 60Hz, try lowering to 50Hz)

Combined 4K / HD distributions - a WyreStorm EXP-SCL-DAC-4K scaler may be required between receiver and display to scale down 4K transmissions to 1080p 24fps for HD screens and upscale 1080p to 4K 30Hz for UHD displays

16) 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 MX-PP-4K matrix or EX-70-4K Transmitter.

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 correctly set to the maximum capabilities of the devices:

4K - Supported resolutions - consult Specification section 5 of this manual for details on supported resolutions

1080p - 1920x1080p, 60Hz or 50Hz

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 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 the sensor within the fascia of the source display. If necessary, secure the emitter over the sensor with a small amount of contact adhesive.

3) Is the remote handset 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. The remote transmitter can be seen 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, Fluorescent lighting (on cold start up)

- Halogen lighting
- Plasma screens

5) 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.

6) 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.

7) 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.

8) Reactivate the IR call-back function on your matrix and swap IR ports on the matrix to rule out a fault with the matrix or connection ports.

9) 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.

9. FAQs

Cat5e or 6?

While our equipment is tested and graded to Cat 5e cable standard; tests have shown that better results are achieved when using Cat6 cable.

The lower AWG (American Wire Gauge) uses thicker copper cores ensure better signal transfer/Transmission rates. Newly installed cabling should always conform to Part P Regulation and BS 7671 (17th Edition), and should be terminated to 568B standard.

Can I use a single Cat 5e/Cat 6 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 WyreStorm HDBaseT receivers will operate at 70m or 100m (4K / 1080p) depending on the model used.

Recommended conditions denotes no electrical interference, straight cable runs with no bends or kinks and no patch panels or wall outlets. If some of the above are factors in your installation then signal strength and bandwidth can be compromised.

Should a cable run approach the upper limit of the receiver capabilities, the signal can be boosted by connecting to another compatible extender set.

What about 3D?

All our matrix switches and the majority of our extender products will pass-through a 3D Blu-ray signal.

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 Transmitter 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 HDMI 1.4?

HDMI 1.4 refers to a list of 'features' that a device is capable of supporting, including Ethernet channel, return audio channel, 3D etc. 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.

For combined 4K and 1080p HD distributions, a WyreStorm EXP-SCL-DAC-4K scaler between receiver and display is required to scale down 4K transmissions to 1080p 24fps for HD screens and upscale 1080p to 4K 30Hz for UHD displays.

See wyrestorm.com for more details

How does the Transmission device handle 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, or 4K 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.

I cannot get a signal from my A/V receiver along a Cat 5e extender set

Check to ensure that the A/V Receiver isn't adding CEC (HDMI Control Protocol) to the outgoing signal, this can sometimes have an effect on the HDMI signal.

10. Maintenance

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

11. Product 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. 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.

12. Mail-in-service

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.

13i. Warranty

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

13ii. 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-authorized 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.

14. Installation Notes



wyrestorm.com

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WyreStorm Technologies reserve the right to change physical appearance or technical specification of this product at any time.

Visit wyrestorm.com for the latest information on products.