MSolutions MS-3PRI HDBaseT Extender Set User Guide

Contents

1 User Guide
1.1 MS-3PRI
1.1.1 Notices
1.1.2 Introduction
1.1.3 Key Features
1.1.4 Connectivity Overview – TX
1.1.5 Connectivity Overview – RX
1.1.6 Understanding the LED's
1.1.7 Cabling for HDBaseT
1.1.8 Power
1.1.9 IR Control
1.1.10 RS-232 Control
1.1.11 Specifications
1.1.12 Package Contents
1.1.13 Schematic
2 Documents / Resources
2.1 References
3 Related Posts

User Guide

MS-3PRI

HDBaseT™ Extender Set – 4K to 90m 18G, Uncompressed 4K 4:4:4 60, PoC, RS-232 pass through, with single channel bi-directional IR

Notices

- This MSolutions product contains electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection is highly recommended in order to protect and extend the life of your equipment.
- The transmission distances of HDMI over Cat cables are measured using TE CONNECTIVITY 1427071-6 EIA/TIA-568-B termination (T568B) of cables is recommended for optimal performance. To minimise interference of unshielded twisted pairs in the Cat5e/6 cable, do not run the HDBaseT / Cat5e/6/6a cabling with or in close parallel proximity to mains power cables.
- Do not substitute or use any other power supply other than the enclosed unit, or an MSolutions approved replacement. Do not disassemble either the Transmitter or Receiver units for any reason. Doing so will void the manufacturer's warranty.
- The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.
- Dolby is a trademark of Dolby Laboratories.
- MSolutions reserves the right to change the specifications of this unit without prior notice. As a result of this, physical representations or graphical elements contained within this user guide may not be accurate.

Introduction

The MSolutions MS-3PRI is a 4K 4:4:4 60 HDMI extender using uncompressed HDBaseT technology to extend 4K HDR video (18Gbps) to a distance of up to 90m over single CAT cable.

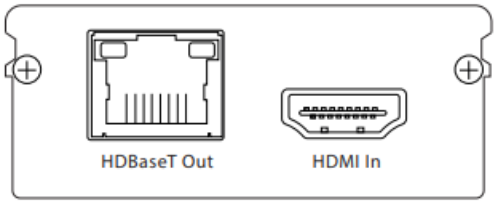
The extender provides bi-directional RS-232 and a single channel IR link between TX to RX, or RX to TX. Bi-directional PoC (Power over Cable) allows for either the TX or RX to be powered.

Key Features

- Uncompressed extension of HDMI at resolutions up to 4K 60Hz 4:4:4 using HDBaseT technology
- 4K signal extension up to 90m over single CAT (UFTP) including HDR formats supported under 18Gbps
- 1080p or lower video resolutions up to 100m over single CAT
- Supports HDMI pass-through all known HDMI audio formats including Dolby Atmos / DTS:X
- Bi-directional 12V PoC (Power over Cable)
- Single channel 5V IR pass-through (TX to RX, or RX to TX)
- Bi-directional RS-232 serial pass through
- CEC (Consumer Electronics Control) pass through
- HDCP2.2 compliant

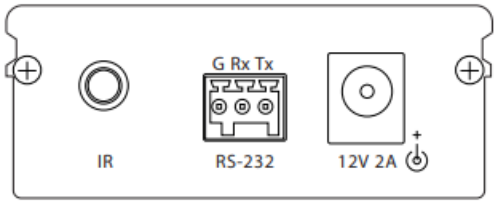
Resolution	Refresh	Chroma	Depth
4096×2160 (DCI) 3840×2160	50Hz / 60Hz 60Hz 24Hz	4:4:4 4:2:0 / 4:2:2 / 4:4:4 4:2:0 / 4:2:2 / 4:4:4	8-bit 8 / 10 / 12-bit 8 / 10 / 12-bit
1920×1080	up to 60Hz	4:4:4 / RGB	up to 16-bit
1280×720 1024×768	up to 60Hz	4:4:4 / RGB	up to 16-bit
VGA to WUXGA	up to 60Hz		

Connectivity Overview – TX



Front panel:

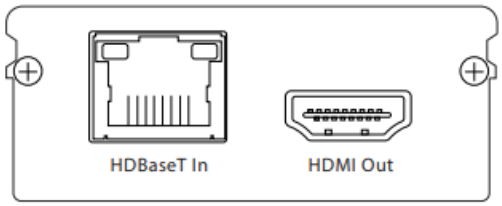
- HDBaseT Out – connect to Cat cable to receiver
- HDMI In – connect to HDMI source



Rear panel:

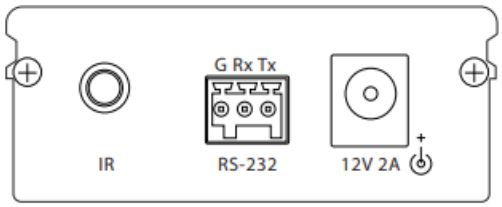
- IR – connect to either IR transmitter or IR receiver cables
- RS-232 – use supplied 3-pin phoenix connector to connect to serial device
- Power – connect to supplied 12V 2A power supply (or connect to RX)

Connectivity Overview – RX



Front panel:

- HDBaseT In – connect to Cat cable from transmitter
- HDMI Out – connect to HDMI sink device



Rear panel:

- IR – connect to either IR transmitter or IR receiver cables
- RS-232 – use supplied 3-pin phoenix connector to connect to serial device
- Power – connect to supplied 12V 2A power supply (or connect to TX)

Understanding the LED's

This MSolutions extender set includes status LED indicators on both the Transmitter and Receiver products to show active connections and to further help integrators diagnose potential problems with the associated cabling.

The RJ45 HDBaseT connections on both the transmitter and receiver units have orange and green LED's.

- The orange LED indicates that the unit is receiving power. The LED will blink continuously.
- The green LED indicates that the unit is communicating with the unit attached to the far side of the link over the Cat cable. The LED will be solid whilst the units are able to host a HDBaseT link across the infrastructure.
- Internal LED's that may be seen through venting of the product are not indicative of a working / non-working unit.

Cabling for HDBaseT

It is crucial to use the correct RJ45 pin configuration for the interconnecting CAT cable between MSolutions HDBaseT products, specifically the MS-3PRI. The recommended cable for this connection is a minimum CAT6A or higher. It is important to use a `straight' (pin-to-pin) CAT cable wired to the T568B wiring standard, as this configuration is less susceptible to Electro-Magnetic Interference (EMI).

When installing CAT cables, it is advised to prioritize the highest quality possible. HDMI distribution products will function reliably with a CAT5E standard cable or above. However, MSolutions strongly recommends using a CAT6A (or higher) cable for installations, particularly for longer distances, high EMI areas, or when distributing 4K signals.

To ensure compliance with high-speed standards, especially for 4K distribution, the HDMI cable infrastructure must meet the necessary specifications. Please note that longer HDMI cable lengths may result in increased signal integrity reduction compared to HDBaseT. Therefore, the use of shorter HDMI cables is recommended to maintain signal integrity over the link.

For comprehensive testing of both CAT and HDMI cables for video signal distribution, please refer to the MSolutions MS-TestPro, which offers HDBaseT and HDMI testing capabilities.

Power

The MS-3PRI uses Power over Cable (PoC) to provide bi-directional power from either the Transmitter to the Receiver, or Receiver to the Transmitter over the CAT cable link. Please only use the supplied 12V/2A DC PSU supplied with the MSolutions MS-3PRI to power the unit.

IR Control

The MS-3PRI can distribute infrared comands from either the receiver to the transmitter, to provide source control from the display; or, from transmitter to receiver to provide display control from a centrally located control processor.

The MS-3PRI is supplied with a single 5V IR transmitter that can be connected to either of the 3.5mm jack sockets on the transmitter or receiver to the labelled `IR' port. The 5V IR Receiver is then connected to the 3.5mm jack socket labelled `IR' on the opposite end of the link.

Please use the supplied MSolutions IR equipment within this kit – alternative manufacturers IR cabling may not have the same pin configuration which, if used, could damage the componentry inside the MSolutions extender, or the IR cabling.

Note: the 3.5mm jack sockets are bi-directional – it is only possible to send IR control in one direction depending on which end of the link has the IR transmitter or receiver. It is not possible to send IR controls in two directions simultaneously.

RS-232 Control

The MS-3PRI can distribute bi-directional serial commands between the transmitter and receiver to allow for control commands to be sent alongside the video and audio distribution.

Each HDBaseT unit is fitted with a 3-pin Phoenix connector block that will need the serial TX, RX and Ground pins terminating into. HDBaseT has the ability to transparently send any type of serial data as both pieces of equipment are able to communicate using the same baud rate, stop-gap, and parity.

Specifications

Transmitter

- Video connectivity: 1 x HDMI input (female), 1 x HDBaseT output (RJ45 keystone)
- IR connectivity: 1 x 3.5mm stereo jack (female) – IR TX or IR RX
- RS-232 connectivity: 1 x 3-pin Phoenix connector, block included
- Power supply: 1 x 12V/2A DC
- Individual unit dimensions (W x D x H): 60 x 84 x 25mm
- Individual unit weight: 0.1kg
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)
- Operating humidity: 0-80% non condensing

Receiver

- Video connectivity: 1 x HDBaseT input (RJ45 keystone), 1 x HDMI output (female)
- IR connectivity: 1 x 3.5mm stereo jack (female) – IR TX or IR RX
- RS-232 connectivity: 1 x 3-pin Phoenix connector, block included

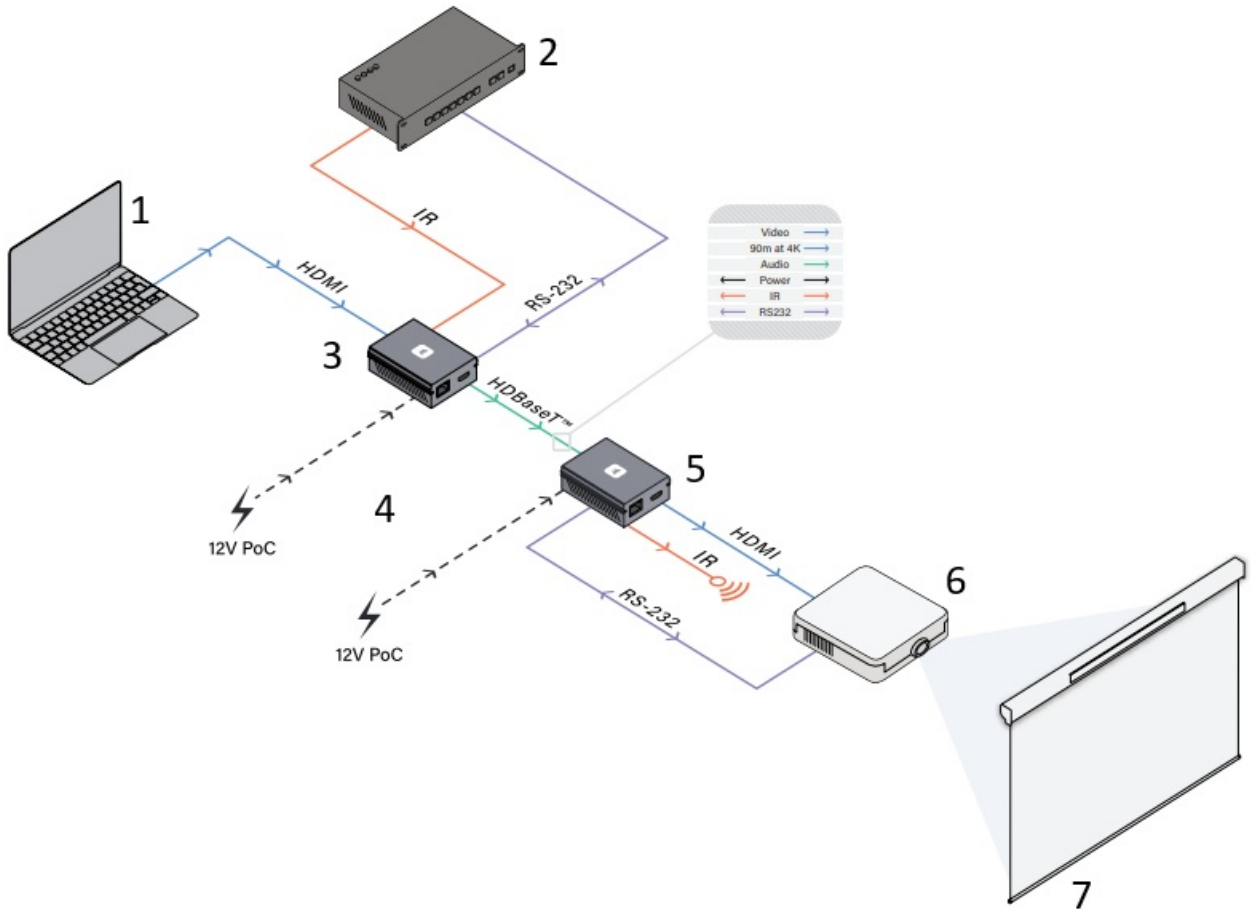
- Power supply: 1 x 12V/2A DC
- Individual unit dimensions (W x D x H): 60 x 84 x 25mm
- Individual unit weight: 0.1kg
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)
- Operating humidity: 0-80% non condensing

Package Contents

- 1 x MST-3PRI (transmitter)
- 1 x MSR-3PRI (receiver)
- 1 x 12V/2A DC power supply with US, UK, and EU clips
- 1 x 5V IR transmitter
- 1 x 5V IR receiver
- 2 x 3-pin Phoenix connector blocks
- 2 x Surface mounting brackets

Schematic

MS-3PRI Schematic



Solutions

1. Laptop

2. Control Processor
3. **MS-3PRI Transmitter**
4. Bi-directional PoC TX or RX can be powered
5. **MS-3PRI Receiver**
6. Projector
7. 4K 4:4:4: 60 Projector Display

MS-3PRI
Transmitter

MS-3PRI
Receiver

HDMI
HD BaseT™
IR
RS-232

support@m4sol.com | www.m4sol.com

M Solutions

www.m4sol.com

Documents / Resources

	**MSolutions MS-3PRI HDBaseT Extender Set** [pdf] User Guide MS-3PRI HDBaseT Extender Set, MS-3PRI, HDBaseT Extender Set, Extender Set, Set

References

- **Msolutions - Pro AV Solutions, HDBaseT Products and Tools!**
- **User Manual**