Solutions MS-310U1R XR HDBaseT Extender Set User Guide

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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.

Contents

Introduction

The MSolutions MS-310U1R is a 4K HDMI / KVM HDBaseT extender set allowing for uncompressed video and audio to be extended up to 100m at 4K UHD (10.2Gbps), and 130m at 1080p or lower resolutions.

A single USB2.0 channel allows for bi-directional USB client to host connectivity for a variety of applications. The unit also features RS-232 serial pass-through. 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 4:2:0 / 4K 30Hz 4:4:4 using HDBaseT technology
- 4K signal extension to 100m over single CAT including HDR formats supported under 10.2Gbps
- 1080p or lower video resolutions up to 130m over single CAT
- Supports HDMI pass-through all known HDMI audio formats including Dolby Atmos / DTS:X
- 1x USB2.0 channel for KVM connectivity of a USB device across the link – max 200Mbps data rate pass-through

- Flexible USB extension for: USB2.0 cameras, touch screens, smart boards, hard drives, games controllers, USB audio devices, printers, scanners, or HID's (mouse or keyboard)
- Bi-directional RS-232 serial pass through
- CEC (Consumer Electronics Control) pass through
- HDCP2.2 compliant
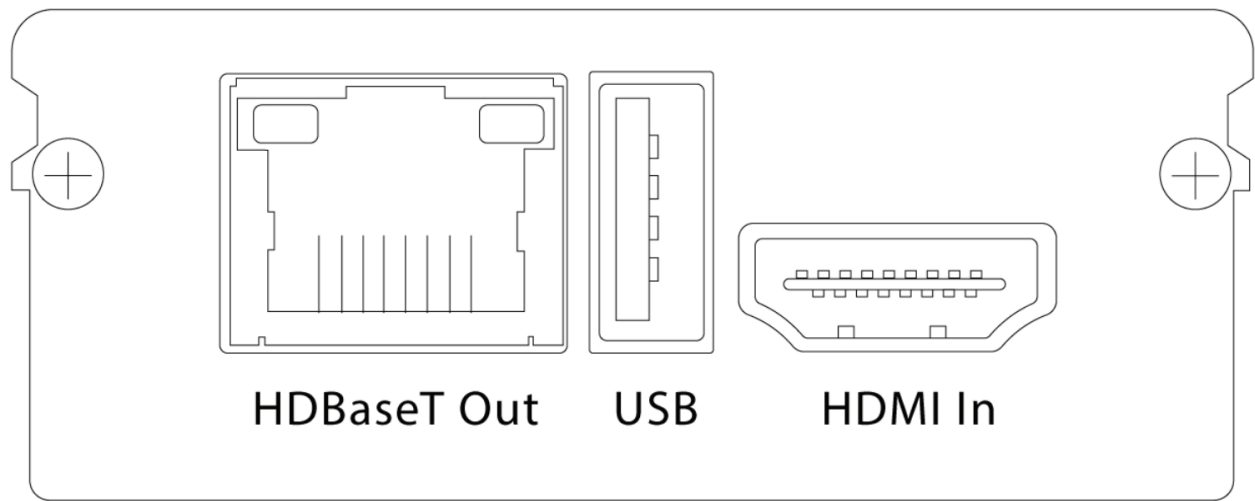- Bi-directional 12V PoC (Power over Cable)

Video resolution capabilities – 10.2Gbps HDMI 1.4 specification max:

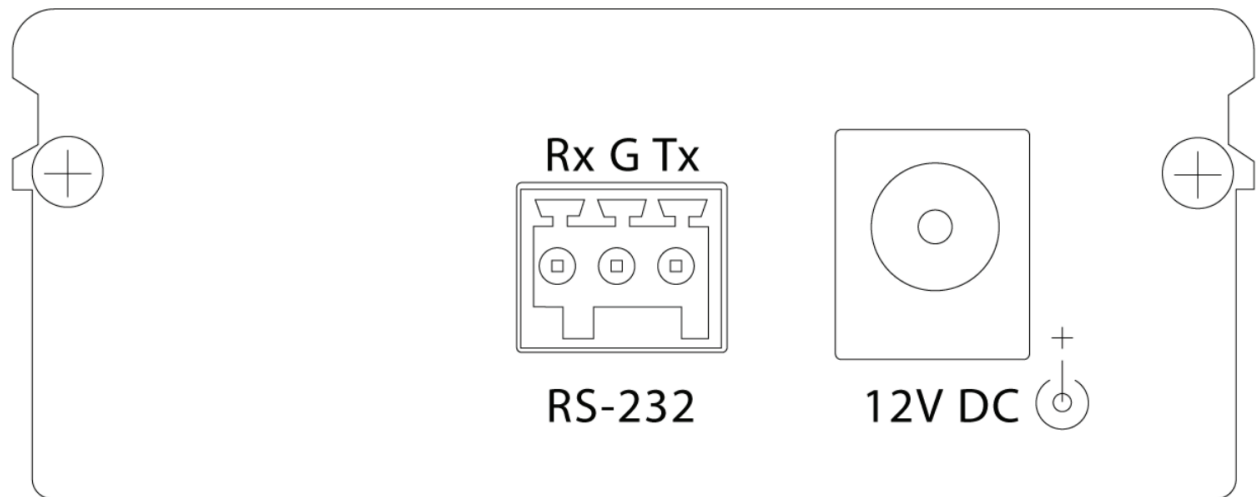| Resolution	Refresh	Chroma	Depth
4096×2160 (DCI) 3840×2160	50Hz / 60Hz 30Hz 24Hz	4:2:0 4:2:0 / 4:2:2 / 4:4:4 / RGB 4:2:0 / 4:2:2 / 4:4:4 / RGB	8-bit 8 / 10 / 12-bit 8 / 10 / 12-bit
1920×1080	up to 60Hz	4:4:4 / RGB	up to 16-bit
1280×720 1024×768	up to 60Hz	4:4:4 / RGB	up to 16-bit
VGA to WUXGA	up to 60Hz		

Connectivity Overview – TX

Front panel:

- HDBaseT Out – connect to Cat cable to receiver
- USB Host – connect to USB host device
- HDMI In – connect to HDMI source

Rear panel:

- RS-232 – use supplied 3-pin phoenix connector to connect to serial device
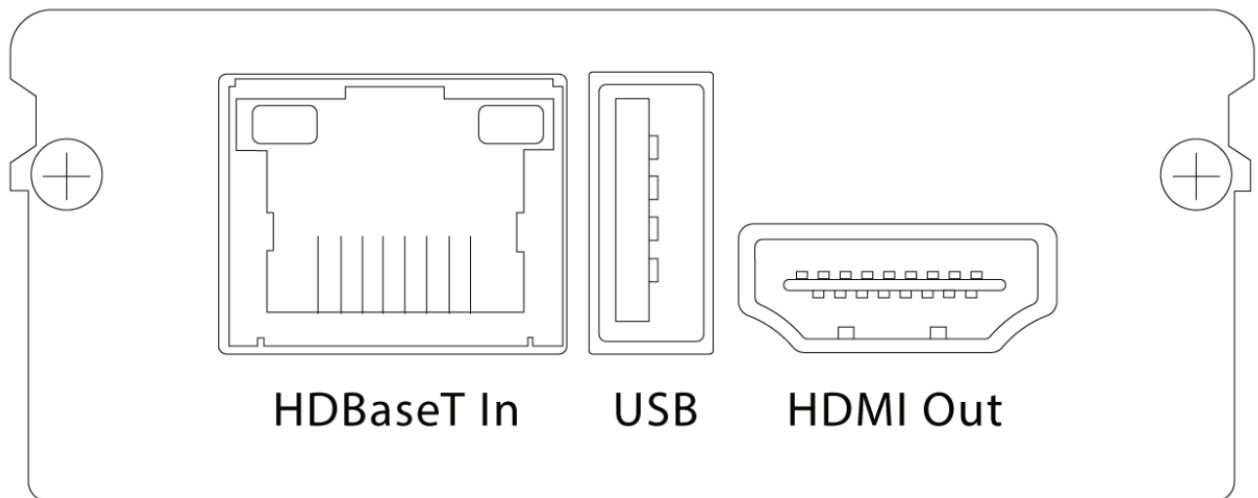
- Power – connect to supplied 12V/2A power supply
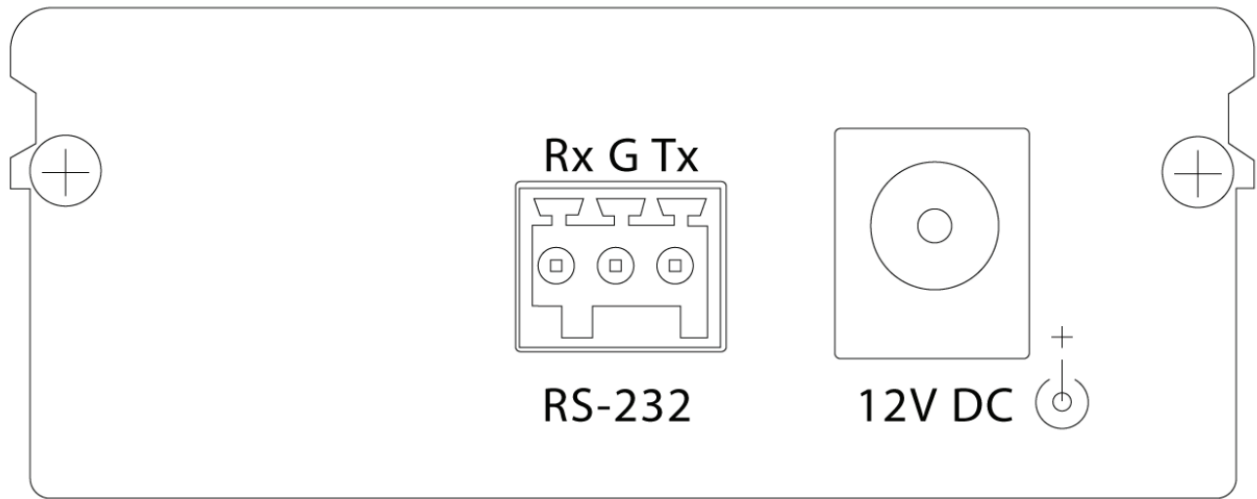

Connectivity Overview – RX

Front panel:

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

Rear panel:

- RS-232 – use supplied 3-pin phoenix connector to connect to serial device
- Power – connect to supplied 12V/2A power supply

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 important that the interconnecting Cat cable between the MSolutions HDBaseT products is terminated using the correct RJ45 pin configuration. The link Cat cable must be a 'straight' (pin-topin) Cat cable and it is advised that this is wired to the T568B wiring standard as this format is less prone to EMI (Electro-Magnetic Interference).

When installing Cat cables it is advised that the best possible Cat cable quality possible is used. HDMI distribution products will only work if used with Cat5e standard cable or above. MSolutions recommends using a Cat6 (or higher) cable for installations, especially when running over longer distances, in areas of high EMI, or with 4K signal distribution.

The HDMI cable infrastructure should be compliant to High-Speed standards, especially where 4K is being distributed. It is important to understand that where excessive HDMI cable lengths are used, this brings increased reduction in signal integrity over distance compared to HDBaseT. It is therefore recommended to use short HDMI cables to ensure the integrity of the signal over the link.

For HDBaseT and HDMI testing capabilities, please refer to the MSolutions MS-TestPro to prove both Cat and HDMI cables can be used for video signal distribution.

USB

This KVM extender combines USB2.0 connectivity with video and audio to be passed between host on the transmitter side (Type A to Type A USB cable – supplied), to a peripheral device on the receiver side of the link

only (no host at the RX).

The USB type A connections on the Receiver can be used to connect a USB2.0 camera, touch screen, smart board, hard drive, games controller, USB audio device, printer, scanner, or HID (mouse or keyboard) to a host device at the HDBaseT transmitter.

A maximum data transfer of 200Mbps can be achieved over the link – please note that this may not be enough for some USB2.0 cameras to pass higher video resolutions.

Please use the supplied USB & HDMI cables to fit into the TX & RX connections neatly. Using alternative cables may damage the connections due to the close proximity of the sockets.

RS-232 Control

The MS-310U1R 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 for serial pass-through. 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.

Power

The MS-310U1R XR 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-310U1R XR to power the unit.

Specifications

Transmitter

- Video connectivity: 1 x HDMI input (female), 1 x HDBaseT output (RJ45 keystone)
- USB connectivity: 1 x USB type A (female)
- 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)
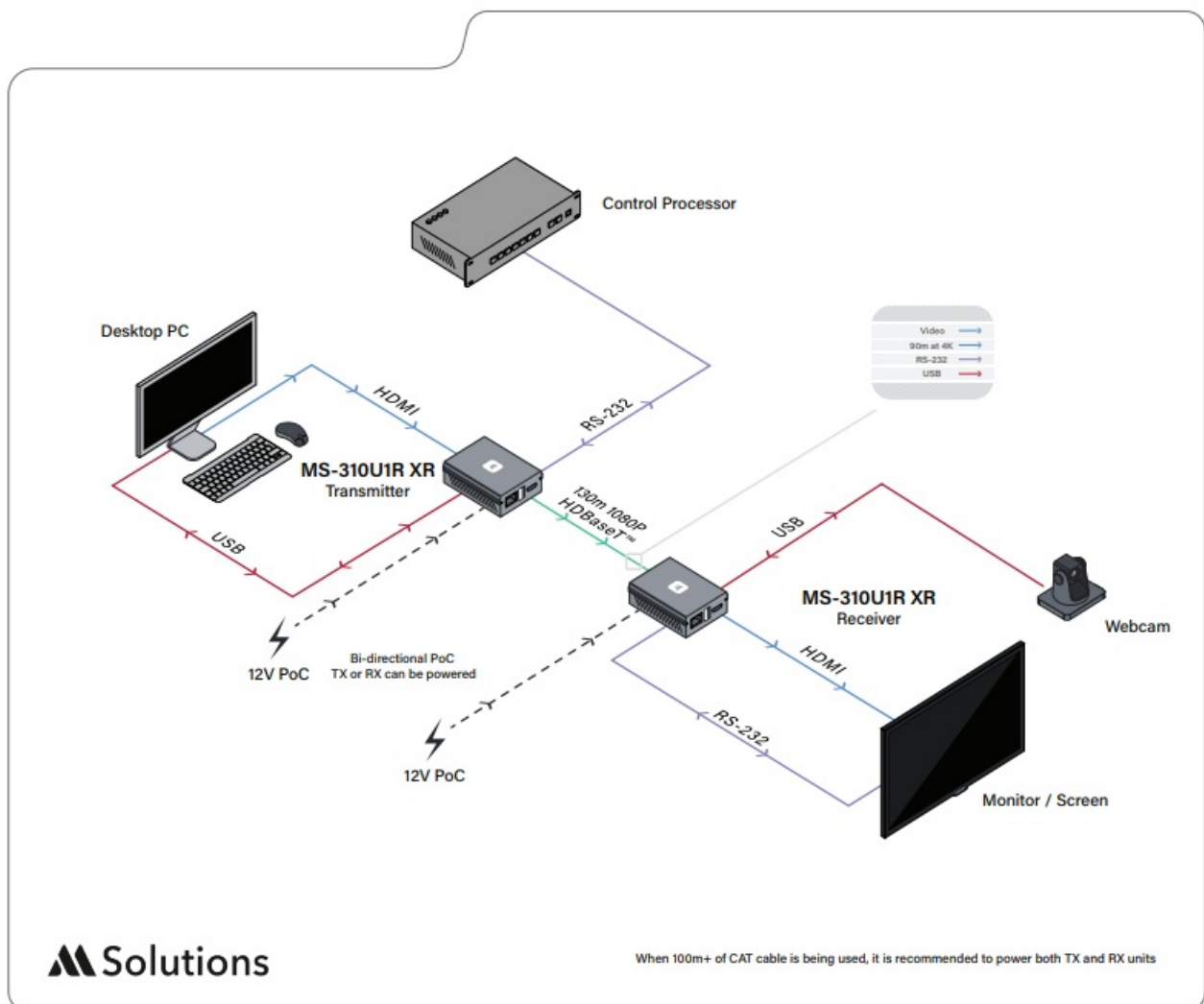- Operating humidity: 0-80% non condensing

Receiver

- Video connectivity: 1 x HDBaseT input (RJ45 keystone), 1 x HDMI output (female)
- USB connectivity: 1 x USB type A (female)
- 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-310U1R (transmitter)
- 1 x MSR-310U1R (receiver)
- 1 x 12V/2A DC power supply with US, UK, and EU clips
- 1 x USB Type A (male) to USB Type A (male) cable, 0.5m, for host device (TX)
- 1 x USB Type A (male) to USB Type A (female) cable, 0.5m, for peripheral device (RX)
- 2 x HDMI 18Gbps cables, 0.5m
- 2 x 3-pin phoenix connector blocks
- 2 x Surface mounting brackets

Schematic

MS-310U1 R XR
Transmitter

MS-310U1 R XR
Receiver

HDMI

HDBaseT™

RS-232

USB

Customer Support

support@m4sol.com | www.m4sol.com

⩕ Solutions

Documents / Resources

⩕ Solutions User Guide MS-310U1R XR HDBaseT™ Extender Set - 4K to 100m (10G), 130m @ 1080p. USB 2.0 (x1) & RS-232 pass through. HDCP2.2 compliant	[**Solutions MS-310U1R XR HDBaseT Extender Set**](#) [pdf] User Guide MS-310U1R XR, MS-310U1R XR HDBaseT Extender Set, HDBaseT Extender Set, Extender Set

References

- ⩕ [Msolutions - Pro AV Solutions, HDBaseT Products and Tools!](#)