



ReThink

There's a better way.

RAV-EX-HDBT-TRx
User Manual

RAV-EX-HDBT-TRx

HDBT 3.0 Transceiver – 4K60Hz and 4x USB 2.0 Hub

Osiris family of extenders



Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended to protect and extend the life of your equipment.

Introduction

RAV-EX-HDBT-TRX is an HDBaseT 3.0 extender built on the latest HDBaseT 3.0 platform. It supports transmission of uncompressed HDMI 2.0 video signals at up to 4K@60Hz 4:4:4 8bit over a single Cat 6A cable, with a transmission distance of up to 100m/330ft.

Key Features

- **Transceiver Design:**
Flexible transceiver design allows the device to be configured as either a transmitter or receiver at any time, simplifying installation and reducing inventory complexity.
- **Uncompressed Video Transmission:**
Delivers uncompressed HDMI 2.0 signals up to 4K@60Hz 4:4:4 8bit, with full support for HDR formats including Dolby Vision and HDR10+.
- **KVM Extension:**
Supports USB 2.0 and analogue audio pass-through with configurable direction, enabling seamless keyboard, mouse, and audio extension.
- **HDMI Loop-Out:**
When operating in transmitter mode, the device provides a local HDMI loop-out for convenient signal monitoring.
- **Audio De-Embedding:**
Supports audio de-embedding on both transmitter and receiver ends for flexible audio routing.
- **Ethernet Pass-Through:**
Supports transparent transmission of 1G/100Mbps Ethernet for network extension over the same cable.
- **Multi-Signal Transmission:**
Capable of transmitting additional control signals including IR and RS-232, enabling full system integration
- **Two-Way PoH:**
Supports bi-directional PoH (Power over HDBaseT), allowing the system to be powered from either end with a single power adapter, enhancing installation flexibility.
- **Supports auto switching when worked with RAV-MS-4X2HU-Tx:**
When an active HDBaseT input or an HDMI input is detected on the transceiver, it will automatically switch to the HDBaseT source or HDMI input (detect HDMI 5V).

Package Contents

- 1 x Transceiver
- 1 x DC 12V Power Adapter
- 1 x AC Power Cord (with UK and EU Pins)
- 1 x IR Emitter
- 1 x Broadband IR Receiver (30kHz-50kHz)
- 2 x Phoenix Male Connectors (3.5mm, 3 Pins)
- 2 x Mounting Brackets (with Screws)

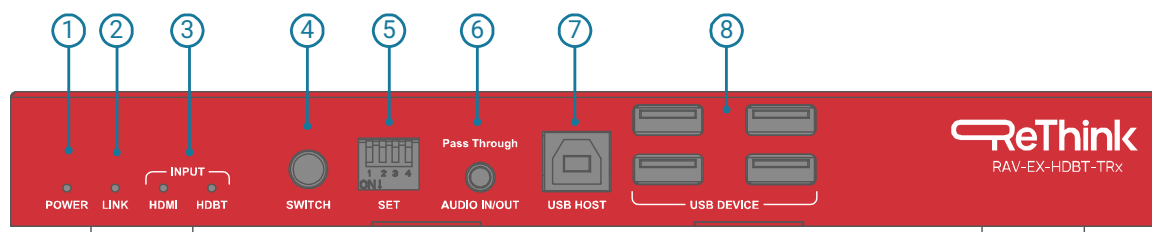
Specifications

Technical	
Video Input	Transmitter mode: 1 x HDMI Receiver mode: 1 x HDMI, 1 x HDBT
Input Video Signal	HDMI with 4K@60 YUV 4:4:4, HDCP 2.2
Video Output	Transmitter: 1 x HDMI, 1 x HDBT Receiver: 1 x HDMI
Output Video Signal	HDBT, HDMI
Input / Output Resolutions	4096 x 2160 _{2,5,6,7,8} (YUV 4:4:4), 3840 x 2160 _{2,5} , 2560x1600 ₈ , 2560x1600 ₈ , 2560x1440 ₈ , 1920x1200 ₈ , 1920x1080P ₈ , 1680x1050 ₈ , 1600x1200 ₈ , 1600x900 ₈ , 1440x900 ₈ , 1366x768 ₈ , 1360x768 ₈ , 1280x1024 ₈ , 1280x960 ₈ , 1280x800 ₈ , 1280x768 ₈ , 1280x720 ₈ , 1024x768 ₈ , 800x600 ₈ 1 = 23.98 Hz, 2 = 24 Hz, 3 = 25 Hz, 4 = 29.97 Hz, 5 = 30 Hz, 6 = 50 Hz, 7 = 59.94 Hz, 8 = 60 Hz
Audio Input	1x analogue audio (pass-through)
Audio Output	1x analogue audio (pass-through) 1x analogue audio (audio de-embedding)
Audio Format	• Audio In/Out: Stereo • HDMI In/Out: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X HDBT: Same as HDMI In/Out

Maximum Pixel Clock	600MHz
Maximum Data Rate	18Gbps
USB Spec	USB 2.0 and backward compatible with USB 1.1/1.0
USB Port	1x USB 2.0 host port (type-B) 4x USB 2.0 device ports (type-A)
Control Method	RS232
Transmission Distance	1080P: 100m 4K@60Hz 4:2:0: 100m 4K@60Hz 4:4:4: 100m over Cat 6A/7 cable
General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge)/ ±4kV (Contact discharge)
Power Supply	DC12V/3A
Power Consumption (Max)	18.96W
Device Dimension (W x H x D)	215mm x 25mm x 120mm/8.46" x 0.98" x 4.72"
Product Net Weight	0.60kg/1.32lbs

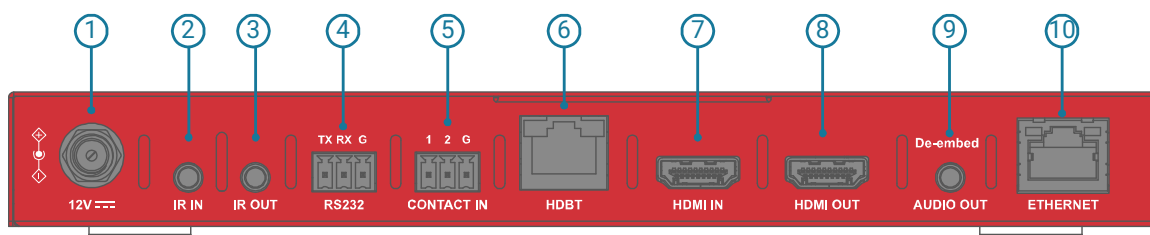
Operation Controls and Functions

Front Panel



ID	Name	Function Description
1	POWER LED	On: The device is powered on. Off: The device is powered off.
2	LINK LED	On: The HDBT ports between this device and another transceiver are connected. Off: The HDBT ports between this device and another transceiver are not connected.
3	INPUT	HDMI LED On: HDMI In is selected as input video source. HDBT LED On: HDBT is selected as input video source. Note: These two LED indicators indicate the input source selection status of receiver only.
4	SWITCH	Press this button to select the input video source between HDMI In and HDBT In for receiver.
5	SET	4-Pin DIP Switch for settings of transceiver's working mode (transmitter/receiver), USB mode (USB Host/USB Device), Audio In/Out and RS-232 working mode (RS232 pass-through, API control or firmware update). For more information, see "DIP Switch Settings" section.
6	Audio IN/OUT	This port can be configured as Audio Input or Audio Output port. For more information, see "DIP Switch Settings" section.
7	USB HOST	USB 2.0 Type-B port. Connect to a USB host device (e.g. PC).
8	USB DEVICE	USB 2.0 Type-A port. Connect to USB slave devices (e.g. keyboard, mouse, etc.).

Rear Panel

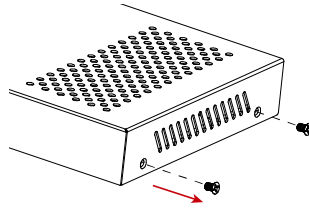


ID	Name	Function Description
1	DC 12V	Connect to the power adapter provided.
2	IR IN	Connect to the IR receiver provided.
3	IR OUT	Connect to the IR emitter provided.
4	RS232	Connect to a RS232 device for bi-directional RS232 pass-through, API control or firmware upgrade. The default baud rate of this port is 115200.
5	CONTACT IN	Connect to a keypad or push button to select the input video source between HDMI In and HDBT In for receiver.
6	HDBT	Connect to another transceiver or HDBT matrix switcher for HDBT transmission.
7	HDMI IN	Connect to an HDMI source device.
8	HDMI OUT	Connect to an HDMI display device.
9	AUDIO OUT (De-embed)	Connect to an audio receiver (e.g. speaker) for audio de-embedding output.
10	ETHERNET	Connect either side to the wireless router for Ethernet pass-through.

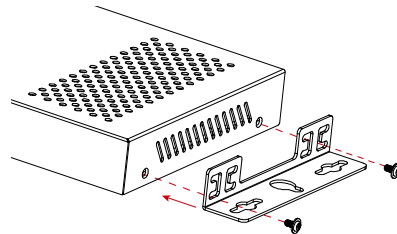
Installation

Before installation, ensure the device is disconnected from the power source.

1. Remove the four screws that secure the side panels to the transmitter/receiver.



2. Position and install the mounting brackets with the four mounting screws provided.



3. Mount and secure the transmitter/receiver to a surface or a suitable location with the mounting screws (not included).

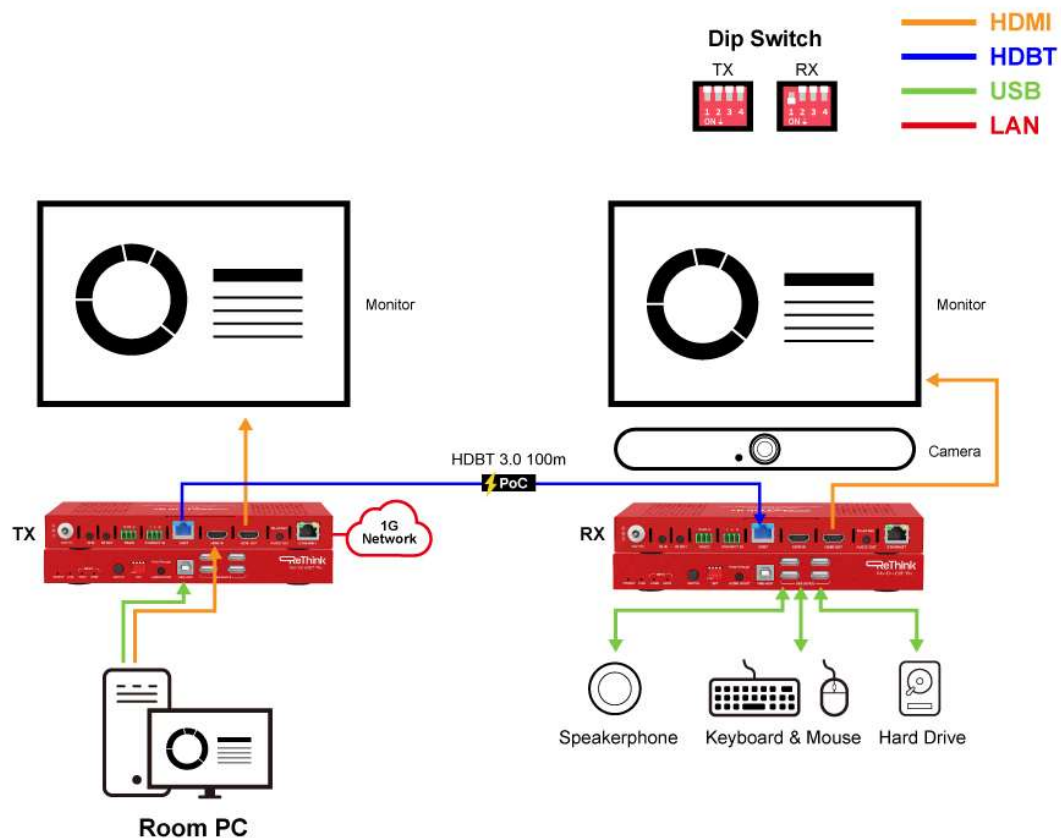
Typical Applications

Before wiring, disconnect the power from all devices.

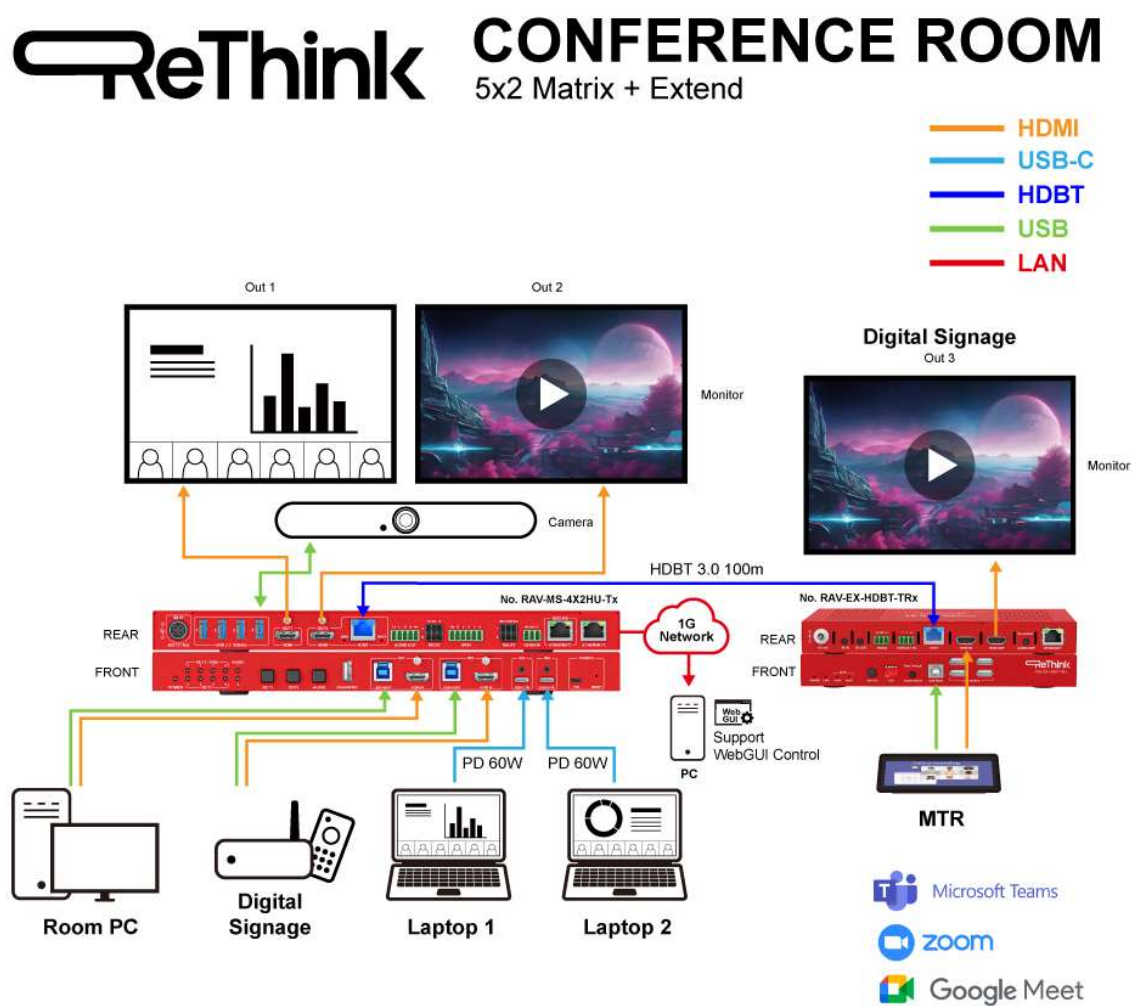
During wiring, connect and disconnect the cables gently.

Conference Room – Transceiver

ReThink CONFERENCE ROOM Transceiver



When connecting to the RAV-MS-4X2HU-Tx matrix, set the DIP switch to “Down, Down, -, -”. The USB devices connected to the device will always be linked to the HDBT input.



Auto Switching

The device supports auto switching function when it is used as a receiver, and follows the principles below:

- When an active HDBT or HDMI source is connected, the device will automatically switch to the newly connected active source.
- If the current active source is disconnected, the device will switch to the other available active source.
- If no active sources are detected, the device will default to the HDMI IN source.

Note:

- Video switching detects HDMI 5V output.
- When the device is used with the RAV-MS-4X2HU-Tx, and both HDMI and HDBT sources are connected, if the device is currently set to the HDMI input, changing the input source of the matrix's HDBT OUT port will trigger the device to automatically switch to the HDBT input.

DIP Switch Settings

RAV-EX-HDBT-TRx uses a 4-pin DIP switch for settings of working mode (transmitter/receiver), USB mode (USB Host/USB Device), Audio In/Out and RS-232 working mode (RS232 pass-through, API control or firmware update).

By default, all the four switches are set in (up, up, up, up) positions.



The following table shows how the DIP Switch functions:

DIP Position				Function
1	2	3	4	
up				Set as Transmitter
down				Set as Receiver
	up			Set as USB Host and Audio In (analogue audio pass through)
	down			Set as USB Device and Audio Out (analogue audio pass through)
		up	up	RS232 pass through
		down	up	RS232 for API and MCU update
		up	down	RS232 for HDBT update
		down	down	Reserved

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