User Manual

EXT-H102UETH-HDBT

HDMI 2.0 Extender over HDBaseT 3.0 with USB 2.0

Version: EXT-H102UETH-HDBT_2021V1.0

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated by March, 2020. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user’s authority to operate the equipment.

SAFETY PRECAUTIONS

To ensure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Table of Contents

1. Product Introduction

Thanks for choosing the EXT-H102UETH-HDBT HDMI2.0b Extender set, which consists of a transmitter and a receiver. This set is utilizing the latest HDBaseT 3.0 technology. It can extend 4K or 1080p video to distance up to 100 meters (328 feet) over a single CAT6A solid core cable without any compression. It supports audio de-embedding and ARC. It also supports bi-directional IR, USB and RS232 pass-through control and Ethernet extension. 24V PoC feature allows the transmitter and the receiver can be powered from each other and only one power adapter is needed in system.

1.1 Features

- HDBaseT 3.0 technology which supports extending HDMI 2.0 without any compression.
- Supports HDMI 2.0b, 4K@60 4:4:4, HDR10, Dolby Vision, HDCP 2.3.
- Extends up to 4K60 4:4:4 video signals up to 100 meters over a single CAT6A cable
- Supports Bi-directional IR and RS232 pass-through control.
- Flexible USB 2.0 Extension - Transmitter or receiver side can be set as Host/Device.
- Supports Gigabit full duplex Ethernet extension from either transmitter or receiver.
- Supports audio de-embedding on a balanced analog output on transmitter.
- Supports ARC (Audio Return Channel).
- Features a HDMI loop out on transmitter.
- Supports bi-directional 24V PoC.

1.2 Packing List

- 1x EXT-H102UETH-HDBT Transmitter
- 1x EXT-H102UETH-HDBT Receiver
- 1x DC power adapter with EU plug(24v1.25A)
- 4x Mounting Ears with 4x Screws
- 8x Plastic Cushions
- 1x 5-Pin terminal block
- 2x 3-Pin terminal block
- 1x User Manual

1.3 Customer Service

We provide limited warranty for the product within **five years** counting from date of purchase (The purchase invoice shall prevail).

Note: *Please contact your distributor immediately if any damage or defect in the components is found.*

2. Specification

	Transmitter	Receiver
Video		
Input	(1) HDMI IN	(1) HDBT IN
Input Connector	(1) Type-A female HDMI 2.0b	(1) RJ45
Input Resolution	Up to 4K@60Hz 4:4:4	Up to 4K@60Hz 4:4:4
Output	(1) HDBT OUT, (1) HDMI LOOP OUT	(1) HDMI
Output Connector	(1) RJ45, (1) Type-A female HDMI	(1) Type-A female HDMI
Output Resolution	Up to 4K@60Hz 4:4:4	Up to 4K@60Hz 4:4:4
Audio		
Input	-	(1) ARC IN
Input Connector	-	(1) Toslink Connector
Output	(1) ARC OUT, (1) AUDIO OUT	-
Output Connector	(1) Toslink connector (1) 5-pin terminal block	-
Audio Format	Toslink (ARC): PCM, Dolby Digital, DTS 5.1CH 5-pin terminal block: PCM 2CH	
Frequency Response	20Hz ~ 20KHz, ±3dB	
Max Output Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal	
THD+N	< 0.05% (-80dB), 20Hz~20KHz bandwidth, 1kHz sine at 0dBFS level (or max level)	
SNR	> 85dB, 20Hz-20kHz bandwidth	
Crosstalk Isolation	> 70dB, 10kHz sine at 0dBFS level (or max level before clipping)	
L-R Level Deviation	< 0.3dB, 1kHz sine at 0dBFS level (or max level before clipping)	
Frequency Response Deviation	< ± 0.5dB, 20Hz – 20kHz	
Output Load Capability	1KΩ and higher (Supports 10x paralleled 10KΩ loads)	
Stereo Channel Separation	>70dB@1KHz	
Control		

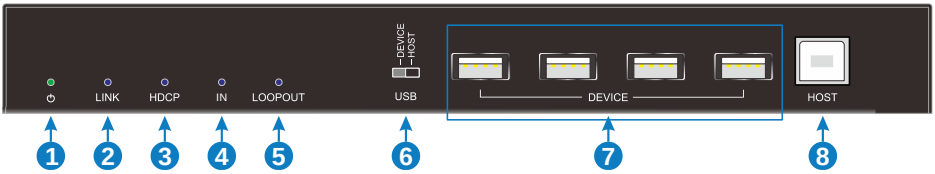
Control Part	(4) DEVICE, (1) HOST, (1) USB Switch, (1) IR IN, (1) IR OUT, (1) RS232, (1) ETHERNET	(4) DEVICE, (1) HOST, (1) ARC Switch, (1) USB Switch, (1) IR IN, (1) IR OUT, (1) RS232, (1) ETHERNET
Control Connector	(4) Type-A USB 2.0, (1) Type-B USB 2.0, (1) 2-pin DIP Switch, (2) 3.5mm Jacks, (1) 3-pin Terminal Block, (1) RJ45	(4) Type-A USB 2.0, (1) Type-B USB 2.0, (1) 3-pin DIP Switch, (1) 2-pin DIP Switch, (2) 3.5mm Jacks, (1) 3-pin Terminal Block, (1) RJ45
General		
HDCP Version	Input: HDCP 2.3, HDCP 2.2, HDCP 1.4 compliant Loop out: Follows the display's HDCP version. RX Output: Follows the source's HDCP version.	
CEC	Pass-through (when ARC switch is selected to PASS or SPDIF)	
Bi-directional PoC	Supported	
HDMI 2.0 Cable Length	4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 15m, 1080P ≤ 20m	
Transmission Distance	4K/1080p ≤ 100 meters (328 feet)	
USB 2.0 Bandwidth over HDBaseT	Up to 272Mbps	
Operation Temperature	-5 to +55℃(+23° to +131°F)	
Storage Temperature	-25 to +70℃(-13° to +158°F)	
Relative Humidity	10% to 90%, non-condensing	
Power Supply	Input:100V~240V AC; Output:24V DC 1.25A	
Power Consumption	17W(Max)	
Dimension (W*H*D)	212mm x 25mm x 100mm	
Net Weight	570g(TX), 555g(RX)	

Note: *Please use high-qualified HDMI cable fully compliant with HDMI v2.0 for reliable transmission and connection.*

3. Panel Description

3.1 Transmitter

Transmitter Front Panel



① **POWER LED:** Illuminates green when power is applied, or blinks when in firmware upgrade mode.

② **LINK LED:** Illuminates when there is a valid HDBaseT link between the transmitter and the receiver.

③ **HDCP LED:** Illuminates when the video contains HDCP content, or blinks when the video has no HDCP content.

④ **IN LED:** Illuminates when there is an HDMI source device is connected to HDMI input port.

⑤ **LOOPOUT LED:** Illuminates when both HDMI source device and HDMI display device (HDMI loop out port) are connected.

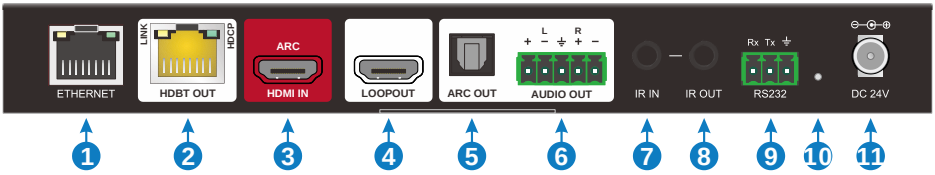
⑥ **USB:** DIP switch for DEVICE or HOST mode selection.

- **DEVICE:** The USB devices at transmitter position are used to control the HOST PC at receiver position.
- **HOST:** The HOST PC at transmitter position is controlled by the USB devices at receiver position.

⑦ **DEVICE:** Four type-A USB 2.0 ports for USB devices (e.g. Mouse, Keyboard and USB Camera) connection to control the PC which is connected to the HOST port of receiver.

⑧ **HOST:** Type-B USB 2.0 port for PC connection. The PC can be controlled by the USB devices which are connected to type-A USB 2.0 ports of receiver.

Transmitter Rear Panel



① **ETHERNET:** Used for Gigabit Ethernet extension together with the ETHERNET port of receiver.

② **HDBT OUT:** RJ45 port to connect the HDBT input port of receiver by CAT6A Ethernet cable. The LINK LED illuminates when there is a valid HDBaseT link between the transmitter and the receiver. The HDCP LED illuminates when the video contains HDCP content.

③ **HDMI IN:** Connects to HDMI source device.

④ **LOOPOUT:** Connects to HDMI display device.

⑤ **ARC OUT:** Connects to audio system (e.g. amplifier) for ARC audio output.

⑥ **AUDIO OUT:** Connects to audio system (e.g. amplifier) for audio de-embedding from HDMI input.

⑦ **IR IN:** Connects to the IR receiver for IR pass-through.

⑧ **IR OUT:** Connects to the IR emitter for IR pass-through.

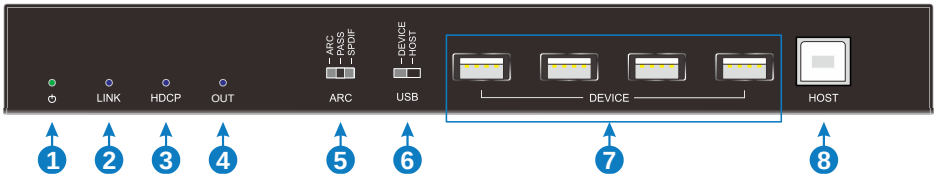
⑨ **RS232:** Connects to RS232 control device (e.g. PC) or a third-party device for RS232 control.

⑩ **FIRMWARE UPGRADE BUTTON:** Press the button with paper clip or other sharp tool for 3s to enter firmware upgrade mode. Update Valens IC program, connect a PC to the RS232 port, and then double-click the update file (.bat). Press the button for 3s again to exit the mode.

⑪ **DC 24V:** DC connector for the power adapter connection.

3.2 Receiver

Receiver Front Panel



① **POWER LED:** Illuminates green when power is applied, or blinks when in firmware upgrade mode.

② **LINK LED:** Illuminates when there is a valid HDBaseT link between the transmitter and the receiver.

③ **HDCP LED:** Illuminates when the video contains HDCP content, or blinks when the video has no HDCP content.

④ **OUT LED:** Illuminates when there is a HDMI display device is connected to HDMI output port and when input source is detected.

⑤ **ARC:** DIP switch for ARC mode selection.

- **HDMI:** The ARC input via HDMI output port of receiver.
- **PASS:** Supports CEC & ARC pass-through.
- **SPDIF:** The ARC input via SPDIF input port of receiver.

⑥ **USB:** DIP switch for DEVICE or HOST mode selection.

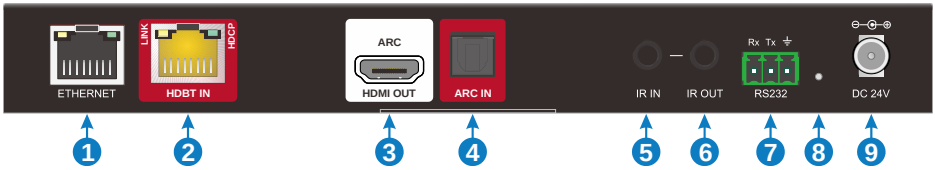
- **DEVICE:** The USB devices at receiver position are used to control the HOST PC at transmitter position.
- **HOST:** The HOST PC at receiver position is controlled by the USB devices at transmitter position.

⑦ **DEVICE:** Four type-A USB 2.0 port for USB devices (e.g. Mouse, Keyboard and USB Camera) connection to control the PC which is connected to the HOST port of transmitter.

⑧ **HOST:** Type-B USB 2.0 ports for PC connection. The PC can be controlled by the

USB devices which are connected to type-A USB 2.0 ports of transmitter.

Receiver Rear Panel



① **ETHERNET:** Used for Gigabit Ethernet extension together with the ETHERNET port of transmitter.

② **HDBT IN:** RJ45 port to connect the HDBT output port of transmitter by CAT6A Ethernet cable. The LINK LED illuminates when there is a valid HDBaseT link between the transmitter and the receiver. The HDCP LED illuminates when the video contains HDCP content.

③ **HDMI OUT:** Connects to HDMI display device.

④ **ARC IN:** Connects to ARC audio source device (e.g.TV).

⑤ **IR IN:** Connects to the IR receiver for IR pass-through.

⑥ **IR OUT:** Connects to the IR emitter for IR pass-through.

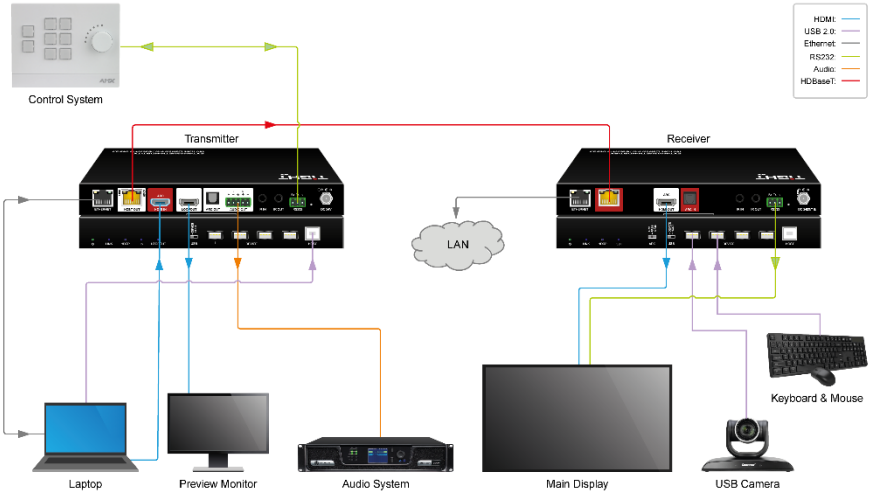
⑦ **RS232:** Connects to RS232 control device (e.g. PC) or a third-party device which is to be controlled.

⑧ **FIRMWARE UPGRADE BUTTON:** Press the button with paper clip or other sharp tool for 3s to enter firmware upgrade mode. Update Valens IC program, connect a PC to the RS232 port, and then double-click the update file (.bat). Press the button for 3s again to exit the mode.

⑨ **DC 24V:** DC connector for the power adapter connection.

4. System Connection

The following diagram illustrates typical input and output connections that can be utilized with the HDMI2.0 Extender:

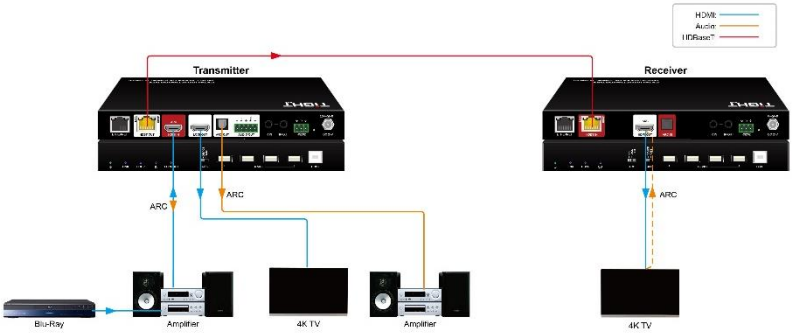


4.1 ARC System Connection

1) When ARC switch is selected to HDMI, and the TV supports ARC, the TV audio can be transmitted back to the transmitter via HDMI output port of receiver, and then it will be available on both the **ARC OUT & HDMI IN** ports of the transmitter. CEC pass-through is not supported in this mode.

2) When ARC switch is selected to SPDIF, the audio can be transmitted back to the transmitter via **ARC IN** SPDIF port of receiver, and then it will be available on both the **ARC OUT & HDMI IN** ports of the transmitter. Besides, it also supports CEC pass-through in this mode.

3) When ARC switch is selected to PASS, the extender can pass the ARC signal and support CEC pass-through. If the amplifier can work with the TV for ARC function, the ARC audio can be transmitted back to the transmitter via HDMI output port of receiver, and then it will be available on both the **ARC OUT & HDMI IN** ports of the transmitter.



Note: *Please try to restart the extender if ARC function works abnormally.*

5. Panel Drawing