HDMI 2.0 over HDBaseT 3.0 Extender with USB 2.0

4KEX100-KVM-Pro



User Manual

AV Access

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Introduction

Overview

This product is an HDMI 2.0 extender based on the new generation of HDBT 3.0 platform, which can transmit the uncompressed video signal up to 4K@60Hz 4:4:4 8-bit over single 100m Cat 6A/7 F/FTP or U/FTP cable. One HDMI output port on transmitter is used for HDMI loop out. The kit features KVM function for remote USB control. It also supports audio pass-through from the transmitter to the receiver and audio de-embedding on both sides. The transmitter and receiver each have one RS232 port for RS232 pass-through or firmware upgrade, which can be select through the DIP switch. With one-way PoH, one power adapter is needed to be connected to the receiver to power both units.

Features

- HDMI 2.0 and HDCP 2.2 compatibility.
- Supports transmitting 4K@60Hz 4:4:4 8bit signal without compression and supports any HDR format, including Dolby Vision and HDR10+.
- Supports transmitting 4K@60Hz 4:4:4 signals up to 100m/330ft via Cat 6A/7 F/FTP or U/FTP cable.
- Supports USB 2.0 pass-through over HDBT, and up to 350Mbps data transfer.
- Provides USB Device ports with high power, for supporting higher power USB devices connected.
- Supports local HDMI loop-out.
- Supports audio pass-through from transmitter to receiver.
- Supports audio de-embedding at both ends.
- Supports one-way PoH function, the transmitter can be powered by the receiver.
- Supports bi-directional RS232 pass-through and firmware upgrade.

Package Contents

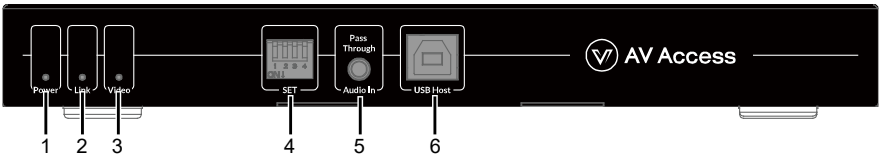
Before you start the installation of the product, please check the package contents:

- Transmitter x 1
- Receiver x1
- Power Adapter (DC 12V/3A) x 1
- USB 2.0 Type-A to Type-B Cable x 1
- Phoenix Male Connectors (3-pin, 3.5mm) x 2
- Mounting Brackets (with Screws) x 8
- User Manual x 1

Panel

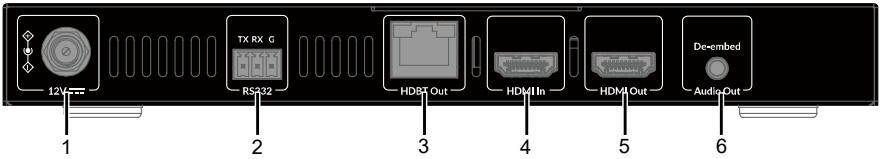
Transmitter

Front Panel



ID	Name	Description
1	Power LED	On: The device is powered on. Off: The device is powered off.
2	Link LED	On: HDBT link is normal. Off: No HDBT link or link error.
3	Video LED	On: HDMI input signal is active. Off: No HDMI input signal or HDMI input signal is inactive.
4	SET	4-Pin DIP Switch for settings of RS232 working mode (RS232 pass-through, Valens firmware upgrade and MCU firmware upgrade). For more information, see "DIP Switch Settings" section.
5	Audio In (Pass Through)	Connect to an audio source for audio pass-through from transmitter to receiver.
6	USB Host	USB 2.0 Type-B port. Connect to a USB host device (e.g., PC).

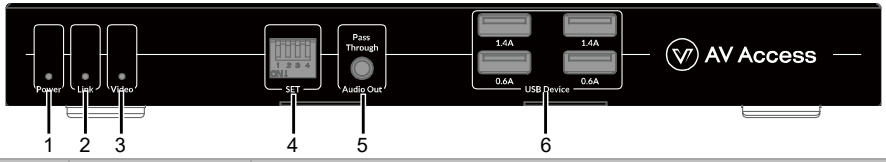
Rear Panel



ID	Name	Description
1	DC 12V	Connect to the power adapter provided. With one-way PoH function supported, one power adapter is needed to connect to the receiver to power both units.
2	RS232	Connect to a RS232 device for bi-directional RS232 pass-through or firmware upgrade.
3	HDBT Out	Connect to the HDBT In port of the receiver.
4	HDMI In	Connect to an HDMI source device.
5	HDMI Out	Connect to an HDMI display device for HDMI signal loop-out.
6	AUDIO OUT (De-embed)	Connect to an audio receiver (e.g., speaker) for audio de-embedding output.

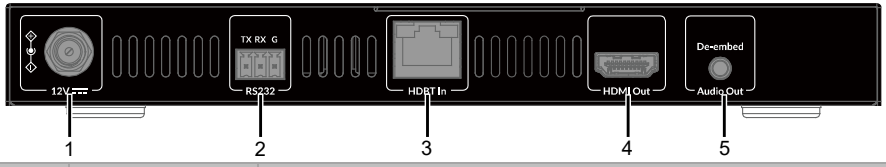
Receiver

Front Panel



ID	Name	Description
1	Power LED	On: The device is powered on. Off: The device is powered off.
2	Link LED	On: HDBT link is normal. Off: No HDBT link or link error.
3	Video LED	On: HDMI output signal is active. Off: No HDMI output signal or HDMI output signal is inactive.
4	SET	4-Pin DIP Switch for settings of RS232 working mode (RS232 pass-through, Valens firmware upgrade and MCU firmware upgrade). For more information, see "DIP Switch Settings" section.
5	Audio Out (Pass Through)	Connect to an audio receiver for audio pass-through from transmitter to receiver.
6	USB Device	USB 2.0 Type-A port. Connect to USB devices (e.g., keyboard, mouse, USB camera, USB flash drive, etc.). Note: USB ports support the USB 2.0 standard with a maximum of 1.4A for the top two ports and 0.6A on the bottom two ports. Before connecting a USB 3.0 device, confirm the compatibility with USB 2.0.

Rear Panel



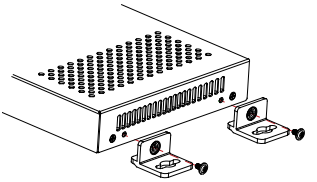
ID	Name	Description
1	DC 12V	Connect to the power adapter provided. With one-way PoH function supported, one power adapter is needed to connect to the receiver to power both units.
2	RS232	Connect to a RS232 device for bi-directional RS232 pass-through or firmware upgrade.
3	HDBT In	Connect to the HDBT Out port of the transmitter.
4	HDMI Out	Connect to an HDMI display device.
5	Audio Out (De-embed)	Connect to an audio receiver (e.g., speaker) for audio de-embedding output.

Installation and Application

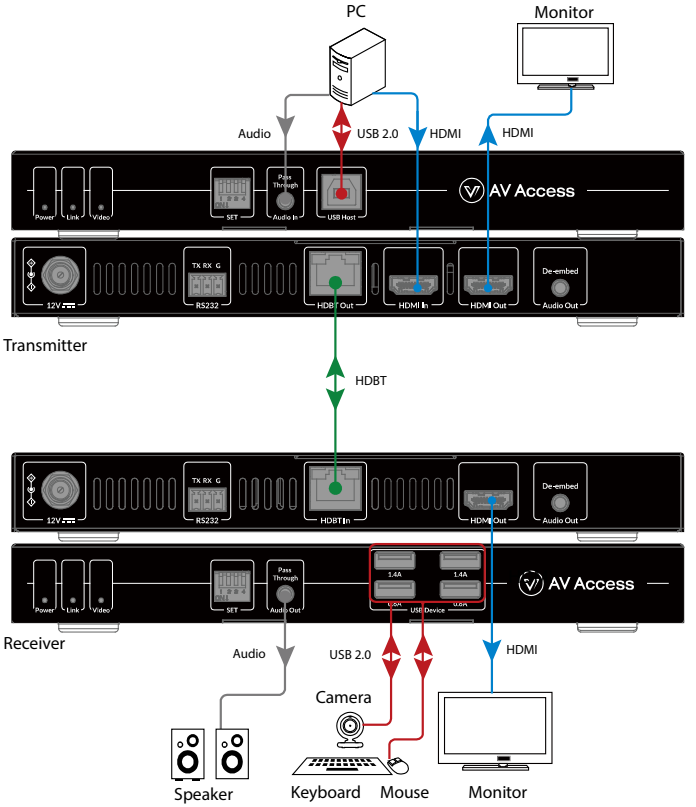
Brackets Installation

Note: Before installation, please ensure the extender is disconnected from the power source.

1. Attach the installation bracket to the enclosure using the screws that were provided in the package separately. As shown in the figure.
2. Attach the brackets to the surface you want to hold the unit against using the screws (not included).



Application



Additional connection options:

- RS232 operations: Connect a control PC or control system to RS232 port of the transmitter and receiver. Use the DIP switch to set the function of RS232 port, see "RS232 Pass-Through" section.
- Audio de-embedding output: Connect audio receivers to Audio Out (De-embed) ports of the transmitter and receiver for de-embedding audio output.

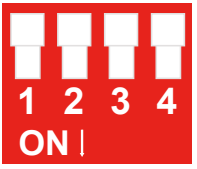
Note:

- The Cat x cable used must be in the transmission distance range, see "Specification" section get transmission distance.
- With one-way PoH supported, one power adapter is needed to be connected to the receiver to power both units.
- USB devices connected with the receiver can be connected to the USB host PC connected with the transmitter.
- The two USB 2.0 ports supports 1.4A can be connected to high-power USB devices such as USB camera, USB hard disk.

DIP Switch Settings

Transmitter and receiver each equip a 4-pin DIP switch for settings of RS232 working mode (RS232 pass-through, MCU firmware update or Valens firmware update).

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



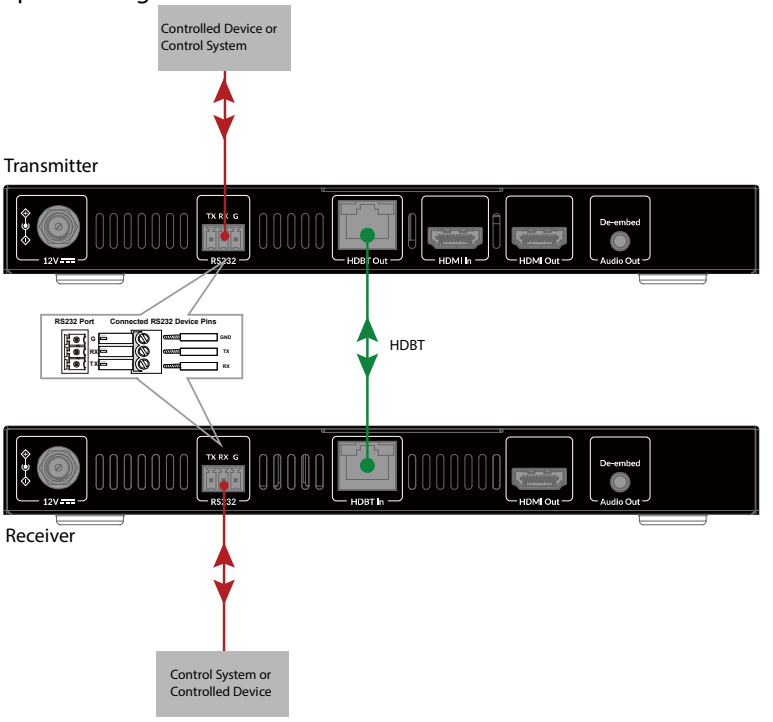
The following table shows how the DIP Switch functions:

DIP Position				Function
1	2	3	4	
X	X	up	up	RS232 pass through (default)
X	X	down	up	RS232 for MCU firmware update
X	X	up	down	RS232 for Valens firmware update
X	X	down	down	Reserved

Note: "X" indicates the position of the DIP switch pin doesn't affect the function.

RS232 Pass-Through

The device supports bi-directional RS232 pass-through. Set both the DIP switches of the transmitter and receiver to "X, X, up, up" before performing RS232 pass-through.



Specifications

Technical	
Input/Output Video Signal	HDMI with 4K@60 YUV 4:4:4, HDCP 2.2
Input/Output Resolutions	**SMPTE:** 4096x2160[1,2,3,4,5], 3840x2160[1,2,3,4,5], 3840x2160[6,7](YUV 420), 2560x1080[4,5], 1920x1080P[1,2,3,4,5,6,7,8,9,10], 1920x1080i[4,5,7], 1280x720[1,2,3,4,5,6,7] **VESA:** 3840x1440[4,5,6], 3840x1080[4,5,6,7], 3440x1440[4,5,6], 2560x1600[4,5,6,7], 2560x1440[4,5,6,7,8], 2560x1080[4,5,6,7,8,9], 1920x1440[4,5,6,7,8], 1920x1200[4,5,6,7,8,9], 1680x1050[4,5],

Technical	
	1600x1200[4,5], 1600x900[4,5], 1440x900[4,5], 1366x768[4,5], 1360x768[4,5], 1280x1024[4,5], 1280x960[4,5], 1280x800[4,5], 1280x768[4,5], 1280x720[4,5], 1024x768[4,5], 800x600[4,5] 1=24Hz, 2=25Hz, 3=30Hz, 4=50Hz, 5=60Hz, 6=100Hz, 7=120Hz, 8=144Hz, 9=165Hz, 10=240Hz
Audio Format	**Audio In/Out (pass-through):** 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 **Audio De-embedding:** Stereo
Maximum Pixel Clock	600MHz
Maximum Data Rate	HDMI: 18Gbps USB: 350Mbps
USB Specification	USB 2.0 and backward compatible with USB 1.1/1.0

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	20% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge)/ ±4kV (Contact discharge)
Power Supply	DC 12V 3A
Power Consumption (Max)	18.96W
Device Dimensions (W x H x D)	Transmitter/Receiver: 215 mm × 25 mm × 120 mm/ 8.46" x 0.98" x 4.72"
Product Weight	Transmitter: 0.56kg/1.23lbs Receiver: 0.57kg/1.26lbs

Transmission Distance

Note:

- Straight-through category cable wired to T568B standard is recommended.
- For max HDMI 2.0 resolution recommended cable is: Cat 6A U/FTP or F/FTP.

Cable Type	Range	Supported Video
Cat 5e/6	70m/230ft	4K@60Hz 4:2:0 36bpp 4K@30Hz 1080P@60Hz
	40m/131ft	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp
Cat 6A (U/FTP)	100m/330ft	4K@60Hz 4K@30Hz

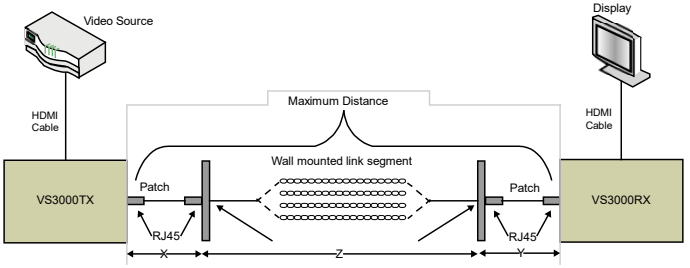
Cable Type	Range	Supported Video
		1080P@60Hz

Use Patches

Note:

Patches may be used in the installation, and the patches will obviously affect the transmission distance. Limits and distances are as follows:

- Support up to 2 patch cables, each not exceeding 5m.
- Patches must be installed on both ends of the device, refer to the following pictures:



The standard specifies the following lengths for the three-segment cable installation:

- X = Left-side patch cable length ≤ 5 [meter]
- Y = Right-side patch cable length ≤ 5 [meter]
- Z = Wall segment ≤ Maximum Distance – X – Y [meter]

Cable Type	Range	Supported Video
Cat 5e/6	70m/230ft (with Patches)	4K@60Hz 4:2:0 36bpp 4K@30Hz 1080P@60Hz
	30m/100ft (with Patches)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp
Cat 6A (U/FTP)	70m/230ft (with Patches)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp
	100m/330ft (with Patches)	4K@60Hz 4:2:0 36bpp 4K@30Hz 1080P@60Hz

Warranty

Products are backed by a limited 1-year parts and labor warranty. For the following cases AV Access shall charge for the service(s) claimed for the product if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by AV Access) labeled on the product has been removed, erased, replaced, defaced or is illegible.
2. The warranty has expired.
3. The defects are caused by the fact that the product is repaired, dismantled or altered by anyone that is not from an AV Access authorized service partner. The defects are caused by the fact that the product is used or handled improperly, roughly or not as instructed in the applicable User Guide.
4. The defects are caused by any force majeure including but not limited to accidents, fire, earthquake, lightning, tsunami and war.
5. The service, configuration and gifts promised by salesman only but not covered by normal contract.
6. AV Access preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

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