4K DP over HDBT 3.0 Extender with USB 2.0

4KEX100-DP-Pro



User Manual

AV Access

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Introduction

Overview

This product is a 100m DisplayPort HDBT 3.0 Extender. It supports DP 1.2a up to 4K@60Hz 4:4:4 8bit and compatible with HDCP 2.2, and also features USB 2.0, audio, and RS232 pass-through. It offers the distribution of uncompressed 4K@60Hz UHD video, audio, power, RS232 and USB 2.0 together up to 100m/330ft over a single Cat 6A cable. With one-way PoH integrated, it only needs one power adapter to be connected to the receiver to power both units. It also supports firmware upgrade through RS232 ports, and RS232 function can be set through DIP switches.

Features

- Uncompressed DP 1.2a up to 4K@60Hz 4:4:4 8bit and HDCP 2.2 compatibility.
- Supports DP 4 lanes, and up to 5.4Gbps per lane.
- Supports DP SST mode.
- Supports all HDR formats, including static HDR (HDR10, HLG) and dynamic HDR (Dolby Vision, HDR10+).
- Transmits 4K@60Hz 4:4:4 8bit signals to 100m/330ft via a single Cat 6A/7 F/FTP or U/FTP cable.
- Supports USB 2.0, audio and RS232 pass-through.
- Built-in DIP switches to set RS232 functions.
- Supports one-way PoH function, and one power adapter is needed to be connected to the receiver to power both units.
- Supports firmware upgrade through RS232 ports.

Package Contents

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

- Transmitter x 1
- Receiver x 1
- Power Adapter (DC 12V/3A) x 1
- USB 2.0 Type-A to USB Type-B Cable (L = 1.5m) x 1
- Phoenix Male Connectors (3.5mm, 3 Pins) x 2
- Phoenix Male Connectors (3.5mm, 5 Pins) x 1
- Mounting Brackets (with Screws) x 8
- User Manual x 1

Panel

Front Panel

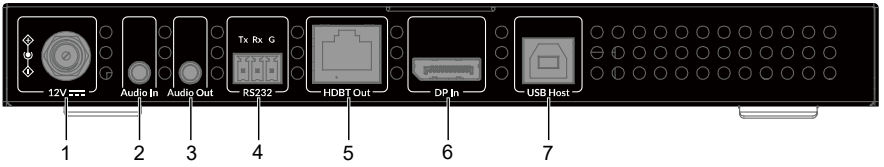
Transmitter & Receiver (take transmitter as the example)



ID	Name	Description
1	Power LED	On: The device is powered on. Off: The device is powered off.
2	Link LED	On: The HDBT link is normal. Blinking/Off: No HDBT link or link error.
3	Video LED	On: Video is being transmitted. Off: No video is being transmitted.
4	SET	4-Pin DIP Switch for settings of RS232 working mode. Detail information, please refer to "DIP Switch Settings" section.

Rear Panel

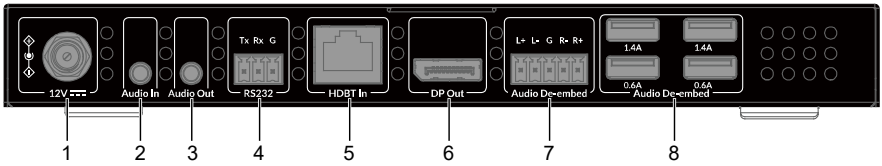
Transmitter



ID	Name	Description
1	12V	Connect to the power adapter provided. With one-way PoH function supported, one power adapter is needed to be connected to the receiver to power both units.
2	Audio In	Connect to an audio source for audio pass-through.
3	Audio Out	Connect to an audio receiver for audio pass-through.
4	RS232	Connect to a RS232 device for bi-directional RS232 pass-through or firmware upgrade. RS232 function can be set through DIP switch on front panel, see "DIP Switch Settings" section to get detail information.
5	HDBT Out	Connect to the HDBT IN port of the receiver.

ID	Name	Description
6	DP In	Connect to a DP source.
7	USB Host	Connect to a host device.

Receiver



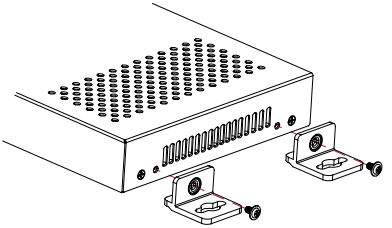
ID	Name	Description
1	12V	Connect to the power adapter provided. With one-way PoH function supported, one power adapter is needed to be connected to the receiver to power both units.
2	Audio In	Connect to an audio source for audio pass-through.
3	Audio Out	Connect to an audio receiver for audio pass-through.
4	RS232	Connect to a RS232 device for bi-directional RS232 pass-through or firmware upgrade. RS232 function can be set through DIP switch on front panel, see "DIP Switch Settings" section to get detail information.
5	HDBT In	Connect to the HDBT OUT port of the transmitter.
6	DP Out	Connect to a DP display.
7	Audio De-embed	Connect to an audio receiver to output de-embedded audio from DP output.
8	USB Device	Connect to USB devices such as USB keyboard, mouse, or camera. **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.

Installation and Application

Brackets Installation

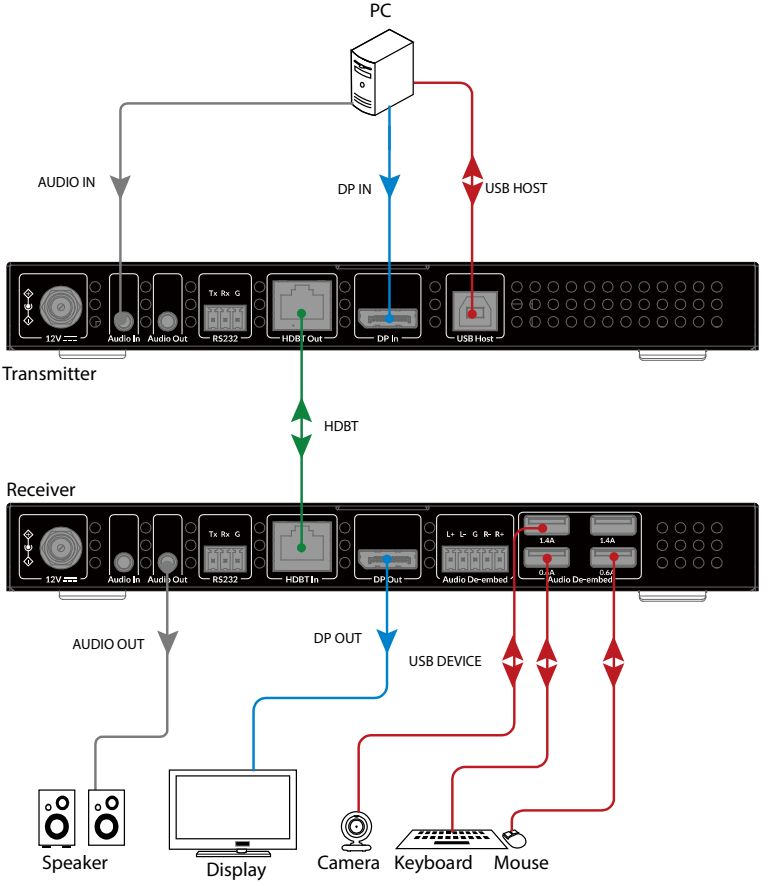
Note: Before installation, please ensure the extender is disconnected from the power source.

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:

- Audio pass-through: Connect an audio source to Audio In port of the transmitter/receiver, and connect an audio receiver to Audio Out port of

the receiver/transmitter.

- RS232 pass-through: Set both the DIP switches of the transmitter and receiver to "X, X, up, up" position. Connect a RS232 master/slave device to RS232 port of the transmitter/receiver, and connect a RS232 slave/master device to RS232 port of the receiver/transmitter.

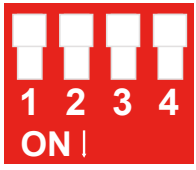
Note:

- 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:

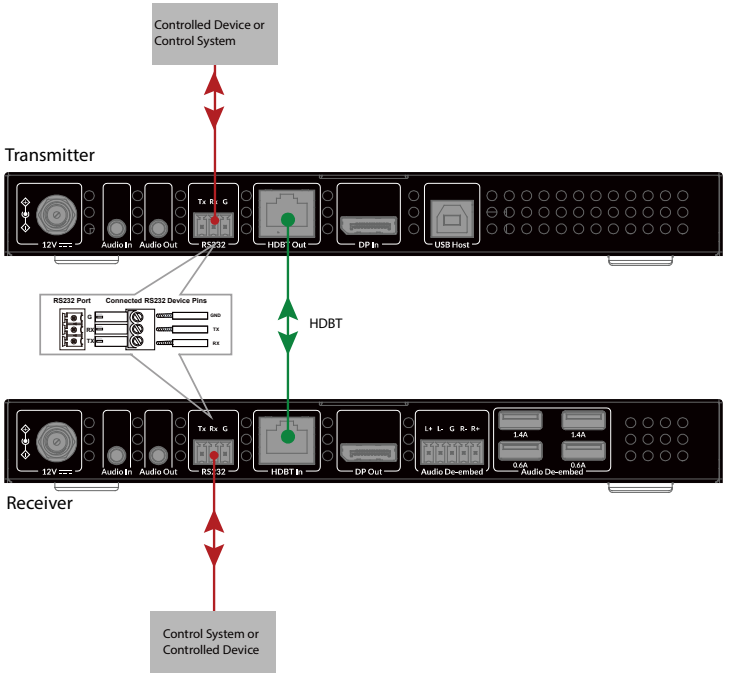
- "X" indicates the position of the DIP switch pin doesn't affect the function.
- Both Valens firmware of the transmitter and receiver can be upgraded through RS232 port of the transmitter/receiver. Set the DIP switch of the

transmitter/receiver to “X, X, up, down”. Connect a PC to RS232 port of the transmitter/receiver, and connect the transmitter and receiver, users can upgrade Valens firmware of transmitter and receiver through the RS232 port of the transmitter/receiver.

RS232 Pass-Through

RS232 ports can be used for bi-directional RS232 signal pass-through between the transmitter and receiver.

1. Set the DIP switches of the transmitter and receiver to the “X, X, up, up” position for RS232 pass-through.
2. Connect a RS232 controlled Device or control system to RS232 port of transmitter / receiver and connect a control system or RS232 controlled Device to RS232 port of receiver/transmitter.
3. Connect HDBT Out of the transmitter to HDBT In of the receiver.
4. When all is set, RS232 signal can be passed through bi-directionally between two RS232 devices.



Specifications

Technical	
Input/Output Video Signal	DP 1.2a with 4K@60 YUV 4:4:4, HDCP 2.2
Input/Output Resolutions	**VESA:** 800 x 600[8], 1024 x 768[8], 1280 x 768[8], 1280 x 800[8], 1280 x 960[8], 1280 x 1024[8], 1360 x 768[8], 1366 x 768[8], 1440 x 900[8], 1600 x 900[8], 1600 x 1200[8], 1680 x 1050[8], 1920 x 1200[8], 2048 x 1152[8], **SMPTE:** 1280 x 720P[6,7,8], 1920 x 1080P[6,7,8,9], 3840 x 2160[2,3,5,6,8], 4096 x 2160[2,3,5,6,8] 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz, 9 = 120Hz
Audio Format	• DP In/Out: audio formats including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X • Audio In/Out/Audio De-embed: Stereo
HDR Format	All HDR formats, including HDR 10, HLG, HDR 10+ and Dolby Vision
Maximum Data Rate	Supports DP 4 lanes, and up to 5.4Gbps per lane
USB	USB 2.0 and backward compatible with USB 1.1/1.0, Maximum bandwidth is 350Mbps

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)	21.9W
Device Dimensions (W x H x D)	Transmitter/Receiver: 215mm x 25mm x 120mm/8.46" x 0.98" x 4.72"
Product Weight	Transmitter/Receiver: 0.56kg/1.23lbs

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.

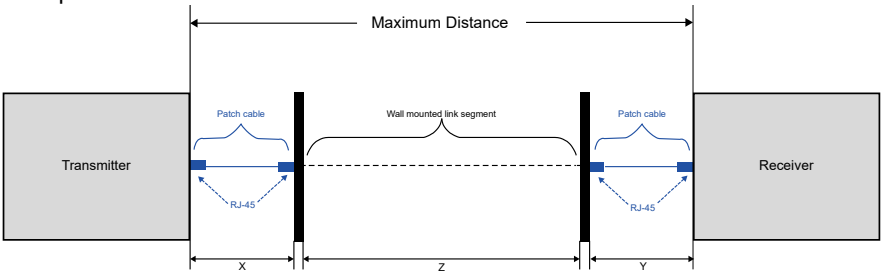
Cable Type	Range	Supported Video
Cat 5e/6	70m/230ft	4K@60Hz 4:2:0 36bpp 4K@30Hz 1080P@60Hz
	40m/131ft	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp
Cat 6A (U/FTP)	100m/330ft	4K@60Hz 4K@30Hz 1080P@60Hz

Use Patched Cable

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 ≤ 5m
- Y = Right-side patch cable length ≤ 5m
- Z = Wall segment ≤ Maximum Distance – X - Y

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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