# 4K 100m BYOM Extender via DisplayLink

4KEX100-BYOM



## User Manual

AV Access

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# Introduction

## Overview

This product is a 100m 4K@60Hz dual monitor BYOM extender. Ideal for video conferencing. This extender supports dual 4K@60Hz video, USB 3.2 data, audio, 1G network, RS232 control, and power transmission, all through a single Cat 6A/7 F/FTP or U/FTP cable. It ensures smooth USB 3.2 Gen 1 data transfer at speeds of up to 5 Gbit/s, while remaining backward compatible with USB 3.0, 2.0, and 1.1 devices.

The product supports DisplayLink technology and has a built-in DisplayLink driver. Easy installation without network download. After installing the driver, regardless of whether the connected computer supports video output capability, the MST dual video output function can be achieved through the legacy USB-A port or the latest USB-C port, even allowing devices like Macbooks with M-series chips to output MST dual video through legacy USB connections.

The system provides automatic and manual switching for connecting multiple devices, giving users the flexibility to manage their USB connections as needed. It also features one-way PoH+ function, one power adapter is needed to be connected to the transmitter to power both units.

## Features

- 2 x 1 USB-B + USB-C transmitter and dual monitor receiver set.
- Supports transmitting dual 4K video, USB 3.0, Ethernet, audio, RS232, and power signals over a single Cat 6A/7 F/FTP or U/FTP cable up to 100m (330ft).
- Supports USB 3.2 Gen 1 standard with up to 5Gbit/s data transfer rate, and backward compatible with USB 3.0, USB 2.0, and USB 1.1.
- One USB-C host port on transmitter supports 100W charging.
- Provides 1G network connection for connected laptops.
- Supports multiple peripheral connections on both transmitter and receiver:
  - On transmitter side, it provides 2x USB-A ports sharing (shared 2.5A current output) and 1x USB-C port (1.5A output) for connecting high-power USB devices;
  - On receiver side, it provides 2x USB-A and 1x USB-C device ports (each USB device port supports 1.5A current output) for video conferencing applications or connecting USB peripherals.
- RS232 and GPIO pass-through for industrial camera control.
- Built-in a USB flash to store DisplayLink driver, and no need to download from the website.
- Plug and play, and compatible with multiple operating systems.
- Support firmware upgrading via micro-USB port and RS232 port.
- Supports auto switch and manual switch (via front panel button).
- Supports one-way PoH+ function, one power source is needed to be connected to the transmitter side to power both units.

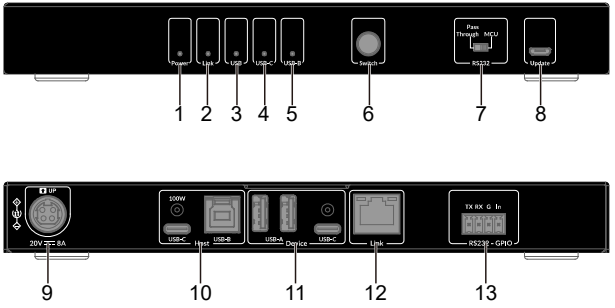
# Package Contents

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

- 4KEX100D-DM (Transmitter) x 1
- 4KEX100D-DM (Receiver) x 1
- Power Adapter (DC 20V/8A) x 1
- Phoenix Male Connector (3.5mm, 5-Pin) x 1
- Phoenix Male Connector (3.5mm, 4-Pin) x 2
- USB 3.2 Type-C to Type-C Cable (L = 2m) x 1
- USB 3.2 Type-A to Type-B Cable (L = 1.8m) x 1
- Mounting Brackets (with Screws) x 8
- User Manual x 1

# Panel

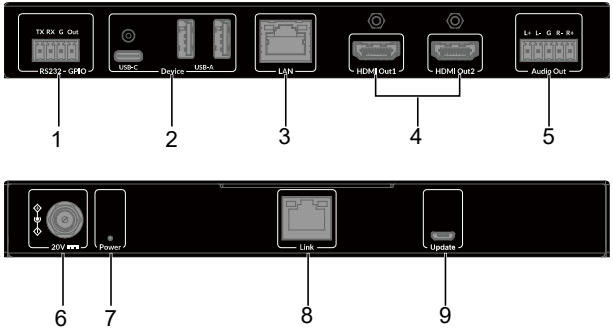
## Transmitter




| # | Name | Description |
|---|---|---|
| 1 | Power LED | • On: The device is powered on.<br>• Off: The device is powered off. |
| 2 | Link LED | • On: The HDBT link is normal.<br>• Blinking/Off: No HDBT link or link error. |
| 3 | USB LED | • On: The USB data is being transmitted.<br>• Off: There's no USB data being transmitted. |
| 4 & 5 | USB-C & USB-B LEDs | • On: The corresponding USB host is selected.<br>• Off: The corresponding USB host is not selected. |
| 6 | Switch Button | Press to switch the selected USB host between USB-C and USB-B. |
| 7 | RS232 | Use the switch to set the function of RS232:<br>• Pass-Through: Set the function of the RS232 port to pass-through.<br>• MCU: RS232 port is occupied, and users can upgrade the transmitter's MCU through the "Update" port. |
| 8 | Update | USB 2.0 Micro-USB port. Connect to a PC for upgrading Valens or MCU firmware (the RS232 switch needs to be set to "MCU" position).<br>When upgrade Valens firmware, please note that:<br>• Valens firmware can be upgraded on both Transmitter and receiver;<br>• The "VAIUE" tool is required to |

| # | Name | Description |
|---|---|---|
| | | perform the Valens firmware upgrade. |
| 9 | 20V | Connect to the provided power adapter.<br>**Note:** The device supports one-way PoH+, requiring only one power adapter to be connected to this transmitter to supply power to both units. |
| 10 | Host | USB-C:<br>USB 3.2 type-C port. Connect to a USB-C laptop. The port supports data transmission with data transfer rate up to 5Gbit/s, and 100W charging (with local power adapter connected).<br>The following cable is recommended:<br>USB Type-C to Type-C cable (USB 3.2 or above).<br>USB-B:<br>USB 3.2 type-B port. Connect to a laptop. |
| 11 | USB Device | 2x USB 3.0 type-A ports share a 2.5A current output and maximum 5Gbps data transfer rate each.<br>1x USB 3.0 type-C port supports a 1.5A current output and maximum 5Gbps data transfer rate. |
| 12 | Link | Connect to Link port of receiver. |
| 13 | RS232 & GPIO (In) | RS232 pass through.<br>GPIO input, 3.3V. |

## Receiver




| # | Name | Description |
|---|---|---|
| 1 | RS232 & GPIO (Out) | RS232 pass-through.<br>GPIO output, 3.3V. |
| 2 | USB Device | Two USB 3.2 type-A ports and one USB 3.2 type-C device port.<br>**Note:** Each USB device port supports 1.5A current output. |
| 3 | LAN | Connect to local network for USB 3.0 to LAN pass-through. |
| 4 | HDMI Out 1 & 2 | Connect to HDMI displays. |
| 5 | Audio Out | Connect to audio receiver. For outputting audio from the laptop connected to the host device. |
| 6 | DC 20V | Connect to the DC 20V/3A power adapter if needed. With one-way PoH+, connect the provided power adapter to the transmitter can supply power for both units. |

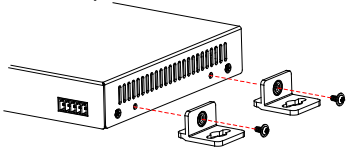
| # | Name | Description |
|---|---|---|
| 7 | Power LED | On: The device is powered on.<br>Off: The device is powered off. |
| 8 | Link | Connect to the Link of the transmitter. |
| 9 | Update | USB 2.0 Micro-USB port. Connect to a PC for upgrading Valens or MCU firmware.<br>When upgrade Valens firmware, please note that:<br>• Valens firmware can be upgraded on both Transmitter and receiver;<br>• The "VAIUE" tool is required to perform the Valens firmware upgrade. |

# Installation

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

Steps to install the device on a flat surface:

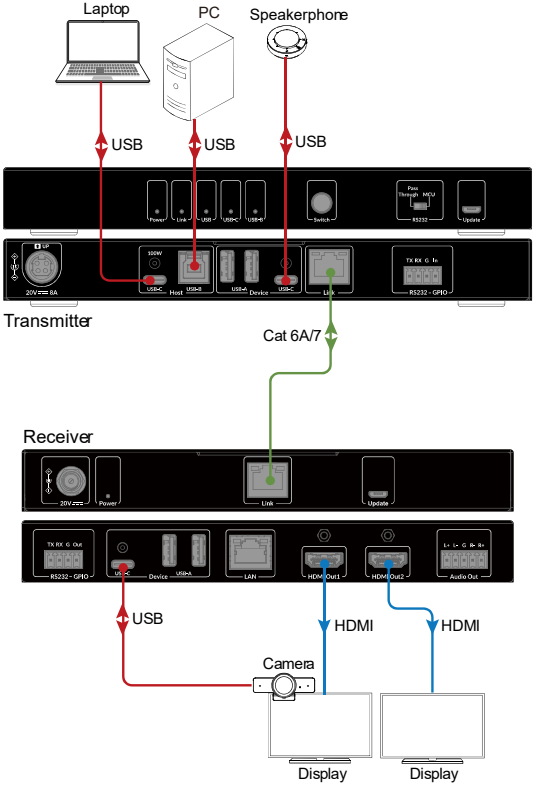
1. Attach two wall mount brackets to each side of the device using the screws provided in the package (take the transmitter as an example).



2. Install the brackets on a flat surface using screws (not included).

The installation steps for the transmitter and receiver are the same.

# Application



# Auto Switching

The device supports automatic switching. The auto switching follows the principle: **LIFO** mode.

- When a new active host device is inserted, all USB devices (connected to the transmitter and the receiver) will be switched to the new inserted USB host automatically.
- When current selected host device is removed, if the other host port has an active host device connected, all USB devices (connected to the device and the receiver) will be switched to the other USB host. Otherwise, it will keep the current host port selected.

**Note:**

- USB switching is detecting VBUS. This host device is the VBUS pass-through. If current selected USB host is not connected, USB device ports have no VBUS output.
- Users also can use the SWITCH button on front panel to switch USB host.

# Install DisplayLink Driver

DisplayLink technology requires installing the driver on the computer.

This product already has a built-in Displaylink driver. When the transmitter is connected to the laptop, the laptop will automatically recognize the device as a USB flash drive (name: DL-DRIVERS). Users can click the pop-up window to open the USB flash drive and double-click the application to install it.

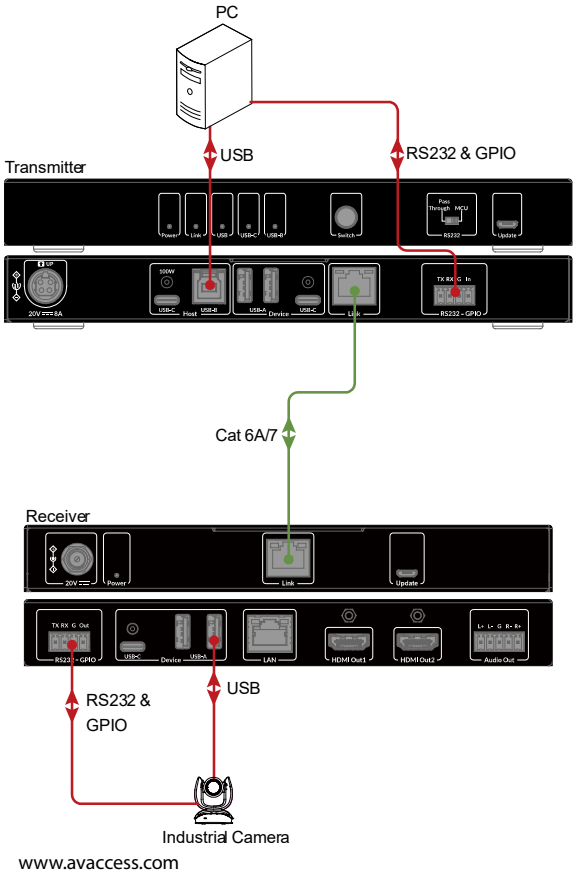
If this USB flash drive is not displayed automatically, open it from Windows file manager or macOS finder.

It is still possible to download the latest drivers from DisplayLink's official website:
*https://www.synaptics.com/products/displaylink-graphics/downloads*

# RS232 & GPIO

The transmitter and receiver feature a RS232 & GPIO (In) port and a RS232 & GPIO (Out) port respectively, which are used for industrial camera control.

- RS232 & GPIO (In): GPIO (In), GPIO digital in port, supports 3.3V voltage input. Connect to a PC.
- RS232 & GPIO (Out): GPIO (Out), GPIO digital out port, supply for 3.3V voltage output. Connect to an industrial camera.




# Specifications

| Technical | |
|---|---|
| USB Standard | USB 3.2 Gen1, and backward compatible with USB 3.0, USB 2.0, and USB 1.1 standards |
| Video Output Resolution | HDMI 2.0, up to 4K@60Hz 4:4:4 8bit. |
| Data Rate | Up to 5Gbit/s |
| Ethernet | 1G |
| Audio Output | PCM 2.0 |

| 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 | 10% to 90%, non-condensing |
| ESD Protection | Human-body Model:<br>±8kV (Air-gap discharge) / ±4kV (Contact discharge) |
| Power Supply | 20V, 8A (One-way PoH+, receiver receive power from the transmitter) |
| Power Consumption | 8.25W (no-load)<br>44.7W (no charging) |
| Device Dimensions (W x H x D) | Transmitter: 215mmx25mmx120mm / 8.46" x 0.98" x 4.72"<br>Receiver: 215mmx25mmx120.2mm / 8.46" x 0.98" x 4.73." |
| Product Weight | Transmitter: 0.68kg / 1.5lbs;<br>Receiver: 0.66kg / 1.46lbs |

**Transmission Distance**

**Note:**

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

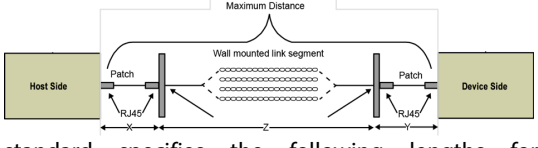
| Cable Type | Range |
|---|---|
| Cat 6A (U/FTP / F/FTP) | 100m/330ft |

**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 |
|---|---|
| Cat 6A (U/FTP / F/FTP) | 90m/295ft (80m+5m+5m) |

# 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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