AT-OME2-E2321-WP

Omega 2 HDBaseT 3 2x1 Video Switcher Wall Plate with HDMI and USB-C

Instructions for Use

Version 1.0



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Version Information

This section lists document revisions.

Version	Date	Notes
1.0	September 11, 2026	Initial release.

Sales & Customer Support

Main Office (US)	Hall Research, 1234 Lakeshore Dr Suite #150, Coppell, TX 75019
Support Hours	Monday – Friday, 8:00 a.m. – 6:00 p.m. (CST)
Website	https://www.hallresearch.com
Product Page	https://www.hallresearch.com/product/AT-OME2-E2321-WP

IMPORTANT: Visit https://www.hallresearch.com/product/AT-OME2-E2321-WP for the latest firmware updates and Instructions for Use.

Warranty

To view the product warranty, use the following link: https://hallresearch.com/warranty

Important Safety Information

CAUTION: Risk of electric shock. Do not open the enclosure or expose it to rain or moisture. No user-serviceable parts inside. Refer servicing to qualified service personnel.

- Do not expose this apparatus to rain, moisture, dripping, or splashing, and do not place objects filled with liquids, such as vases, on the apparatus.
- Do not install or place this unit in a bookcase, built-in cabinet, or other confined space. Ensure the unit is well ventilated.
- To prevent the risk of electric shock or fire from overheating, do not obstruct the ventilation openings with newspapers, tablecloths, curtains, or similar items.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not place sources of naked flames, such as lighted candles, on the unit.
- Clean this apparatus only with a dry cloth.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Protect the power cord from being walked on or pinched, particularly at plugs.
- Only use attachments and accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel.

FCC Compliance

This hardware device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Introduction

Overview

The AT-OME2-E2321-WP is a 2x1 wall plate switcher transmitter with USB-C and HDMI inputs. Built on the HDBaseT 3.0 platform, it transmits fully uncompressed 4K@60Hz 4:4:4 8-bit SDR and 4K@60Hz 4:2:2 12-bit HDR video, together with audio, USB 2.0, control signals, and power, up to 40 m (131 ft) over a single Cat 6A or better cable.

The wall plate fits a US 2-gang box for easy wall or table installation. It switches between the USB-C input and the HDMI + USB-B input automatically, or manually with the front-panel button or API commands. The USB-C port is full-featured: it carries video and USB data, and charges the connected computer at up to 60 W when a local power adapter is connected.

The wall plate is Power over HDBaseT (PoH) capable. It can be powered by a compatible Omega 2 HDBaseT 3.0 receiver (such as the AT-OME2-D2311) over the category cable, so no local power adapter is needed except for USB-C charging.

Features

- 2x1 wall plate switcher transmitter on the HDBaseT 3.0 platform.
- Automatic and manual (button and API command) switching between the USB-C input and the HDMI + USB-B input.
- Full-featured USB-C input with 4K video, USB data, and 60 W charging*.
- HDMI 2.0 input supports resolutions up to 4K@60Hz 4:4:4 8-bit and HDCP 2.2.
- Transmits 4K@60Hz 4:4:4 8-bit signals up to 40 m (131 ft) and 4K@30Hz 4:4:4 8-bit signals up to 70 m (230 ft) over Cat 6A or better cable.
- Additional analog audio pass-through channel for independent audio distribution to the HDBaseT receiver.
- High-speed USB 2.0 pass-through with data rates up to 300 Mbps.
- RS-232 port supports command pass-through, API control, and firmware update.
- PoHPD function allows the transmitter to be powered by an HDBaseT receiver.
- Display on/off control through CEC.

NOTE: *USB-C 60 W charging requires an additional power adapter connected to the wall plate transmitter.

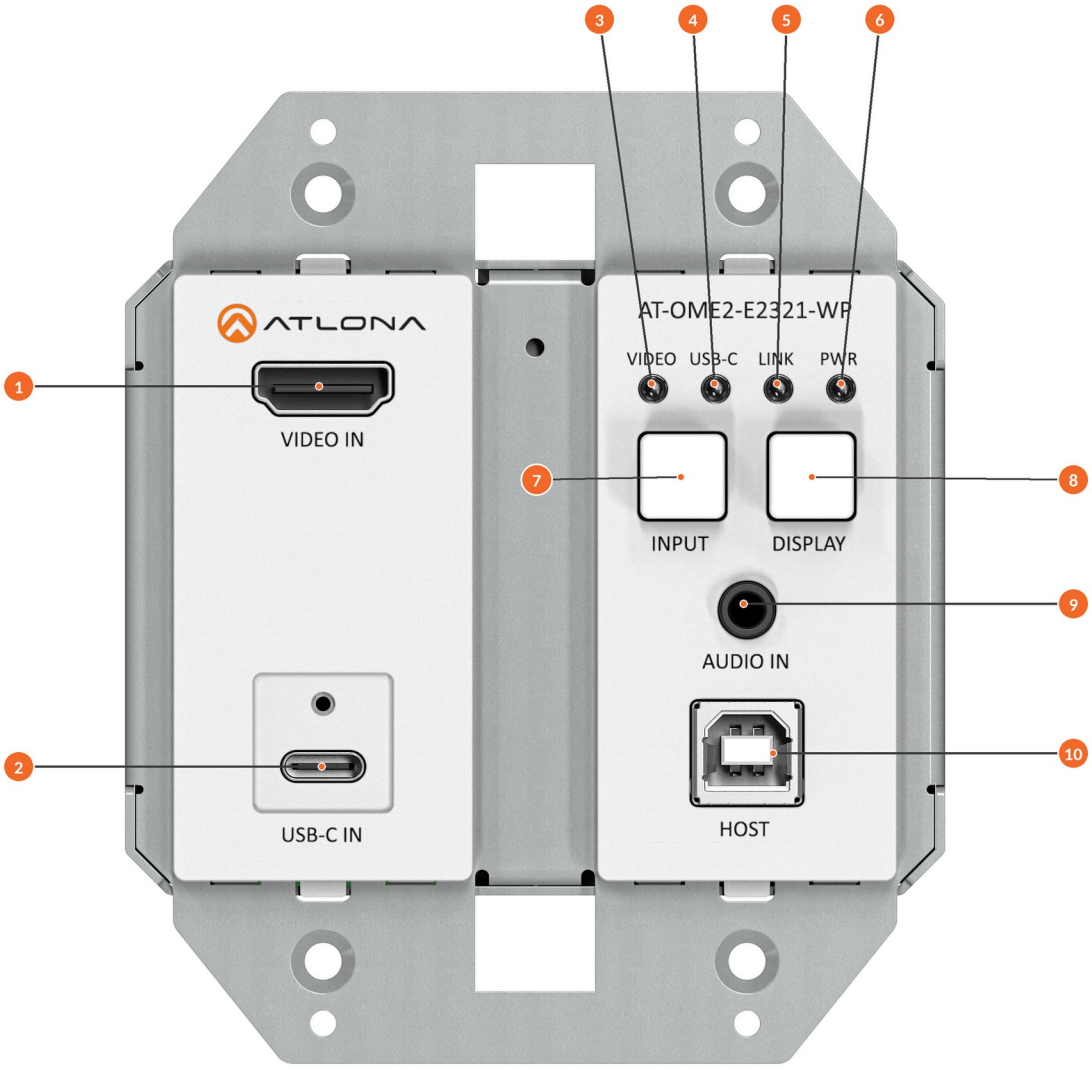
Package Contents

- 1 x Wall plate transmitter
- 1 x 2-gang US faceplate cover (with 4 screws)
- 1 x USB 2.0 Type-A to USB Type-B cable (1.5 m)
- 1 x 3.5 mm 3-pin Phoenix male connector
- 1 x 3.5 mm 2-pin Phoenix male connector
- 4 x Mounting screws

NOTE: If any items are missing or damaged, contact Hall Research Technical Support at hallresearch.com.

Panel Description

Front Panel

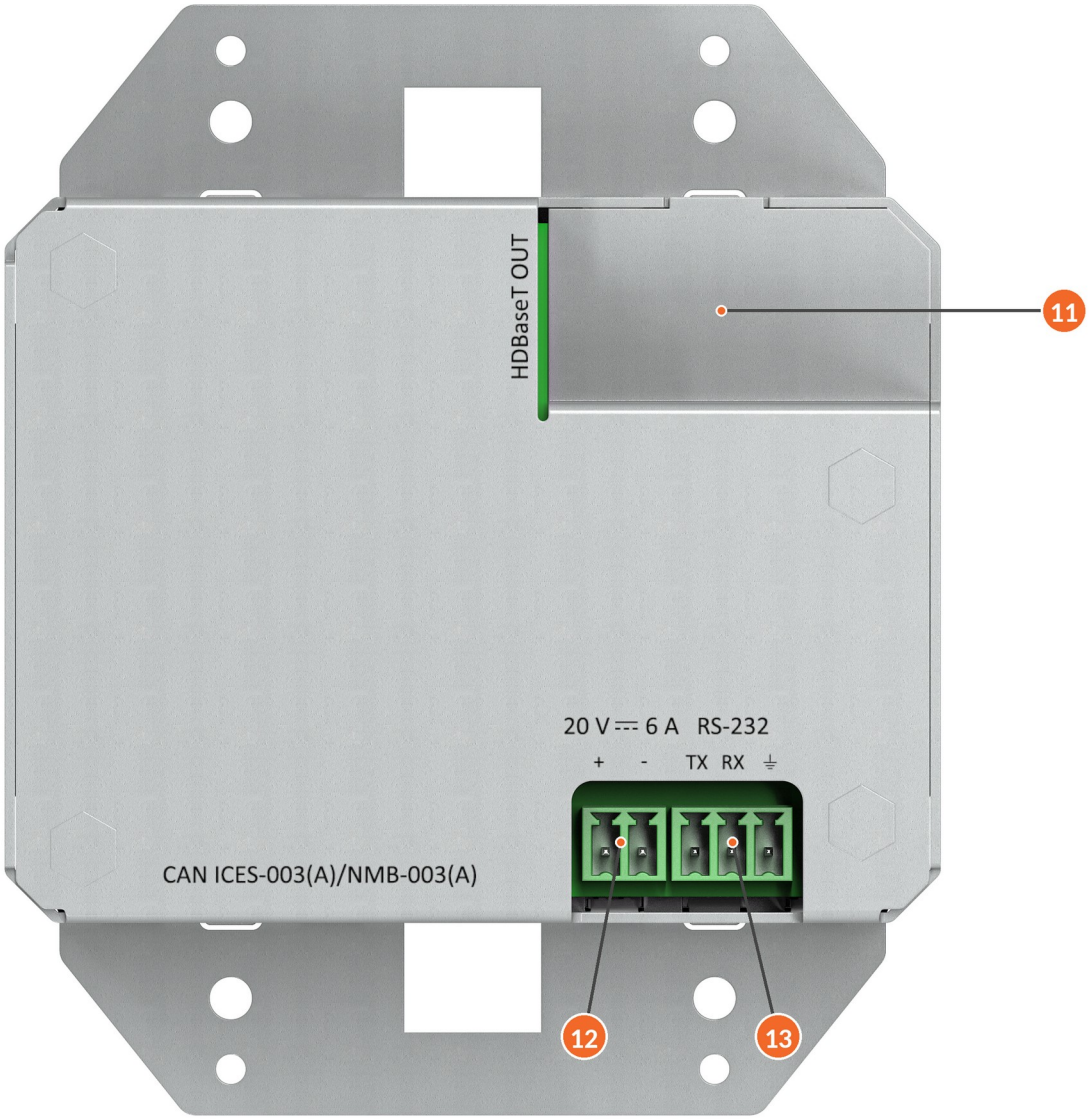


AT-OME2-E2321-WP — Front Panel

#	Name	Description
1	VIDEO IN	HDMI input. Connect to an HDMI source.
2	USB-C IN	Connect to a USB-C source (e.g., a laptop). • Full-featured USB-C port that supports USB 2.0, 4K@60Hz video, and charging up to 60 W. • To charge a device through the USB-C port, connect a power adapter to the 20V port of the transmitter. • Recommended cable: USB-C to USB-C, USB 3.2 Gen 1 or above.

#	Name	Description
3	VIDEO LED	On: The HDMI source is selected. Off: The HDMI source is not selected.
4	USB-C LED	On: The USB-C source is selected. Off: The USB-C source is not selected.
5	LINK LED	On: The HDBaseT link is normal. Off: No HDBaseT link, or a link error.
6	PWR LED	On: The device is powered on. Off: The device is powered off.
7	INPUT	Input selection button. Press to select the HDMI or USB-C input.
8	DISPLAY	Display on/off control (CEC). • Short press: turns on the display. • Press and hold for at least 3 seconds: turns off the display.
9	AUDIO IN	Connect to an analog audio source. The audio passes through to the receiver.
10	HOST	Connect to a USB host (e.g., a PC) using the USB-A to USB-B cable provided. This port is bound to the VIDEO IN (HDMI) port: when the HDMI input is selected, the USB peripherals connected to the receiver are linked to this USB host.

Rear Panel



AT-OME2-E2321-WP — Rear Panel

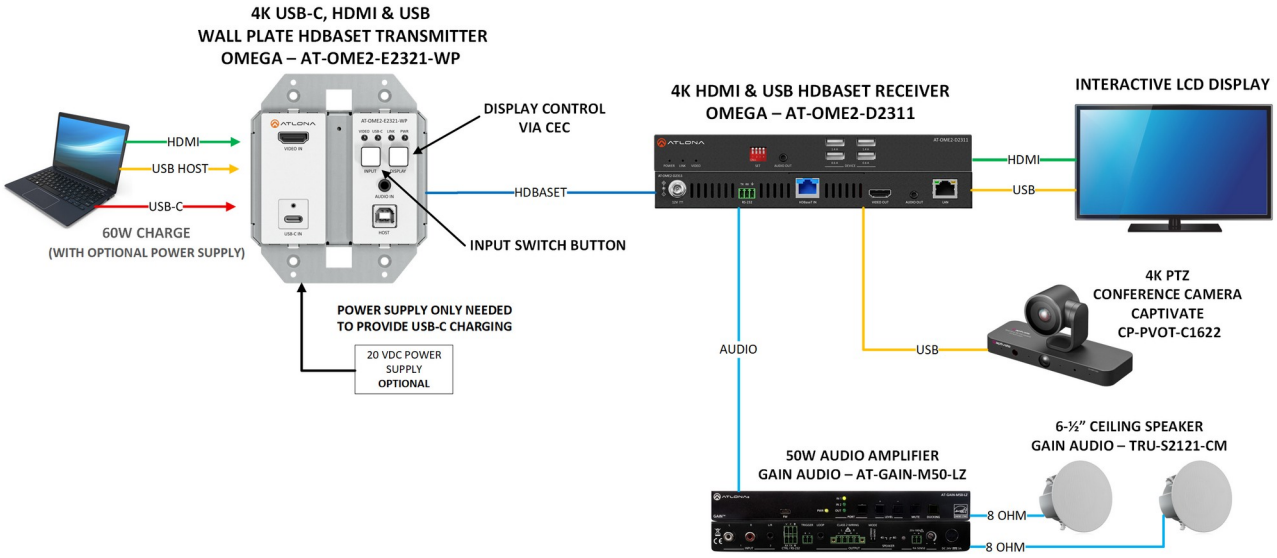
#	Name	Description
11	HDBaseT OUT	Connect to the HDBaseT IN port of a compatible Omega 2 HDBaseT 3.0 receiver (such as the AT-OME2-D2311).
12	20V ⎓ 6A	2-pin Phoenix terminal (+, –). Connect to a DC 20V 6A power adapter (sold separately). A 20V/6A power adapter must be connected to this port to charge a device through the USB-C port.
13	RS-232	3-pin Phoenix terminal (TX, RX, G). Connect to an RS-232 device for device control or firmware update. Only the MCU firmware of the transmitter can be updated through this port; the HDBaseT (Valens) firmware is updated through the connected receiver.

Installation

WARNING: Before installation and wiring, disconnect power from all devices. Connect and disconnect cables gently.

1. Connect the HDBaseT, RS-232, and power cables (if used) to the rear panel of the wall plate.
2. Mount the wall plate in a US 2-gang electrical box or table box using the four mounting screws provided.
3. Attach the 2-gang faceplate cover using the four screws provided.

Wiring



AT-OME2-E2321-WP — Application Wiring Diagram

1. Connect an HDMI source (e.g., a room PC) to the VIDEO IN port and, for USB, connect the PC to the HOST port using the USB-A to USB-B cable provided.
2. Connect a USB-C source (e.g., a laptop) to the USB-C IN port.
3. Optionally, connect an analog audio source to the AUDIO IN port.
4. Connect the HDBaseT OUT port to the HDBaseT IN port of a compatible Omega 2 HDBaseT 3.0 receiver (such as the AT-OME2-D2311) using a shielded Cat 6A or better cable terminated to T568B.
5. At the receiver, connect the display, the USB peripherals (keyboard, mouse, USB camera), and the audio amplifier.
6. Power the receiver. The wall plate is powered over HDBaseT (PoH). To charge a laptop through the USB-C port, also connect a DC 20V 6A adapter to the 20V port of the wall plate.

Automatic Signal Switching

The transmitter switches automatically between its two inputs following the LIFO (last in, first out) rule:

1. When a video source is connected, that most recently connected source is selected.
2. When the selected source is disconnected, the transmitter checks whether a cable is connected to the other input. If so, it switches to that input; if not, it keeps the current selection and outputs no signal.

To select a specific input source:

- Disconnect the desired video source from the transmitter and then connect it again, or
- Use the INPUT button on the front panel or API commands to select the video source.

NOTE: Automatic switching detects the 5V signal only, not a valid audio/video signal. If the selected source continues to output 5V while in standby, the transmitter does not switch to the other input. In this case, turn off the source in standby or disconnect it from the transmitter.

RS-232 Control

The transmitter can be controlled with API commands. Connect a PC or control system to the RS-232 port of the transmitter. For third-party control commands, contact Hall Research technical support. Serial terminal software may be needed on the PC.

Before sending API commands over RS-232, make sure the serial port settings of the transmitter and the controlling device match:

Parameter	Value
Baud Rate	115200 bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Specifications

Technical	
Inputs	1 x HDMI IN (VIDEO IN), 1 x USB-C IN
Output	1 x HDBaseT OUT
Other Ports	1 x AUDIO IN (3.5 mm), 1 x USB HOST (Type-B), 1 x RS-232 (3-pin Phoenix), 1 x 20V DC (2-pin Phoenix)
Video Signal	Input: HDMI up to 4K@60Hz (4:4:4 8-bit), HDCP 2.2; USB-C up to 4K@60Hz (4:4:4 8-bit), HDCP 2.2 Output: HDBaseT
Resolutions (HDMI / USB-C / HDBaseT)	4096 × 2160 @ 24, 30, 50, 59.94, 60 Hz (YUV 4:4:4) 3840 × 2160 @ 24, 30, 60 Hz (YUV 4:4:4) 2560 × 1600, 2560 × 1440, 1920 × 1200, 1920 × 1080p, 1680 × 1050, 1600 × 1200, 1600 × 900, 1440 × 900, 1366 × 768, 1360 × 768, 1280 × 1024, 1280 × 960, 1280 × 800, 1280 × 768, 1280 × 720, 1024 × 768, 800 × 600 @ 60 Hz
Maximum Data Rate	18 Gbps
Audio Format	HDMI IN / USB-C IN: multi-channel audio, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, and DTS:X AUDIO IN: Stereo
USB	USB 2.0 pass-through, up to 300 Mbps
Control Method	Front-panel buttons, RS-232 (API), CEC display control
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: ±8 kV (air-gap discharge), ±4 kV (contact discharge)
Power Supply	PoH(powered by the HDBaseT receiver) DC 20V 6A (optional, for USB-C charging)
Power Consumption (Max)	6.6 W (USB-C charging not included) 71.6 W (USB-C charging included)
Dimensions (W x H x D)	89 mm x 105.6 mm x 36.25 mm (3.5 in x 4.16 in x 1.43 in)
Weight	0.36 kg (0.79 lb)

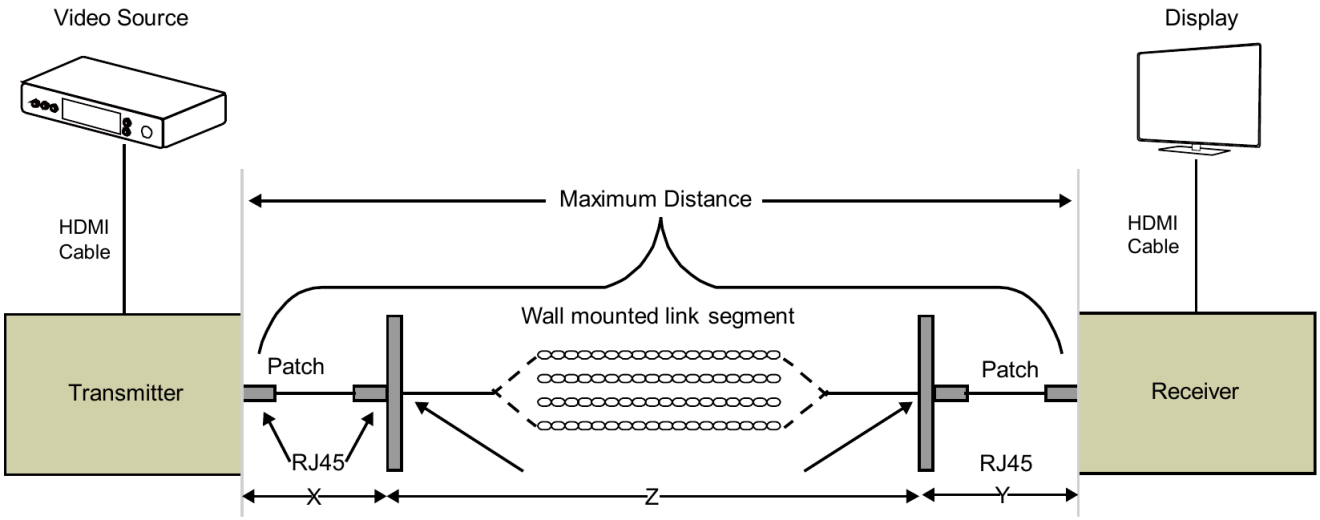
Transmission Distance

- A straight-through category cable wired to the T568B standard is recommended.
- For maximum HDMI 2.0 resolution, Cat 6A U/FTP, F/FTP, or S/FTP cable is recommended.

Cable Type	Transmission Distance (Max)	Supported Video
Cat 5e/6	60 m (197 ft)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080p@60Hz
	40 m (131 ft)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp
Cat 6A or 7 (U/FTP, F/FTP, or S/FTP)	70 m (230 ft)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080p@60Hz
	40 m (131 ft)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp

Using Patch Cables

Network patch cables may be used in the installation, but they reduce the transmission distance. A maximum of two patch cables may be used, each no longer than 5 m, one at each end of the link, as shown below.



Three-segment installation with patch cables

- X = patch cable length at the transmitter end ≤ 5 m
- Y = patch cable length at the receiver end ≤ 5 m
- Z = wall segment ≤ maximum distance – X – Y

Cable Type	Transmission Distance (Max, with patches)	Supported Video
Cat 5e/6	60 m (197 ft)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080p@60Hz

Cable Type	Transmission Distance (Max, with patches)	Supported Video
	30 m (100 ft)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp
Cat 6A or 7 (U/FTP, F/FTP, or S/FTP)	70 m (230 ft)	4K@60Hz 4:2:0 24bpp 4K@30Hz 1080p@60Hz
	40 m (131 ft)	4K@60Hz 4:4:4 24bpp 4K@60Hz 4:2:2 36bpp 4K@60Hz 4:2:0 36bpp