



HDMI®/USB-C Extender Series

User Manual

Model : HUW01-4K6G

4K60Hz HDMI® & USB-C (DisplayPort) CAT6 Wall Plate
Extender



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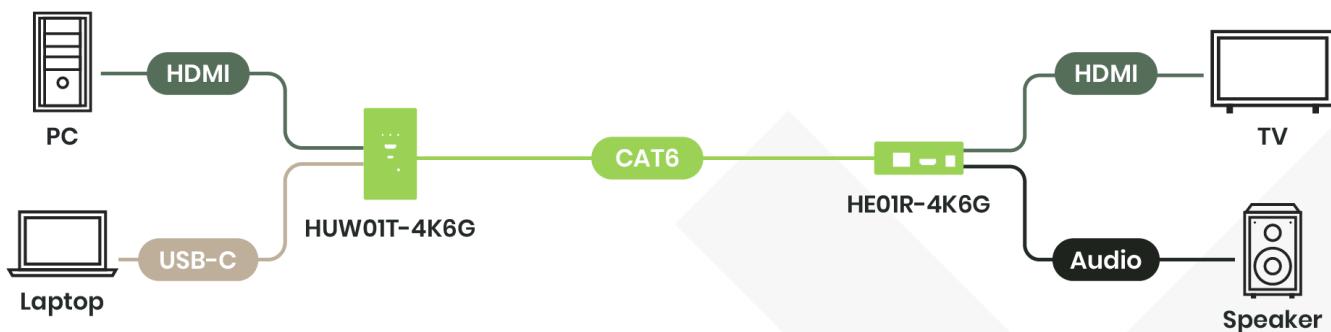
Introduction

HUW01-4K6G is US-Standard HDMI® and USB-C wall plate extender that can use one single CAT6 cable to transmit audiovisual signals and power. It supports up to 4K resolution at 60Hz with a maximum transmission distance of 70m. The device offers flexibility, allowing users to choose between HDMI® or USB-C input ports for audiovisual signal transmission.

Features

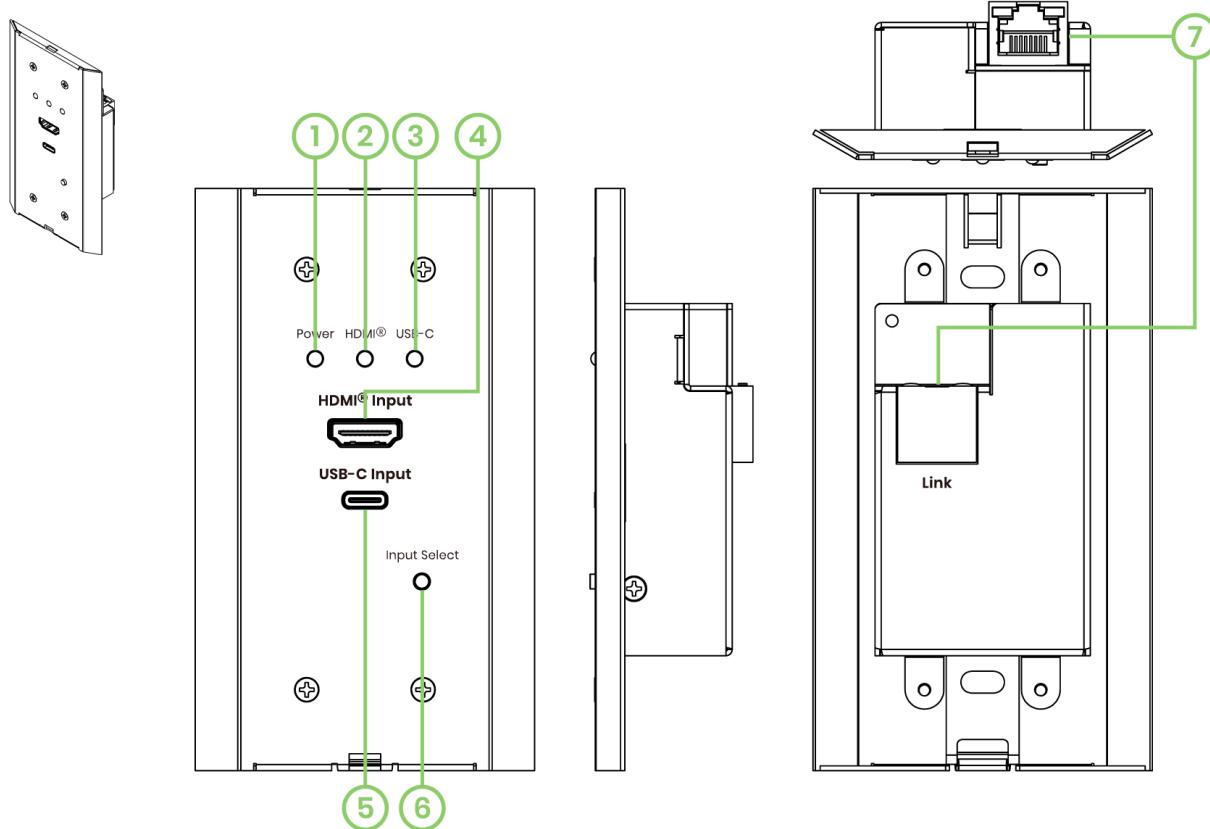
- Resolution up to 4K60Hz
- Signal extension up to 60m over CAT5e, 70m over CAT6
- US standard housing
- Power over cable transmission, no power needed at the transmitter side.

Application Diagram



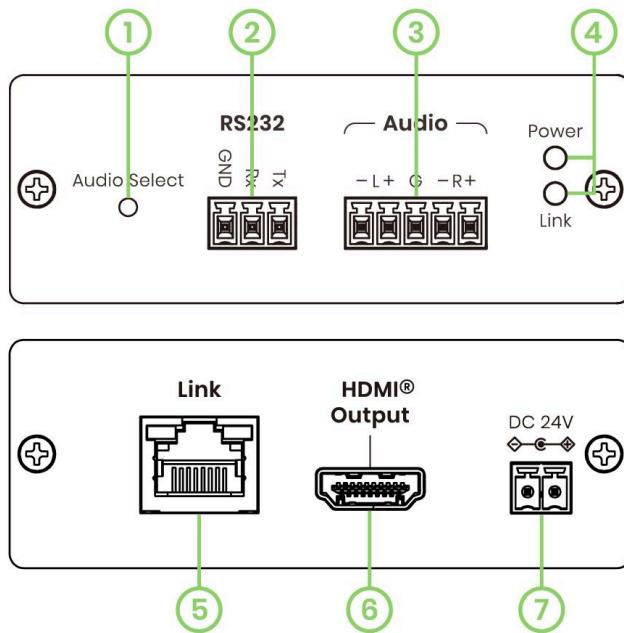
Panel View

HUW01T-4K6G



Item	Interface	Description
1	Power LED	Refer to LED indication
2	HDMI® LED	Refer to LED indication
3	USB-C LED	Refer to LED indication
4	HDMI® Input	To connect to HDMI® source
5	USB-C Input	To connect to USB-C Video Source (DP alternate mode)
6	Input Select	Input select button, Refer to Input Video Switching
7	Link	To connect to HE01R-4K6G via CAT6 cable

HE01R-4K6G



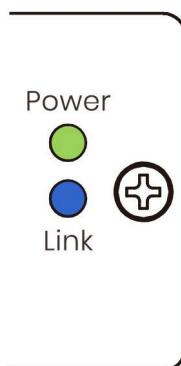
Item	Interface	Description
1	Audio Select	Audio select button. Refer to Audio settings.
2	RS232	To connect to an RS232-command-controllable device
3	Audio Output	To connect to an audio receiver
4	Power/Link LED	Refer to LED Indication
5	Link	To connect to HUW01T-4K6G via a CAT6 cable
6	HDMI® Output	To connect to a monitor or a TV
7	Terminal Block	To plug in a DC 24V power adapter

LED Indication

Power/HDMI®/USB-C LED

LED Indication	Status	Description
 Power	On	Power On
	Off	Power Off
 HDMI®	Blue	Link and HDMI®Input Detected
	Red	Link and standby at the HDMI®port
	Off	Not Selected
 USB-C	Blue	Link and USB-C Input Detected
	Red	Link and standby at the USB-C port
	Off	Not Selected

Power/Link LED



LED Indication	Status	Description
 Power (Green)	On	Power On
	Off	Power Off
 Link (Blue)	On	RJ45 Linked
	Off	RJ45 Unlinked

Functional Description

AV Transmission over CAT6

HUW01-4K6G enables high-quality audiovisual (AV) transmission over CAT6 cabling, supporting long-distance signal delivery without compromising audio or video quality. It is designed for stable, high-resolution AV distribution across extended cable runs, making it ideal for professional AV installations.

Latency

HUW01-4K6G has a latency¹ less than one frame according to our test, and here is our test condition. The test results are shown as follows:

HUW01-4K6G Latency Test		
Test condition		Test result
Distance	Resolution	
70m	4K60Hz 4:4:4	AMP NETCONNECT CATEGORY 6 CABLE E138034 4PR 23AWG UTP < 1 frame

Transmission Distance

At 4K60Hz 4:4:4, HUW01-4K6G could reach up to 70m, the distance may differ by cable or construction quality. The transmission distance test results are shown as follows:

HUW01-4K6G Transmission Distance Test		
Test condition		Test result
Resolution	Cable used	
4K60Hz 4:4:4	CAT5e COMMSCOPE ISO-EN COMPLIANT 27 CAT5E UTP SOLIDPR04 AWG24 1917 RNI9040036	60m
4K60Hz 4:4:4	CAT6 COMMSCOPE E98256 4PR 24AWG U/UTP	70m

¹ The compression introduces ultra-low latency which is crucial for real-time applications such as video conferencing and live streaming, where minimizing delay is essential for smooth and responsive communication.

Video Interface

The HDMI® and USB-C Video input and HDMI® video output functionality in HUW01-4K6G allows for the transmission and reception of high-definition video signals over CAT6 for longer distances. These features allow HDMI® and USB-C audiovisual sources to connect to remote displays seamlessly.

The USB-C port on the transmitter supports only DisplayPort Alternate Mode (DP-ALT) and does not support Power Delivery (PD) or USB data transmission.

Support Resolution

HUW01-4K6G supports various resolutions, indicated by the below table:

Resolution	
3840x2160	30/50/60Hz
2560x1600	60Hz
2560x1440	60Hz
1920x1200	60Hz
1920x1080 ²	30/50/60
1680x1050	60Hz
1600x1200	60Hz
1600x900	60Hz
1440x900	60Hz
1280x1024	60Hz
1280x720	50/60Hz
1024x768	60/75Hz
800x600	60/75Hz
640x480	60/75Hz

² The timing of 1920x1080 is also supported in interlace mode.

EDID Settings

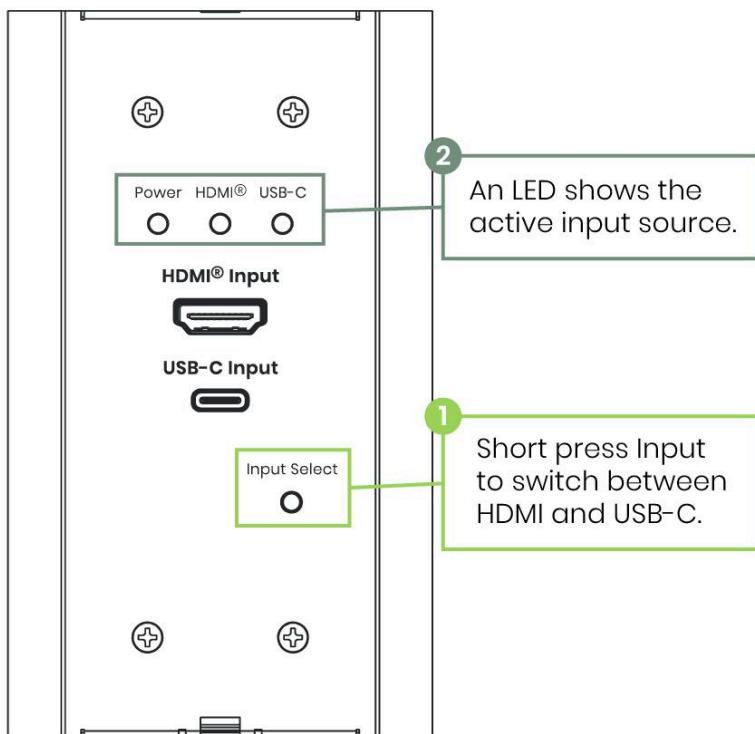
HUW01-4K6G supports EDID Pass-through Mode, which uses the EDID of the monitor connected to HE01R-4K6G.

Input Video Switching

The transmitter features two video input sources: HDMI® and USB-C. By default, the device allows switching between these two input sources using the Input Select Button located on the transmitter unit.

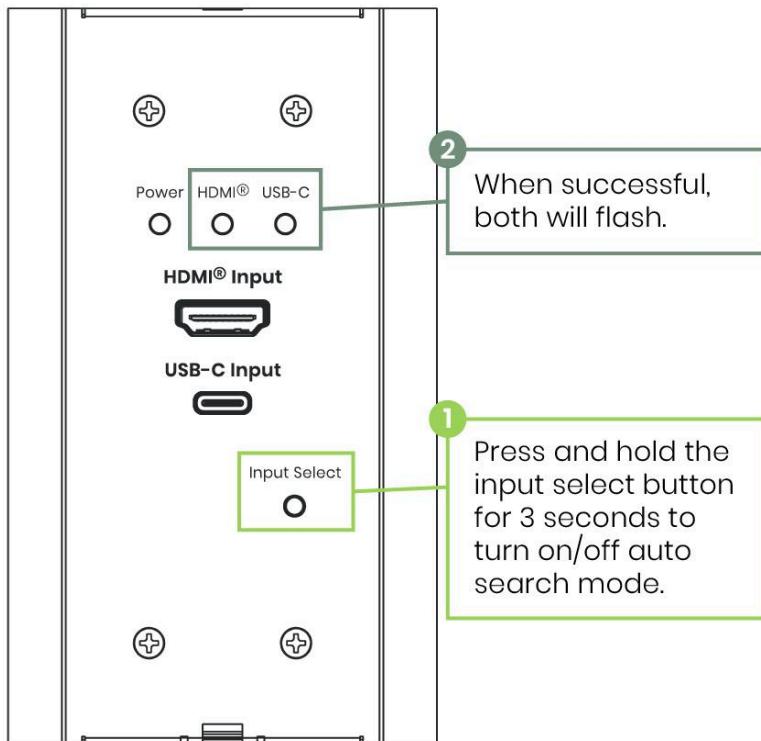
Switching Video Input Sources

- Short Press the Input Select Button to toggle between the HDMI® and USB-C video input ports.
- The selected source will be transmitted to the receiver and displayed on the connected screen.
- An LED indicator will reflect the active input source.



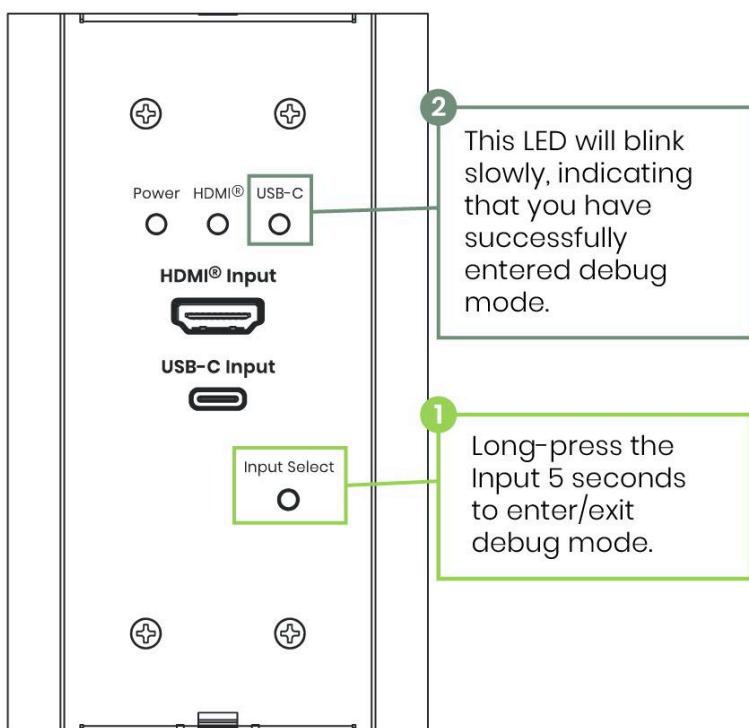
Activating Auto Search Mode

- Press and Hold the Input Select Button for 3 seconds..
- After 3 seconds, the HDMI® & USB-C LEDs on HUW01T-4K6G will start blinking. Releasing the Input Select Button will allow you to enter Auto Search Mode..
- In this mode, it will automatically detect if there is an active video source connected to the input HDMI® I/USB-C port, without requiring you to manually choose an input.
- To deactivate the Auto Search Mode, press and hold the Input Select Button again for 3 seconds, and release it when the HDMI® & USB-C LEDs on HUW01T-4K6G start blinking.



Activating USB-C Debug Mode

- Press and Hold the Input Select Button for 5 seconds to switch the USB-C port into debug mode.
- In this mode, the USB-C port functions as a serial communication interface (RS232).
- You can connect an RS232 control device (e.g., a laptop with terminal software) via USB-C to send control commands to both the transmitter and the receiver.
- While in debug mode, the USB-C LED will indicate this state with a breathing flash pattern (slow fading in and out).
- To return the USB-C port to normal video input operation, press and hold the Input Select Button again for 5 seconds.



Audio Interface

Audio transmission over CAT6 through HUW01-4K6G enables the extension of high-quality audio signals over CAT6 with ultra-low latency and fully synchronized with the video signal.

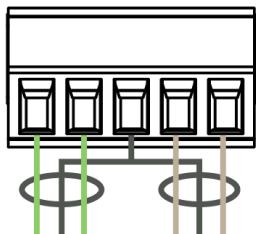
Apart from audio transmitted through HDMI® and USB-C ports, HE01R-4K6G supports an extra audio extraction through a phoenix contact.

The following are the connections to a balanced or unbalanced stereo audio receiver:

1. Connect Audio out to a balanced stereo audio speakers

Audio

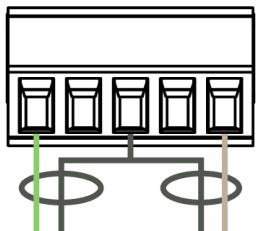
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2. Connect Audio out to an unbalanced stereo audio speakers

Audio

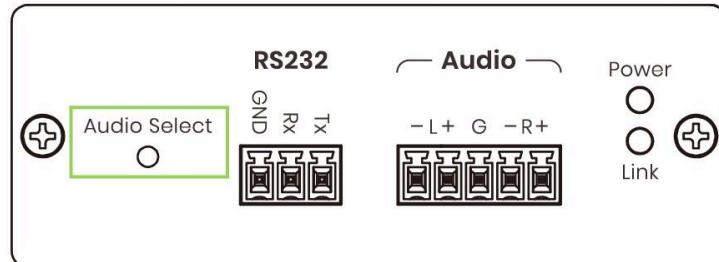
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※ The surround sound will output only through 2 channels

Audio Settings

The HE01R-4K6G features a button that enables flexible audio signal routing. Audio transmitted via the HDMI® and USB-C ports can be output through either the HDMI® output port, a phoenix contact connector or both output ports at the same time.



Press the Audio Select Button on HE01R-4K6G to switch to different audio output modes.

- Audio output on both HDMI® and Analog Audio Ports
- Audio output only on HDMI® port
- Audio output only on Analog Audio port
- Audio disable

RS232

HUW01-4K6G supports RS232³ control. It defines the electrical characteristics and timing of signals for serial communication between devices⁴, typically facilitating communication between computers and peripherals such as modems, printers, and other serial devices.

HUW01-4K6G supports RS232 command control through either of the following interfaces:

1. USB-C Port on the Transmitter (in Debug Mode)

When Debug Mode is activated, the USB-C port can be connected to a control device (e.g., laptop) to send RS232 commands to the transmitter.

2. RS232 Port on the Receiver

An RS232 port is also available on the receiver for direct connection. Commands sent from this port can control both the transmitter and receiver.

For the RS232 commands please refer to the **Command List of Control via RS232** section.

For successful communication, both communicating devices must operate at the same baud rate⁵. The operating baud rate of HUW01-4K6G is 115200 bps. If the connected device transmits at a different baud rate, communication errors may occur.

³ RS232 is used for serial communication, allowing data to be transmitted one bit at a time over a single wire.

⁴ RS232 communication can be simplex (one-way), half-duplex (two-way, but only one direction at a time), or full-duplex (two-way, simultaneous communication).

⁵ Common baud rates in RS232 communication include 2400, 4800, 9600, 19200, 38400, 57600, 115200, and more. The selection of baud rate depends on the capabilities and requirements of the communicating devices.

Control via RS232

Function Description

The RS232 port of the receiver can be used to configure and operate the transmitter and the receiver that are connected and linked between each other. The configuration and operation can be achieved with a default baudrate of 115200 bps (8-N-1, no flow control) via software programs such as HyperTerminal.

The command format is defined as follows: >COMMAND_STRING> COMMAND_PARAMETERS

- Command strings are case-insensitive and may be entered in either lowercase or uppercase.
- The command string and its corresponding parameter must be separated by a space.
- Press Enter to execute the command.
- Ex: Switch to USB-C input source on the transmitter
 - SRC_SWITCH 1 → Enter to execute the command

Command List

Command	Parameters	Description	Remark
RESET	N/A	System reset	-
SRC_SWITCH	0	Switch to HDMI®input source on the transmitter	-
	1	Switch to USB-C input source on the transmitter	-
SRC_SEARCH	0	Disable Auto Search Mode on the transmitter	-
	1	Enable Auto Search Mode on the transmitter	-
AUDIO_MODE	0	Audio output on HDMI®port and Analog Audio port	-
	1	Audio output on HDMI®port	-
	2	Audio output on Analog Audio port	-
	3	Audio disable	-
VERSION	0	Get Firmware Version of transmitter	-
	1	Get Firmware Version of receiver	-
FACTORY	N/A	Reset to factory default	-

Technical Specification

Item No.	HUW01T-4K6G	HE01R-4K6G
Compliance		
Standard	HDMI® 2.0 HDCP 2.2	
Max. Video Resolution	4K60Hz	
Max. Transmission Distance	70m over CAT6	
Dynamic Range Standard ⁶	SDR, HDR, HDR10, HDR10+	
Audio Format ⁷	PCM 2CH, 5.1CH, 7.1CH DTS 2CH, 5.1CH Dolby Digital (AC-3)2CH, 5.1CH	
Analog Audio	Impedance: 500Ω Signal-to-noise Ratio (SNR): 114dB (A-weighted) Dynamic Range: 114dB THD+N: -94dB	
RS232 Baud Rate	115200bps	
Ports & Interfaces		
Video Input	1 x HDMI® Type-A 1 x USB Type-C	1 x RJ45
Video Output	1 x RJ45	1 x HDMI® Type-A
Analog Audio Output	-	Terminal Block 5-Pin
Power		
Power Supply	DC 12~24V	
Power Consumption	5.28W	
Power Saving	2.4W	
Ambient Temperature		
Operation	0 to 55°C	

⁶ Dynamic range metadata in the input stream is pass-through and fully maintained

⁷ Audio data in the input stream is pass-through and fully maintained.

Storage	-40 to 80°C	
Operating Altitude	2000m	
Humidity	Up to 95%	
Physical Characteristics		
Dimension	120 x 70 x 36mm	123 x 88 x 32mm
Weight	88.6 g	248.4 g

Caution

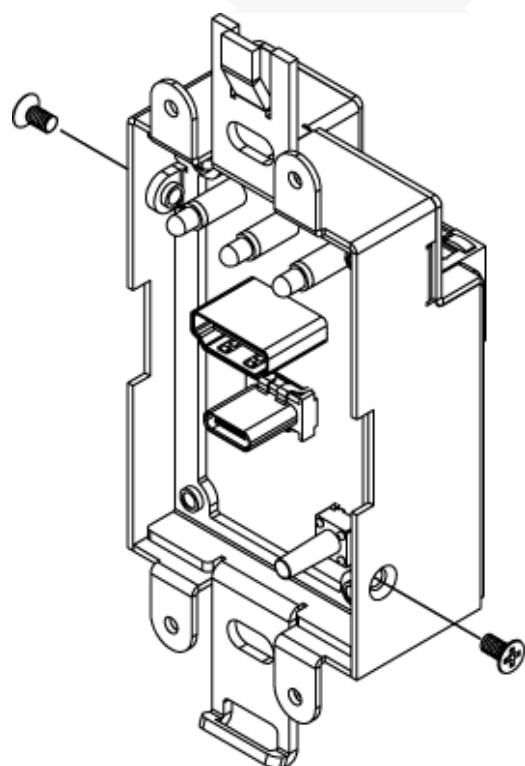
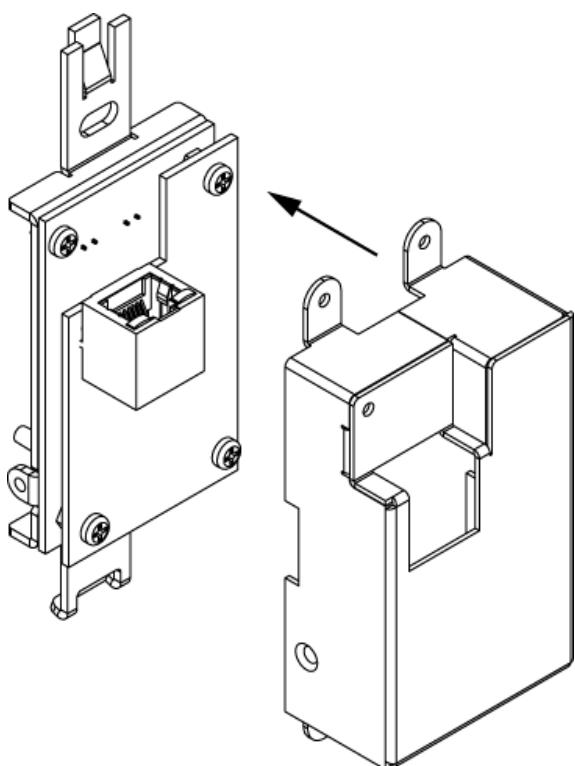
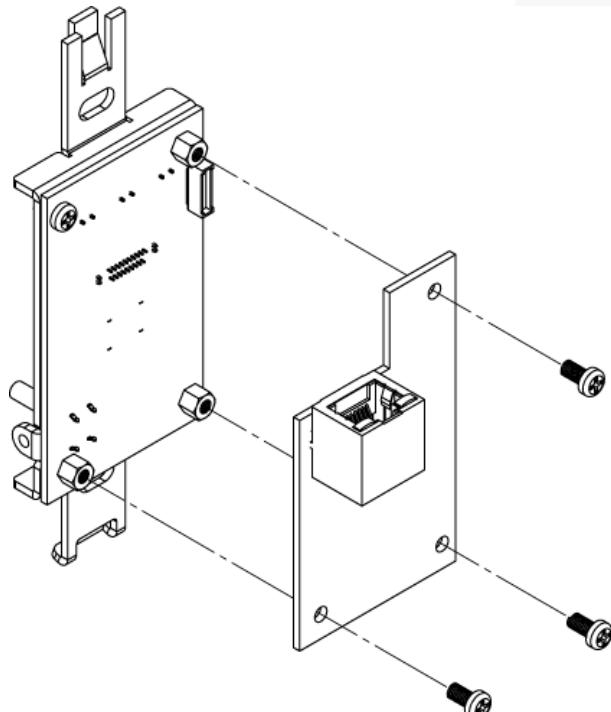
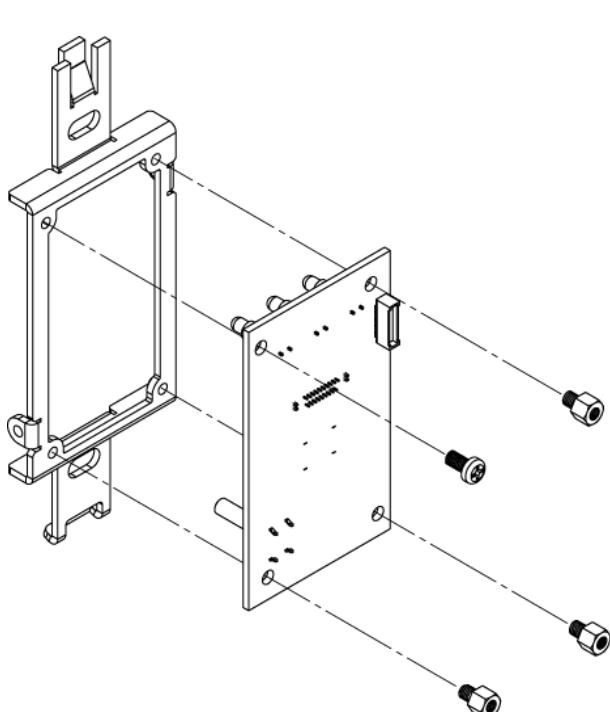
1. This product is designed for indoor applications. If you plan to use it outdoors, we recommend installing additional equipment for waterproof protection and surge protectors to prevent damage caused by lightning.
2. Do not put anything on the power and system cables, place them where they cannot be stepped on. Please be sure there is nothing resting on any cables.
3. Avoid using this product close to water places, or near high temperature devices such as radiators, stoves, etc.
4. Shut down the power supply and unplugged all equipment immediately if:
 - A. water or any kind of liquid has been spilled into the product;
 - B. the product has been damaged by external force;
 - C. the product does not operate normally as this manual indicates;
 - D. please contact us for further repair if above conditions happen.
5. Using certified Premium HDMI® cables to transfer high-resolution video is recommended.
6. Using only certified 10G USB-C cables that support DisplayPort Alternate Mode (DP Alt Mode) for video input functionality is recommended.
7. The UTP Ethernet cable is recommended to use high-quality CAT6 UTP/STP/FTP cable. Improper installation may cause unstable connection, and video or audio interruption.
8. The transmission distance may be shortened by the cable or construction quality. Using CAT6 cable between transmitter and receiver, the transmission distance can reach up to 70 meters.
9. The USB-C port on the transmitter does not support Power Delivery (PD) or USB data signals

Package Includes

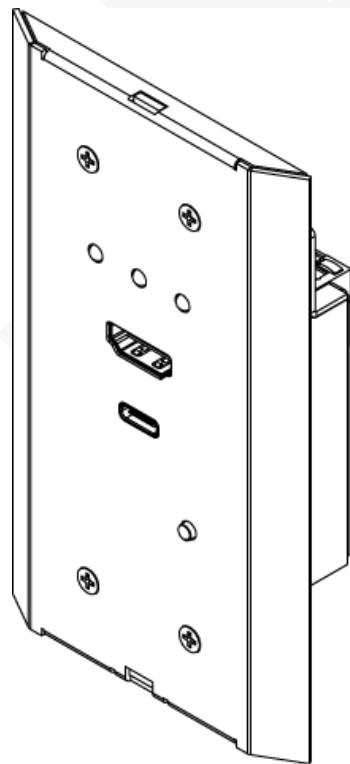
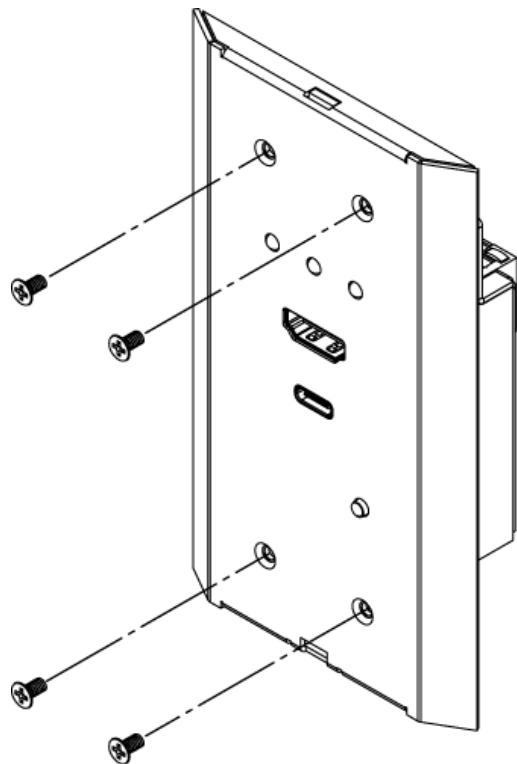
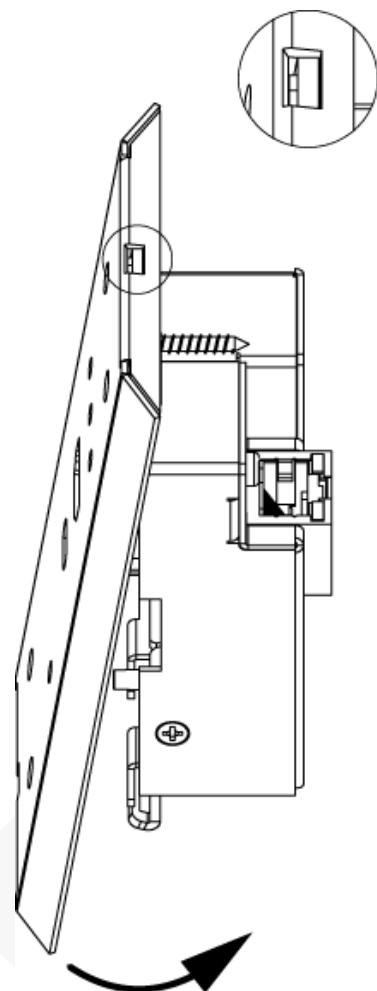
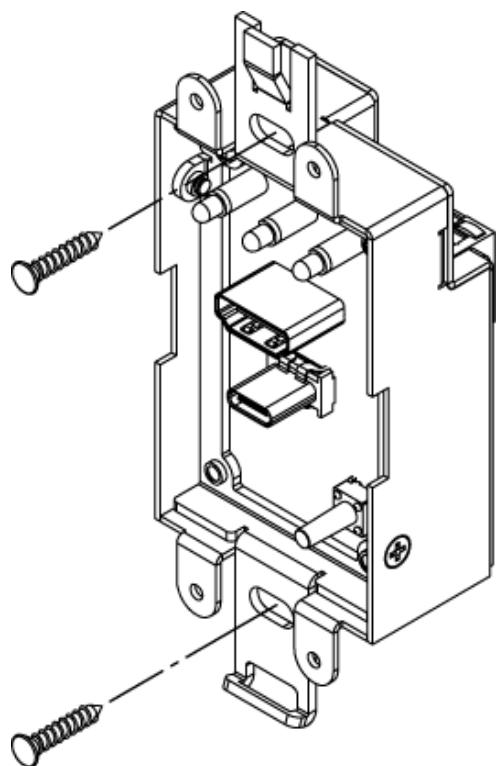
Item	Amount	Image
HUW01T-4K6G	1 pc	
HE01R-4K6G	1 pc	
DC 12V1A Power Adapter	1 pc	
Mounting Screw Pack	1 bag	 4 pcs (bag) 4 pcs (bag) 4 pcs (bag) 4 pcs (bag) 1 pcs (bag)
Mounting Screw Pack 2	1 bag	 2 pcs (bag) 2 pcs (bag)
Rubber gasket Pack	1 bag	 4 pcs (bag)

HUW01T-4K6G Installation

PCB Assembling

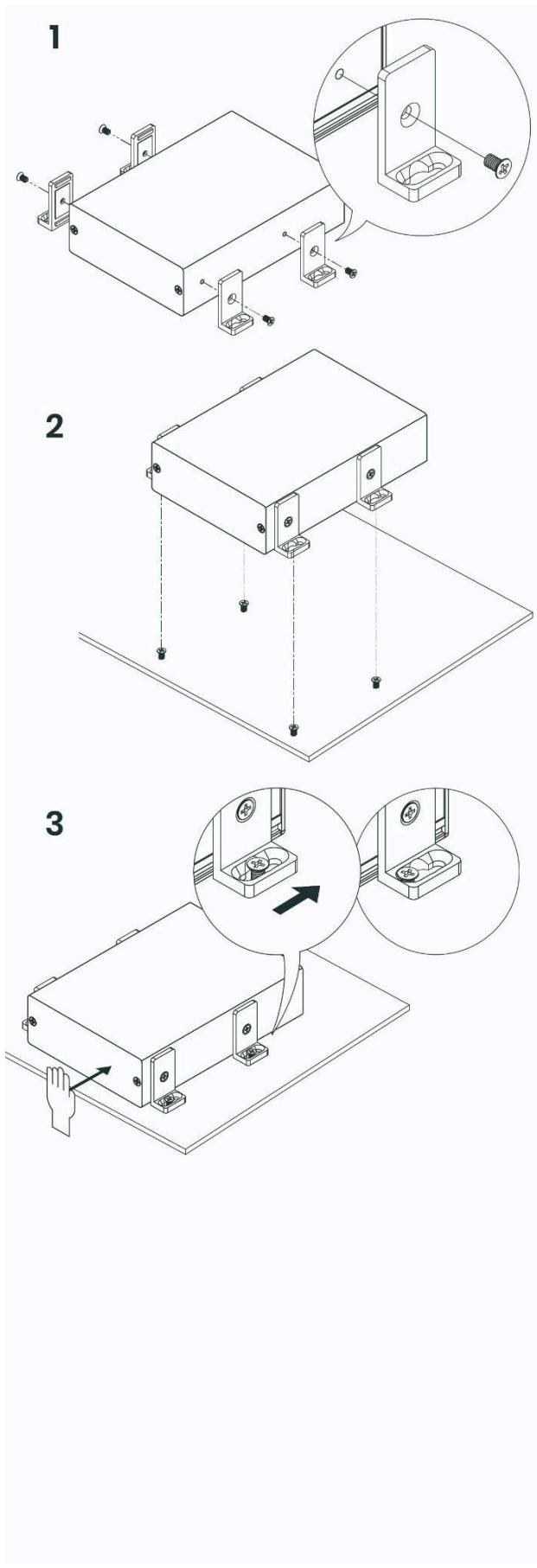


Install on Wall

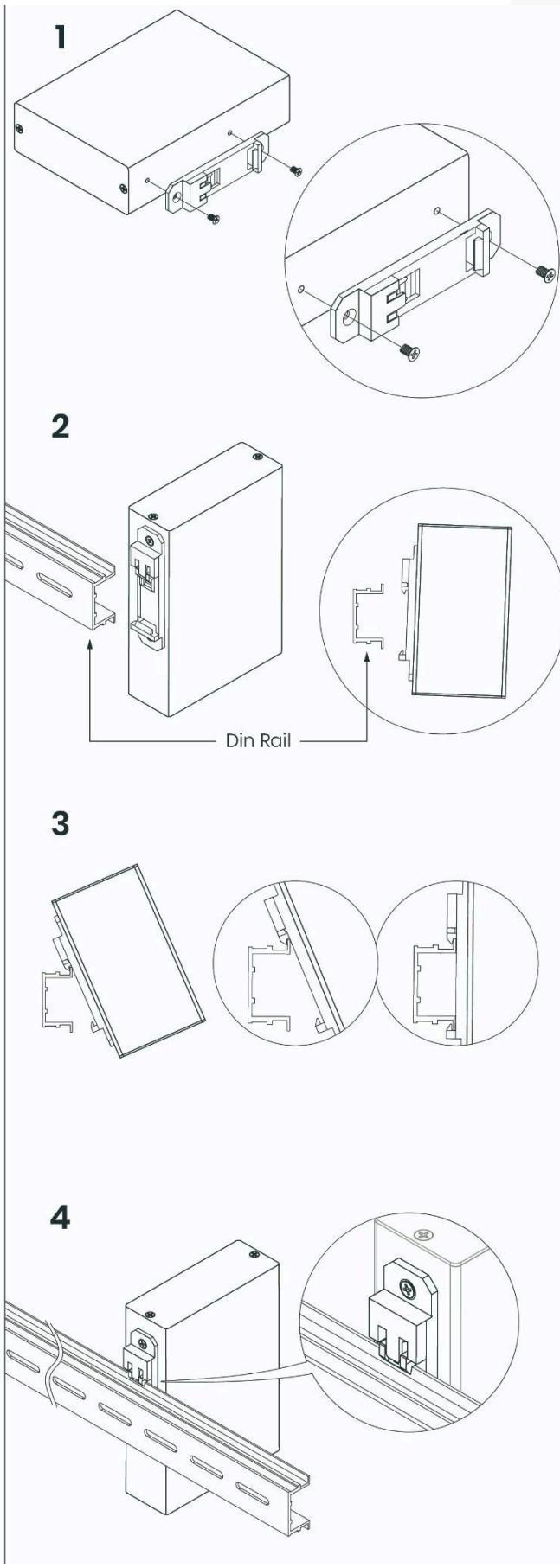


HE01R-4K6G Installation

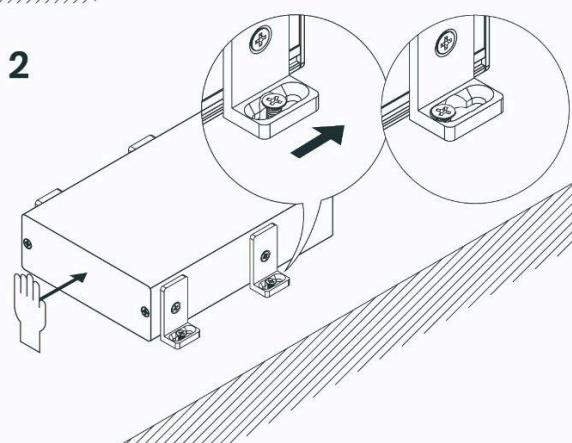
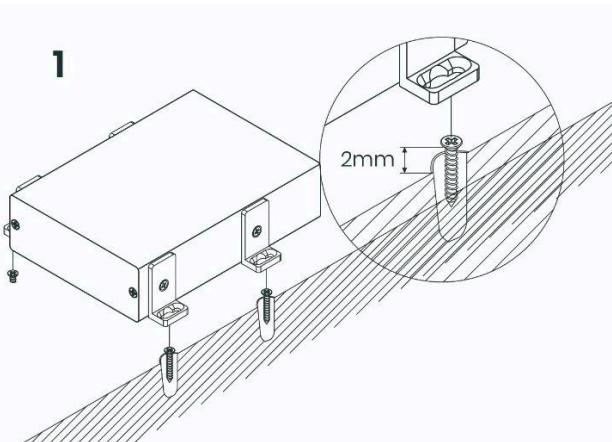
Installed on a Platform



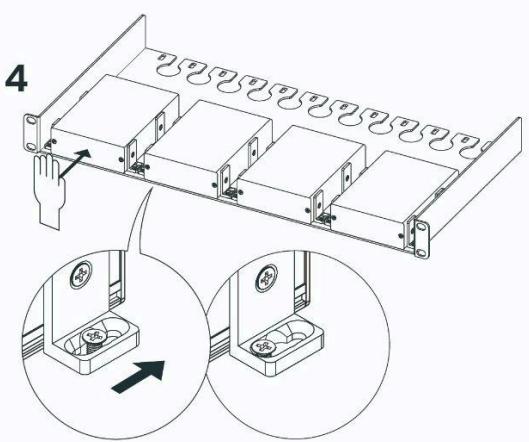
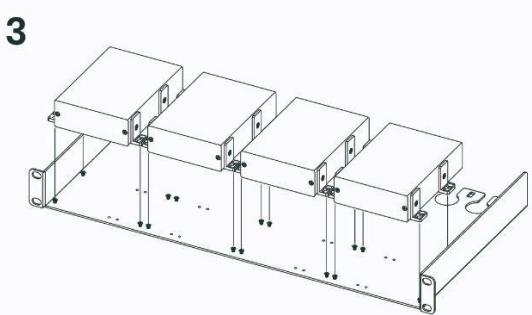
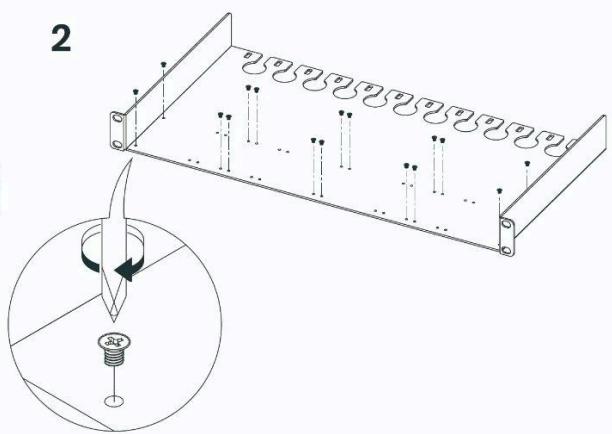
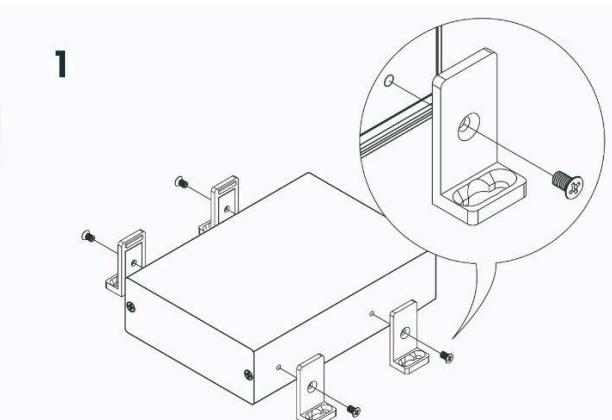
Installed on a DIN-rail



Installed on the Wall



Installed on a Rack



RoHS CE