PU-USB1H-KIT

USBC AV & Data Extender Kit with HDMI & USB Data Output

OPERATION MANUAL

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Version 1.1

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.
- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
v1.00	07/04/2026	Initial release

CONTENTS

1. INTRODUCTION

The PU-USB1H-KIT is a USB 3.2 Gen1 extender kit designed to extend the signal from one USB-C host to multiple USB devices and an HDMI output up to 100 metres (328 feet).

The transmitter enables the extension from the USB-C host to 3 local USB devices and USB devices on the receiver. USB-C can function as either a host or device, enhancing the flexibility of any installation and also provides USB Power Delivery (PD) up to 60W. Additionally, the transmitter supports 802.3at Power over Ethernet (PoE) PSE, delivering up to 30W of power. The unit also features a hotkey for convenient firmware update.

The receiver allows the extension of a USB-C host connection to 2 local USB devices and USB devices on the transmitter. It also supports the transmission of a USB to HDMI output with resolutions up to 4K30 4:4:4.

When the receiver is powered by the transmitter, it supports 802.3at Power over Ethernet (PoE) PD up to 25W, USB-C provides 5V/1A. When the receiver is powered from local power, USB-C port can provide up to 60W (PD3.0 compliance) to the connected device. Additionally, USB-C can function as either a host or device, enhancing the flexibility of any installation. The unit also features a hotkey for convenient firmware update.

2. APPLICATIONS

- Remote USB-C AV & Data extension
- Security and monitoring
- Smart classroom and device integration
- Industrial control
- Conference room and boardroom comprehensive USB over IP functionality extension

3. PACKAGE CONTENTS

- 1× USB 3.2 over Category Cable Transmitter with PoE and USB PD
- 1×USB 3.2 to HDMI over Category Cable Receiver with PoE
- 1× 24V/6.25A DC Power Adapter
- 1× Terminal Block (2-pin)
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

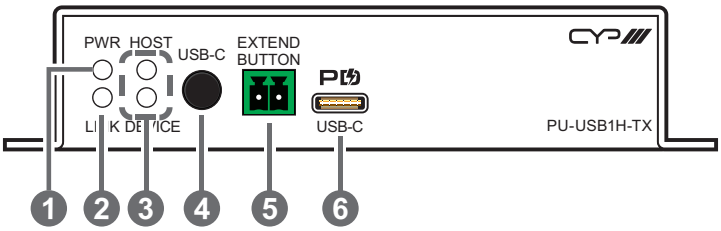
- The use of industry standard Cat.6, Cat.6A or Cat.7 cable is highly recommended
- The use of host computer with an available USB 3.2 Gen 1 Type-C port is highly recommended

5. FEATURES

- Supports 4 USB 3.2 Gen1 device connections (including USB-C) on the TX side, and 3 USB 3.2 Gen1 device ports (including USB-C) on the RX
- Supports the transmission of video from USB-C to HDMI output with resolutions up to 4K30 4:4:4
- Supports Point-to-Point transmission
- Transmission up to 100 metres (328 feet)
- TX supports 3 USB-A ports providing 5V/0.9A of power, RX supports 2 USB-A ports providing 5V/0.9A of power
- Supports 802.3at PoE PSE up to 30W to power paired receiver
- USB-C supports USB-PD up to 60W (PD3.0 compliance) when powered by local power
- TX or RX can be configured as USB-C port as host or device
- The host device can control multiple USB devices on transmitter side and receiver side
- RX can be powered by compatible transmitter supporting the 802.3at PoE standard (Optional)
- Support hotkey for easy firmware updates

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Transmitter Front Panel



1. **POWER LED:** This LED will illuminate to indicate the unit is on and receiving power.

   Note: When the firmware update is active the LED will blink.

2. **LINK LED:** This LED will illuminate solidly when a live connection with a compatible receiver is active.

3. **HOST & DEVICE LEDs:** The illuminated LED indicates which USB Mode is currently active.

4. **USB-C Button:** Press and hold the button for 5 seconds to toggle the USB-C port between HOST and DEVICE Mode.

5. **EXTEND Button:** This terminal block is used for direct USB host mode selection. Short the 2 pins for 5 seconds to make the USB-C port toggle between HOST and DEVICE Mode.

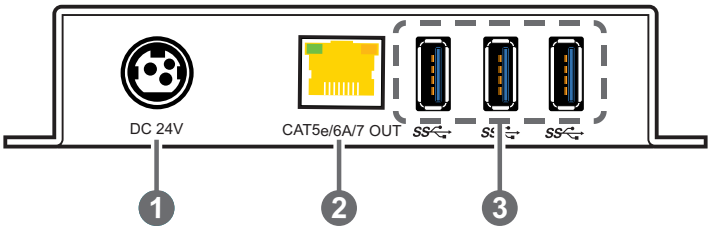
   Note: The EXTEND Button and the USB-C button operate independently and can be used at any time.

6. **USB 3.2 Port (Type-C):** In Host mode, connect directly to a USB host such as a PC or laptop to extend their USB functionality to devices connected to the USB ports on the currently connected receiver. In Device mode, connect directly to a standard USB device such as a mouse, keyboard or flash drive to extend their USB functionality to the host currently connected to the receiver's USB-C port. Firmware update is also available on this port.

   Note1: 60W of power can be provided to connected USB-C devices, but only when the unit is powered locally.

   Note2: When connected to a compatible receiver, this unit can optionally transmit video signals to receiver's HDMI port. Due to its support of full USB 3.2 data transfer speeds, video bandwidth is limited to 4K30.

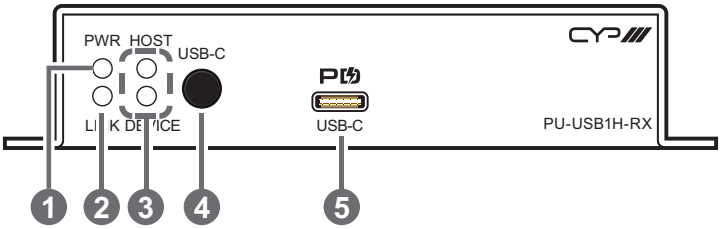
6.2 Transmitter Rear Panel



1. **DC 24V** Port: Plug the 24V DC power adapter into this port and connect it to an AC wall outlet for power.
2. **CAT 5e/6A/7 OUT Port:** Connect to a compatible receiver with a single cable for transmission and reception of all data signals.
3. **USB 3.2 Device Ports (Type-A):** Connect directly to a standard USB device such as a mouse, keyboard or flash drive to extend their USB functionality to the host currently connected to the transmitter or receiver's USB-C port.

   Note: Type-A port can provide up to 5V/0.9A (4.5W) power.

6.3 Receiver Front Panel



1. **POWER LED:** This LED will illuminate to indicate the unit is on and receiving power.

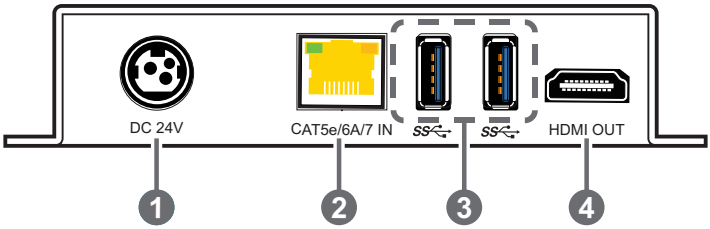
   Note: When the firmware update is active the LED will blink.
2. **LINK LED:** This LED will illuminate solidly when a live connection with a compatible transmitter is active.
3. **HOST & DEVICE LEDs:** The illuminated LED indicates which USB Mode is currently active.
4. **USB-C Button:** Press and hold the button for 5 seconds to toggle the USB-C port between HOST and DEVICE Mode.

5 **USB 3.2 Port (Type-C):** In Host mode, connect directly to a USB host such as a PC or laptop to extend their USB functionality to devices connected to the USB ports on the currently connected transmitter and to transmit video signals to unit's HDMI port. In Device mode, connect directly to a standard USB device such as a mouse, keyboard or flash drive to extend their USB functionality to the host currently connected to the transmitter's USB-C port. Firmware update is also available on this port.

Note1: 60W of power can be provided to connected USB-C devices, but only when the unit is powered locally.

Note2: When transmitting video signals to unit's HDMI port. Due to its support of full USB 3.2 data transfer speeds, video bandwidth is limited to 4K30.

6.4 Receiver Rear Panel



1 **DC 24V Port:** Plug the 24V DC power adapter into this port and connect it to an AC wall outlet for power.

2 **CAT 5e/6A/7 IN Port:** Connect to a compatible transmitter with a single cable for transmission and reception of all data signals.

3 **USB 3.2 Device Ports (Type-A):** Connect directly to a standard USB device such as a mouse, keyboard or flash drive to extend their USB functionality to the host currently connected to the transmitter or receiver's USB-C port.

Note: Type-A port can provide up to 5V/0.9A (4.5W) power.

4 **HDMI OUT Port:** Connect to HDMI TV, monitor, or amplifier for digital video and audio output.

6.5 System Control

6.5.1 Hardware Driver

Before video can be transmitted from a host computer to the HDMI output for the first time, the Silicon Motion display driver must be installed.

Note1: The required hardware driver can be downloaded at: https://www.siliconmotion.com/downloads/

Note2: For Windows 10 and Windows 11 systems connected to the internet, the driver is typically installed automatically via Windows Update and no manual installation is required.

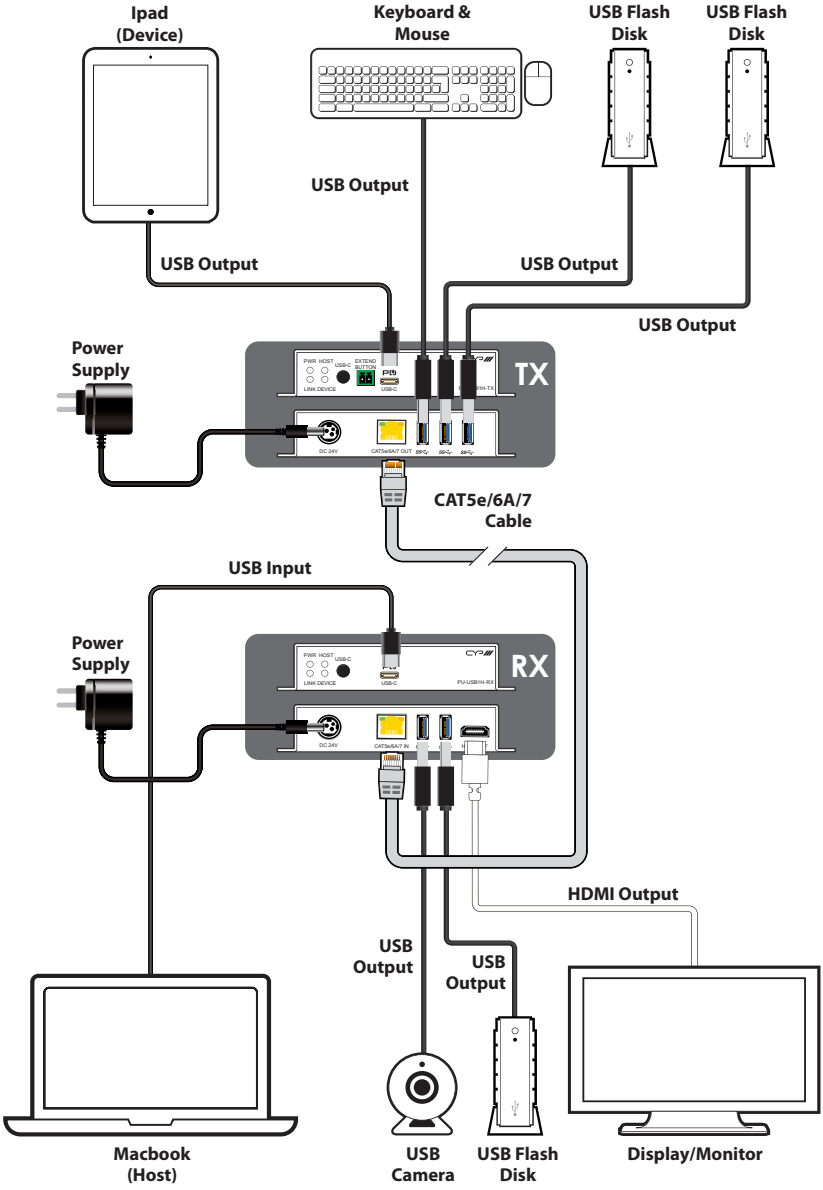
6.5.2 Firmware Update

To update the firmware via USB, connect your PC to the Type-C port and do the following steps. After the upgrade is complete, the unit will reboot automatically.

Note: Do not disconnect the USB-C cable or remove power while the POWER LED is blinking. Interrupting the update process may corrupt the firmware.

- Connect your PC to USB-C port.
- Press and hold the "USB-C" button while power up the unit. A virtual USB drive (labeled "USB Drive" or similar) will appear on the host computer.
- Open the virtual USB drive and copy the compatible and properly named (UsbcR_2154_CYP_Vx.xx.bin) firmware file into it.
- After the file is copied, the folder window will close automatically. During the update process, the unit will be flashing the POWER LED on the front of the unit.
- Wait for the POWER LED to return to a steady solid green state. After the upgrade is complete, the unit will reboot automatically.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	10.2Gbps
USB-C Bandwidth	5Gbps
HDBaseT Bandwidth	6/6 Gbps
Input Port	[RX] 1×Cat.5e/6A/7 (RJ-45)
Output Ports	[TX] 1×Cat.5e/6A/7 (RJ-45) [TX] 3×USB 3.2 (Type-A) [RX] 2×USB 3.2 (Type-A)
Bi-directional Port	[TX] 1×USB 3.2 (Type-C) [RX] 1×USB 3.2 (Type-C)
Power Supply	24V/5A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection (HBM)	±12kV (Air Discharge) ±8kV (Contact Discharge)
Dimensions (W×H×D)	[RX] 128mm×25mm×108mm [Case Only] [RX] 128mm×25mm×112.5mm [All Inclusive]
Weight	[TX] 214g [RX] 234g
Chassis Material	Metal (Aluminum)
Chassis Colour	Black
Operating Temperature	0˚C – 40˚C/32˚F – 104˚F
Storage Temperature	-20˚C – 60˚C/-4˚F – 140˚F
Relative Humidity	20 – 90% RH (Non-condensing)
Power Consumption	[TX] 98.2W (full load) [RX] 73.2W (full load)

8.2 Video Specifications

Supported Resolutions (Hz)	Input	Output
	USB-C (Host mode)	HDMI
720×400p@70/85	×	×
640×480p@60/72/75/85	×	×
720×480i@60	×	×
720×480p@60	×	×
720×576i@50	×	×
720×576p@50	×	×
800×600p@30/50/56/60/72/75/85	30/50/60	30/50/60
848×480p@60	×	×
1024×768p@30/50/60/70/75/85	30/50/60	30/50/60
1152×864p@30/50/60/75	30/50/60	30/50/60
1280×720p@30/50/60	✓	✓
1280×768p@60/75/85	×	×
1280×800p@30/50/60/75/85	30/50/60	30/50/60
1280×960p@60/85	×	×
1280×1024p@30/50/60/75/85	30/50/60	30/50/60
1360×768p@60	×	×
1366×768p@60	×	×
1400×1050p@60	×	×
1440×900p@60/75	×	×
1600×900p@30/50/60	✓	✓
1600×1200p@60	×	×
1680×1050p@60	×	×
1920×1080i@50/60	×	×

Supported Resolutions (Hz)	Input	Output
	USB-C (Host mode)	HDMI
1920×1080p@24/25/30	30	30
1920×1080p@50/60	✓	✓
1920×1200p@60RB	×	×
2560×1440p@30/60	✓	✓
2560×1600p@60RB	×	×
2048×1080p@24/25/30	×	×
2048×1080p@50/60	×	×
3840×2160p@24/25/30	30	30
3840×2160p@24, HDR10	×	×
3840×2160p@50/60 (4:2:0),HDR10	×	×
3840×2160p@50/60	×	×
4096×2160p@24/25/30	×	×
4096×2160p@50/60 (4:2:0)	×	×
4096×2160p@24, HDR10	×	×
4096×2160p@50/60 (4:2:0),HDR10	×	×
4096×2160p@50/60	×	×

8.3 Audio Specifications

8.3.1 Digital Audio

HDMI Output	
LPCM	
Max Channels	8 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	None

8.4 Cable Specifications

Cable Length	HD	FHD	4K UHD	4K UHD+	8K UHD
High Speed HDMI Cable					
HDMI Output	15m	10m	5m	×	×

Cable Length	USB 3.2
	5Gbps
Ethernet Cable	
Cat.5e	50m
Cat.6	70m
Cat.6A/7	100 m (straight) 90 m (with patches)

Bandwidth Category Examples:

HD Video

- 720p@60Hz
- HDMI transmission rates lower than 3Gbps
- HD-SDI (SMPTE 292M, 1.485Gbps)

FHD Video

- 1080p@60Hz
- HDMI transmission rates between 3Gbps and 5.3Gbps
- 3G-SDI (SMPTE 424M, 2.970Gbps)

4K UHD Video

- 4K@24/25/30Hz (8-bit color) & 4K@50/60Hz (4:2:0, 8-bit color)
- HDMI transmission rates between 5.3Gbps and 10.2Gbps
- 6G-SDI (SMPTE ST 2081, 6Gbps)

4K UHD^{+} Video

- 1080p@120Hz (10/12-bit HDR)
- 4K@50/60Hz (4:4:4, 8-bit) & 4K@50/60Hz (4:2:0, 10/12-bit HDR)
- HDMI transmission rates between 10.2Gbps and 18Gbps
- 12G-SDI (SMPTE ST 2082, 12Gbps)

8K UHD Video

- 4K@120Hz (10/12-bit HDR)
- 8K@24/25/30Hz (10/12-bit HDR) & 8K@50/60Hz (4:2:0, 8-bit color)
- HDMI transmission rates between 18Gbps and 48Gbps
- 24G-SDI (SMPTE ST 2083, 24Gbps)

8.5 HDBaseT Features

HDBaseT Feature Set	Receiver
Video & Audio Extension	Supported
LAN Extension	Unsupported
Send power to Transmitter	Unsupported
Accept power from Transmitter	Supported (PoE)
IR Extension	Unsupported
RS-232 Extension	Unsupported
USB 3.2 Extension	Supported

9. ACRONYMS

ACRONYM	COMPLETE TERM
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
Mbps	Megabits per second
Gbps	Gigabits per second
PD	Powered Device
PoE	Power over Ethernet
PSE	Power Sourcing Equipment
UAC	USB Audio Class
USB	Universal Serial Bus
UVC	USB Video Class

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