

4K60 USB-C Extender Kit with USB 3.2, 100W Charging and HDMI Output, 40m

Single-Cable BYOD: DP Alt Mode Video, USB 3.2 Gen 1 Data and 100W Power Delivery over CAT6a to a Remote 4K Display



Turns one USB-C port on a laptop into a complete room connection up to 40m/130ft away - 4K60 video, USB 3.2 peripherals and 100W charging on a single CAT6a cable. The EXT-USBCPD4K-40M transmitter accepts a full-featured USB-C input (DisplayPort Alt Mode 1.4a, USB 3.2 Gen 1 data and Power Delivery 3.0) and the receiver delivers HDMI 2.0b at up to 4K60 4:4:4, three USB 3.2 downstream ports, de-embedded analog audio and RS-232 pass-through at the display end, so a presenter plugs in one cable and the room's display, camera, speakerphone and touch panel all come up - with the laptop charging.

Bi-directional 24V PoC powers either end from a single supply, USB 3.2 Gen 1 runs at up to 2.5 Gbps for 4K room cameras and storage, and 25 EDID presets plus an ASCII API over the SERVICE port give integrators control of HDCP, EDID and USB port power. Resolutions up to 4096x2160@60, 5120x1440@60 and 5120x2160 (50Hz 4:4:4 / 60Hz 4:2:0) are supported over HDMI, with HDR10+, Dolby Vision and HLG pass-through. Requires CAT6a U/FTP 23AWG minimum; 100W laptop charging is available when the transmitter is powered from its own 24V/7.5A supply.

Surge Protection Recommended — This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

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1. Features

- ✓ Extends a full-featured USB-C source (DP Alt Mode 1.4a video, USB 3.2 Gen 1 data, PD 3.0 charging) up to 40m/130ft at 4K and 35m/115ft at 5K over one CAT6a cable
- ✓ Receiver outputs HDMI 2.0b at up to 4K60 4:4:4 (18Gbps) with HDCP 2.3; also supports 5120x1440@60 and 5120x2160 (50Hz 4:4:4 / 60Hz 4:2:0)
- ✓ Up to 100W USB-C Power Delivery back to the laptop over the same USB-C cable (transmitter powered from the included 24V/7.5A supply)
- ✓ USB 3.2 Gen 1 at up to 2.5 Gbps to three downstream ports at the receiver (2x USB-A, 1x USB-C, 5V/1.5A each) - 4K cameras, speakerphones, touch, storage
- ✓ Bi-directional 24V PoC: power the transmitter or the receiver and the far end needs no supply
- ✓ Analog audio de-embedding (3.5mm, LPCM 2CH) at both transmitter and receiver, plus RS-232 pass-through on 3-pin phoenix connectors
- ✓ HDR, HDR10+, Dolby Vision and HLG pass-through; 8/10/12-bit color; RGB and YCbCr 4:4:4 / 4:2:2 / 4:2:0
- ✓ ASCII API over the USB-C SERVICE port (115200 8N1): HDCP mode, 25 EDID presets including two user-defined, USB port power, HDMI 5V, status and firmware update
- ✓ Metal enclosures with mounting ears; ESD protection IEC 61000-4-2 +/-8kV air / +/-4kV contact; CE/FCC/UL certified power supply

2. Package Contents

- ✓ 1× Receiver
- ✓ 1× 24V/7.5A Power Adapter
- ✓ 2× 3-pin 3.5mm Phoenix Connector
- ✓ 4× Mounting Ear
- ✓ 8× Machine Screw
- ✓ 2× User Manual
- ✓ 1× Hexagonal Copper Stud

3. Specifications

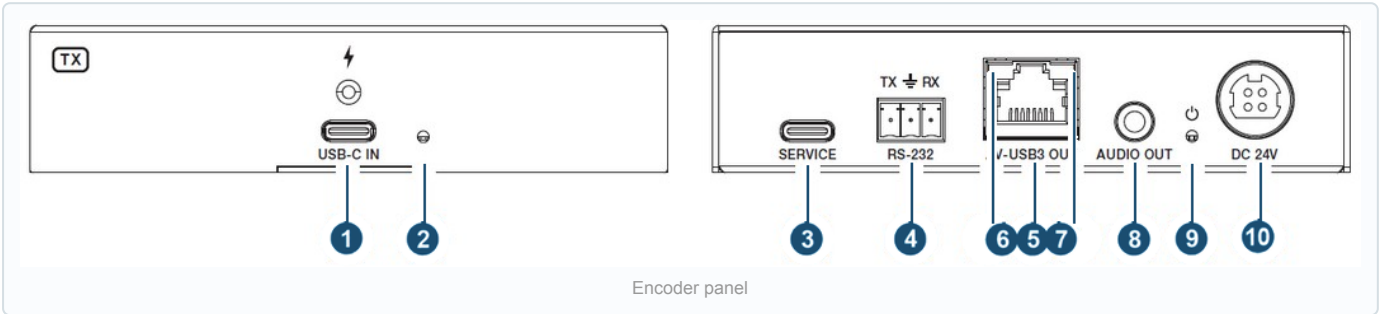
TECHNICAL		
USB-C Input	Full-featured USB-C: DisplayPort Alt Mode 1.4a video, USB 3.2 Gen 1 and USB 2.0 data, USB-C Power Delivery 3.0	
USB Protocol	USB 3.2 Gen 1 and USB 2.0; transfer rate up to 2.5 Gbps (5 Gbps operation not supported)	
USB-C Charging	Up to 100W PD to the source (transmitter must be powered from its 24V/7.5A supply)	
HDMI / HDCP	Receiver HDMI 2.0b output; HDCP 2.3 and HDCP 1.x; 18Gbps	
Video Resolution	480i to 4096x2160@60; 2560x1080@60, 3440x1440@60, 5120x1440@50/60, 5120x2160@50/60 (5K60 at 4:2:2/4:2:0, 8-bit)	
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG pass-through	
Color Depth / Space	8/10/12-bit (8-bit at 5K60 4:2:2); RGB, YCbCr 4:4:4, 4:2:2, 4:2:0	
Audio Format	LPCM, Dolby Digital/Plus/EX, Dolby TrueHD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio; analog de-embed LPCM 2CH 32-192kHz	
Analog Audio	2.2dBu (1Vrms) max; 20Hz-20kHz +/-0.5dB; dynamic range and S/N >90dB; THD+N <0.007%	
Transmission Distance	Up to 40m/130ft at 4K, 35m/115ft at 5K over CAT6a U/FTP 23AWG minimum, direct-wired; USB-C source cable 1.5m/4.9ft (USB 3.2 Gen 1 passive); HDMI output cable 3m/9.8ft passive	



continued

ESD Protection	IEC 61000-4-2: +/-8kV air-gap, +/-4kV contact
Control	RS-232 pass-through (3-pin phoenix, both ends); ASCII API via USB-C SERVICE port, 115200 baud 8N1; HDCP, 25 EDID presets (2 user-defined), USB port power, HDMI 5V, status, reboot, reset, firmware update
CONNECTIONS	
Transmitter	Input: 1x USB-C IN (24-pin female). Output: 1x AUDIO OUT (3.5mm), 1x AV-USB3 OUT (RJ45, 24V PoC). Control: 1x RS-232 (3-pin 3.5mm phoenix), 1x SERVICE (USB-C)
Receiver	Input: 1x AV-USB3 IN (RJ45, 24V PoC). Output: 1x HDMI OUT (Type A), 2x USB-A downstream, 1x USB-C downstream (5V/1.5A each), 1x AUDIO OUT (3.5mm). Control: 1x RS-232 (3-pin 3.5mm phoenix), 1x SERVICE (USB-C)
MECHANICAL	
Housing / Color	Metal enclosure, black
Dimensions	Transmitter and Receiver each: 4.65" x 4.37" x 1.00" (118 x 111 x 25.5mm)
Weight	Transmitter 0.79 lbs (359g); Receiver 0.84 lbs (383g)
Power Supply	Input AC 100-240V 50/60Hz; output DC 24V/7.5A (included, for transmitter; CE/FCC/UL). Receiver powered by PoC or optional 24V/2A
Power Consumption	Transmitter 4.36W max without charging, 106W max with 100W USB-C charging; Receiver 25.4W max
Operating Temperature	32°F to 104°F (0°C to 40°C); storage -4°F to 140°F (-20°C to 60°C)
Humidity	Operating 20-80% RH; storage 10-90% RH, non-condensing
Certifications	CE, FCC, UL (power supply)
PACKAGE CONTENTS	
Package Contents	1x Transmitter (USB-C IN); 1x Receiver (HDMI OUT); 1x 24V/7.5A power adapter; 2x 3-pin 3.5mm phoenix connector; 4x Mounting ear; 8x Machine screw; 1x Hexagonal copper stud; 1x User manual

4. Panel descriptions



numbers and order are untouched. A human still needs to audit these against the panel artwork crops — see "Still needed."

TRANSMITTER PANEL

No.	Name	Description
1	USB-C IN	Full-featured USB-C port. Connect your laptop here; it carries DP Alt Mode video, USB 3.2 Gen 1 data and up to 100W PD charging.
2	USB-C IN LED	Lights red while the USB-C IN port is charging the laptop; lights green when an active source is connected but not charging.

continued

No.	Name	Description
3	SERVICE	USB 2.0 port used for firmware upgrade and API control.
4	RS-232	3-pin phoenix connector; connect to a computer for RS-232 signal pass-through.
5	AV-USB3 OUT	Connect to the AV-USB3 IN port on the receiver with a CAT6a cable. Carries the AV and USB signals plus 24V PoC power.
6	LINK LED	On when the TX and RX are connected and linked; off when they are not.
7	VIDEO LED	On for video with HDCP encryption; blinking for video without HDCP; off when there is no video.
8	AUDIO OUT	Audio de-embedding output; connect to an audio device.
9	Power LED	Lights red when the transmitter is powered on.
10	DC 24V	DC 24V/7.5A power input.

RECEIVER PANEL

No.	Name	Description
1	HDMI OUT	HDMI signal output; connect to a display such as a monitor with an HDMI cable.
2	HDMI OUT LED	Green LED lights when the HDMI OUT port is connected to a display.
3	USB DEVICES 1/2	Downstream USB-A ports, output up to 5V/1.5A. Connect USB devices such as a flash or hard disk.
4	USB DEVICES 3	Downstream USB-C port, output up to 5V/1.5A. Connect a USB device such as a flash or hard disk.
5	USB LED	USB signal indicator: on for USB 3.2 detected; blinking for USB 2.0 detected; off for no USB signal.
6	SERVICE	USB 2.0 port used for firmware upgrade and API control.
7	RS-232	3-pin phoenix connector; connect to a control system for RS-232 signal pass-through.
8	AV-USB3 IN	Connect to the AV-USB3 OUT port on the transmitter with a CAT6a cable. Carries the AV and USB signals plus 24V PoC power.
9	LINK LED	On when the TX and RX are connected and linked; off when they are not.
10	VIDEO LED	On for video with HDCP encryption; blinking for video without HDCP; off when there is no video.



continued

No.	Name	Description
11	AUDIO OUT	HDMI audio de-embedding output; connect to an audio device.
12	Power LED	Lights red when the receiver is powered on.
13	DC 24V	DC 24V/2A power input.

5. Introduction

This extender kit extends a full USB-C signal — video and USB 3.2 data — up to 40m/130ft over a single CAT6a cable. The transmitter accepts one full-featured USB-C input carrying DisplayPort Alt Mode (v1.4a) A/V, USB 3.2 Gen 1 data and up to 100W PD charging to a laptop. The receiver provides one HDMI output and three USB 3.2 downstream ports. Both ends support audio de-embedding, RS-232 pass-through and bi-directional 24V PoC, making the kit suited to commercial A/V and BYOD installations.

6. Cabling — direct interconnection method

The manual carries a caution you should follow at install time: **the CAT cable between the transmitter and receiver must be a direct (straight-through) connection — do not cross-connect.** Terminate both ends to the same pinout. The manual prints the wire order as:

PIN	WIRE
1	White and Orange
2	Orange
3	White and Green
4	Blue
5	White and Blue
6	Green
7	White and Brown
8	Brown

Use CAT6a U/FTP, 23AWG minimum, direct-wired. A surge-protection device is recommended to protect the equipment.

7. System control — API commands

Both boxes accept ASCII API commands. Connect the **SERVICE** port to a PC and use a serial terminal. The SERVICE port is a USB-C port presenting a virtual RS-232 interface. **Protocol: 115200 baud (fixed), 8 data bits, 1 stop bit, no parity.**

TRANSMITTER — COMMON COMMANDS

COMMAND	FUNCTION	FEEDBACK / NOTES	DEFAULT
? / help	List all commands	—	
get version	Get all firmware versions	e.g. TX BOOT: V1.01.01, TX FW: V1.00.01, RX FW: V1.00.01, SUB MCU1: V1.00.00.0 1, SUB MCU2: V1.00.17	
reboot	Reboot the device	Reboots and re-initializes	



continued

COMMAND	FUNCTION	FEEDBACK / NOTES	DEFAULT
<code>status</code>	Get system status	See status note below	
<code>set tx input x hdcv y</code>	Set input HDCP (x=0 all / 1 input 1; y=0 off / 1 = HDCP 1.4 / 2 = HDCP 2.3)	e.g. <code>set tx input 0 hdcv 2</code>	HDCP 2.3
<code>get tx input x hdcv</code>	Get input HDCP status		
<code>get tx input x connected</code>	Get input cable connected status		
<code>get tx input x signal</code>	Get input signal status	e.g. TX input 1 3840x2160p 60Hz YUV 4:4:4 8bit	
<code>set tx input x edid y</code>	Set input EDID (y = 01–23)	See EDID presets below	01 (auto)
<code>get tx input x edid</code>	Get input EDID		
<code>get tx input x edid data</code>	Get raw EDID data	Returns hex block	
<code>set user edid x <y></code>	Set user-defined EDID (x=1 or 2), y = 256-byte EDID data		
<code>get user edid x</code>	Get user-defined EDID data		
<code>get tx usb connected</code>	Get TX USB cable connected status		1
<code>set hdbt update</code>	Set SERVICE port to HDBT UART for firmware update		

EDID presets (set tx input x edid y, y = 01–23):

Y	PRESET	Y	PRESET
01	Copy EDID from RX output (auto, default)	13	4K30, 7.1CH DTS/DOLBY/HD
02	1080p60, 2CH PCM	14	720p60, 2CH PCM
03	1080p60, 5.1CH DTS/DOLBY	15	1920x1200p60, 2CH PCM
04	1080p60, 7.1CH DTS/DOLBY/HD	16	1680x1050p60, 2CH PCM
05	4K60, 2CH PCM	17	1600x1200p60, 2CH PCM
06	4K60, 5.1CH DTS/DOLBY	18	1440x900p60, 2CH PCM
07	4K60, 7.1CH DTS/DOLBY/HD	19	1360x768p60, 2CH PCM



continued

Y	PRESET	Y	PRESET
08	5K60, 2CH PCM	20	1280×1024p60, 2CH PCM
09	5K60, 5.1CH DTS/DOLBY	21	1024×768p60, 2CH PCM
10	5K60, 7.1CH DTS/DOLBY/HD	22	User Defined 1
11	4K30, 2CH PCM	23	User Defined 2
12	4K30, 5.1CH DTS/DOLBY		

Transmitter status feedback (as printed): `` Status Info 5K USB-C and USB 3.2 Extender over CAT TX FW v1.0.0
TX Cable Signal HDCP EDID Input Connected 3840x2160p60Hz YUV 4:4:4 8bit HDCP 2.3 01_Auto EDID
(default) TX_USB Cable TX_01 Connected ``

RECEIVER — COMMON COMMANDS

COMMAND	FUNCTION	FEEDBACK / NOTES	DEFAULT
<code>? / help</code>	List all commands	—	
<code>get version</code>	Get all firmware versions	e.g. RX BOOT: V1.1.1, RX FW: V1.00.01, TX FW: V1.00.01, SUB MCU: V1.0.1	
<code>reboot</code>	Reboot the device		
<code>status</code>	Get system status	See status note below	
<code>set rx output x source y</code>	Set output source (x=0 all / 1 output 1; y=0 off / 1 = TX input / 2 = AVMUTE)		1
<code>get rx output x source</code>	Get output video source		
<code>set rx output x hdcp y</code>	Set output HDCP mode (y=0 signal mgmt / 1 follow sink / 2 follow source / 3 force HDCP 1.4 / 4 force HDCP 2.3)		1 (follow sink)
<code>get rx output x hdcp</code>	Get output HDCP mode		
<code>get rx output x connected</code>	Get output cable connected status		
<code>get rx output x signal</code>	Get output signal status		
<code>set rx hdmi out x power y</code>	Set HDMI 5V power (y=0 follow input / 1 force on / 2 force off)		0



continued

COMMAND	FUNCTION	FEEDBACK / NOTES	DEFAULT
<code>get rx hdmi out x power</code>	Get HDMI 5V status		
<code>set rx usbd x power y</code>	Set USB device port power (x=0 all / 1–3 each; y=0 follow host / 1 force on / 2 force off)		0
<code>get rx usbd x power</code>	Get USB device port power status		
<code>set hdbt update</code>	Set SERVICE port to HDBT UART for firmware update		

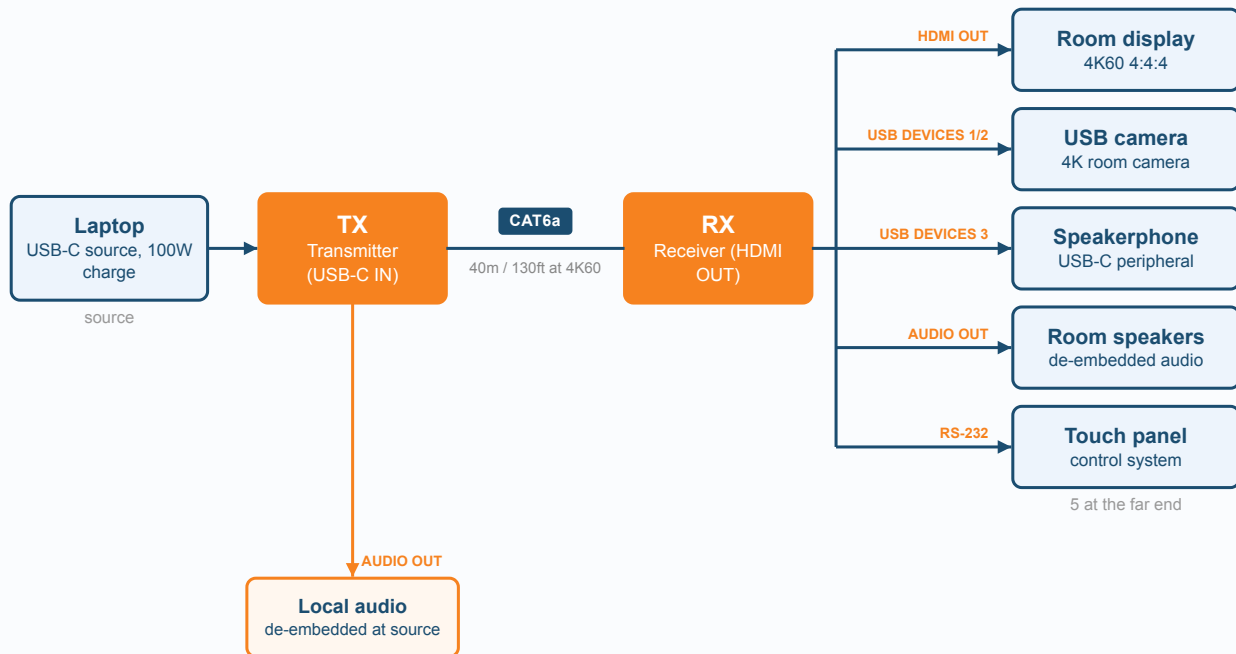
Receiver status feedback (as printed): `` Status Info 5K HDMI and USB 3.2 Extender over CAT RX FW v1.0.0 RX
Cable Signal HDCP Source Output Connected 3840x2160p60Hz YUV 4:4:4 8bit HDCP 2.3 TX_Input RX_USB
USB_Power RX_01 Follow_host RX_02 Follow_host RX_03 Follow_host ``



8. Application Example

TYPICAL SETUP

4K60 USB-C Extender Kit with USB 3.2, 100W Charging and HDMI Output, 40m



How it works: Bi-directional 24V PoC powers either end from a single supply, USB 3.2 Gen 1 runs at up to 2.5 Gbps for 4K room cameras and storage, and 25 EDID presets plus an ASCII API over the SERVICE port give integrators control of HDCP, EDID and USB port power. Resolutions up to 4096x2160@60, 5120x1440@60 and 5120x2160 (50Hz 4:4:4 / 60Hz 4:2:0) are supported over HDMI, with HDR10+, Dolby Vision and HLG pass-through. Requires CAT6a U/FTP 23AWG minimum; 100W laptop charging is available when the transmitter is powered from its own 24V/7.5A supply.

9. Installation FAQ

Q: How must the CAT cable between the transmitter and receiver of the EXT-USBCPD4K-40M be run and terminated?

A: Use CAT6a U/FTP, 23AWG minimum, direct-wired, and terminate both ends to the same straight-through pinout. Do not cross-connect the cable.

Q: How is the EXT-USBCPD4K-40M powered at each end?

A: The transmitter is powered from its included 24V/7.5A supply. The receiver runs on 24V PoC over the CAT6a cable, or from an optional 24V/2A supply, and the PoC is bi-directional so the far end does not need its own supply. Note that 100W USB-C charging works only when the transmitter is powered from its supply.

Q: What are the local cable length limits for the EXT-USBCPD4K-40M?

A: The USB-C source cable is 1.5m/4.9ft (USB 3.2 Gen 1 passive) and the HDMI output cable is 3m/9.8ft passive. The link between transmitter and receiver reaches 40m/130ft at 4K and 35m/115ft at 5K.



Q: What plugs into the receiver of the EXT-USBCPD4K-40M?

A: The receiver provides one HDMI Type A output to the display, two downstream USB-A ports and one downstream USB-C port (5V/1.5A each) for peripherals, and a 3.5mm AUDIO OUT for de-embedded audio. Its RJ45 AV-USB3 IN connects back to the transmitter over CAT6a.

Q: Is surge protection recommended when installing the EXT-USBCPD4K-40M?

A: Yes, a surge-protection device is recommended to protect the equipment on the cable run.

10. Integration FAQ

Q: What control interfaces does the EXT-USBCPD4K-40M offer?

A: It has RS-232 pass-through on both ends via a 3-pin 3.5mm phoenix connector, plus an ASCII API on the SERVICE USB-C port at 115200 baud, 8 data bits, 1 stop bit, no parity.

Q: What can a control system do over the EXT-USBCPD4K-40M API?

A: Over the ASCII API you can set input HDCP mode, select EDID presets, set output source and HDCP, control HDMI 5V power and the downstream USB port power, read status and signal, and reboot, reset or update the firmware. Commands include entries like set tx input 0 hdcp 2 and set rx output 1 source 1.

Q: How does the EDID handling on the EXT-USBCPD4K-40M work for a system integrator?

A: It offers 25 EDID presets, two of which are user-defined, selectable with set tx input x edid y. The default preset 01 copies the EDID from the receiver's connected display automatically.

Q: How does the EXT-USBCPD4K-40M fit into a BYOD or commercial A/V room?

A: A USB-C laptop connects to the transmitter, one CAT6a run carries video, USB 3.2 and control to the receiver, and the receiver drives an HDMI display along with USB peripherals and audio. RS-232 pass-through and the API let it join a room control system.

