



USBC-EXB230R-K

**4K HDBaseT 3.0 USB-C Extender
(KVM) - 230ft (Cat6)**

USER MANUAL

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Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating, or adjusting this product. Keep this manual for future reference.

Important Safety Note – Surge Protection Recommended

This product contains sensitive electronic components that may be damaged by electrical spikes, surges, lightning strikes, or static discharge. To protect and extend the service life of your equipment, we strongly recommend using a surge protection device.

Registration Page

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Introduction & Features

Introduction

USBC-EXB230R-K is designed to transmit USB-C video and USB 2.0 data over long distances using a single CAT6A/7 cable. It supports video extension up to 230 ft (70m) at 4K@30Hz (4:4:4, 8-bit) and 130 ft (40m) at 4K@60Hz (4:4:4, 8-bit) with reliable performance.

The transmitter features a USB-C input supporting DisplayPort Alt Mode (v1.2a), USB 2.0 data, and power delivery, along with a dedicated USB-C charging port and two local USB device ports. The receiver provides a USB-C output for video and USB 2.0 data, as well as three USB device ports for peripherals. Both the Transmitter and Receiver support RS-232 pass-through and bi-directional 24V Power over Cable (PoC), enabling simplified installation with power supplied from either end.

With support for HDR, HDR10+, Dolby Vision LLM, and HLG, this extender offers a highly efficient and flexible solution for USB-C video and data extension, making it ideal for commercial AV installations, conference rooms, classrooms, and professional workspaces.

Features

1. **HDBaseT 3.0 USB-C Extender** – Supports USB-C video and USB 2.0 data transmission over a single CAT6A/7 cable.
2. **18Gbps Video Bandwidth** – Delivers video up to 4K@60Hz (4:4:4, 8-bit).
3. **Extended Transmission Distance** –
 - Up to 130 ft (40m) at 4K@60Hz (4:4:4, 8-bit)
 - Up to 230 ft (70m) at 4K@30Hz (4:4:4, 8-bit)

Features & Package Contents

(Continued)

4. **HDR Pass-Through** – Compatible with HDR, HDR10+, Dolby Vision LLM, and HLG.
5. **HDCP 2.2 & DP 1.2a Compliant** – Ensures secure content transmission between modern sources and displays.
6. **USB Device Ports** – Extra USB ports on the Transmitter & Receiver end allow peripheral connections providing 5V/1A on each USB-A port.
7. **Audio Pass-Through** – Supports LPCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, and DTS:X.
8. **RS-232 Pass-Through** – Enables control system integration.
9. **Bi-Directional 24V PoC** – Only one unit needs to be powered, the other gets powered over the CAT6 connection.
10. **Compact, Installer-Friendly Design** – Ideal for clean, flexible, and professional installations.

Package Contents

1.	USBC-EXB230R-K Transmitter	1 pcs
2.	USBC-EXB230R-K Receiver	1 pcs
3.	3-pin 3.5mm Phoenix Connectors (male)	2 pcs
4.	Power Adapter	1 pcs
5.	User Manual	1 pcs

Specifications

Technical	
USB Compliance	USB 2.0
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Resolution (Input & Output)	640x480p60Hz, 800x600p60Hz, 1024x768p60Hz, 1280x1024p60Hz, 1360x768p60Hz, 1440x900p60Hz, 1440x1050p60Hz, 1600x1200p60Hz, 720x480i59.94Hz(480i59), 720x480p59.94Hz(480p59), 720x576i-50Hz(576i50), 720x576p50Hz(576p50), 1280x720p50Hz(720p50), 1280x720p59.94Hz(720p59), 1280x720p60Hz(720p60), 1920x1080i50Hz(1080i50), 1920x1080i59.94Hz(1080i59), 1920x1080i60Hz(1080i60), 1920x1080p23.98Hz(1080p23), 1920x1080p24Hz(1080p24), 1920x1080p25Hz(1080p25), 1920x1080p29.97Hz(1080p29), 1920x1080p30Hz(1080p30), 1920x1080p50Hz(1080p50), 1920x1080p59.94Hz(1080p59), 1920x1080p60Hz(1080p60), 3840x2160p23.98Hz(2160p23), 3840x2160p24Hz(2160p24), 3840x2160p25Hz(2160p25), 3840x2160p29.97Hz(2160p29), 3840x2160p30Hz(2160p30), 3840x2160p50Hz(2160p50), 3840x2160p59.94Hz(2160p59), 3840x2160p60Hz(2160p60), 4096x2160p23.98Hz, 4096x2160p24Hz, 4096x2160p25Hz, 4096x2160p29.97Hz, 4096x2160p30Hz, 4096x2160p50Hz, 4096x2160p59.94Hz, 4096x2160p60Hz
Color Space	RGB, YCbCr_4:4:4, YCbCr_4:2:2, YCbCr_4:2:0
Color Depth	8-bit, 10-bit, 12-bit
Audio Formats	USB-C pass-through: LPCM 2.0/5.1/7.1CH, Dolby True HD, Dolby Atmos, DTS-HD Master Audio and DTS:X
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
Transmission Distance	- Extend 4K60Hz (4:4:4 8bit) signal up to 130ft/40m and 4K30Hz (4:4:4 8bit) signal up to 230ft/70m with CAT6A/7 cable - USB 2.0 pass through up to 230ft/70m, connecting to 3x USB devices to the receiver
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)

Specifications

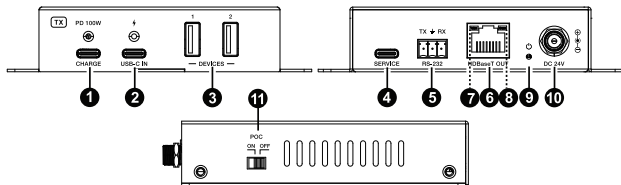
Connection	
Transmitter	Front Panel: 1x CHARGE [USB Type C, 24-pin female] 1x USB-C IN [USB Type C, 24-pin female] 2x USB 2.0 DEVICES [USB Type A, 4-pin female] Rear Panel: 1x SERVICE [USB-C with USB 2.0 only, 12-pin female, firmware upgrade port] 1x RS-232 [3-pin phoenix with 3.5mm pitch] 1x HDBaseT OUT [RJ45 connector, 24V PoC] 1x Power LED [Red LED, Power indicator] 1x DC 24V [24V/2.7A, 19mm locking connector] Side Panel: 1x PoC ON/OFF [1-pin DIP switch, 24V PoC ON/OFF selection]
Receiver	Front Panel: 1x USB-C OUT [USB Type C, 12-pin female] 1x USB 2.0 DEVICES [USB Type C, 12-pin female] 2x USB 2.0 DEVICES [USB Type A, 4-pin female] Rear Panel: 1x SERVICE [USB-C with USB 2.0 only, 12-pin female, firmware upgrade port] 1x RS-232 [3-pin phoenix with 3.5mm pitch] 1x HDBaseT IN [RJ45 connector, 24V PoC] 1x Power LED [Red LED, Power indicator] 1x DC 24V [24V/2.7A, 19mm locking connector] Side Panel: 1x PoC ON/OFF [1-pin DIP switch, 24V PoC ON/OFF selection]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	L: 120mm / 4.72in W: 113mm / 4.45in H: 25.5mm / 1.00in
Weight	Transmitter: 353g / 12.45oz; Receiver: 352g / 12.42oz

Specifications

Mechanical	
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 24V/2.7A (US/EU standard, CE/FCC/UL certified)
Power Consumption	TX/RX with full USB devices (each 5V/1A): 46.8W TX/RX without USB devices: 16.08W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Operating Humidity	20% ~ 80% (relative humidity, no condensation)
Storage Humidity	10% ~ 90% (relative humidity, no condensation)

Operation Controls and Functions

Transmitter Panel

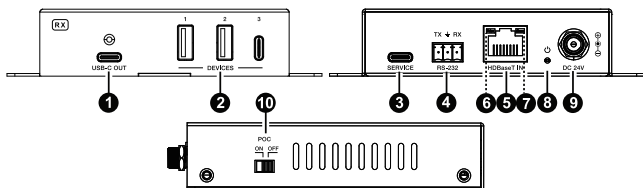


Operation Controls and Functions

No.	Name	Function Description
1.	CHARGE port & locking connector	USB Type C power input port, supporting up to 100W power input. Connect to an external USB-C charger, then the USB-C IN port can power the connected device.
2.	USB-C IN port & locking connector	USB Type C port with following three functions: (1) USB audio/video signal input port, connected to source device. (2) USB 2.0 signal transmission port. (3) USB-C charging port. Only when the CHARGE port is connected to the power supply, the USB-C IN port can provides 100W charging power for external USB-C devices.
3.	DEVICES 1-2	Connect USB Flash Drive, keyboard, USB camera or other USB devices, with a maximum power supply of 5V/1A.
4.	SERVICE	Used for firmware upgrade and API commands control.
5.	RS-232	Used for RS-232 signal pass-through.
6.	HDBaseT OUT	Connect a CAT 6/7 cable. The other end connects to the Receiver.
7.	Signal LED (Yellow)	▪ Light on: There is video signal transmission with HDCP encryption. ▪ Light flashing: There is video signal transmission without HDCP encryption. ▪ Light off: There is no video signal transmission.
8.	Link LED (Green)	▪ Light on: Transmitter and receiver are linked. ▪ Light off: Transmitter and receiver are not linked.
9.	Power LED (Red)	▪ Light on: The transmitter is powered on. ▪ Light off: The transmitter is powered off.
10.	DC 24V	Connect the included power adapter. Note that the extender supports PoC function, it means that either transmitter or receiver is powered on by 24V/2.7A power adapter, the other one doesn't need power supply.
11.	PoC switch	Use to turn on/off the PoC function.

Operation Controls and Functions

Receiver Panel



No.	Name	Function Description
1.	USB-C OUT port & locking connector	USB Type C port with following three functions: (1) USB audio/video signal output port, connected to display device. (2) USB 2.0 signal transmission port. (3) Providing max 5V/1A power out.
2.	DEVICES 1-3	Three USB 2.0 ports (two USB-A ports and one USB-C port), connected to USB Flash Drive, keyboard, USB camera or other USB devices, with a maximum power supply of 5V/1A.
3.	SERVICE	Used for firmware upgrade.
4.	RS-232	Used for RS-232 signal pass-through.
5.	HDBaseT IN	Connect a CAT 6/7 cable. The other end connects to the Transmitter.
6.	Signal LED (Yellow)	Light on: There is video signal transmission with HDCP encryption. Light flashing: There is video signal transmission without HDCP encryption. Light off: There is no video signal transmission.
7.	Link LED (Green)	Light on: Transmitter and receiver are linked. Light off: Transmitter and receiver are not linked.

Operation Controls and Functions

No.	Name	Function Description
8.	Power LED (Red)	▪ Light on: The receiver is powered on. ▪ Light off: The receiver is powered off.
9.	DC 24V	Connect the included power adapter. Note that the extender supports PoC function, it means that either transmitter or receiver is powered on by 24V/2.7A power adapter, the other one doesn't need power supply.
10.	PoC switch	Use to turn on/off the PoC function.

API Commands

The extender also supports API commands control. Connect the SERVICE port of the transmitter to a PC or control system with a USB-C cable. Then, open a serial command tool on PC to send ASCII commands to control the extender. The ASCII commands list about the extender is shown as below.

ASCII Commands				
SERVICE (USB-C port with virtual RS-232) communication protocol (Connect to laptop) Baud rate: 115200 (Fixed) Data bit: 8 Stop bit: 1 Parity bit: none				
Command	Function	Example	Feedback	Default
?	Get the list of all commands	?	List all commands	
help	Get the list of all commands	help	List all commands	
get fw version	Get the firmware version	get fw version	TX: BOOT V1.00.01 MCU V1.00.01 RX: BOOT V1.00.01 MCU V1.00.01	

API Commands

Command	Function	Example	Feedback	Default
set reboot	Reboot the device	set reboot	Reboot... System Initializing... Initialization Finished! TX: BOOT V1.00.01 MCU V1.00.01	
set reset	Reset to factory defaults	set reset	Sure to RESET to default settings? Type "Yes" after next prompt to confirm...	
get status	Get system status	get status	Please refer to the note for "get status".	
set tx source x	Set TX input source (x=0-3) x=0: OFF x=1: USB-C input x=2: AVMUTE x=3: Internal pattern	set tx source 1 set tx source 0	Set TX source to USB-C Set TX source to OFF	1
get tx source	Get TX input source	get tx source	USB-C	
set tx pattern x y	Set TX internal pattern generator resolution (x=1~7) pattern (y=1~12) x=01: 1080P60Hz x=02: 4K60Hz x=03: 4K30Hz x=04: 4K25Hz x=05: 4K24Hz x=06: 720P60Hz x=07: 480P60Hz	set tx pattern 1 2	Set TX pattern 1080P60Hz checkboard	

API Commands

Command	Function	Example	Feedback	Default
set tx pattern x y	(Continued) y=01: Black y=02: Checkboard y=03: Strip y=04: Red y=05: Green y=06: Blue y=07: White y=08: Ramp y=09: Red ramp y=10: Green ramp y=11: Blue ramp y=12: PRBS	set tx pattern 1 2	Set TX pattern 1080P60Hz checkboard	
get tx pattern	Get TX internal pattern generator output resolution and pattern	get tx pattern	TX pattern 1080P60Hz checkboard	
set tx input hdcp y	Set TX input HDCP to (y=0~2) y=0: HDCP OFF y=1: HDCP 1.4 y=2: HDCP 2.2	set tx input hdcp 2 set tx input hdcp 0	Set TX input HDCP 2.2 Set TX input HDCP OFF	HDCP 2.2
get tx input hdcp	Get TX input HDCP status	get tx input hdcp	TX input HDCP 2.2	
set tx output hdcp y	Set TX output HDCP mode to (y=0~4) y=0: Signal management y=1: Follow sink (default) y=2: Follow source y=3: Force HDCP 1.4 y=4: Force HDCP 2.2	set tx output hdcp 1	Set TX output HDCP to follow sink	1

API Commands

Command	Function	Example	Feedback	Default
get tx output hdcp	Get TX output HDCP mode	get tx output hdcp	Follow sink	
get tx usbc5v	Get TX USB-C host input 5V	get tx usbc5v	On	
set tx edid to y	Set TX input EDID to (y=0~18) y=00: Copy EDID from RX USB-C output (default) y=01: 1920x1080p60Hz, Audio 2CH PCM y=02: 1920x1080p60Hz, Audio 5.1CH DTS/DOLBY y=03: 1920x1080p60Hz, Audio 7.1CH DTS/DOLBY/HD y=04: 3840x2160p30Hz 4:4:4, Audio 2CH PCM y=05: 3840x2160p30Hz 4:4:4, Audio 5.1CH DTS/DOLBY y=06: 3840x2160p30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD y=07: 3840x2160p60Hz 4:2:0, Audio 2CH PCM y=08: 3840x2160p60Hz 4:2:0, Audio 5.1CH DTS/DOLBY y=09: 3840x2160p60Hz 4:2:0, Audio 7.1CH DTS/DOLBY/HD y=10: 3840x2160p60Hz 4:4:4, Audio 2CH PCM y=11: 3840x2160p60Hz 4:4:4, Audio 5.1CH DTS/DOLBY y=12: 3840x2160p60Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD	set tx edid to 0	Set TX input EDID to 00_Copy EDID from RX USB-C output (default)	0

API Commands

Command	Function	Example	Feedback	Default
set tx edid to y	(Continued) y=13: WUXGA 1920x1200p 60Hz, Audio 2CH PCM y=14: DVI 1280x1024p60Hz, Audio None y=15: DVI 1920x1080p60Hz, Audio None y=16: DVI 1920x1200p60Hz, Audio None y=17: User Defined 1 y=18: User Defined 2	set tx edid to 0	Set TX input EDID to 00_Copy EDID from RX USB-C output (default)	0
get tx edid	Get TX input EDID	get tx edid	TX input EDID to 00_Copy EDID from RX USB-C output (default)	
get tx edid data	Get TX input EDID data	get tx edid data	TX input EDID <00 FF FF FF....>	
set user edid x <y>	Set user defined EDID (x=0-2) to y x=0: User Defined 1 and User Defined 2 x=1: User Defined 1 x=2: User Defined 2 y=00 FF FF FF (y is 256 bytes EDID data)	set user edid 1 <00 FF FF FF....>	User defined 1 EDID is loaded	
get user edid x	Get user defined EDID (x=0-2) data x=0: User Defined 1 and User Defined 2 x=1: User Defined 1 x=2: User Defined 2	get user edid 1	User defined 1 EDID <00 FF FF FF....>	

API Commands

Command	Function	Example	Feedback	Default
set tx x usb5v y	Set TX USB device port output (x=0~2) 5V to (y=0~2) x=0:All USB device ports x=1:USB-A device 1 x=2:USB-A device 2 y=0: Disable 5V output y=1: Follow host y=2: Force 5V always output	set tx 0 usb5v 1	Set TX all USB device output 5V:follow host	1
get tx x usb5v	Get TX USB device port output (x=0~2) 5V status x=0:All USB device ports x=1:USB-A device 1 x=2:USB-A device 2	get tx 0 usb5v	USBA_1 5V: follow host USBA_2 5V: follow host	
set rx source x	Set RX output source(x=0~3) x=0: OFF x=1: HDBT input x=2: AVMUTE x=3: Internal pattern	set rx source 1 set rx source 0	Set RX source to HDBT Set RX source to OFF	1
get rx source	Get RX output source	get rx source	HDBT	
set rx output hdcp y	Set RX output HDCP mode to (y=0~4) y=0: Signal management y=1: Follow sink (default) y=2: Follow source y=3: Force HDCP 1.4 y=4: Force HDCP 2.2	set rx output hdcp 1	Set RX output HDCP to follow sink	1
get rx output hdcp	Get RX output HDCP mode	get rx output hdcp	Follow sink	
get rx pattern	Get RX internal pattern generator output resolution and pattern	get rx pattern	RX pattern 1080P60Hz checkboard	

API Commands

Command	Function	Example	Feedback	Default
set rx pattern x y	Set RX internal pattern generator resolution (x=1~7) pattern (y=1~12) x=01: 1080P60Hz x=02: 4K60Hz x=03: 4K30Hz x=04: 4K25Hz x=05: 4K24Hz x=06: 720P60Hz x=07: 480P60Hz y=01: Black y=02: Checkboard y=03: Strip y=04: Red y=05: Green y=06: Blue y=07: White y=08: Ramp y=09: Red ramp y=10: Green ramp y=11: Blue ramp y=12: PRBS	set rx pattern 1 2	Set RX pattern 1080P60Hz checkboard	
set rx usb5v y	Set RX USB device port output (x=0~2) 5V to (y=0~2) x=0:All USB device ports x=1:USB-A device 1 x=2:USB-A device 2 y=0: Disable 5V output y=1: Follow host y=2: Force 5V always output Note: USB-C device 3 can't be set due to USB-C auto output power when USB device is connected.	set rx 0 usb5v 1	Set RX all USB device output 5V follow host	1

API Commands

Commands	Description	Example	Feedback	Default
get rx x usb5v	Get RX USB device port output (x=0-2) 5V status x=0:All USB device ports x=1:USB-A device 1 x=2:USB-A device 2	get rx 0 usb5v	USBA_1 5V: follow host USBA_2 5V: follow host	
set hdbt update	Set SERVICE to HDBT UART for FW update	set hdbt update	HDBT update...	

Notes: The feedback of the command of "get status" is as following.

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Status Info USB-C Extender over HDBT

TX: BOOT V1.00.01 MCU V1.00.01

RX: BOOT V1.00.01 MCU V1.00.01

Input	Cable	HDCP	EDID
USB-C	Connected	HDCP 2.2	00_Copy EDID from RX USB-C output (default)

Output	Cable	Resolution	ColorSpace	ColorDepth	HDCP
USB-C	Connected	3840x2160p60Hz	YUV 4:4:4	8bit	HDCP 2.2

TxOutputFrom	RxOutputFrom
--------------	--------------

USB-C	HDBT
-------	------

USB_Device	USB_5V
------------	--------

TX_USBA_1	Follow host
-----------	-------------

TX_USBA_2	Follow host
-----------	-------------

RX_USBA_1	Follow host
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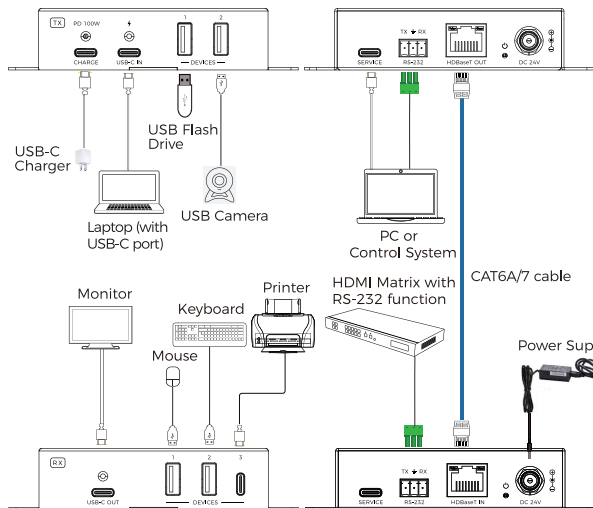
RX_USBA_2	Follow host
-----------	-------------

RX_USBC_3	Follow host
-----------	-------------

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Application Example

Transmitter



Receiver

FAQs & Troubleshooting

1. No Audio Output

- Ensure the source device is set to output audio over USB-C / HDMI.
- Check that the display or audio system supports the selected audio format.
 - Try switching to LPCM 2.0 for compatibility testing.

2. Video Drops or Flickers

- Reduce resolution or refresh rate (e.g., from 4K@60Hz to 4K@30Hz).
 - Replace the CAT cable with a shorter or higher-quality cable.
 - Avoid running CAT cables near high-voltage electrical lines.
- Ensure PoC power is stable and supplied from only one end.

3. No USB Device Detection

- Confirm the connected USB device is USB 2.0 compatible.
 - Avoid using unpowered USB hubs.
- Reconnect the USB device after video signal is established.
- Check that USB device power requirements do not exceed 5V/1A.

4. Power Issues

- Ensure only one power adapter is connected when using PoC.
 - If instability occurs, power the Receiver directly.
 - Use the supplied power adapter only.

FAQs & Troubleshooting

5. RS-232 Control Not Working

- Verify correct baud rate and pin configuration.
- Confirm RS-232 cables are properly terminated.
- Test RS-232 devices locally before extending.

Still have some questions?

Please feel free to contact us at: info@orei.com. OR Fill out the form on the 'Contact Us' page on the website.

Our team will be more than happy to help you.

OREI Live Technical Support Hours

US team (US/Canada/Mexico): Monday-Friday, 9 a.m. - 5 p.m. Central Time

Support Email - info@orei.com | **Support Number** - 877-290-5530



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(KVM) - 230ft (Cat6)**

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