PUV-C3050TX-UA

UHD+ USB-C over HDBaseT Transmitter with USB KVM

OPERATION MANUAL

HIGH-DEFINITION MULTIMEDIA INTERFACE

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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
RDV1	2022/06/22	Preliminary release

CONTENTS

1. INTRODUCTION

This 4K UHD+ USB-C over HDBaseT transmitter uses HDBaseT 3.0, the newest generation of HDBaseT technology, and is the perfect solution for extending full bandwidth (18Gbps, 4K@60Hz 4:4:4) video signals with HD audio via a single run of Cat.6A/7 cable over distances of up to 40 meters. Multiple control and data signals may also be transmitted along with the audio and video, including IR, RS-232, and USB 3.0. Additionally, the inclusion of a USB-C connection as its input allows for the combination of video, audio, and USB over a single cable from the connected source device, greatly enhancing installation practicality. This transmitter is ideal for use in any video extension scenario, especially when latency-free, uncompressed, high resolution video is critical, such as medical installations, live conferences, and education.

2. APPLICATIONS

- Household entertainment sharing and control
- Lecture hall/classroom display and control
- Meeting room presentation and control

3. PACKAGE CONTENTS

- 1× UHD+ USB-C over HDBaseT Transmitter with USB KVM
- 1× 24V/2.7A DC Power Adapter
- 2× 3-pin Terminal Block
- 1× 8-pin Terminal Block
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

- USB-C source equipment such a media player, laptop, or tablet.
- HDMI receiving equipment such as an HDTV, monitor, or audio amplifier.
- A compatible HDBaseT 3.0 receiver with PoH (PD) support is recommended.
- The use of Premium High Speed HDMI cables, and industry standard Cat.6A or Cat.7 Ethernet cable is highly recommended.

5. FEATURES

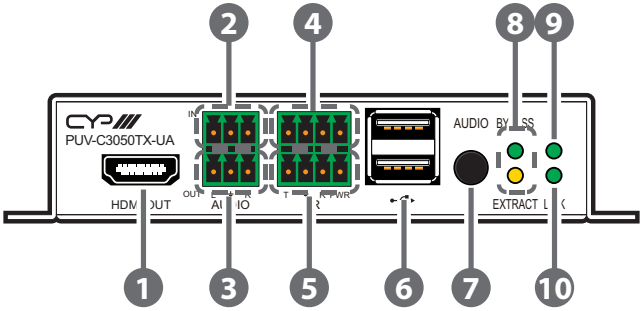
- USB-C (USB 3.0) video compatible
- HDMI 2.0 and DVI 1.0 compatible
- HDCP 2.2 and HDCP 1.x compliant
- HDBaseT 3.0 compliant (Backwards compatible with HDBaseT 2.0/1.0)
- 1 USB-C input
- 1 HDBaseT and 1 HDMI output
- Supports up to 4K UHD^{+} (18Gbps, 4K@60Hz 4:4:4, 8-bit) video output over both HDMI and HDBaseT
- Supports Deep Colour input and output up to 12-bit
- Supports 10-bit and 12-bit HDR (High Dynamic Range) input/output
- Supports CEC bypass
- HDBaseT extends video, audio and data over a single Cat.6A/7 cable and can reach distances up to 70m/230ft
- HDBaseT feature support: HD Video and Audio, PoH (PSE), Bi-directional audio (analogue), and Control (bi-directional USB/IR/RS-232 pass-through)
- 2 USB 2.0 Type-A device ports and 1 USB-C host port
- Selectable USB-C audio extraction/analogue audio bypass functionality when paired with a compatible receiver

  Note: USB-C audio extraction is only available with LPCM 2.0 sources.
- HDMI output functions as a local monitor
- Can supply PoH to a connected compatible receiver

  Note: The PoH function is designed for powering compatible receiver units only. Non-PoH receivers will need their own power supply. Receivers from other brands may not be compatible.

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



1. **HDMI OUT port:** Connect to an HDMI TV, monitor, or amplifier for digital video and audio output.
2. **AUDIO IN 3-pin Terminal Block:** Connect to the analogue audio output of a device such as a media player or game console using a 3-pin adapter cable. Audio is sent to the analogue audio output on the connected compatible receiver.
3. **AUDIO OUT 3-pin Terminal Block:** Connect to powered speakers or an amplifier for analogue audio output using a 3-pin adapter cable. Audio is sourced from the analogue audio input on the connected compatible receiver in bypass mode, or from the USB-C port in extract mode.
4. **RS-232 4-pin Terminal Block:** Connect to a PC, laptop, or serial controllable device with a 4-pin adapter cable for the extension of RS-232 signals between both ends of the HDBaseT connection.
5. **IR 4-pin Terminal Block (In/Out):** Connect to both an IR Blaster and Extender using a 4-pin Y-adapter cable to transmit and receive IR control signals and extend them to devices connected to the other end of the HDBaseT connection.
6. **USB 2.0 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 currently active USB host port.

7. **AUDIO Button:** Press this button to toggle the transmitter's analogue audio out stream source between the receiver's analogue audio input (bypass) and the USB-C input's audio (extract).

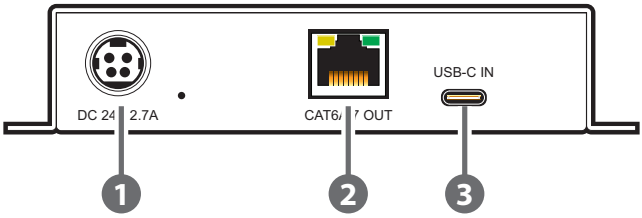
   Note: Audio extraction is only available with LPCM 2.0 sources. Pressing this will also change the setting on compatible receivers.

8. **BYPASS & EXTRACT LEDs:** These LEDs will illuminate to indicate if the unit is in audio bypass (receiver's analogue audio input) or extract mode (USB-C input).

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

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

6.2 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.

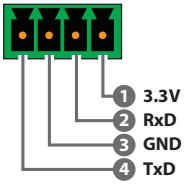
2. **CAT6A/7 OUT Port:** Connect to a compatible HDBaseT receiver with a single Cat.6A/7 cable for extension of all data signals. PoH will also be supplied to a connected compatible PD receiver.

3. **USB-C Port:** Connect directly to a USB-C video and audio source such as a laptop, or tablet. USB functionality will also be extended to all currently connected USB devices on both ends of the HDBaseT connection.

6.3 IR Cable Pinouts

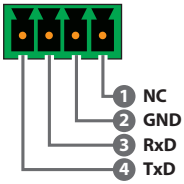
IR Blaster + IR Extender

4-pin Terminal Block



6.4 Serial Pinout

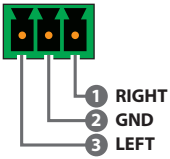
4-pin Terminal Block



6.5 Audio Pinouts

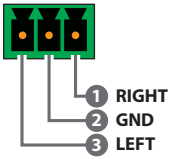
Stereo Audio Input

3-pin Terminal Block

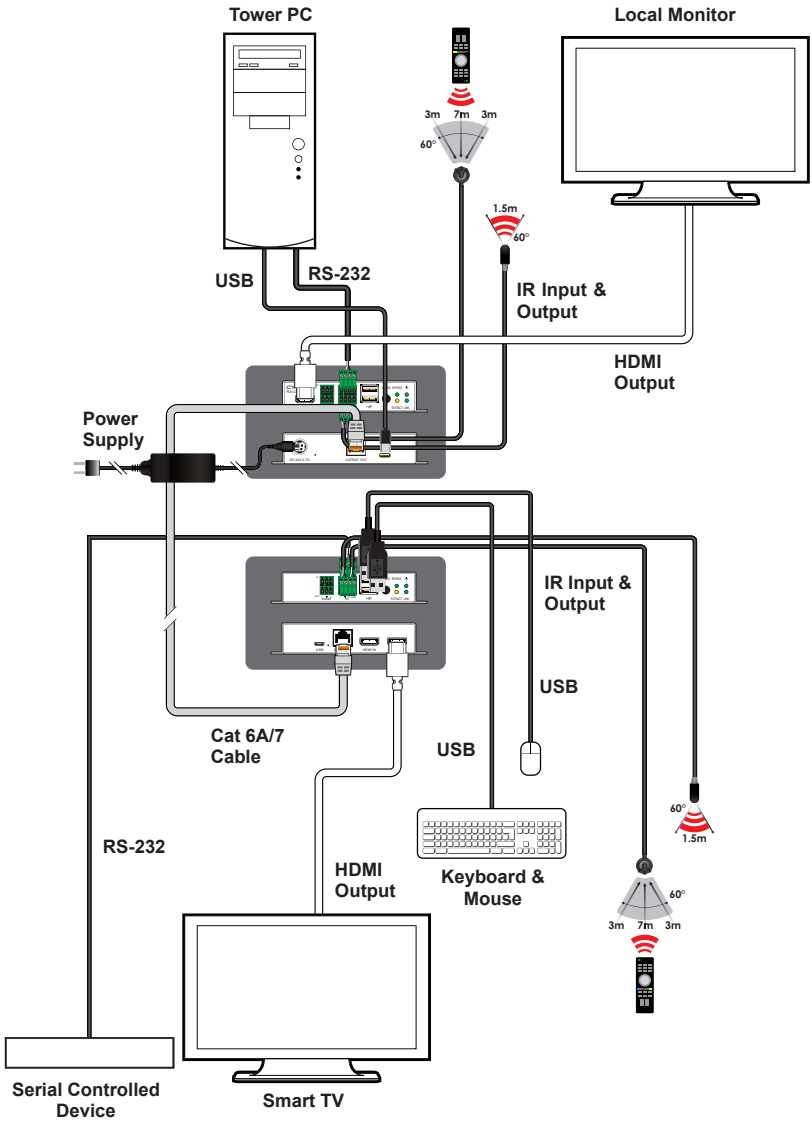


Stereo Audio Output

3-pin Terminal Block



7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	18Gbps
USB-C Bandwidth	32.40Gbps (DisplayPort 1.4a compliant)
HDBaseT Bandwidth	16Gbps
Input Ports	1×USB 3.0 (Type-C) 1×Analog Stereo (3-pin Terminal Block)
Output Ports	1×HDMI (Type-A) 1×HDBaseT (RJ-45) 1×Analog Stereo (3-pin Terminal Block)
Pass-through Ports	1×IR In/Out (4-pin Terminal Block) 1×RS-232 (4-pin Terminal Block) 2×USB 2.0 (Type-A)
IR Frequency	30 ~ 50kHz (30 ~ 60kHz under ideal conditions)
Baud Rate	Up to 115200
Power Supply	24V/2.7A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions (W×H×D)	128mm×25mm×108mm [Case Only] 128mm×25mm×112.5mm [All Inclusive]
Weight	385g
Chassis Material	Metal (Steel)
Chassis Colour	Black
Operating Temperature	0˚C – 50˚C/32˚F – 122˚F
Storage Temperature	-20˚C – 60˚C/-4˚F – 140˚F
Relative Humidity	20 – 90% RH (Non-condensing)
Power Consumption	18.5W

8.2 Video Specifications

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

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

USB-C Input / HDMI & HDBaseT Output	
LPCM	
Max Channels	8 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	Standard & High-Definition

8.3.2 Analogue Audio

Analogue Input	
Max Audio Level	2Vrms
Impedance	90.2kΩ
Type	Unbalanced

Analogue Output	
Max Audio Level	2Vrms
THD+N	< –80dB@0dBFS 1kHz (A-wt)
SNR	> 70dB@0dBFS
Frequency Response	< ±3dB@20Hz~20kHz
Crosstalk	< –60dB@10kHz
Impedance	499Ω
Type	Unbalanced

8.4 Cable Specifications

Cable Length	HD	FHD	4K UHD	4K UHD+	8K UHD
High Speed HDMI Cable					
HDMI Output	10m		5m	3m	×
USB-C Cable					
USB-C Input	2m			1m	×
Ethernet Cable					
Cat.5e/6	70m			40m	×
Cat.6A/7	70m			40m	×

Bandwidth Category Examples:

HD Video
- 720p@60Hz
- HDMI transmission rates lower than 3Gbps

FHD Video
- 1080p@60Hz
- HDMI transmission rates between 3Gbps and 5.3Gbps

4K UHD Video
- 4K@24/25/30Hz (8-bit colour) & 4K@50/60Hz (4:2:0, 8-bit colour)
- HDMI transmission rates between 5.3Gbps and 10.2Gbps

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

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 colour)
- HDMI transmission rates between 18Gbps and 48Gbps

8.5 HDBaseT Features

HDBaseT Feature Set	Transmitter
Video & Audio Extension	Supported
LAN Extension	Unsupported
Send power to Receiver	Supported (PoH)
Accept power from Receiver	Unsupported
IR Extension	Supported
RS-232 Extension	Supported
USB 2.0 Extension	Supported

9. ACRONYMS

ACRONYM	COMPLETE TERM
4K UHD	4K Ultra-High-Definition (10.2Gbps max)
4K UHD+	4K Ultra-High-Definition (18Gbps max)
8K UHD	8K Ultra-High-Definition (48Gbps max, without DSC)
8K UHD+	8K Ultra-High-Definition (48Gbps max, with DSC)
ADC	Analogue-to-Digital Converter
ASCII	American Standard Code for Information Interchange
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
CEC	Consumer Electronics Control
dB	Decibel
GbE	Gigabit Ethernet
Gbps	Gigabits per second
HDBT	HDBaseT
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
IP	Internet Protocol
IR	Infrared
kHz	Kilohertz
KVM	Keyboard/Video/Mouse
LAN	Local Area Network
LED	Light-Emitting Diode

ACRONYM	COMPLETE TERM
LPCM	Linear Pulse-Code Modulation
MHz	Megahertz
PD	Powered Device
PoH	Power over HDBaseT
PSE	Power Sourcing Equipment
SNR	Signal-to-Noise Ratio
TCP	Transmission Control Protocol
THD+N	Total Harmonic Distortion plus Noise
TMDS	Transition-Minimized Differential Signaling
USB	Universal Serial Bus
VGA	Video Graphics Array
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduced Blanking)
XGA	Extended Graphics Array
Ω	Ohm

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