



AVX-105C-TX

UHD⁺ USB-C over Copper Transmitter with PoE

 **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
RDV1	2022/12/29	Preliminary release

CONTENTS

1. Introduction	1
2. Applications	1
3. Package Contents	1
4. System Requirements	1
5. Features	2
6. Operation Controls and Functions	3
6.1 Front Panel	3
6.2 Rear Panel.....	4
7. Connection Diagram	5
8. Specifications	6
8.1 Technical Specifications	6
8.2 Video Specifications.....	7
8.3 Audio Specifications.....	9
8.3.1 Digital Audio	9
8.4 Cable Specifications	10
9. Acronyms	11



1. INTRODUCTION

This 4K UHD⁺ USB-C over Copper Transmitter and Receiver is designed for high-quality AV extension with minimum latency. By using a sophisticated ultra-light compression scheme (lossless for most content) it's a great solution for extending 4K@60Hz (4:4:4) audio/video streams. Advanced video content such as HDR (High Dynamic Range), 10-bit color and multi-channel HD Bitstream audio can be easily transmitted. The use of 10 Gigabit Ethernet allows for extension distances of up to 100m when using Cat.6A/7. Additionally, this unit's compact form factor, and its PoE functionality, which can extend power to the receiver, makes it ideal for installation in tight spaces, or inclusion in AV travel kits.

2. APPLICATIONS

- /// High quality, low latency, video extension
- /// Household entertainment
- /// Lecture halls, meeting rooms, and classrooms
- /// Point-to-Point secure video conferencing

3. PACKAGE CONTENTS

- /// 1× UHD⁺ USB-C over Copper Transmitter with PoE
- /// 1× UHD⁺ HDMI over Copper Receiver
- /// 1× 48V/0.83A DC Power Adapter
- /// 1× USB-C Cable (2m)
- /// 1× Operation Manual

4. SYSTEM REQUIREMENTS

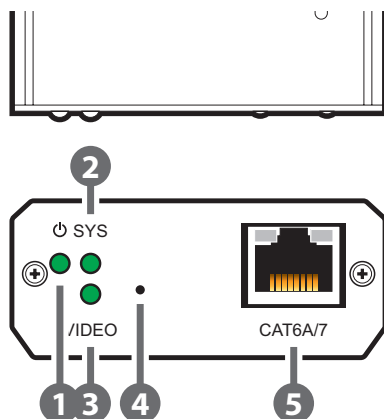
- /// USB-C source equipment such as a laptop, PC, set-top box, or media player
- /// Compatible copper-based receiver is required
- /// The use of USB-C Gen2 cables, and industry standard Cat.6A, or Cat.7 Ethernet cable is highly recommended

5. FEATURES

- /// HDMI 2.0 (via USB-C) compatible
- /// HDCP 2.2 and HDCP 1.x compliant
- /// 1x USB-C input, 1x 10GbE output (Transmitter)
- /// 1x 10GbE input, 1x HDMI output (Receiver)
- /// Ultra-light compression, lossless for most content
- /// Extension up to 100m when using at.6A/7
- /// Supports up to 4K UHD⁺ (18Gbps, 4K@50/60Hz 4:4:4, 8-bit) video input and output
- /// Supports pass-through of 10/12-bit HDR sources
- /// Supports pass-through of audio formats including LPCM (up to 8 channels), Bitstream and HD Bitstream
- /// Simple, hassle free, point-to-point connection
- /// Supports PoE which can extend power from the transmitter to the receiver. (Compatible receivers only)

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



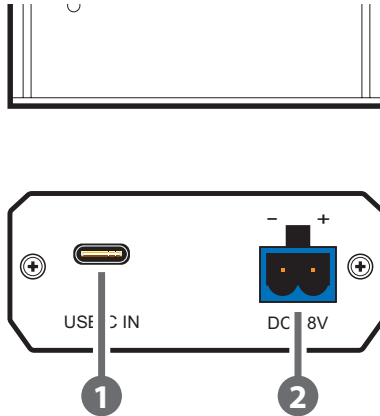
- 1 Power LED:** This LED will illuminate to indicate the unit is on and receiving power.

Note: This LED will blink during the firmware update process.
- 2 SYS LED:** This LED will illuminate to indicate that the system is stable and ready to process audio/video streams.

Note: This LED will blink during the firmware update process.
- 3 VIDEO LED:** This LED will illuminate to indicate that the video source is stable, and streaming is in process.
- 4 Reset Pinhole:** Press this button to reset the video connection between the transmitter and receiver.
- 5 CAT6A/7 Port:** Connect directly to a compatible receiver for audio and video extension. Power via PoE can also be supplied over this port when connected to a compatible receiver.

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

6.2 Rear Panel



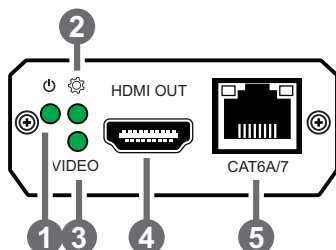
- 1 USB-C IN Port:** Connect to USB-C source equipment such as a laptop, PC, set-top box, or media player.

Note: The unit can optionally be powered directly via this port.

- 2 DC 48V Port:** Plug the 48V DC power adapter into this port and connect it to an AC wall outlet for power. (Optional, if powered via USB-C.)

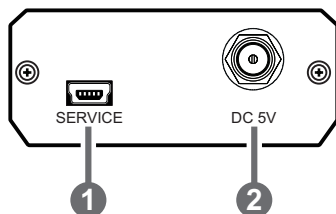
Note: PoE functionality is only available when powered via 48V DC.

6.3 Receiver Front Panel



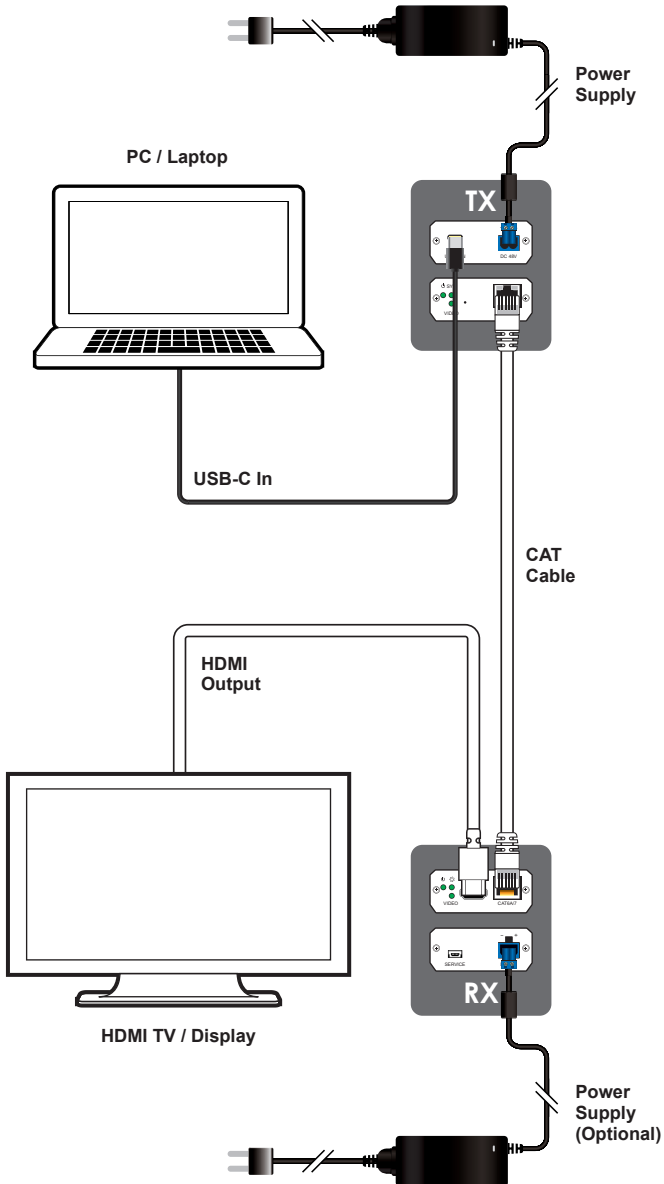
- 1 Power (⏻) LED:** This LED will illuminate to indicate the unit is on and receiving power.
Note: This LED will blink during the firmware update process.
- 2 System (⚙️) LED:** This LED will illuminate to indicate that the system is stable and ready to process audio/video streams.
Note: This LED will blink during the firmware update process.
- 3 VIDEO LED:** This LED will illuminate to indicate that the video source is stable, and streaming is in process.
- 4 HDMI OUT Port:** Connect to an HDMI TV, monitor, or amplifier for digital video and audio output.
- 5 CAT6A/7 Port:** Connect directly to a compatible transmitter for audio and video extension.

6.4 Receiver Rear Panel



- 1 SERVICE (USB Mini-B) Port:** This port is for firmware update only.
- 2 DC 5V Port:** Plug the 5V DC power adapter into this port and connect it to an AC wall outlet for power.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

USB-C Bandwidth	21.6 Gbps
Ethernet Bandwidth	10 Gbps
Input Ports	[TX] 1×USB (Type-C) [RX] 1×10GbE (RJ-45)
Output Ports	[TX] 1×10GbE (RJ-45) [RX] 1×HDMI (Type-A)
Power Supply	48V/0.83A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
TX Dimensions (W×H×D)	60mm×24.75mm×95mm [Case Only] 60mm×26mm×96mm [All Inclusive]
rX Dimensions (W×H×D)	57mm×20.6mm×87mm [Case Only] 60mm×20.6mm×87mm [All Inclusive]
Weight	[TX] 159g, [RX] 139g
Chassis Material	Metal (Steel)
Chassis Color	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	[TX] 8W, [RX] 4.51W

8.2 Video Specifications

Supported Resolutions (Hz)	Input	Output
	USB-C	10GbE
720x400p@70/85	✓	✓
640x480p@60/72/75/85	✓	✓
720x480i@60	✓	✓
720x480p@60	✓	✓
720x576i@50	✓	✓
720x576p@50	✓	✓
800x600p@56/60/72/75/85	✓	✓
848x480p@60	✓	✓
1024x768p@60/70/75/85	✓	✓
1152x864p@75	✓	✓
1280x720p@50/60	✓	✓
1280x768p@60/75/85	✓	✓
1280x800p@60/75/85	✓	✓
1280x960p@60/85	✓	✓
1280x1024p@60/75/85	✓	✓
1360x768p@60	✓	✓
1366x768p@60	✓	✓
1400x1050p@60	✓	✓
1440x900p@60/75	✓	✓
1600x900p@60RB	✓	✓
1600x1200p@60	✓	✓
1680x1050p@60	✓	✓
1920x1080i@50/60	✓	✓

Supported Resolutions (Hz)	Input	Output
	USB-C	10GbE
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/Output / 10GbE Output/Input	
LPCM	
Max Channels	8 Channels
Sampling Rate (kHz)	32~192
Bitstream	
Supported Formats	Standard & High-Definition

8.4 Cable Specifications

Cable Length	HD	FHD	4K UHD	4K UHD ⁺	8K UHD
USB-C Cable					
USB-C Input	2m		1m	x	
Ethernet Cable					
Cat.6A/7	100m			x	

Cable Length	1080p		4K30	4K60
	8-bit	12-bit	(4:4:4) 8-bit	(4:4:4) 8-bit
High Speed HDMI Cable				
HDMI Input	15m	10m	5m	3m

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)

9. ACRONYMS

ACRONYM	COMPLETE TERM
10GbE	10 Gigabit Ethernet
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)
AVoIP	Audio/Video over IP
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
GbE	Gigabit Ethernet
Gbps	Gigabits per second
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
IP	Internet Protocol
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MHz	Megahertz
PoE	Power over Ethernet
PSE	Power Sourcing Equipment
SDI	Serial Digital Interface
SFP	Small Form-factor Pluggable transceiver
TCP	Transmission Control Protocol

ACRONYM	COMPLETE TERM
USB	Universal Serial Bus
VoIP	Video over IP



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