



## AVX-105F-KIT

**AVX 6G 4K UHD+ USB-C TX to HDMI RX, AV over Fiber  
Transmitter/Receiver KIT (4K60, HDR10, HDCP2.2)**

**OPERATION MANUAL**



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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

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## 1. INTRODUCTION

This 4K UHD<sup>+</sup> USB-C over Fiber Transmitter and Receiver Set 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 colour and multi-channel HD Bitstream audio can be easily transmitted. The use of interchangeable, field-replaceable, SFP+ modules allows for transmission distances of up to 30km (Maximum transmission distance depends on the SFP+ modules used). Additionally, These units compact form factor makes it ideal for installation in tight spaces, or inclusion in AV travel kits.

## 2. APPLICATIONS

- /// AV extension without RF interference
- /// Long distance data and video transmission
- /// Household entertainment
- /// Lecture halls, meeting rooms, and classrooms
- /// Point-to-Point Secure Video Conferencing

## 3. PACKAGE CONTENTS

- /// 1 x USB-C over Fiber Transmitter
- /// 1 x HDMI over Fiber Receiver
- /// 2 x 5V/2.6A DC Power Adapter
- /// 2 x SFP+ Multi-mode fiber modules
- /// 1 x Operation Manual

## 4. SYSTEM REQUIREMENTS

- /// USB-C source equipment such as a laptop, PC, set-top box, or media player
- /// Compatible fiber-based receiver is required
- /// IEEE 802.3ae compatible SFP+ fiber module supporting a dual-optical fiber connection style, such as LC, or a pre-terminated crossover dual-optical fiber cable

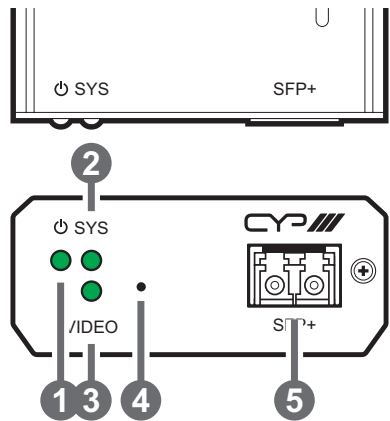
*Note: Single-mode and multi-mode support is dependent on the SFP+ modules used.*

## 5. FEATURES

- /// HDMI 2.0 (via USB-C) compatible
- /// HDCP 2.2 and HDCP 1.x compliant
- /// Transmitter: 1x USB-C input, 1x fiber (SFP+) output
- /// Receiver: 1x fiber (SFP+) input, 1x HDMI output
- /// Ultra-light compression, lossless for most content
- /// Extension up to 30km (maximum distance depends on the SFP+ module and type of fiber used)
- /// Supports up to 4K UHD<sup>+</sup> (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

# 6. OPERATION CONTROLS AND FUNCTIONS

## 6.1 Transmitter Front Panel

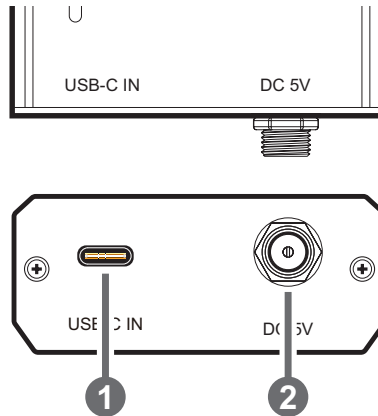


- 1 Power LED:** This LED will illuminate to indicate the unit is on and receiving power.  
*Note: This LED will blink during the firmware update process.*
- 2 SYS LED:** This LED will illuminate to indicate that the system is stable and ready to process audio/video streams.  
*Note: This LED will blink 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 SFP+ Port:** Insert a standard SFP+ module, and connect the appropriate optical cable to allow data transmission to a compatible receiver.

*Note: The SFP+ module must support a dual-optical fiber connection style, such as LC, or be pre-terminated dual-optical fiber cables. Single-mode and multi-mode support is dependent on the SFP+ modules used.*



## 6.2 Transmitter Rear Panel

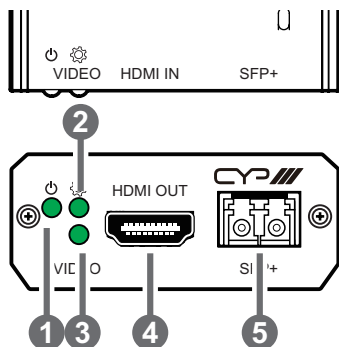


- 1 **USB-C IN Port:** Connect to USB-C source equipment such as a laptop, PC, set-top box, or media player.

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

- 2 **DC 5V Port:** Plug the 5V DC power adapter into this port and connect it to an AC wall outlet for power. (Optional, if powered via USB-C)

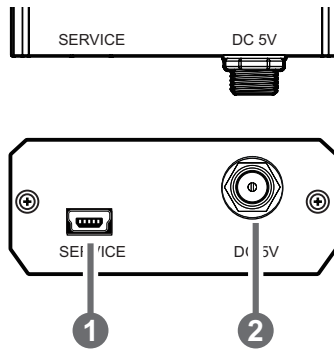
## 6.3 Receiver Front Panel



- 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 **SFP+ Port:** Insert a standard SFP+ module, and connect the appropriate optical cable to allow data reception from a compatible transmitter.

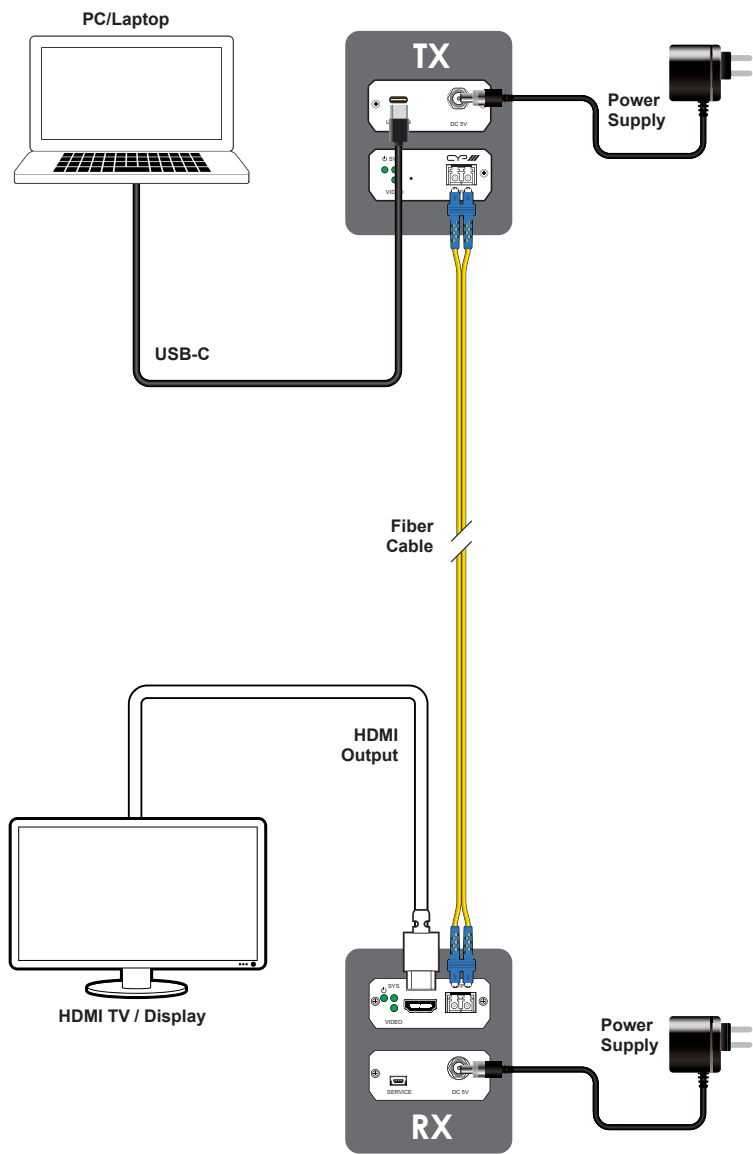
*Note: The SFP+ module must support a dual-optical fiber connection style, such as LC, or be pre-terminated dual-optical fiber cables. Single-mode and multi-mode support is dependent on the SFP+ modules used.*

## 6.4 Receiver Rear Panel



- ❶ **SERVICE (USB Mini-B) Port:** This port is for firmware update only.
- ❷ **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

<b>USB-C Bandwidth</b>	21.6Gbps
<b>Fiber Bandwidth</b>	10Gbps
<b>Input Port</b>	[TX] 1×USB (Type-C) [RX] 1×10GbE (SFP+)
<b>Output Port</b>	[TX] 1×10GbE (SFP+) [RX] 1×HDMI (Type-A)
<b>SFP+ Module</b>	[TX] 1×Single/Multi-mode (LC) [RX] 1×Single/Multi-mode (LC)
<b>Power Supply</b>	[TX] 5V/2.6A DC [RX] 5V/2.6A DC (US/EU standards, CE/FCC/UL certified)
<b>ESD Protection (HBM)</b>	±8kV (Air Discharge) ±4kV (Contact Discharge)
<b>Dimensions (W×H×D)</b>	[TX/RX] 60mm×24.75mm×95mm [Case Only] [TX/RX] 60mm×26mm×103mm [All Inclusive]
<b>Weight</b>	{TX/RX} 170g
<b>Chassis Material</b>	Metal (Steel)
<b>Chassis Colour</b>	Black
<b>Operating Temperature</b>	0°C – 50°C/32°F – 122°F
<b>Storage Temperature</b>	-20°C – 60°C/-4°F – 140°F
<b>Relative Humidity</b>	20 – 90% RH (Non-condensing)
<b>Power Consumption</b>	7W

## 8.2 Video Specifications

Supported Resolutions (Hz)	Input	Output
	USB-C	10GbE
<b>720×400p@70/85</b>	✓	✓
<b>640×480p@60/72/75/85</b>	✓	✓
<b>720×480i@60</b>	✓	✓
<b>720×480p@60</b>	✓	✓
<b>720×576i@50</b>	✓	✓
<b>720×576p@50</b>	✓	✓
<b>800×600p@56/60/72/75/85</b>	✓	✓
<b>848×480p@60</b>	✓	✓
<b>1024×768p@60/70/75/85</b>	✓	✓
<b>1152×864p@75</b>	✓	✓
<b>1280×720p@50/60</b>	✓	✓
<b>1280×768p@60/75/85</b>	✓	✓
<b>1280×800p@60/75/85</b>	✓	✓
<b>1280×960p@60/85</b>	✓	✓
<b>1280×1024p@60/75/85</b>	✓	✓
<b>1360×768p@60</b>	✓	✓
<b>1366×768p@60</b>	✓	✓
<b>1400×1050p@60</b>	✓	✓
<b>1440×900p@60/75</b>	✓	✓
<b>1600×900p@60RB</b>	✓	✓
<b>1600×1200p@60</b>	✓	✓
<b>1680×1050p@60</b>	✓	✓
<b>1920×1080i@50/60</b>	✓	✓

Supported Resolutions (Hz)	Input	Output
	USB-C	10GbE
<b>1920×1080p@24/25/30</b>	✓	✓
<b>1920×1080p@50/60</b>	✓	✓
<b>1920×1200p@60RB</b>	✓	✓
<b>2560×1440p@60RB</b>	✓	✓
<b>2560×1600p@60RB</b>	✓	✓
<b>2048×1080p@24/25/30</b>	✓	✓
<b>2048×1080p@50/60</b>	✓	✓
<b>3840×2160p@24/25/30</b>	✓	✓
<b>3840×2160p@50/60 (4:2:0)</b>	✓	✓
<b>3840×2160p@24, HDR10</b>	✓	✓
<b>3840×2160p@50/60 (4:2:0), HDR10</b>	✓	✓
<b>3840×2160p@50/60</b>	✓	✓
<b>4096×2160p@24/25/30</b>	✓	✓
<b>4096×2160p@50/60 (4:2:0)</b>	✓	✓
<b>4096×2160p@24, HDR10</b>	✓	✓
<b>4096×2160p@50/60 (4:2:0), HDR10</b>	✓	✓
<b>4096×2160p@50/60</b>	✓	✓

### 8.3 Audio Specifications

#### 8.3.1 Digital Audio

USB-C Input / 10GbE Output	
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 <sup>+</sup>	8K UHD
USB-C Cable					
USB-C Input		2m		1m	×
Fiber Cable					
Multi-mode Fiber (OM3)		300m			×
Multi-mode Fiber (OM4)		550m			×
Single-mode Fiber		30km			×

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

- **4K UHD<sup>+</sup> 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 colour)
- HDMI transmission rates between 18Gbps and 48Gbps
- 24G-SDI (SMPTE ST 2083, 24Gbps)

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>10GbE</b>	10 Gigabit Ethernet
<b>4K UHD</b>	4K Ultra-High-Definition (10.2Gbps max)
<b>4K UHD<sup>+</sup></b>	4K Ultra-High-Definition (18Gbps max)
<b>8K UHD</b>	8K Ultra-High-Definition (48Gbps max, without DSC)
<b>8K UHD<sup>+</sup></b>	8K Ultra-High-Definition (48Gbps max, with DSC)
<b>AVoIP</b>	Audio/Video over IP
<b>Cat.5e</b>	Enhanced Category 5 cable
<b>Cat.6</b>	Category 6 cable
<b>Cat.6A</b>	Augmented Category 6 cable
<b>Cat.7</b>	Category 7 cable
<b>GbE</b>	Gigabit Ethernet
<b>Gbps</b>	Gigabits per second
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High-Definition Multimedia Interface
<b>HDR</b>	High Dynamic Range
<b>IP</b>	Internet Protocol
<b>LED</b>	Light-Emitting Diode
<b>LPCM</b>	Linear Pulse-Code Modulation
<b>MHz</b>	Megahertz
<b>PoE</b>	Power over Ethernet
<b>PSE</b>	Power Sourcing Equipment
<b>SDI</b>	Serial Digital Interface
<b>SFP</b>	Small Form-factor Pluggable transceiver
<b>TCP</b>	Transmission Control Protocol

ACRONYM	COMPLETE TERM
<b>USB</b>	Universal Serial Bus
<b>VoIP</b>	Video over IP



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