



# CH-507TX & RX

## HDMI over CAT5e/6/7 Transmitter and Receiver



Operation Manual



**HDMI**<sup>®</sup>  
HIGH-DEFINITION MULTIMEDIA INTERFACE

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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
VS1	2012/02/29	First Release
VR2	2012/03/02	Added PoE support (Brand only)
VS3	2012/03/23	Amended PoE function and updated the connection diagram and the specifications table
VR4	2012/04/16	Added IR distance
VS5	2014/06/13	Updated texts/diagrams
VS6	2015/06/17	Amended the LAN connector of the front and rear panels
VS7	2016/04/26	Supplied IR blaster and extender to receiver's package
VS8	2019/07/25	Update Format and Cable Distance
VS9	2020/10/06	Updated manual layout and branding

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## 1. INTRODUCTION

The HDMI over CAT5e/6/7 Transmitter and Receiver set can send uncompressed video/audio and IP data over a single run of CAT5e/6/7 cable up to 100m at 1080p and 70m at 4K. It has the added benefit of control through the built-in RS-232 pass-through and 2-way IR control and a LAN serving connection. Additionally, it has Power over Cable (PoC) functionality that allows for greater flexibility in installations.

## 2. APPLICATIONS

- Household entertainment sharing and control
- Lecture room display and control
- Showroom display and control
- Meeting room presentation and control
- Classroom display and control

## 3. PACKAGE CONTENTS

- 1×HDMI over CAT5e/6/7 Transmitter
- 1×HDMI over CAT5e/6/7 Receiver
- 1×IR Blaster (Accessory for Receiver)
- 1×IR Extender (Accessory for Receiver)
- 1×24 V/1.25A DC Power Adaptor
- 1×Operation Manual

## 4. SYSTEM REQUIREMENTS

- HDMI source device such as a DVD/Blu-ray player and an HDMI equipped display (TV or monitor).

## 5. FEATURES

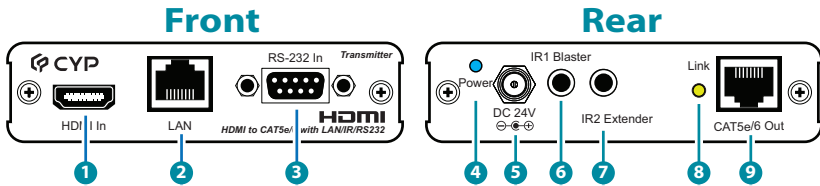
- HDMI 1.x and DVI 1.0 compliant
- HDCP compliant
- Supports HDMI 3D and 4K x 2K features
- Supports HDCP repeater and CEC bypass
- Supports distance up to 100m/328ft at 1080p and 70m/229ft at 4K through CAT5e/6/7 cable
- HDMI input resolutions up to 4K@60Hz (YUV 4:2:0, 8-bit) or 4K@30Hz (YUV 4:4:4, 8-bit)
- Supports pass-through of audio formats including LPCM 2.0/5.1/7.1, and Bitstream over HDMI
- HDBaseT™ convergence: uncompressed high-definition Video and Audio, LAN serving, Power over Cable (PoC) and IR/RS-232 Control pass-through
- Installation friendly

### Notes:

- 1. This system was tested with CAT6/23AWG cables, results may vary with cables of a different specification.*
- 2. The PoC function is designed for powering compatible receiver units only—non-PoC receivers will need their own power supply. Receivers of another brand may not be compatible.*
- 3. For playback of 4K2K HDMI source signals, a 4K2K capable display and High Speed HDMI cables are required.*

## 6. OPERATION CONTROLS AND FUNCTIONS

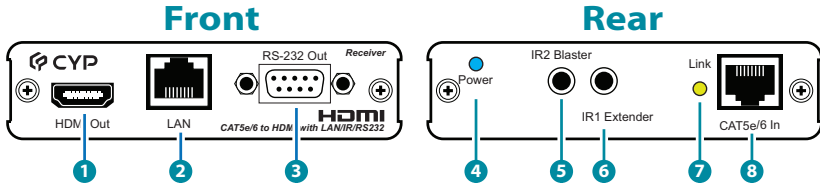
### 6.1 Transmitter Front and Rear Panels



- 1 HDMI In:** Connect to HDMI source equipment such as a DVD or Blu-ray player.
- 2 LAN:** Connect to an internet or network connection.
- 3 RS-232 In:** Connect to a PC or laptop with D-sub 9-pin male cable for the transmission of RS-232 commands.
- 4 Power LED:** This blue LED will illuminate when the transmitter is connected to a power supply.
- 5 DC 24V:** Plug the 24V DC power supply into the unit and connect the adaptor to an AC outlet.  
*Note: Only the Transmitter unit needs to be powered and can power the Receiver unit via PoC.*
- 6 IR1 Blaster:** Connect to the IR Blaster cable for IR signal transmission. Place the IR blaster in direct line-of-sight of the equipment to be controlled.
- 7 IR2 Extender:** Connect to the IR Extender cable for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR extender.
- 8 Link LED:** The yellow LED will illuminate when both the input and output signals are connected.
- 9 CAT5e/6 Out:** Connect to the receiver unit with a single CAT5e/6/7 cable for transmission of all data signals.



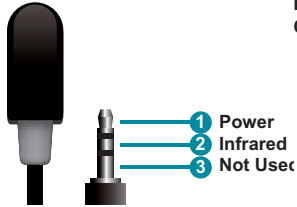
## 6.2 Receiver Front and Rear Panels



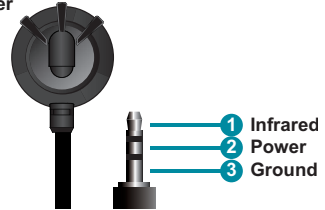
- 1 **HDMI Out:** Connect to a HDMI equipped TV/monitor for display of the HDMI input source signal.
- 2 **LAN:** Connect to a PC or Laptop to the Internet or network connection.
- 3 **RS-232 Out:** Connect to the device that is to be controlled (via D-sub 9-pin female cable) by RS-232 commands.
- 4 **Power LED:** This blue LED will illuminate when the receiver is receiving a power supply via PoC from a compatible transmitter unit.
- 5 **IR2 Blaster:** Connect to the IR Blaster cable for IR signal transmission. Place the IR blaster in direct line-of-sight of the equipment to be controlled.
- 6 **IR1 Extender:** Connect to the IR Extender cable for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR extender.
- 7 **Link LED:** The yellow LED will illuminate when both the input and output signals are connected.
- 8 **CAT5e/6 In:** Connect to the transmitter unit with an single CAT5e/6/7 cable for transmission of all data signals.

## 6.3 IR Cable Pin Assignment

IR Blaster Cable

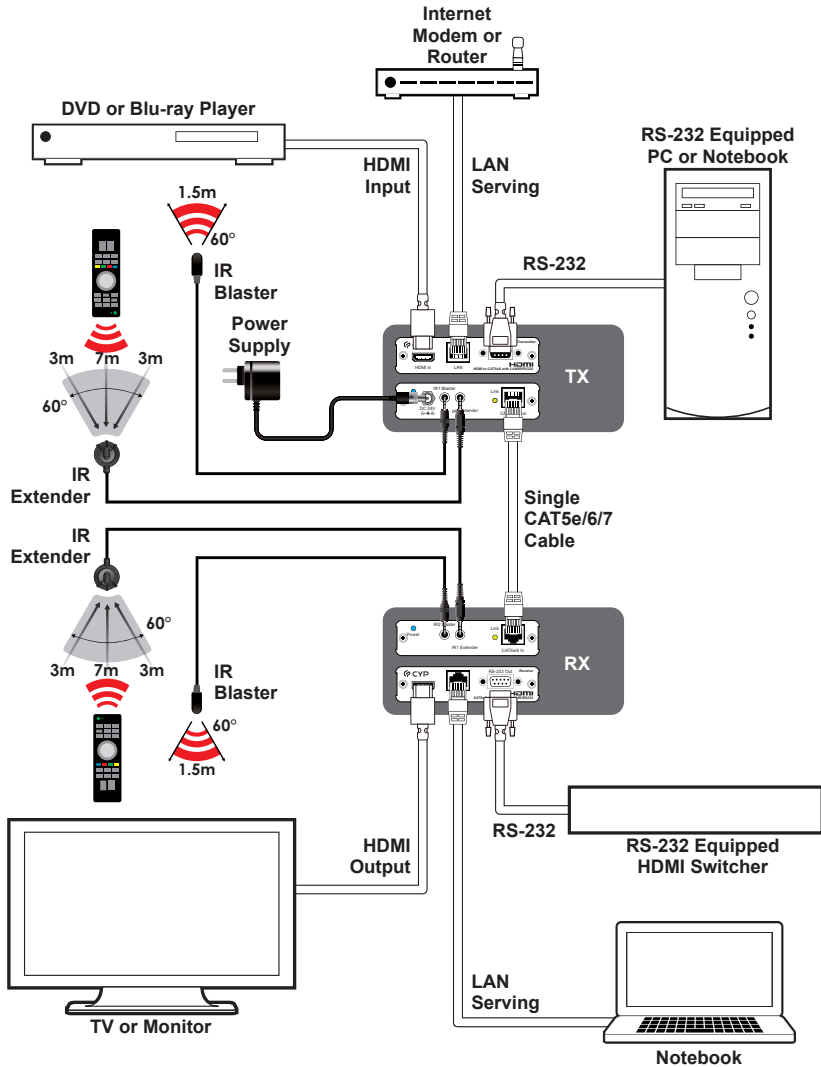


IR Extender Cable



PIN	ASSIGNMENT (TX/RX)
1	N/C
2	TxD / RxD
3	RxD / TxD
4	N/C
5	GND
6	N/C
7	N/C
8	N/C
9	N/C

## 7. CONNECTION DIAGRAM



*Note: Only the Transmitter unit needs to be powered and can power the Receiver unit via PoC.*

## 8. SPECIFICATIONS

<b>HDMI Bandwidth</b>	10.2Gbps
<b>HDBaseT Bandwidth</b>	10.2Gbps
<b>Transmitter</b>	
<b>Input Ports</b>	1×HDMI, 1×LAN, 1×IR Extender, 1×RS-232
<b>Output Ports</b>	1×CAT5e/6/7, 1×IR Blaster
<b>Receiver</b>	
<b>Input Ports</b>	1×CAT5e/6/7, 1×IR Extender
<b>Output Ports</b>	1×HDMI, 1×LAN, 1×RS-232, 1×IR Blaster
<b>IR Frequency</b>	30 - 50kHz (30 - 60kHz under ideal conditions)
<b>Baud Rate</b>	up to 115200
<b>Power Supply</b>	24 V/1.25A DC (US/EU Standards, CE/FCC/ UL certified)
<b>ESD Protection (HBM)</b>	±8 kV (air-gap discharge) ±4 kV (contact discharge)
<b>Dimensions (W×H×D)</b>	102 mm×25 mm×113 mm (Tx) 102 mm×25 mm×107 mm (Rx)
<b>Weight</b>	252g (Tx) 256g (Rx)
<b>Chassis Material</b>	Metal (Aluminum)
<b>Chassis Color</b>	Silver
<b>Operating Temperature</b>	0°C – 40°C/32°F – 104°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>	13W

## 8.1 Cable Specifications

Cable Length	1080p		4K30	4K60
	8-bit	12-bit	(4:4:4) 8-bit	(4:2:0) 8-bit
<b>High Speed HDMI Cable</b>				
<b>HDMI Input</b>	15m	10m	5m	×
<b>HDMI Output</b>	15m	10m	5m	×
<b>Ethernet Cable</b>				
<b>Cat.5e/6/7</b>	100m		70m	×

### Bandwidth Category Examples:

- **1080p (FHD Video)**

- Up to 1080p@60Hz, 12-bit color
- Data rates lower than 5.3Gbps or below 225MHz TMDS clock

- **4K30 (4K UHD Video)**

- 4K@24/25/30Hz & 4K@50/60Hz (4:2:0), 8-bit color
- Data rates higher than 5.3Gbps or above 225MHz TMDS clock but below 10.2Gbps

- **4K60 (4K UHD<sup>+</sup> Video)**

- 4K@50/60Hz (4:4:4, 8-bit)
- 4K@50/60Hz (4:2:0, 10-bit HDR)
- Data rates higher than 10.2Gbps

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>CAT5e</b>	Category 5 Cable
<b>CAT6</b>	Category 6 Cable
<b>CAT7</b>	Category 7 Cable
<b>CEC</b>	Consumer Electronics Control
<b>DVI</b>	Digital Visual Interface
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High Definition Multimedia Interface
<b>IR</b>	Infrared
<b>PoC</b>	Power over Cable





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