User Manual

HDBaseT 3.0 Extender (100m)

With eARC/ARC Function

Manual No: V1.0

Dear user:

Thank you for using the product of our company. In order to better experience the visual effect brought by this product, we have prepared a detailed user manual. Please read the user manual carefully before you start to use this product, from which you can get the knowledge about product introduction, usage and other aspects, so that you can use this machine correctly. If you don't understand anything, please feel free to contact us!

Tips: This manual is for reference only. If it is updated, no further notice will be given!

This user manual mainly introduces the use method, main performance parameters, equipment connection, important safety instructions and other information of the extender.

This manual is only used as the user's operation instruction, not for maintenance service. If there are any changes in the functions or related parameters from the date of issuance, they will be supplemented by additional information, which can be obtained from us or our distributors.

Contents

1. Product Preview

2. Package Contents

① 1 x HDBaseT 3.0 Extender (Transmitter)

② 1 x HDBaseT 3.0 Extender (Receiver)

③ 1 x IR receiver cable (1.5 meters)

④ 1 x IR transmitter cable (1.5 meters)

⑤ 4 x Hanging ear

⑥ 2 x 3pin-3.81mm phoenix terminal

⑦ 8 x Machine Screws (KM3*4)

⑧ 1x 24V/1A Locking Power adapter

⑨ 1x User Manual

AXTRON

*Stability & Reliability
are our core values*

3. Introduction

This HDBaseT 3.0 extender extends HD/UHD audio/video signals, eARC/ARC, RS-232, bidirectional infrared control signals, 1GbE Ethernet and USB2.0 signals up to 100 meters via CAT6a/7 network cables, enabling zero-latency and uncompressed long-distance transmission between signal sources and display devices. The highest resolution is 4K @ 60Hz 4:4:4. The Transmitter supports audio embedding and stripping, and the receiver supports audio stripping. This product supports the eARC/ARC function (the audio from HDMI output of Receiver return to HDMI IN port, HDMI OUT port (Audio only), SPDIF OUT port of Transmitter). Also supports USB2.0 transmission (Host/Device configurable) and bidirectional POC functions.

This product provides the most convenient solution for HDMI extension application through the CAT cable, and can be widely used in video conference system, multimedia signal broadcasting, HDMI signal extension and other fields.
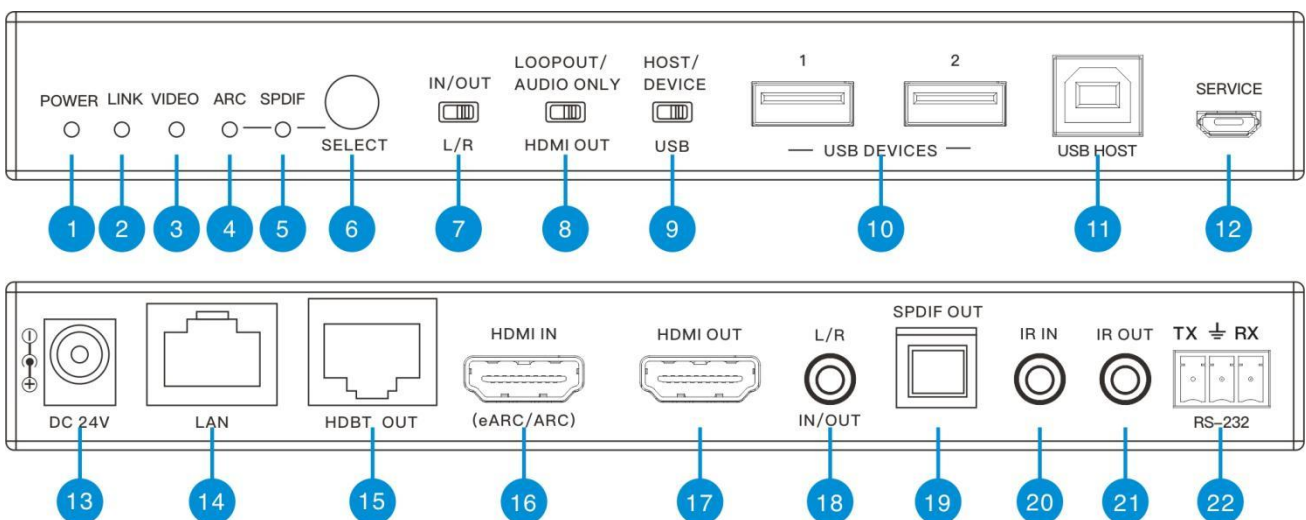
4. Features

✧ HDMI2.0b, HDCP 2.2 and HDBaseT 3.0 compliant

✧ Support 18Gbps video bandwidth

✧ Support video resolution up to 4K2K@60Hz (YUV 4:4:4)

✧ Support HDR, HDR10, HDR10+, Dolby vision and HLG pass-through

✧ Supports HDMI audio format: LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD

✧ The transmission distance without compression and delay is up to 100 meters through a single CAT6A/7 network cable.

✧ Support eARC/ARC audio return to the HDMI IN port, HDMI OUT port (Audio only) and SPDIF OUT port of Transmitter

✧ Support reverse transmission of one-way SPDIF audio

✧ Support bidirectional infrared control signal, RS-232 control signal and 1G network signal pass-through transmission

✧ Support USB2.0 transmission (Host/Device configurable)

✧ Support bidirectional 24V POC functions, that is, only one end of the Transmitter or Receiver needs to be connected to a 24 V/1A power supply.

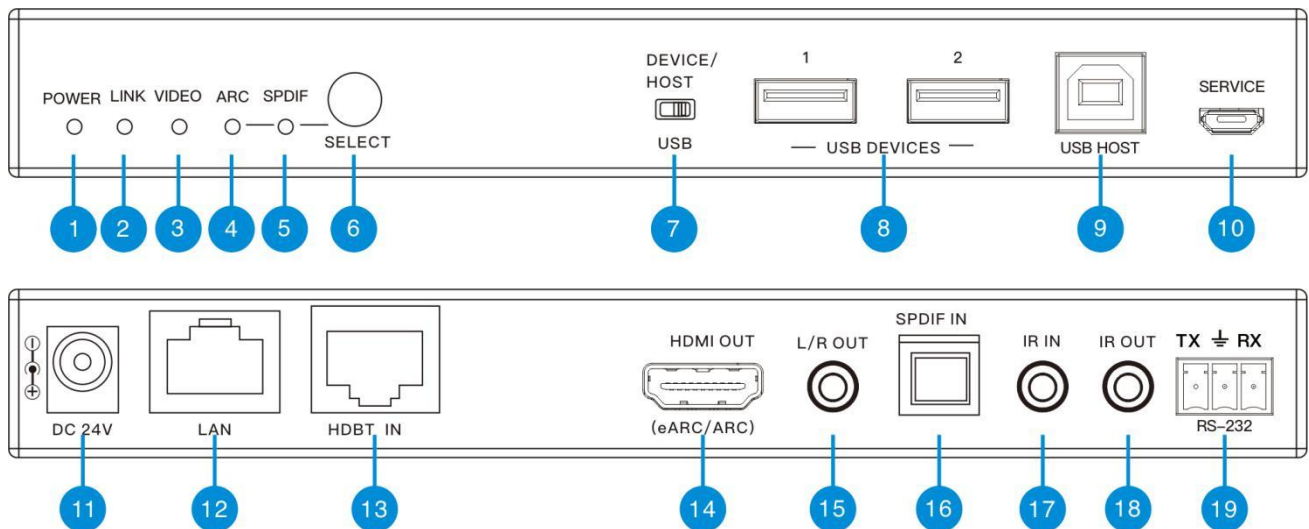✧ Reasonable design and easy installation

5. Functional Description

5.1 Transmitter Panel

No.	Name	Function Description
1	Power LED	The red power LED is on when the Transmitter is powered on.
2	LINK LED	Light On: The Transmitter and Receiver are connected normally. Light Flash: The transmitter and receiver are in low power mode. Light Off: The transmitter and Receiver are not connected.
3	VIDEO LED	Light On: Video is encrypted. Light Flash: Video is not encrypted. Light Off: No HDMI signal input.
4	ARC LED	Light On: The Transmitter switches to ARC mode. Light Off: The Transmitter switches to SPDIF mode.
5	SPDIF LED	Light On: The Transmitter switches to SPDIF mode. Light Off: The Transmitter switches to ARC mode.
6	SELECT Key	To switch between ARC mode and SPDIF mode.
7	IN/OUT L/R Switch	Turn the switch to the left, L/R IN/OUT port is the audio embedded port. Turn the switch to the right, L/R IN/OUT port is the audio stripping port.
8	LOOPOUT/ AUDIO ONLY Switch	Turn the switch to the left (LOOPOUT), the HDMI OUT port is the loop out port for the HDMI IN interface. Turn the switch to the right (AUDIO ONLY), The HDMI OUT port outputs 720p black screen with audio from ARC/SPDIF.
9	HOST/DEVICE USB Switch	Turn the switch to the left(HOST), Transmitter enables USB HOST mode. Turn the switch to the right(DEVICE), Transmitter enables USB DEVICE mode.
10	USB DEVICES	Two USB device ports for U disk, mouse and keyboard.
11	USB HOST	USB expands the host port and connects to the computer.
12	SERVICE	Firmware Upgrade Port.
13	DC 24V	DC 24V/1A power supply port *Note: the Extender supports POC function, If one of the transmitter or receiver is already connected to 24 V/1A power supply, the other does not need to be connected to power supply.*
14	LAN	1G Network Port.
15	HDBT OUT	10G network port. Connect the HDBT IN port of the Receiver via the CAT6A/7 network cable. Used for pass-through of various signals.
16	HDMI IN	HDMI signal input port. Connect the HDMI source device via the HDMI cable. Supports eARC/ARC amplifiers.

17	HDMI OUT	HDMI signal loop port. Switch it to HDMI loop port or audio output port through LOOP OUT/AUDIO ONLY switch.
18	L/R IN/OUT	Audio embedded/stripping port. Audio embedding or stripping can be selected via the L/R IN/OUT switch.
19	SPDIF OUT	Fiber optic audio signal output port.
20	IR IN	Connect the IR receiving cable to receive the IR remote control signal. The IR signal is sent to the IR OUT port of the Receiver.
21	IR OUT	Connect the IR emission cable to transmit the IR remote control signal. The IR signal comes from the IR IN port of the Receiver.
22	RS-232	RS-232 serial port for serial command transmission.

5.2 Receiver Panel

| No.	Name	Function Description
1	Power LED	The red power LED is on when the Transmitter is powered on.
2	LINK LED	Light On: The Transmitter and Receiver are connected normally. Light Flash: The transmitter and receiver are in low power mode. Light Off: The transmitter and Receiver are not connected.
3	VIDEO LED	Light On: Video is encrypted. Light Flash: Video is not encrypted. Light Off: No HDMI signal input.
4	ARC LED	Light On: The Receiver switches to ARC mode. Light Off: The Receiver switches to SPDIF mode.

| 5	SPDIF LED	Light On: The Receiver switches to SPDIF mode. Light Off: The Receiver switches to ARC mode.
6	SELECT Key	To switch between ARC mode and SPDIF mode.
7	DEVICE/HOST USB Switch	Turn the switch to the right (HOST), Receiver enables USB HOST mode. Turn the switch to the left (DEVICE), Receiver enables USB DEVICE mode.
8	USB DEVICES	Two USB device ports for U disk, mouse and keyboard.
9	USB HOST	USB expands the host port and connects to the computer.
10	SERVICE	Firmware Upgrade Port.
11	DC 24V	DC 24V/1A power supply port *Note: the Extender supports POC function, If one of the transmitter or receiver is already connected to 24 V/1A power supply, the other does not need to be connected to power supply.*
12	LAN	1G Network Port.
13	HDBT IN	10G network port. Connect the HDBT OUT port of the Transmitter via the CAT6A/7 network cable. Used for pass-through of various signals.
14	HDMI OUT	HDMI signal output port. Connect the HDMI source device via the HDMI cable. Supports eARC/ARC TV.
15	L/R OUT	Audio stripping output port.
16	SPDIF IN	Fiber optic audio signal input port.
17	IR IN	Connect the IR receiving cable to receive the IR remote control signal. The IR signal is sent to the IR OUT port of the Transmitter.
18	IR OUT	Connect the IR emission cable to transmit the IR remote control signal. The IR signal comes from the IR IN port of the Transmitter.
19	RS-232	RS-232 serial port for serial command transmission.

5.3 Input & Output Switch

Switch the ARC/SPDIF mode via the "SELECT" key on the Transmitter and Receiver panels. At the same time, The HDMI OUT port of Transmitter can be switched to loop output or audio output through the LOOP OUT/AUDIO ONLY switch. In different scenarios, the input and output paths are different, as shown in the following diagram:
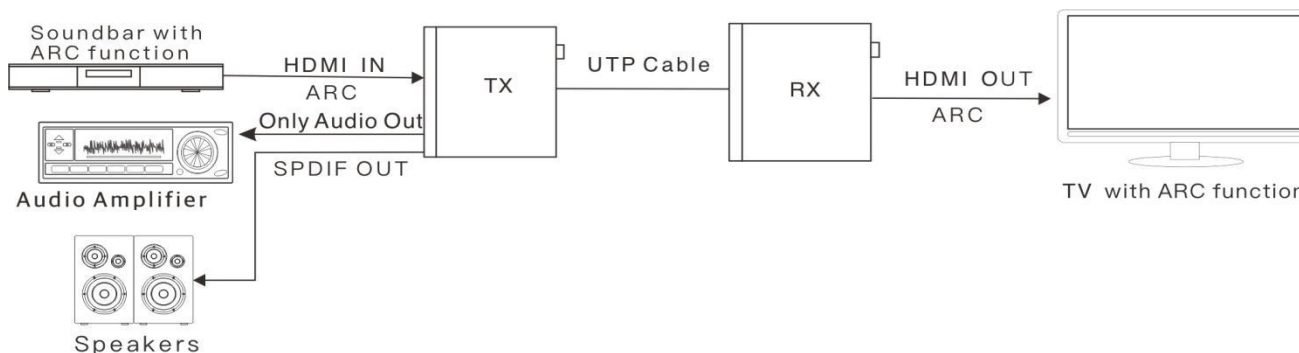
Scenario 1. Set both the Transmitter and Receiver to SPDIF mode. Then turn the LOOP OUT/AUDIO ONLY switch on the Transmitter panel to the right, and switch the HDMI OUT port to the audio output port.
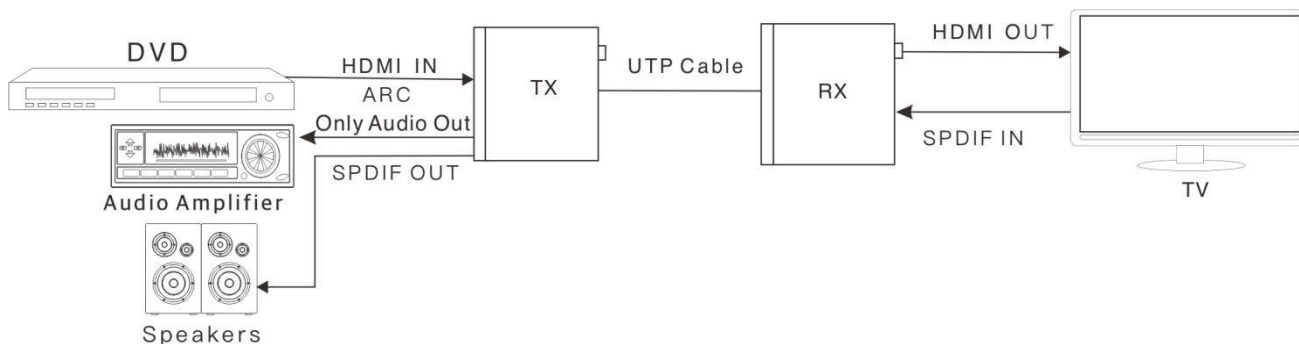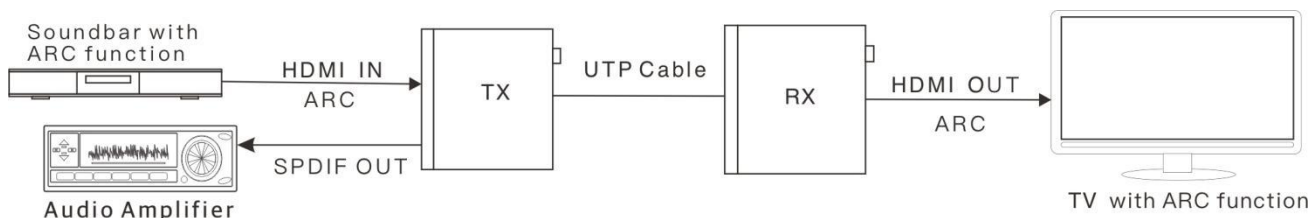

Scenario 2. Set both the Transmitter and Receiver to SPDIF mode. Then turn the LOOP OUT/AUDIO ONLY switch on the Transmitter panel to the left, and switch the HDMI OUT port to the HDMI signal loop output port.
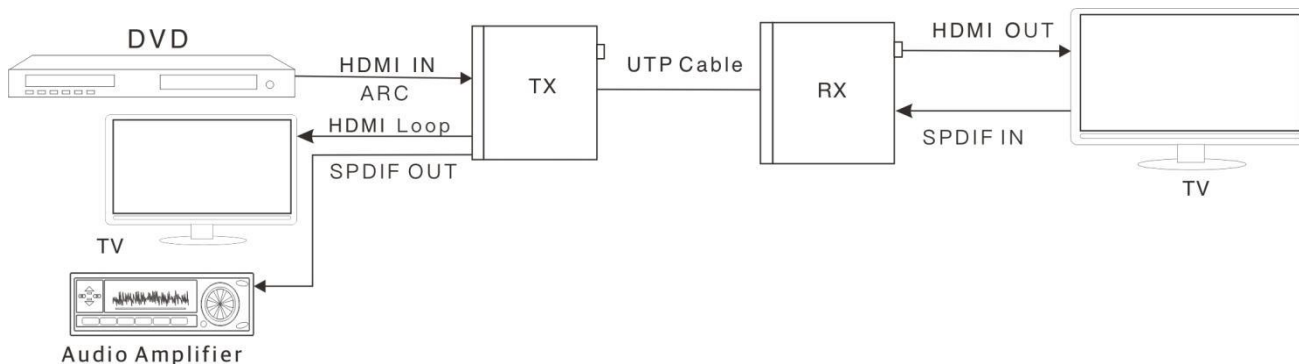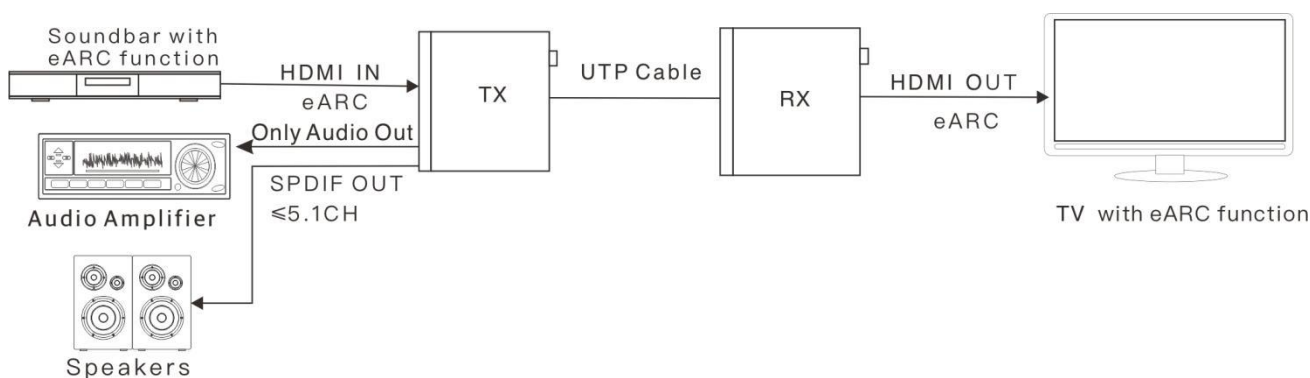

Scenario 3. Set both the Transmitter and Receiver to ARC mode. Then turn the LOOP OUT/AUDIO ONLY switch on the Transmitter panel to the right, and switch the HDMI OUT port to the audio output port.

Scenario 4. Set both the Transmitter and Receiver to ARC mode. Then turn the LOOP

OUT/AUDIO ONLY switch on the Transmitter panel to the left, and switch the HDMI

OUT port to the HDMI signal loop output port.

Scenario 5. Set both the Transmitter and Receiver to eARC mode. Then turn the LOOP

OUT/AUDIO ONLY switch on the Transmitter panel to the right, and switch the HDMI

OUT port to the audio output port.

Scenario 6. Set both the Transmitter and Receiver to eARC mode. Then turn the LOOP

OUT/AUDIO ONLY switch on the Transmitter panel to the left, and switch the HDMI

OUT port to the HDMI signal loop output port.
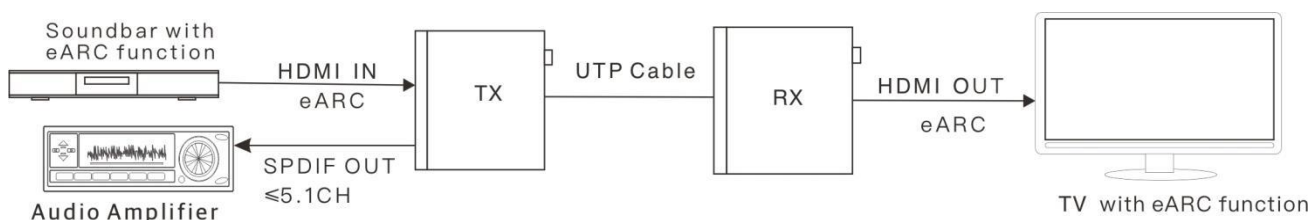
Note：In eARC mode, the SPDIF OUT port can only output audio up to 5.1CH.

5.4 Audio Embedded & Stripping

The transmitter supports audio embedding and stripping. The L/R IN/OUT port can be used for audio embedded or stripping.
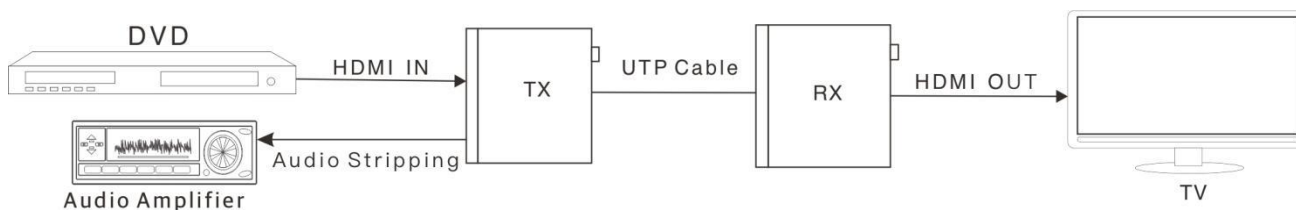
■ **Transmitter Audio Embedded**

When the L/R IN/OUT switch is turned to the left, audio from an external device is embedded in the L/R IN/OUT port.
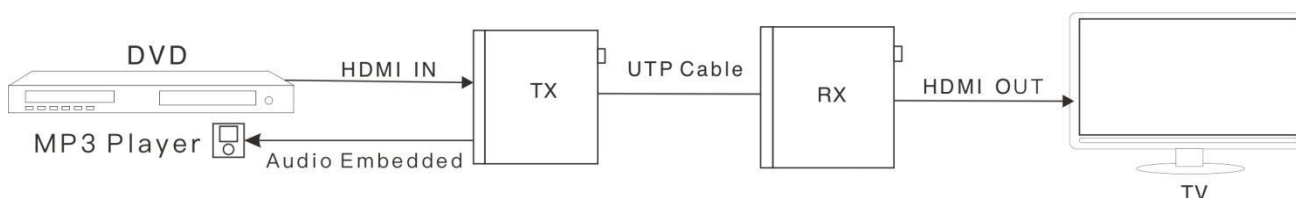
■ **Transmitter Audio Stripping**

When the L/R IN/OUT switch is turned to the right, the L/R IN/OUT port outputs from the stripped audio of HDMI IN port.


5.5 USB Mode Application

The Extender supports USB2.0 signal transmission, the Host/Device is configurable.

Mode 1: The USB signal is sent from the Transmitter to the Receiver.

Turn the HOST/DEVICE USB switch to the left, and then turn off and restart the Transmitter to put it into the USB Host mode. At the same time, turn the DEVICE/HOST USB switch to the left, and then turn off and restart the Receiver to put it into the USB Device mode.
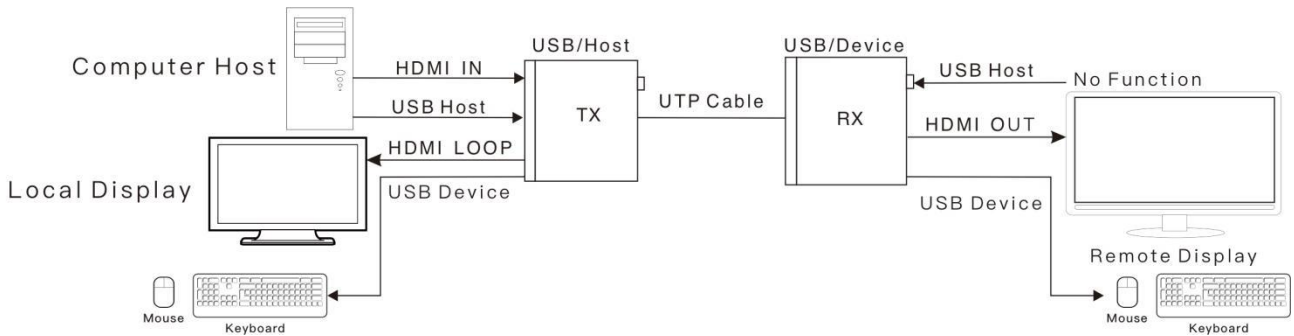
Mode 2: The USB signal returns from the Transmitter to the Receiver.

Turn the HOST/DEVICE USB switch to the right, and then turn off and restart the Transmitter to put it into the USB Device mode. At the same time, turn the DEVICE/HOST USB switch to the right, and then turn off and restart the receiver to put it into the USB Host mode.
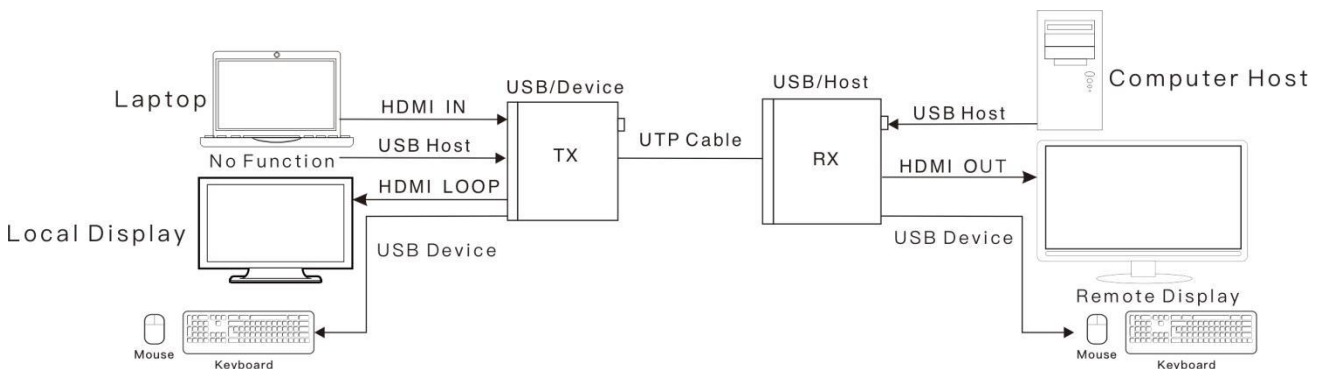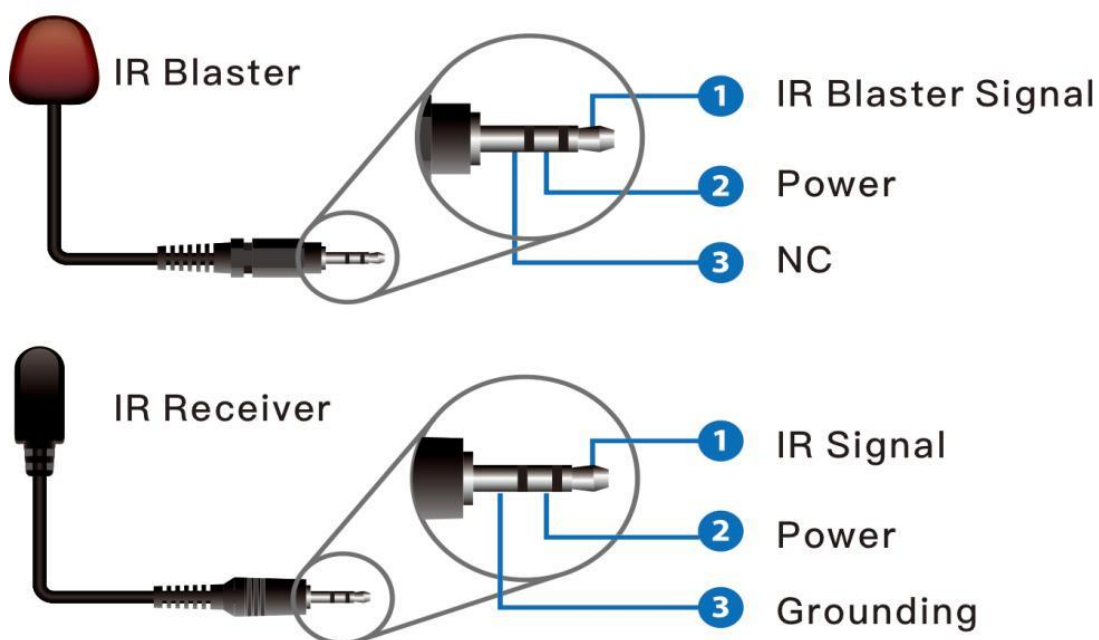
5.6 IR line introduction

The IR receive and transmit heads are as follow:

IR RECEIVER   IR BLASTER

Note:

When the angle between the lR receiver and the remote control is ±45°, the

transmission distance is 0-5 meters;

When the angle between the lR receiver and the remote control is   ±90°, the
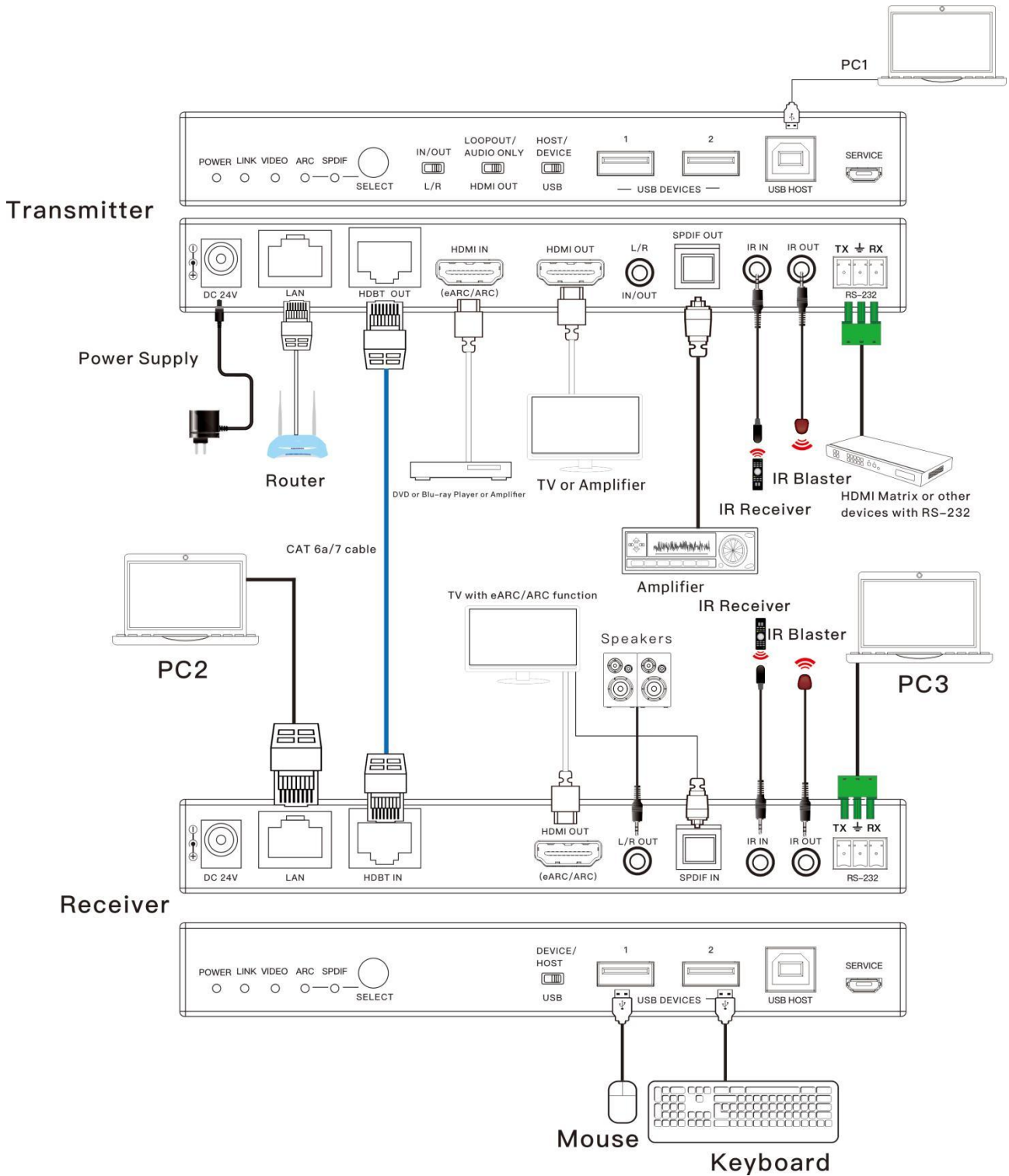
transmission distance is 0-8 meters.

6. Technical Parameters

Parameter Specifications	
HDMI Compliance	HDMI2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Resolution	Up to 4K@60Hz 4:4:4
HDBaseT Bandwidth	The main link rate is 16Gbps, and the return link rate is 2Gbps
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12-bit
HDMI Audio Format	LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
L/R Audio Format	PCM2.0
SPDIF Audio Format	LPCM2.0, AC3 5.1, DTS 5.1
IR Level	12Vp-p
IR Frequency	20K-60KHz
USB Bandwidth	Up to 350Mbps
Ethernet	1000Mbps
RS-232	Up to 921600bps
Transmission Distance	100m (via single CAT6A/7 network cable)
ESD Protection	Human body model: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
Connection	
Transmitter	**Input Port**: 1 x HDMI IN [Type A, 19-pin female] **Output Port**: 1 x HDMI OUT [Type A, 19-pin female] 1 x HDBT OUT [RJ45, 8-pin female] 1 x SPDIF OUT [S/PDIF] 1 x L/R OUT [3.5mm Stereo Mini-jack] **Control Port:** 1 x IR IN [3.5mm Stereo Mini-jack] 1 x IR OUT [3.5mm Stereo Mini-jack] 1 x RS-232 [phoenix terminal] 1 x SERVICE [Mini-USB, firmware upgrade port] 1 x USB HOST [USB Type B] 2 x USB DEVICES [USB Type A] 1 x LAN [RJ45]

Receiver	**Input Port:** 1 x HDBT IN [RJ45, 8-pin female] 1 x SPDIF IN [S/PDIF] **Output Port:** 1 x HDMI OUT [Type A, 19-pin female] 1 x L/R OUT [3.5mm Stereo Mini-jack] **Control Port:** 1 x IR IN [3.5mm Stereo Mini-jack] 1 x IR OUT [3.5mm Stereo Mini-jack] 1 x RS-232 [3pin-3.81mm phoenix terminal] 1 x SERVICE [Mini-USB, firmware upgrade port] 1 x USB HOST [USB Type B] 2 x USB DEVICES [USB Type A] 1 x LAN [RJ45]		
Mechanical			
Housing	Metal Enclosure		
Color	Black		
Dimensions	Transmitter/ Receiver: 170mm (L)x102mm(W)x22mm(H)		
Weight	Transmitter: 425g, Receiver: 437g		
Power Supply	Input: AC 100-240V 50/60Hz Output: DC 24V/1A (US/EU standard, CE/FCC/UL Certificate)		
Power Consumption	Transmitter/ Receiver: 15.36W (POC)		
Operating Temperature	0℃-40℃ / 32℉-104℉		
Storage Temperature	-20℃ -60℃ / -4℉ -140℉		
Relative Humidity	20-90% RH (non-condensing)		
Resolution/ Cable Length	4K60 - Meter	4K30 - Meter	1080P 60 - Meter
HDMI IN/OUT	5 meter	10 meter	15 meter
Advanced high speed HDMI cable is recommended			

7. Application Examples

✧ Safety Instructions

Symbols used in the user manual and on the device to indicate the risk of injury to the user or others and damage to property. For your safe and correct use of the device, the symbols and their meanings are as follows. Please make sure to understand these symbols correctly before reading the user manual.

🗑	The product contains some metal components, please pay attention to environmental protection.
⚠	This is a Class A product and may cause radio interference in the living environment. In this case, the user may be required to take practical measures against the interference.
⚡	Warn the user that uninsulated hazardous voltage present in the equipment may cause a person to receive an electric shock.
⚠ CAUTION	Warning: To avoid electric shock, do not open the cover and do not put useless parts inside the case. Please contact qualified service personnel.

✧ General Information Instructions

💡	Lists what may cause an unsuccessful operation or setup, and some related information to be aware of.

⚠ **WARNING**

To ensure reliable use of the equipment and personal safety, please observe the following items during installation, use and maintenance:

Precautions for installation:

◆ Do not use this product in the following places: places with dust, oil smoke, conductive dust, corrosive gas and flammable gas. Places exposed to high temperature, condensation, wind and rain; places with vibration and impact. Electric shock, fire, misoperation can also cause product damage and deterioration.

◆ When processing and wiring screw hole , do not make metal chips and wire ends fall into the ventilation hole of the controller, which may cause fire, failure and misoperation.

◆ After the installation of the product, it is necessary to ensure that there is no foreign matter on the ventilation surface, including dust-proof paper and other packaging items, otherwise it may lead to poor heat dissipation during operation, causing fire, failure and misoperation.

◆ Avoid wiring, plugging and unplugging cable plugs in live state, otherwise it is easy to cause electric shock or circuit damage.

◆ Installation and wiring must be firm and reliable, and poor contact may lead to misoperation.

◆ For applications with serious interference, shielded cables should be selected for

the input or output cables of high frequency signals to improve the anti-interference performance of the system.

Precautions for Wiring:

◆ The installation and wiring can only be carried out after the external power supply is completely cut off, otherwise it may cause electric shock or equipment damage.

◆ This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to the ground. Before connecting the input or output of this product, please be sure to ground the product correctly.

◆ After installation and wiring, remove foreign matters immediately, and cover the terminal cover plate of the product before power on to avoid electric shock.

Precautions for operation and maintenance:

◆ Do not touch the terminal when it is powered on, otherwise it may cause electric shock and misoperation.

◆ Please clean and tighten the terminal after turning off the power supply. These operations may cause electric shock when the power is on.

◆ Please connect or remove the communication signal cable and the cable of the expansion module or control unit after the power is turned off. Otherwise, it may cause equipment damage and misoperation.

◆ Do not disassemble the device to avoid damaging the internal electrical components.

◆ Please be sure to read this manual carefully and fully confirm the safety before

changing, commissioning, starting and stopping the program.

Precautions for product scrapping:

◆ Electrolytic capacitors on circuit boards may explode when burned.

◆ Please collect and dispose of it, and do not put it into domestic garbage.

◆ Please dispose of as industrial waste or in accordance with local environmental

protection regulations.