User Manual

77451-POE

Twisted Pair POE Extender

SAFETY PRECAUTIONS

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.

NOTICE: Please read this user manual carefully before using this product.

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till September 13, 2016. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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1. Introduction

1.1 Introduction

This Extender is an HDMI/IR/RS232 twisted pair extender including one transmitter and one receiver. It is a professional 1x1 extender, with a single CAT5e cable, the input HDMI signal can be long-distance transmitted, and the control signal (IR & RS232) is able to work in a bi-directional way, and PoE are supported by this extender. With its Ethernet ports, this extender also supports internet access to work in a LAN.

1.2 Features

- HDBaseT technology
- High Bandwidth: 10.2Gps
- Support CEC
- Support 3D
- Support PoE, eliminating the complexity of installing local power supplies.
- HDMI/IR/RS232 signal transmitted over single CAT5e/CAT6 twist pair.
- Max transmission distance is up to 100 meters for 1080P signals.
- Max transmission distance is up to 100 meters for 4K×2K signals.
- Support Ethernet expanding.
- HDTV Compatible, use HDMI 1.4a and HDCP compliant.
- Support 1080P, 1080i, 720P, 576P, 576i, 480P, and 480i.
- High quality output video signal with 24bit/36bit deep color.
- Bi-directional RS232 control.
- Bi-directional IR control.
- LED indicators show work status.
- Wall/table-mountable aluminium enclosure with PT case design.

Note: Please use a CAT5e cable with low impedance (Shielded twisted pair will be better and should be well grounded) for good transmission effect.

1.3 Package Contents

- 1 x Transmitter
- 1 x Receiver
- 4 x Mounting ears
- 1 x Power adapter (DC 24V 1.25A)
- 2 x RS232 cable
- 8 x Screws (3*6mm)
- 1 x User manual

Notes: Please confirm if the product and the accessories are all included, if not, please contact with the dealers.

2. Product Appearance

2.1 Transmitter

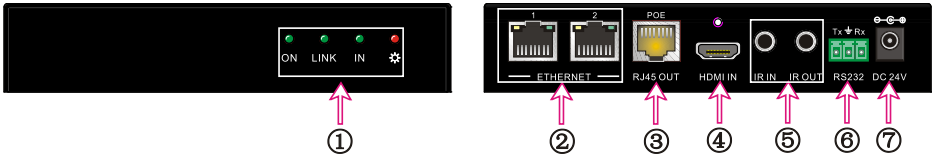

Figure 1 Interfaces

No.	Name	Description
①	On Link In Power	✓ On: Used to show the working status, blinks when in normal working state, turns off when stop working. ✓ Link: Twisted Pair Link status indicator. It will keep on when connection is successful. ✓ In: When connected with device which supports HDCP and works normally, this LED will keep on. If the device does not support HDCP, the LED will blink. ✓ Power: Turns red and keep on when power on.
②	ETHERNET	Ethenet ports, when need to work in a local area network, one of these 4 ports (both the Ethernet ports of Transmitter and Receiver) should be used for internet access, and the others can be connected with computers. If they are well connected, the yellow LED indicators on the corresponding ports will keep blink and the green ones will keep on when working.
③	HDBT OUT	To connect with the HDBT IN port of Receiver by using a single CAT5e cable (100m length in max).
④	HDMI IN	HDMI input port, connect with an HDMI source device.
⑤	IR IN&OUT	✓ IN: Connect with IR Receiver to collect infrared signal from IR Remote, work with far-end IR OUT port. ✓ OUT: Connect with IR Emitter to send infrared signal, work with far-end IR IN port.
⑥	RS232	Serial port, 3p captive screw connector, connect with the control terminal to control the controlled terminal, supports bi-directional RS232 control between the transmitter (Transmitter) and the receiver (Receiver).
⑦	DC 24V	Connect with a DC 24V power adapter. (Not necessary if Receiver connects with power adapter)

2.2 Receiver

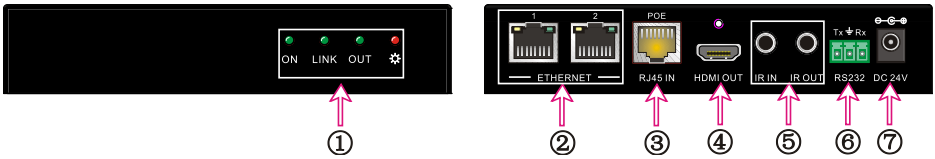

Figure 2 Interfaces

No.	Name	Description
①	On Link Out Power	✓ On: Used to show the working status, blinks when in normal working state, turns off when stop working. ✓ Link: Twisted Pair Link status indicator. It will keep on when connection is successful. ✓ Out: When connected with device which supports HDCP and works normally, this LED will keep on. If the device does not support HDCP, the LED will blink. ✓ Power: Turns red and keep on when power on.
②	ETHERNET	Ethenet ports, when need to work in a local area network, one of these 4 ports (both the Ethernet ports of Transmitter and Receiver) should be used for internet access, and the others can be connected with computers. If they are well connected, the yellow LED indicators on the corresponding ports will keep blink and the green ones will keep on when working.
③	HDBT IN	To connect with the HDBT OUT port of Transmitter by using a single CAT5e cable (100m length in max).
④	HDMI OUT	HDMI output port, connect with an HDMI displaying device.
⑤	IR IN&OUT	✓ IN: Connect with IR Receiver to collect infrared signal from IR Remote, work with far-end IR OUT port. ✓ OUT: Connect with IR Emitter to send infrared signal, work with far-end IR IN port.
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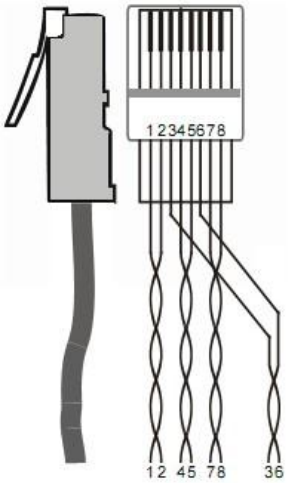
2.3 Twisted Pair Cable Connection

The twisted pair used in Extender MUST be a straight-through cable. The connectors can be T568A or T568B, but both sides must be the same.

TIA/EIA T568A			TIA/EIA T568B	
Pin	Cable color		Pin	Cable color
1	green white		1	orange white
2	green		2	orange
3	orange white		3	green white
4	blue		4	blue
5	blue white		5	blue white
6	orange		6	green
7	brown white		7	brown white
8	brown		8	brown
1st Ground	4--5		1st Ground	4--5
2nd Ground	3--6		2nd Ground	1--2
3rd Group	1--2		3rd Group	3--6
4th Group	7--8		4th Group	7--8



3. System Connection

3.1 Usage Precautions

Please cut off the power of the HDMI source device and the output displaying device before accessing with the Extender, as it may damage to Extender. Ensure that all connections (including the power cord) are done before turning on the power to work with Extender.

3.2 System Diagram

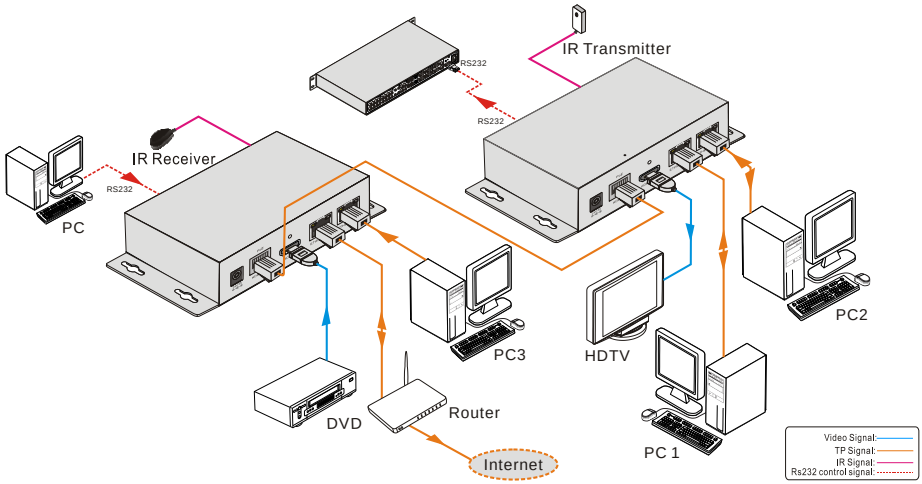


Figure 3 System Diagram

3.3 Connection Procedure

Step1. Connect HDMI source (such as DVD player) to HDMI IN port of the transmitter with HDMI cable.

Step2. Connect HDBT OUT port of Transmitter and HDBT IN port of Receiver, with single CAT5e cable.

Step3. Connect HDMI displayer (such as HDTV) to HDMI OUT port of Receiver with HDMI cable.

Step4. Both Transmitter and Receiver have IR IN and OUT. When one model use for IR signal receiver, the IR signal must be sent out by the other model.

For example: When “IR IN” of Transmitter connects with an IR receiver, the IR Emitter must be connected to “IR OUT” of Receiver.

Step5. To set as a LAN, one of the four ETHERNET ports of Transmitter and Receiver should be used for Internet access, and the others can be connected with computers.

Step6. Connect the RS232 port of the computer and the RS232 port of Transmitter or Receiver (any one is able to work as the RS232 signal can be transmitted bi-directionally) by using a RS232 cable.

Step7. Connect with DC24V power adaptor(s) (Any end of Transmitter and Receiver is connected with power adapter is enough with its PoE function).

3.4 System Applications

As its good performance in control and transmission, the Extender can be widely used in computer realm, monitoring, large screen displaying, conference system, education and bank securities institutions etc.

4. Specification

Model / Spec	Transmitter	Receiver
Input		
Input Signal	1 HDMI,1 IR in, 1 RS232	1 IR in, 1 HDBaseT, 1 RS232
Input Connector	1 HDMI female 1 3.5mm mini jack for IR in 1 3P captive connector	1 3.5mm mini jack for IR in 1 RJ-45 1 3P captive connector
Video Signal	HDMI1.4a	HDMI1.4a
Audio	Digital audio, transmit through HDMI audio	Digital audio, transmit through HDMI audio
Output		
Output	1 HDBaseT, 1 IR out, 1 RS232	1 HDMI, 1 IR out, 1 RS232
Output Connector	1 RJ-45 1 3.5mm mini jack for IR out 1 3P captive connector	1 HDMI female 1 3.5mm mini jack for IR out 1 3P captive connector
Video signal	HDMI1.4a	HDMI1.4a
Transmission Mode	HDBaseT	
Ethernet Port		
Connector	2 RJ45	2 RJ45
Ethernet Transmission Speed	Adaptive 10M/100M (max), full duplex or half duplex.	
General		
Resolution Range	800x600 ~ 1920x1200, 3D, 4K×2K	
Transmission Distance	Max distance 100m	
Differential Phase Error	±10° @ 135MHz_100M	
SNR	>70dB@ 100MHz-100M	
Gain	0dB ~ 10dB@100MHz	
Bandwidth	10.2Gbps	
Return Lost	＜-30dB@5KHz	
THD	＜0.005%@1KHz	
HDMI Standard	Support HDMI1.4a and HDCP	
Min. ～Max. Level	0.3V ~ 1.45Vp-p	
Impedance	75Ω	

Temperature	-20 ~ +70℃
Humidity	10% ~ 90%
Power Consumption	10W
Power Supply	Input: 100VAC~240VAC, 50/60Hz; Output: 24VDC 1.25A
Dimension (W*H*D)	152x28x 84(mm)
Net Weight	0.8Kg

5. Troubleshooting & Maintenance

1) When images of terminal unit output with ghost, such as the projector output with ghost. Generally this is not a unit faulty, this may be caused by an incorrect setting on the projector or a bad quality of cable. Please check the projector's setting or try another high quality connection cable.

2) When there is a color losing or no video signal output, please check the input and output end connections of the cables.

3) When user cannot control the extender by computer through its COM port, please check the COM port number in the software and make sure the COM port is in good condition.

4) When switching, there is no output image:

- Check with oscilloscope or multimeter if there is any signal at the input end. If there is no signal input, it may be the input connection cord broken or the connectors loosen.
- Check with oscilloscope or multimeter if there is any signal at the output end. If there is no signal output, it may be the output connection cord broken or the connectors loosen.
- If it is still the same after the above checking, maybe there is something wrong in the extender. Please send it to the dealer for fixing.

5) If the static becomes stronger when connecting the video connectors, it probably due to bad grounding, please check the grounding and make sure it connected well, otherwise it would damage the extender

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