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User Manual

DVM-HDBT-EX3

HD-BaseT-Extender

HDMI+2xIR+RS232   100m

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 April 2014. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

Update History

Version	Date	Update Content
1.0	2014.02.22	First version.
2.0	2014.04.12	Update version.

Table of Contents

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 POC 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 PoC, 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 90 meters for 1080P signals.
- Max transmission distance is up to 70 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. Introduction of Product Appearance

2.1 Product Appearance of 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 (90m length in max).
④	HDMI IN	HDMI input port, connect with an HDMI source device.
⑤	IR IN&OUT	✓ IN: Connect with IR receiver, the IR signal received from this port can only send out in Receiver. ✓ OUT: Connect with IR Emitter, and the sending IR signal is received from TPHD403PR.
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 Product Appearance of 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 (90m length in max).
④	HDMI OUT	HDMI output port, connect with an HDMI displaying device.
⑤	IR IN&OUT	✓ IN: Connect with IR receiver, the IR signal received from this port can only send out in Transmitter. ✓ OUT: Connect with IR Emitter, and the sending IR signal is received from Transmitter.

⑥	RS232	Serial port, 3p captive screw connector, connects 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 Transmitter connects with power adapter)

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
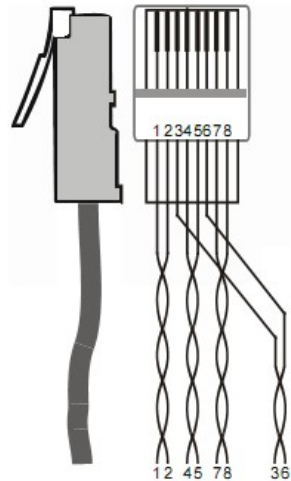
3. System Connection

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
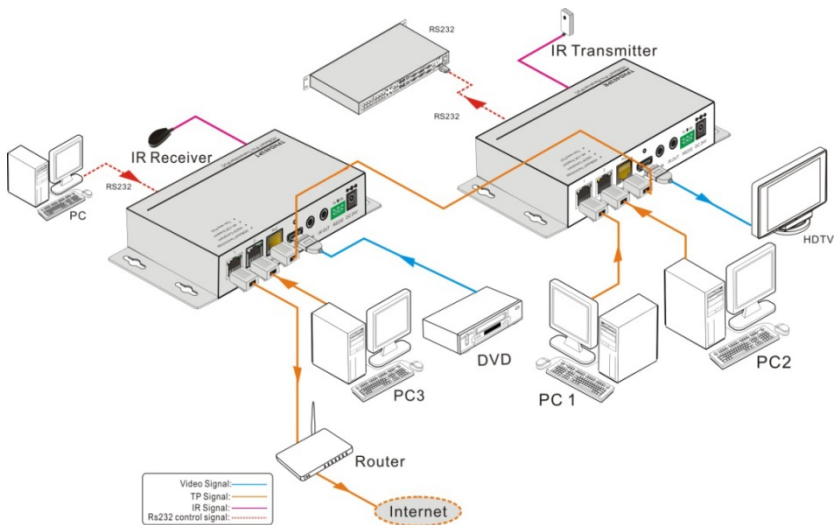
Extender.

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 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.

Connect with DC24V power adaptor(s) (Any end of Transmitter and Receiver is connected with power adapter is enough with its POC 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 there is a color losing or no video signal output, maybe the cables have already broken or haven't been connected well.

2) 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 and the communication protocol is correct.

3) If a device has connected with an ETHERNET port but TPHD403P can't recognize it, please check whether its IP address is the same with another connected device.

4) When switching , there is no output image:

- Check if there is any signal at the input.
- Check if there is any signal at the output.

  We can check these by using an oscilloscope or a multimeter. If there is no signal input/output, maybe the input/output cables broken or the connectors loosen, please change for another cable.

- Check if the output port number is the same with the controlled one.
- 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 repairing.

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.

If the extender cannot be controlled through the RS232 port or by the IR remote, the unit may have already been broken. Please send it to the dealer for repairing.

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