

User Manual

TPHD402P

HDMI/IR/RS232 Twisted Pair PoC Extender



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Version: TPHD402P_2014V1.3



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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.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

NOTICE: Please read this user manual carefully before using this product. Pictures shown in this manual are for reference only, different model and specifications are subject to real product.

This manual is for operation instruction only, not for any maintenance usage. Compared to the former TPHD402P user manual version, this version removes the built-in IR receiver and adds collocation products. 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.

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All product function is valid till 2014-04-28.

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1. Introduction

1.1 Introduction to TPHD402P

TPHD402P is an HDMI/IR/RS232 twisted pair including a transmitter (TPHD402PT) and receiver (TPHD402PR). The TPHD402P uses HDBaseT technology to deliver HDMI signal, max transmission distance up to 60 meters with CAT5e/CAT6 cable. CEC, bi-directional RS232&IR control, and PoC are supported by TPHD402P.

1.2 Features

- Support Full HD: Delivers resolutions including 800x600@60Hz, 1024x768@Hz, 1280x720@60Hz, 1280x1024@60Hz, 1366x768@60Hz, 1600x1200@60Hz, 1920x1080@60Hz, 1920x1200@60Hz, 3D, 4K×2K
- Max transmission distance is up to 60 meters over single CAT5e/CAT6 cable.
- High Bandwidth: 10.2Gps.
- HDTV Compatible, use HDMI 1.4 and HDCP compliant.
- Support PoC & CEC.
- Connect with a displayer to transmit EDID and HPD signals constantly by using a CAT5e cable.
- Use HDBaseT technology.
- Bi-directional RS232/IR control.
- LED indicators show work status.
- Wall/table-mountable aluminium enclosure, 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.

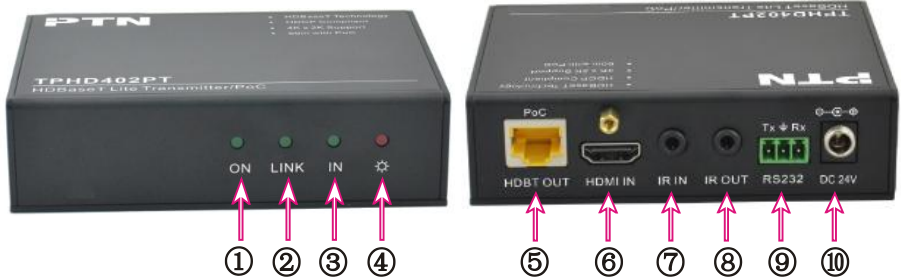
1.3 Package Contents

- 1 x TPHD402PT
- 1 x TPHD402PR
- 4 x Mounting brackets (Separated from TPHD402P)
- 8 x Plastic cushions
- 2 x RS232 cables
- 8 x Screws
- 2 x Power adapters (DC 24V)
- 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

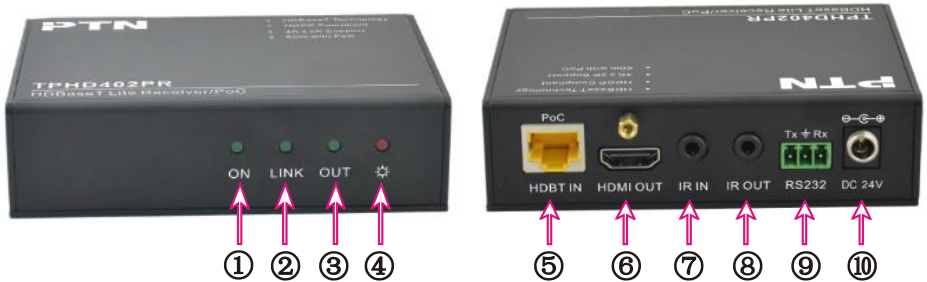
2.1 Appearance of TPHD402PT



- 1) ON: Working status indicator, blink green when the device works fine, turn off when the device stops working.
- 2) LINK: Twisted Pair link status indicator, illuminate green when the connection is successful.
- 3) IN: HDCP compliance indicator, illuminate green when the connected device supports HDCP and work normally; blink green when the connected device does not support HDCP.
- 4) POWER LED: Illuminate red when power on.
- 5) HDBT OUT: Connect to the HDBT IN port of TPHD402PR with a CAT5e cable.
- 6) HDMI IN: Connect to HDMI source.
- 7) IR IN: Connect with IR receiver, the IR signal received from this port can only send out via TPHD402PR.
- 8) IR OUT: Connect with IR transmitter, the sent IR signals are received by TPHD402PR.
- 9) RS232: Serial port, 3-pin captive screw connector, connects with the control terminal, supports bi-directional RS232 control.
- 10) DC 24V: Connect with power supply (Not necessary if TPHD402PR connects with power).

Note: Pictures shown in this manual are for reference only, different model and specifications are subject to real product.

2.2 Appearance of TPHD402PR



- 1) ON: Working status indicator, blink green when the device works fine, turn off when the device stops working.
- 2) LINK: Twisted Pair link status indicator, illuminate green when the connection is successful.
- 3) IN: HDCP compliance indicator, illuminate green when the connected device supports HDCP and work normally; blink green when the connected device does not support HDCP.
- 4) POWER LED: Illuminate red when power on.
- 5) HDBT IN: Connect to the HDBT OUT port of TPHD402PT with a CAT5e cable.
- 6) HDMI OUT: Connect to HDMI display device.
- 7) IR IN: Connect with IR receiver, the IR signal received from this port can only send out via TPHD402PT.
- 8) IR OUT: Connect with IR transmitter, the sent IR signal are received by TPHD402PT.
- 9) RS232: Serial port, 3-pin captive screw connector, connects with the control terminal, supports bi-directional RS232 control.
- 10) DC 24V: Connect with power supply (Not necessary if TPHD402PT connects with power).

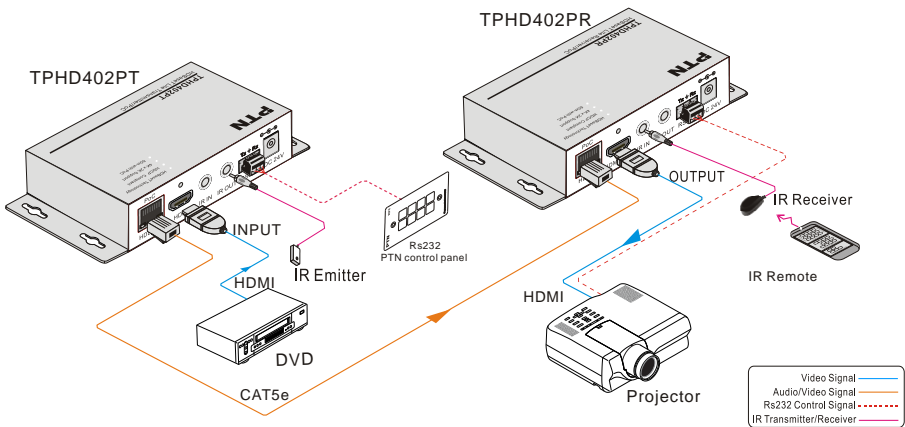
Note: Pictures shown in this manual are for reference only, different model and specifications are subject to real product.

3. System Connection

3.1 Usage Precautions

- 1) System should be installed in a clean environment and has a prop temperature and humidity.
- 2) All of the power switches, plugs, sockets and power cords should be insulated and safety.
- 3) All devices should be connected before power on.

3.2 System Diagram



3.3 Connection Procedure

- Step1.** Connect HDMI source (such as Blue-ray DVD) to HDMI IN port of TPHD402PT with HDMI cable.
- Step2.** Connect HDBT OUT port of TPHD402PT to HDBT IN port of TPHD402PR through a CAT5e/CAT6 cable.
- Step3.** Connect a HDMI displayer (such as HDTV) to HDMI OUT port of TPHD402PR with HDMI cable.
- Step4.** Both TPHD402PT and TPHD402PR have IR IN and OUT. When one end is used as an IR receiver, the other end will be used as an IR transmitter.
For example: When "IR IN" of TPHD402PT connects with an IR receiver, the IR transmitter must be connected to "IR OUT" of TPHD402PR.
- Step5.** Connect the RS232 port of the devices to be controlled and the receiver or the transmitter.
- Step6.** Connect with DC 24V power adaptor(s) (One is sufficient as the other end can be energized with PoC function).

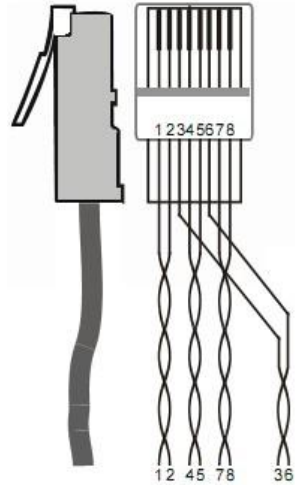
3.4 Application

TPHD402P has a good application in various occasions, such as computer realm, monitoring, big screen displaying, meeting room, education and bank & securities institution etc.

3.5 Twisted Pair Cable Connection

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

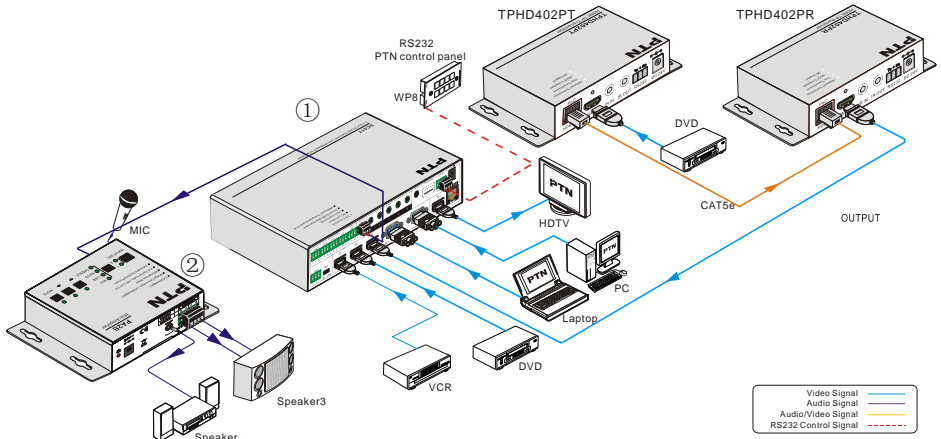
TIA/EIA T568A		TIA/EIA T568B	
Pin	Cable color	Pin	Cable color
1	green white	1	orange white
2	green	2	orange
3	orange white	3	green white
4	blue	4	blue
5	blue white	5	blue white
6	orange	6	green
7	brown white	7	brown white
8	brown	8	brown
1st Ground	4--5	1st Ground	4--5
2nd Ground	3--6	2nd Ground	1--2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



Note: To make a better transmission, cable connectors MUST be metallic, the shielded layer of cable MUST be connected to the connector’s metal shell.

3.6 Collocation Products

TPHD402P usually work together with other devices to extend the transmission distance of HDMI/IR/RS232 signal. Here are the most common collocation products.



Description:

1) SC51T (mini scaler switcher)

- Bi-directional IR & RS232 control.
- Compliant with HDCP.
- Supports CEC, with commands to enable/disable this function.
- Supports video source auto-switching function.
- Output resolutions selectable to assure preferred output, and supports various output resolutions, such as 1920x1200, 1920x1080, 1600x1200, 1360x768, 1280x800, 1280x720, 1024x768.
- VGA video supports C-video, YPbPr and VGA.
- MIC port supports balance/unbalance signal, suppress the external noise effectively.
- 3-level MIC input, supports condenser microphone, dynamic microphone and wireless microphone.
- Powerful OSD function.

2) PA2B (mini digital amplifier)

- 2x20Watt@4Ω as the default amplifier output.
- Bridge connection function. User can switch the PA2B to be 1x40Watt@8Ω by bridge connection.
- 48V phantom power to support condenser microphone.
- MIC port can support balance/unbalance signal, suppress the external noise effectively.

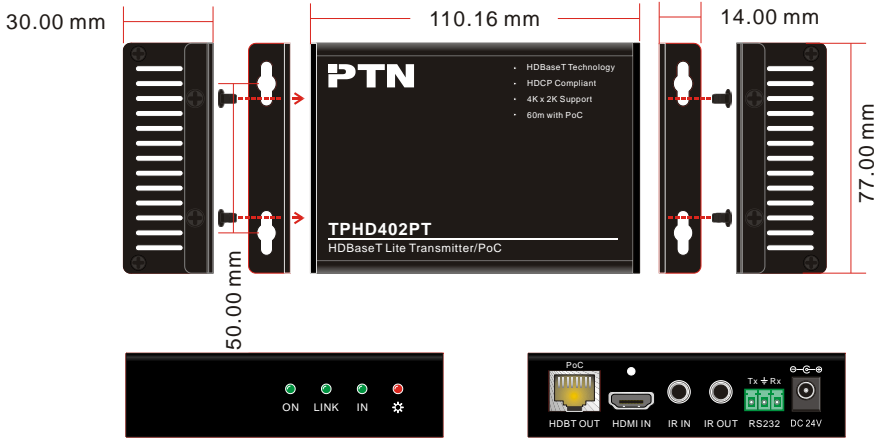
4. Specification

Model	TPHD402PT	TPHD402PR
Spec		
Input		
Input Signal	1 HDMI, 1 IR & 1 RS232	1 IR, 1 RJ-45 & 1 RS232
Input Connector	HDMI female, 3.5mm mini jack, 3-pin captive screw connector	3.5mm mini jack, RJ-45, 3-pin captive screw connector
Video Signal	HDMI1.4	HDMI1.4
Audio	Digital audio, transmit through HDMI audio	Digital audio, transmit through HDMI audio
Output		
Output	1 RJ-45, 1 IR, 1 RS232	1 HDMI, 1 IR, 1RS232
Output Connector	RJ-45, 3.5mm mini jack, 3-pin captive screw connector	HDMI female, 3.5mm mini jack, 3-pin captive screw connector
Video signal	HDMI1.4	HDMI1.4
Transmission Mode	HD Base T	
General		
Resolution	800x600@60Hz, 1024x768@Hz, 1280x720@60Hz, 1280x1024@60Hz, 1366x768@60Hz, 1600x1200@60Hz, 1920x1080@60Hz, 1920x1200@60Hz, 3D, 4K×2K	
Transmission Distance	Max distance 60M	
SNR	>70dB@ 100MHz-100M	
Bandwidth	10.2Gbps	
THD	<0.005%@1KHz	
HDMI Standard	Support HDMI1.4, 3D and HDCP	
Impedance	75Ω	
Temperature	-10 ~ +40℃	
Humidity	10% ~ 90%	
Power Supply	Input: 100VAC~240VAC, 50/60Hz Output: DC 24V, 1.25A	
Power Consumption	9.6W	
Dimension (W*H*D)	110 x 77x 30 mm	110 x 77x 30 mm
Net Weight	0.5Kg	0.5Kg

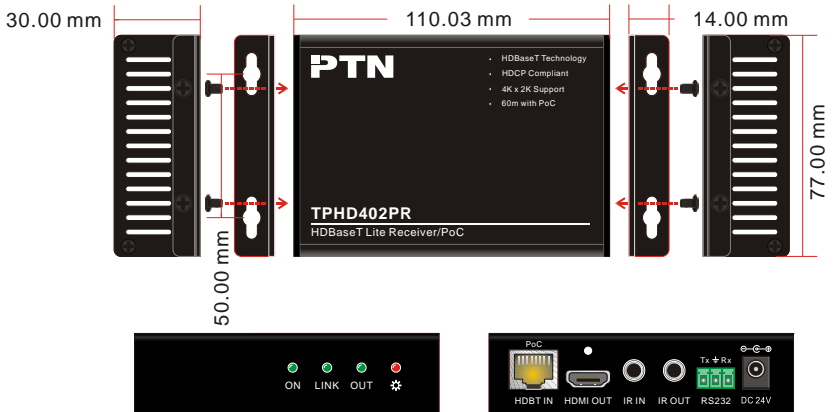
NOTE: All nominal levels are at ±10%.

5. Panel Drawing

TPHD402PT



TPHD402PR



6. Troubleshooting & Maintenance

Problems	Causes	Solutions
Output images in display show with ghost	Incorrect setting on the display	Check the display's setting
	A cable of bad quality	Try another high quality connection cable
No output image when switching	No signal at the input / output end	Check with oscilloscope or multimeter if there is any signal at the input / output end.
	Fail or loose connection	Make sure the connection is good
	The extender is broken	Send it to authorized dealer for repairing.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	The device has already been broken	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.
Cannot control the device by RS232 / IR	The device has already been broken	Send it to authorized dealer for repairing.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

7. After-sales Service

If there appear some problems when running the device, please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.

1) Product Limited Warranty: PTN warrants that its products will be free from defects in materials and workmanship for **three years**, which starts from the first day you buy this product (The purchase invoice shall prevail).

Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

2) What the warranty does not cover:

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
 - Normal wear and tear
 - Use of supplies or parts not meeting our specifications
 - No certificate or invoice as the proof of warranty.
 - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
 - Damage caused by force majeure.
 - Servicing not authorized by PTN
 - Any other causes which does not relate to a product defect
- Delivery, installation or labor charges for installation or setup of the product

3) Technical Support: Email to our after-sales department or make a call, please inform us the following information about your cases.

- Product version and name.
- Detailed failure situations.
- The formation of the cases.

Remarks: For any questions or problems, please try to get help from your local distributor, or email PTN at: support@PTN-electronics.com.



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