

# USER MANUAL

## AVG-HD402PR HDBaseT Extender

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Version: HD402PR\_2015V1.0



The AVG-HD402PR uses HDBaseT technology to deliver HDMI signal with a maximum transmission distance up to 60 meters with CAT5e/CAT6 cable.

### Features

- Supports 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, HDMI 1.4 and HDCP compliant.
- Supports PoC & CEC.
- Connect with a display to transmit EDID and HPD signals constantly by using a CAT5e cable.
- Uses HDBaseT technology.
- Bi-directional RS232/IR control.
- LED indicators show working status.
- Wall/table-mountable aluminium enclosure, PT case design.

**PLEASE READ THIS PRODUCT MANUAL CAREFULLY  
BEFORE USING THIS PRODUCT.**

This manual is only for operation instruction only, and not to be used in a maintenance capacity. The functions described in this version are current as at March 2015. Any changes of functions and operational parameters will be updated in future manual versions. Please refer to your dealer for the latest product details.

Version 1.0 1/3/15

## SAFETY OPERATION GUIDE



In order to guarantee the reliable operation of the equipment and safety of the user, please abide by the following procedures in installation, use and maintenance:

1. The system must be earthed properly. Please do not use two blade plugs and ensure the AC power supply ranges from 100v to 240v and from 50Hz to 60Hz.
2. Do not install the switcher in an environment where it will be exposed to extreme hot or cold temperatures.
3. This unit will generate heat during operation, please ensure that you allow adequate ventilation to ensure reliable operation.
4. Please disconnect the unit from mains power if it will be left unused for a long time.
5. Please **DO NOT** try to open the casing of the equipment, **DO NOT** attempt to repair the unit. Opening the unit will void the warranty. There are high voltage components in the unit and attempting to repair the unit could result in serious injury.
6. Do not allow the unit to come into contact with any liquid as that could result in personal injury and product failure.

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### 1. Introduction

#### 1.1. Introduction to the AVG-HD402PR

The AVG-HD402PR is an HDMI/IR/RS232 twisted pair including a transmitter (AVG-HD402T) and receiver (AVG-HD402PR). The AVG-HD402PR 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 the AVG-HD402PR .

#### 1.2. Features

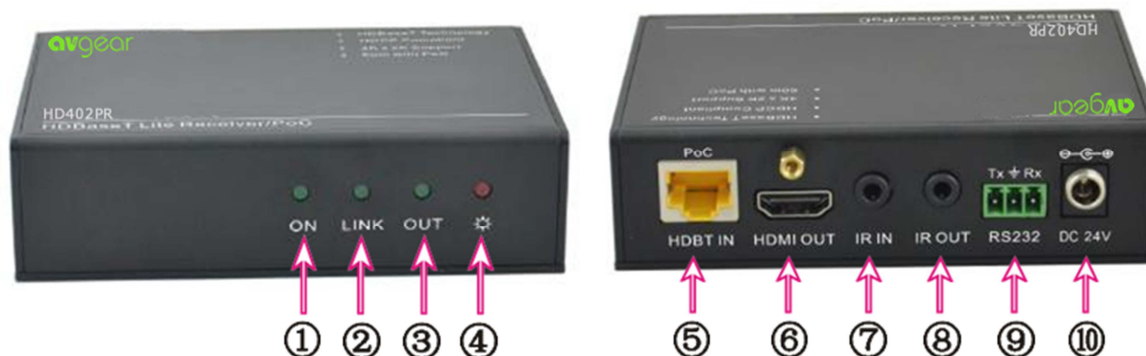
- Supports Full HD: Delivers resolutions including 800x600@60Hz, 1024x768@Hz,1280x720@60Hz, 1280x1024@60Hz, 1366x768@60Hz, 1600x1200@60Hz,1920x1080@60Hz, 1920x1200@60Hz, 3D, 4K×2K
- Max transmission distance is up to 60 meters over a single CAT5e/CAT6 cable.
- High Bandwidth: 10.2Gps.
- HDTV Compatible,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

## 2. Package List

- 1 x AVG-HD402PR
- 1 x AVG-HD402T
- 4 x Mounting brackets
- 8 x Plastic cushions
- 2 x RS232 cables
- 8 x Screws
- 2 x Power adapters (DC 24V)
- 1 x User manual

**Note:** Please confirm if the product and the accessories are all included, if not, please contact your dealer.

### 3. Product Appearance of the AVG-HD402PR

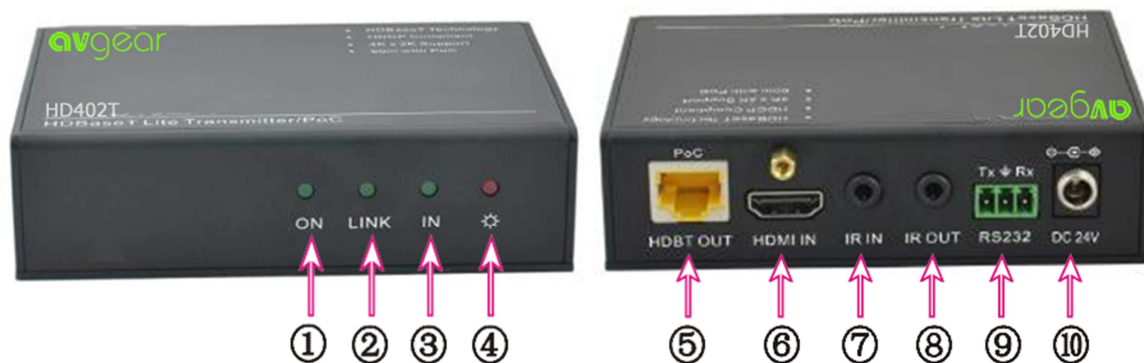


#### 3.1. Appearance of AVG-HD402PR

No.	Name	Description
①	ON	Working status indicator, blinks green when the device is operational, turns off when the device stops working.
②	LINK	Twisted Pair link status indicator, illuminates green when the connection is successful.
③	IN	HDCP compliance indicator, illuminates green when the connected device supports HDCP and is working normally; blinks green when the connected device does not support HDCP.
④	POWER LED	Illuminates red when power is on.
⑤	HDBT IN	Connects to the HDBT OUT port of a AVG-HD402T with a CATx cable.
⑥	HDMI OUT	Connects to HDMI display device.
⑦	IR IN	Connect with IR receiver, the IR signal received from this port can only send out via a AVG-HD402T.
⑧	IR OUT	Connect with IR transmitter, the sent IR signal are received by AVG-HD402T.
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 AVG-HD402T connects with power).

**Note:** Pictures shown in this manual are for reference only.

### 3.2. Appearance of AVG-HD402T



No.	Name	Description
①	ON	Working status indicator, blinks green when the device is operational, turns off when the device is not working.
②	LINK	Twisted Pair link status indicator, illuminates green when the connection is successful.
③	IN	HDCP compliance indicator, illuminates green when the connected device supports HDCP and is operational; blinks green when the connected device does not support HDCP.
④	POWER LED	Illuminates red when power is on.
⑤	HDBT OUT	Connect to the HDBT IN port of a AVG-HD402PR with a CATx cable.
⑥	HDMI IN	Connects to a HDMI display device.
⑦	IR IN	Connects with IR receiver, the IR signal received from this port can only send out via a AVG-HD402PR.
⑧	IR OUT	Connect with IR transmitter, the sent IR signals are received by AVG-HD402PR connect with IR transmitter, the sent IR signal is received by the 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 AVG-HD402PR connects with power).

**Note:** Pictures shown in this manual are for reference only.



## 4. System Connection

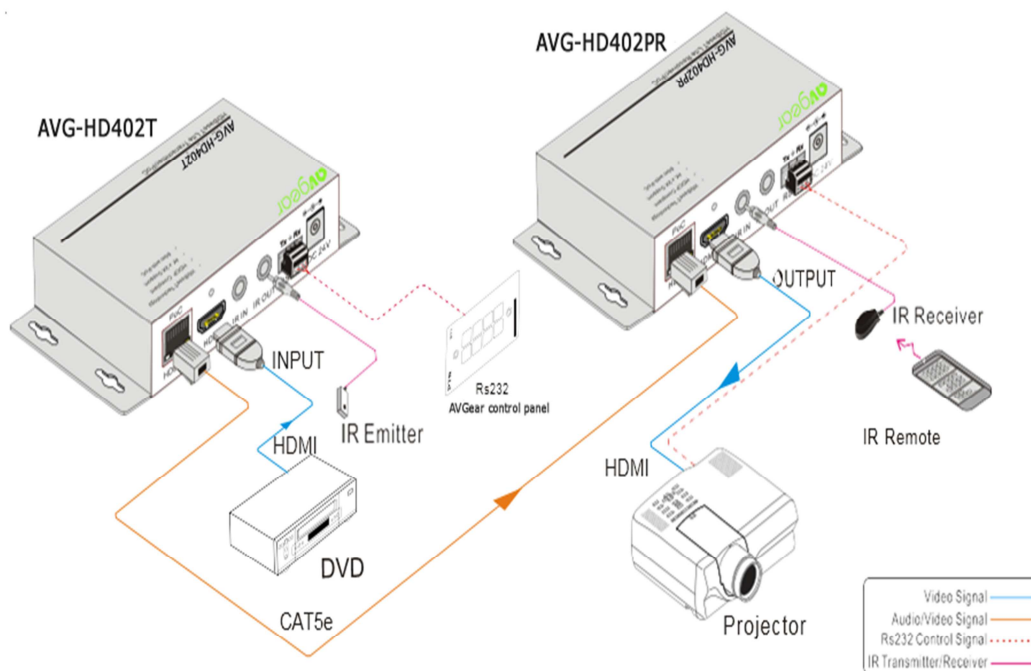
### 4.1. System Applications

Reliable performance for control and transmission makes the AVG-HD402PR ideal in the IT computer space, signal monitoring, big screen displays, conference systems, television broadcast, education, banking and security institutions etc.

### 4.2. Usage Precautions

1. System should be installed in a clean environment with temperature and humidity maintained to within equipment specification.
2. All of the power switches, plugs, sockets and power cords should be insulated and safe.
3. All devices should be connected before power is turned on.

### 4.3. Connection Diagram



#### 4.4. Connection Procedure

**Step 1.** Connect HDMI source (such as Blue-ray DVD) to HDMI IN port of AVG-HD402T with HDMI cable.

**Step 2.** Connect HDBT OUT port of AVG-HD402T to HDBT IN port of AVG-HD402PR through a CAT5e/CAT6 cable.

**Step 3.** Connect a HDMI display (such as HDTV) to HDMI OUT port of AVG-HD402PR with HDMI cable.

**Step 4.** Both AVG-HD402T and AVG-HD402PR 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 AVG-HD402T connects with an IR receiver, the IR transmitter must be connected to “IR OUT” of AVG-HD402PR.

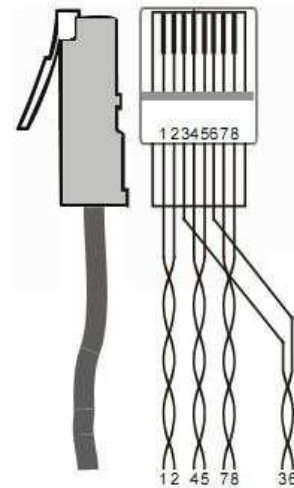
**Step 5.** Connect the RS232 port of the devices to be controlled and the receiver or the transmitter.

**Step 6.** Connect with DC 24V power adaptor(s) (One is sufficient as the other end can be energized with the PoC function).

### 4.5. Twisted Pair 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.

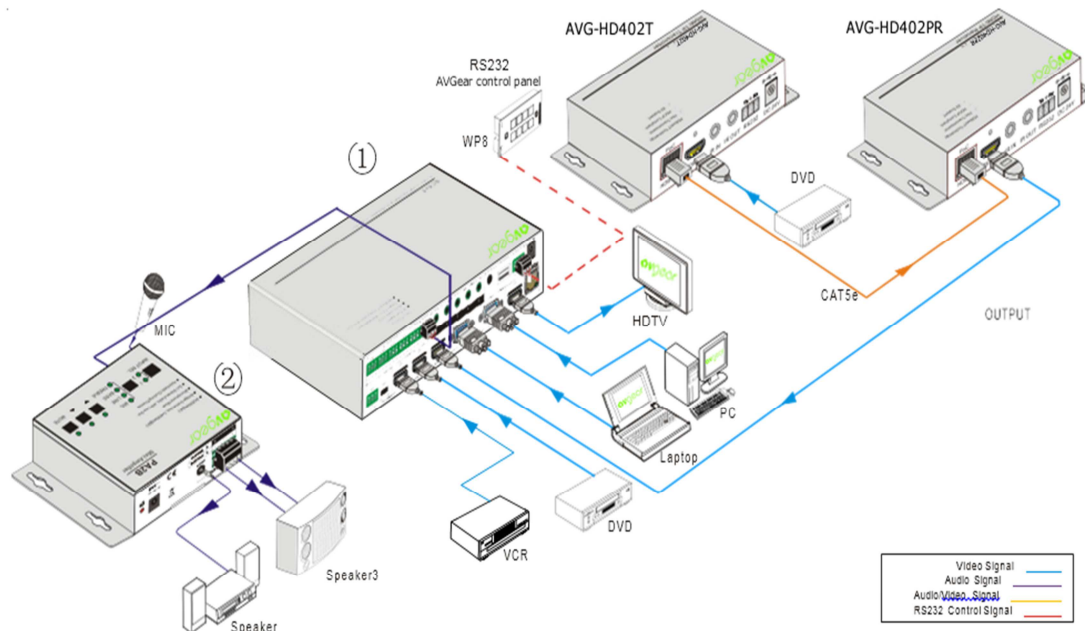
TIA/EIA T568A		68B	
PIN	Cable Color	PIN	Cable Color
1	green white	1	orange white
2	green	2	orange
3	orange white	3	Green white
4	blue	4	blue
5	blue white	5	blue white
6	orange	6	green
7	brown white	7	brown white
8	brown	8	brown
1st Ground		1st Ground	4--5
2nd Ground		2nd Ground	3--6
3rd Group		3rd Group	1--2
4th Group		4th Group	3--6
		7--8	



**Note:** For a more reliable transmission, cable connectors MUST be metallic, the shielded layer of cable MUST be connected to the connector's metal shell.

## 4.6. Associated Products

AVG-HD402PR usually works together with other devices to extend the transmission distance of HDMI/IR/RS232 signal. Here are the most commonly associated products.



### Description:

#### 1) SC51T (mini scaler switch)

- 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) MA1 (mini digital amplifier)

- 2x20Watt@4Ω as the default amplifier output.

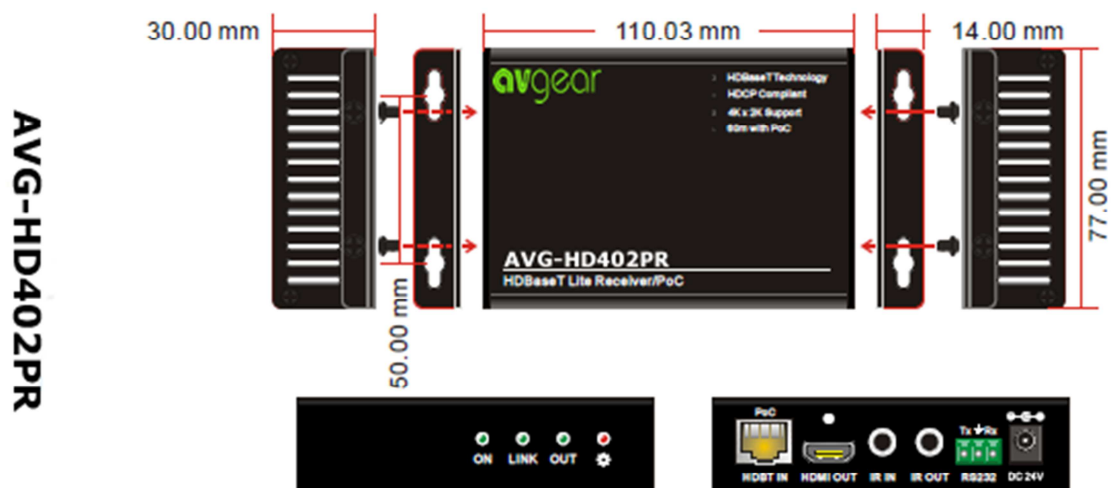
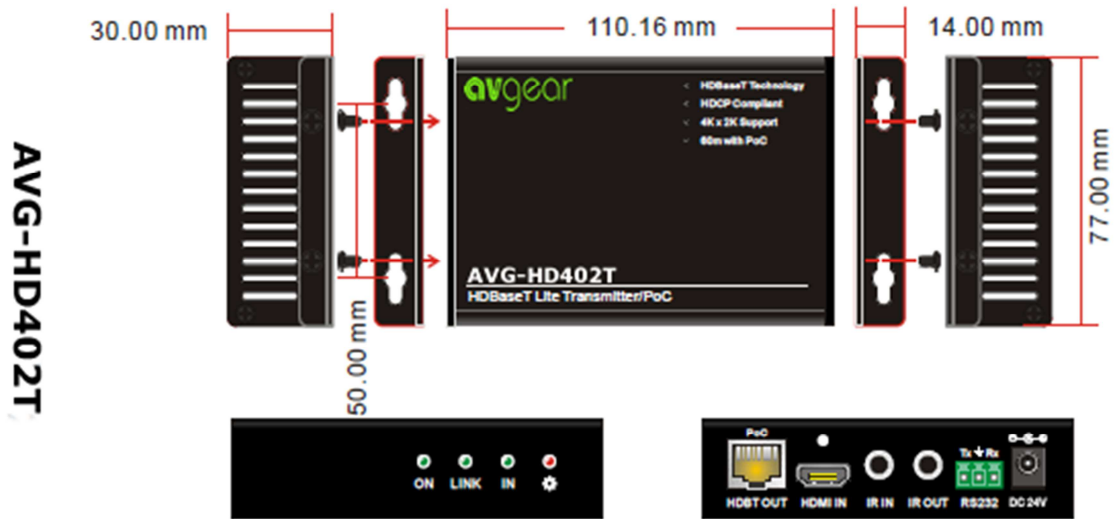
- Bridge connection function. User can switch the MA1 to be 1x40Watt@8Ω by bridge connection.
- 48V phantom power to support condenser microphone.
- MIC port can support balance/unbalance signal, suppress the external noise effectively.

## 5. Specifications

Model	AVG-HD402T	AVG-HD402PR
Spec		
<b>Input</b>		
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
<b>Output</b>		
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	
<b>General</b>		
Resolution	800x600@60Hz, 1024x768@Hz, 1280x720@60Hz, 1280x1024@60Hz, 1366x768@60Hz, 1600x1200@60Hz, 1920x1080@60Hz, 1920x1200@60Hz, 3D, 4Kx2K	
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°C	
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%

## 6. Panel Drawing



## 7. Troubleshooting & Maintenance

Problems	Causes	Solutions
Output images in display contains ghosting	Incorrect setting on the display	Check the display's setting
	Poor cable 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.
	Failed or loose connection	Re-seat the connection.
	The extender is faulty	Send it to authorized dealer for repairing.
Cannot control the device by control device (e.g. a PC) through the RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	The device has a previous fault	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors	Poor grounding	Check the grounding and make sure it is connected well.
Cannot control the device by RS232 / IR remote / front panel buttons	The device has a previous fault.	Send it to authorized dealer for repairing.