

## HDBT-EX1-4K

### HDBaseT Extender Set 70m



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Version: HDBT-EX1-4K\_2019V1.2

## Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till October, 2019. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



## SAFETY PRECAUTIONS

To ensure 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.

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## 1. Product Introduction

The HDBT-EX1-4K extender set consists of a transmitter and receiver pair. HDMI signals are input into the transmitter and HDBaseT technology is used to transmit the signals to the receiver up to 70 m via a Cat5e/Cat6 cable. The receiver then outputs the HDMI signal.

Bi-directional IR is also transmitted across the Cat5e/Cat6 cable. The extender set supports PoC, which can be used to power the receiver via the Cat5e/Cat6 cable. This eliminates the need for power at the receiver end.

The HDBT-EX1-4K has a good application in various occasions, such as computer realm, monitoring, big screen displaying, meeting room, education and bank & securities institution etc.

### 1.1 Features

- Supports full HD: Delivers high-resolution image (1080p 3D, 4Kx2K)
- Maximum transmission distance is 230 ft. (70 m) for 1080p and 131 ft. (40m) for 4Kx2K over single CAT5e/CAT6 cable
- High Bandwidth: 10.2Gps.
- HDTV Compatible, use HDMI 1.4 and HDCP2.2 compliant.
- Support PoC & CEC.
- Uses HDBaseT technology for extended capability and reliability
- Bi-directional IR control
- LED indicators show work status.

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

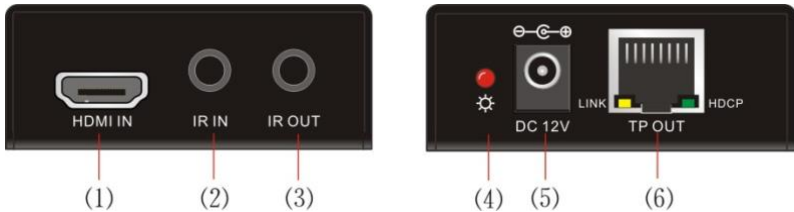
### 1.2 Package List

- 1x HDBT-EX1-4K (including TX and RX)
- 4x Mounting Ears with 4 Screws
- 8x Plastic Cushions
- 1x Power Adapter (12V DC 1A)
- 1x User Manual

**Note:** Please contact your distributor immediately if any damage or defect in the components is found.

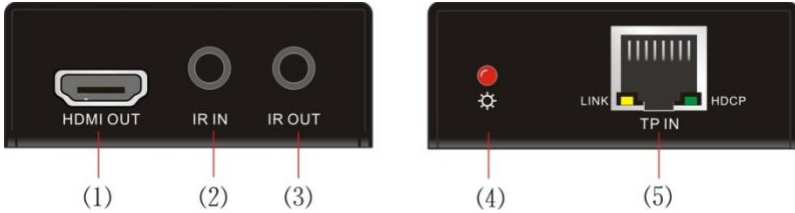
## 2. Product Description

### 2.1 Transmitter



- ① **HDMI IN:** Type-A female HDMI input port to connect an HDMI source device.
- ② **IR IN:** 3.5mm mini jack to connect IR receiver or IR system for IR pass-through.
- ③ **IR OUT:** 3.5mm mini jack to connect IR emitter for IR pass-through.
- ④ **Power LED:** The LED illuminates red when power is applied.
- ⑤ **DC 12V:** Power port for 12V DC power adapter connection.
- ⑥ **TP OUT:** RJ45 port to connect the **TP IN** port of receiver by CATx cable. The LED illuminates green when there is HDMI video traffic with HDCP. It will blink green when there is HDMI video traffic without HDCP and will be off when there is no HDMI video traffic. The LINK LED illuminates orange when there is a valid HDBaseT link between the transmitter and the receiver.

## 2.2 Receiver



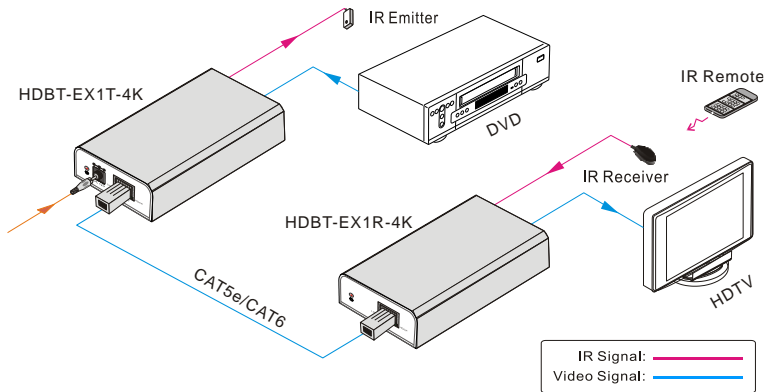
- ① **HDMI OUT:** Type-A female HDMI output port to connect an HDMI display device.
- ② **IR IN:** 3.5mm mini jack to connect IR receiver or IR system for IR pass-through.
- ③ **IR OUT:** 3.5mm mini jack to connect IR emitter for IR pass-through.
- ④ **Power LED:** The LED illuminates red when power is applied.
- ⑤ **TP IN:** RJ45 port to connect the **TP OUT** port of transmitter by CATx cable. The LED illuminates green when there is HDMI video traffic with HDCP. It will blink green when there is HDMI video traffic without HDCP and will be off when there is no HDMI video traffic. The LINK LED illuminates orange when there is a valid HDBaseT link between the transmitter and the receiver.

### 3. System Connection

#### 3.1 Usage Precautions

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- The Cat5e/Cat6 terminations for HDBaseT devices should be a straight-thru TIA/EIA T568B standard.

#### 3.2 System Diagram



#### 3.3 Connection Procedure

**Step1.** Connect HDMI source (such as Blue-ray DVD) to the **HDMI IN** port of the transmitter with an HDMI cable.

**Step2.** Connect TP OUT port of the transmitter to **TP IN** port of the receiver via a CAT5e/CAT6 cable.

**Step3.** Connect a HDMI display device (such as HDTV) to **HDMI OUT** port of the receiver with HDMI cable.

**Step4.** When using the bi-directional IR control:

- a) Connect the IR emitter at either end to the **IR OUT** port on either the transmitter or the receiver.
- b) When using a powered IR receiver, connect via a 3.5 mm stereo plug to the **IR IN** on either the receiver or the transmitter.

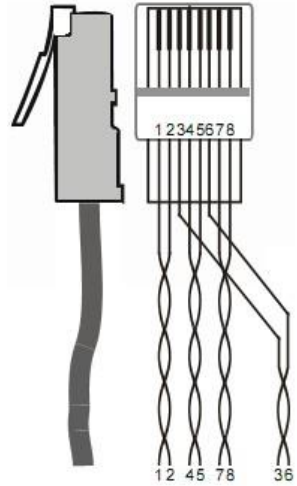
**Step5.** Connect 12V DC power adaptor to the power port of transmitter, the receiver will be energized synchronously with PoC solution.



### 3.4 Twisted Pair Cable Connection

The Cat5e/Cat6 terminations for HDBaseT devices should be a straight thru TIA/EIA T568B standard. TIA/EIA T568A standard is NOT recommended.

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



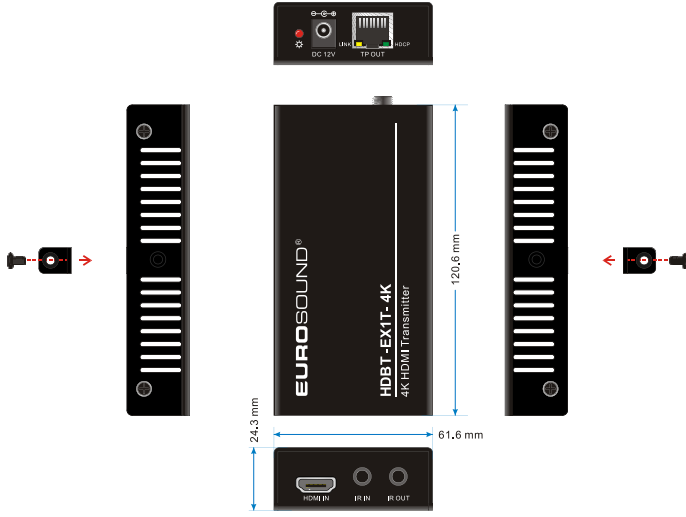
**Note:** To make a better transmission, cable connectors **MUST** be metallic, the shielded layer of cable **MUST** be connected to the connector's metal shell.

## 4. Specification

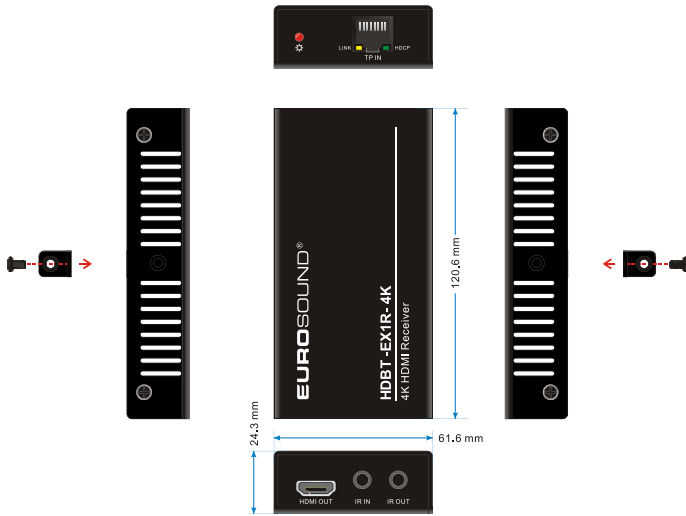
<b>Transmitter</b>	
Input	(1) HDMI IN
Input Connector	(1) Type-A female HDMI
Output	(1) TP OUT
Output Connector	(1) RJ45
Control	(1) IR IN (1) IR OUT
Control Connector	(2) 3.5mm mini jacks
<b>Receiver</b>	
Input	(1) TP IN
Input Connector	(1) RJ45
Output	(1) HDMI OUT
Output Connector	(1) Type-A female HDMI
Control	(1) IR IN (1) IR OUT
Control Connector	(2) 3.5mm mini jacks
<b>General</b>	
Video Resolution	Up to 4K@60Hz 4:2:0
HDMI Audio Format	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Transmission Standard	HDBaseT
Transmission Distance	4K@60Hz 4:2:0 ≤ 40 meters (131 feet), 1080P@60Hz ≤ 70 meters (230 feet)
Bandwidth	10.2Gbps
HDMI Standard	1.4
HDCP Version	2.2, 1.4 compliant. Pass-through
Operation Temperature	-5~ +55°C
Storage Temperature	-25 ~ +70°C
Relative Humidity	10%-90%
Power Supply	Input:100V~240V AC; Output:12V DC 1A
Max Power Consumption	9.6W
Dimension (W*H*D)	TX/RX: 61.6mm x 24.3mm x 120.6mm
Net weight	TX/RX: 280g

**Note:** All nominal levels are at ±10%.

## 5. Panel Drawing



**HDBT-EX1T-4K**



**HDBT-EX1R-4K**

## 6. Troubleshooting & Maintenance

### □ No image on display:

- Ensure that the display device has been set to the correct input.
- Ensure that the HDMI cables used for both the source/transmitter and the receiver/display are properly connected and are working. Test the HDMI cables directly from a source to display and ensure their operation.
- Ensure that the Cat5e/Cat6 cable has not been damaged and that it has been terminated correctly with T568B on both ends. A temporary length of Cat5e/Cat6 can be used for testing to ensure that the devices are all compatible and working properly.
- Ensure proper grounding of the power supply.
- Known issues with HDMI 1.2 source devices:  
Older compatibility (HDMI 1.2) may result in HDBaseT transmission issues. Please contact Technical Support of PTN Electronics for a solution to these issues.

### □ Color lose or poor picture quality:

- Ensure that the HDMI cables used for both the source and transmitter and the receiver and display are properly connected and are of good quality. Test the HDMI cables directly from a source to display and ensure their picture quality.
- Ensure proper grounding of the power supply.
- If the static becomes stronger or picture quality becomes worse when connecting the video connectors, this may be due to improper grounding.
- Check the grounding and make sure all the components are properly grounded to a common ground. Improper grounding may cause damage to the receiver.

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

## 7. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. These terms and conditions may be changed without prior notice.

### 1) Warranty

The limited warranty period of the product is fixed three years.

### 2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

### 3) Warranty Exclusion

- 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 distributor.
  - Any other causes which does not relate to a product defect.
- Shipping fees, installation or labor charges for installation or setup of the product.

### 4) Documentation

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defect has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

**Remarks:** Please contact your local distributor for further assistance or solutions.