4K 60Hz 2x1 HDBaseT Extender
EHB-232-W & THBW-232-W
(HDBaseT Set)   **(Transmitter Only)**

User Manual
Version 1.0

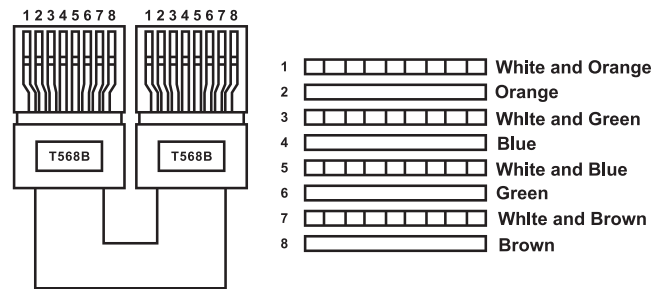# Thank You for Purchasing This Product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge Protection Device Recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Caution

This product requires the use of UTP connectors. Please connect via direct interconnection and do not cross connect.

Pin		Color
1		White and Orange
2		Orange
3		White and Green
4		Blue
5		White and Blue
6		Green
7		White and Brown
8		Brown

Direct Interconnection Method

Table of Contents

1. Introduction

This product can extend HDMI/USB-C signals up to 150m/492ft for 1080P@60Hz, or 120m/394ft for 4K@60Hz (4:4:4) via a single CAT6/6A cable. The wall-plate transmitter features one HDMI input and one USB-C input port, supporting manual and automatic switching modes. The box receiver features one HDMI output and one 3.5mm de-embedding audio output. It supports bi-directional PoC and bi-directional IR, RS-232 signal transmission. The multifunctional extender can be widely used in scenarios of demonstration, video conference, multimedia teaching and other HDMI signal extension occassions.

HDMI **USB-C**

2. Features

ꙮ DP 1.4, HDCP 2.2 compliant
ꙮ The transmitter wall plate supports two inputs: 1× HDMI and 1× USB-C
ꙮ Video resolutions up to 4K@60Hz 4:4:4, and bandwidth up to 18Gbps
ꙮ Supports auto switching and manual switching
ꙮ The maximum transmission distance via CAT6/6A cable is up to:
   • 120m/394ft for 4K@60Hz 4:4:4 signal
   • 150m/492ft for 1080P@60Hz 4:4:4 signal
ꙮ Supports LPCM 7.1CH, Dolby TrueHD and DTS-HD Master Audio
ꙮ Supports HDR, HDR10, HDR10+, Dolby Vision, and HLG pass-through
ꙮ Bi-directional IR, RS-232 and CEC control signal transmission
ꙮ Supports bi-directional PoC

3. Package Contents

THBW-232-W (Transmitter Only):

- 🌀 1× 4K60 2x1 HDBT Extender (Transmitter)
- 🌀 1× 24V/1A Multinational Power Supply
- 🌀 1× 2-pin 3.5mm Phoenix Connector (Male)
- 🌀 2× 3-pin 3.5mm Phoenix Connector (Male)
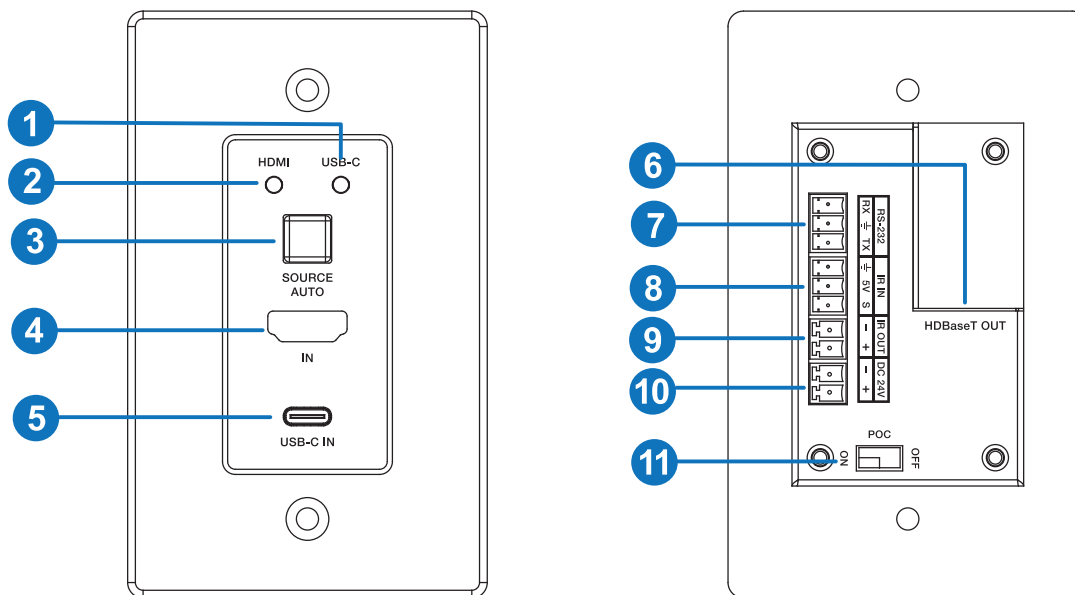- 🌀 1× User Manual

EHB-232-W (Transmitter & Receiver):

- 🌀 1× 4K60 2x1 HDBT Extender (Transmitter)
- 🌀 1× 18Gbps HDMI over HDBaseT Extender (Receiver)
- 🌀 1× 24V/1A Multinational Power Supply
- 🌀 1× IR Blaster Cable (1.5m)
- 🌀 1× IR Wideband Receiver Cable (1.5m)
- 🌀 1× 2-pin 3.5mm Phoenix Connector (Male)
- 🌀 2× 3-pin 3.5mm Phoenix Connector (Male)
- 🌀 1× 3-pin 3.81mm Phoenix Connector (Male)
- 🌀 2× Mounting Ear
- 🌀 4× Machine Screw (KM3*4)
- 🌀 1× User Manual

4. Specifications

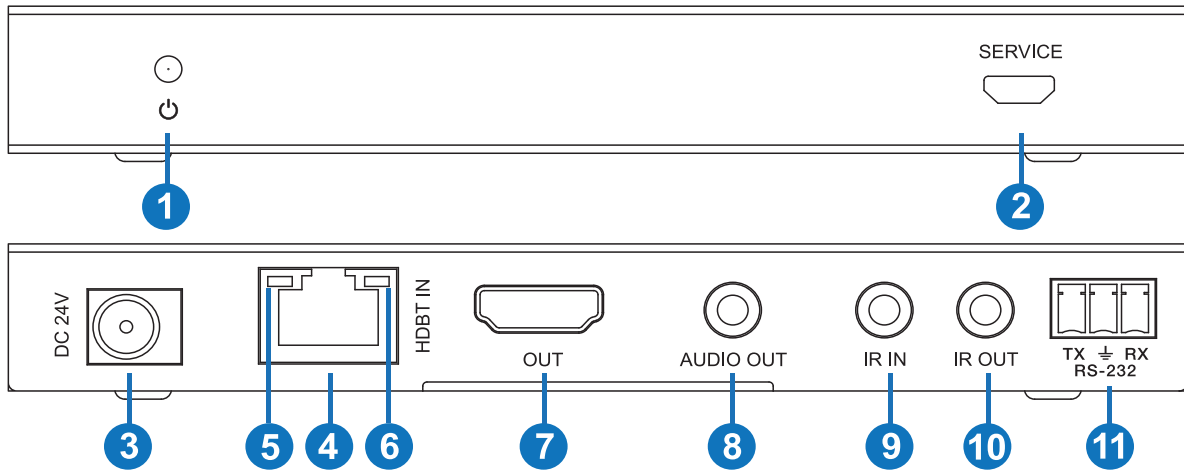| Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Resolution	Up to 4K@60Hz 4:4:4, Including all 3D TV formats, Including all computer resolutions such as 1920x1200
Color Depth	8-bit, 10-bit, 12-bit
Color Space	RGB_4:4:4, YCbCr_4:4:4, YCbCr_4:2:2, YCbCr_4:2:0
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG
HDMI Audio Format	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby (Digital, TrueHD, Digital Plus), DTS (ES, HD Master, HD-HRA, X)
L/R Audio Format	LPCM 2.0CH
IR Level	5Vp-p
IR Frequency	Wideband 20K-60KHz
Transmission Distance	4K@60Hz 4:4:4 - Up to 120m/394ft (CAT6/6a), 1080P@60Hz 4:4:4 - Up to 150m/492ft for (CAT6/6a)
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connections	
Transmitter	**Input**: 1× USB-C IN (Female), 1× HDMI IN (Female) **Output**: 1× HDBT OUT (RJ45) **Control**: 1× RS-232 (3-pin Phoenix), 1× IR IN (3-pin Phoenix), 1× IR OUT (2-pin Phoenix)
Receiver	**Input**: 1× HDBT IN (RJ45) **Output**: 1× HDMI OUT (Female), 1× AUDIO OUT (3.5mm) **Control**: 1× IR IN (3.5mm), 1× IR OUT (3.5mm), 1× RS-232 (3-pin Phoenix), 1× SERVICE (Mini-USB)
Mechanical	
Housing	**Transmitter/Receiver**: Metal Enclosure
Color	**Transmitter**: White + Black, **Receiver**: Black
Dimensions	**Transmitter**: 69.8mm [W] × 39mm [D] × 114mm [H], **Receiver**: 140mm [W] x 65mm [D] x 18mm [H]
Weight	**Transmitter**: 203g, **Receiver**: 155g
Power Supply	**Input**: AC 100-240V 50/60Hz; **Output**: DC 24V/1A (US/EU standard, CE/FCC/UL certified)
Power Consumption	**Transmitter**: 4.5W (Max); **Receiver**: 4.7W (Max)
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Operating Humidity	20%~80% relative humidity, non-condensing
Storage Humidity	10%~90% relative humidity, non-condensing

5. Operation Controls and Functions

5.1 Transmitter Panel

Num.	Name	Function Description
1	USB-C LED	The green LED will be on when USB-C input is selected as the input channel.
2	HDMI LED	The green LED will be on when HDMI input is selected as the input channel.
3	Source/Auto	Press to switch the two input sources: USB-C and HDMI. Long press for 3 seconds to enable or disable auto switching function. The indicator will be blue when auto switching is enabled.
4	HDMI IN	HDMI input port, supporting video signal up to 4K60 4:4:4.
5	USB-C IN	USB-C input port, supporting video signal up to 4K60 4:4:4.
6	HDBaseT OUT	Connects to the HDBT IN port on Receiver with CAT6/6A cable.
7	RS-232	3-pin Phoenix connector for RS-232 command transmission. The RS-232 command will pass-through from transmitter to receiver or from receiver to transmitter.
8	IR IN	IR input port for receiving the signal of IR remote.
9	IR OUT	IR output port for control of source device. This IR output signal is from the IR IN port of receiver.
10	DC 24V	DC 24V/1A power supply input port. Note that the extender supports PoC function, this means that either the transmitter or receiver is powered on by a 24V/1A power adapter, the other one doesn't need a power supply.
11	PoC ON/OFF	PoC switch. Switch to ON to enable PoC function; switch to OFF to disable PoC, and the transmitter is powered from local power supply at this time.

5. Operation Controls and Functions

5.2 Receiver Panel

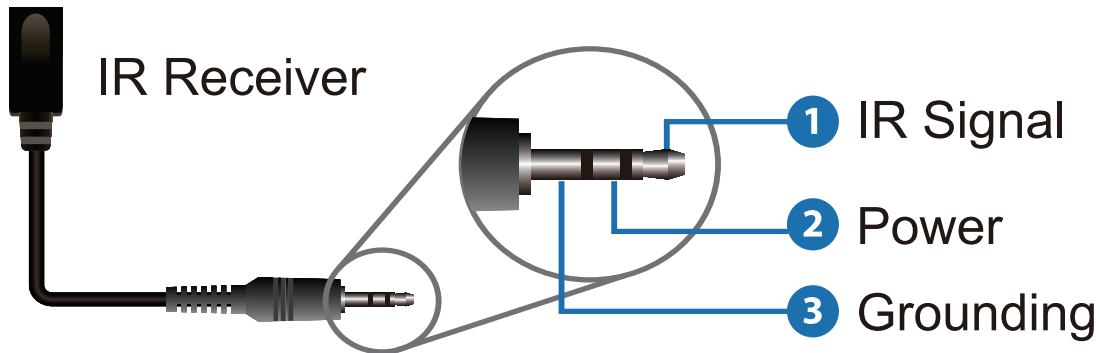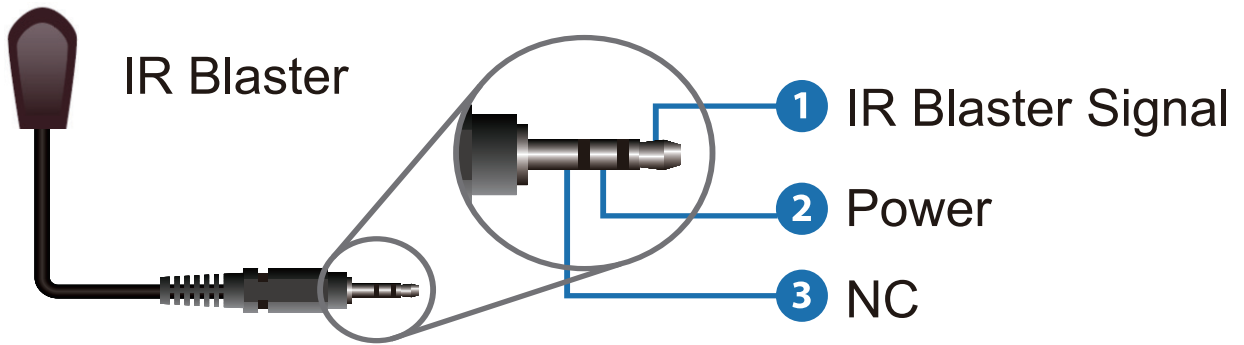| Num.	Name	Function Description
1	Power LED	Red LED indicates that the receiver is powered on.
2	SERVICE	Firmware update port.
3	DC 24V	DC 24V/1A power supply input port. Note that the extender supports PoC function, this means that either the transmitter or receiver is powered on by a 24V/1A power adapter, the other one doesn't need a power supply.
4	HDBT IN	Connects to the HDBT OUT port on Transmitter with CAT6/6a cable.
5	Connection LED	**On**: Transmitter and receiver are in good connection status. **Flashing**: Transmitter and receiver are in poor connection status. **Off**: Transmitter and receiver are not connected.
6	Data LED	**On**: There is HDMI signal with HDCP. **Flashing**: There is HDMI signal without HDCP. **Off**: There is no HDMI signal.
7	HDMI OUT	HDMI signal output for display.
8	AUDIO OUT	3.5mm stereo connector for analog audio output.
9	IR IN	IR signal input port for receiving the signal of IR remote.
10	IR OUT	IR signal output port for control of display device. This IR output signal is from the IR IN port of transmitter.
11	RS-232	3-pin Phoenix connector for RS-232 command transmission. The RS-232 command will pass-through from transmitter to receiver or from receiver to transmitter.

5

6. IR Pin Definition

IR Receiver and Blaster pin's definitions:

IR RECEIVER

IR BLASTER

IR Blaster

1 IR Blaster Signal

2 Power

3 NC

IR Receiver

1 IR Signal

2 Power

3 Grounding

Note: When the angle between the IR receiver and the remote control is ± 45 °, the transmission distance is 0-5 meters; when the angle between the IR receiver and the remote control is ± 90 °, the transmission distance is 0-8 meters.

7. Application Example

IR Receiver

Power Supply

Transmitter

HDMI   USB-C

SOURCE
AUTO

IN

USB-C IN

CAT6/6A

UHDTV

PC

TV Box

2.0 Speakers

IR Blaster

DC 24V

HDBT IN

OUT

AUDIO OUT

IR IN

IR OUT

TX ⏚ RX
RS-232

Receiver