USER MANUAL

EXT-HBT70-WP-SET
HDBaseT Wall Plate Extender Switch Set 70m

Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till September 2017. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

All product function is valid till 2017-9-30.

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 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.

Contents

1. Introduction

1.1 Introduction to EXT-HBT70-WP-SET

EXT-HBT70-WP-SET is 2x1 wallplate HDBaseT Transmitter for switching and extending HDMI or VGA + audio input to display or projector, and the transmission distance is up to 40m@4K and 70m@1080p over a single Cat5e/6/7 cable based on Certified HDBaseT technology. The resolution of HDMI input is up to 4K/UHD@ 60Hz 4:2:0 and VGA input up to 1920x1200.

EXT-HBT70-WP-SET is ideal for huddle rooms, classrooms and small conference rooms. The wall‑mountable design provides the convenience of placing input connections precisely where they are needed.

1.2 Feature

- Features one HDMI input and one VGA input with 3.5mm analogue audio input.
- Supports HDMI signal up to 4K@60Hz 4:2:0, VGA input signal up to 1920 x 1200.
- Built-in scaling function to match signals to display native resolution.
- Ensures display of content-protected media and interoperability with other HDCP compliant devices.
- Audio signal can be selectively embedded into the video output.
- HDBaseT technology extend HDMI and VGA, Audio, control signals up to 70m over CATx cable.
- Automatically detect active inputs when sources are connected.
- Flexible control options for compatibility with third-party system, matrix switcher or receiver.
- Supports bi-directional RS232 pass-through with HDBaseT connection and local control.
- PoH (power over HDBaseT) allows powering from the receiver at the display end.
- Provides power supply for devices like WP8 Control Panel.

1.3 Package List

- 1 x EXT-HBT70-WP-SET 4K Wallplate HDBaseT Transmitter & Receiver
- 1 x 2-pin Pluggable Terminal Block
- 1 x 4-pin Pluggable Terminal Block
- 1 x User Manual

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

2. Specification

Input & Output	
Input	(1) HDMI; (1) VGA; (1) AUDIO; (1) 12V POWER ;
Input Connector	(1) 19-pin Type A female HDMI; (1) HD-15 VGA; (1) 3.5mm mini jack; (1) 2-pin Pluggable Terminal Block
Output	(1) HDBaseT; (1) 12V POWER
Output Connector	(1) RJ45; (1) 2-pin Pluggable Terminal Block
Transmission Mode	HDBaseT
Control Parts	
Control Ports	(1) FIRMWARE; (1) RS232
Control Connector	(1) Micro USB; (1) 3-pin Pluggable Terminal Block
General	
Video Resolution	VGA - up to 1920 x 1080@60Hz; HDMI - up to 4K/UHD@ 60Hz 4:2:0
Audio Impedance	＞10Ω
Frequency Response	20Hz~20KHz
SNR	>85db@20Hz~20KHz
Transmission Distance	1080p ≤ 70M; 4Kx2K ≤ 40M
Bandwidth	10.2Gbps
HDMI Standard	Support HDMI1.4 and HDCP complaint
External Power Supply	Input:100V~240V AC; Output: 12VDC 2A
Max Consumption	9.6W
Operation Temperature	-10 ~ +40℃
Storage Temperature	-15 ~ +55℃
Relative Humidity	10% ~ 90%
Dimension (W*H*D)	151mm x 80mm x 44mm
Net Weight	258g

3. Panel Description

3.1 Front Panel
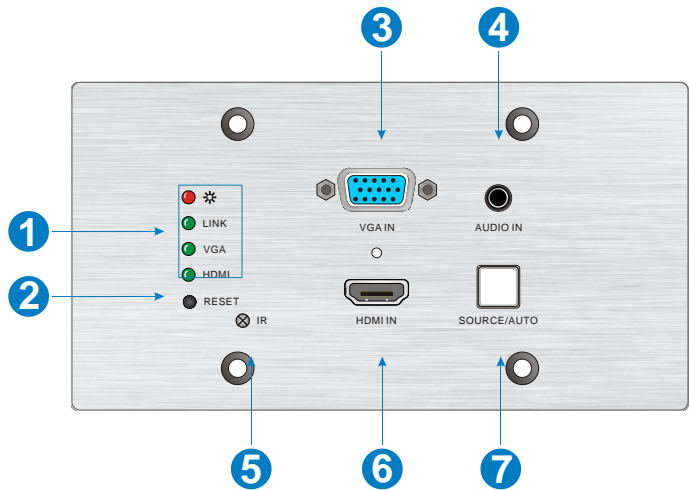
No.	Name	Description
①	LED indicator	POWER: Glows red when power is applied.
		LINK: Glows green when an HDBaseT link is established.
		VGA: Glows green when the VGA input is active, amber when a source is available, and off when there is no source connected.
		HDMI: Glows when HDMI input is active, amber when a source is available, and does not light when there is no source connected.
②	RESET	This button performs a soft reboot of the EXT-HBT70-WP-SET.
③	VGA IN	VGA input connector, connect with VGA source.
④	AUDIO IN	3.5mm stereo audio connector supplies audio for the VGA input.
⑤	IR	Built-in IR sensor to receive IR signal from IR remote.
⑥	HDMI IN	HDMI input connector, connect with HDMI source.
⑦	SOURCE/AUTO	Backlight Button. ▪ Press this button to switch input signal manually

		between HDMI and VGA sources.
		▪ Press and hold this button 3 seconds, the LED turn green to enter auto-switching mode. Press and hold again can exit this mode.

3.2 Rear Panel
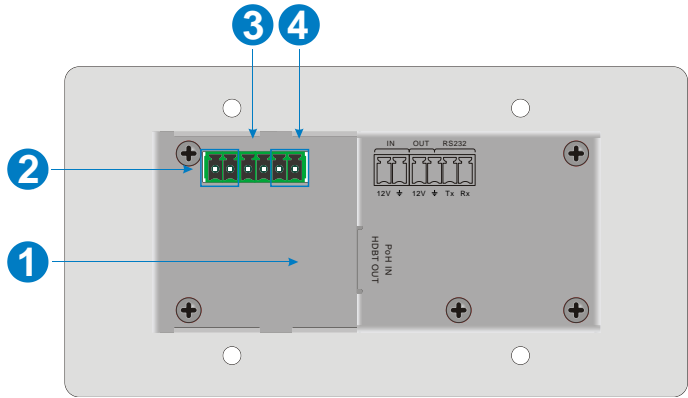
No.	Name	Description
①	HDBT OUT (PoH IN)	HDBaseT output, connects with HDBaseT Receiver over a single Category cable to deliver AV signals, support PoH.
②	IN	12V input, connects with power adapter.
③	OUT	12V output, connects with WP-KP-6 Control Panel to energize it.
④	RS232	Serial port for control EXT-HBT70-WP-SET or the third-party device via RS232 commands. Please refer to the ***5. RS232 Control*** for more details.

3.3 Side Panel
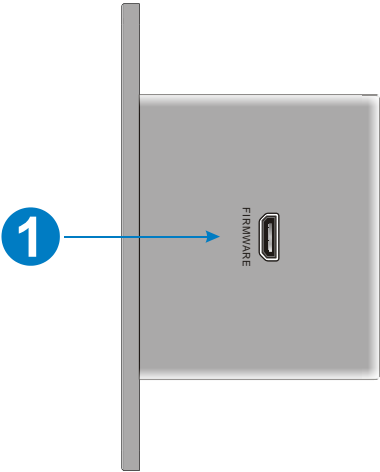
No.	Name	Description
①	FIRMWARE	Micro-USB connector used for firmware update.

4. System Connection

Usage Precautions

- Verify 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.
- All devices should be connected before power on.

Example Overview:
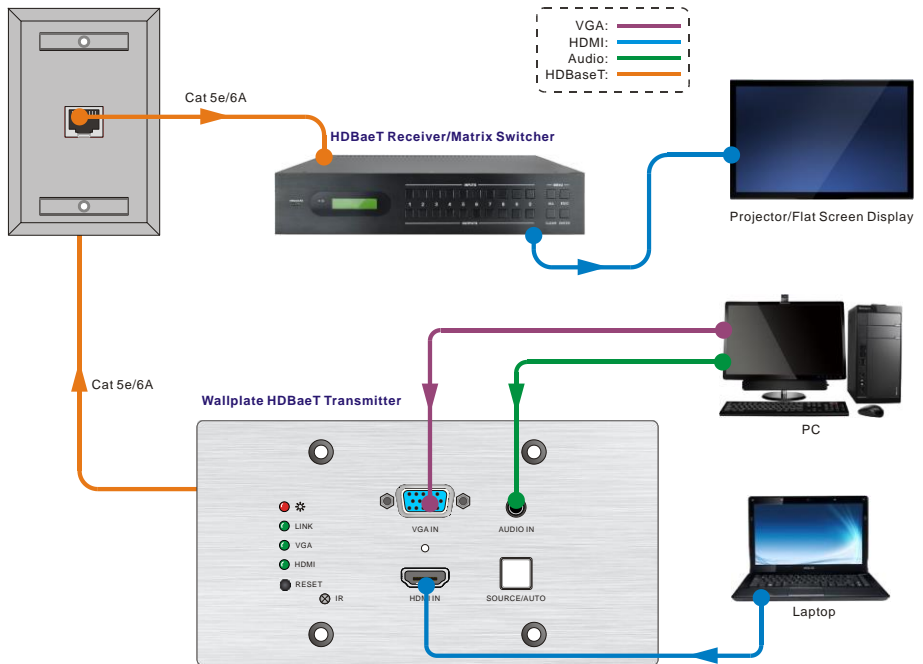
Installation

① If installing in a back-box, it is recommended that the EXT-HBT70-WP-T be installed in a suitable square box. The square box has sufficient space to terminate the cables with jacks behind the unit when fully installed.

7

②   Run one Cat5e/6/7 cable from the EXT-HBT70-WP-T location to the location where the HDBaseT Receiver/ Matrix Switcher will be located (somewhere near the display device).See the installation instructions for the 70M HDBaseT Receiver.

③   If using the Control Panel, run another twisted pair cable from the EXT-HBT70-WP-T location to the location that the Control Panel will be mounted.

④   All Cat5e/6/7 cables should be terminated with jacks. This allows the permanent link between the two devices to be tested.

⑤   Use the appropriate category rated patch cable to connect the HDBaseT link to the HDBT OUT connector.

⑥   If using the WP-KP-6 Control Panel, use the supplied adapter cable to connect with the second cable and follow the installation instructions for the HDBaseT Receiver and WP-KP-6 Control Panel.

Note: We recommends Cat5e/6/7 cabling with alien crosstalk prevention technology for the performance of HDBaseT link.

5. Button Control

SOURCE/AUTO Button

Press and hold the SOURCE/AUTO button for 3 seconds. When the button lights up green the EXT-HBT70-WP-T is in AUTO mode. This mode automatically selects the last video source connected to the EXT-HBT70-WP-T and outputs it to the display. Press and hold again for approximately 3 seconds, the light will go out, and the device will be in Manual mode which will allow the user to momentarily press the button to toggle between the two sources.

6. RS232 Control

6.1 RS232 Connection

There are two RS232 control modes switching via sending 50779% or 50780%.

① Control this EXT-HBT70-WP-T and far-end third-party device (such as Projector) device by the local PC, and the connection diagram shown as below:

GeMNeXT

RS232:
HDBaseT:

Cat 5e/6A

HDBT IN   HDMI OUT   IR IN   IR OUT   RS232   DC 24V

HDBaeT Receiver

Projector/Flat Screen Display

Cat 5e/6A

IN   OUT   RS232
12V   12V   Tx   Rs

PoH IN
HDBT OUT

Wallplate HDBaeT Transmitter

PC
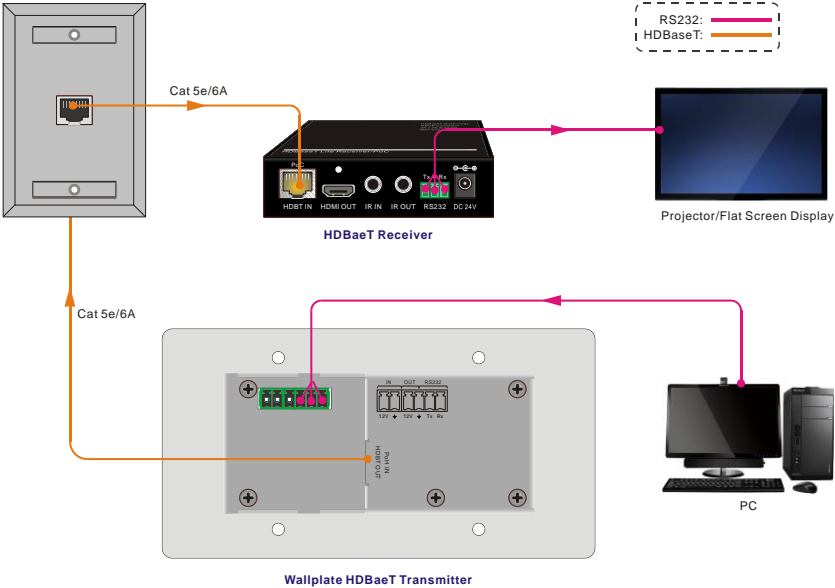
② Control the EXT-HBT70-WP-T by the remote PC which is connected with Receiver.

Wallplate HDBaeT Transmitter
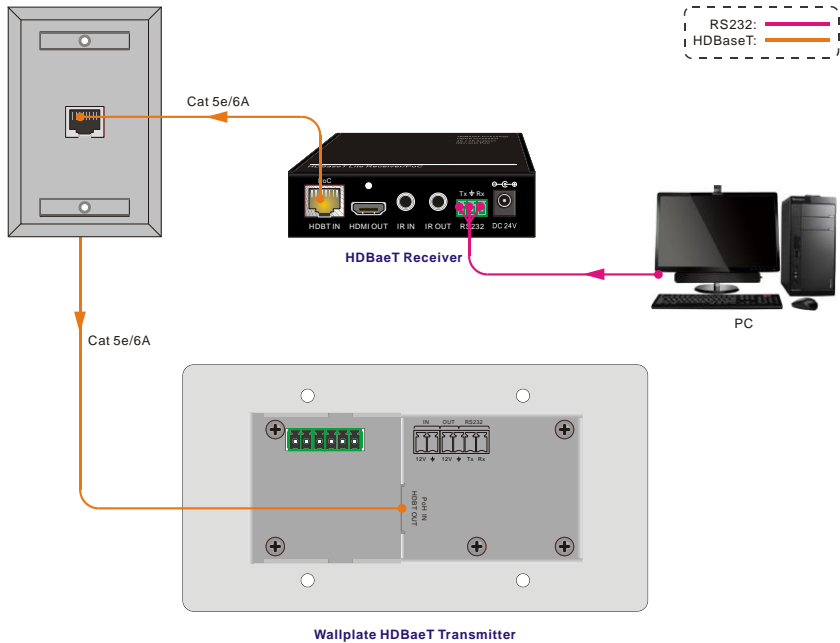
The RS232 control mode can be chosen via RS232 commands, please refer to the *5.3.1 RS232 mode switching* for more details.

6.2 RS232 Control Software

- **Installation** Copy the control software file to the control PC.
- **Uninstallation** Delete all the control software files in corresponding file path.

Basic Settings:

First, connect EXT-HBT70-WP-T with all input devices and output devices needed, then to connect it with a computer which is installed with RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:

CommWatch.exe

The interface of the control software is showed as below:
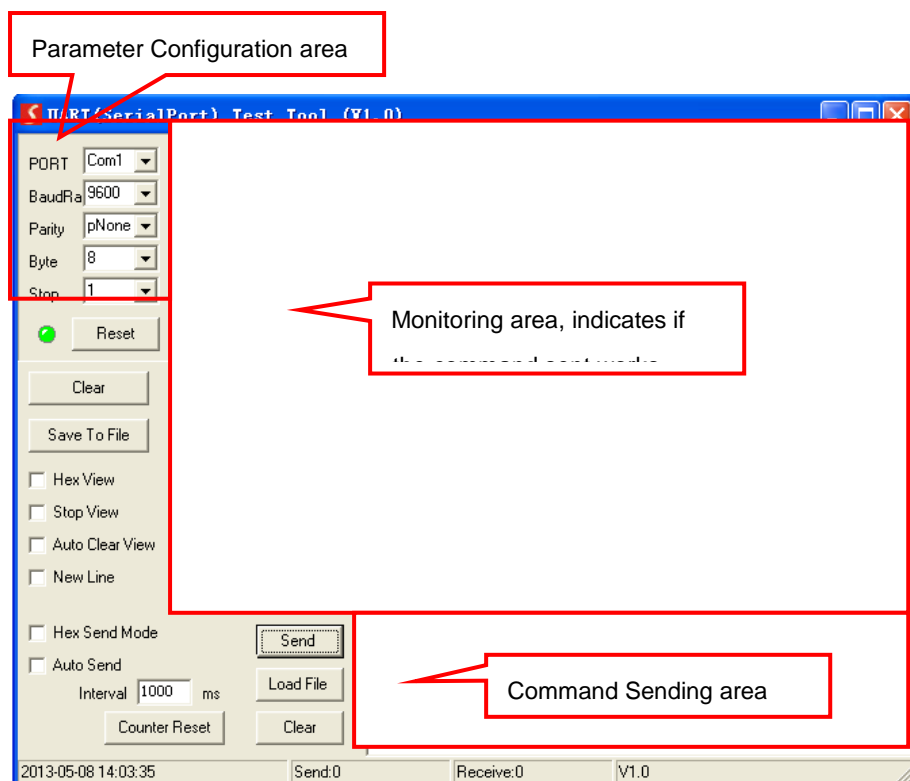
Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then you are able to send command in Command Sending Area.

6.3 RS232 Command

Communication protocol: RS232 Communication Protocol

Baud rate: 9600   Data bit: 8   Stop bit: 1   Parity bit: none

6.3.1 Control Mode Switching

Command	Function	Feedback Example
50779%	Switch to RS232 mode 1（Default）, control scaler switcher and the far-end third-party device.	RS232 Mode 1: RS232 Control Scaler & Remote.
50780%	Switch to RS232 mode 2, control the scaler switcher from remote.	RS232 Mode 2:RS232 & Remote Control Scaler

6.3.2 Signal Switching

Command	Function	Feedback Example
50770%	Enable auto-switching	Auto Switching
50771%	Disable auto-switching	Manual Switching
50702%	Switch to HDMI input	Switch to HDMI
50704%	Switch to VGA input	Switch to VGA

6.3.3 VGA Scaling Configuration

The default output resolution for VGA is 1920x1080. Below is a list of the output resolutions the built-in scaler can output.

Command	Function	Feedback Example
50632%	Check the output resolution	Resolution: xx
50619%	Change the resolution to 1360X768 HD	Resolution: 1360x768
50626%	Change the resolution to 1024X768 XGA	Resolution: 1024x768
50627%	Change the resolution to 1280X720 720P	Resolution: 1280x720

Command	Function	Feedback Example
50628%	Change the resolution to 1280X800 WXGA	Resolution: 1280x800
50629%	Change the resolution to 1920X1080 1080P	Resolution: 1920x1080
50620%	Change the resolution to1920X1200 WUXGA	Resolution: 1920x1200
50621%	Change the resolution to1600X1200 UXGA	Resolution: 1600x1200

6.3.4 HDCP Compliance

Command	Function	Feedback Example
50790%	Set the HDCP status of HDMI output socket to Active	HDCP Active
50791%	Set the HDCP status of HDMI output socket to On	HDCP On
50792%	Set the HDCP status of HDMI output socket to Off	HDCP Off
50793%	Check HDCP status	HDCP Off/ HDCP On/ HDCP Active (default)

6.3.5 VGA Image Adjustment

Command	Function	Feedback Example
50636%	Check the brightness	Brightness: xx (xx=00～99)
502xx%	Set the brightness to xx.	Brightness: xx (xx=00～99)
50637%	Check the contrast	Contrast: xx (xx=00～99)
503xx%	Set the contrast to xx.	Contrast: xx (xx=00～99)
50638%	Check the saturation	Saturation: xx (xx=00～99)
504xx%	Set the saturation to xx.	Saturation: xx (xx=00～99)
50639%	Check sharpness	Sharpness: xx (xx=00～99)
505xx%	Set the sharpness to xx.	Sharpness: xx (xx=00～99)

Command	Function	Feedback Example
50606%	Auto-adjust the input parameter	VGA Input Auto
50640%	Check the color temperature	Color Temperature: xx (xx can be medium, warm, user, or cool.)
50607%	Adjust the color temperature	Color Temperature: xx (xx can be medium, warm, user, or cool.)
50635%	Check the image aspect ratio	Aspect Ratio: xx (xx can be 16:9, 4:3, or auto.)
50608%	Set the aspect ratio	Aspect Ratio: xx (xx can be 16:9, 4:3, or auto.)
50633%	Check the picture mode	Picture Mode: xx (xx can be dynamic, standard, mild, or user.)
50614%	Set the picture mode	Picture Mode: xx (xx can be dynamic, standard, mild, or user.)
50707%	Check the present resolution and polarity	1920x1080 Hpolarity:1 Vpolarity:0
50705%	Change the horizontal polarity to the opposite	Hpolarity:0/1
50706%	Change the vertical polarity to the opposite	Vpolarity:0/1
50678%	Enable screen output adjusting	Enter Output Position Adjust
50679%	Disable screen output adjusting	Exit Output Position Adjust
50670%	Move the image to left	Output Position Adjust X xx
50671%	Move the image to right	Output Position Adjust X xx
50672%	Move the image up	Output Position Adjust Y xx
50673%	Move the image down	Output Position Adjust Y xx
50674%	Pull left from right side (decrease image width)	Output Width Adjust xx

Command	Function	Feedback Example
50675%	Stretch right from right side (increase image width)	Output Width Adjust xx
50676%	Stretch upwards from bottom side (decrease image height)	Output Height Adjust xx
50677%	Stretch downwards from bottom side (increase image height)	Output Height Adjust xx

6.3.6 **EDID Configuration**

| Command	Function	Feedback Example
50772%	EDID pass-through (default)	EDID: bypass mode
50773%	Set EDID data to 1080P PCM 2.0ch	EDID:1080P&PCM 2ch
50774%	Set EDID data to 1080P Dolby 5.1	EDID:1080P&5.1ch
50775%	Set EDID data to 1080P3D Dolby 5.1	EDID:1080P3d&5.1ch
50776%	Set EDID data to 1080i PCM 2.0ch	EDID:1080i&PCM 2ch
50777%	Set EDID data to 4Kx2K PCM 2.0ch	EDID:4K&PCM 2ch
50778%	Check EDID data	EDID: bypass mode EDID:1080P&PCM 2ch EDID:1080P&5.1ch EDID:1080P3d&5.1ch EDID:4K&PCM 2ch
50799%	Program EDID file, send EDID data within 10s	Waiting for edid within 10 secs!

Note: EDID commands are for HDMI sources only.

6.3.7 **Device Configuration**

Command	Function	Feedback Example
50698%	Software upgrading	
50699%	Check the software version	Version Vx.x.x
50617%	Restore factory default	

7. Panel Drawing EXT-HBT70-WP-T
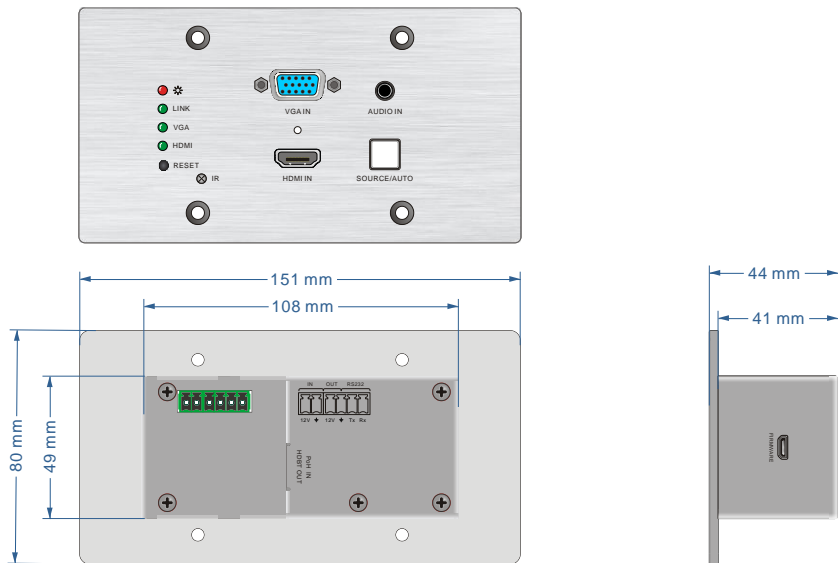
8. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Color losing or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken	Check whether the cables are connected correctly and in working condition.
No HDMI signal output in the device while local HDMI input is in normal working state		
Output image with white noise.		
POWER indicator doesn't work or no respond to any operation	Loose or failed power cord connection	Ensure the power cord connection is good

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

9. Customer Service

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

1) Warranty

The limited warranty period of the product is fixed 3 (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 dealers only.

3) Warranty Exclusions:

- 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 defeat 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 or dealer.

Remarks: For further assistance or solutions, please contact your local distributor or dealer.

EXT-HBT70-WP-R

Ultra-thin HDBaseT Receiver
131ft/40m 4K UHD, support audio de-embedding

Introduction

The EXT-HBT70-WP-R is an Ultra-thin HDBaseT Receiver designed with audio de-embedded outputs. It receives 4K/1080p HDMI signal via CAT5e/CAT6a cable from HDBaseT Transmitter or Matrix Switcher at 40m/70m.

It supports unidirectional PoH function, the receiver can be powered by HDBaseT Transmitter or Matrix Switcher.

Features

- Supports HDMI1.4 & HDCP2.2, and is backward compatible to the previous version.

- Maximum transmission distance is up to 40m (131ft) at 4Kx2K, and 70m (230ft) at 1080p.

- Supports bi-directional IR and RS232 pass-through for long-distance control.

- Supports bi-directional PoH for simplified wiring, and compatible with 48VDC PoC.

- Supports audio de-embedded outputs.

Package List

- 1 x EXT-HBT70-WP-R Receiver

- 2 x Mounting Ears & 2 x Screws

- 4 x Plastic Cushions

- 1 x 3-Pin Phoenix Connector (Male)

- 1 x User Manual

Panel Description

Front Panel

No.	Name	Description
①	RS232 MODE switcher	CTRL: RS232 pass-through control mode; UPDATE A: Update Valens IC program, connect a PC to the RS232 port, and then double-click the update file (.bat). UPDATE B: Update the IC program which is used for de-embedding audio, the upgrade method is the same as the above UPDATE A.
②	Link status LED	OFF: No Link; GREEN:Link successful.
③	HDCP compliant LED	OFF: No HDMI traffic (no picture); GREEN: Traffic with HDCP; Blinking: Traffic without HDCP.
④	Power LED	OFF: No power; RED: DC power present.

Rear Panel
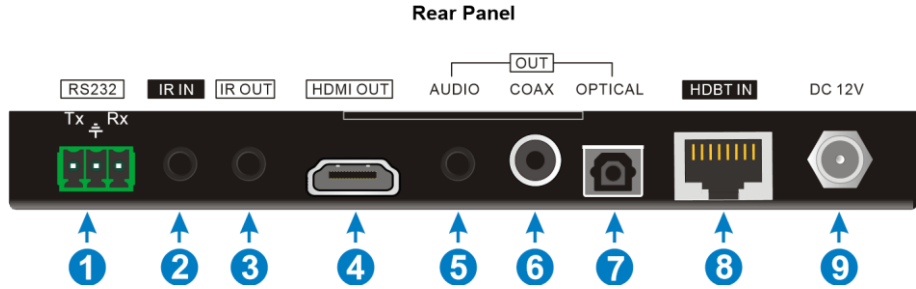
No.	Name	Description
①	RS232 connector	If one is connected with control device (e.g. PC), and the other should be connected with the third-party that need to be controlled.
②	IR IN	Work with far-end IR OUT port, connect with IR Receiver (with carrier) to collect IR signal to control far-end display device from local.
③	IR OUT	Work with far-end IR IN port, connect with IR Emitter to send IR signal to control input source device.

| ④	HDMI OUT	HDMI type A connector, connect to display.
⑤	AUDIO OUT	3.5mm stereo audio jack, connect to analog stereo audio device.
⑥	COAX OUT	Coaxial audio connector, connect to digital audio device.
⑦	OPTICAL OUT	Optical audio connector, connect to optical audio devices.
⑧	HDBT IN	Connect to the HDBT OUT socket on HDBaseT Transmitter or Matrix Switcher via CAT5e/6a/7 cable, support bidirectional PoH technology.
⑨	DC 12V power port	Connect to 12VDC power adaptor, or it can be powered via the HDBaseT Transmitter or Matrix Switcher by bidirectional PoH technology.

Specification

Video	
Video Input	(1) HDBT IN
Video Input Connector	(1) RJ45
Video Output	(1) HDMI OUT
Video Output Connector	(1) HDMI type A
Audio	
Audio Output	(1) AUDIO OUT; (1) COAX OUT; (1) OPTICAL OUT
Audio Output Connector	(1) 3.5mm stereo audio jack; (1) Coaxial audio connector; (1) Optical audio connector
Digital Audio Output Format	PCM/Dobly/DTS
Analog Audio Output Format	PCM
Frequency Response	20 Hz to 20 kHz, ±3 dB

Control	
Control Ports	(1) IR IN; (1) IR OUT; (1) RS232
Control Connector	(2) 3.5mm mini jack (IR); (1) 3-pin phoenix connector (RS232)
General	
Transmission Mode & Distance	HDBaseT (bi-directional PoH); 1080P ≤ 70m; 4K×2K ≤ 40m
Resolution	Up to 4K×2K@60Hz 4:2:0
Bandwidth	10.2Gbps
HDMI Standard	HDMI1.4 & HDCP2.2
Power Consumption	15W (max)
Temperature	-10℃~ 50℃
Humidity	0% ~ 90%
Power Supply	Input: 100VAC~240VAC, 50/60Hz; Output: 12VDC 2A
Dimension (W*H*D)	152mmx16.2mmx100mm
Net Weight (g)	236g

System Diagram
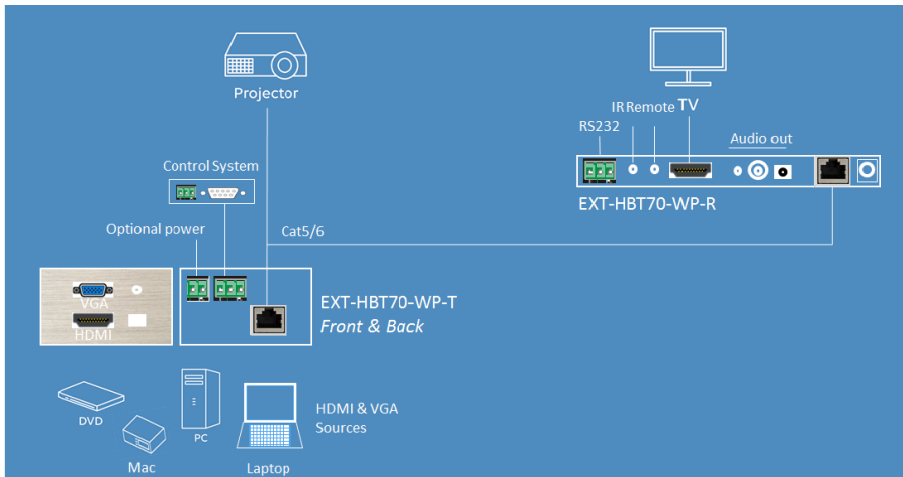
www.GeMNeXT.com

GeMNeXT rights owned by AVDIS B.V.

Tel: +31 (0)85 2100 614

Email: info@gemnext.com

Website: www.gemnext.com

Ambachtstraat 3A
3732 CN De Bilt
The Netherlands