User Manual

WOXCON

TPUH407-US

4K HDBaseT 2.0 Extender

All Rights Reserved

Version: TPUH407-US_2018V1.0

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 July, 2018. 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 performance 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.

Table of Content

1. Product Introduction

Thanks for choosing the TPUH407-US HDBaseT2.0 extender, which consists of a wallplate transmitter and a receiver. The extender is designed to transmit HDMI (1080P, 4K@60Hz 4:2:0), RS232 and USB signal up to 328ft/100m away by using a signal CATx cable.

The wallplate transmitter features two HDMI inputs, and one of them can be selected as the input source by the **SOURCE/AUTO** button on the front panel. It also features Type-B USB port to connect a PC or other device which needs to be controlled by the far-end HID devices (e.g. mouse, keypad and so on), which are connected to the Type-A USB input ports of receiver. The transmitter supports CEC: the **DISPLAY ON/OFF** button on the front panel is used to control the far-end display device, and it can be programmed by RS232 command to ensure the compatibility with various display devices. Moreover, 24V PoC allows the transmitter can be powered from the receiver, and the transmitter has 12V DC output for powering other device.

1.1 Features

- Supports HDMI signal up to 4K@60Hz 4:2:0.
- HDMI 1.4 standard and HDCP 2.2 compliant.
- Automatically detect active input when source is connected.
- HDBaseT technology extends HDMI, USB and RS232 signal up to 328ft/100m over CATx cable.
- Supports bi-directional RS232 pass-through with HDBaseT connection and local control.
- Supports CEC to turn on/off display by the **DISPLAY ON/OFF** button.
- Ensures display of content-protected media and interoperability with other HDCP compliant devices.
- Supports 24V PoC wide range, the transmitter can be powered from the receiver by the CATx cable.
- Provides 12V power supply for other device like WP series Control Panel.
- Firmware upgrade by Micro-USB port.

1.2 Package List

Wallplate transmitter	● 1x TPUH407T-US Wallplate Transmitter
	● 4x Mounting Screws
	● 1x 2-pin Terminal Block
	● 1x 3-pin Terminal Block
Receiver	● 1x TPUH452R Receiver
	● 2x Mounting Ears
	● 4x Mounting Screws
	● 4x Plastic Cushions
	● 1x RS232 Cable (3-pin to DB9)
	● 1x Power Adaptor (24V DC 1.25A)
	● 1 x User Manual

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

2. Specification

2.1 Transmitter

| Input	
Input	(2) HDMI
Input Connector	(2) Type-A female HDMI
Output	
Output	(1) HDBT, (1) TO PC, (1) DC OUT
Output Connector	(1) RJ45, (1) Type-B USB, (1) 2-pin terminal block
Control	
Control Port	(1) FIRMWARE, (1) RS232
Control Connector	(1) Micro-USB, (1) 3-pin terminal block
General	
Bandwidth	10.2Gbps
HDMI Version	1.4
HDCP Version	2.2
Video Resolution	Up to 4K×2K@60Hz 4:2:0
Transmission Mode	HDBaseT
Transmission Distance	1080P/4K@60Hz ≤ 328ft/100m
Power Supply	Powered from the receiver by CATx cable.
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10%-90%
Dimension (W*H*D)	89mm x 104.5mm x 44mm
Net Weight	250g

2.2 Receiver

| Input	
Input	(1) HDBT, (3) USB
Input Connector	(1) RJ45, (3) Type-A USB
Output	
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
Control	
Control port	(1) FIRMWARE, (1) RS232
Control Connector	(1) Micro-USB, (1) 3-pin terminal block
General	
Bandwidth	10.2Gbps
HDMI Version	1.4
HDCP Version	2.2
Video Resolution	Up to 4K×2K@60Hz 4:2:0
Transmission Mode	HDBaseT
Transmission Distance	1080P/4K@60Hz ≤ 328ft/100m
AC Adapter Input Power	100V~240V AC, 50/60Hz
Input Power	24V DC 1.25A
Power Consumption	23W (Max, work with the transmitter)
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10%-90%
Dimension (W*H*D)	136mm x 25.5mm x 95mm
Net Weight	365g

3. Panel Description

3.1 Transmitter Front Panel
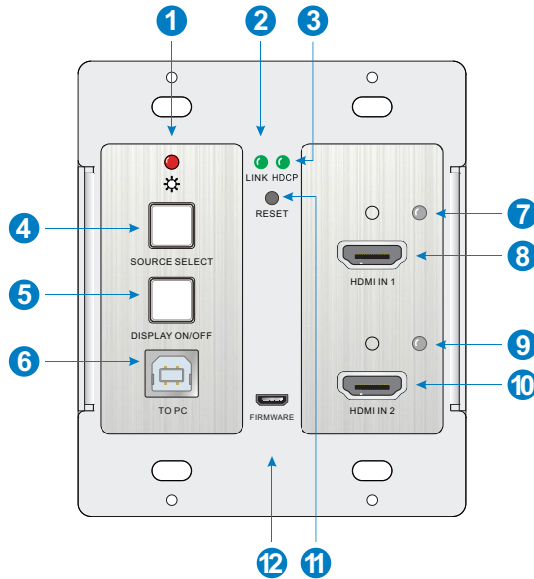
① **POWER LED:** The LED illuminates red when power is applied.

② **LINK LED:** The LED illuminates green when the transmitter is successfully connected to the receiver are by a CATx cable.

③ **HDCP LED:**

- The LED illuminates green when the HDMI signal is transmitted with HDCP.
- The LED blinks green when the HDMI signal is transmitted without HDCP.
- The LED turns off when there is no HDMI signal input.

④ **SOURCE SELECT:** Press the button to select the next input source, or press and hold it at least 3 seconds to enable auto-switching mode. For more details, please refer to the *5.1 Signal Switching* on the page 10.

⑤ **DISPLAY ON/OFF:** Press the button to turn on/off the display. For more details, please refer to the *5.2 Display Control* on the page 10.

⑥ **TO PC:** Type-B USB port to connect a PC or other device needs to be controlled.

⑦ **HDMI IN 1 LED:** The LED illuminates orange when the **HDMI IN 1** port is connected to a source device, and it will turn green once the device is selected as input source.

⑧ **HDMI IN 1:** Type-A HDMI port to connect a HDMI source.

⑨ **HDMI IN 2 LED:** The LED illuminates orange when the **HDMI IN 2** port is connected to a source device, and it will turn green once the device is selected as input source.

⑩ **HDMI IN 2:** Type-A HDMI port to connect a HDMI source.

⑪ **RESET:** Press the recessed button to reboot this unit.

⑫ **FIRMWARE:** Micro-USB port for firmware upgrade.

3.2 Transmitter Rear Panel
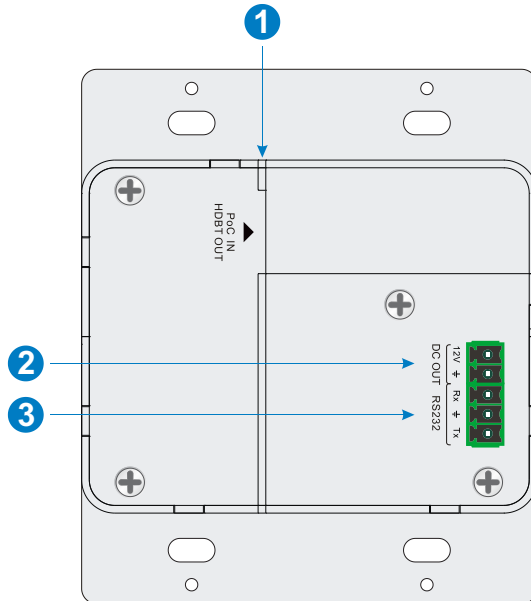
① **HDBT OUT (PoC IN):** RJ45 HDBaseT output port to connect to the **HDBT IN** port of the receiver by a CATx cable. It supports 24V PoC to enable the transmitter can

be powered from receiver.

② **DC OUT:** 2-pin terminal block to connect a compatible device which needs to be powered.

③ **RS232:** 3-pin terminal block to connect a control device (such as PC) to send RS232 command to control this unit, or to connect a third party device which needs to be controlled by RS232 pass-through. For more details, please refer to the ***6. RS232 Control*** on the page 11.

3.3 Receiver Front Panel
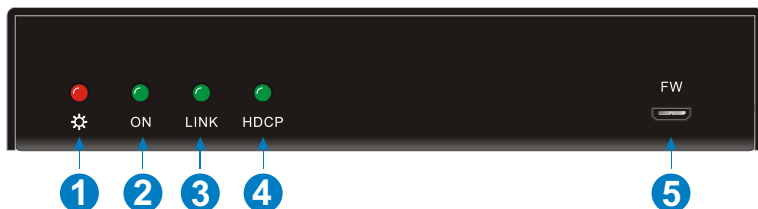
① **POWER LED:** The LED illuminates red when power is applied.

② **ON LED:** The LED blinks green when the receiver is in the working status.

③ **LINK:** The LED illuminates green when the receiver is successfully connected to the transmitter are by a CATx cable.

④ **HDCP LED:**
- The LED illuminates green when the HDMI signal is transmitted with HDCP.
- The LED blinks green when the HDMI signal is transmitted without HDCP.
- The LED turns off when there is no HDMI signal input.

⑤ **FW:** Micro-USB port for firmware upgrade.

3.4 Receiver Rear Panel
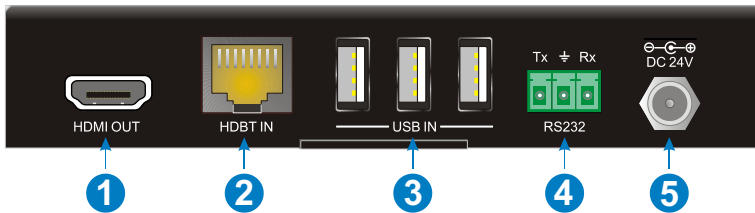
① **HDMI OUT:** Type-A HDMI port to connect a display.

② **HDBT IN:** RJ45 HDBaseT input port to connect to the **HDBT OUT** port on the transmitter by a CATx cable.

③ **USB IN:** Three type-A USB ports to connect HID devices (e.g. mouse, keypad and so on) to control the device which is connected to the **TO PC** port of the transmitter.

④ **RS232:** 3-pin terminal block to connect a control device (such as PC), or to connect a third party device which needs to be controlled by RS232 pass-through. For more details, please refer to the ***6. RS232 Control*** on the page 11.

⑤ **DC 24V:** Power port to connect the 24V DC power adaptor.

4. System Connection

4.1 Usage Precaution

● 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.

● All devices should be connected before power on.

4.2 System Diagram

The following diagram illustrates typical input and output connection that can be utilized with the extender:
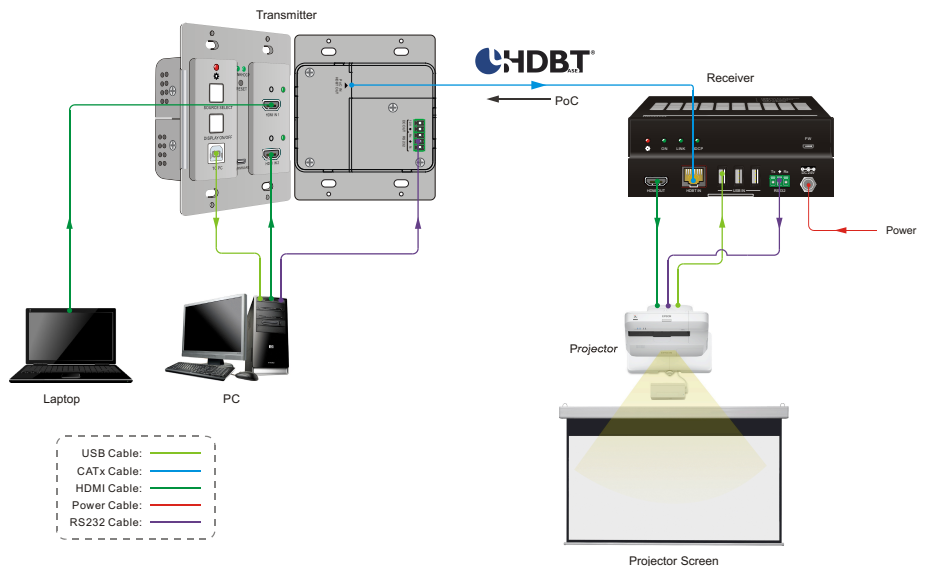
5. Button Control

5.1 Signal Switching

1) Press the **SOURCE SELECT** button to switch to next source device, and then the corresponding input LED will turn green.

2) Press and hold the **SOURCE SELECT** button at least 3 seconds to enable auto-switching mode, and it abides by the following principles:

- **New input:**

Once a new input signal detected, the transmitter will automatically switch to this new signal.

- **Signal removing**

Once removing the current display signal, the transmitter will automatically switch to another active HDMI input.

- **Rebooting device**

The transmitter can save the last configuration before losing power. If the last switching mode is auto-switching, the transmitter will automatically enter auto-switching mode once rebooted, then detect all inputs and memorize their connection status for future rebooting using. If the last selected input source is still available, the transmitter will switch to this input. Otherwise, it will switch to the first available active input source starting at **HDMI IN 1**.

- **Exit auto-switching mode**

The input source would remain the same when press and hold the **SOURCE SELECT** button again to exit the auto mode.

5.2 Display Control

1) Press the **DISPLAY ON/OFF** button to turn on/off the display.

2) The **DISPLAY ON/OFF** can be customized by sending RS232 commands for compatibility with various displays. For more details, please refer to the ***6.3.4 Button Control User-defined*** on the page 16.
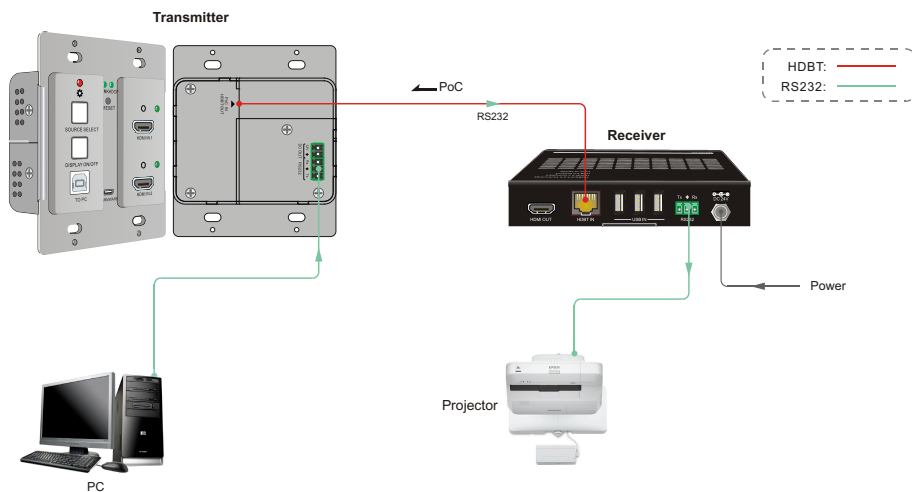
6. RS232 Control

6.1 RS232 Connection

According the RS232 control mode, there are three types of RS232 connection for different application.

① When only control the local transmitter, please connect a control device (e.g. PC) to the RS232 port of the transmitter, the connection diagram shown as below:

Transmitter


PC
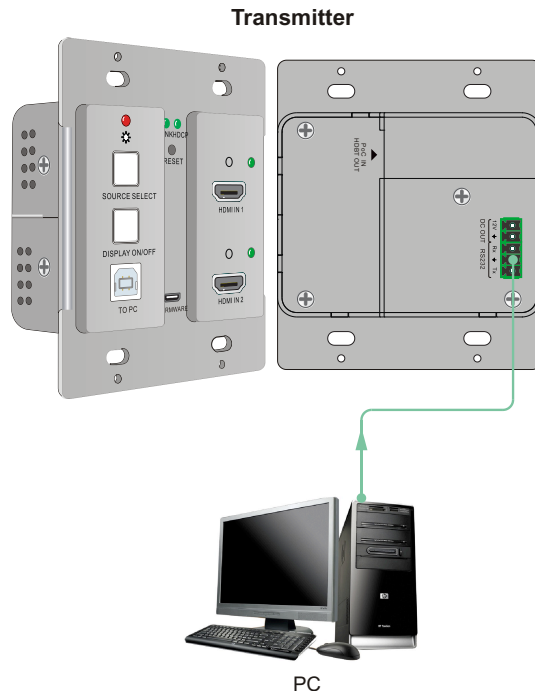
② When control the far-end third party device from local control device (e.g. PC), please connect the PC to the RS232 port of the transmitter, and then please connect the third party device (e.g. projector) to the RS232 port of receiver. The connection diagram shown as below:

③ When control the local third party device from far-end control device (e.g. PC), please connect the PC to the RS232 port of the receiver, and then please connect the third party device to the RS232 port of transmitter. The connection diagram shown as below:
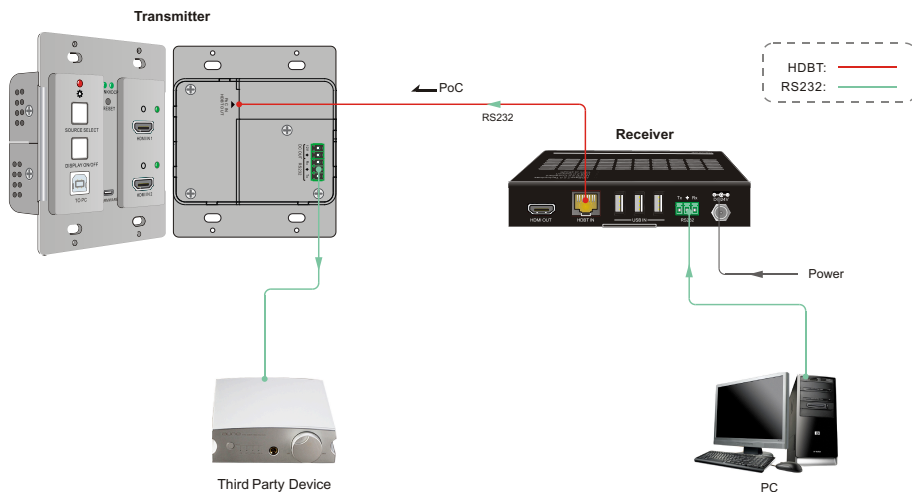
6.2 RS232 Control Software

After set all needed input and output devices according to the RS232 connection diagram, please install the RS232 control software into the control PC to send RS232 command.
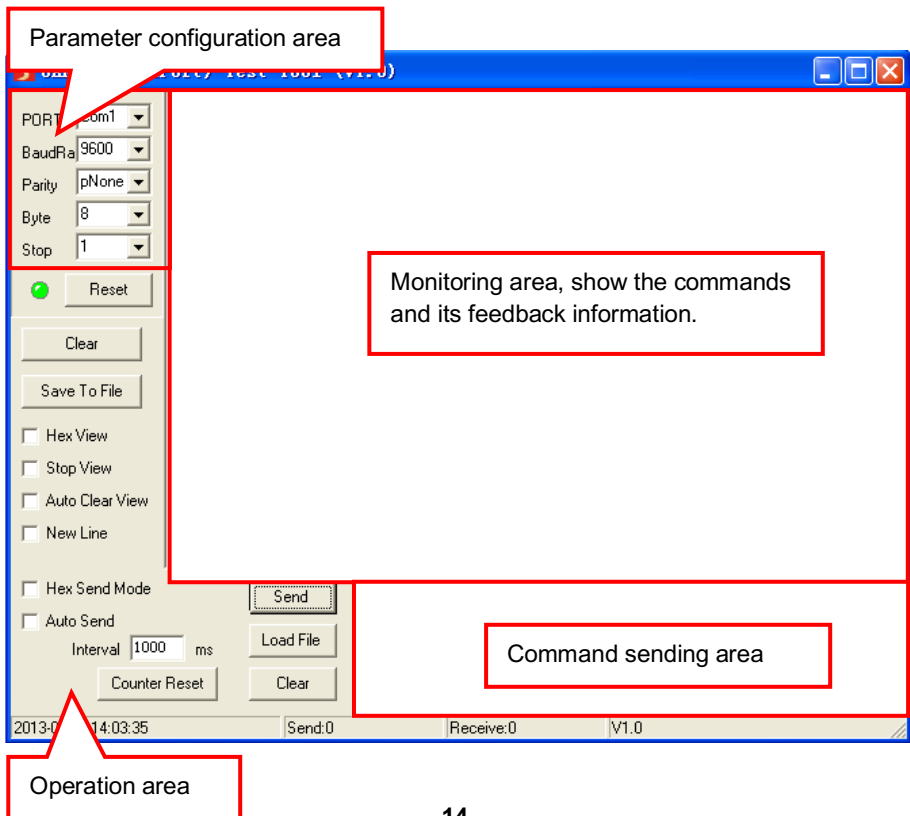
- **Installation:** Copy the control software file to the control PC.
- **Uninstallation:** Delete all the control software files in corresponding file path.

Here take the software **CommWatch.exe** as an example.

First, please double-click the following icon:

CommWatch.exe

Then, 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, then the RS232 commands can be sent in the Command Sending Area.
Baud rate: 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
Data bit: 8.
Stop bit: 1.
Parity bit: none.

6.3 RS232 Command

Beside the button control on the front panel, the transmitter can be controlled by sending the below commands.
Baud rate: 9600.
Data bit: 8.
Stop bit: 1.
Parity bit: none.

6.3.1 Signal Switching

Command	Function	Feedback Example
50701%	Switch to HDMI IN 1 input.	SWITCH TO HDMI1
50702%	Switch to HDMI IN 2 input.	SWITCH TO HDMI2
50710%	Enable auto-switching mode.	AUTO SWITCHING
50711%	Disable auto-switching mode.	MANUAL SWITCHING
50712%	Get the signal switching mode.	AUTO SWITCHING
		MANUAL SWITCHING

6.3.2 CEC Command

Command	Function	Feedback Example
50730%	Volume up the display	CEC VOLUME INCREASE
50731%	Volume down the display	CEC VOLUME DECREASE
50732%	Mute the display	CEC VOLUME MUTE
50733%	Display ON	CEC DISPLAY ON
50734%	Display OFF	CEC DISPLAY OFF

Note: *The display must support CEC.*

6.3.3 HDCP Command

Command	Function	Feedback Example
50709%	Get the HDCP mode	HDCP: ON
		HDCP: OFF
50713%	Get the HDCP status	HDCP1.4
		HDCP2.2
		NO HDCP

6.3.4 Button Control User-defined

When the display is incompatible with the extender, the **DISPLAY ON/OFF** button can be defined to send control characters by following command format.

| Command Format	Function	Command Example
/+kb: xxxx	k=0, Set the **DISPLAY ON** k=1, Set the **DISPLAY OFF** xxxx: ASCII characters b=0, Baud rate is 2400 b=1, Baud rate is 4800 b=2, Baud rate is 9600 b=3, Baud rate is 19200 b=4, Baud rate is 38400 b=5, Baud rate is 57600 b=6, Baud rate is 115200	/+02:abc123
		Set the **DISPLAY ON** to send the ASCII characters **abc123**.
/-kb:xx xx xx xx	k=0, Set the **DISPLAY ON** k=1, Set the **DISPLAY OFF** xx xx xx xx: HEX characters b=0, Baud rate is 2400 b=1, Baud rate is 4800 b=2, Baud rate is 9600 b=3, Baud rate is 19200 b=4, Baud rate is 38400 b=5, Baud rate is 57600 b=6, Baud rate is 115200	/-12:30 31 32 33
		Set the **DISPLAY OFF** to send the HEX characters **30 31 32 33**.

6.3.5 Factory Default

Command	Function	Feedback Example
50617%	Restore factory default	FACTORY RESET
50699%	Get firmware version	VERSION Vx.x.x

7. Panel Drawing

7.1 Transmitter
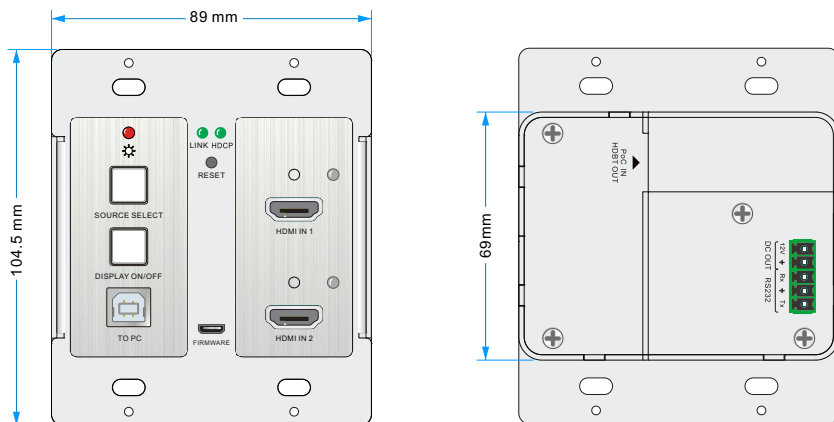
7.2 Receiver
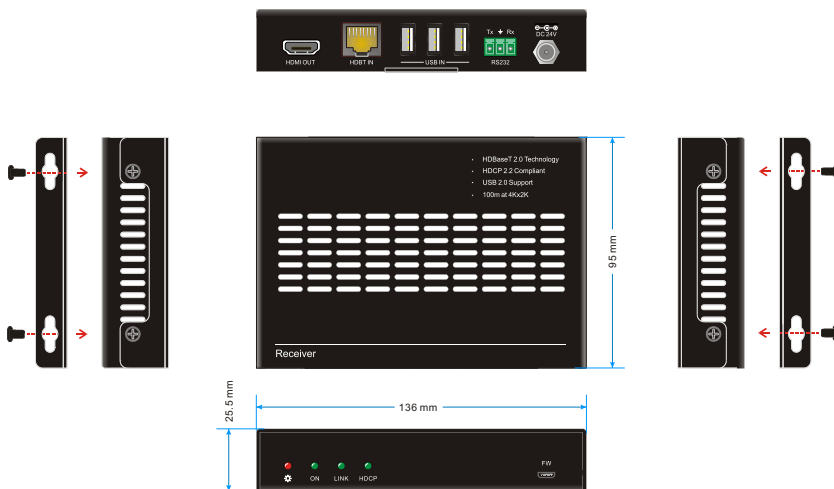
8. Troubleshooting & Maintenance

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

Note: If your problem still remaining after following the above troubleshooting steps, please contact your local dealer or distributor for further assistance.

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 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 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.

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