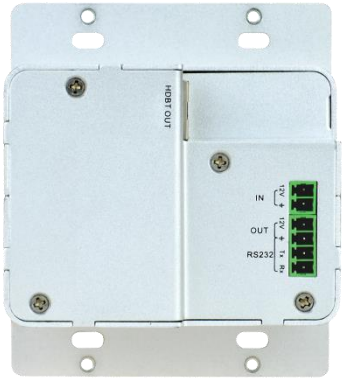
User Manual

TPUH406TV-US

4K Wallplate HDBaseT Transmitter



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Version: TPUH406TV-US_2017V1.2

PTN www.PTN-electronics.com

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 July 6, 2017. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

Trademarks

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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.

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1. Introduction

1.1 Introduction to TPUH406TV-US

Connect, switch and extend HDMI and 1 VGA+ audio input to displays or projectors in conference rooms, classrooms and control centers. Inputs are automatically switched (or manually selected) to permit seamless transfer from one source to the next. Extend signal up to 70 meters (230ft) over a single Category cable. Certified HDBaseT technology for a complete professional installation including HD video, power, RS232 control. This device uses Power over HDBaseT (PoH) to provide the flexibility for powering the transmitter from the receiver at the display over the same Category cable. This product is used with HDBaseT 70M extender Receiver.

1.2 Features

- HDBaseT Alliance certified.
- Dual gang Decora form factor with matte anodized aluminum finish.
- Delivers full uncompressed HD video 3D and 4Kx2K (VESA resolutions up to 1920x1200@60Hz, and HDTV resolutions up to 2160p) over single Category cable up to 70m (230ft).
- Supports key features of HDMI 1.4 including EPG, EDID, and HDCP.
- Built-in scaling function to automatically match signals to display native resolution.
- PoH (power over HDBaseT) allows powering from the receiver at the display end.
- Locking features for input connectors.

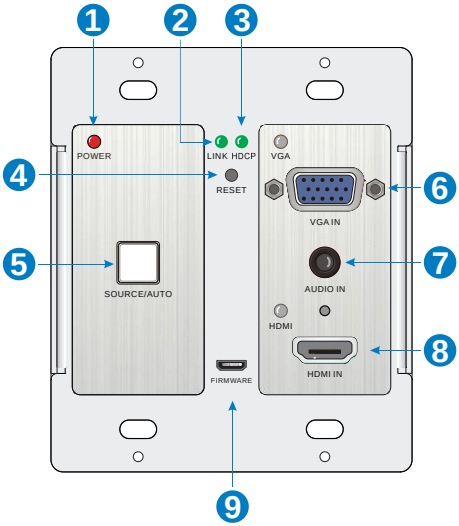
1.3 Package List

- 1 x TPUH406TV-US
- 4 x Mounting Screws
- 1 x 2-pin Pluggable Terminal Block
- 1 x 4-pin Pluggable Terminal Block
- 1 x Top Cover
- 1 x User Manual

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

2. Panel Description

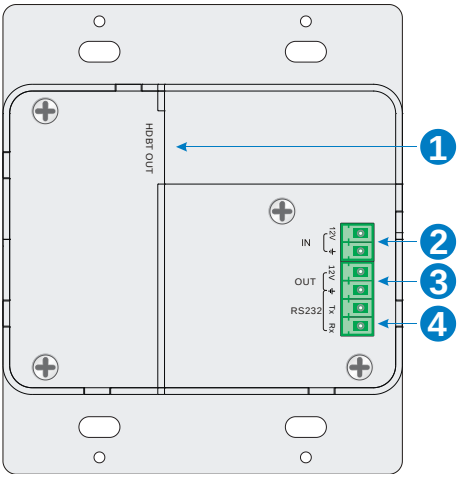
2.1 Front Panel



No.	Name	Description
①	POWER	LED indicator glows red when power is applied.
②	LINK	LED indicator glows green when an HDBaseT link is established.
③	HDCP	LED indicator glows green when an HDCP link is established.
④	RESET	This button performs a soft reboot of the 4K Wallplate HDBaseT Transmitter.
⑤	SOURCE/AUTO	Button switches sources and upon push and hold changes mode between Auto and Manual source select. LED indicator glows green when in Auto mode.
⑥	VGA & VGA IN	VGA – LED indicator glows green when the VGA input is active, amber when a source is available, and does not light when there is no source connected. VGA IN – HD 15 connector.
⑦	AUDIO IN	3.5mm stereo audio connector supplies audio for the VGA input.
⑧	HDMI & HDMI IN	▪ HDMI - LED indicator glows when HDMI input is active, amber when a source is available, and does

		not light when there is no source connected. ▪ HDMI IN – HDMI connector with locking feature.
⑨	FIRMWARE	Micro-USB connector used to update firmware.

2.2 Rear Panel



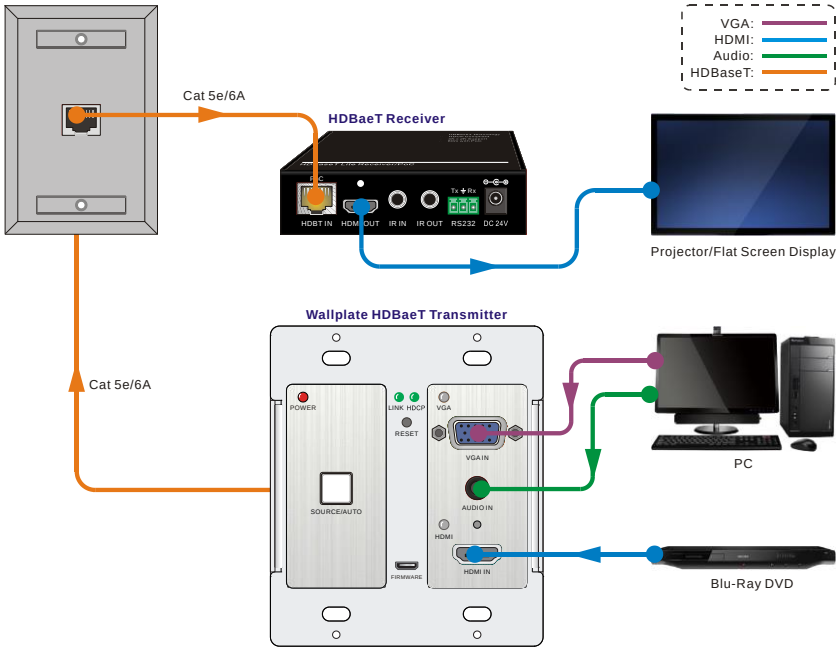
No.	Name	Description
①	HDBT OUT	HDBaseT output, connects with HDBaseT Receiver over a single Category cable to deliver AV signals, support PoC.
②	IN	12V input, connects with power adapter.
③	OUT	12V output, connects with Control Panel to energize it.
④	RS232	Serial port for control TPUH406TV-US and the third-party device via RS232 commands. Please refer to the ***5. RS232 Control*** for more details.

3. System Connection

Usage Precautions

- System should be installed in a clean environment and has a prop 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.

Overview:



Installation

① If installing in a back-box, it is recommended that the TPUH406TV-US be installed in a 4-5/8" square box at a minimum. The 4-5/8" square box has sufficient space to terminate the cables with jacks behind the unit when fully installed.

② Run one twisted pair cable from the TPUH406TV-US location to the location where the HDBaseT Receiver 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 TPUH406TV-US location to the location that the Control Panel will be mounted.

④ All twisted pair 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 Control Panel, use the supplied adapter cable to connect with the second cable and follow the installation instructions for the HDBaseT Receiver and Control Panel.

Note: We recommends Category 6A cabling with alien crosstalk prevention technology for the performance of HDBaseT link.

4. Button Control

SOURCE/AUTO Button

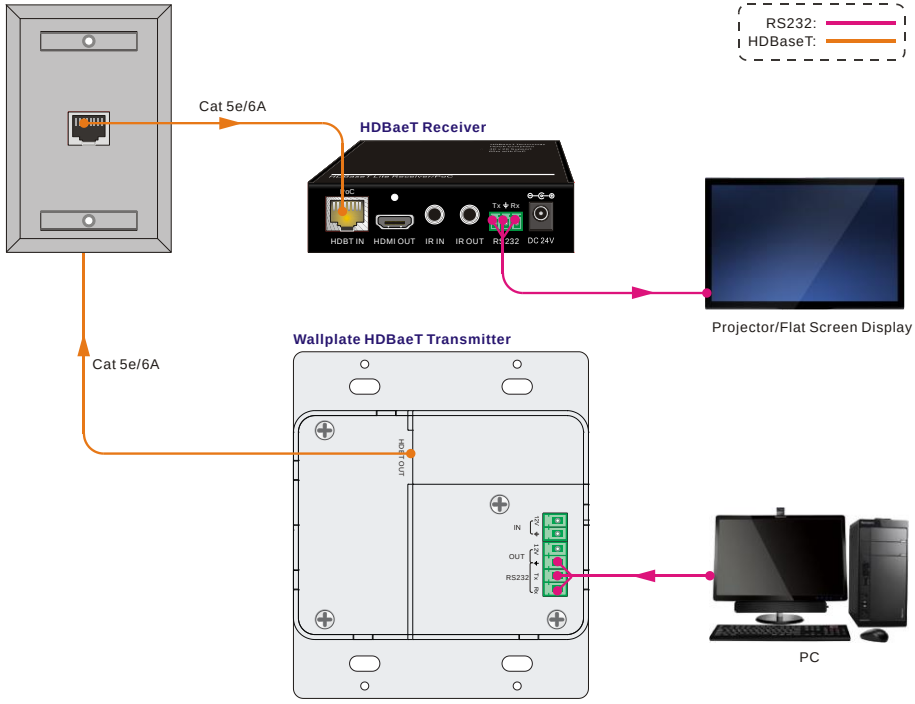
Press and hold the SOURCE/AUTO button for approximately 3 seconds. When the button lights up green the TPUH406TV-US is in AUTO mode. This mode automatically selects the last video source connected to the TPUH406TV-US and outputs it to the display. Press and hold again for approximately 3 seconds, the 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.

5. RS232 Control

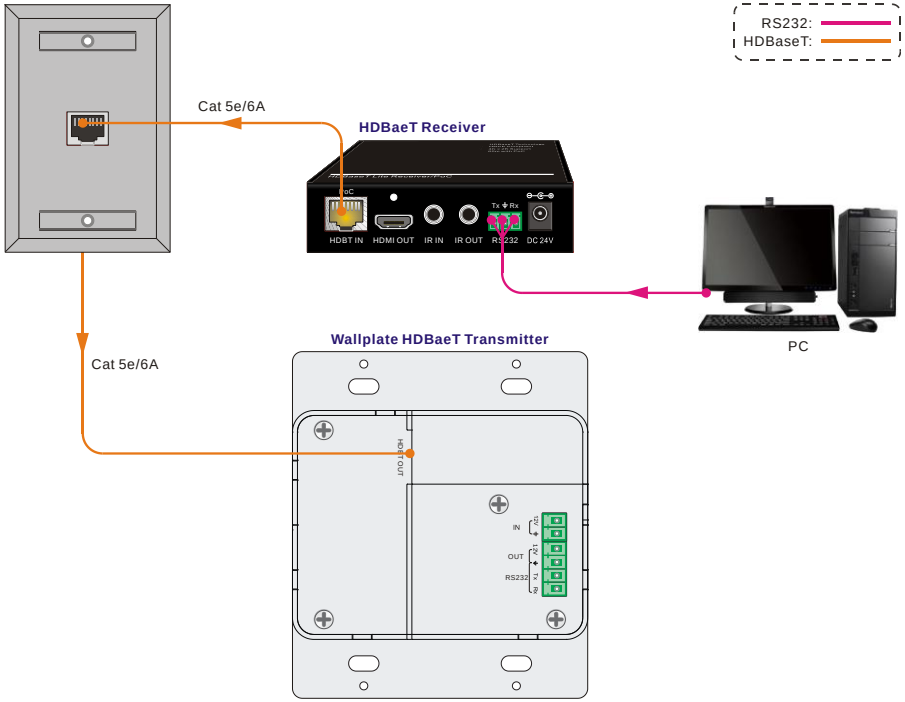
5.1 RS232 Control Connection

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

① Control this Wallplate HDBaseT Transmitter and far-end third-party device (such as Projector) device by local PC, and the connection diagram shown as below:



② Control the Wallplate HDBaseT Transmitter by the remote PC which is connected with Receiver.



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

5.2 RS232 Control Software

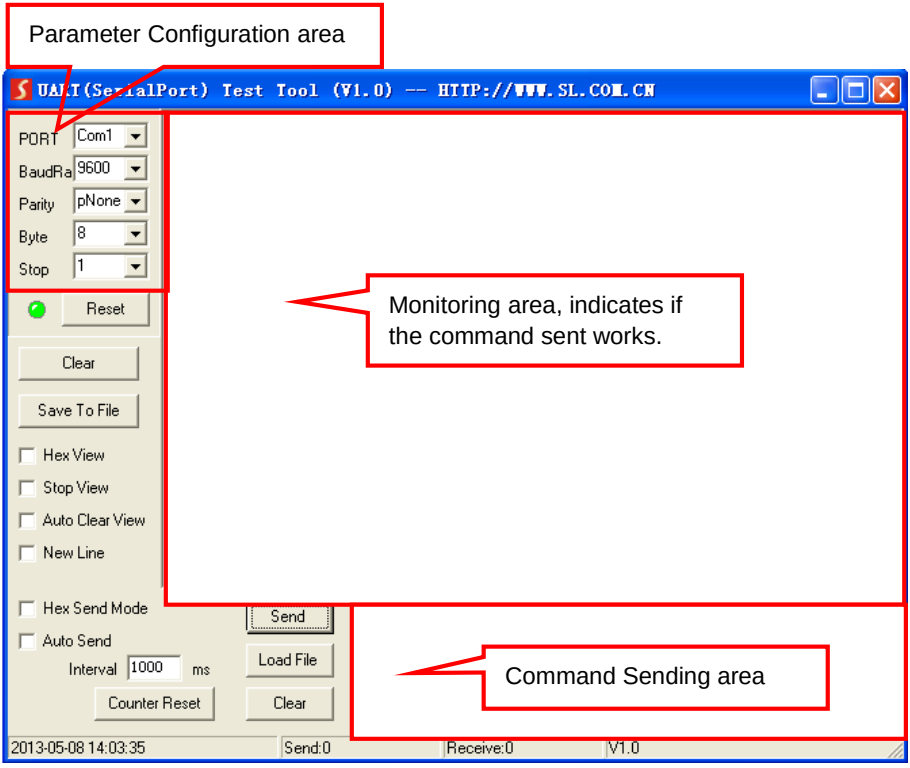
- **Installation** Copy the control software file to the control PC.
- **Uninstallation** Delete all the control software files in corresponding file path.

Basic Settings:

First, connect TPUH406TV-US 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:

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.

5.3 RS232 Commands

Communication protocol: RS232 Communication Protocol
Baud rate: 9600 **Data bit: 8** **Stop bit: 1** **Parity bit: none**

5.3.1 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

5.3.2 Input Signal Switching

Command	Function	Feedback Example
50770%	Enable auto-switching	Auto Switching
50771%	Disable auto-switching	Manual Switching
50701%	Switch to HDMI input	Switch to HDMI
50704%	Switch to VGA input	Switch to VGA

5.3.3 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
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

5.3.4 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)

5.3.5 VGA Image Adjusting

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)
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
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

5.3.6 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.

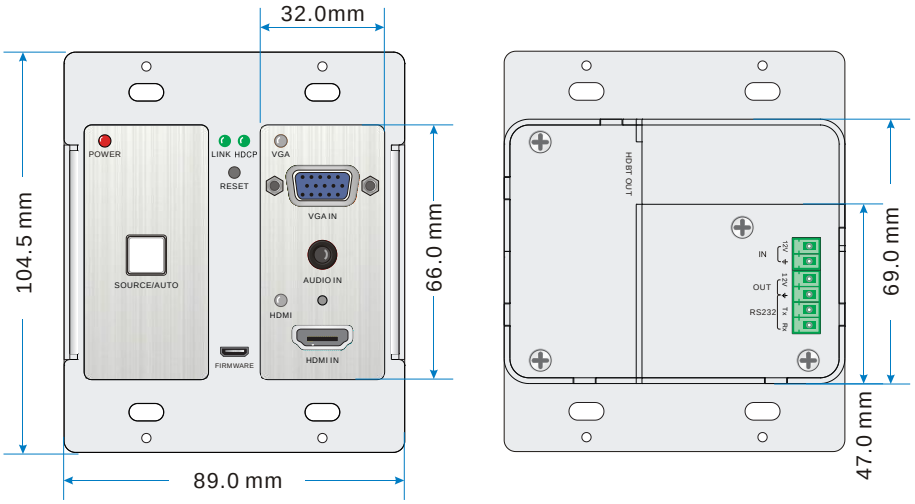
5.3.7 Device Configuration

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

6. 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 4Kx 2K
Audio Impedance	＞10KΩ
Frequency Response	20Hz~20KHz
SNR	>85db@20Hz~20KHz
Transmission Distance	1080p ≤ 70m; 4Kx2K ≤ 40m
Bandwidth	10.2Gbps
HDMI Standard	HDMI 1.4 and HDCP 1.4
Power Supply	Input:100V~240V AC; Output: 12VDC 2A
Max Consumption	9.6W
Work Temperature	-10 ~ +40℃
Reference Humidity	10% ~ 90%
Dimension (W*H*D)	104.5mm x 89.0mm x 44.0 mm
Net Weight	238g

7. Panel Drawing



8. Troubleshooting & Maintenance

Problems	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 snowflake.		
POWER indicator doesn't work or no respond to any operation.	Loose or failed power cord connection	Ensure the power cord connection is good
When some projector (such as EPSON) is used as output, it show a blurred screen.	The projector can't complaint with this product.	Send 50705% and 50706% on RS232 control software to change the horizontal polarity and vertical polarity for VGA signal.
Static becomes stronger when connecting the video connectors	bad grounding	Check the grounding and make sure it is connected well.
Cannot be controlled by front panel buttons	The unit may have already been broken	Send it to authorized dealer for repairing.

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

9. After-sales Service

If there appear some problems when running TPUH406TV-US, please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.

① **Product Limited Warranty:** PTN warrants that its products will be free from defects in materials and workmanship for **three years** (The purchase invoice shall prevail). Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

② **What the warranty does not cover:**

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

③ **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.

- Product version and name.
- Detailed failure situations.
- The formation of the cases.

Remarks: For any questions or problems, please try to get help from your local distributor, or email PTN at: support@PTN-electronics.com.

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