

## TPUH701T

### HDMI 2.0 2x1 Wall Plate Transmitter / Switcher with HDMI & USB-C



**All Rights Reserved**

**Version: TPUH701T\_2019V2.0**

# TPUH701T

## 79066-H2U User Manual

### **Preface**

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different product model specifications may vary.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated October, 2018. In order to continue improving the product, we reserve the right to make function or parameter 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.



# TPUH701T

## 79066-H2U User Manual

### **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 (electrical shock or burn hazard)
- 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 product's power cable
- 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 sufficient ventilation to avoid damage caused by overheating
- 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 Contents

<b>1. Product Introduction</b> .....	<b>5</b>
1.1 Features .....	5
1.2 Package List .....	5
<b>2. Specifications</b> .....	<b>6</b>
<b>3. Panel Descriptions</b> .....	<b>7</b>
3.1 Front Panel .....	7
3.2 Rear Panel .....	8
<b>4. System Connection</b> .....	<b>10</b>
4.1 Usage Precautions.....	10
<b>5. Button Control</b> .....	<b>11</b>
5.1 Source Switching .....	11
5.2 Display Control .....	11
<b>6. RS-232 Control</b> .....	<b>12</b>
6.1 RS-232 Connection .....	12
6.2 RS-232 Control Software.....	13
6.3 RS-232 Commands .....	14
6.3.1 Device Control .....	14
6.3.2 Source Switching .....	14
6.3.3 Display Control .....	15
6.3.4 HDCP Mode.....	15
6.3.5 EDID Management.....	15
<b>7. Button User-Defined</b> .....	<b>16</b>
7.1 IR learning feature:.....	16
7.2 Programmed by RS-232 Commands.....	17
<b>8. Panel Drawing</b> .....	<b>18</b>
<b>9. Troubleshooting &amp; Maintenance</b> .....	<b>18</b>
<b>10. Customer Service</b> .....	<b>19</b>

# TPUH701T

## 79066-H2U User Manual

### 1. Product Introduction

The TPUH701T is a 3x1 Wallplate Switcher Transmitter, designed to switch and extend video signals to a distant display. This switcher features 2 HDMI and 1 USB-C inputs, and is capable of transmitting a 4K signal up to 131 feet (40 meters) or a 1080P signal up to 230 feet (70 meters) over a single cable. Inputs can be switched using the “Source/Auto” button, and the display power can be controlled via programmable RS232 using the “Display On/Off” button. The TPUH701T can also be powered using PoH from the connected HDBase-T receiver, eliminating the need for a power supply.

The TPUH701T offers a comprehensive, all-in-one solution for extending and switching HD & UHD video sources to a distant display, along with single-wire installation and remote serial control at the press of a button.

#### 1.1 Features

- Supports HDMI signal up to 4K@60Hz 4:4:4, Slimport signal up to 4K@30Hz 4:4:4.
- HDMI 2.0 standard and HDCP 2.2 compliant. Ensures display of content-protected media and interoperability with other HDCP compliant devices.
- Active input automatic detection
- Extending HDMI signal 4K@60Hz up to 131ft/40m and 1080P@60Hz up to 229ft/70m
- Supports RS-232 pass-through with HDBaseT connection and local control
- Supports IR pass-through to extend IR signal to control display device
- The **DISPLAY ON/OFF** button can be programmed by IR learning feature or RS-232 command
- The HDBT port supports 12V-48V PoH input, the switcher can be powered from the compatible HDBaseT receiver by the CAT6 cable, and it also supports 24V PoH output to provide power supply for the compatible HDBaseT receiver
- Provides external 12V DC power supply for other devices
- Firmware upgrade by Micro-USB port

#### 1.2 Package List

- 1x TPUH701T HDMI 2.0 3x1 Wall Plate Transmitter Switcher
- 3x 2-pin Terminal Block
- 1x 3-pin Terminal Block
- 1x Power Adapter (24V 1.25A)

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

# TPUH701T

## 79066-H2U User Manual

### 2. Specifications

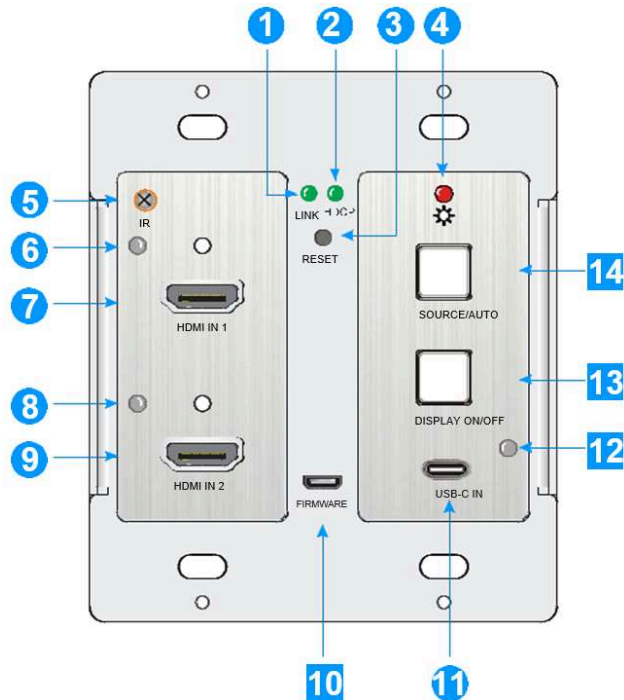
<b>Inputs</b>	2 HDMI (Type-A, Female) 1 USB-C (Import, Female)
<b>Supported Input Resolution</b>	HDMI: Up to 4Kx2K@60Hz 4:4:4 USB-C: Up to 4Kx2K@30Hz 4:4:4
<b>Outputs</b>	1 HDBase-T (RJ45, Female)
<b>Supported Output Resolution</b>	Up to 4Kx2K@60Hz 4:4:4
<b>Control Ports</b>	1 IR Built-in Sensor 1 Firmware port (Micro-USB, Female) 1 RS232 (3-Pin Phoenix, Female) 1 IR In (2-Pin Phoenix, Female)
<b>Bandwidth</b>	18Gbps
<b>Compliances</b>	HDMI 2.0, HDCP 2.2
<b>Transmission Distance</b>	4K@60Hz ≤ 130ft (40m) 1080P@60Hz ≤ 230ft (70m)
<b>Power Supply</b>	Input: 100 ~ 240 VAC Output: 24 VDC, 1.25A
<b>Power Consumption</b>	22W (Max)
<b>Temperature</b>	14 ~ 131°F (-10 ~ 55°C)
<b>Humidity</b>	10 ~ 90%
<b>Product Dimensions</b>	4.1"(104.5mm) x 3.5"(89mm) x 1.9"(47.3mm)
<b>Product Weight</b>	0.63 lbs. (285g)

# TPUH701T

## 79066-H2U User Manual

### 3. Panel Descriptions

#### 3.1 Front Panel



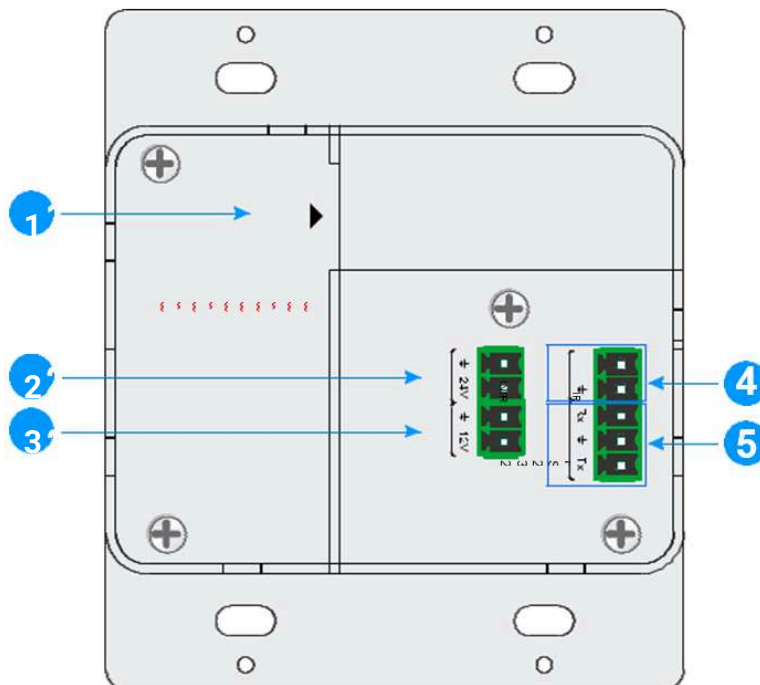
- 1. LINK LED:** The LED illuminates green when the transmitter is successfully connected to the receiver by a CAT6 cable
- 2. HDCP LED:**
  - The LED illuminates green when the HDMI signal is transmitted with HDCP
  - The LED blinks green when the HDMI signal is transmitted without HDCP
  - The LED turns off when there is no HDMI signal input
- 3. RESET:** Press the recessed button to reboot this unit
- 4. POWER LED:** The LED illuminates red when power is applied
- 5. IR:** Built-in IR sensor for IR learning feature or IR pass-through control
- 6. 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
- 7. HDMI IN 1:** Type-A HDMI port to connect HDMI source

# TPUH701T

## 79066-H2U User Manual

8. **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
9. **HDMI IN 2:** Type-A HDMI port to connect HDMI source
10. **FIRMWARE:** Micro-USB port for firmware upgrade
11. **USB-C:** Type-C USB to connect device with Slimport output
12. **USB-C LED:** The LED illuminates orange when the USB-C port is connected to a source device, and it will turn green once the device is selected as input source
13. **Display On/Off:** Turn the display **ON** or **OFF** via CEC or RS-232 (Programming required). For more details, please refer to **5.2 Display Control**
14. **Source/Auto:**
  - Press the backlit button to select the next input source.
  - Press and hold the button at least 3 seconds to enable auto switching mode. For more details, please refer to the **5.1 Source Switching**

### 3.2 Rear Panel



1. **HDBT OUT (PoH):** RJ-45 HDBase-T output port to connect to the **HDBT IN** port of the receiver by a CAT6 cable. It supports 12V-48V PoH to enable the switcher can be powered from a compatible receiver



# TPUH701T

## 79066-H2U User Manual

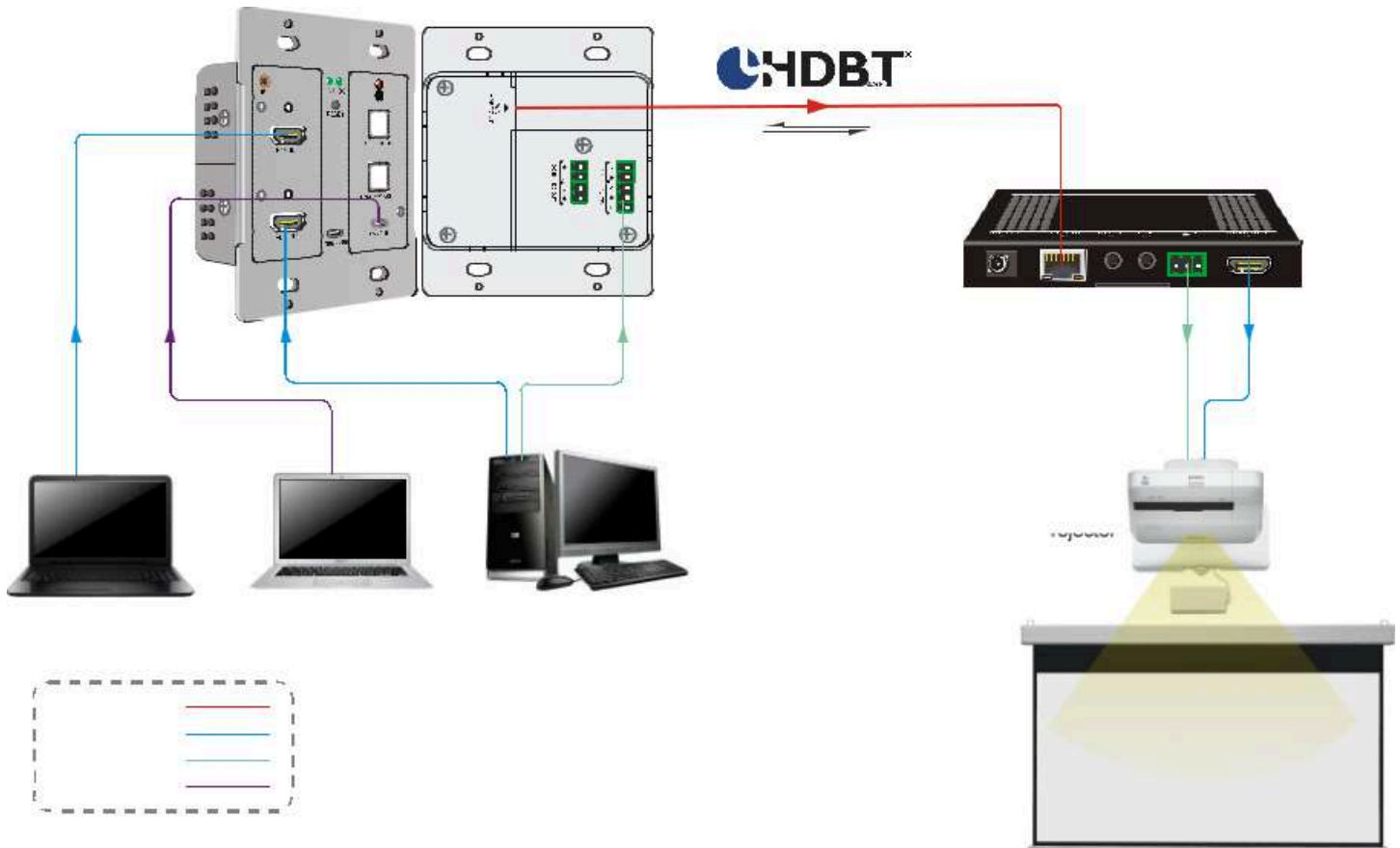
2. **DC IN:** Power port to connect 24V DC power adapter
3. **DC OUT:** 2-pin terminal block to connect a compatible device which needs to be powered
4. **IR IN:** 2-pin terminal block to connect IR control center for broader solution
5. **RS232:** 3-pin terminal block to connect a control device (e.g. PC) to send the RS-232 command to control this unit, or to control the far-end third party device. For more details, please refer to **6. RS-232 Control**

# TPUH701T

## 79066-H2U User Manual

### 4. System Connection

The following diagram illustrates typical input and output connection that can be utilized with the switcher:



#### 4.1 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
- All devices should be connected before power on

## 5. Button Control

### 5.1 Source Switching

1. Press the **SOURCE/AUTO** button to switch to next source device, and then the corresponding input LED will turn green.
2. Press and hold the **SOURCE/AUTO** button at least 3 seconds to enable auto switching mode, and it abides by the following principles:
  - The switcher will switch to the first available active input starting at **HDMI IN 1 > HDMI IN 2 > USB-C**
  - **New input:** Once a new input signal detected, the switcher will automatically switch to this new signal
  - **Source removed:** When an active source is removed, the switcher will switch to the first available active input starting at **HDMI IN 1**
  - **Reboot:** The switcher can save the last configuration before losing power. If the last switching mode is auto switching, the switcher 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 switcher 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:** Press and hold the **SOURCE/AUTO** button for 3 seconds again to exit the auto mode, and the input source will not be changed

### 5.2 Display Control

1. Press the **DISPLAY ON/OFF** button to turn on/off the display which supports CEC
2. The **DISPLAY ON/OFF** button also can be programmed by IR learning feature or RS232 command.

For more details, refer to **7. Button User-Defined**

# TPUH701T

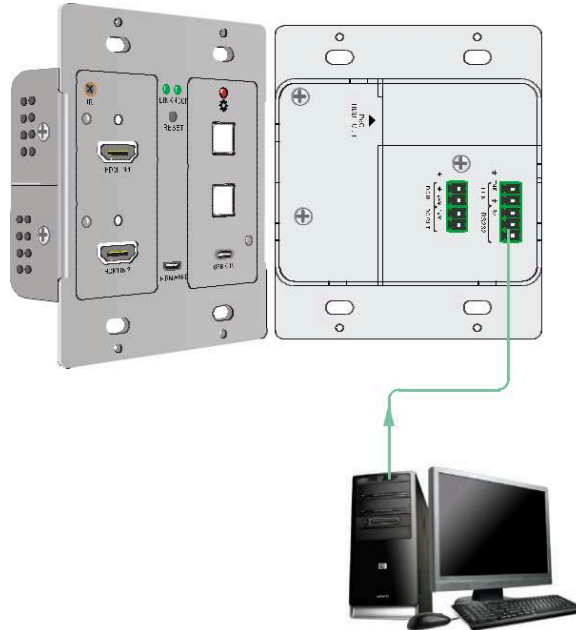
## 79066-H2U User Manual

### 6. RS-232 Control

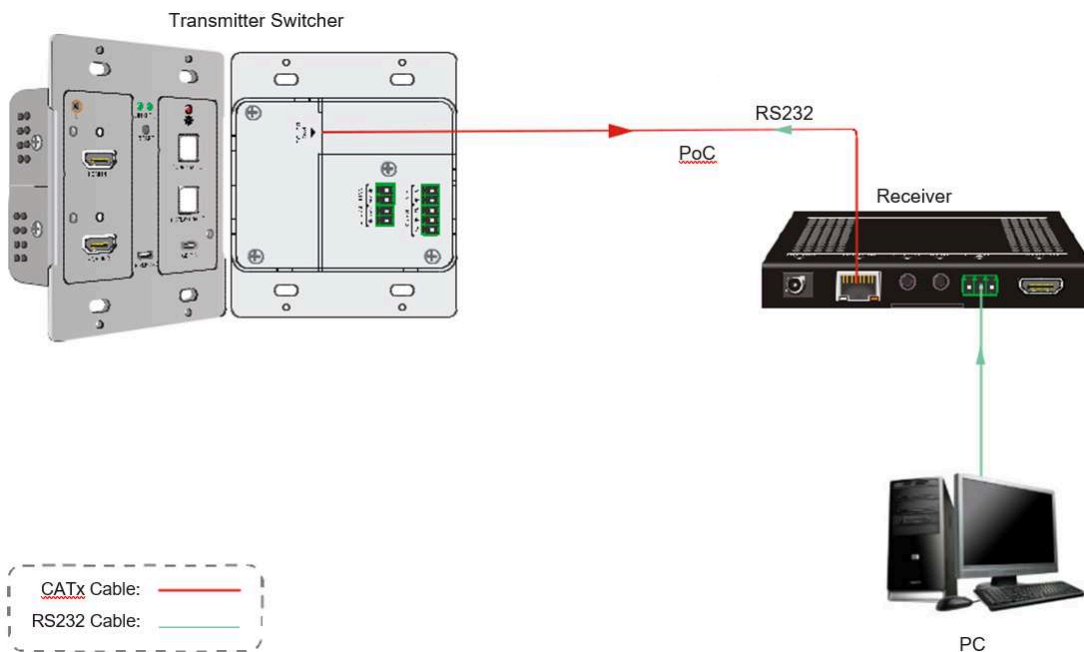
#### 6.1 RS-232 Connection

According to the RS-232 control mode, there are three types of RS-232 connection for different application:

1. To control the switcher from local, connect a control device (e.g. PC) to the RS-232 port of the switcher according to the connection diagram shown below:



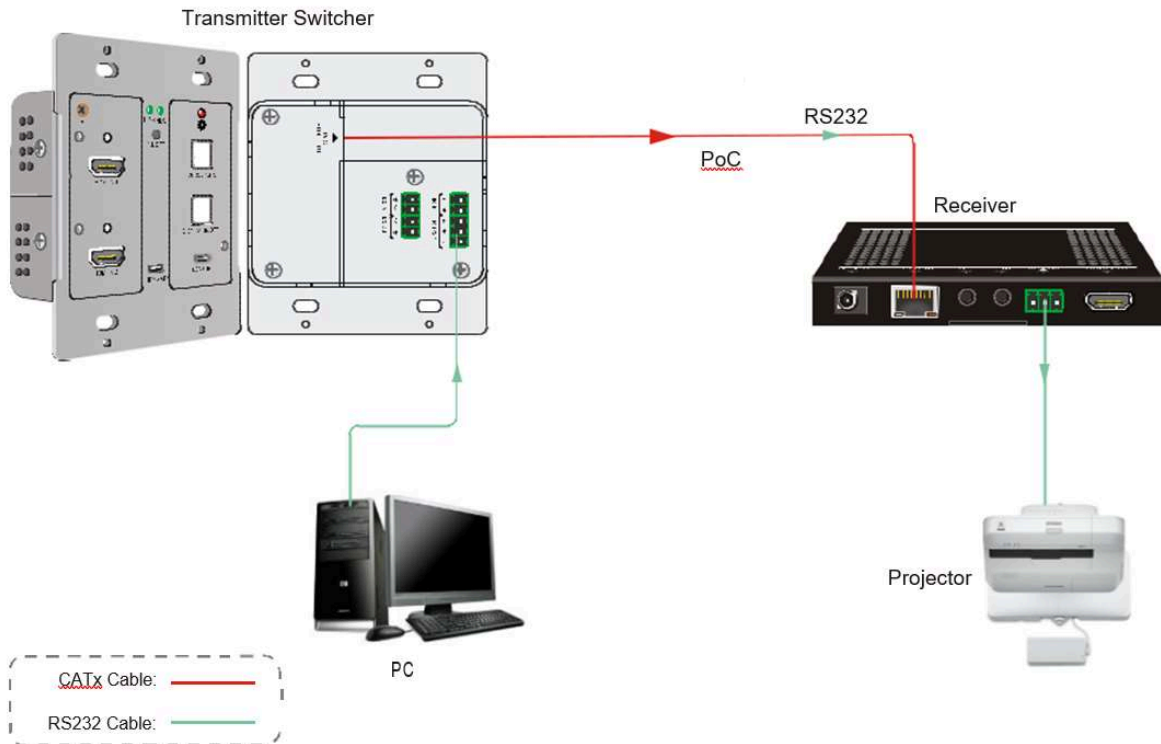
2. To control the switcher from remote, connect a control device (e.g. PC) to the RS-232 port of the remote receiver according to the connection diagram shown below:



# TPUH701T

## 79066-H2U User Manual

- To control the far-end third party device, please connect the control device (e.g. PC) to the RS-232 port of the switcher, and then please connect the third-party device (e.g. projector) to the RS-232 port of remote receiver. The connection diagram is shown below:



### 6.2 RS-232 Control Software

After installing all needed input and output devices according to the RS-232 connection diagram, install the RS-232 control software into the control PC to send RS-232 commands.

Set the parameters of COM number, baud rate, data bit, stop bit and the parity bit as shown, then the RS-232 commands can be sent in the Command Sending Area.

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

# TPUH701T

## 79066-H2U User Manual

### 6.3 RS-232 Commands

Besides the button control on the front panel, the switcher can be controlled by sending the below commands.

**Note:**

- Command ending: “<CR><LF>”
- Error feedback: “COMMAND ERROR” or “OUT OF RANGE”
- In the commands, “[” and “]” are symbols for easy reading and do not need to be typed in actual operation
- Type commands carefully, as they are case-sensitive

#### 6.3.1 Device Control

Command	Function	Feedback Example
#GET_FIRMWARE_VERSION	Get firmware version	@V1.0.0
#FACTORY_RESET	Restore factory defaults	@FACTORY_RESET
#REBOOT	System reboot	@REBOOT
#HELP	Get full command list	
#HELP xxxx	Get details of any command “xxxx” where “xxxx: is any command	#HELP SET AV
		@SELECT VIDEO AND AUDIO INPUT PORT #SET_AV PARAM1 PARAM=H,C H1 – HDMI 1 H2 – HDMI 2 C – USB Type-C

#### 6.3.2 Source Switching

Command	Function	Feedback Example
#SET_AV H1	Switch to HDMI 1	@AV H1
#SET_AV H2	Switch to HDMI 2	@AV H2
#SET_AV C	Switch to USB-C	@AV C
#GET_AV	Read the current input source	@AV H1
		@AV H2
		@AV C
#SET_AUTO_SWITCH 1	Enable auto-switching mode	@AUTO_SWITCH 1
#SET_AUTO_SWITCH 0	Disable auto-switching mode	@AUTO_SWITCH 0
#GET_AUTO_SWITCH	Read the current switching mode	@AUTO_SWITCH 1
		@AUTO_SWITCH 0

# TPUH701T

## 79066-H2U User Manual

### 6.3.3 Display Control

Command	Function	Feedback Example
#SET_DISPLAY 0	Power off display (Use CEC port or RS-232 for the display)	@DISPLAY 0
#SET_DISPLAY 1	Power on display (Use CEC port or RS-232 for the display)	@DISPLAY 1

### 6.3.4 HDCP Mode

Command	Function	Feedback Example
SET_OUTPUT_HDCP 1	Set the HDCP mode to ACTIVE for output port	@OUTPUT_HDCP 1
SET_OUTPUT_HDCP 2	Set the HDCP mode to ON for output port	@OUTPUT_HDCP 2
SET_OUTPUT_HDCP 3	Set the HDCP mode to OFF for output port	@OUTPUT_HDCP 3
GET_OUTPUT_HDCP	Read the current setting of the HDCP mode	@OUTPUT_HDCP 1
		@OUTPUT_HDCP 2
		@OUTPUT_HDCP 3

### 6.3.5 EDID Management

The input resolution (EDID setting) can be set using RS-232 commands to one of the options given in the following table:

Command	Function	Feedback Example
#SET_EDID_MODE 0	EDID bypass mode	@EDID_MODE 0
#SET_EDID_MODE 1	1920x1080@60 4:4:4 Stereo Audio	@EDID_MODE 1
#SET_EDID_MODE 2	1920x1080@60 4:4:4 Lossless Audio	@EDID_MODE 2
#SET_EDID_MODE 3	3840x2160@30 4:4:4 HDR Stereo Audio	@EDID_MODE 3
#SET_EDID_MODE 4	3840x2160@30 4:4:4 HDR Lossless Audio	@EDID_MODE 4
#SET_EDID_MODE 5	3840x2160@60 4:4:4 Stereo Audio	@EDID_MODE 5
#SET_EDID_MODE 6	3840x2160@60 4:4:4 Lossless Audio	@EDID_MODE 6
#SET_EDID_MODE 7	1920x1080@60 DVI	@EDID_MODE 7
#SET_EDID_MODE 8	3840x2160@60 DVI	@EDID_MODE 8
#SET_EDID_MODE 9	Select the user-defined EDID If a user-defined EDID has not been uploaded, this command will function identically to "SET_EDID_MODE 3"	@EDID_MODE 9
#UPLOAD_USER_EDID	Upload the user-defined EDID	@USER EDID READY PLEASE SEND EDID DATA IN 10S OK/ERROR

GET_EDID_MODE	Read the current EDID mode	@EDID_MODE 0
		@EDID_MODE 1
		@EDID_MODE 2
		@EDID_MODE 3
		@EDID_MODE 4
		@EDID_MODE 5
		@EDID_MODE 6
		@EDID_MODE 7
		@EDID_MODE 8
		@EDID_MODE 9

## 7. Button User-Defined

Press the **DISPLAY ON/OFF** button can turn on/off the display. If the incompatible display device needs to be used, the **DISPLAY ON/OFF** button can be programed by IR learning feature or RS-232 command.

### 7.1 IR learning feature:

Follow the below IR learning steps to define the **DISPLAY ON/OFF** button functionality:

1. Press and hold the **DISPLAY ON/OFF** button for five seconds (until the **SOURCE/AUTO** button LED flashes) to enable the IR learning mode.
2. Press the **DISPLAY ON/OFF** button to choose the **ON** or **OFF** IR command be set:
  - Button LED lit indicates that **DISPLAY ON** mode is selected
  - Button LED flashing indicates that **DISPLAY OFF** mode is selected
3. Point the IR remote at the IR sensor and press the respective button on the IR remote
4. The **SOURCE/AUTO** and **DISPLAY ON/OFF** button LEDs will keep lit for 3 second to indicate that IR command has been learnt, and then these two button LEDs will go out to exit the IR learning mode

**Note:** The IR learning function will self-terminate after 30 seconds of inactivity



# TPUH701T

## 79066-H2U User Manual

### 7.2 Programmed by RS-232 Commands

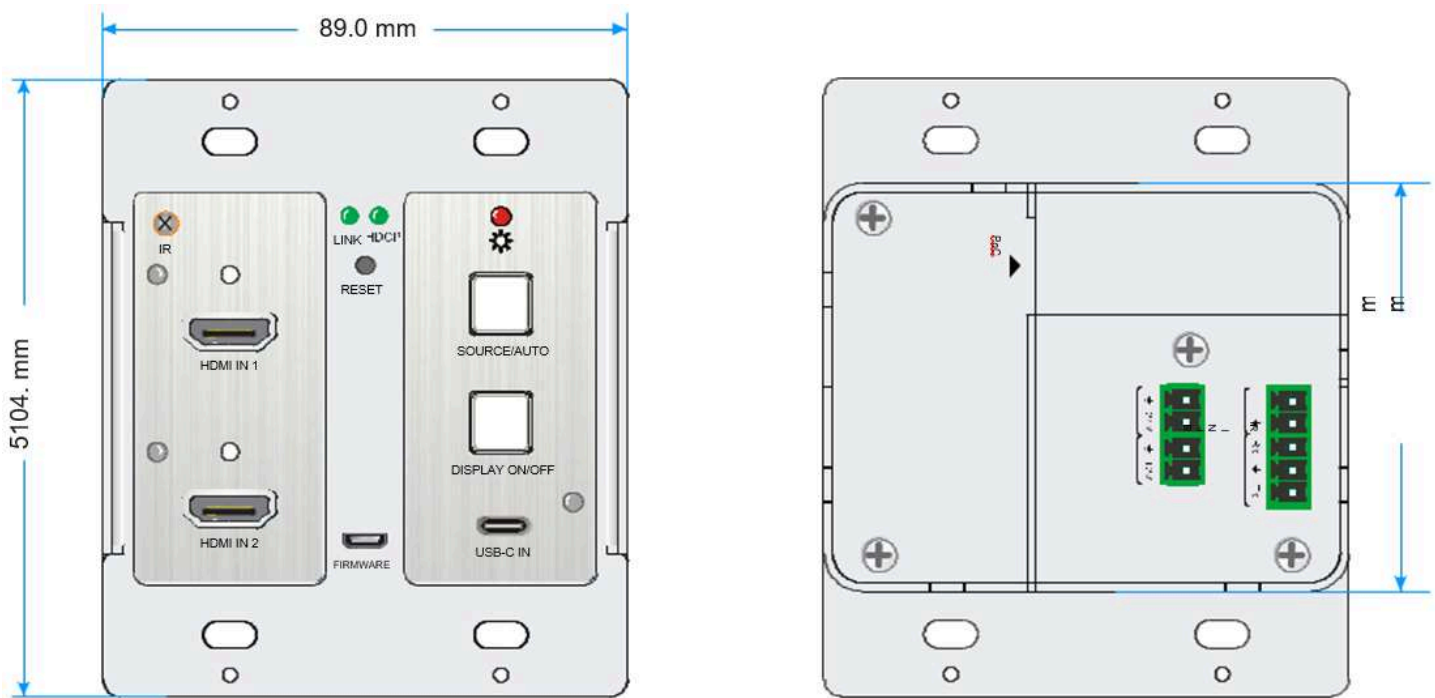
The **DISPLAY ON/OFF** button also can be defined to send control characters by following the below command format:

Command	Function	Feedback Example															
#SET_ON_[PARAM1]_[PARAM2]: xxxx	Set device to send command "xxxx" to display when the <b>DISPLAY ON</b> button is pressed <b>[PARAM1]</b> : Baud rate of display	#SET_ON_05_30:1234567															
	<table border="1"> <thead> <tr> <th>[PARAM1]</th> <th>Baud Rate</th> </tr> </thead> <tbody> <tr><td>00</td><td>115200</td></tr> <tr><td>01</td><td>57600</td></tr> <tr><td>02</td><td>38400</td></tr> <tr><td>03</td><td>19200</td></tr> <tr><td>04</td><td>9600</td></tr> <tr><td>05</td><td>4800</td></tr> <tr><td>06</td><td>2400</td></tr> </tbody> </table> <b>[PARAM2]</b> : Delay Time (in s) "00 ~ 99"	[PARAM1]	Baud Rate	00	115200	01	57600	02	38400	03	19200	04	9600	05	4800	06	2400
[PARAM1]	Baud Rate																
00	115200																
01	57600																
02	38400																
03	19200																
04	9600																
05	4800																
06	2400																
#SET_OF_[PARAM1]_[PARAM2]: xxxx	Set device to send command "xxxx" to display when the <b>DISPLAY ON</b> button is pressed <b>[PARAM1]</b> : Baud rate of display	#SET_OF_05_30:ABCDEFGF															
	<table border="1"> <thead> <tr> <th>[PARAM1]</th> <th>Baud Rate</th> </tr> </thead> <tbody> <tr><td>00</td><td>115200</td></tr> <tr><td>01</td><td>57600</td></tr> <tr><td>02</td><td>38400</td></tr> <tr><td>03</td><td>19200</td></tr> <tr><td>04</td><td>9600</td></tr> <tr><td>05</td><td>4800</td></tr> <tr><td>06</td><td>2400</td></tr> </tbody> </table> <b>[PARAM2]</b> : Delay Time (in s) "00 ~ 99"	[PARAM1]	Baud Rate	00	115200	01	57600	02	38400	03	19200	04	9600	05	4800	06	2400
[PARAM1]	Baud Rate																
00	115200																
01	57600																
02	38400																
03	19200																
04	9600																
05	4800																
06	2400																

# TPUH701T

## 79066-H2U User Manual

### 8. Panel Drawing



### 9. Troubleshooting & Maintenance

Problem	Potential Cause	Solution
Loss of video output to display, or loss of color in video output	The cables may not be connected correctly, or may be damaged	Check that all cables are in working condition and are connected properly
No HDMI signal output while HDMI input is in normal working status		
Visual distortion on output video image		
POWER indicator does not respond to any operation, or does not work	Loose or failed power cord connection	Check that the power cord is in working condition and connected properly

**Note:** If the problem persists after following the above troubleshooting steps, contact your local dealer or distributor for further assistance

## 10. 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:

### Warranty

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

### 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.

### 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.

### 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.