

# User Manual



## SCAM82TS

### 8x2 HDMI 2.0 Seamless Matrix Switcher



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## **8x2 HDMI 2.0 Seamless Matrix Switcher**

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**Version: SCAM82TS\_2019V1.5**

### 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 May, 2019. 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 B 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 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 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. Product Introduction

Thanks for choosing the SCAM82TS 8x2 multi-format seamless presentation matrix switcher with one TPUH610A extender kit! The matrix switcher simplifies meeting room and presentation space system integration by providing one HDBaseT input, four HDMI inputs, one VGA input, one DP input, one USB-C input, one HDBaseT output and one HDMI output. It also provides external audio inputs to be embedded in HDBaseT, HDMI and VGA video inputs respectively. Moreover, it provides MIX audio input for global audio.

The matrix switcher provides true 4K scaling up to 4K@60Hz@4:4:4. Both inputs and outputs are capable of providing 4K@60Hz@4:4:4 signals. The HDBaseT input and output provide an innovative solution with VLC technology, allowing transmission of HDMI 2.0 signals over a CATx cable while ensuring very high, original image quality. It is designed for use with the TPUH610A extender kit. The USB-C input is ideal for AV interfacing with newer MacBook, Chromebook, and Windows PC, as well as smart phones and tablets.

The matrix switcher supports auto switching on HDMI, HDBaseT and HDMI loop outputs based on TMDS activity signals sensing. It also allows users to control system functionality via Web GUI, RS232, IR and CEC. Additionally, users can control relay device such as the rise and fall of projector screen over RELAY ports.

The matrix switcher is designed to be the central component of AV system. It is ideal for applications where multiple signals with different resolutions must be optimized for displays. It is also suitable for presentation spaces where two displays are needed.

#### 1.1 Features

- 8x2 HDMI 2.0 seamless presentation switcher with matrix outputs.
- HDMI 2.0 and HDCP 2.2 compliant. The video resolution can up to 4K@60Hz 4:4:4.
- Supports video resolution down-scaling and up-scaling, 1080P, 1920x1200P, 4K@30Hz, 4K@60Hz can be selected for HDMI and HDBaseT outputs.
- Supports Auto switching.
- Features a mirrored HDMI output for HDBaseT output.
- Visually lossless video de-compression and compression for HDMI signals transmission up to 40m at 4K and 70m at 1080P on HDBaseT input and output.
- HDBaseT input and output support 24V PoC.
- External balanced audio inputs can be embedded in one HDBaseT input and two HDMI video inputs respectively.

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- Provides two groups of audio outputs (balanced audio and digital SPDIF audio) for audio de-embedding.
- Supports MIX audio input and its volume control.
- Supports HDMI output, HDBaseT output audio control.
- Controllable via RS232 local and pass-through, IR local and pass-through, TCP/IP, relay, CEC and on OSD.

### 1.2 Package List

Matrix Switcher	<ul style="list-style-type: none"><li>● 1x SCU82TS 8x2 HDMI 2.0 Seamless Matrix Switcher</li><li>● 2x Mounting Ears with 6 Screws</li><li>● 4x Plastic Cushions</li><li>● 1x IR Remote</li><li>● 1x IR Receiver</li><li>● 3x 3-pin Terminal Blocks</li><li>● 7x 5-pin Terminal Blocks</li><li>● 1x Power Adaptor (24V DC 5A)</li></ul>
Extender Kit	<ul style="list-style-type: none"><li>● 1x TPUH610AT HDBaseT Transmitter</li><li>● 1x TPUH610AR HDBaseT Receiver</li><li>● 4x Mounting Ears with 8 Screws</li><li>● 8x Plastic Cushions</li><li>● 1x 3-pin Terminal Block</li><li>● 1x RS232 Cable (3-pin to DB9)</li></ul>
	<ul style="list-style-type: none"><li>● 1x User Manual</li></ul>

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

## 2. Specification

### 2.1 SCU82TS Matrix Switcher

<b>Video Input</b>	
Video Input	(1) HDBaseT, (4) HDMI, (1) Display Port, (1) VGA, (1) USB-C
Video Input Connector	(1) RJ45, (4) Type-A female HDMI, (1) Type-A female DisplayPort, (1) 15-pin female VGA, (1) Type-C USB 3.0
Video input Video Resolution	HDBaseT: Up to 4Kx2K@60Hz 4:4:4
	HDMI: Up to 4Kx2K@60Hz 4:4:4
	DP: Up to 4Kx2K@60Hz 4:4:4
	VGA: Up to 1920x1200 (50/60Hz)
	USB-C: Up to 4Kx2K@30Hz
<b>Video Output</b>	
Video Output	(2) HDMI, (1) HDBaseT
Video Output Connector	(2) Type-A Female HDMI, (1) RJ45
Video output Video Resolution	HDMI: Up to 4Kx2K@60Hz 4:4:4
	HDBaseT: Up to 4Kx2K@60Hz 4:4:4
HDMI Version	2.0
HDCP Version	2.2
<b>Audio Input</b>	
Audio Input	(1) External balanced audio (L+R) for <b>1-HDBT</b> input port (1) External balanced audio (L+R) for <b>2-HDMI</b> input port (1) External balanced audio (L+R) for <b>3-HDMI</b> input port (1) Stereo auxiliary audio for <b>6-VGA</b> input port (1) Balanced MIX audio
Audio Input Connector	(4) 5-pin terminal blocks (1) 3.5mm jack
Frequency Response	20Hz – 20KHz, ±3dB
Max Input Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above - 10dBV (316mV) nominal consumer line level signal.
Input Impedance	>10KΩ
<b>Audio Output</b>	
Audio Output	(1) Balanced audio (L+R) for <b>1-HDMI</b> output audio de-embedding (1) Digital SPDIF audio (L+R) for <b>1-HDMI</b> output audio de-embedding (1) Balanced audio (L+R) for <b>2-HDBT</b> output audio de-embedding (1) Digital SPDIF audio (L+R) for <b>2-HDBT</b> output audio de-embedding
Audio Output Connector	(2) 5-pin terminal blocks (2) Toslink connectors
Frequency Response	20Hz – 20KHz, ±3dB

## 8x2 HDMI 2.0 Seamless Matrix Switcher

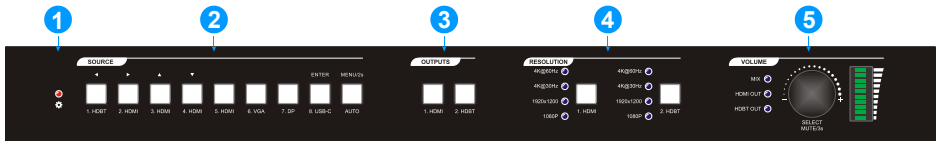
Max Output Level	2.0Vrms $\pm$ 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal
THD+N	< 0.05% (-80dB), 20Hz – 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)
SNR	> 80dB, 20Hz - 20KHz bandwidth
Crosstalk Isolation	> 70dB, 10KHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	< 0.3dB, 1KHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	< $\pm$ 0.5dB 20Hz - 20KHz
Output Load Capability	1K $\Omega$ and higher (Supports 10x paralleled 10K $\Omega$ loads)
Stereo Channel Separation	>70dB@1KHz
Noise Level	-80dB
<b>Control Part</b>	
Control Port	(1) RS232, (2) RELAY 1-2, (1) IR EYE, (2) IR IN, (1) IR OUT, (1) TCP/IP, (1) FIRMWARE
Control Connector	(3) 3-pin terminal blocks, (4) 3.5mm jacks, (1) RJ45, (1) Type-A USB
<b>General</b>	
Transmission Mode	HDBaseT
Transmission Distance	HDBaseT Input/Output: 1080P@60Hz $\leq$ 230 feet (70 meters), 4K@60Hz $\leq$ 131 feet (40 meters)
Bandwidth	18Gbps
Operation Temperature	-10°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
External Power Supply	Input: AC 100~240V, 50/60Hz; Output: 24V DC 5A
Power Consumption	85W (Max)
Dimension (W*H*D)	436.4mm x 44mm x 356.5mm
Net Weight	2.87KG

## 2.2 TPUH610A Extender Kit

<b>Transmitter (TX)</b>	
Input	(1) HDMI
Input Connector	(1) Type-A female HDMI
Output	(1) HDBT OUT
Output Connector	(1) RJ45
Control	(1) IR IN, (1) IR OUT, (1) RS232
Control Connector	(2) 3.5mm jacks, (1) 3-pin terminal block
Video Resolution	Up to 4Kx2K@60Hz 4:4:4 8bit
<b>Receiver (RX)</b>	
Input	(1) HDBT IN
Input Connector	(1) RJ45
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
Control	(1) IR IN, (1) IR OUT, (1) RS232
Control Connector	(2) 3.5mm jacks, (1) 3-pin terminal block
Video Resolution	Up to 4Kx2K@60Hz 4:4:4 8bit
<b>General</b>	
Transmission Mode	HDBaseT
Transmission Distance	1080P@60Hz ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 meters)
HDMI Version	2.0
HDCP Version	2.2
Bandwidth	18Gbps
Power Consumption	14W (max)
Operation Temperature	-10°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
External Power Supply	Input Power: 12V DC 2A or Power over Cable (PoC), AC Adaptor Input Power: 100~240VAC, 50/60Hz
Dimension (W*H*D)	115mm x 16mm x 84mm
Net Weight (g)	Transmitter/Receiver: 150g

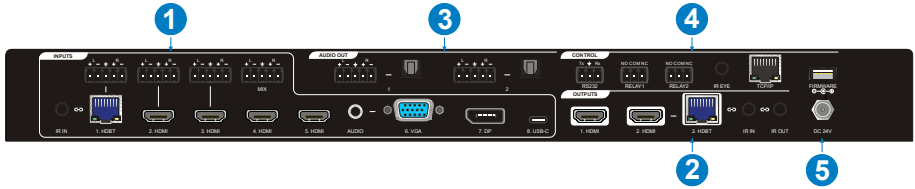
### 3. Panel Description

#### 3.1 Matrix Switcher Front Panel



- ① **Power LED:** The LED illuminates red the device is powered on.
- ② **SOURCE:** Total nine buttons with blue backlight.
  - 1-HDBT input selector / Left Key for On Screen Display control (OSD).
  - 2-HDMI input selector / Right Key for OSD.
  - 3-HDMI input selector / Up Key for OSD.
  - 4-HDMI input selector / Down Key for OSD.
  - 5-HDMI input selector.
  - 6-VGA input selector.
  - 7-DP input selector.
  - 8-USB-C input selector / Enter key for OSD.
  - Auto switching mode selector. Press this to enter or exit auto switching mode. / Press and hold it at least 2 seconds to enable OSD menu.
- ③ **OUTPUTS:** Two buttons with blue backlight.
  - 1-HDMI output selector.
  - 2-HDBT output selector.
- ④ **RESOLUTION:** Two output video resolution selectors. Press the **1.HDMI** or **2.HDBT** button repeatedly to cycle through the four video resolutions. A series of four LEDs, one of which illuminates blue to indicate which resolution is selected.
- ⑤ **VOLUME:**
  - Press the volume knob in to toggle among **MIX**, **HDMI OUT** and **HDBT OUT** audio control, and the corresponding LED will illuminate blue.
  - Rotate the knob to increase or decrease the volume of the selected audio.
  - Press and hold the knob at least three seconds to mute the selected audio. Rotate the knob to unmute.

### 3.2 Matrix Switcher Rear Panel



- ① **INPUT:** Total eight video inputs, five audio inputs and one IR input.
- **1-HDBT:** RJ45 port to connect the TPUH610AT transmitter to receive AV signal, IR and RS232 control signal, and one external balanced audio input (5-pin) can be embedded in the HDBT video. In addition, the HDBT input supports 24V PoC.
  - **2-HDMI:** Type-A female HDMI port to connect the HDMI source. One external balanced audio input (5-pin) can be embedded in the HDMI video.
  - **3-HDMI:** Type-A female HDMI port to connect the HDMI source. One external balanced audio input (5-pin) can be embedded in the HDMI video.
  - **4-HDMI:** Type-A female HDMI port to connect the HDMI source.
  - **5-HDMI:** Type-A female HDMI port to connect the HDMI source.
  - **6-VGA:** 15-pin female VGA port to connect the VGA source. One stereo auxiliary audio input (3.5mm jack) can be embedded in the VGA video.
  - **7-DP:** Type-A female DP port to connect the DP source.
  - **8-USB-C:** Type-C USB port to connect the device with SlimPort output, e.g. Macbook.
  - **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
  - **MIX:** 5-pin terminal block to connect the audio source for global audio mixing.
- ② **OUTPUT:**
- **1-HDMI:** Type-A female HDMI port to connect the video display.
  - **2-HDMI:** Type-A female HDMI port to connect the video display.
  - **2-HDBT:** RJ45 port to connect the TPUH610AR receiver to transmit AV signal, IR and RS232 control signal. The HDBT output supports 24V PoC.
- Note:** The 2-HDMI and 2-HDBT ports output the same signal.
- **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
  - **IR OUT:** 3.5mm jack to connect the IR emitter for IR pass-through.

### ③ AUDIO OUTPUT:

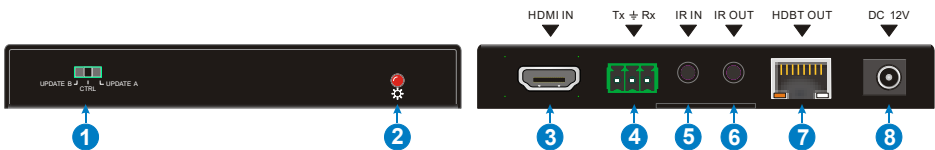
- **1:** One balanced audio output (5-pin) and one digital SPDIF audio output for 1-HDMI output audio de-embedding.
- **2:** One balanced audio output (5-pin) and one digital SPDIF audio output for 2-HDBT output audio de-embedding.

### ④ CONTROL:

- **RS232:** 3-pin terminal block to connect the control device (e.g. PC) to control the switcher by sending RS232 commands. It also supports RS232 pass-through control.
- **RELAY 1-2:** Two 3-pin terminal blocks to connect the relay devices (e.g. projector screen).
- **IR EYE:** 3.5mm jack to connect IR receiver to control the switcher by the IR remote.
- **TCP/IP:** RJ45 port to connect the control device (e.g. PC) to control the switcher by GUI.
- **FIRMWARE:** Type-A USB port for firmware upgrade.

### ⑤ DC 24V: DC barrel connector for the power adapter connection.

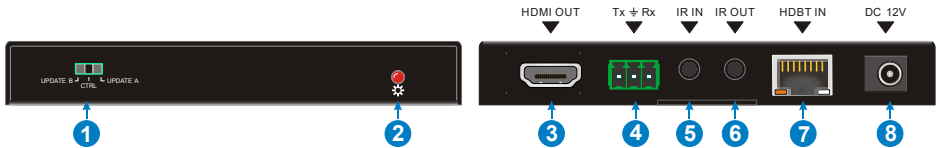
## 3.3 Transmitter Front and Rear Panel



- ① **MODE SWITCH:** Put the Mode switch in the **CTRL** position for normal operation and to allow RS232 control pass-through. Put the switch in the **UPDATE A** position to update the Valens IC program. Finally, put the switch in the **UPDATE B** position to update the compression IC program.
- ② **POWER LED:** The LED illuminates red when power is applied.
- ③ **HDMI IN:** Type-A female HDMI port to connect the HDMI source.
- ④ **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
- ⑤ **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
- ⑥ **IR OUT:** 3.5mm jack to connect the IR emitter for IR pass-through.

- ⑦ **HDBT OUT:** RJ45 port to connect the **HDBT IN** port of switcher by CATx Ethernet cable.
- ⑧ **DC 12V:** DC barrel connector for the power adapter connection.

### 3.4 Receiver Front and Rear Panel



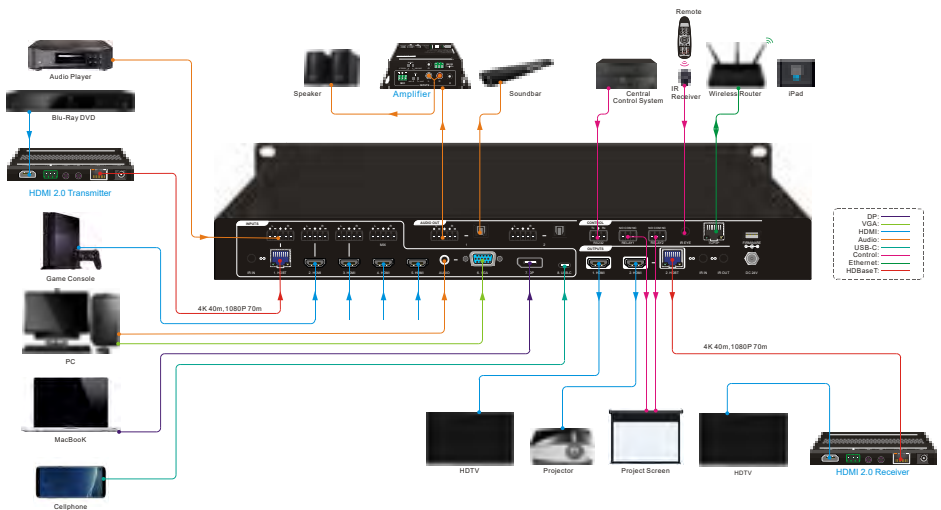
- ① **MODE SWITCH:** Put the Mode switch in the **CTRL** position for normal operation and to allow RS232 control pass-through. Put the switch in the **UPDATE A** position to update the Valens IC program. Finally, put the switch in the **UPDATE B** position to update the compression IC program.
- ② **POWER LED:** The LED illuminates red when power is applied.
- ③ **HDMI OUT:** Type-A female HDMI port to connect the display device.
- ④ **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
- ⑤ **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
- ⑥ **IR OUT:** 3.5mm jack to connect the IR emitter for IR pass-through.
- ⑦ **HDBT IN:** RJ45 port to connect the **HDBT OUT** port of switcher by CATx Ethernet cable.
- ⑧ **DC 12V:** DC barrel connector for the power adapter connection.

### 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



## 5. Button Control

### 5.1 Manual Switching

When the switcher is in manual switching mode, the AUTO button LED goes out. Please follow the below steps to switch input source to output channel.

- 1) Press any one of eight input buttons to select input source, and the corresponding button LED turns blue.
- 2) Press either **1-HDMI** or **2-HDBT** output button to select output channel, and the corresponding button LED turns blue.
- 3) Press the input button again to confirm switching setting, otherwise, it will automatically confirm after three seconds.

### 5.2 Auto Switching

Please follow the below steps to enable auto switching mode for 1-HDMI or 2-HDBT output.

- 1) Press **AUTO**, and the button LED turns blue.
- 2) Press either **1-HDMI** or **2-HDBT** output button, and the corresponding button LED turns blue.
- 3) Press **AUTO** button again to confirm the setting, otherwise, it will automatically confirm after three seconds.
- 4) Repeat the above three steps can exit auto mode, but the input source will remain the current setting.

**Note:** The AUTO button LED illuminates blue when the **1-HDMI** output is in auto mode or the **2-HDBT** output in auto mode.

When in auto mode, the switcher will switch according to the following rules:

- *The switcher will switch to the first available active input starting at input 1 to 8.*
- *New input: The switcher will automatically select the new input once detecting a new input.*
- *Reboot: If power is restored to the switcher, it will automatically reconnect the input before powered off.*
- *Source removed: When an active source is removed, the switcher will switch to the first available active input starting at 1-HDBT input.*
- *In auto mode, the input source also can be switched by the manual switching steps.*

### 5.3 Resolution Selection

Press the **1.HDMI** or **2.HDBT** button on RESOLUTION area repeatedly to cycle through the four video resolutions. A series of four LEDs, one of which illuminates blue to indicate which resolution is selected.

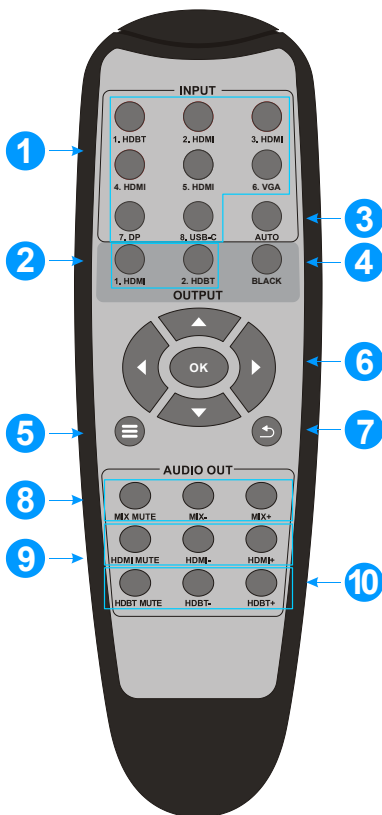
### 5.4 Sound Volume Control

Press volume knob to choose **MIX**, **HDMI OUT** or **HDBT OUT** audio needs to be adjusted, the corresponding LED will turn blue and keep on.

- *Adjusting the knob in clockwise direction to increase sound volume.*
- *Adjusting the knob in anti-clockwise direction to decrease sound volume.*
- *Press and hold the knob at least three seconds to mute the selected audio. Rotate the knob to unmute.*

## 6. IR Remote Control

Connect IR receiver to the **IR EYE** port, the switcher can be controlled by the following IR remote.



- ① Select input source
- ② Select output channel
- ③ Press **AUTO** to enable auto switching mode, and then select output channel.
- ④ Press **BLACK**, and then select output channel to make it output black screen.
- ⑤ Enable/Disable OSD menu.
- ⑥ Confirm and Navigation buttons: OK, UP, DOWN, LEFT and RIGHT for OSD menu.
- ⑦ Return to the previous OSD menu.
- ⑧ MIX input audio control: Mute, Volume Down and Volume Up.
- ⑨ HDMI output audio control: Mute, Volume Down and Volume Up.
- ⑩ HDBT output audio control: Mute, Volume Down and Volume Up.

### 7. GUI Control

The switcher can be controlled via TCP/IP. The default IP settings are:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Type **192.168.0.178** in the internet browser, it will enter the below log-in webpage:



User Name  
Please Enter

Password  
Please Enter

Login

GUI: V1.0.0  
Firmware: V1.0.0

**Username:** admin

**Password:** admin

Type the user name and password, and then click **Login** to enter the section for video switching.

### 7.1 Video Switching



- **HDMI OUTPUT:** Switch the selected input source to HDMI output. Click **AUTO** to enable/disable auto switching mode.
- **HDBT OUTPUT:** Switch the selected input source to HDBT output. Click **AUTO** to enable/disable auto switching mode.
- **Preset:** Save the current routing status to preset 1~5.

### 7.2 Resolution Selection



- **HDMI OUTPUT:** Select the HDMI output video resolution. Press **AUTO** to automatically select the best output resolution for satisfying the connected display.
- **HDBT OUTPUT:** Select the HDBT output video resolution. Press **AUTO** to automatically select the best output resolution for satisfying the connected display.

**Note:** If EDID communication is failed, the 1080P@60Hz will be used as default output resolution.

### 7.3 Audio Control



- **1.HDBT Embedded:** Select the external balanced audio (5-pin) to embed in **1.HDBT** video input.
- **2.HDMI Embedded:** Select the external balanced audio (5-pin) to embed in **2.HDMI** video input.
- **3.HDMI Embedded:** Select the external balanced audio (5-pin) to embed in **3.HDMI** video input.
- **MIX:** MIX input audio volume control.
- **HDMI Output:** Select MIX input audio to mix with HDMI output audio, and then control the global output audio by volume bar and buttons.
- **HDBT Output:** Select MIX input audio to mix with HDBT output audio, and then control the global output audio by volume bar and buttons.

### 7.4 Configuration

#### 7.4.1 PoC Setting



- Turn on or off PoC for HDBT output port.
- Turn on or off PoC for HDBT input port.

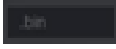
### 7.4.2 EDID Management



- Select the compatible built-in EDID for the selected input source.
- Upload user-define EDID by the below steps:

Step 1: Prepare the EDID file (.bin) on the control PC.

Step 2: Select the user-defined.

Step 3: Click the black box , and then select the EDID file (.bin) according the tooltip.

Step 4: Click **Apply** to upload the user-defined EDID.

### 7.4.3 Relay Control



- Set **Momentary** or **Latching** relay control mode for Relay 1 and Relay 2.
- After setting the auto stop time, click **Momentary**, the projector screen starts to be rolled up or dropped down until the auto stop time is up.
- Click **Latching**, the projector screen starts to be rolled up or dropped down, and then click **Latching** again to stop process.

#### RELAY 1 and RELAY 2 Ports Definition:



- When clicking **Momentary**, the **NO** connection closes, and the **NC** connection opens. When the delay time is up, the **NO** connection opens, and the **NC** connection closes.
- When clicking **Latching**, the **NO** connection closes, and the **NC** connection opens. When the delay time is up, the **NO** connection opens, and the **NC** connection closes.

### 7.5 CEC Control

If the input sources and display support CEC, they can be controlled by the below control buttons to replace IR remote.

#### 1) Source Control



- Select the input source which needs to be control, and then press function button as need.

### 2) Display Control



- Select the output display which needs to be control, and then press function button as need.

### 3) User-defined

The switcher also provides user-define CEC functions, the CEC command can be edited and saved in the Trigger textbox.



- Select the input source, and then type CEC command in the **Trigger 1** or **Trigger 2** box to control the selected source.
- Select the output display, and then type CEC command in the **Trigger 1** or **Trigger 2** box to control the selected display.

### 7.6 Tags Setting

The screenshot shows the 'Tags' configuration page. The top navigation bar includes tabs for Video, Resolution, Audio, Configuration, CEC, Tags (active), RS232 Control, Network, and Security. The main area is divided into two sections: 'INPUTS' and 'Preset'. The 'INPUTS' section lists eight input sources with text boxes for labeling: 1. HD/ET, 2. HDMI, 3. HDMI, 4. HDMI, 5. HDMI, 6. VGA, 7. DP, and 8. USB-C. The 'Preset' section lists six presets with text boxes for labeling: Preset 1, Preset 2, Preset 3, Preset 4, Preset 5, and Preset 6. A blue 'Confirm' button is at the bottom center.

- **INPUTS:** Modify the label of input sources.
- **Preset:** Modify the label of presets.

### 7.7 RS232 Control

#### 1) Port Mode



- **HDBT Transmitter Pass Through:** Establish RS232 pass-through communication between the switcher and HDBaseT receiver (e.g. TPUH610AR). The RS232 port of the switcher can be used to transfer commands to control the third-party device which is connected to the HDBaseT receiver.
- **HDBT Receiver Pass Through:** Establish RS232 pass-through communication between the switcher and the HDBaseT transmitter (e.g. TPUH610AT). The RS232 port of the switcher can be used to transfer commands to control the third-party device which is connected to the HDBaseT transmitter.
- **Local Control:** The RS232 port of the switcher is used to connect control device (e.g. PC) to control the switcher.

### 2) Command

- Select **Local**, **HDBT In** or **HDBT Out** control mode.
  - ✓ **Local:** Send RS232 commands to control the local third-party which is connected to the RS232 port of the switcher.
  - ✓ **HDBT In:** Send RS232 commands to control the far-end third-party which is connected to the RS232 port of HDBaseT transmitter.
  - ✓ **HDBT Out:** Send RS232 commands to control the far-end third-party (e.g. projector) which is connected to the RS232 port of HDBaseT receiver.
- Select **HEX** or **ASCII** format.
- **Baud Rate:** Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- **Command Ending:** **NULL**, **CR**, **LF** or **CR+LF** can be chosen.
- **Command:** Type command in this textbox to control the third-party device.
- **Trigger On:** Type Power On command in this box to turn on the third-party device.
- **Trigger Off:** Type Power Off command in this box to turn off the third-party device.

### 7.8 Network Setting

Video Resolution Audio Configuration CEC Tags RS232 Control **Network** Security

MAC Address: 44-33-4C-C9-35-12

DHCP ☒ Static IP

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Confirm

- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

### 7.9 Password Setting



The screenshot shows a web interface for configuring the device. At the top, there is a navigation bar with tabs: Video, Resolution, Audio, Configuration, CEC, Tags, RS232 Control, Network, and Security. The Security tab is currently selected and highlighted in blue. Below the navigation bar, the main content area is titled 'Credentials'. It contains a 'Password:' label followed by a text input field containing the text 'admin'. To the right of the input field is a blue 'Continue' button. Below this, there is a section titled 'Front Panel Lock'. It features a horizontal slider control. The slider is currently positioned towards the 'ON' end, which is highlighted in blue. The 'OFF' end is greyed out.

- Modify the login password.
- Lock or unlock the front panel buttons.

### 7.10 GUI Upgrade

Please visit at <http://192.168.0.178:100> for GUI online upgrade.

Type the username and password (the same as the GUI log-in setting, modified password will be available only after rebooting) to login the configuration interface. After that, click **Administration** in the source menu to get to **Upload Firmware** as shown below:



Select the desired update file and press **Apply**, it will start upgrading then.

### 8. RS232 Control

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The switcher can be controlled by sending RS232 commands.

#### 8.1 RS232 Control Software

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

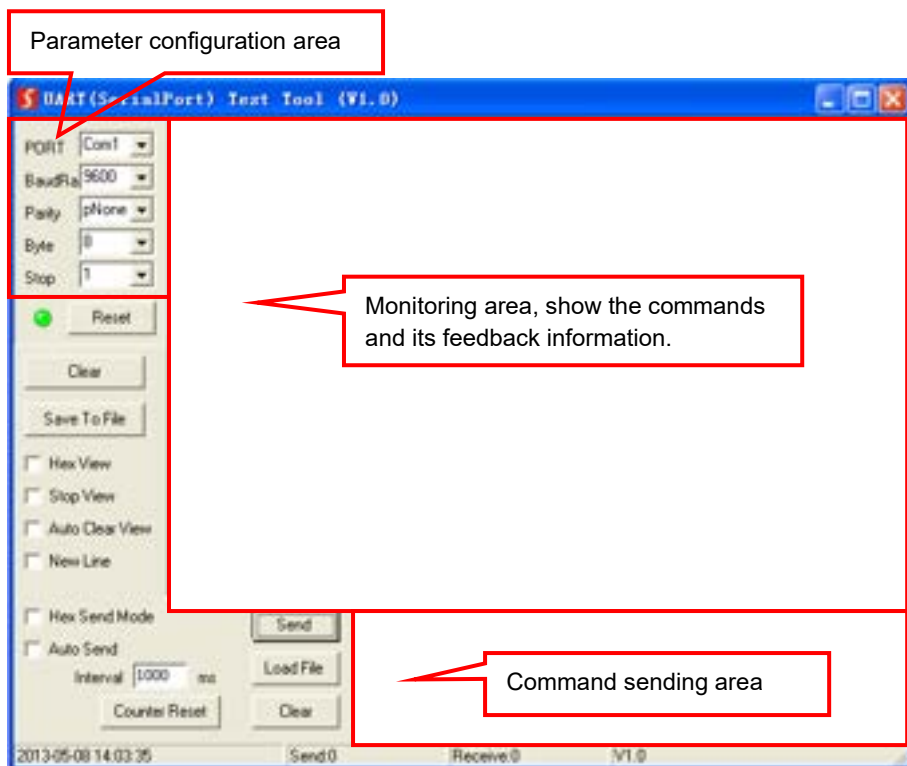
#### Basic Settings:

Connect the switcher with all input devices and output devices needed, then to connect it with a PC which is installed with RS232 control software. Double-click the software icon to run this software.

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



The main view is shown 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.

## 8.2 RS232 Communication Command

**Communication protocol:** RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

**Note:**

- All commands not need to end with "<CR><LF>".
- In the commands, "[" and "]" are symbols for easy reading and do not need to be typed in actual operation.
- Please remember to end the commands with the ending symbols "." or ":",
- Type the command carefully, it is case-sensitive.

### 8.2.1 Device Control

Command	Description	Feedback Example
<b>PWON.</b>	Power on system.	PWON
<b>PWOFF.</b>	Power off system. Turn off HDBaseT power supply.	PWOFF
<b>STANDBY.</b>	System standby. Press any button to awake.	STANDBY
<b>/*Type;</b>	Report system model.	SCU82TS
<b>/^Version;</b>	Report firmware version.	V1.0.0
<b>/%Lock;</b>	Lock front panel buttons.	System Locked
<b>/%Unlock;</b>	Unlock front panel buttons.	System Unlock!
<b>%9964.</b>	Report IP address.	IP:192.168.0.178
<b>USBUpdata:[x].</b>	Upgrade the 3458 IC. After successfully upgrading, send the command "SPI:15,0." to turn off the serial communication between the 3458 IC and control PC.	
<b>%9961.</b>	Report the system locking status.	System UnLock/Lock!
<b>%9962.</b>	Report the system power status.	PWON/PWOFF/STANDBY
<b>%9963.</b>	Report the IR carrier mode.	Carrier native
<b>%0911.</b>	Reset to factory default.	

## 8.2.2 Source Switching

Command	Description	Feedback Example
<b>Demo.</b>	Switch to demo testing mode, switch AV 1->1, 2->2 and so on.	Demo Mode AV: AV: 1-> 1 AV: 1-> 2 ... AV: 1-> 7 AV: 1-> 8 AV: 2-> 1 AV: 2-> 2 ... AV: 2-> 7 AV: 2-> 8 Normal Mode
<b>Undo.</b>	Cancel the previous operation.	Undo Ok!
<b>[x]All.</b>	Switch input [x] to HDMI and HDBT outputs. x=1~4.	Example: 4ALL. Feedback: 4 To All
<b>All#.</b>	Switch all input signal to the corresponding output channel. 1->1, 2->2	All Through.
<b>All\$.</b>	Turn off all output.	All Closed.
<b>[x]#.</b>	Switch input [x] to output [x]. x=1~2.	1 Through
<b>[x]\$.</b>	Turn off output [x]. x=1~2.	1 Closed.
<b>[x]@.</b>	Turn on output [x]. x=1~2.	01 Open.
<b>All@.</b>	Turn on all outputs.	All Open
<b>[x]B[y].</b>	Switch input [x] to output [y]. x=1~8, y=1~2.	AV: 1-> 1
<b>%9975.</b>	Report the source switching status.	Out 1 2 In 4 4
<b>Status[x].</b>	Report the output [x] status. x=1~2	AV: 5-> 1
<b>Status.</b>	Report the input channel on output channel one by one.	AV:01->01 AV:01->02
<b>%9971.</b>	Report the connection status of all inputs. Y means the corresponding input port is connected to a source device, N means not.	In 01 02 03 04 Connect Y Y N N In 05 06 07 08 Connect N N N Y

## 8x2 HDMI 2.0 Seamless Matrix Switcher

Command	Description	Feedback Example	
AutomationON[X].	Enable the auto switching mode for the output [X].	HDMI Automation ON HDBT Automation ON	
	X		Output Port
	1		HDMI
	2		HDBT
AutomationOFF[X].	Disable the auto switching mode for the output [X].	HDMI Automation OFF HDBT Automation OFF	
	X		Output Port
	1		HDMI
	2		HDBT

### 8.2.3 Preset Setting

Command	Description	Feedback Example
<b>Save[y].</b>	Store the current switching status to preset [y]. y=0~ 9.	Save To F0
<b>Recall[y].</b>	Recall the preset [y]. y=0~ 9.	Recall From F0
<b>Clear[y].</b>	Clear the preset [y].	Clear F0

# 8.2.4 Output Resolution Setting

Command	Description	Feedback Example																						
VRES/X:Y.	Set the output resolution of port [X] to [Y]. 1) X=9/10:	Output HDMI:720p@50Hz Output HDBT:720p@50Hz																						
	<table><tr><th>X</th><th>Output Port</th></tr><tr><td>9</td><td>HDMI</td></tr><tr><td>10</td><td>HDBT</td></tr></table>		X	Output Port	9	HDMI	10	HDBT																
	X		Output Port																					
	9		HDMI																					
	10		HDBT																					
	2) Y=1~10:																							
	<table><tr><th>Y</th><th>Resolution</th></tr><tr><td>1</td><td>4K@60Hz</td></tr><tr><td>2</td><td>4K@30Hz</td></tr><tr><td>3</td><td>1920X1200@60Hz</td></tr><tr><td>4</td><td>1080P@60Hz</td></tr><tr><td>5</td><td>1080P@50Hz</td></tr><tr><td>6</td><td>1600x1200@60Hz</td></tr><tr><td>7</td><td>1360x768@60Hz</td></tr><tr><td>8</td><td>1024x768@60Hz</td></tr><tr><td>9</td><td>720P@60Hz</td></tr><tr><td>10</td><td>720P@50Hz</td></tr></table>		Y	Resolution	1	4K@60Hz	2	4K@30Hz	3	1920X1200@60Hz	4	1080P@60Hz	5	1080P@50Hz	6	1600x1200@60Hz	7	1360x768@60Hz	8	1024x768@60Hz	9	720P@60Hz	10	720P@50Hz
	Y		Resolution																					
	1		4K@60Hz																					
	2		4K@30Hz																					
	3		1920X1200@60Hz																					
	4		1080P@60Hz																					
	5		1080P@50Hz																					
	6		1600x1200@60Hz																					
	7		1360x768@60Hz																					
	8		1024x768@60Hz																					
	9		720P@60Hz																					
10	720P@50Hz																							

### **8.2.5 Audio Control**

## 8x2 HDMI 2.0 Seamless Matrix Switcher

Command	Description	Feedback Example
<b>Embedded:[x].</b>	Select external balanced audio (L+R) for input [x]. x=1~3.	HDBT1 Embedded
<b>UnEmbedded:[x].</b>	Select internal audio for input [x]. x=1~3.	HDBT1 UnEmbedded
<b>MIXOUT:[x].</b>	The output [x] audio is mixed with MIX audio.	HDMI1 OUT MIX
<b>UnMIXOUT:[x].</b>	The output [x] audio is not mixed with MIX audio.	HDMI1 OUT UnMIX
<b>SetHDMIVol:xx.</b>	Set the HDMI output audio volume to xx. xx=0~60.	Volume of HDMI: 30.
<b>HDMIVolume+.</b>	Increase the HDMI output audio volume.	Volume of HDMI: 31.
<b>HDMIVolume-.</b>	Decrease the HDMI output audio volume.	Volume of HDMI: 29.
<b>HDMIMute.</b>	Mute the HDMI output audio.	HDMI Mute.
<b>HDMIUnmute.</b>	Unmute the HDMI output audio.	HDMI Unmute.
<b>SetHDBTVol:xx.</b>	Set the HDBT output audio volume to xx. xx=0~60.	Volume of HDBT: 30.
<b>HDBTVolume+.</b>	Increase the HDBT output audio volume.	Volume of HDBT: 31.
<b>HDBTVolume-.</b>	Decrease the HDBT output audio volume.	Volume of HDBT: 29.
<b>HDBTMute.</b>	Mute the HDBT output audio.	HDBT Mute.
<b>HDBTUnmute.</b>	Unmute the HDBT output audio.	HDBT Unmute.
<b>SetMIXVol:XXX.</b>	Set the MIX input audio volume to xx. xx=0~60.	Volume of MIX: 30.
<b>MIXVolume+.</b>	Increase the MIX input audio volume.	Volume of MIX: 31.
<b>MIXVolume-.</b>	Decrease the MIX input audio volume.	Volume of MIX: 29.
<b>MIXMute.</b>	Mute the MIX input audio.	MIX Mute.
<b>MIXUnmute.</b>	Unmute the MIX input audio.	MIX Unmute.
<b>%9941.</b>	Report the audio status.	HDBT Unmute. HDMI Mute. MIX Mute.
<b>%9942.</b>	Report the audio volume.	Volume of HDBT: 9. Volume of HDMI: 30. Volume of MIX: 6.
<b>%9943.</b>	Report the external audio status.	HDBT1 UnEmbedded HDMI2 Embedded HDMI3 Embedded



### 8.2.6 EDID Management

Command	Description	Feedback Example								
<b>EDID/[x]/[y].</b>	<p>The input [x] invoke built-in EDID [y].</p> <p>x=1~5, 7.</p> <table><tr><td>y</td><td>EDID</td></tr><tr><td>1</td><td>1080P@60Hz</td></tr><tr><td>2</td><td>4K@30Hz 4:4:4</td></tr><tr><td>3</td><td>4K@60Hz 4:4:4</td></tr></table>	y	EDID	1	1080P@60Hz	2	4K@30Hz 4:4:4	3	4K@60Hz 4:4:4	EDID/4/1
y	EDID									
1	1080P@60Hz									
2	4K@30Hz 4:4:4									
3	4K@60Hz 4:4:4									
<b>EDIDUpgrade[x].</b>	<p>Upgrade the EDID data of the input port [x].</p> <p>x=1~5, 7.</p> <p>When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds. Please disconnect HDBT connection before sending command to ensure the data can be received successfully.</p>									
<b>EDIDM[x]B[y].</b>	<p>Set the EDID data of output [x] to input [y]. x=1~2, y=1~5, 7.</p>	<p>Example: EDIDM1B1.</p> <p>Feedback:</p> <p>Input 1 EDID Upgrade OK By 01 EXT EDID!</p>								
<b>EDIDMInit.</b>	<p>Reset factory default EDID to all input ports.</p>	<p>All input EDID Set Default 1080P!</p>								

### 8.2.7 Relay Control

Command	Description	Feedback Example
<b>RelayON[X].</b>	Turn on relay [X], X=1~2.	
<b>RelayOFF[X].</b>	Turn off relay [X], X=1~2.	
<b>RelayAutomationCtl:[X],[Y].</b>	Set the auto stop time of relay [X] to Y seconds. X=1~2, Y=0~20.	
<b>ToggleRelay[X].</b>	Toggle relay [X], X=1~2.	

### 8.2.8 VGA Output Image Adjustment

When 6-VGA source is selected, the below commands can be used to adjust the output picture.

Command	Description	Feedback Example
<b>SetVGAPhase:XX.</b>	Set the phase position to XX. XX=0~100.	
<b>SetVGABrightness: XX.</b>	Set the brightness to XX. XX=0~100.	
<b>SetVGAContrast: XX.</b>	Set the contrast to XX. XX=0~100.	
<b>SetVGAColor: XX.</b>	Set the color to XX. XX=0~100.	
<b>SetVGAAutoSync:X.</b>	X=0, Disable Auto-Sync mode. X=1, Enable Auto-Sync mode.	
<b>SetVGASharpness:XX.</b>	Set the sharpness to XX. XX=0~100.	
<b>SetVGAColorTemp:X.</b>	Auto-adjust the color temperature to X. X=0~3 (Normal/Cool/Warm)	
<b>SetVGAAspetRatio:X.</b>	Set the aspect ratio to X. X=0~2 (16:9/ 4:3/auto)	
<b>SetVGAPicMode:X.</b>	Set the image mode to X. X=0~3. (dynamic/standard/mild/user)	

### 8.2.9 Switcher Baud Rate Setting

Command	Description	Feedback Example
<b>Baudrate 2400.</b>	Set the RS232 baud rate of switcher to 2400.	Set Local RS232 baudrate is 2400!
<b>Baudrate 4800.</b>	Set the RS232 baud rate of switcher to 4800.	Set Local RS232 baudrate is 4800!
<b>Baudrate 9600.</b>	Set the RS232 baud rate of switcher to 9600.	Set Local RS232 baudrate is 9600!
<b>Baudrate 19200.</b>	Set the RS232 baud rate of switcher to 19200.	Set Local RS232 baudrate is 19200!
<b>Baudrate 38400.</b>	Set the RS232 baud rate of switcher to 38400.	Set Local RS232 baudrate is 38400!
<b>Baudrate 57600.</b>	Set the RS232 baud rate of switcher to 57600.	Set Local RS232 baudrate is 57600!

## 8x2 HDMI 2.0 Seamless Matrix Switcher

Command	Description	Feedback Example
<b>Baudrate 115200.</b>	Set the RS232 baud rate of switcher to 115200.	Set Local RS232 baudrate is 115200!

### 8.2.10 CEC Control

If the input sources and displays support CEC, they can be controlled by sending CEC commands to replace IR remote.

**Step 1:** According to the below command to enable CEC control.

Command	Description	Feedback Example
<b>CECON.</b>	Enable CEC	CEC Turn ON!
<b>CECOFF.</b>	Disable CEC	CEC Turn OFF!

**Step 2:** According to the below command format to send specific command to control input source or display device.

**CEC[I/O][port][command].**

- The “[I]” represents the input port. The “[O]” represents the output port.
- The “[port]” represents the port number. The input ports are 01~05, and the output ports are 06~08.
- The “[command]” represents the specific command from the table below.

✓ **Control the input source:**

Command	Description	Example and Feedback
<b>CECI[port]00.</b>	Confirm operation (Enter).	CECI0100.
		[CEC]: blue ray OK.
<b>CECI[port]01.</b>	UP.	CECI0101.
		[CEC]: blue ray up.
<b>CECI[port]02.</b>	DOWN.	CECI0102.
		[CEC]: blue ray down.
<b>CECI[port]03.</b>	LEFT.	CECI0103.
		[CEC]: blue ray left.

## 8x2 HDMI 2.0 Seamless Matrix Switcher

CECI[port]05.	RIGHT.	CECI0105.
		[CEC]: blue ray right.
CECI[port]09.	Back to submenu.	CECI0109.
		[CEC]: blue ray menu.
CECI[port]0D.	Exit.	CECI010D.
		[CEC]: blue ray Exit.
CECI[port]41.	Volume up.	CECI0141.
		[CEC]: Source VOL +
CECI[port]42.	Volume down.	CECI0142.
		[CEC]: Source VOL -
CECI[port]44.	Play.	CECI0144.
		[CEC]: blue ray play.
CECI[port]45.	Stop.	CECI0145.
		[CEC]: blue ray stop.
CECI[port]46.	Pause.	CECI0146.
		[CEC]: blue ray pause.
CECI[port]48.	Rewind	CECI0148.
		[CEC]: blue ray backward.
CECI[port]49.	Fast forward.	CECI0149.
		[CEC]: blue ray forward.
CECI[port]4B.	Forward.	CECI014B.
		[CEC]: blue ray skid forward.
CECI[port]4C.	Backward.	CECI014C.
		[CEC]: blue ray skid backward.
CECI[port]6C.	Power off.	CECI016C.
		[CEC]: Source Power off.
CECI[port]6D.	Power on.	CECI016D.
		[CEC]: Source Power on.

✓ **Control the output display:**

Command	Description	Example and Feedback
CECO[port]34.	Input channel selection.	CECO0634.
		[CEC]: TV input select
CECO[port]41.	Volume up.	CECO0641.
		[CEC]: TV VOL +
CECO[port]42.	Volume down.	CECO0642.
		[CEC]: TV VOL -
CECO[port]43.	Mute	CECO0643.
		[CEC]: TV VOL Mute
CECO[port]36.	Power off.	CECO0636.
		[CEC]: TV Power off
CECO[port]04.	Power on.	CECO0604.
		[CEC]: TV Power on

### 8.2.11 Third-party Device Control

The switcher supports RS232 pass-through control, the third-party device can be controlled by RS232 command, and the command format as shown below:

Command	Function	Command Example
UARTPassThrough:Y.	<b>RS232 mode selection:</b> <ul style="list-style-type: none"> <li>Y=0, <b>Local Control:</b> The RS232 port of the switcher is used to connect control device (e.g. PC) to control the switcher.</li> <li>Y=1, <b>HDBT Transmitter Pass Through:</b> Establish RS232 pass-through communication between the switcher and the HDBaseT transmitter (e.g. TPUH610AT). The RS232 port of the switcher can be used to transfer commands to control the third-party device which is</li> </ul>	



## 8x2 HDMI 2.0 Seamless Matrix Switcher

	<p>connected to the HDBaseT transmitter.</p> <ul style="list-style-type: none"> <li>● Y=2, <b>HDBT Receiver Pass Through</b>: Establish RS232 pass-through communication between the switcher and HDBaseT receiver (e.g.TPUH610AR). The RS232 port of the switcher can be used to transfer commands to control the third-party device which is connected to the HDBaseT receiver.</li> </ul>	
/+[Y]/[X].*****.	<ul style="list-style-type: none"> <li>● xxx: ASCII characters.</li> <li>● Y: Represents the RS232 port.               <ol style="list-style-type: none"> <li>1) Y=1: The RS232 port of switcher.</li> <li>2) Y=2: The RS232 port of HDBaseT receiver.</li> <li>3) Y=3: The RS232 port of HDBaseT transmitter.</li> </ol> </li> <li>● X: Represents the baud rate of third-party device.               <ol style="list-style-type: none"> <li>1) X=1, 2400</li> <li>2) X=2, 4800</li> <li>3) X=3, 9600</li> <li>4) X=4, 19200</li> <li>5) X=5, 38400</li> <li>6) X=6, 57600</li> <li>7) X=7, 115200</li> </ol> </li> </ul>	/+3/3:123456.
		Send the command "123456" to the third-party device. The baud rate is 9600.

## 9. OSD Control

The SCU82TS provides a powerful OSD operation menu which contains 3 parts: optional settings, image settings, system settings etc.

There are two ways to enter OSD menu:

- 1) Press and hold the **MENU/2s** button  at least two seconds on the front panel.
- 2) Press the **MENU** button  on the IR remote.

### Operation:

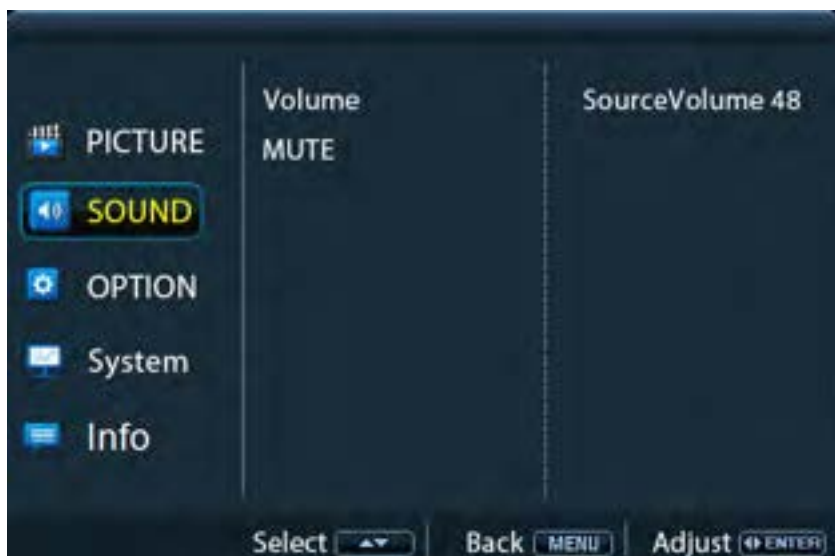
- Press direction buttons on IR Remote to switch between menu options and menu pages.
- Press **OK** on the IR Remote to confirm the selection.

Options include Picture, Sound, Option, System, and Info.



PICTURE MENU

**Note:** When setting the Picture Mode to **User**, Picture Adjust and Colortemp Adjust are available.



SOUND MENU



OPTION MENU



SYSTEM MENU



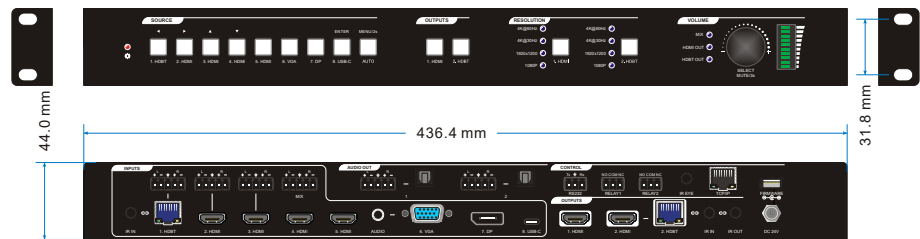
INFO MENU

### 10. Firmware Upgrade

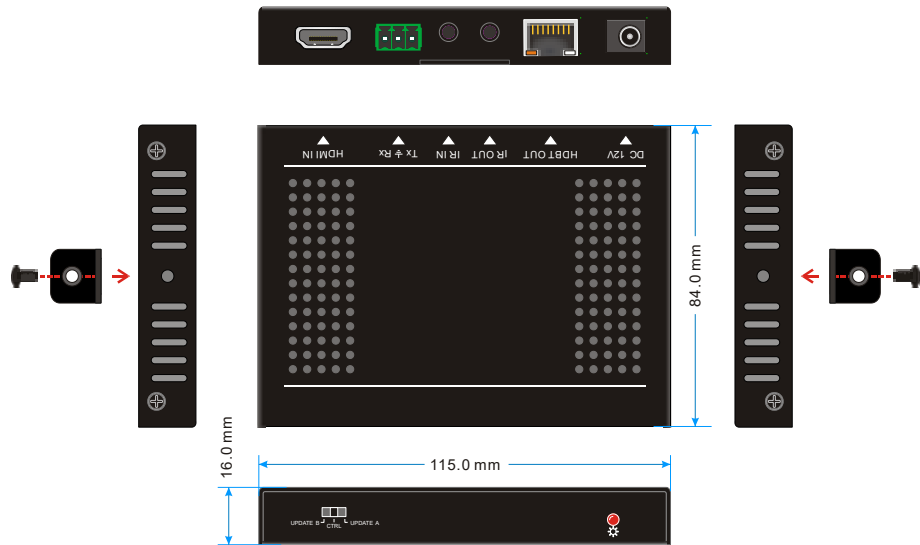
Please follow the steps as below to upgrade firmware by the **FIRMWARE** port on the rear panel:

- 1) Prepare the latest upgrade file (.bin) and rename it as "USERAPP.bin" on PC.
- 2) Power off the switcher, and connect the **FIRMWARE** port of switcher to the PC with USB cable.
- 3) Power on the switcher, and then the PC will automatically detect a U-disk named of "BOOTDISK".
- 4) Double-click the U-disk, a file named of "READY.TXT" would be showed.
- 5) Directly copy the latest upgrade file (.bin) to the "BOOTDISK" U-disk.
- 6) Reopen the U-disk to check the filename "READY.TXT" whether automatically becomes "SUCCESS.TXT", if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file (.bin) should be confirm again, and then follow the above steps to update again.
- 7) Remove the USB cable after firmware upgrade.
- 8) After firmware upgrade, the switcher should be restored to factory default by sending command.

11. Panel Drawing

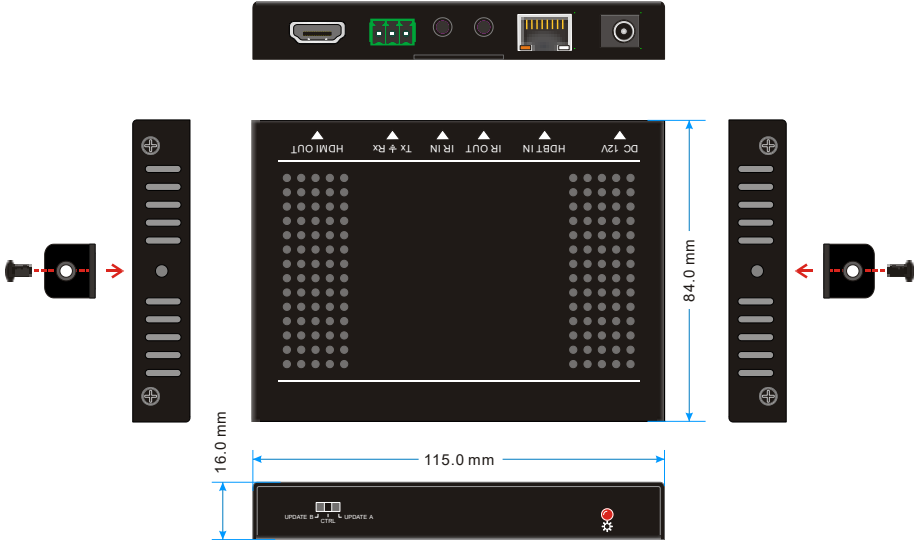


SCU82TS Matrix Switcher



TPUH610AT HDBaseT Transmitter

8x2 HDMI 2.0 Seamless Matrix Switcher



TPUH610AR HDBaseT Receiver

## 12. Troubleshooting and Maintenance

Problems	Potential Causes	Solutions
Output image with white noise.	Bad quality of the connecting cable	Try another high quality cable.
	Fail or loose connection	Make sure the connection is good
No output image when switching	No signal at the input / output end	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection	Make sure the connection is good.
	The switcher is broken	Send it to authorized dealer for repairing.
<b>POWER</b> indicator doesn't work or no respond to any operation	Fail connection of power cord.	Make sure the power cord connection is good.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Type in correct RS232 communication parameters.
	Broken RS232 port	Send it to authorized dealer for checking.

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

## 13. 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.

### 1) Warranty

The limited warranty period of the product is fixed 5 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 defect 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.