

# User Manual

# WOXCON

## MUH44E-H2 KIT

### 4K 4x4 HDBaseT Matrix with 3 Receivers



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Version: MUH44E-H2 KIT\_2019V1.1

## 4K 4x4 HDBaseT Matrix with 3 Receivers

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### 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 September, 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.



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### 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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## 4K 4x4 HDBaseT Matrix with 3 Receivers

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### 1. Product Introduction

Thanks for choosing this 4K 4x4 HDBaseT Matrix with 3 Receivers! It features 4 HDMI inputs, 1 HDMI output with audio breakout and 3 HDBaseT outputs. The de-embedded audio can be output from SPDIF and L/R connector. It supports video resolutions up to 4K@60Hz 4:4:4 and can transmit 4K video to distances up to 131 feet (40 meters) and 1080P video to distances up to 229 feet (70 meters) over a single CATx cable. It supports bidirectional IR extension and IR, RS232, and TCP/IP control options. It supports the Power over Cable (PoC) feature, allowing the receivers to draw their power from the matrix over the CATx cable. In addition, there is the smart built-in EDID setting can be selected by the 4-pin DIP switch on the rear panel.

#### 1.1 Features

- Supports HDMI resolutions up to 4K@60Hz 4:4:4, including 1080P 3D video
- Fully compliant with the HDMI 2.0 and HDCP 2.2 specifications
- Can transmit 4K signals to distances up to 131 feet (40 meters) and 1080P signals to distances up to 229 feet (70 meters) over a single CATx cable.
- Features three HDBaseT outputs and includes three receivers.
- Supports the 24V PoC feature, allowing the receivers to draw their power from the matrix over the CATx cable.
- Includes a local HDMI output with corresponding digital optical S/PDIF and stereo L/R analog outputs.
- Smart EDID management for various application and customized setting.
- Controllable via RS232, IR and TCP/IP.

**4K 4x4 HDBaseT Matrix with 3 Receivers**

**1.2 Package List**

HDBaseT Matrix	<ul style="list-style-type: none"> <li>● 1x MUH44E-H2 4K 4x4 HDBaseT Matrix</li> <li>● 2x Mounting Ears with 6 Screws</li> <li>● 4x Plastic Cushions</li> <li>● 1x IR Remote</li> <li>● 4x IR Receivers</li> <li>● 4x IR Emitters</li> <li>● 1x RS232 Cable (3-pin to DB9)</li> <li>● 1x 5-pin Terminal Block</li> <li>● 1x Power Adaptor (24V DC 2.71A)</li> <li>● 1x Power Cord</li> </ul>
HDBaseT Receiver	<ul style="list-style-type: none"> <li>● 3x TPUH-BYE20R HDBaseT Receivers</li> <li>● 6x Mounting Ears with 6 Screws</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.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

## 2. Specification

### 2.1 MUH44E-H2 HDBaseT Matrix

Video	
Video Input	(4) HDMI
Video Input Connector	(4) Type-A female HDMI
Video input Video Resolution	Up to 4K@60Hz 4:4:4
Video Output	(3) HDBaseT, (1) HDMI
Video Output Connector	(3) RJ45, (1) Type-A Female HDMI,
Video output Video Resolution	HDMI: Up to 4K@60Hz 4:4:4
	HDBaseT: Up to 4K@60Hz 4:4:4
HDMI Version	Up to 2.0
HDCP Version	Up to 2.2
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Audio	
Audio Output	(1) SPDIF, (1) L/R
Audio Output Connector	(1) Toslink connectors, (1) 5-pin terminal blocks
Frequency Response	20Hz – 20kHz, ±3dB
Max Output Level	2.0Vrms ± 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	< ± 0.5dB 20Hz - 20kHz
Output Load Capability	1KΩ and higher (Supports 10x paralleled 10KΩ loads)
Stereo Channel Separation	>70dB@1kHz
Control	
Control Port	(1) FIRMWARE, (3) IR IN, (1) IR EYE, (4) IR OUT, (1) TCP/IP, (1) RS232, (1) EDID
Control Connector	(1) Micro-USB, (8) 3.5mm jacks, (1) RJ45, (1) 3-pin terminal block, (1) 4-pin DIP switch
General	
Transmission Standard	HDBaseT
Transmission Distance	1080P@60Hz ≤ 230 feet (70 meters),



**4K 4x4 HDBaseT Matrix with 3 Receivers**

	4K@60Hz ≤ 131 feet (40 meters)
Bandwidth	18Gbps
Operation Temperature	-5~ +55 °C
Storage Temperature	-25 ~ +70 °C
Relative Humidity	10%-90%
External Power Supply	Input: AC 100~240V, 50/60Hz; Output: 24V DC 2.71A
Maximum Power Consumption	58watts
Dimension (W*H*D)	436.4mm x 44mm x 236.5mm
Net Weight	1.9KG

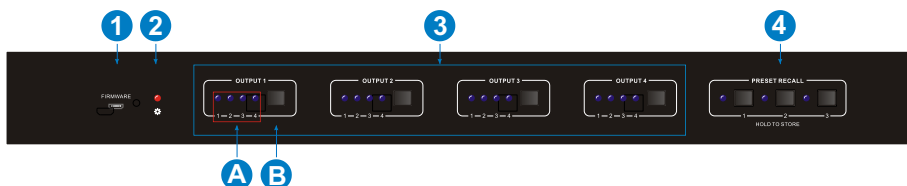
**2.2 TPUH-BYE20R HDBaseT Receiver**

<b>Receiver</b>	
Input	(1) HDBT
Input Connector	(1) RJ45
Output	(1) HDMI
Output Connector	(1) Female type-A HDMI
Control	(1) IR IN, (1) IR OUT
Control Connector	(2) 3.5mm mini jacks
<b>General</b>	
Video Resolution	Up to 4K@60Hz 4:4:4
Transmission Mode	HDBaseT
Transmission Distance	1080P@60Hz ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 meters)
HDMI Version	Up to 2.0
HDCP Version	Up to 2.2
Bandwidth	18Gbps
Power Consumption	9.5W (Max)
Operating Temperature	-5°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
Power Supply	Input Power: 24V DC 1.25A or Power over Cable (PoC), AC Adaptor Input Power: 100~240VAC, 50/60Hz
Dimension (W*H*D)	74mm x 18mm x 120mm
Net Weight (g)	235g

## 4K 4x4 HDBaseT Matrix with 3 Receivers

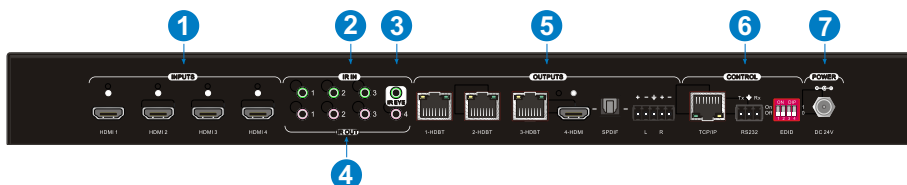
### 3. Panel Description

#### 3.1 Matrix Front Panel



- ① **FIRMWARE:** Micro-USB port for firmware upgrade.
- ② **Power LED:** The LED illuminates red when power is applied.
- ③ **Signal Switching Zone:**
  - A. **INPUT LEDs:** A series of four LEDs, one of which illuminates blue to indicate which source is selected.
  - B. **OUTPUT button:** Press the button repeatedly to cycle through the four video inputs.
- ④ **PRESET RECALL:**
  - Press and hold the button 1~3 to save the current switching status to the corresponding preset 1~3.
  - Press the button 1~3 to recall the saved preset 1~3.

#### 3.2 Matrix Rear Panel



- ① **INPUTS:** Four type-A female HDMI ports to connect the HDMI source devices (Blu-ray Disc™ or DVD players, gaming consoles, etc.).
- ② **IR IN:** Three 3.5mm jacks to connect the IR receivers for IR pass-through.
- ③ **IR EYE:** 3.5mm jack to connect the IR receiver for IR local control.
- ④ **IR OUT:** Four 3.5mm jacks to connect the IR emitters for IR pass-through.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### ⑤ OUTPUTS:

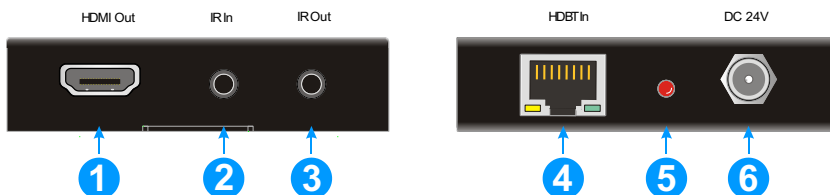
- **1~3-HDBT:** Three HDBaseT RJ45 outputs to connect the three HDBaseT receivers.
- **4-HDMI:** One local HDMI port to connect a local display.
- **SPDIF:** A digital optical S/PDIF audio output.
- **L/R:** A stereo pair of analog RCA audio output jacks.

### ⑥ CONTROL:

- **TCP/IP:** RJ45 port to connect the control device (e.g. PC) to control the matrix by GUI.
- **RS232:** 3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
- **EDID:** 4-pin DIP switch for EDID setting.

### ⑦ POWER: DC barrel connector for the power adapter connection.

## 3.3 Receiver Front and Rear Panel



- ① **HDMI Out:** Type-A female HDMI port to connect the display device.
- ② **IR IN:** 3.5mm jack to connect the IR receiver for IR pass-through.
- ③ **IR OUT:** 3.5mm jack to connect the IR emitter for IR pass-through.
- ④ **HDBT In:** RJ45 port to connect the **HDBT** output port of HDBaseT matrix by CATx Ethernet cable. The **LINK LED** illuminates orange when there is a valid HDBaseT link between the matrix and the receiver. The **HDCP LED** illuminates green when the video contains HDCP content.
- ⑤ **POWER LED:** The LED illuminates red when power is applied.
- ⑥ **DC 24V:** DC barrel connector for the power adapter connection.

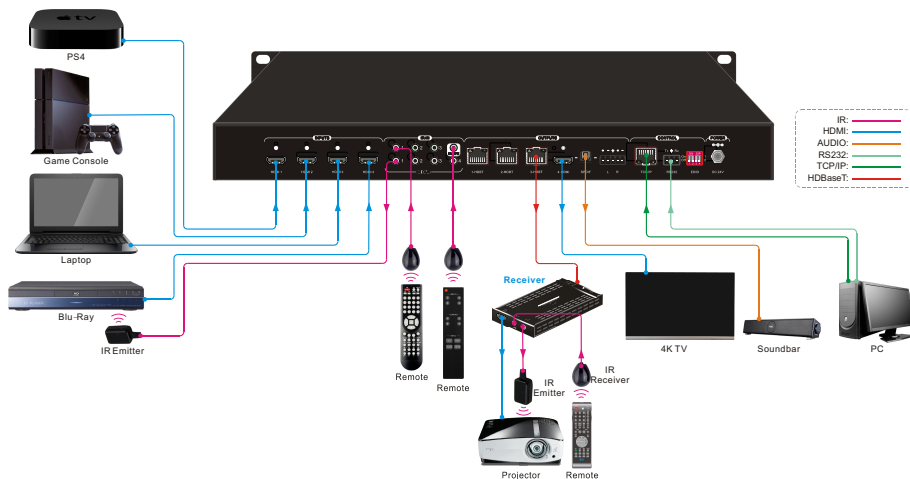
## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 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



## 4K 4x4 HDBaseT Matrix with 3 Receivers

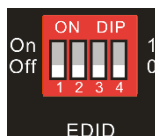
## 5. Panel Control

### 5.1 Signal Switching

- Repeatedly press the **OUTPUT** button on front panel to cycle through the various inputs for the corresponding output.
- Press and hold **PRESET RECALL** button 1~3 to save the current switching status to the corresponding preset 1~3.
- Press the **PRESET RECALL** button 1~3 to recall the saved preset 1~3.

### 5.2 EDID Setting

The Extended Display Identification Data (EDID) is used for the source device to match its video resolution with the connected display. By default, the EDID of source device is 1080P PCM 2CH. Meanwhile, since the displays with different capabilities are connected to the matrix, the 4-pin DIP switch on the rear panel can be used to set the EDID to a built-in fixed value. Use the following table to determine the setting for the 4-pin DIP switch for specific video resolution and audio capabilities. The switch represents “0” when in the lower (**Off**) position, and it represents “1” while putting the switch in the upper (**On**) position.



Switch Status	Video Resolution	Audio Format
0000 (Default)	Enable RS232, GUI or IR remote EDID management.	
0001	1080P	2CH
0010	1080P	Multi-CH
0011	4K@30Hz HD	2CH
0100	4K@30Hz HDR	Multi-CH
0101	4K@60Hz HDR	2CH
0110	4K@60Hz HDR	Multi-CH
0111	User-define	

**Note:**

- *2CH: LPCM 2Ch.*
- *Multi-CH: 8Ch LPCM, Dolby TrueHD, DTS-HD, Dolby Digital5.1, DTS 5.1, Dolby Digital Plus.*

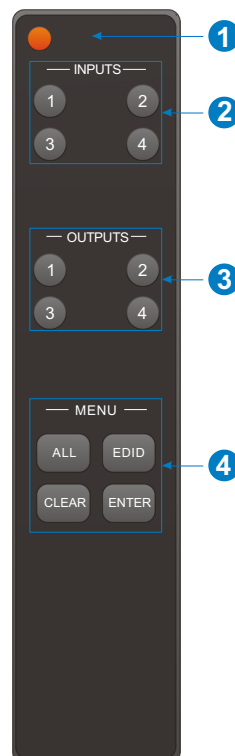
## 4K 4x4 HDBaseT Matrix with 3 Receivers

## 6. IR Control

### 6.1 IR Remote Control

Connect IR receiver to the **IR EYE** port, the matrix can be controlled by the below IR remote.

- Press the **STANDBY (1)** button to enter or exit standby mode.
- To switch the selected input for one or more of the outputs, first press the number corresponding to the desired **INPUT (2)**, then press one or more **OUTPUTS (3)** or the **ALL (4)** button, then press the **ENTER (4)** button to execute the change.
- Examples:
  - ✓ To send input 3 to output 2, first press the **INPUTS 3** button, then press the **OUTPUTS 2** button, and finally press the **ENTER** button to execute the change.
  - ✓ To send input 1 to outputs 1 and 4, first press the **INPUTS 1** button, then press both the **OUTPUTS 1** and **4** buttons, and finally press the **ENTER** button to execute the change.
  - ✓ To send input 4 to all outputs, first press the **INPUTS 4** button, then press the **ALL** button, and finally press the **ENTER** button to execute the change.
- To set the EDID for one or more source devices to the EDID capabilities of a specific output, press the **EDID (4)** button, then press the desired **INPUTS (2)** or the **ALL (4)** button, then press the **OUTPUTS (3)** button corresponding to the desired display, finally press the **ENTER (4)** button to execute the operation.



## 4K 4x4 HDBaseT Matrix with 3 Receivers

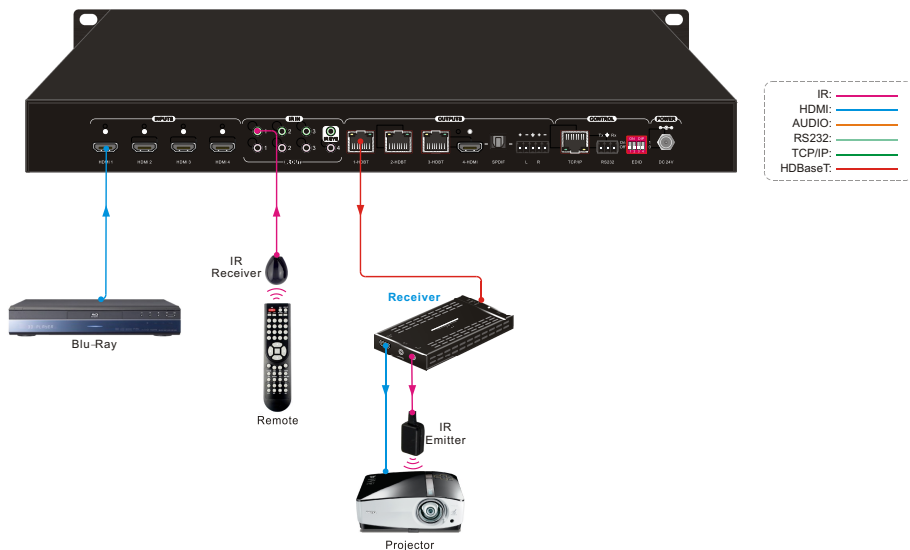
### 6.2 IR Pass-through Control

#### 6.2.1 Control Far-end Device locally

Connect an IR receiver to **IR IN** port of the matrix; users can control far-end display via its IR remote from local.

In that case, the IR signal is transferred via twisted pair. Only the corresponding **IR OUT** port can emit control signals to the remote display.

See the figure below:



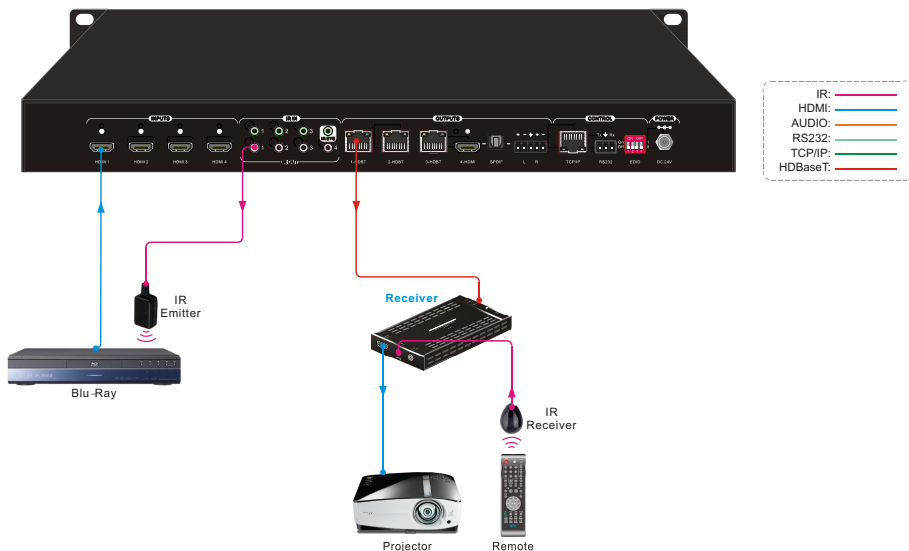
#### 6.2.2 Control Local Device Remotely

Connect IR receiver(s) to **IR IN** ports on far-end HDBT receiver(s), and IR emitter(s) to **IR OUT** ports of the matrix, and use the IR remote of local source to control the device remotely.

- **One to One:**

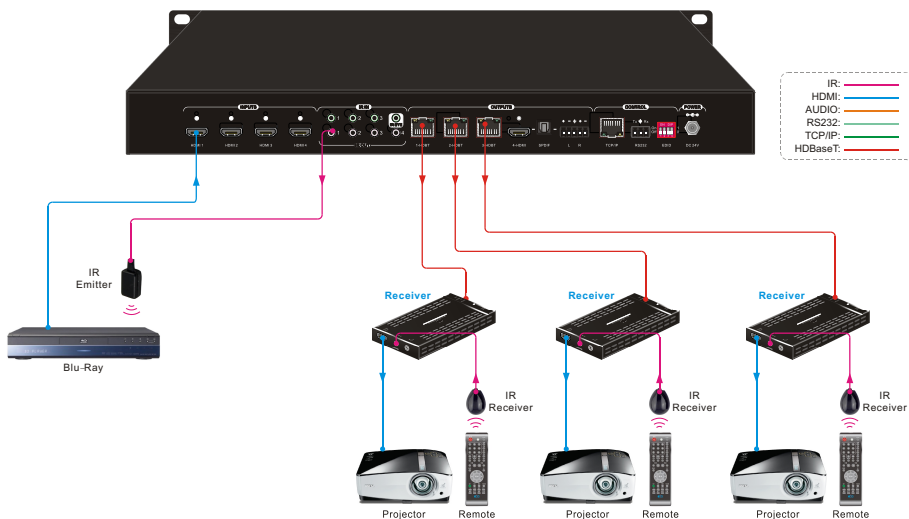
Connect an IR receiver to **IR IN** port on far-end HDBaseT receiver, and an IR emitter to **IR OUT 1** port of the matrix. Use the IR remote of local source to control the device remotely. See below:

## 4K 4x4 HDBaseT Matrix with 3 Receivers



### Multiple to One:

If switch HDMI 1 to all HDBT outputs, connect three IR receivers to **IR IN** ports of HDBaseT receivers, and an IR emitter to **IR OUT 1** port of the matrix. See below:





## 4K 4x4 HDBaseT Matrix with 3 Receivers

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The IR signal can be sent by any three of IR remotes, then it is transferred to HDBaseT receiver, then to **IR OUT 1** port and received by the local source device.

### Switching Operation:

Sending command (reference to *8.2.2 Source Switching*):

Command	Description
<b>IRFollowON.</b>	Enable the IR switching to follow video switching.
<b>IRFollowOFF.</b>	Disable the IR switching to follow video switching.
<b>IR[X]:[Y].</b>	Switch local IR OUT [X] to far-end IR IN [Y]. x=1~4, Y=1~3.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

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### 7. GUI Control

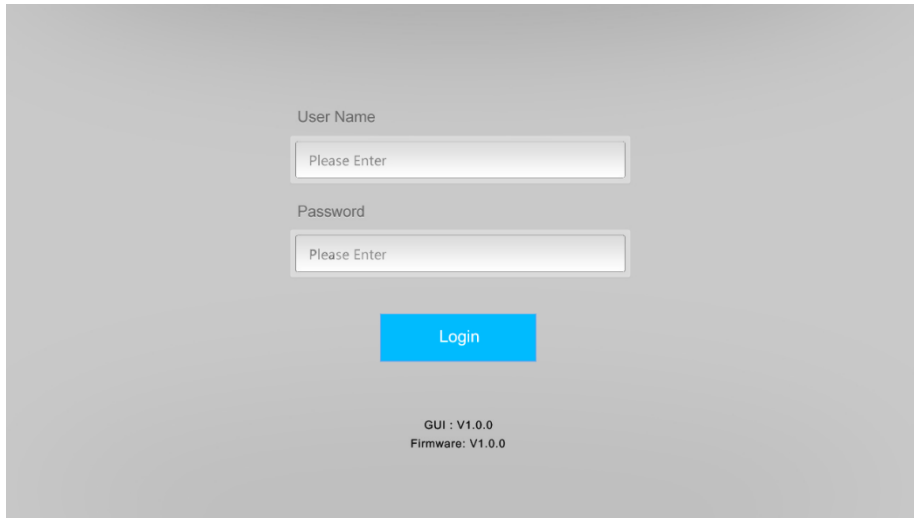
The matrix can be controlled via TCP/IP. The default IP settings are:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

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



User Name

Password

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.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

## 7.1 Switching Tab



Use the 4x4 button grid on the left side to set which inputs are directed to which outputs. For example, clicking the buttons on the Input 1 row and Output 1,2,3,4 column, directs input 1 to all outputs.

Use the 6 numbered buttons on the right in conjunction with the **Save** and **Recall** buttons to save and load layout presets.

- To save a given layout, first click one of the numbered buttons, then click the **Save** button.
- To load a previously saved layout, first click one of the numbered buttons, then click the **Recall** button.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.2 Audio Tab

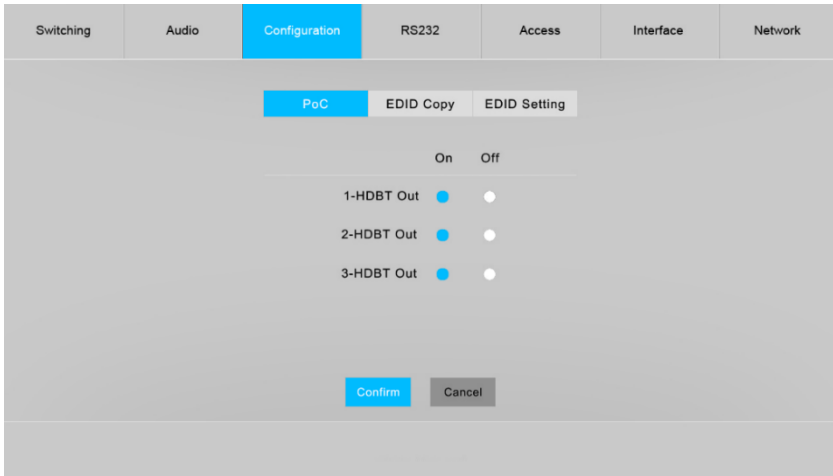
Switching	Audio	Configuration	RS232	Access	Interface	Network
<p>On    Off</p> <hr/> <p>Analog Audio    <input checked="" type="radio"/>    <input type="radio"/></p> <hr/> <p>Digital Audio    <input checked="" type="radio"/>    <input type="radio"/></p> <p><input type="button" value="Confirm"/>    <input type="button" value="Cancel"/></p>						

- Turn on or turn off the analog audio output and digital audio output.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

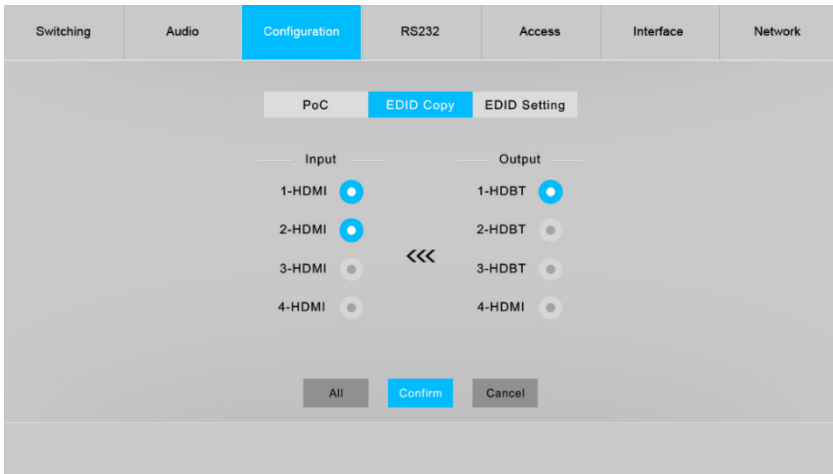
### 7.3 Configuration Tab

#### 7.3.1 PoC Setting



- Turn on or off PoC for 1-HDBT, 2-HDBT and 3-HDBT output.

#### 7.3.2 EDID Copy



- Copy the EDID of the selected output device to one or more input source device.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.3.3 EDID Setting

The screenshot displays the EDID Setting configuration page. The 'Configuration' tab is active, and the 'EDID Setting' sub-tab is selected. The 'Input' section shows '1-HDMI' and '2-HDMI' as selected options. The 'Embedded EDID' section shows '1080P 2CH' as the selected option. The 'User-Define' option is also visible, with a file selection box showing '.bin'. An 'Apply' button is located below the file selection box. At the bottom of the page, there are 'All', 'Confirm', and 'Cancel' buttons.

- Select the compatible built-in EDID for the selected input source.
- Upload user-defined EDID by the below steps:
  - 1) Prepare the EDID file (.bin) on the control PC.
  - 2) Select the **User-define**.
  - 3) Click the box , and then select the EDID file (.bin) according to the tooltip.
  - 4) Click **Apply** to upload the user-defined EDID, and then click **Confirm** to save setting.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.4 RS232 Tab

Switching	Audio	Configuration	RS232	Access	Interface	Network
<p>HEX <input checked="" type="radio"/> ASCII <input type="radio"/></p> <p>Baud Rate: 9600 ▼</p> <p>Command Ending: NULL ▼</p> <p>Command: xxxxxx</p> <p style="text-align: center;">Send</p>						

- **Baud Rate:** Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- **Command Ending:** NULL, CR, LF or CR+LF can be chosen.
- **Command:** Type the command in this box to control the third-party device which is connected to the RS232 port of the matrix.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.5 Access Tab

Switching	Audio	Configuration	RS232	Access	Interface	Network
<p>Credentials</p> <p>Password: <input type="text" value="admin"/> <input type="button" value="Confirm"/></p> <p>Front Panel Lock</p> <p>ON <input checked="" type="checkbox"/> OFF</p>						

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



## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.6 Interface Tab

Switching	Audio	Configuration	RS232	Access	Interface	Network										
<p>Title Bar Label: <input type="text"/></p> <p>Button Labels:</p> <table><thead><tr><th>Input</th><th>Output</th></tr></thead><tbody><tr><td>1: <input type="text" value="1-HDMI"/></td><td>1: <input type="text" value="1-HDBT"/></td></tr><tr><td>2: <input type="text" value="2-HDMI"/></td><td>2: <input type="text" value="2-HDBT"/></td></tr><tr><td>3: <input type="text" value="3-HDMI"/></td><td>3: <input type="text" value="3-HDBT"/></td></tr><tr><td>4: <input type="text" value="4-HDMI"/></td><td>4: <input type="text" value="4-HDMI"/></td></tr></tbody></table> <p><input type="button" value="Confirm"/> <input type="button" value="Cancel"/></p>							Input	Output	1: <input type="text" value="1-HDMI"/>	1: <input type="text" value="1-HDBT"/>	2: <input type="text" value="2-HDMI"/>	2: <input type="text" value="2-HDBT"/>	3: <input type="text" value="3-HDMI"/>	3: <input type="text" value="3-HDBT"/>	4: <input type="text" value="4-HDMI"/>	4: <input type="text" value="4-HDMI"/>
Input	Output															
1: <input type="text" value="1-HDMI"/>	1: <input type="text" value="1-HDBT"/>															
2: <input type="text" value="2-HDMI"/>	2: <input type="text" value="2-HDBT"/>															
3: <input type="text" value="3-HDMI"/>	3: <input type="text" value="3-HDBT"/>															
4: <input type="text" value="4-HDMI"/>	4: <input type="text" value="4-HDMI"/>															

- Modify the title bar label.
- Modify the button labels.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.7 Network Tab

Switching	Audio	Configuration	RS232	Access	Interface	Network
<p>MAC Address: 44-33-4C-C9-35-12</p> <p>DHCP <input type="checkbox"/> Static IP <input checked="" type="checkbox"/></p> <p>IP Address: <input type="text" value="192.168.0.178"/></p> <p>Subnet Mask: <input type="text" value="255.255.255.0"/></p> <p>Gateway: <input type="text" value="192.168.0.1"/></p> <p><input type="button" value="Confirm"/></p>						

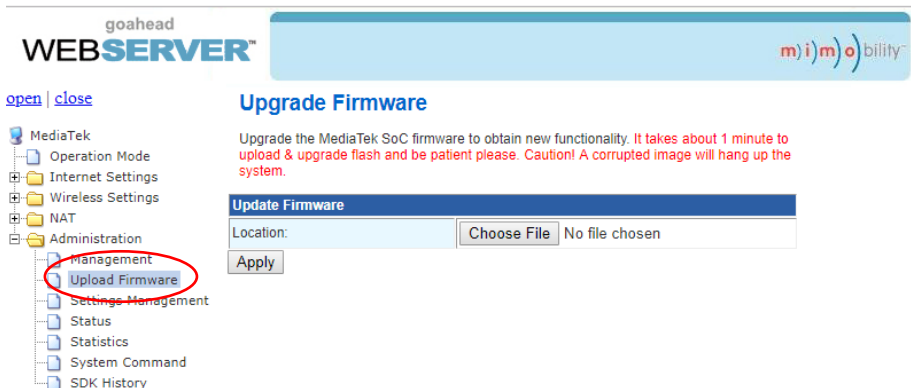
- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

## 4K 4x4 HDBaseT Matrix with 3 Receivers

### 7.8 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:



The screenshot displays the 'WEB SERVER' interface. On the left, a navigation tree shows 'Administration' expanded, with 'Upload Firmware' circled in red. The main panel is titled 'Upgrade Firmware' and contains the following text: 'Upgrade the MediaTek SoC firmware to obtain new functionality. It takes about 1 minute to upload & upgrade flash and be patient please. Caution! A corrupted image will hang up the system.' Below this is a form titled 'Update Firmware' with a 'Location:' label, a 'Choose File' button, and the text 'No file chosen'. An 'Apply' button is located below the form.

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

## 4K 4x4 HDBaseT Matrix with 3 Receivers

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### 8. RS232 Control

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The matrix 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 matrix 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.

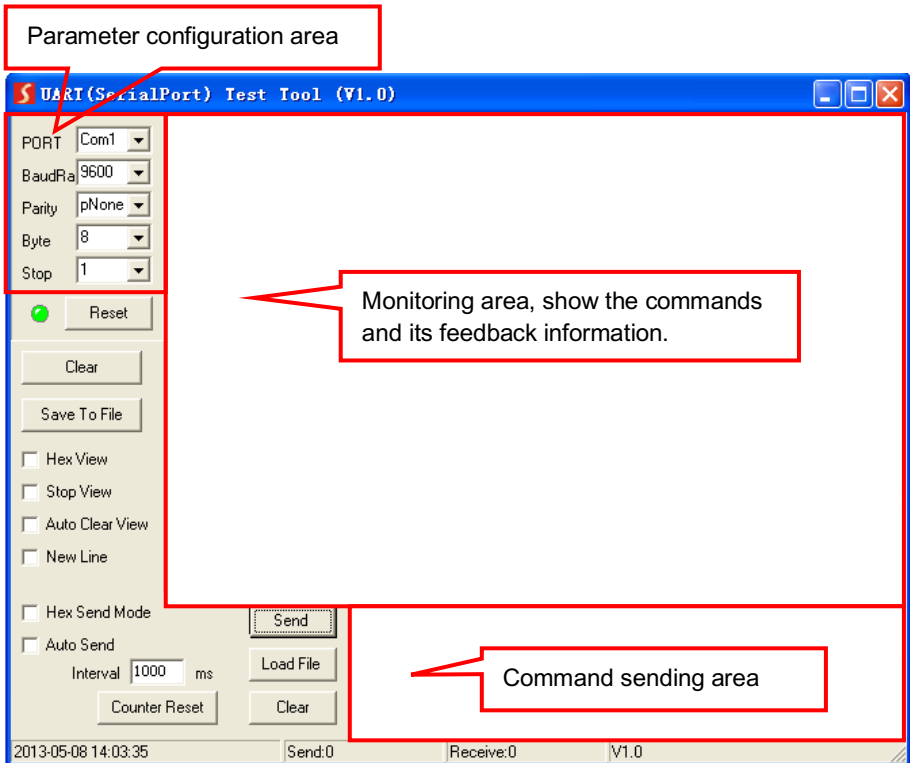
Here take the software **CommWatch.exe** as example:



CommWatch.exe

## 4K 4x4 HDBaseT Matrix with 3 Receivers

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.

4K 4x4 HDBaseT Matrix with 3 Receivers

8.2 RS232 Communication Command

Communication protocol: RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Note:

- 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
PowerON.	Power on system.	Power ON!
PowerOFF.	System standby.	Power OFF!
/*Name.	Report the system name.	MUH44E-H2
/*Type.	Report system model.	4x4 HDBT Matrix
/*Version.	Report firmware version.	V1.0.0
STA.	Report system status.	.....
STA_OUT.	Report output status.	OUT 01 02 03 04 LINK N N N N
STA_IN.	Report input status.	IN 01 02 03 04 LINK N N N N
STA_VIDEO.	Report video status.	Output1 Switch To 01! Output2 Switch To 02! Output3 Switch To 03! Output4 Switch To 04!
STA_AUDIO.	Report audio status.	SPDIF Out ON! IIS Out ON!
STA_IR.	Report IR status.	IR Follow Video ON! Local1 IR Out Switch To Remote1 IR IN! Local2 IR Out Switch To Remote2 IR IN! Local3 IR Out Switch To Remote3 IR IN!
RST.	Factory reset.	Factory Default!
Lock.	Lock front panel buttons.	Front Panel Locked!
Unlock.	Unlock front panel buttons.	Front Panel UnLock!

### 4K 4x4 HDBaseT Matrix with 3 Receivers

Command	Description	Feedback Example
<b>GetGuiIP.</b>	Report GUI IP.	GUI_IP:192.168.0.178!
<b>SetGuiIP:xxx.xxx.xxx.xx.</b>	Set GUI IP to [xxx.xxx.xxx.xxx].	Example: SetGuiIP:192.168.0.176. Feedback: SetGuiIP:192.168.0.176.
<b>PHDBT[x]:ON.</b>	Turn on PoC for HDBT output [x]. x=1~3.	HDBT1 Power ON!
<b>PHDBT[x]:OFF.</b>	Turn off PoC for HDBT output [x]. x=1~3.	HDBT1 Power OFF!

### 8.2.2 Source Switching

Command	Description	Feedback Example
<b>OUT[x]:[Y].</b>	Switch input [Y] to output [x]. x=1~4, Y=1~4.	OUT1:4. Output1 Switch To 04!
<b>[x]ALL.</b>	Switch input [x] to all outputs. X=1~4.	Output1 Switch To 01! Output2 Switch To 01! Output3 Switch To 01! Output4 Switch To 01!
<b>IRFollowON.</b>	Enable the IR switching to follow video switching.	IR Follow Video ON!
<b>IRFollowOFF.</b>	Disable the IR switching to follow video switching.	IR Follow Video OFF!
<b>IR[x]:[Y].</b>	Switch local IR OUT [x] to far-end IR IN [Y]. x=1~4, Y=1~3.	IR1:3. Local1 IR Out Switch To Remote3 IR IN!

### 8.2.3 Preset Setting

Command	Description	Feedback Example
<b>PresetSave[x].</b>	Store the current switching status to preset [x]. x=1~ 6.	Preset1 Save Success!
<b>PresetRecall[x].</b>	Recall the preset [x]. x=1~ 6.	Preset3 Recall: Output1 Switch To 03! Output2 Switch To 03! Output3 Switch To 03! Output4 Switch To 03!

**4K 4x4 HDBaseT Matrix with 3 Receivers**

<b>PresetSta[x].</b>	Report the preset [x]. x=1~ 6.	Preset2 Sta: Out1 In 02! Out2 In 02! Out3 In 02! Out4 In 02!
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**8.2.4 Audio Control**

<b>Command</b>	<b>Function</b>	<b>Feedback Example</b>
<b>IISON.</b>	Turn on the stereo analog L/R audio output.	IIS Out ON!
<b>IISOFF.</b>	Turn off the stereo analog L/R audio output.	IIS Out OFF!
<b>SPDIFON.</b>	Turn on the Toslink digital audio output.	SPDIF Out ON!
<b>SPDIFOFF.</b>	Turn off the Toslink digital audio output.	SPDIF Out OFF!

**8.2.5 EDID Management**

<b>Command</b>	<b>Description</b>	<b>Feedback Example</b>
----------------	--------------------	-------------------------



4K 4x4 HDBaseT Matrix with 3 Receivers

<p><b>EDIDUpgrade[x].</b></p>	<p>Upgrade the EDID data of the input [x]. x=0~4, U.</p> <table border="1" data-bbox="379 245 715 639"> <thead> <tr> <th>x</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Upgrade the EDID data of all HDMI input.</td> </tr> <tr> <td>1~4</td> <td>Upgrade the EDID data of HDMI input 1~4.</td> </tr> <tr> <td>U</td> <td>Upgrade the user-define EDID. Note that new EDID can not be automatically invoked. It can be invoked by EDID 4-pin DIP switch (0111), RS232 command or GUI.</td> </tr> </tbody> </table> <p>When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds. Please disconnect all HDBT connections before sending command to ensure the data can be received successfully.</p>	x	Definition	0	Upgrade the EDID data of all HDMI input.	1~4	Upgrade the EDID data of HDMI input 1~4.	U	Upgrade the user-define EDID. Note that new EDID can not be automatically invoked. It can be invoked by EDID 4-pin DIP switch (0111), RS232 command or GUI.									
x	Definition																	
0	Upgrade the EDID data of all HDMI input.																	
1~4	Upgrade the EDID data of HDMI input 1~4.																	
U	Upgrade the user-define EDID. Note that new EDID can not be automatically invoked. It can be invoked by EDID 4-pin DIP switch (0111), RS232 command or GUI.																	
<p><b>EDID/[x]/[y].</b></p>	<p>The input [x] invoke built-in EDID [y]. x=1~4. y=1~7.</p> <table border="1" data-bbox="379 970 715 1241"> <thead> <tr> <th>y</th> <th>EDID</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1080P 2CH</td> </tr> <tr> <td>2</td> <td>1080P Multi-CH</td> </tr> <tr> <td>3</td> <td>4K@30Hz HDR 2CH</td> </tr> <tr> <td>4</td> <td>4K@30Hz HDR Multi-CH</td> </tr> <tr> <td>5</td> <td>4K@60Hz HDR 2CH</td> </tr> <tr> <td>6</td> <td>4K@60Hz HDR Multi-CH</td> </tr> <tr> <td>7</td> <td>User-define EDID.</td> </tr> </tbody> </table>	y	EDID	1	1080P 2CH	2	1080P Multi-CH	3	4K@30Hz HDR 2CH	4	4K@30Hz HDR Multi-CH	5	4K@60Hz HDR 2CH	6	4K@60Hz HDR Multi-CH	7	User-define EDID.	<p>EDID/3/3</p> <p>Input 3 EDID Upgrade OK By 03 Internal EDID!</p>
y	EDID																	
1	1080P 2CH																	
2	1080P Multi-CH																	
3	4K@30Hz HDR 2CH																	
4	4K@30Hz HDR Multi-CH																	
5	4K@60Hz HDR 2CH																	
6	4K@60Hz HDR Multi-CH																	
7	User-define EDID.																	
<p><b>EDIDGOUT[X].</b></p>	<p>Report the EDID of output [X]. X=1~4.</p>	<p>.....</p>																
<p><b>EDIDM[x]B[y].</b></p>	<p>Copy the EDID data of output [x] to input [y]. x=1~4, y=1~4.</p>	<p>EDIDM1B1.</p> <p>Input 1 EDID Upgrade OK By 01 EXT EDID!</p>																

**4K 4x4 HDBaseT Matrix with 3 Receivers**

<b>EDIDMInit.</b>	Reset factory default EDID to all input ports.	All Input EDID Set Default 1080P!												
<b>EDIDSTA[xx].</b>	Report the EDID status of input [xx]. <table border="1" data-bbox="381 309 714 512"> <thead> <tr> <th>x</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>All input ports</td> </tr> <tr> <td>01</td> <td>HDMI input 1</td> </tr> <tr> <td>02</td> <td>HDMI input 2</td> </tr> <tr> <td>03</td> <td>HDMI input 3</td> </tr> <tr> <td>04</td> <td>HDMI input 4</td> </tr> </tbody> </table>	x	Definition	00	All input ports	01	HDMI input 1	02	HDMI input 2	03	HDMI input 3	04	HDMI input 4	EDIDSTA00. Input 01 EDID From 01 Internal EDID! Input 02 EDID From 01 Internal EDID! Input 03 EDID From 01 Internal EDID! Input 04 EDID From 01 Internal EDID!
	x	Definition												
00	All input ports													
01	HDMI input 1													
02	HDMI input 2													
03	HDMI input 3													
04	HDMI input 4													

4K 4x4 HDBaseT Matrix with 3 Receivers

8.2.6 HDCP Management

<p><b>HDCP[xx]MAT.</b></p>	<p>The HDCP content of output [xx] follows the HDCP version of display device.</p> <table border="1" data-bbox="381 296 715 499"> <thead> <tr> <th>x</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>All output ports</td> </tr> <tr> <td>01</td> <td>HDMI output 1</td> </tr> <tr> <td>02</td> <td>HDMI output 2</td> </tr> <tr> <td>03</td> <td>HDMI output 3</td> </tr> <tr> <td>04</td> <td>HDMI output 4</td> </tr> </tbody> </table>	x	Definition	00	All output ports	01	HDMI output 1	02	HDMI output 2	03	HDMI output 3	04	HDMI output 4	<p>HDCP00MAT.</p> <p>OUT 01 HDCP MAT Display!                  OUT 02 HDCP MAT Display!                  OUT 03 HDCP MAT Display!                  OUT 04 HDCP MAT Display!</p>
x	Definition													
00	All output ports													
01	HDMI output 1													
02	HDMI output 2													
03	HDMI output 3													
04	HDMI output 4													
<p><b>HDCP[xx]BYP.</b></p>	<p>The HDCP content of output [xx] follows the HDCP version of source device.</p> <table border="1" data-bbox="381 614 715 817"> <thead> <tr> <th>x</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>All output ports</td> </tr> <tr> <td>01</td> <td>HDMI output 1</td> </tr> <tr> <td>02</td> <td>HDMI output 2</td> </tr> <tr> <td>03</td> <td>HDMI output 3</td> </tr> <tr> <td>04</td> <td>HDMI output 4</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>● If the input video has HDCP content, the HDCP version of HDMI output is HDCP 1.4 for broader video solution.</li> <li>● If the input video has no HDCP content, the HDMI output has no HDCP too.</li> </ul>	x	Definition	00	All output ports	01	HDMI output 1	02	HDMI output 2	03	HDMI output 3	04	HDMI output 4	<p>HDCP00BYP.</p> <p>OUT 01 HDCP BYPASS!                  OUT 02 HDCP BYPASS!                  OUT 03 HDCP BYPASS!                  OUT 04 HDCP BYPASS!</p>
x	Definition													
00	All output ports													
01	HDMI output 1													
02	HDMI output 2													
03	HDMI output 3													
04	HDMI output 4													

4K 4x4 HDBaseT Matrix with 3 Receivers

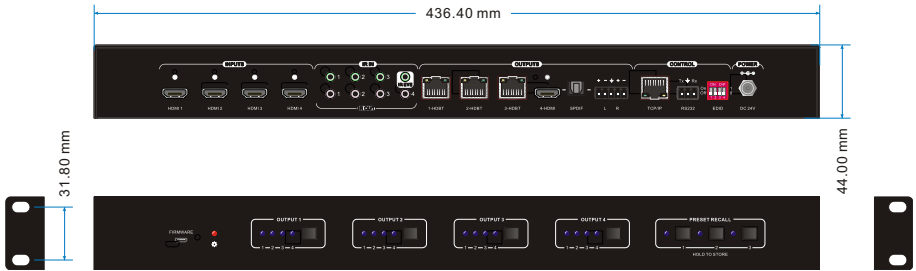
8.2.7 Third-party Device Control

The matrix supports RS232 pass-through control, the third-party device which is connected to the RS232 port can be controlled by RS232 command, and the command format as shown below:

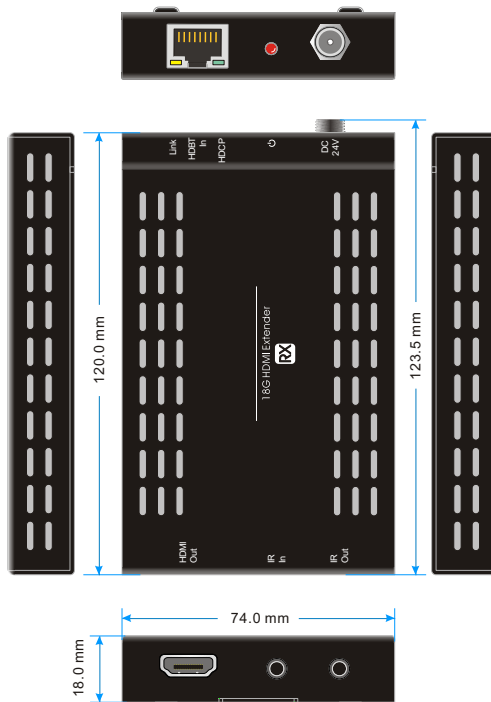
Command	Function	Command Example															
<p>/+[B]:xxx.</p>	<p>Send the command “xxx” to the third-party device whose baud rate is B.</p> <ul style="list-style-type: none"> <li>• xxx: ASCII string.</li> <li>• The “B” represents the baud rate of third-party device.</li> </ul>	<p>/+3:123456.</p>															
	<table border="1"> <thead> <tr> <th data-bbox="353 587 415 616">B</th> <th data-bbox="415 587 689 616">Baud Rate</th> </tr> </thead> <tbody> <tr> <td data-bbox="353 616 415 644">1</td> <td data-bbox="415 616 689 644">2400</td> </tr> <tr> <td data-bbox="353 644 415 673">2</td> <td data-bbox="415 644 689 673">4800</td> </tr> <tr> <td data-bbox="353 673 415 702">3</td> <td data-bbox="415 673 689 702">9600</td> </tr> <tr> <td data-bbox="353 702 415 730">4</td> <td data-bbox="415 702 689 730">19200</td> </tr> <tr> <td data-bbox="353 730 415 759">5</td> <td data-bbox="415 730 689 759">38400</td> </tr> <tr> <td data-bbox="353 759 415 788">6</td> <td data-bbox="415 759 689 788">57600</td> </tr> <tr> <td data-bbox="353 788 415 817">7</td> <td data-bbox="415 788 689 817">115200</td> </tr> </tbody> </table>	B	Baud Rate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200
B	Baud Rate																
1	2400																
2	4800																
3	9600																
4	19200																
5	38400																
6	57600																
7	115200																

4K 4x4 HDBaseT Matrix with 3 Receivers

9. Panel Drawing



MUH44E-H2 HDBaseT Matrix



TPUH-BYE20R HDBaseT Receiver

## 4K 4x4 HDBaseT Matrix with 3 Receivers

## 10. Troubleshooting and Maintenance

Problems	Potential Causes	Solutions
Color losing or no video signal output	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	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.
	Input source is with HDCP while the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are locked.	Send command /%Unlock; or select unlock in GUI interface to unlock.
Cannot control the device via IR remote	The battery has run off.	Change for new battery.
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver.	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR IN port is not with carrier.	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	Fail or loose power connection.	Check whether the cables are connected correctly.

**4K 4x4 HDBaseT Matrix with 3 Receivers**

EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong connection.	Check to ensure the connection between the control device and the unit
	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	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.*

## 11. 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 three years.

### 2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

### 3) Warranty Exclusion

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
  - ✓ Normal wear and tear.
  - ✓ Use of supplies or parts not meeting our specifications.
  - ✓ No certificate or invoice as the proof of warranty.
  - ✓ The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
  - ✓ Damage caused by force majeure.
  - ✓ Servicing not authorized by distributor.
  - ✓ Any other causes which does not relate to a product defect.
- Shipping fees, installation or labor charges for installation or setup of the product.

### 4) Documentation

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defeat has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

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