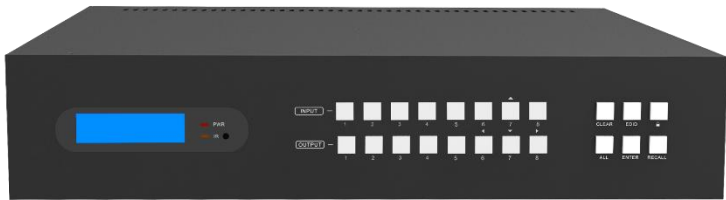


# USER MANUAL

## Matrix-8X8-HBT-H2-KIT

8x8 HDMI 2.0 Matrix Kit



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Version: Matrix-8X8-HBT-H2-KIT\_2018V1.3

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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 August, 2018. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class 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 performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the specifications of product may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, and please treat them as normal electrical wastes.

# Table of Content

1. Product Introduction.....	1
1.1 Features .....	1
1.2 Package List .....	2
2. Specification .....	3
2.1 HDBaseT 8x8 HDMI 2.0 Matrix .....	3
2.2 HDBaseT Receiver .....	4
3. Panel Description.....	5
3.1 Matrix Front Panel .....	5
3.2 Matrix Rear Panel.....	6
3.3 Receiver Front Panel.....	7
3.4 Receiver Rear Panel .....	8
4. System Connection.....	9
4.1 Usage Precaution .....	9
4.2 System Diagram .....	9
5. Button Control.....	10
5.1 Signal Switching .....	10
5.2 EDID Management .....	11
5.3 Inquiry Mode.....	13
5.4 Recall Preset .....	14
6. IR Control.....	15
6.1 IR Remote Control.....	15
6.2 IR Pass-through Control .....	16
6.2.1 Control Local Input Device from Local.....	16
6.2.2 Control Local Input Device from Remote.....	18
6.2.3 Control Remote Output Device from Local .....	20
7. GUI Control.....	22
7.1 Video Switching .....	23
7.2 Coaxial Audio Control .....	24
7.3 Configuration .....	25

7.4 CEC Control .....	28
7.5 RS232 Control .....	30
7.6 Access Setting .....	31
7.7 Interface Setting .....	32
7.8 Network Setting .....	33
7.9 GUI Upgrade .....	34
8. RS232 Control .....	35
8.1 RS232 Control Connection .....	35
8.1.1 Control the Matrix from Local.....	35
8.1.2 Control the Matrix from Remote.....	36
8.1.3 Control the Remote Third-party Device from Local.....	37
8.1.4 Control the Local Third-party Device from Remote.....	38
8.2 RS232 Control Software .....	39
8.3 RS232 Commands for Controlling Matrix .....	40
8.3.1 System Command .....	40
8.3.2 Signal Switching .....	41
8.3.3 Preset Management .....	42
8.3.4 Output Audio Control .....	43
8.3.5 EDID Configuration.....	43
8.3.6 HDCP Compliance .....	45
8.3.7 Baud Rate Setting .....	45
8.3.8 CEC Control .....	46
9. Panel Drawing .....	49
9.1 HDBaseT 8x8 HDMI 2.0 Matrix .....	49
9.2 HDBaseT Receiver .....	49
10. Troubleshooting & Maintenance .....	50
11. Customer Service .....	51

# 1. Product Introduction

Thanks for choosing our professional 8x8 Matrix with eight Receivers! The matrix is an eight-input by eight-output HDBaseT and HDMI matrix with HDCP 2.2 and up to 4K/UHD@60Hz video support. It transmits 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 Ethernet cable. HDBaseT outputs support the Power over Cable (PoC) feature, allowing the receivers to draw their power from the matrix over the HDBaseT cable.

The matrix features comprehensive EDID management and advanced HDCP handing to ensure maximum functionality with a wide range of video sources.

The matrix not only supports bi-directional IR, RS232 extension but also has IR, RS232, and TCP/IP control options.

The product provides performance in control and transmission, which could be used in a number of different installation scenarios, for example, with computers, for monitoring purposes, large screen displays, conference systems, television education, bank security institutions, etc.

## 1.1 Features

- Supports HDMI resolution up to 4K@60Hz 4:4:4.
- Fully compliant with the HDMI 2.0 and HDCP 2.2.
- Transmits 4K signal to the distance up to 131 feet (40 meters) and 1080p signal to the distance up to 229 feet (70 meters) over a single CATx Ethernet cable.
- Supports 12V PoC, allowing the receivers to draw their power from the matrix/transmitter over the HDBaseT cable.
- Features eight HDBaseT outputs and includes HDMI local outputs with corresponding digital and analog audio outputs.
- Features eight digital coaxial audio outputs which can be controlled via GUI or RS232 commands to separate the embedded audio from HDMI inputs and HDBaseT outputs.
- Supports comprehensive EDID management and advanced HDCP handling.
- Controllable via front panel, RS232, IR and TCP/IP (use the built-in GUI).

## 1.2 Package List

HDBaseT 8x8 HDMI 2.0 Matrix	<ul style="list-style-type: none"><li>• 1x HDBaseT 8x8 HDMI 2.0 Matrix</li><li>• 2x Mounting Ears with 6 Screws</li><li>• 4x Plastic Cushions with 4 Screws</li><li>• 1x IR Receiver</li><li>• 1x IR Remote</li><li>• 1x 3-pin to DB9 RS232 Cable</li><li>• 17x 3-pin RS232 Terminal Blocks</li><li>• 1x Power Cord</li></ul>
HDBaseT Receiver	<ul style="list-style-type: none"><li>• 8x HDBaseT Receivers</li><li>• 16x Mounting Ears with 16 Screws</li><li>• 32x Plastic Cushions</li><li>• 8x 3-pin RS232 Terminal Blocks</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 HDBaseT 8x8 HDMI 2.0 Matrix

<b>Video Input</b>	
Input	(8) HDMI
Input Connector	(8) Type-A female HDMI
Input Video Signal	HDMI
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:4:4
<b>Video Output</b>	
Output	(8) HDBaseT, (8) HDMI
Output Connector	(8) RJ45, (8) Type-A female HDMI
Output Video Signal	HDMI, HDBaseT
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:4:4
HDBT Output Resolution	Up to 4Kx2K@60Hz 4:2:0
<b>Audio Output</b>	
Output	(8) Stereo analog audio, (8) Digital coaxial audio
Output Connector	(8) 3-pin terminal blocks, (8) Coaxial jacks
Output Analog Audio Format	PCM
Output Digital Audio Format	PCM
Audio Output Impedance	70Ohms
Frequency Response	20Hz to 20KHz, $\pm 3$ dB
Common Mode Rejection Ratio (CMRR)	>70dB at 20Hz to 20KHz
Signal to Noise Ratio (SNR)	100dB (Max)
<b>Control</b>	
Control port	(8) IR IN, (1) IR ALL IN, (8) IR OUT, (1) IR ALL OUT, (1) IR EYE, (9) RS232, (1) FIRWARE, (1) TCP/IP
Control Connector	(19) 3.5mm mini jacks, (9) 3-pin terminal blocks, (1) Micro USB, (1) RJ45
<b>General</b>	
Transmission Mode	HDBaseT
Transmission Distance	1080p $\leq$ 229 feet (70 meters), 4K@60Hz $\leq$ 131 feet (40 meters)



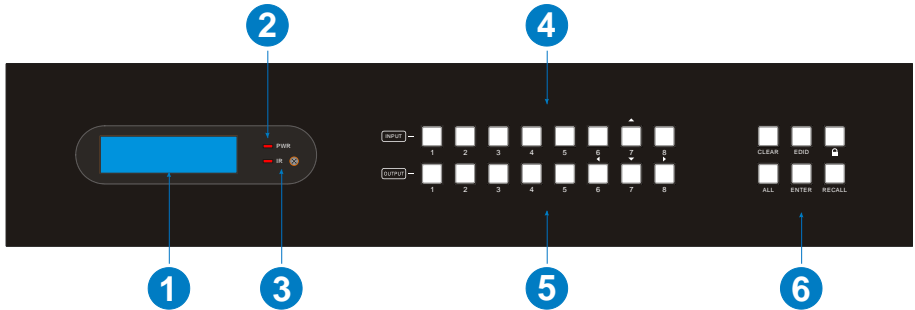
Bandwidth	18Gbps
Operation Temperature	-10 ~ +55°C
Storage Temperature	-25 ~ +70°C
Relative Humidity	10% ~ 90%
External Power Supply	100V~240V AC, 50/60Hz
Power Consumption	100W (Max)
Dimension (W*H*D)	436.4mm x 88mm x 400mm
Net Weight	About 5.4kg

## 2.2 HDBaseT Receiver

<b>Input</b>	
Input Signal	(1) HDBT IN
Input Connector	(1) RJ-45
<b>Output</b>	
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
<b>Control</b>	
Control Port	(1) IR IN, (1) IR OUT, (1) RS232
Control Connector	(2) 3.5mm mini jacks, (1) 3-pin terminal block
<b>General</b>	
Resolution Range	Up to 4Kx2K@60Hz 4:4:4
Bandwidth	18Gbps
Transmission Mode	HDBaseT
Transmission Distance	1080p ≤ 229 feet (70 meters); 4K@60Hz ≤ 131 feet (40 meters)
HDMI Standard	HDMI 2.0 & HDCP 2.2
Operation Temperature	-10 ~ +55°C
Storage Temperature	-25 ~ +70°C
Relative Humidity	10% ~ 90%
External Power Supply	Input: 100VAC~240VAC, 50/60Hz, Output: 12V DC 2A
Power Consumption	14W (Max)
Dimension (W*H*D)	115mm x 16 mm x 84mm
Net Weight	153g

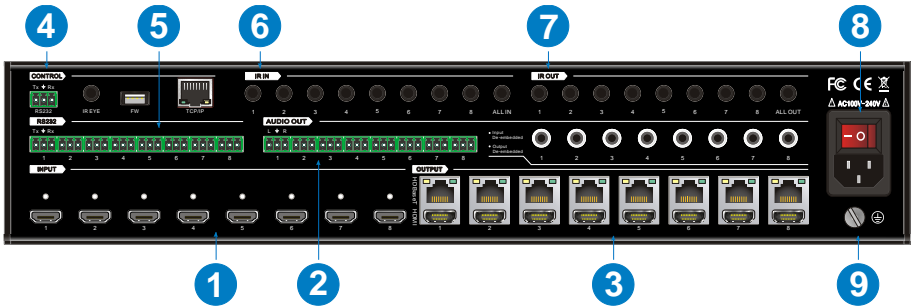
## 3. Panel Description

### 3.1 Matrix Front Panel



- ① LCD Screen: Presents real-time operation status.
- ② Power LED: Illuminates GREEN when the device is in standby mode, illuminates RED when device is powered on.
- ③ IR sensor and its LED: Illuminates RED when the IR sensor receives an IR signal from the include IR remote to control the matrix. The IR sensor is on the right side of the LED.
- ④ INPUT: Eight buttons for input source selection. Button 7 also serves as **UP** navigation button.
- ⑤ OUTPUT: Eight buttons for output channel selection, Button 6, 7 and 8 also serve as **LEFT**, **DOWN** and **RIGHT** navigation buttons.
- ⑥ Menu buttons:
  - CLEAR: Cancel the current commands if ENTER has not been pressed.
  - EDID: Enable input port to manually capture and learn the EDID data of output devices.
  - LOCK: Lock and unlock the front panel buttons.
  - ALL: Select all inputs or all outputs together. Please refer to [\*\*5 Button Control\*\*](#) for more details.
  - ENTER: Confirm the current command or press and hold for 3 seconds to enter inquiry mode.
  - RECALL: Invoke a previous saved preset layout.

### 3.2 Matrix Rear Panel



- ① INPUT: Eight Type A female HDMI input ports to connect HDMI sources.
- ② AUDIO OUT:
  - Eight 3-pin terminal blocks for analog audio output.
  - Eight coaxial jacks to separate the digital audio from HDMI inputs and HDBaseT outputs via GUI or RS232 commands.
- ③ OUTPUT: Eight HDBaseT RJ45 outputs to connect the eight HDBaseT receivers, eight local HDMI ports to connect local displays.
- ④ CONTROL
  - 3-pin terminal block to connect a computer to control the matrix by sending RS232 commands.
  - IR EYE: 3.5mm jack to connect IR receiver to receive IR signal from IR remote to control the matrix.
  - TCP/IP: Ethernet port to connect with a computer to control the matrix via GUI.
  - FW: Micro USB port for firmware upgrade.
- ⑤ RS232: Eight 3-pin terminal blocks to control the third-party devices base on RS232 pass-through feature. There is a one-to-one correspondence between the eight RS232 ports and the eight RS232 ports of eight HDBaseT receivers.
- ⑥ IR IN:
  - 1~8: Eight 3.5mm jacks to connect eight IR receivers. Each IR input is associated with the respective HDBaseT output and cannot be switched separately. It makes up a bi-directional IR transmission with the IR OUT on the corresponding HDBaseT receiver.
  - ALL IN: 3.5mm jack to connect the IR receiver to transmit the IR signal from the ALL IN port to all HDBaseT receivers.

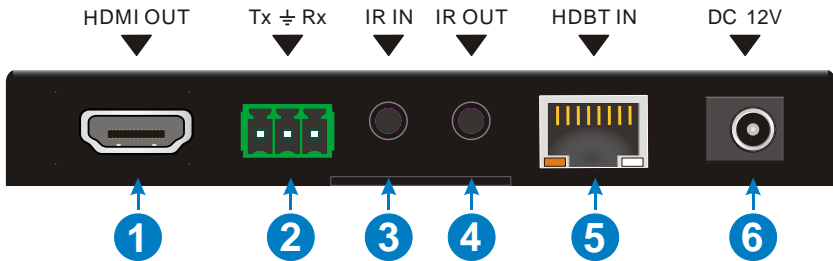
- ⑦ IR OUT:
- 1~8: Eight 3.5mm jacks to connect eight IR emitters to send the IR signal received from the corresponding HDBaseT receivers.
  - ALL OUT: 3.5mm jack to connect the IR emitter to send the IR signal received from all HDBaseT receivers.
- ⑧ AC100V~240V: Power port to connect an AC 100V~240V power by the power cord.
- ⑨ GROUND: Connect to earth to ensure the unit is well grounded.

### 3.3 Receiver Front Panel



- ① Switch to select the RS232 control mode:
- CTRL: RS232 pass-through control.
  - UPDATE A: Connect the RS232 port to the PC, and then double-click the file (.bat) to update the Valens IC.
  - UPDATE B: Use the same method as for UPDATE A to update the compression IC.
- ② POWER LED: Illuminates RED when the device is powered on.

### 3.4 Receiver Rear Panel



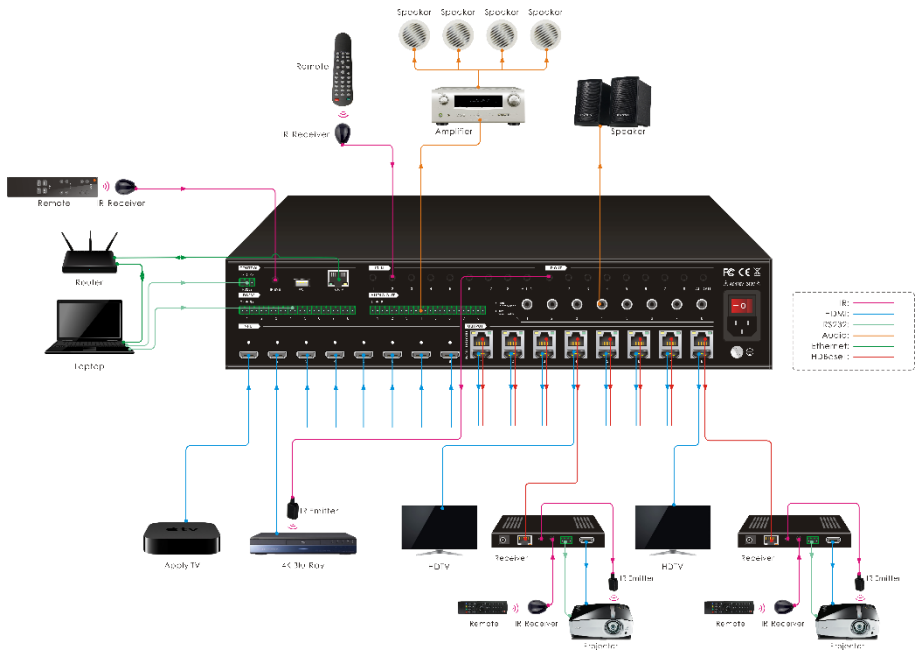
- ① HDMI OUT: Type A female HDMI output port to connect display.
- ② RS232: 3-pin terminal block to work with the RS232 port of matrix to control the third-party device. If one side is connected with control device (e.g. PC), and the other side should be connected with the third-party device.
- ③ IR IN: 3.5mm jack to connect IR receiver.
- ④ IR OUT: 3.5mm jack to connect IR emitter.
- ⑤ HDBT IN: HDBaseT RJ45 input to connect the matrix.
- ⑥ DC 12V power port: DC barrel connector for the AC power adapter. The receiver can work without power adaptor when the matrix is power on.

# 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

The matrix can be controlled by using the buttons on the front panel. Whenever a command is accepted, the indicators of all the buttons pressed will blink three times then they will go off. If the command fails, the indicators will go off immediately without blinking.

### 5.1 Signal Switching

- **Switch an input to an output**

Operation: INPUT# + OUTPUT# + ENTER

Example:            Switch Input 1 to Output 2:



**Note:** In default status, 8 IR OUT ports correspond with 8 HDMI INPUTS. When you switch an HDMI input, the corresponding IR OUT will be switched synchronously.

- **Switch an input to several outputs**

Operation: INPUT# + OUTPUT# + OUTPUT# + ... + ENTER

Example:            Switch Input 1 to Output 2, 3, and 4.



- **Switch an input to all outputs**

Operation: INPUT# + ALL + ENTER

Example:            Switch Input 1 to all outputs.



## 5.2 EDID Management

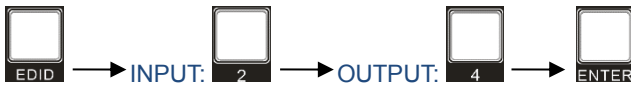
Please note that the HDBT output will always take priority over the HDMI output when using the EDID setting commands. Disconnect the cable from the HDBT output if you need to read the EDID from the HDMI output.

- **EDID data transfer**

**To copy the EDID data from a single output port to only one input port:**

Operation: EDID + INPUT# + OUTPUT# + ENTER.

Example: Input 2 reads EDID data from output 4.



**To copy the EDID data from a single output port to all input ports:**

Operation: EDID + ALL + OUTPUT# + ENTER

Example: All input ports read EDID data from output 4.



- **Predefined EDID settings**

There are seven types of embedded EDID data as shown below. Select one type of EDID data as the new EDID setting.

ID	Video Resolution	Audio Format
1	720p 2D	PCM/DTS/Dolby
2	720p 3D	PCM/DTS/Dolby
3	1080p 2D	PCM/DTS/Dolby
4	1080p 3D	PCM/DTS/Dolby
5	4K@30Hz	PCM/DTS/Dolby
6	4K@60Hz 4:2:0	PCM/DTS/Dolby
7	4K@60Hz 4:4:4	PCM/DTS/Dolby



### ***Set a predefined EDID setting for one input port:***

Operation:

Step1: Press and hold **EDID** for 3 seconds to enter the EDID setting mode.

Step2: Select one input.

Step3: Press **LEFT** and **RIGHT** navigation buttons to select the predefined EDID data type.

Step4: Press **ENTER** to confirm.

Example: Set the EDID data of INPUT 4 to the fourth predefined EDID data type – 1080p 3D:



### ***Set a predefined EDID setting for all input port:***

Operation:

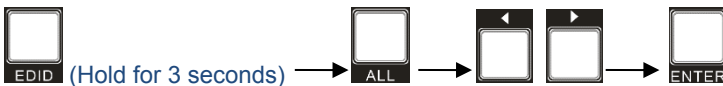
Step1: Press and hold **EDID** for 3 seconds to enter the EDID setting mode.

Step2: Press **ALL** to select all inputs.

Step3: Select the predefined EDID data type via **LEFT** and **RIGHT** navigation buttons.

Step4: Press **ENTER** to confirm.

Example: Set the EDID data of all input ports to the second predefined EDID data type – 720p 3D:



### 5.3 Inquiry Mode

- **Check connection status:**

Press and hold the **ENTER** button for 3 seconds to activate the system inquiry menu on the front panel LCD. Use **LEFT** and **RIGHT** navigation buttons to check the previous or next item respectively, and the **UP** and **DOWN** navigation buttons are used for page turning.

LCD Screen	Description
IN      1 2 3 4 LINK    Y Y N N	Report the connection status of all input ports. Y means the corresponding input port is connected to a source device, N means there is no connection between the input port and source device.
OUT     1 2 3 4 LINK    Y Y Y Y	Report the connection status of all output ports. Y means the corresponding output port is connected to an output device, N means there is no connection between the output port and display device.
OUT     01 02 03 04 IN       05 05 05 05	Report the signal switching status.
IN      1 2 3 4 HDCP    Y Y N N	Report the HDCP compliance of all input ports. Y means the input AV signal is transferred with HDCP, N means the input AV signal content doesn't contain HDCP.
OUT     1 2 3 4 HDCP    Y Y N N	Report the HDCP compliance of all output ports. Y means the output AV signal is transferred with HDCP, N means the output AV signal content doesn't contain HDCP.

- **Output Check:**

Press any output button to check its corresponding input status. For example, to check which input is connected to output 2, press Output 2 button, the the LCD screen displays:

AV	01-> 02
IR	01-> 02

Also, the indicators of the Input 1 and Output 2 buttons will light up for 3 seconds to show that Input 1 is connected to Output 2.

## 5.4 Recall Preset

Press **RECALL** button can load layout preset which is saved via RS232 commands and GUI.

Operation:

Step1: Press **RECALL** button, the LCD screen displays: PRESET LOAD

Step2: Press **LEFT** and **RIGHT** navigation buttons to select PRESET 1~9.

Step3: Press **ENTER** to confirm.

Example: Recall the Preset 1:

Step1: Press **RECALL** button.

Step2: Press **LEFT** and **RIGHT** navigation buttons to select PRESET 1.

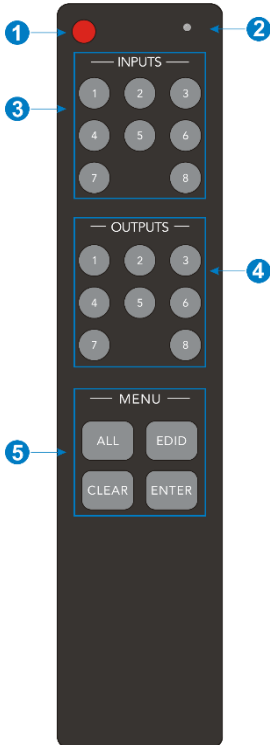
Step3: Press **ENTER** to confirm.



## 6. IR Control

### 6.1 IR Remote Control

Connect an IR receiver to the IR EYE port, the matrix can be controlled by using the following IR remote.



- ① Enter/exit standby mode.
- ② Blinking red when a button is pressed.
- ③ Video source selection buttons.
- ④ Output channel selection buttons.
- ⑤ Menu buttons:
  - ALL: Select all inputs and outputs.
  - EDID: Enable input port to manually capture and learn the EDID data of outputs devices.
  - CLEAR: Cancel the current commands, if ENTER has not been pressed.
  - ENTER: Confirm the desired command or press and hold for 3 seconds to enter into the inquiry mode.

**Note:** The buttons on the remote control directly correspond to the buttons on the front panel and perform the same functions.

## 6.2 IR Pass-through Control

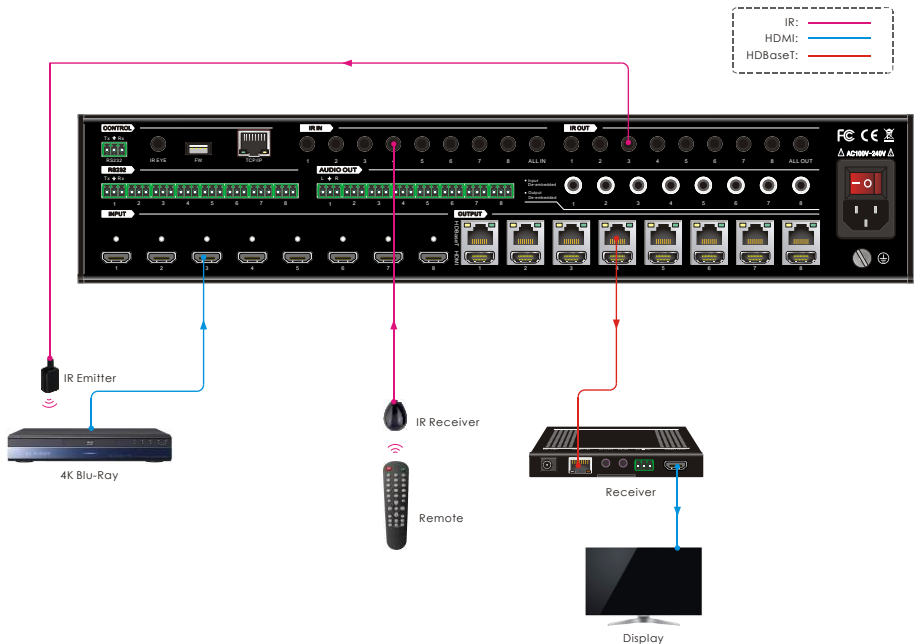
The matrix supports bi-directional IR pass-through, allowing the devices can be controlled by both source and destination ends. This section provides connection and switching examples to illustrate possible configurations.

### 6.2.1 Control Local Input Device from Local

By default, there is a one-to-one correspondence between the IR OUT port on the matrix and the HDMI input. When switch an HDMI input, the corresponding IR OUT will be switched synchronously.

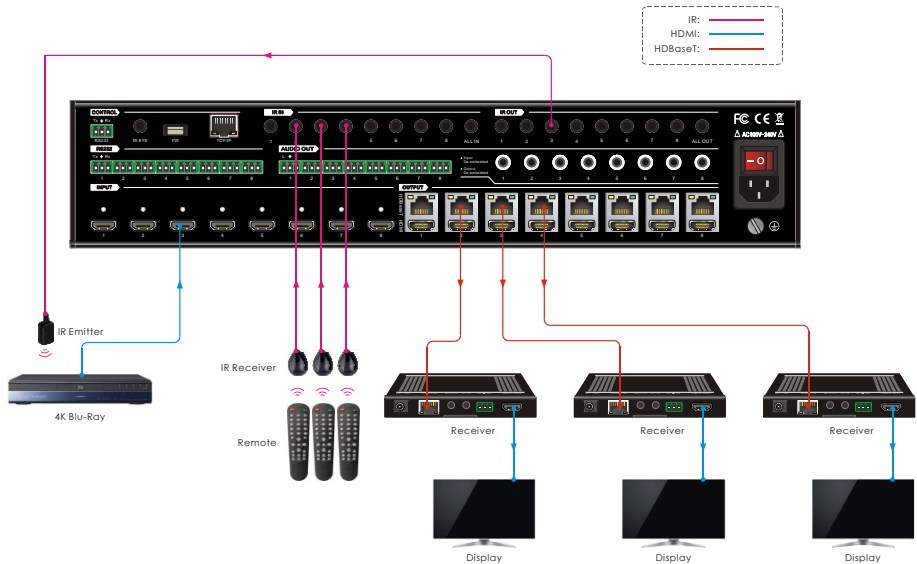
Example: Switch HDMI input 3 to HDBaseT output 4.

Connect an IR receiver to the **IR IN 4** port, and an IR Emitter to the **IR OUT 3** port, the connection diagram shown as below:



Example: Switch HDMI input 3 to HDBaseT output 2, 3, 4.

Connect three IR Receivers to **IR IN 2**, **IR IN 3** and **IR IN 4** port, and an IR Emitter to the **IR OUT 3** port, the connection diagram shown as below:



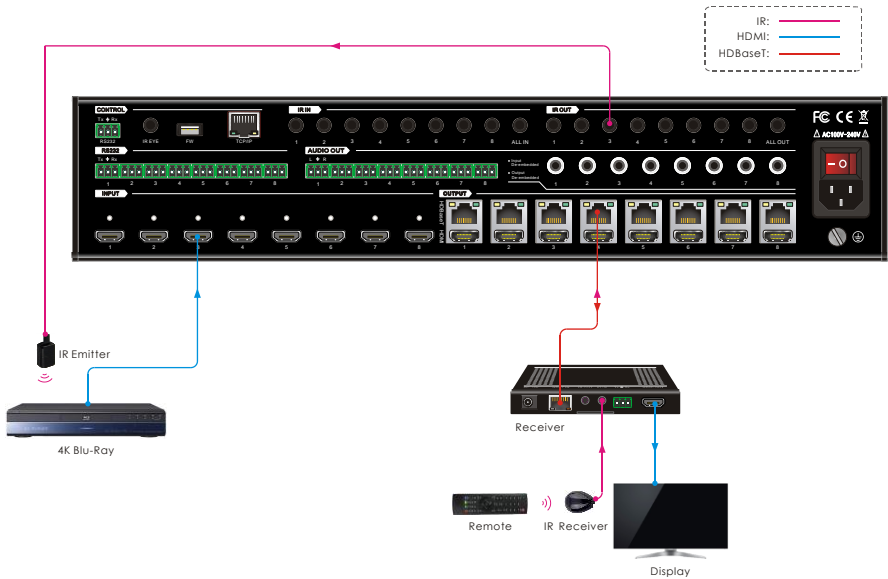
### 6.2.2 Control Local Input Device from Remote

The same basic principle applies when controlling the local input device from the remote location.

- **Control local input device through IR OUT port**

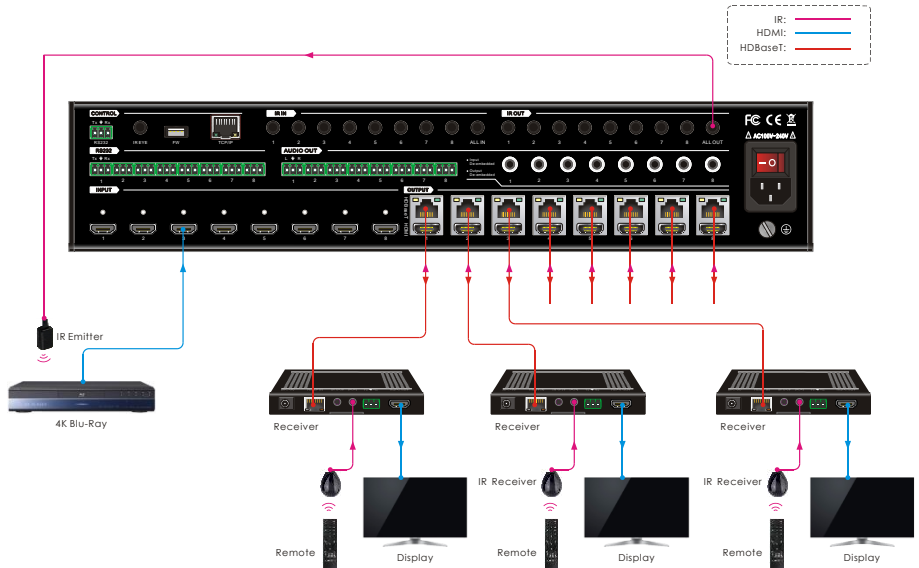
Example: Switch HDMI input 3 to HDBaseT output 4.

Connect an IR Receiver to **IR IN** port on the receiver, then connect an IR emitter to the **IR OUT 3** on the matrix. The third input source can be controlled through its corresponding IR output port. The connection diagram shown as below:



- **Control local input device through IR ALL OUT port**

The emitter can be connected to the **IR ALL OUT** port on matrix to control all local input devices. In this case, the IR receiver must be connected to the **IR IN** port on each of the connected HDBaseT receivers, as shown in the diagram below:





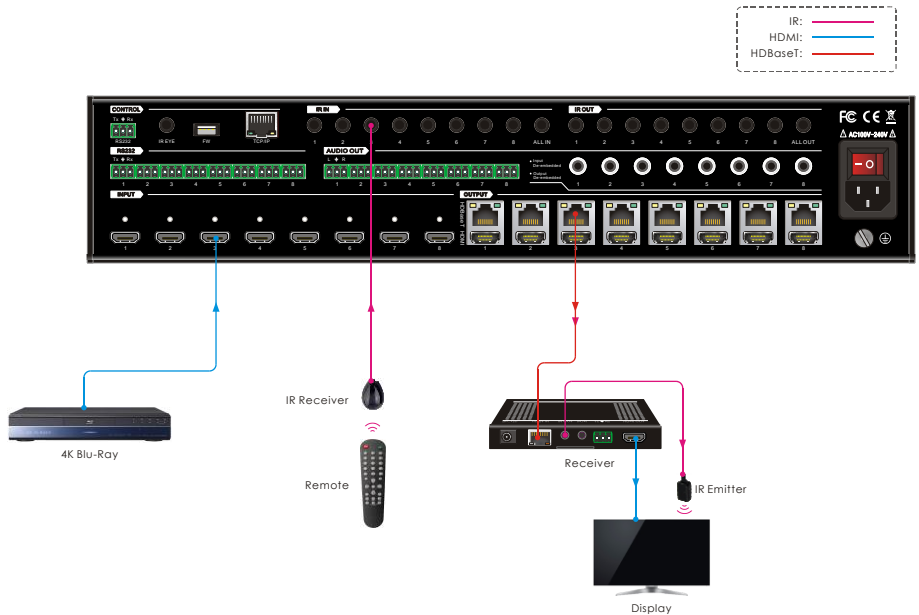
### 6.2.3 Control Remote Output Device from Local

The remote displays can be controlled from the local matrix location.

- **Control remote device through IR IN port**

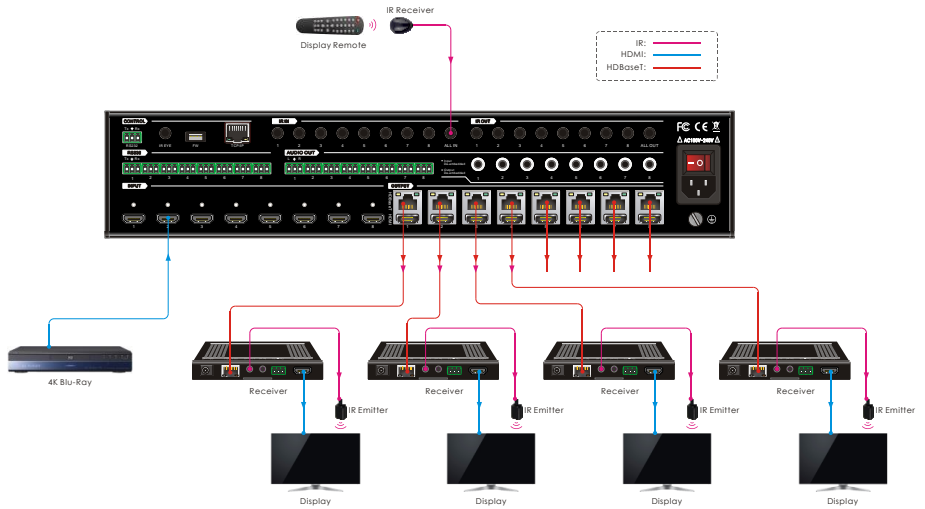
Example: Switch HDMI input 3 to HDBaseT output 3.

Connect an IR Receiver to **IR IN 3** port on the matrix, then connect an IR emitter to the **IR OUT** on the receiver, as shown in the diagram below:



- **Control remote device through IR ALL IN port**

The receiver can be connected to the **IR ALL IN** port on matrix to control all remote output devices. In this case, the IR emitter must be connected to the **IR OUT** port on each connected HDBaseT receiver, as shown in the diagram below:

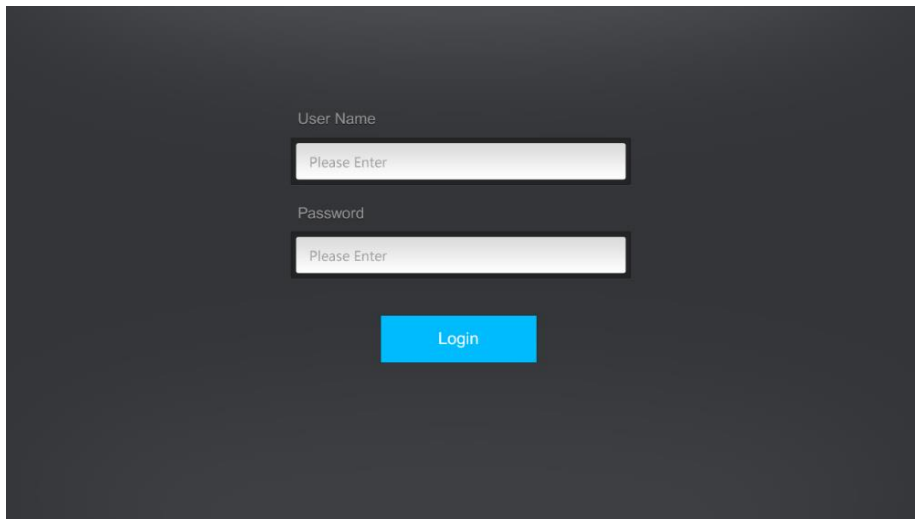


## 7. GUI Control

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

IP Address: 192.168.0.178  
Subnet Mask: 255.255.250.0

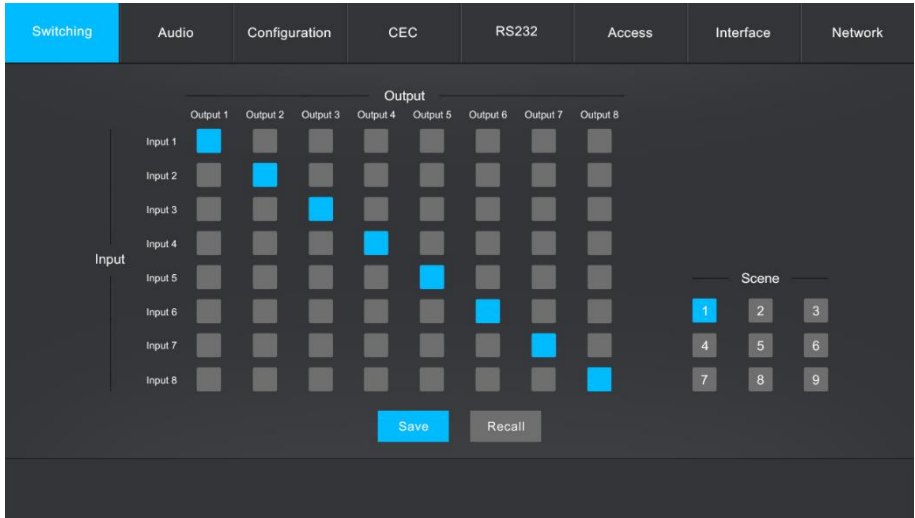
Type [192.168.0.178](http://192.168.0.178) in the internet browser, it will enter the below log-in webpage:



The image shows a dark-themed login interface. It features two input fields: one for 'User Name' and one for 'Password', both containing the placeholder text 'Please Enter'. Below these fields is a bright blue button labeled 'Login'.

## 7.1 Video Switching

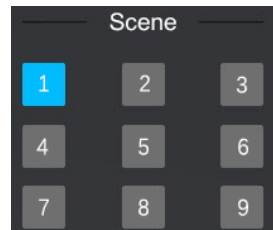
Type the user name and password (both of them are “admin”), and then click **Login** to enter the section for video switching.



Use the 8x8 button grid on the page to set which inputs are directed to which outputs. For example, clicking the button on the Input 1 row and Output 2 column, directs input 1 to output 2.

Use the 9 numbered buttons under scene area 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.



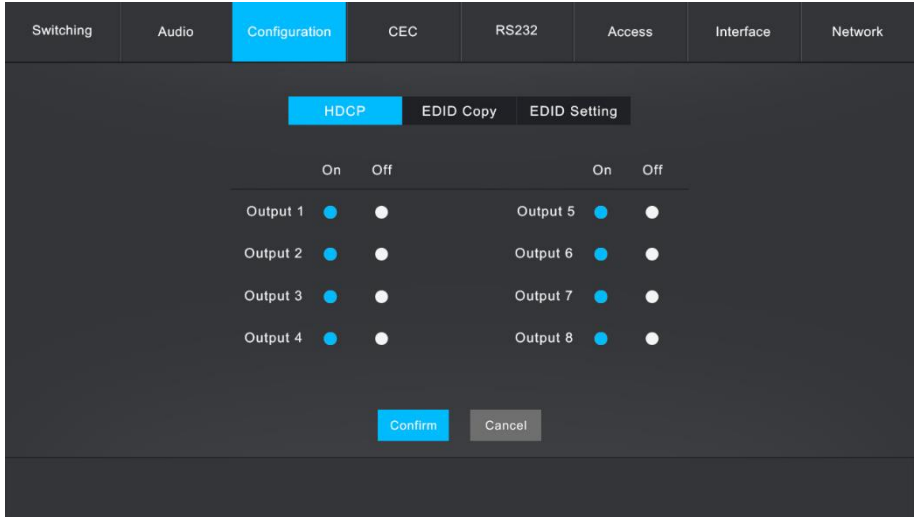
## 7.2 Coaxial Audio Control

Click **Audio** to enter the below section to select the digital audio from HDMI input or HDBaseT output, and the audio can be mute or unmute by pressing the volume icon on the right side.

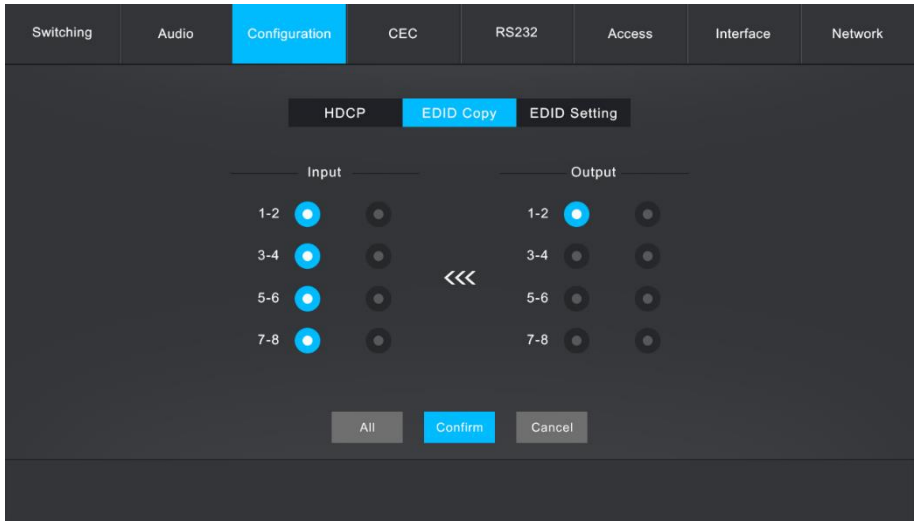
Switching	Audio	Configuration	CEC	RS232	Access	Interface	Network
Select							
Input      Output							
De-embedded      De-embedded							
COAX Output 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 3	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 4	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 5	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 6	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 7	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
COAX Output 8	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>				
Mute							
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				
			<input type="checkbox"/>				

### 7.3 Configuration

The configuration section allows to manage HDCP compliance and the EDID settings. Click **HDCP** to enter the below section to turn on/off HDCP compliance for every output port.



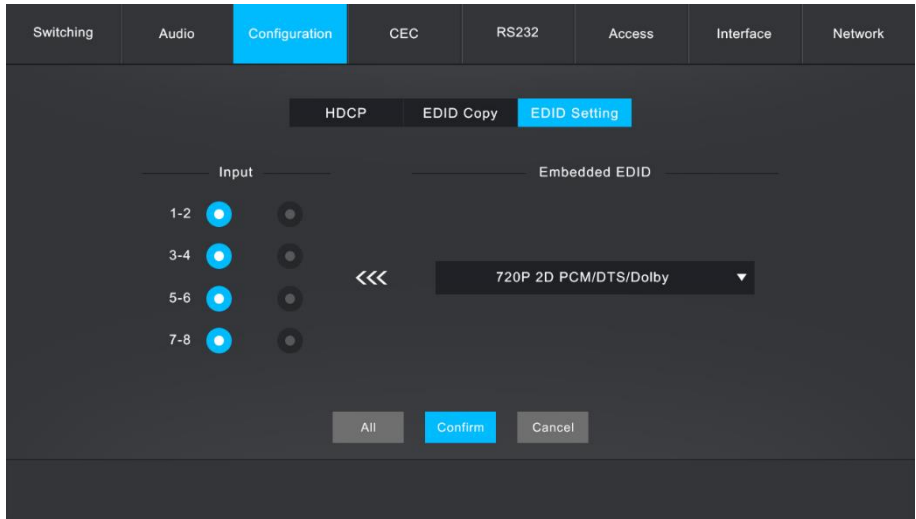
Click **EDID Copy** to enter the below section to copy the EDID data from a single output port to input ports.



Operation:

- 1) Select one output port.
- 2) Select one or several input ports. Press **ALL** to select all input ports.
- 3) Press **Confirm**.

Click **EDID Setting** to enter the below section to set a predefined EDID for input ports.



Operation:

- 1) Select a predefined EDID.
- 2) Select one or several input ports. Press **ALL** to select all input ports.
- 3) Press **Confirm**.



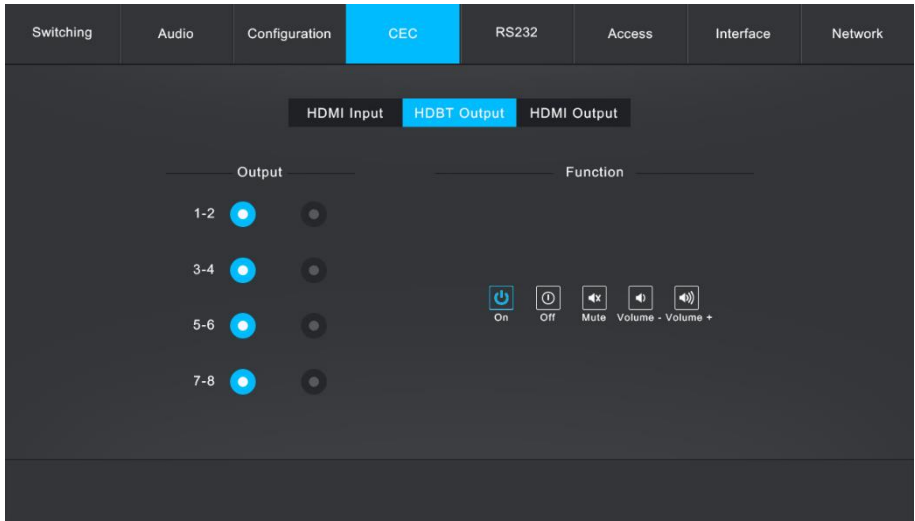
## 7.4 CEC Control

If the input sources, HDBaseT output devices and local HDMI output devices support CEC, they can be controlled via the following CEC interface.

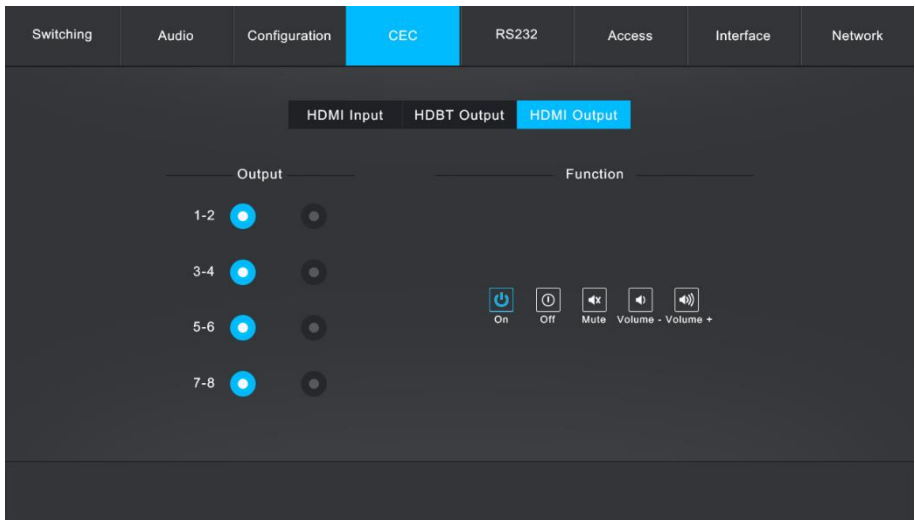
Click **HDMI Input** to enter the below section to control the selected input source.

The screenshot displays a web-based control interface for CEC. At the top, there is a navigation bar with tabs: Switching, Audio, Configuration, CEC (highlighted in blue), RS232, Access, Interface, and Network. Below this, there are three sub-tabs: HDMI Input (highlighted in blue), HDBT Output, and HDMI Output. The main area is divided into two sections: 'Input' and 'Function'. The 'Input' section has four rows, each with a radio button and a label: 1-2 (selected), 3-4, 5-6, and 7-8. The 'Function' section contains a grid of 15 icons for remote control functions: Volume -, Menu, Volume +, On, Off, Stop, Back, Up, Enter, Previous, Next, Pause, Left, Down, Right, REW, FF, and Play.

Click **HDBT Output** to enter the below section to control the selected HDBaseT output device.



Click **HDMI Output** to enter the below section to control the selected local HDMI output device.



## 7.5 RS232 Control

Click **RS232** to enter the below section to send RS232 commands to control remote third-party device.

The screenshot shows the RS232 Control interface. The top navigation bar includes tabs for Switching, Audio, Configuration, CEC, RS232 (highlighted), Access, Interface, and Network. The main content area is dark grey and contains three sections: 'Port' with radio buttons for HDBT 1 through 8 (HDBT 1 is selected), 'Baud Rate' with radio buttons for 2400, 4800, 9600, 19200, 38400, 57600, and 115200 (2400 is selected), and 'Command' with a text input field and a 'Hex' radio button (selected). A blue 'Send' button is at the bottom.

### Operation:

- 1) Select the HDBaseT port which is connected with HDBaseT receiver which must have third-party device attached.
- 2) Set the baud rate.
- 3) Typing the commands in the box to control the selected remote third-party device which is connected to HDBaseT receiver. If click the **Hex**, the RS232 commands can be typed with hexadecimal value.
- 4) Click **Send** to transmit RS232 command to the selected HDBaseT port.

## 7.6 Access Setting

Click **Access** to enter the below section to reset password and lock or unlock front panel buttons. Click **Confirm** to save any changes or click **Cancel** to cancel any changes that have been made.

Switching Audio Configuration CEC RS232 **Access** Interface Network

Credentials

Admin Password: admin

User Password: user

Front Panel Lock

ON  OFF

Version

GUI : V1.0.0  
Firmware: V1.0.0

Confirm Cancel

## 7.7 Interface Setting

Click **Interface** to enter the below section to modify title bar label, LCD readout and button labels. Click **Confirm** to save any changes or click **Cancel** to cancel any changes that have been made.

Switching	Audio	Configuration	CEC	RS232	Access	<b>Interface</b>	Network
-----------	-------	---------------	-----	-------	--------	------------------	---------

Title Bar Label:

LCD Readout:

Button Labels:

Input				Output			
1:	<input type="text" value="Input 1"/>	5:	<input type="text" value="Input 5"/>	1:	<input type="text" value="Output 1"/>	5:	<input type="text" value="Output 5"/>
2:	<input type="text" value="Input 2"/>	6:	<input type="text" value="Input 6"/>	2:	<input type="text" value="Output 2"/>	6:	<input type="text" value="Output 6"/>
3:	<input type="text" value="Input 3"/>	7:	<input type="text" value="Input 7"/>	3:	<input type="text" value="Output 3"/>	7:	<input type="text" value="Output 7"/>
4:	<input type="text" value="Input 4"/>	8:	<input type="text" value="Input 8"/>	4:	<input type="text" value="Output 4"/>	8:	<input type="text" value="Output 8"/>

## 7.8 Network Setting

Click **Interface** to enter the below section to change the default IP Address, Subnet Mask, and Gateway setting. Static IP or Dynamic Host Configuration Protocol (DHCP) also can be chosen. Click the **Confirm** button to save any changes.

Switching	Audio	Configuration	CEC	RS232	Access	Interface	Network
-----------	-------	---------------	-----	-------	--------	-----------	---------

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](#)

## 7.9 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 shows the goahead WEB SERVER interface. On the left is a navigation tree with 'Administration' expanded and 'Upload Firmware' circled in red. The main content area 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 text is a form titled 'Update Firmware' with a 'Location:' label, a 'Choose File' button (which shows 'No file chosen'), and an 'Apply' button.

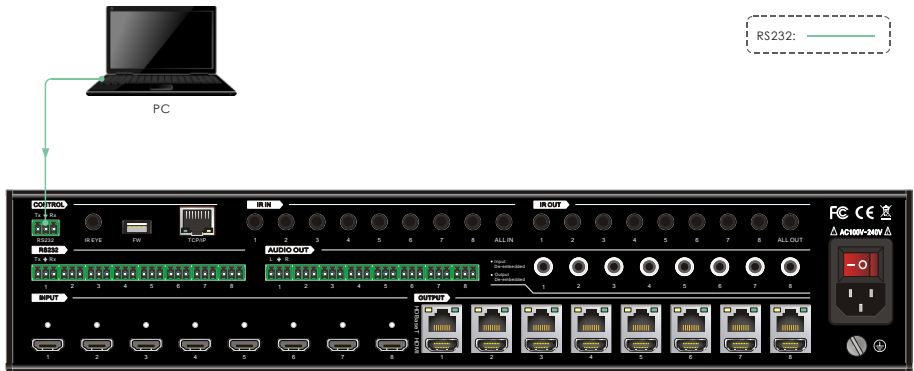
Select the update file and click **Apply** button, and then it will start upgrade process.

## 8. RS232 Control

### 8.1 RS232 Control Connection

#### 8.1.1 Control the Matrix from Local

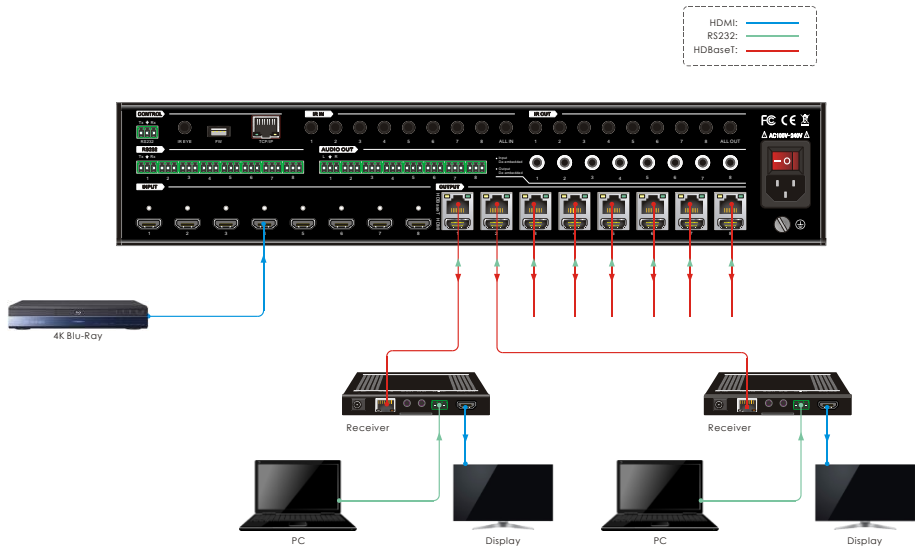
To control the matrix from a local PC, the **3-pin to DB9 RS232 Cable** is used to connect between the matrix and PC. The connection diagram is shown as below:





### 8.1.2 Control the Matrix from Remote

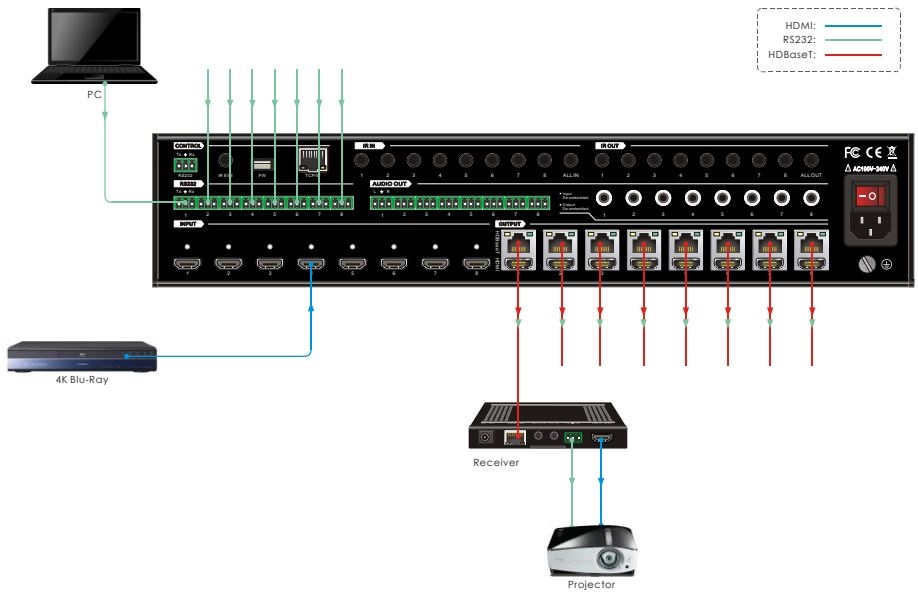
To control the matrix from remote location, please connect one or more PCs to the **RS232** ports of HDBaseT receivers with the **3-pin to DB9 RS232 Cable**. The matrix can be controlled by any one of PCs, the connection diagram is shown as below:



**Note:** The command “**RemoteCtrMcu[x].**” (“**x**” is “**1**” or “**0**”) needs to be sent to enable or disable this control mode. For example, send the command “**RemoteCtrMcu1.**” to enable the remote-control mode, and send the command “**RemoteCtrMcu0.**” to disable the remote-control mode for matrix.

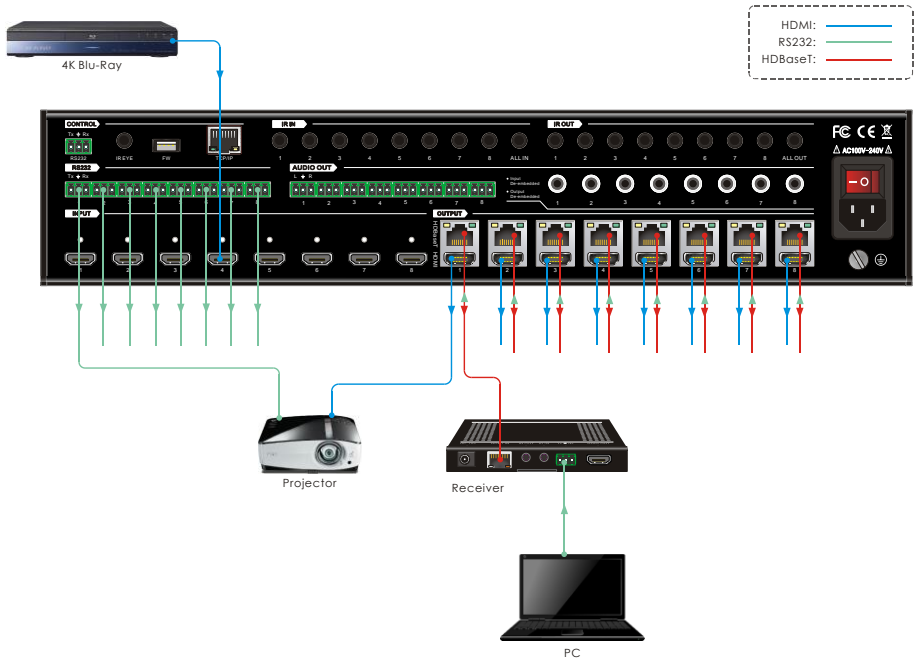
### 8.1.3 Control the Remote Third-party Device from Local

To control a third-party device from local, first determine which HDBaseT receiver is connected to (1 in the diagram below). Next, connect a PC to the corresponding **RS232** port of matrix with **3-pin to DB9 RS232 Cable**, then connect a third-party device (e.g. projector) to the **RS232** port of the determined HDBaseT receiver. The remote third-party device can be controlled by the local PC, the connection diagram is shown as below:



### 8.1.4 Control the Local Third-party Device from Remote

To control a third-party device from remote, first determine which HDBaseT receiver is connected to (1 in the diagram below). Next, connect a PC to the **RS232** port of HDBaseT receiver with **3-pin to DB9 RS232 Cable**, then connect a third-party device (e.g. projector) to the corresponding **RS232** port of matrix. The local third-party device can be controlled by the remote PC, the connection diagram is shown as below:



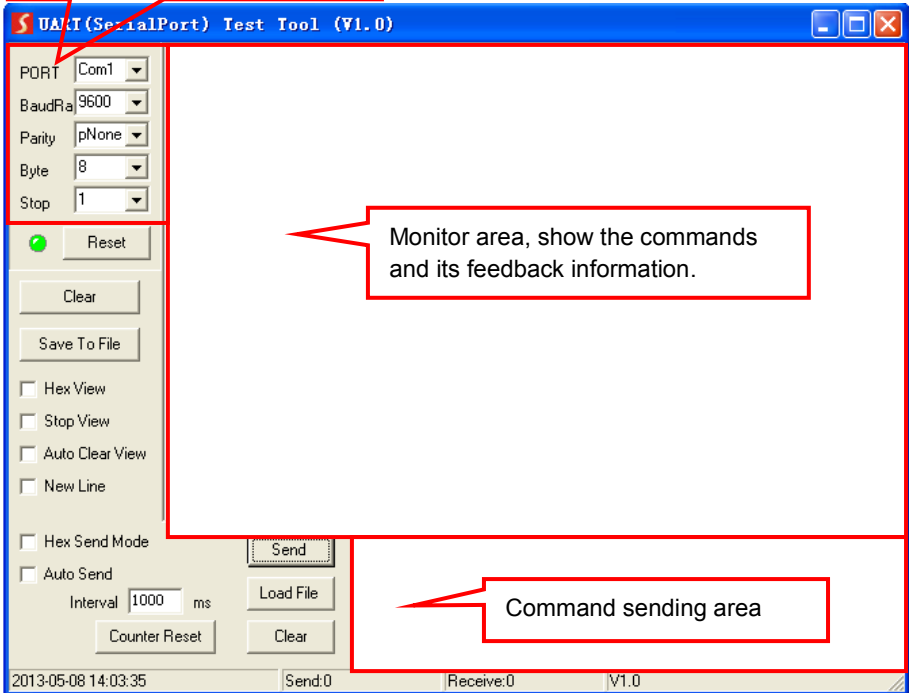
## 8.2 RS232 Control Software

If the matrix and third-party devices needs to be controlled from PC by an RS232 connection, a RS232 control software should be installed in PC. Here using **CommWatch.exe** as an example. The icon is shown as below:



Double-click the icon to run, and its interface is depicted below:

Parameter configuration area



Monitor area, show the commands and its feedback information.

Command sending area

The screenshot shows the 'UART (SerialPort) Test Tool (V1.0)' window. On the left is a configuration panel with dropdown menus for PORT (Com1), BaudRate (9600), Parity (pNone), Byte (8), and Stop (1). Below these are buttons for 'Reset', 'Clear', and 'Save To File'. A group of checkboxes includes 'Hex View', 'Stop View', 'Auto Clear View', 'New Line', 'Hex Send Mode', and 'Auto Send'. At the bottom of the panel are 'Interval' (1000 ms), 'Counter Reset', 'Send', 'Load File', and 'Clear' buttons. The main area is a large white space for monitoring. The status bar at the bottom shows the date '2013-05-08 14:03:35', 'Send:0', 'Receive:0', and 'V1.0'. Red callout boxes with arrows point to the configuration area, the monitor area, and the 'Send' button area.

### 8.3 RS232 Commands for Controlling Matrix

When controlling the matrix, the serial port settings for all RS232 commands is:

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

*The matrix can be controlled by sending the following RS232 commands:*

#### 8.3.1 System Command

Command	Description	Command Example and Response
<b>/*Type;</b>	Report matrix model.	/*Type;
		HDBaseT Matrix
<b>/*Name;</b>	Report matrix name	/*Name;
		MP88
<b>/%Lock;</b>	Lock front panel buttons.	/%Lock;
		System Locked!
<b>/%Unlock;</b>	Unlock front panel buttons.	/%Unlock;
		System Unlock!
<b>/^Version;</b>	Report software version.	/^Version;
		V1.0.0
<b>Demo.</b>	Switch to demo testing mode, switch AV 1->1, 2->2 and so on.	Demo.
		Demo Mode AV:01->01 IR:01->01 AV:01->02 IR:01->02 ... AV:08->08 IR:08->08
<b>Undo.</b>	Cancel the previous operation.	Undo.
		Undo Ok!
<b>PWON.</b>	Power on the system.	PWON.
		PWON
<b>PWOFF.</b>	Power off the HDBaseT power.	PWOFF.
		PWOFF
<b>STANDBY.</b>	Turn the system to standby mode.	STANDBY.
		STANDBY
<b>%9961.</b>	Report the system locking status.	%9961.
		System Locked! /

Command	Description	Command Example and Response
		System UnLock!
%9962.	Report the system power status.	%9962.
		PWON / PWOFF / STANDBY
RemoteCtrMcu[x].	Enable/disable the remote-control mode that the matrix can be controlled from remote PC. x=1 or 0.	RemoteCtrMcu1
		RemoteCtrMcu Open.
%0911.	Reset to factory default.	%0911.
		Factory Default

### 8.3.2 Signal Switching

Command	Description	Command Example and Response
[x]All.	Switch input [x] AV to all output. x=1~8.	1All.
		01 To All.
All#.	Switch all input signal to their corresponding output channel: 1->1, 2->2, 3->3, 4->4, 5->5...	All#.
		All Through.
All\$.	Switch off all output.	All\$.
		All Closed.
[x]#.	Switch input [x] to output [x]. x=1~8.	1#.
		08 Through.
[x]\$.	Switch off output [x]. x=1~8.	1\$.
		01 Closed.
[x]@.	Switch on output [x]. x=1~8.	1@.
		01 Open.
All@.	Switch on all outputs.	All@.
		All Open.
[x]V[y].	Switch input [x] to one or several outputs [y], separate output channels with comma). x=1~8, y=1~8.	1V1, 2, 3.
		AV:01->01,02,03
Status[x].	Report the input channel on output [x]. x=1~8.	Status1.
		AV: 01->01 IR: 01->01

Command	Description	Command Example and Response
<b>Status.</b>	Report the input channel on output channel one by one.	Status.
		AV:01->01 IR:01->01  AV:02->02 IR:02->02  ... AV:01->08 IR:01->08
<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.	%9971.
		IN 1 2 3 4 5 6 7 8 LINK Y Y Y Y Y Y Y Y
<b>%9972.</b>	Report the connection status of all outputs. Y means the corresponding output port is connected to an output device, N means not.	%9972.
		OUT 1 2 3 4 5 6 7 8 LINK Y Y Y Y Y Y Y Y
<b>%9975.</b>	Report the switching status.	%9975.
		Out 01 02 03 04 05 06 07 08 In 01 02 03 04 05 06 07 08

### 8.3.3 Preset Management

Command	Description	Command Example and Response
<b>Save[y].</b>	Store the current switching status to present [y]. y=1~ 9.	Save3.
		Save To F3
<b>Recall[y].</b>	Recall present [y]. y=1~ 9.	Recall1.
		Recall From F1
<b>Clear[y].</b>	Clear the present [y]. y=1~ 9.	Clear1.
		Clear F1

### 8.3.4 Output Audio Control

Command	Description	Command Example and Response
<b>COAX[x][MU/UM]</b> .	Mute or unmute the coaxial audio output [x]. x=01~08. Use MU for mute or UM for unmute.	COAX01MU.
		COAX01MU.
<b>AnlogAudio[x][MU/UM].</b>	Mute or unmute the analog audio output [x]. x=01~08. Use MU for mute or UM for unmute.	AnlogAudio01UM.
		AnlogAudio01UM.
<b>%9977.</b>	Report the output audio status.	%9977.
		COAX01O. COAX02O. ... COAX08O. COAX01UM. ... COAX08UM. AnlogAudio01UM. ... AnlogAudio08UM.

### 8.3.5 EDID Configuration

Command	Description	Command Example and Response
<b>EDIDH[x]B[y].</b>	Set the EDID data of output [x] to input [y]. If the EDID data is available and the audio part supports not only PCM format, then force-set it to only support PCM. If the EDID data is not available, it will set to initial EDID. x=1~8, y=1~8.	EDIDH1B4.
		EDIDH1B4
<b>EDIDPCM[x].</b>	Set the audio format of input [x] to PCM. x=1~8	EDIDPCM4.
		EDIDPCM4
<b>EDIDG[x].</b>	Report the EDID data from output [x]. x=1~8.	EDIDG2.
<b>EDIDMInit.</b>	Reset factory default EDID to all input ports.	EDIDMInit.
		EDIDMInit.
<b>EDIDM[x]B[y].</b>	Set the EDID data of output [x] to input [y]. If the EDID data is not available, the matrix will set it to initial EDID data. x=1~8, y=1~8.	EDIDM1B4.
		EDIDM1B4



Command	Description	Command Example and Response
<b>EDIDUpgrade[x].</b>	Upgrade the EDID data of the input port [x]. When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds.	EDIDUpgrade1.
<b>EDID/[x]/[y].</b>	The input [x] recall the embedded EDID [y]. x=1~8, y=1~7. 1) 720p 2D PCM/DTS/Dolby 2) 720p 3D PCM/DTS/Dolby 3) 1080p 2D PCM/DTS/Dolby 4) 1080p 3D PCM/DTS/Dolby 5) 4K@30Hz PCM/DTS/Dolby 6) 4K@60Hz 4:2:0 PCM/DTS/Dolby 7) 4K@60Hz 4:4: PCM/DTS/Dolby	EDID/1/0.  EDID/1/0
<b>UpgradeIntEDID[y].</b>	Upgrade the embedded EDID [y]. y=1~7. When the matrix gets the command, it will show a message to send EDID file (.bin file).	UpgradeIntEDID3
<b>GetInPortEDID[x]</b> .	Report the EDID of input [x]. x=1~8	GetInPortEDID1.
<b>GetIntEDID[x].</b>	Report the embedded EDID [y]. y=1~7.	GetIntEDID6.

### 8.3.6 HDCP Compliance

Command	Description	Command Example and Response
%O/[X]:[Z].	HDCP management command. The O is the output port; the X is the number of output port, and Z is for HDCP compliance status. X=01~08 or ALL, Z= 0 (Off) or 1 (On).	/%O/01:1.
		/%O/1:1.
%0801.	Auto HDCP management mode.	%0801.
		0801%
%9973.	Report the HDCP status of all input ports. Y means the input AV signal is transferred with HDCP, N means not.	%9973.
		In 01 02 03 04 05 06 07 08 HDCP Y Y Y Y Y Y Y Y
%9974.	Report the HDCP status of all output ports. Y means the output AV signal is transferred with HDCP, N means not.	%9974.
		Out 01 02 03 04 05 06 07 08 HDCP Y Y Y Y Y Y Y Y

### 8.3.7 Baud Rate Setting

To ensure the bi-directional RS232 communication, the serial baud rate of matrix should be set as the same as the RS232 ports' on remote HDBaseT receivers.

Command	Description	Command Example and Response
Baudrate 2400.	Set the serial baud rate of matrix as 2400.	Baudrate 2400.
		Set Local RS232 baudrate is 2400!
Baudrate 4800.	Set the serial baud rate of matrix as 4800.	Baudrate 4800.
		Set Local RS232 baudrate is 4800!
Baudrate 9600.	Set the serial baud rate of matrix as 9600.	Baudrate 9600.
		Set Local RS232 baudrate is 9600!
Baudrate 19200.	Set the serial baud rate of matrix as 19200.	Baudrate 19200.
		Set Local RS232 baudrate is 19200
Baudrate 38400.	Set the serial baud rate of matrix as 38400.	Baudrate 38400.

		Set Local RS232 baudrate is 38400!
<b>Baudrate 57600.</b>	Set the serial baud rate of matrix as 57600.	Baudrate 57600. Set Local RS232 baudrate is 57600!
<b>Baudrate 115200.</b>	Set the serial baud rate of matrix as 57600.	Baudrate 115200. Set Local RS232 baudrate is 115200!

### 8.3.8 CEC Control

If the input sources, HDBaseT output devices and local HDMI output devices are supports CEC, they can be controlled by sending the following command instead of IR remote.

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

- The “[**I**]” represents the input port. The “[**O**]” represents the output port.
- The “[**port**]” represents the port number. The local HDMI output ports are 01~08 and the HDBT output ports are 09, 0A, 0B, 0C, 0D, 0E, 0F and 10. The HDMI input ports are 01~08.
- The “[**port**]” is “FF” for sending command to all input or output ports.
- The “[**command**]” represents the specific command from the table below.

#### ✓ Control the input source:

Command	Description	Command Example and Response
<b>CECI[<b>port</b>]00.</b>	Confirm operation (Enter).	CECI0100.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[<b>port</b>]01.</b>	UP.	CECI0101.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[<b>port</b>]02.</b>	DOWN.	CECI0102.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[<b>port</b>]03.</b>	LEFT.	CECI0103.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[<b>port</b>]04.</b>	RIGHT.	CECI0104.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[<b>port</b>]0A.</b>	Enter main menu.	CECI010A.

		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]0D.</b>	Exit menu.	CECI010D.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]41.</b>	Volume up.	CECI0141.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]42.</b>	Volume down.	CECI0142.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]43.</b>	Mute	CECI0143.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]44.</b>	Play.	CECI0144.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]45.</b>	Stop.	CECI0145.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]46.</b>	Pause.	CECI0146.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]48.</b>	Rewind.	CECI0148.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]49.</b>	Fast forward.	CECI0149.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]4B.</b>	Forward.	CECI014B.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]4C.</b>	Backward.	CECI014C.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]6C.</b>	Power off.	CECI016C.
		CEC_IN_01_SEND_SUCCESS!
<b>CECI[port]6D.</b>	Power on.	CECI016D.
		CEC_IN_01_SEND_SUCCESS!

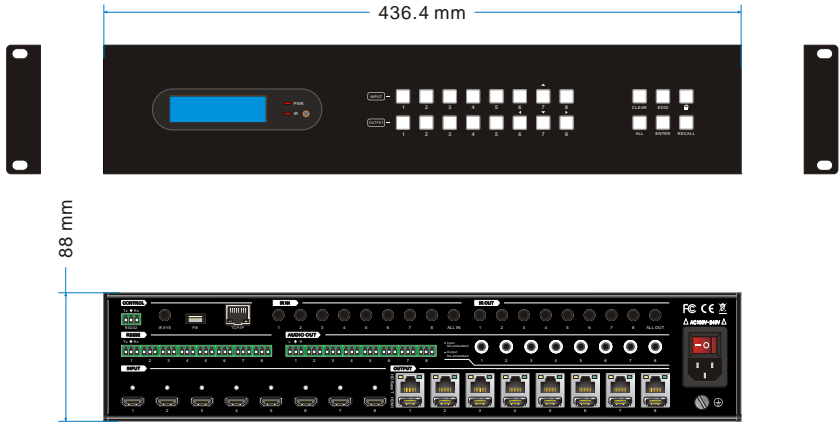
✓ **Control the output display device:**

<b>Command</b>	<b>Description</b>	<b>Command Example and Response</b>
<b>CECO[port]41.</b>	Volume up.	CECO0141.
		CEC_OUT_01_SEND_SUCCESS!
<b>CECO[port]42.</b>	Volume down.	CECO0142.
		CEC_OUT_01_SEND_SUCCESS!
<b>CECO[port]43.</b>	Mute	CECO0143.
		CEC_OUT_01_SEND_SUCCESS!
<b>CECO[port]6C.</b>	Power off.	CECO016C.

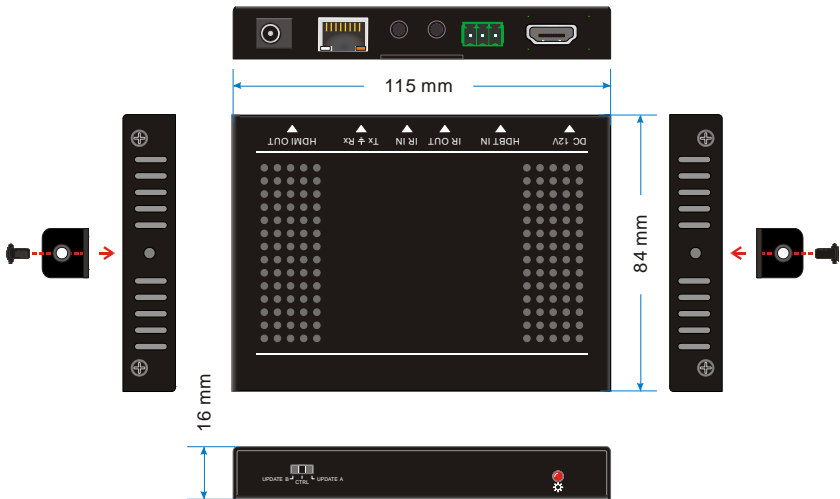
		CEC_OUT_01_SEND_SUCCESS!
<b>CEO[port]6D.</b>	Power on.	CECO016D.
		CEC_OUT_01_SEND_SUCCESS!

# 9. Panel Drawing

## 9.1 HDBaseT 8x8 HDMI 2.0 Matrix



## 9.2 HDBaseT Receiver



## 10. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Output image with snowflake.	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 product 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.
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.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Check the grounding and make sure it is connected well.
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.
Cannot control the device by front panel buttons while can control it through RS232 port	The front panel buttons are locked.	Send command <b>!%Unlock;</b> to unlock the front panel buttons.

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

## 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 Exclusions:

- 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:** For further assistance or solutions, please contact your local distributor.





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