BZB GEAR®

Solutions to Amplify Your World ™

BG-UHD-88M

8X8 HDMI 2.0a 4K UHD Matrix Switcher with Audio De-Embedding & ARC

User Manual

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Statement

Please read these instructions carefully before connecting, operating, or configuring this product. Please save this manual for future reference.

Safety Precaution

- To prevent damaging this product, avoid heavy pressure, strong vibration, or immersion during transportation, storage, and installation.

- The housing of this product is made of organic materials. Do not expose to any liquid, gas, or solids which may corrode the shell.

- Do not expose the product to rain or moisture.

- To prevent the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.

- Do not use the product beyond the specified temperature, humidity or power supply specifications.

- This product does not contain parts that can be maintained or repaired by users. Damage caused by dismantling the product without authorization from BZBGEAR is not covered under the warranty policy.

- Installation and use of this product must strictly comply with local electrical safety standards.

Introduction

The BG-UHD-88M is an 8x8 4K HDMI matrix switch with audio extraction and ARC support. This versatile matrix can handle resolutions up to 4K2K@60Hz 4:4:4 as well as HDR (4K2K@60 4:2:0 10 bits). This HDCP 2.2 compliant unit is equipped with 8 HDMI 2.0a inputs and 8 HDMI 2.0a outputs. It quickly routes any of the eight inputs to any of the eight outputs including one-to-one or one-to-many configurations.

The BG-UHD-88M offers a wide array of control and compatibility options. The unit allows control via front panel push buttons, IR remote control, RS-232, a Web Interface, or IP control. 3rd party control system drivers for Crestron, Control 4, AMX, and RTI are also available to encompass a wider array of system compatibility.

Features

- HDMI 2.0a compliant
- 4K2K@60 4:4:4 8bits
- HDR (High Dynamic Range)
- HDCP 2.2 compliant
- Allows any source to be displayed on multiple displays at the same time
- Allows any HDMI display to view any HDMI source at any time
- Up to 7.1 channel audio
- ARC & Audio Extraction via RCA
- S/PDIF(RCA) audio formats: PCM2, Dolby 5.1, DTS 5.1
- Default HDMI EDID and learns the EDID of displays to the matrix switcher.
- The matrix switch can be controlled via Push button, IR remote control, RS-232, Web Interface, Control 4, IP control, and cloud control.
- Easy installation with rack-mounting
- Fast response times - 3~4 seconds for channel switch

Packing List

- 1x BG-UHD-88M
- 1x IR receiver
- 1x DC 12V 7.5A
- 1x IR Remote control

- 1x Rack-mounting ear set
- 1x Installation software CD
- 1x User Manual

Specifications

Technical	
HDMI compliance	HDMI 2.0a
HDCP compliance	HDCP 1.4/HDCP 2.2
Video bandwidth	Single-link 594MHz [18Gbps]
Video support	HDR 4K2K@60 (4:2:0 10 bits) / 4K2K@60 (4:4:4 8 bits)
Audio support	Surround sound (up to 7.1ch) or stereo digital audio
ESD protection	Human body model - ±15kV [air-gap discharge] & ±8kV [contact discharge]
PCB stack-up	8-layer board [impedance control - differential 100Ω; single 50Ω]
Input	8x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver
Output	8x HDMI + 8x RCA
HDMI Input selection	Push button / IR remote control / RS-232 control / Web control / Control 4/ IP control / Cloud control
IR remote control	Electro-optical characteristics: p = 25° / Carrier frequency: 38kHz
HDMI connector	Type A [19-pin female]
RJ-45 connector	WE/SS 8P8C with 2 LED indicators
RS-232 connector	DE-9 [9-pin D-sub female]
3.5mm connector	[System IR] Receives IR commands from remote control

| Mechanical		
Enclosure	Metal case	
Dimensions (L x W x H)	Model	1'4" x 9.2" x 1.7" [440 x 234 x 44mm]
	Package	1'7" x 12.5" x 6.1" [526 x 318 x 156mm]
Weight	Model	5.8 lbs [2645g]
	Package	8.6 lbs [3899g]
Fixedness	1RU rack-mount with ears Wall hanging holes	
Power supply	12V 7.5A DC	
Power consumption	55 Watts [max]	
Operation temperature	32~104°F / 0~40°C	
Storage temperature	-4~140°F / -20~60°C	
Relative humidity	20~90% RH [no condensation]	

Operation Controls and Functions

Panel Descriptions
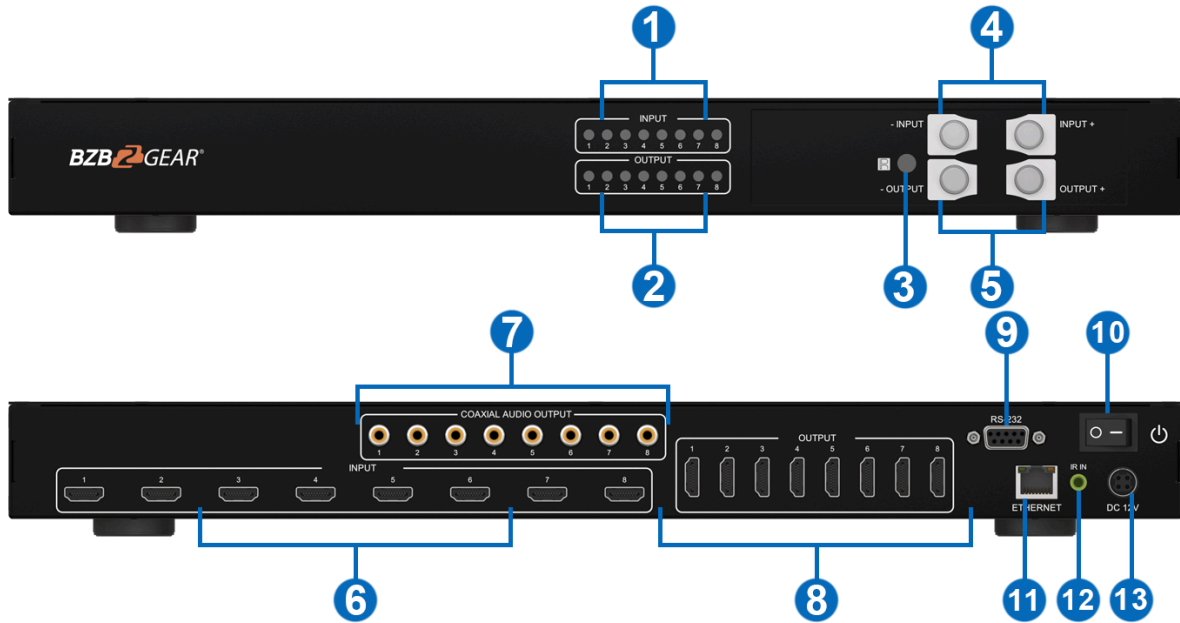
No.	Name
1	**Source Status:** Input source detection LED
2	**Display Status:** Output display detection LED
3	**IR SENSOR:** IR sensor for receiving the IR commands from IR remote
4	**Output Push Button & 7-segment LED:** Front panel push buttons used to select the number of display channel & LED display for output ports
5	**Input Push Button & 7-segment LED:** Front panel push buttons used to select the number of input source & LED display for input channels
6	**INPUT 1-8:** HDMI inputs
7	**Audio OUT:** ARC & Audio Extraction
8	**OUTPUT 1-8:** HDMI outputs
9	**RS-232:** RS-232 control port
10	**Power Switch:** Power on/off the device
11	**Ethernet:** Ethernet control port
12	**System IR Receiver:** Ext. IR receiver
13	**+12V DC:** 12V DC power jack

Application Diagram
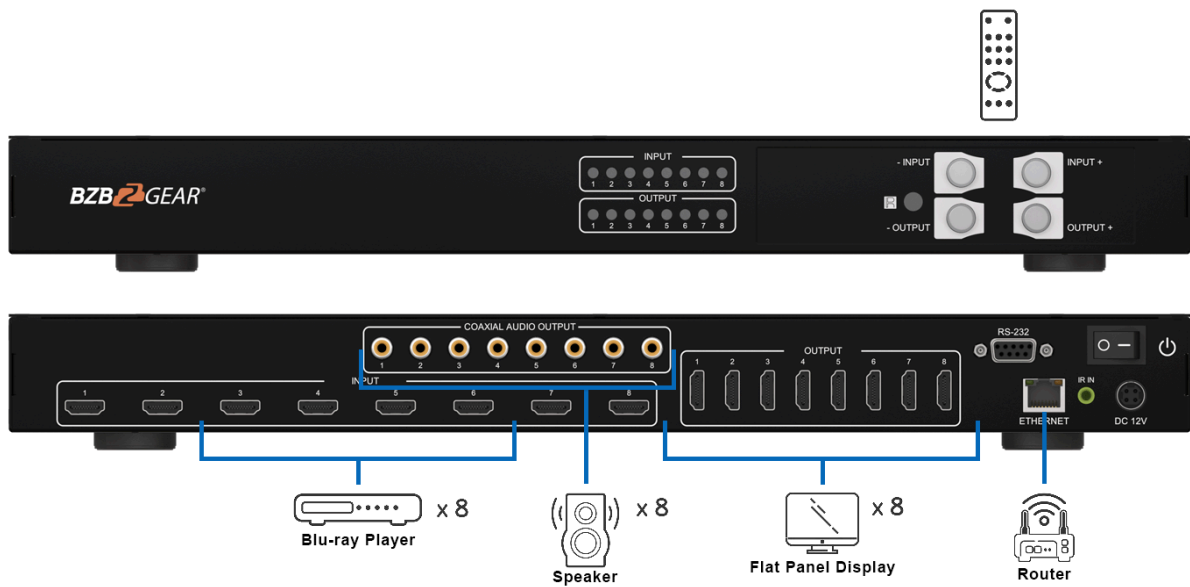
Hardware Installation

1. Connect all sources to HDMI Inputs on the 8x8 HDMI BG-UHD-88M.
2. Connect all displays to HDMI Outputs on the 8x8 HDMI Matrix BG-UHD-88M.
3. Connect the +12V 7.5A DC power supply to the 8x8 HDMI Matrix BG-UHD-88M

Control Methods

Method A: Push Buttons

IN/OUT MAP
(1) Use the "+"or "-" output push buttons to select an output display port
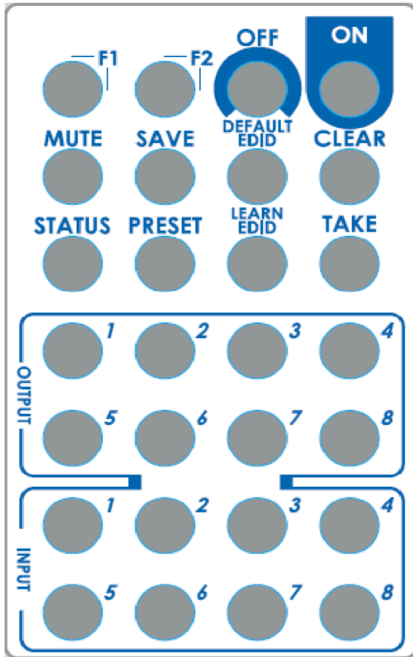(2) Use the "+"or "-" input push buttons to select an input source port
"+": changes selected input/output port in ascending order
"-" : changes selected input/output port in descending order
After you select the desired input/output port, the LED will blink twice and the configuration will be implemented.

Method B: IR Remote Control

Button	Function
OFF	Standby mode
ON	Power on the matrix switcher
MUTE	Turn off output's video and audio
STATUS	Preset output status
SAVE	Save current mapping mode
PRESET	Preset mapping mode
DEFAULT EDID	Begin default EDID selection
LEARN EDID	Begin EDID learning from one output
CLEAR	Clear the previous IR operation procedure
TAKE	Trigger the previous setting
F1	Reserved
F2	Reserved

IN/OUT Switch

| Operation	Procedure	7-Segment LED
IN/OUT Switch	**Output Number (1~8) + Input Number (1~8)**	
Ex: Input 2 To Output 3	1.Press output number key "3" to select Output 3 2.Press input number key "2" to select Input 2 3.Press "TAKE" button	3 - 3 2
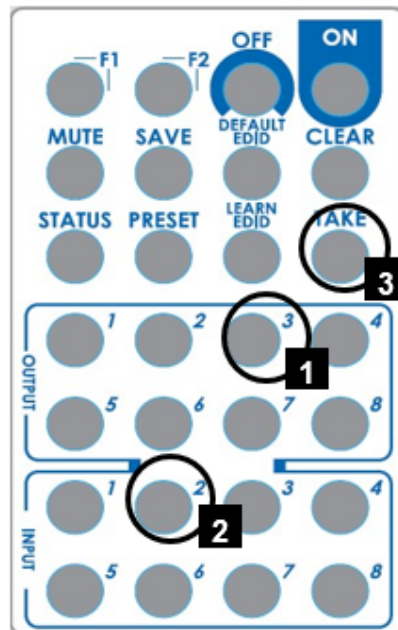
Examples of Key Functions

Operation	Procedure	7-Segment LED
Output Status	**Status + Output Number (1~8) + Take**	
Ex: Output 4 (Input 2)	1.Press "STATUS" button	- -
	2.Press output number key "4" to select Output 4	4 -
	3.Press "TAKE" button	4 2
Save Current Mapping	**Save + Output Number (1-8 storage site) + Take**	
Ex: Save current mapping to 5	1.Press "SAVE" button	d -
	2.Press output number key "5" to select the storage site 5	d 5
	3.Press "TAKE" button	
Preset Mapping	**Preset + Output Number (1-8 storage site) + Take**	
Ex: Preset saved mapping from 5	1.Press "PRESET" button	P -
	2.Press output number key "5" to select the storage site 5	P 5
	3.Press "TAKE" button	
Learn default EDID	**Default EDID + Output Number (1-8 default EDID) + Input Number (input 1~8) + Take**	
Ex: Default EDID 2 Input 3	1.Press "DEFAULT EDID" button	E d
	2.Press output number key "2" to select default EDID 2	2 d
	3.Press input number key "3" to select Input 3	2 3
	4.Press "TAKE" button	0 **F** 0 (success) **F**(fail)
Learn Output EDID	**Learn + Output Number (Output 1~8) +Input Number (input 1~8) + Take**	
Ex: Learn Output 4 Input 3	1.Press "LEARN" button	E L
	2.Press output number key "4" to select Output 4	4 L
	3. Press input number key "3" to select Input 3	4 3
	4.Press "TAKE" button	0 **F** 0 (success) **F**(fail)
Mute Output	**Mute + Output Number (1~8) + Take**	
Ex: Mute Output 3	1. Press "MUTE" button	- 0
	2. Press output number key "3" to select Output 3	3 0

## Method C: Software Control through RS-232

System Requirements

(1) OS Information: MS Win XP/7/8.1/10

(2) Baud rates: 115200

(3) Software size: 2 MB

(4) Minimum RAM requirement: 256 MB
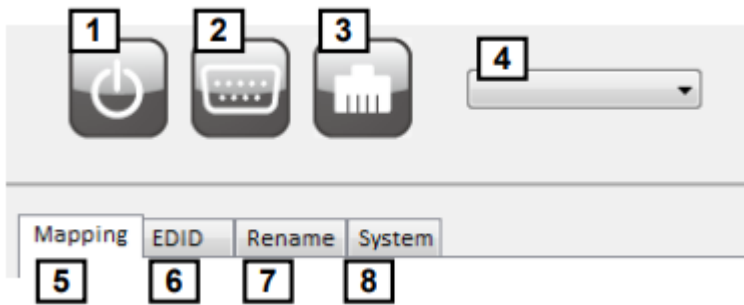
1.   Power ON/ Standby mode
2.   Control SW via RS-232
3.   Control SW via Network
4.   COM Port Selection
5.   I/O Routing Tab
6.   EDID Tab
7.   Rename I/O Tab
8.   Network Setting, Default Reset & Firmware Update Button

I/O Routing Button
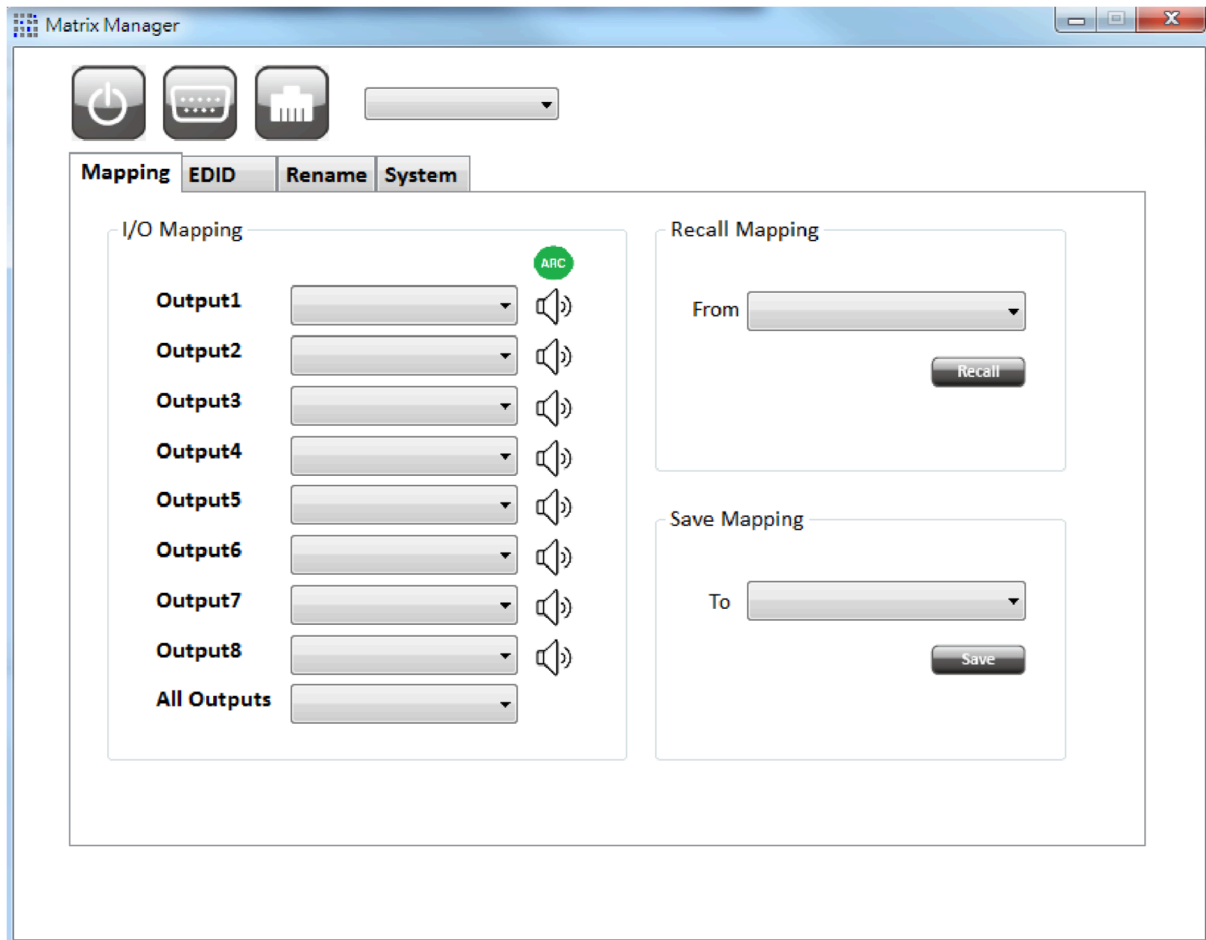
I/O:

- Switch the input for each output
- ARC: Enable/ Disable ARC

Recall Mapping:

- Select the stored Mapping (1-16)
- Click "Recall" button to recall previous mapping which are saved

Save Mapping:

- Select Mapping (1-16)
- Click "Save" button to save current mapping

EDID Button
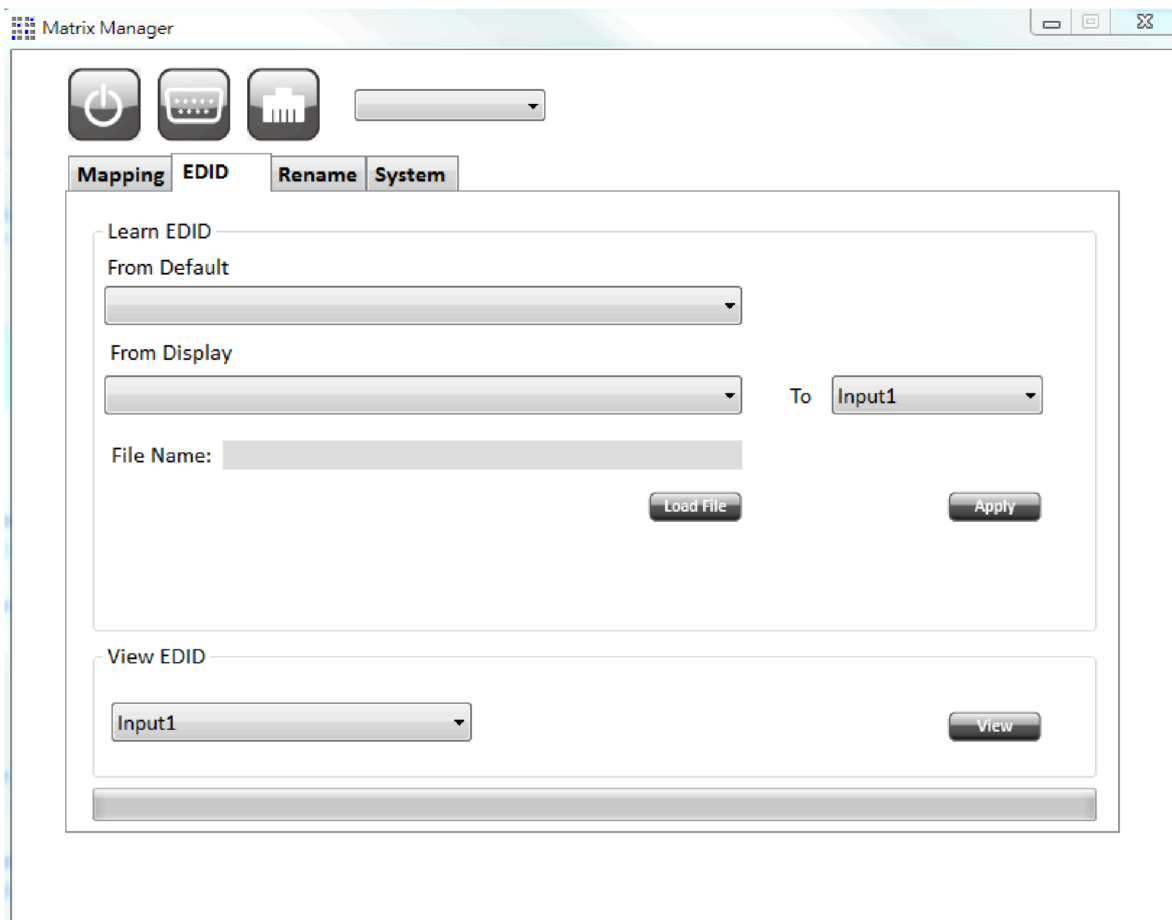
Learn EDID from Default to Input

- Select Default EDID(1-17 Default EDID)
- Select designated Input
- Click "Apply" button to learn from default EDID

Learn EDID from Display to Input

- Select output
- Select designated Input
- Click "Apply" button to learn from display EDID

Load EDID File to Input

- Click "Load File" button to select the EDID file
- Select designated Input
- Click "Apply" button to load EDID File

View EDID

- Select Input or HDMI output
- Click "View" button to read and analyze the EDID

Rename I/O Button
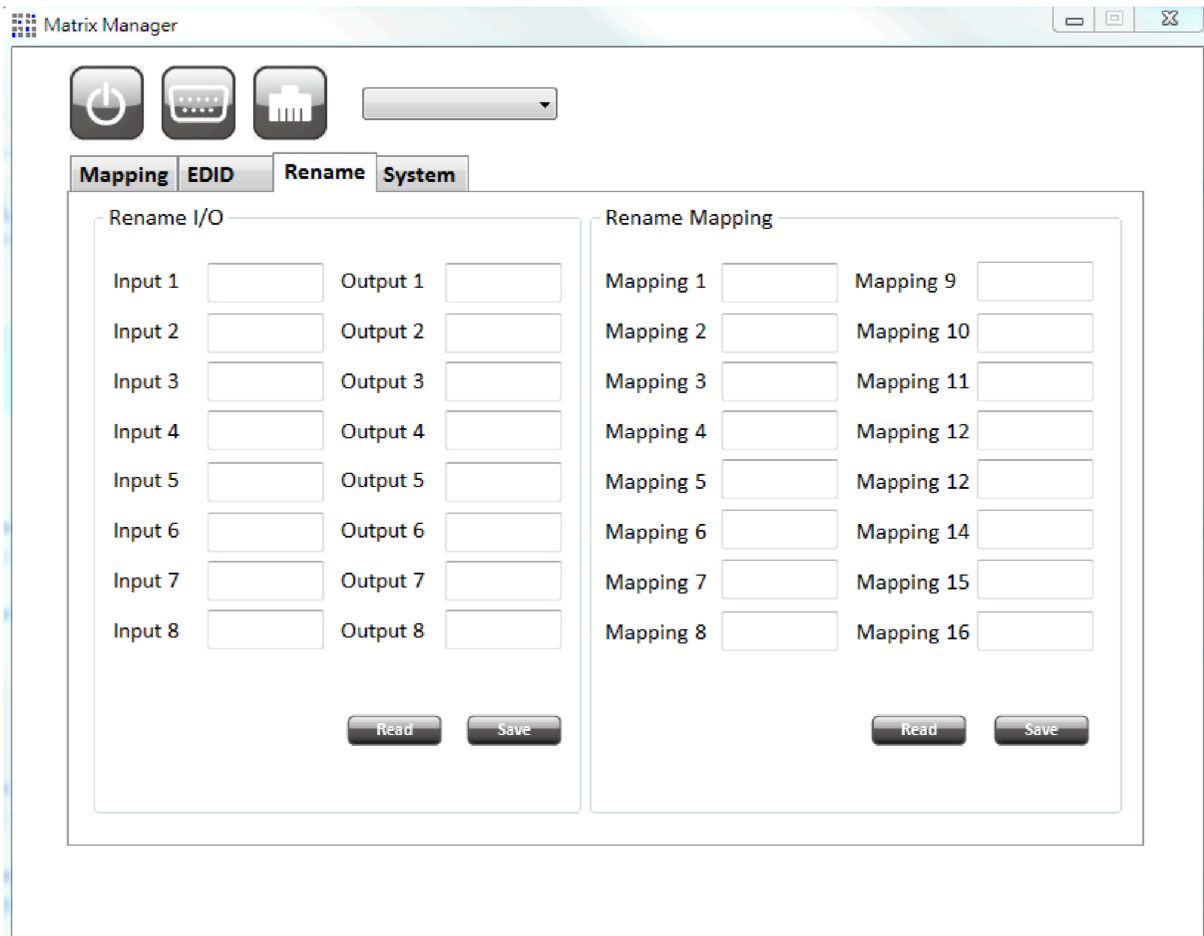
Rename I/O:

- Rename the Inputs
- Rename the Outputs

Rename Mapping:

- Rename the Mappings

System Button
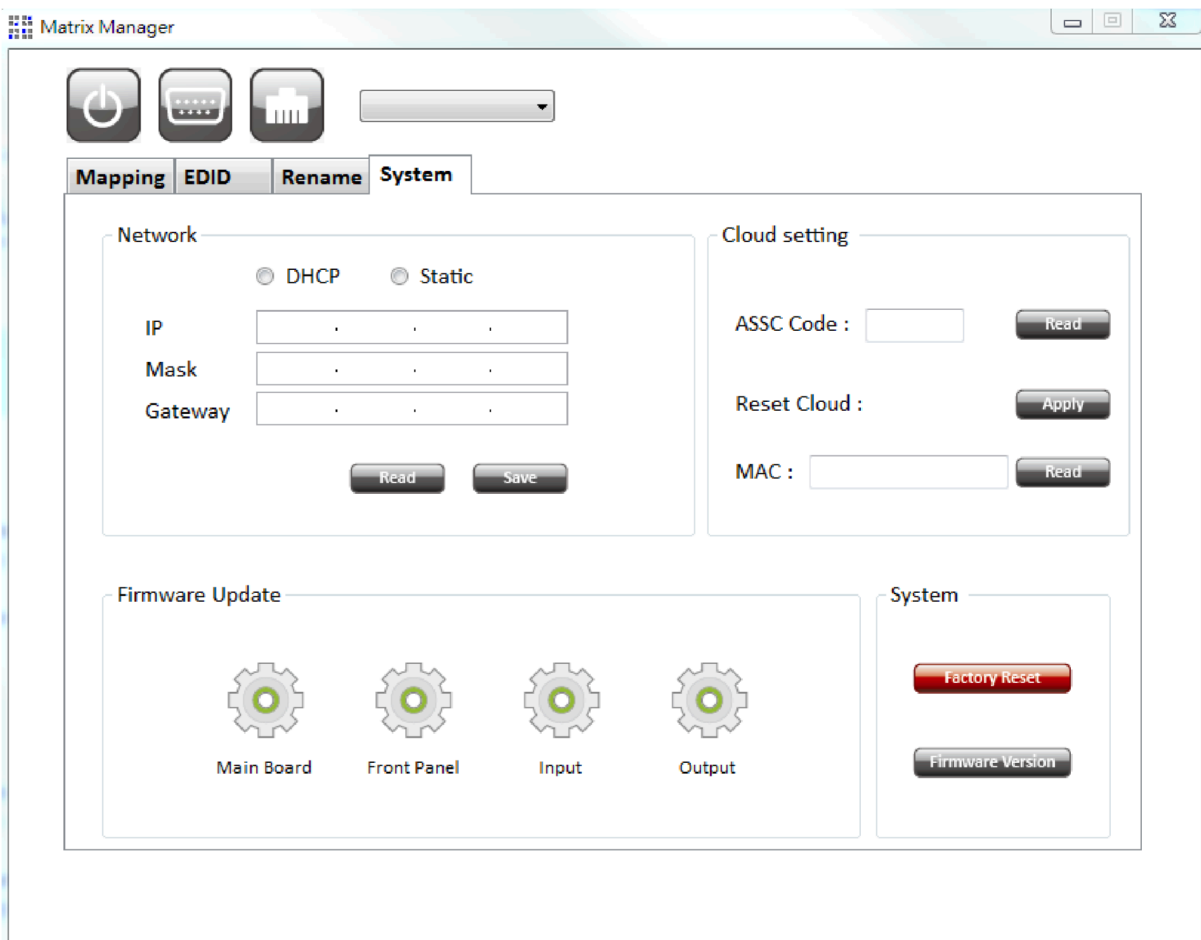
Network-DHCP mode

- After selecting DHCP, device will reboot automatically
- Click "Read" button to automatically get the IP address Information

Network-Static mode

- After selecting static, device will reboot automatically
- Key in the "IP", "MASK", "GATEWAY" information.
- After setting IP address, please click "Save" button to save IP address Information. The device will reboot automatically

"Save" Button

- Save the IP address which is manually entered

"Read" Button *The default IP address is 192.168.1.70

- Read the IP address from the device

Cloud setting-Association Code

- To get an "association code". The device can use this code to pair with cloud server.
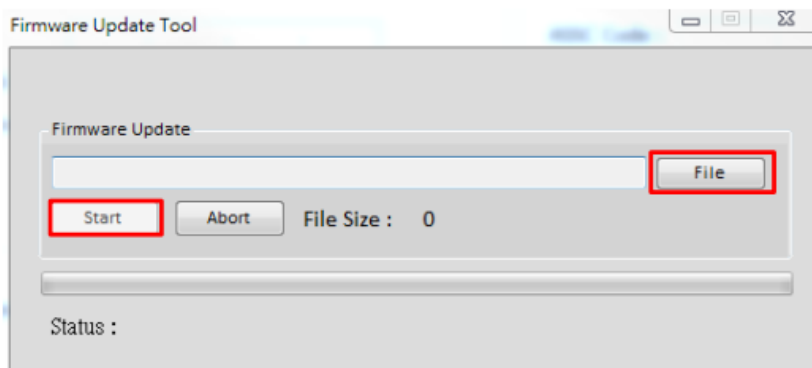
Cloud setting-Reset Cloud

- To reset cloud after a successful pairing

Cloud setting-MAC

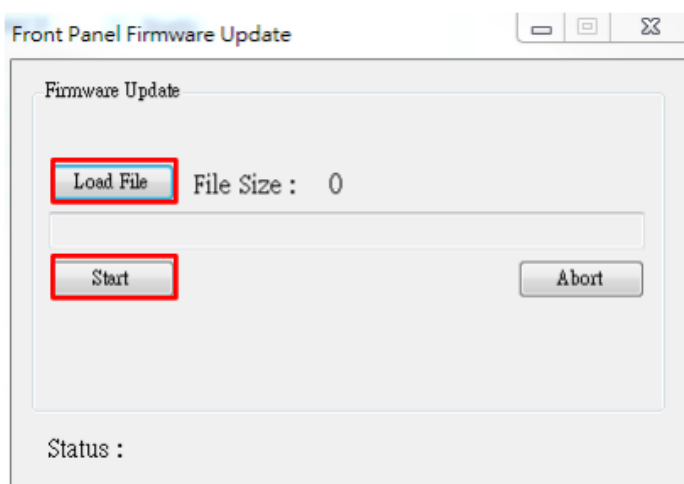- Read the device's MAC address information

Firmware Update-Main Board

- Click "Main Board" button and another window will pop-up
- Click "File" button to load firmware
- Click "Start" button to do firmware update
- Please power cycle after firmware update complete
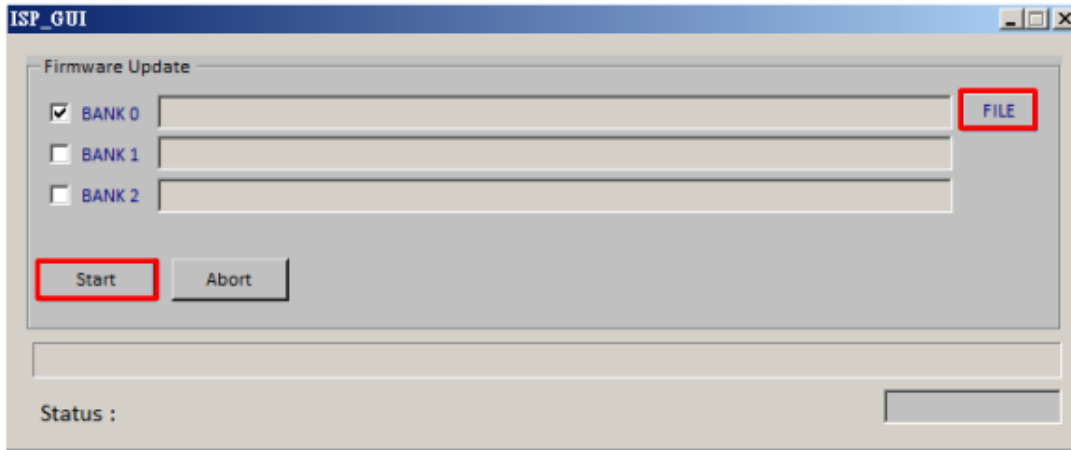

Firmware Update-Front Panel

- Click "Front Panel" button and another window will pop-up
- Click "Load File" button to load firmware
- Click "Start" button to do firmware update
- Please power cycle after firmware update complete

Firmware Update-Input

- Click "Input" button and another window will pop-up
- Click "FILE" button to load firmware
- Click "Start" button to do firmware update
- Please power cycle after firmware update complete

Firmware Update-Output

- Click "Output" button and another window will pop-up
- Click "FILE" button to load firmware
- Click "Start" button to do firmware update
- Please power cycle after firmware update complete
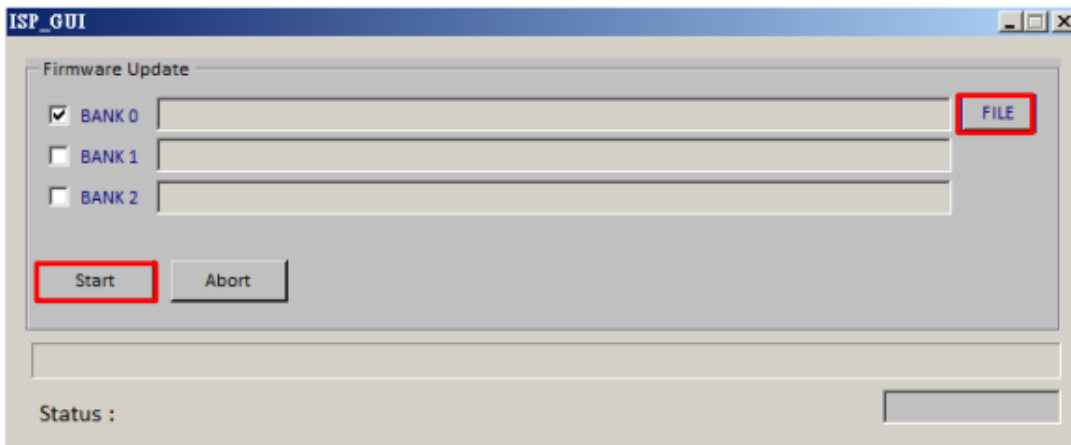
System-Factory Reset

- To do factory default reset

System-Firmware Version

- To get the F/W version information

Method D: Cloud Control (Eagleyes) through Ethernet port

Create Account

The first time using the Eagleyes service, please create a new account.

1. Access Eagleyes (http://www.eagleyes.io) and click "Create new account".

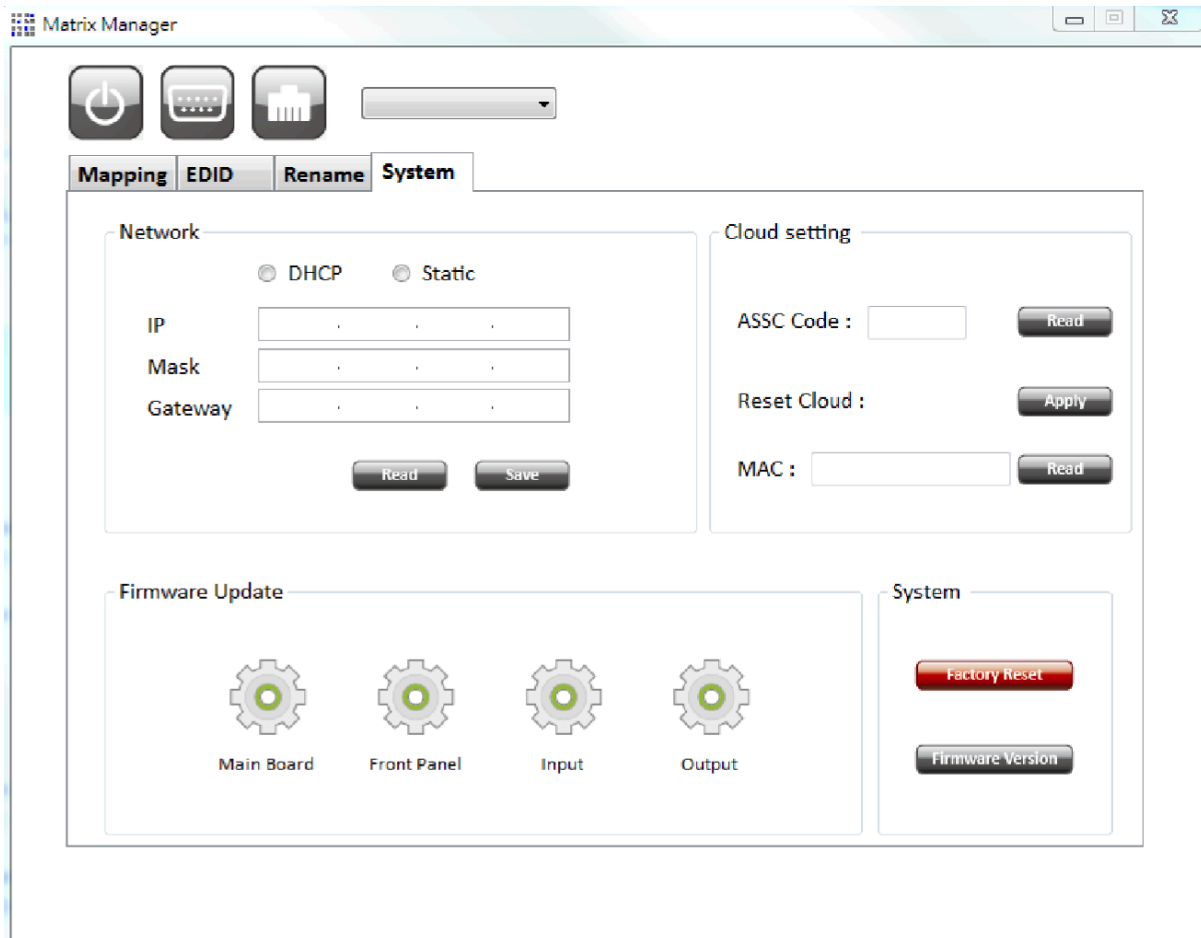2. The Registration page will pop up and please fill in your email and password information to create your private account.
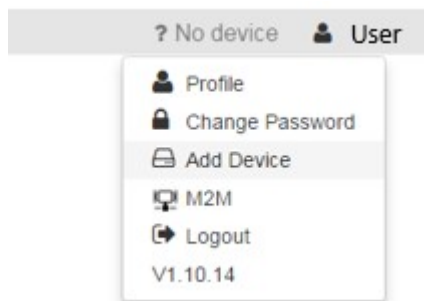
Add Device to Eagleyes

1. First, please make sure the device is connected to Ethernet. Then please execute the software with the device software to get the association code.

2. Access Eagleyes (http://www.eagleyes.io) or download Eagleyes APP, and then log in your account on the right top corner. Click **Add device** to add the device which you just got its association code.

3. Enter the Installer Email for online support in the future, and the Association Code for pairing with your device.
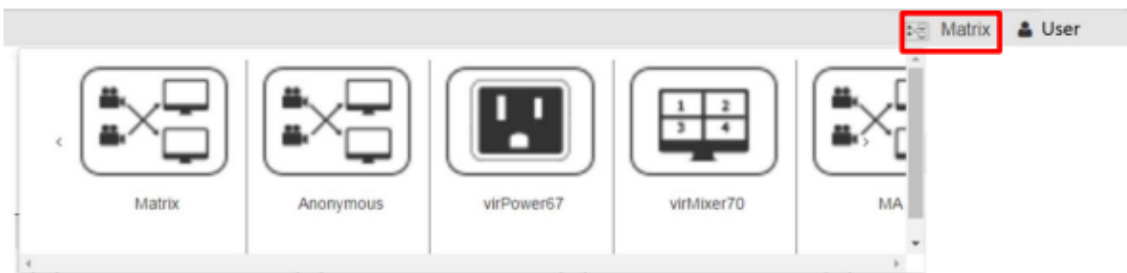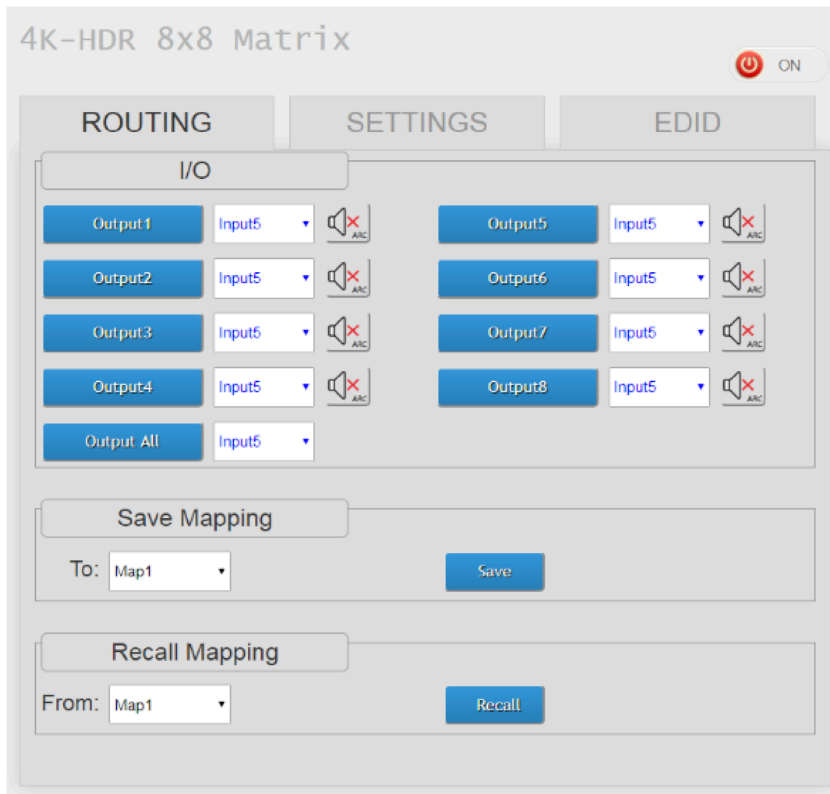

4. After adding the device, the list of devices related to your account will show on the right top corner. You can click the button to switch the device for control.

## Method E: Web Interface Control

Logging in to the Web Interface:
  ● Access the Web Interface by entering the unit's IP address into your browser.
  ● Default IP address: 192.168.1.70

Matrixing Inputs and Outputs:
- Choose preferred inputs for each output by using the dropdown menu next to the corresponding output number.
- If uncertain about the connection between outputs and displays, check the back of the unit.
- To assign the same input to all displays, select the input next to "Output All."
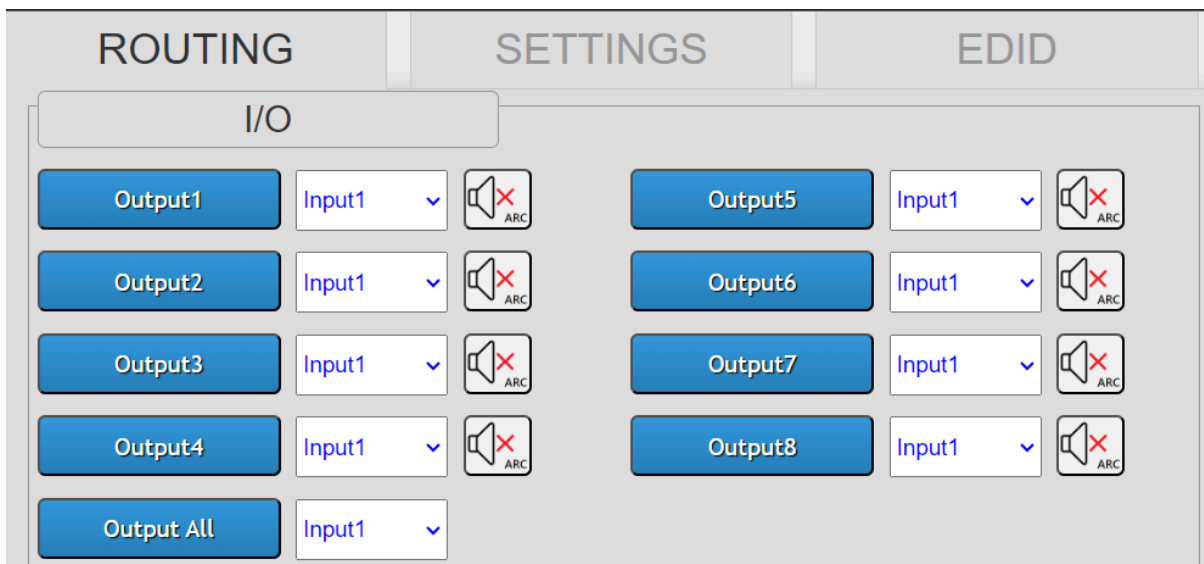
Saving and Recalling Configurations:
- Utilize the "Save Mapping" and "Recall Mapping" settings.

Save Mapping

To: [Map1 ▼]   [Save]

Recall Mapping

From: [Map1 ▼]   [Recall]

Configuration Customization:
- Under the "Settings" tab next to the "Routing" tab, change input, output, and configuration names for better organization.

Input / Name

1 Input1	**5** Input5	
2 Input2	**6** Input6	
3 Input3	**7** Input7	
4 Input4	**8** Input8	

Output / Name

1 Output1	**5** Output5	
2 Output2	**6** Output6	
3 Output3	**7** Output7	
4 Output4	**8** Output8	

[Read] [Save]

Rename Mapping

Configuration / Name

1 Map1	**5** Map5	**9** Map9	**13** Map13
2 Map2	**6** Map6	**10** Map10	**14** Map14
3 Map3	**7** Map7	**11** Map11	**15** Map15
4 Map4	**8** Map8	**12** Map12	**16** Map16

[Read] [Save]

EDID Settings Management:

- In the "EDID" tab next to the "Settings" tab, manage and change EDID settings, choosing from default or display.

EDID Learning

The EDID learning function is only necessary whenever you encounter any display on the HDMI output port that cannot play audio and video properly. Because the HDMI source devices and displays may have various level of capability in playing audio and video, the general principle is that the source device will output the lowest standards in audio format and video resolutions to be commonly acceptable among all HDMI displays. In this case, a 720p stereo HDMI signal output would be probably the safest choice. Nevertheless, the user can force the matrix to learn the EDID of the lowest capable HDMI display among others to make sure all displays are capable to play the HDMI signals normally.

There are **TWO methods** to do EDID Learning as below:

1. IR Remote Control: Please refer to the **Operation Approach\ Method B: IR Remote Control (Page 6.)**
2. Software Control: Please refer to the **Operation Approach\ Method C: Software Control through RS-232 port (Page 9. 10)**

There are **seventeen embedded default EDID** as below:

1. Full-HD(1080p@60)-24bit 2D & 2ch
2. Full-HD(1080p@60)-24bit 2D & 7.1ch
3. Full-HD(1080p@60)-24bit 3D & 2ch
4. Full-HD(1080p@60)-24bit 3D & 7.1ch
5. HD(1080i@60)(720p@60)-24bit 2D & 2ch
6. HD(1080i@60)(720p@60)-24bit 2D & 7.1ch
7. Full-HD(1080p@60)-36bit 2D & 2ch
8. Full-HD(1080p@60)-36bit 2D & 7.1ch
9. Full-HD(1080p@60)-24bit 2D & 2ch & Dolby 5.1ch

10. 4k2k@30 2ch
11. 4k2k@30 7.1ch
12. 4k2k@30-3D-PCM2CH(2ch)
13. 4k2k@30-3D-BITSTR(7.1ch)
14. 4k2k@60-420-3D-PCM2CH(2ch)
15. 4k2k@60-420-3D-BITSTR(7.1ch)
16. 4k2k@60-3D-PCM2CH(2ch)
17. 4k2k@60-3D-BITSTR(7.1ch)

FAQ

Q Can every TV work with the HDMI matrix?
A Basically, the answer is YES. But if your TV cannot support 1080p, please refer the EDID LEARNING section to learn EDID from your TV.

Q What is EDID? Why do I need to learn EDID?
A EDID contains the whole information of the display such as the resolution and audio setting which this display can support. Therefore, based on the EDID information, media player will pick up the most suitable resolution and audio setting to the display. In order to faithfully transmit the EDID information from display to the media player, learning EDID from display to this device is necessary.

Q What should I do to learn EDID for the matrix?
A Due to the limitation of HDMI, the source device can only output one format of video and audio. In other words, the source device cannot output 720p and 1080p video at the same time, or output stereo and surround sound at the same time. Therefore, you may need to manually setup each HDMI input for desirable audio/video output format. The mechanism of EDID Learning is to pick up the HDMI display with the lowest capability among the ones you would use for this input source. For example, if user would like to play the Input-2 upon output-2, output-3 and output-4, and only output-3 cannot support 1080p [support up to 720p only], please learn the EDID from the display connected to the output-3 at the Input-2 port. Of course, if outpt-3 would get the HDMI signals from every HDMI input, please learn EDID information from output3 to all four HDMI inputs. For more information about EDID Learning, please refer to EDID LEARNING section.

Q My TV can support 1080p, but why there is no audio?
A The factory default EDID of this device is 1080p & 2ch audio. However, there would be a problem after you change to use 1080p & 7.1ch if the TV cannot support 7.1ch audio. Please use the default EDID, 1080p & 2ch audio.

Q When I set an audio amplifier (AV receiver) between TV and the matrix to extract 7.1ch audio, but why there is still no audio?
A Basically, the default EDID of the chosen input can support 7.1ch audio, but the problem is that the EDID of the amplifier still cannot match the default setting. Therefore, the best method is to learn EDID from the amplifier directly. Please refer to EDID LEARNING section and follow the steps to learn the EDID. When learning EDID from the amplifier, user just needs to connect the matrix and amplifier. Please don't connect HDMI cable between amplifier and TV when the EDID learning is proceeding.

Q When I play the same content upon multi-displays, why only the TV equipped with amplifier can have 7.1ch audio, and the others don't have 7.1ch audio even no stereo?
A Due to the limitation of HDMI, the source only can choose one video and one audio format to play, which can be either 1080p and 7.1ch or 1080p and stereo audio. It means when the user sets the matrix at 1080p and 7.1ch, the source will only play the content under this format. Therefore if the TV cannot decode 7.1ch audio, there is definitely no audio.

Notice

1. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.

2. All HDMI over Cat.X transmission distances are measured using Belden 1583A CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.

3. EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.

4. To reduce the interference among the unshielded twisted pairs of wires in LAN cable, one can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.

5. Because the quality of the LAN cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of LAN cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.

6. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

7. Additional IR remote controls and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

8. Solid cable is preferred.

Tech Support

Have technical questions? We may have answered them already!

Please visit BZBGEAR's support page (bzbgear.com/support) for helpful information and tips regarding our products. Here you will find our Knowledge Base (bzbgear.com/knowledge-base) with detailed tutorials, quick start guides, and step-by-step troubleshooting instructions. Or explore our YouTube channel, BZB TV (youtube.com/c/BZBTVchannel), for help setting up, configuring, and other helpful how-to videos about our gear.

Need more in-depth support? Connect with one of our technical specialists directly:

Phone	**Email**	**Live Chat**
1.888.499.9906	support@bzbgear.com	bzbgear.com

Warranty

BZBGEAR Pro AV products and cameras come with a three-year warranty. An extended two-year warranty is available for our cameras upon registration for a total of five years.

For complete warranty information, please visit bzbgear.com/warranty.

For questions, please call 1.888.499.9906 or email support@bzbgear.com.

Mission Statement

BZBGEAR is a breakthrough manufacturer of high-quality, innovative audiovisual equipment ranging from AVoIP, professional broadcasting, conferencing, home theater, to live streaming solutions. We pride ourselves on unparalleled customer support and services. Our team offers system design consultation, and highly reviewed technical support for all the products in our catalog. BZBGEAR delivers quality products designed with users in mind.

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