MA-5588V

4K-HDR 8x8 HDBaseT Lite matrix with PoC

User Manual

rev: 200511
Made in Taiwan

INTRODUCTION

The **MA-5588V 4K-HDR 8x8 HDBaseT Lite matrix with PoC** provides the most flexible and cost effective solution in the market to route high definition video sources plus multi-channel (up to 7.1-channel) digital audio from any of the eight HDMI sources to the remote displays at the same time. MA-5588V supports all 3D formats, the true 4K 2K video and provides two HDMI local loopouts. Through only one low cost Cat-5/5e/6 LAN cables, not only high quality video and audio can be transmitted to the display sites, but also users can switch among eight HDMI sources using the push button, IR remote, RS-232, IP control, web-interface control, cloud, control 4 & Alexsa Echo control. Furthermore, the built-in IR extension function makes users at display site access the DVD player, PS4 or any HDMI supported devices directly! In addition, MA-5588V also supports PoC (Power over Cable) which can power RX unit from TX side with power supply.

FEATURES

- HDMI 2.0a compliant
- Supports 4K2K@60 4:4:4 8bits
- Supports HDR[1], which is 4K2K@60 4:2:0 10bits[2]
- Extends HDMI signal up to 60m (198ft) from the HDMI source at Full HD 1080p 36-bit, 35m (114ft) at 4K2K@60 444 (4K-HDR Technology)
- Supports PoC(Power over Cable) which can power RX unit from TX side with power supply
- Supports two HDMI loopout
- Supports audio extraction via stereo audio L/R & S/PDIF from HDMI loopout
- HDCP1.4 & HDCP2.2 compliant
- Supports resolution downscaling from 4K2K to 1080P[3]
- Bi-directional IR pass-though
- Allows controlling local HDMI sources or display through control path
- Allows controlling matrix switcher from IR remote
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable transmission
- 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
- Supports 7.1 channel digital audio
- Supports default HDMI EDID and learns the EDID of displays to matrix switcher
- The matrix switcher can switch every output channels from any HDMI inputs by Push button, IR remote control, RS-232, IP control, web-interface control and cloud, control 4 & Alexsa Echo control.
- Easy installation with rack-mounting
- Fast response time – 4~6 seconds for channel switch

(!)
1. HDR = High Dynamic Range.

2. The video bandwidth of 4K2K@60 4:2:0 10bits (HDR) is 384 MHz, and the 4K2K@60 4:4:4 8bits is 594MHz**.**

3. When used in conjunction with the EX-57VAC-I-SP-RX receiver
   (a) The MA-5588V can support resolution downscaling from 4K2K to 1080P
   (b) NOT supports resolution downscaling from 4K2K@60 4:2:2 to 1080P

(!) The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ45 connectors is recommended.

PACKAGE CONTENTS

- 1x MA-5588V
- 1x IR receiver
- 1x DC 12V 16A
- 1x IR Remote control*
- 1x Rack-mounting ear set
- 1x Installation software CD
- 1x User Manual

(!) ***** Additional IR remote controllers and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

SPECIFICATIONS

Model Name	MA-5588V
Technical	
Role of usage	True 8x8 matrix switcher Transmitter [TX]
HDMI compliance	HDMI 2.0a
HDCP compliance	Yes
Video bandwidth	Single-link 600MHz [18Gbps]
Video support	HDR 4K2K@60(4:2:0 10bits) / 4K2K@60 (4:4:4 8bits)
Audio support	Surround sound (up to 7.1ch) or stereo digital audio
PoC support	YES
HDMI over UTP transmission range	1080p@60 – up to 60m (198ft) [CAT.X] 4K2K@60 444 (4K-HDR Technology) – 35m (114ft)
Input TMDS signal	1.2 Volts [peak-to-peak]
Input DDC signal	5 Volts [peak-to-peak, TTL]
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 RJ-45 for IP Control / 9x IR socket for IR receiver
Output	8x RJ-45(HDBaseT) / 2x HDMI / 2x RCA / 9x IR socket for IR blaster
HDMI Input selection	Push button / IR remote control / RS-232 control / IP control / web-interface control/ cloud / control 4 & Alexsa Echo control
HDMI source control	Controllable via IR pass-through from IR receiver at RX to IR blaster at TX
IR remote control	Electro-optical characteristics: π= 25° / Carrier frequency: 38kHz
HDMI connector	Type A [19-pin female]
RJ-45 connector	WE/SS 8P8C
RS-232 connector	DE-9 [9-pin D-sub female]
3.5mm connector	1. Earphone jack for IR blaster **[All IR Out]** IR signal from all outputs **[IR1~IR8]** IR control on individual source device 2. Earphone jack for IR receiver **[System IR]** Receives IR commands from remote control **[IR1~IR8]** Receives IR commands from individual remote control
Mechanical	
Housing	Metal enclosure

Dimensions [L x W x H]	Model	440 x 278 x 44mm [1'4" x 10.8" x 1.7"]
	Package	513 x 456 x 144mm [1'7" x 1'5" x 5.6"]
	Carton	535 x 320 x 495mm [1'8" x 1' x 1'6"]
Weight	Model	3405g [120oz]
	Package	4365g [9.6lbs]

Fixedness	1RU rack-mount with ears Wall hanging holes
Power supply	12V 16 A DC
Power consumption	120 Watt [max]
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]

CONNECTION DIAGRAM
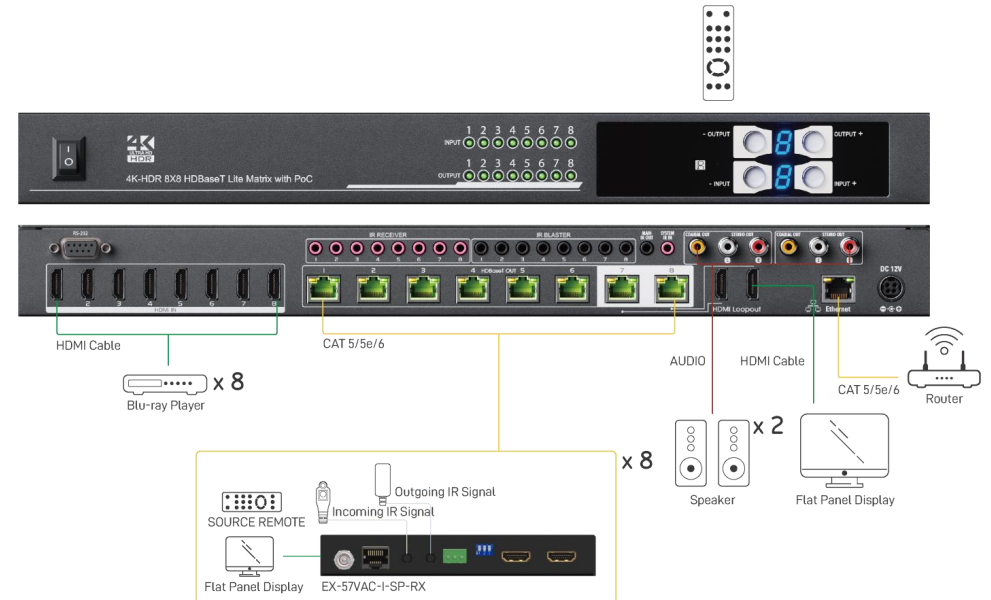
PANEL DESCRIPTIONS
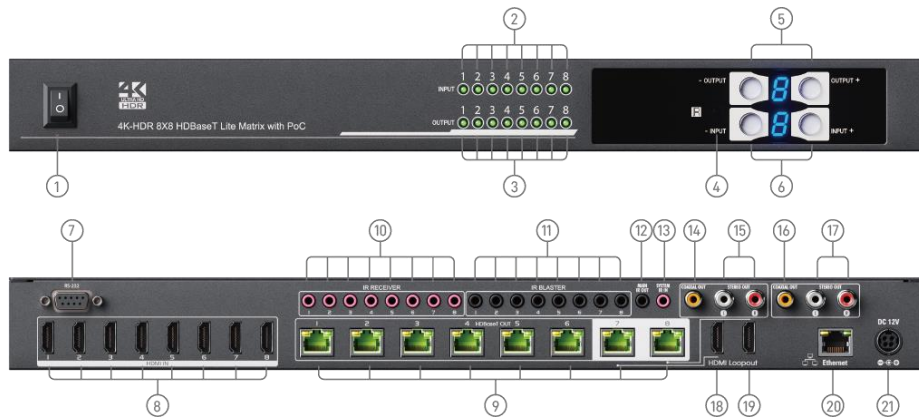
1. **Power Switch**

2. **Source Status:** Input source indicator LED

3. **Display Status:** Output display indicator LED

4. **IR SENSOR:** IR sensor for receiving the IR commands from IR remote

5. **Output Push Button & 7-segment LED:** Front panel push buttons used to select the number of display channel & LED display for output ports

6. **Input Push Button & 7-segment LED:** Front panel push buttons used to select the number of input source & LED display for input channels

7. **RS-232:** RS-232 control port

8. **INPUT 1-8:** HDMI inputs

9. **RJ-45:** HDBT output port 1-8

10. **IR Receiver 1-8:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver

11. **IR Blaster 1-8:** 3.5mm IR blaster socket for individual HDMI source control

12. **All IR Output:** 3.5mm IR blaster socket for HDMI source control on all 8 inputs

13. **System IR Receiver:** Ext. IR receiver

14. **S/PDIF output:** Audio extraction from HDMI local loopout port 1

15. **Stereo Audio Output L/R:** Audio extraction from HDMI local loopout port 1

16. **S/PDIF output:** Audio extraction from HDMI local loopout port 2

17. **Stereo Audio Output L/R:** Audio extraction from HDMI local loopout port 2

18. **HDMI Local Loopout Port 1:** Local HDMI loopout from HDBT output port 7

19. **HDMI Local Loopout Port 2:** Local HDMI loopout from HDBT output port 8

20. **Ethernet:** Ethernet control port

21. **+12V DC:** 12V DC power jack

IR PASS-THROUGH

[IR Extenders]

IR Blaster   IR Receiver

[IR Sockets]

MA-5588V

All IR Out: The default location for IR blaster to transmit all IR command signals received from any of the one remote receivers to all of the HDMI sources.

IR BLASTER 1-8: IR blaster connected here can only transmit IR command signals from the remote receivers that are setting at respective input channel from 1 to 8.

System IR: Receives IR commands from remote control

IR RECEIVER 1-8: Receives IR commands from individual remote control

> **CAUTION!** → Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

[Definition of IR Earphone Jack]

IR Blaster   IR Receiver

1. IR Signal
2. Grounding

1. IR Signal [30-56 kHz]
2. Grounding
3. Power

> 📖 You can buy any IR extension cables in the market that are compatible to the definition of the IR sockets for the extender if necessary for replacement use. However, IR cables longer than 2m (6-ft) may not work.

OPERATION APPROACH

Method A: Push-in Button

IN/OUT MAP

(1) Use the "+" or "-" output push button to select the number of display

(2) Use the "+" or "-" input push button to select the number of input source

    "+": change selected input/output port in ascending order

    "-": change selected input/output port in descending order

After you select the desired input/output port, the LED will blink twice and the setting will be effective

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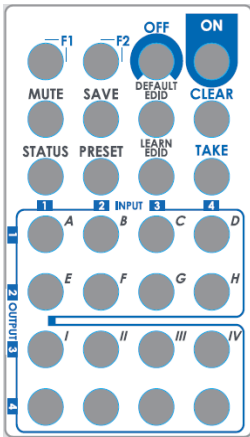
Button	Function
OFF	Standby mode
ON	Power on the matrix switcher
MUTE	Turn off output's video and audio
STATUS	Preset output status
SAVE	Save current mapping mode
PRESET	Preset mapping mode
DEFAULT EDID	Begin default EDID selection
LEARN EDID	Begin EDID learning from one output
CLEAR	Clear the previous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

1. 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
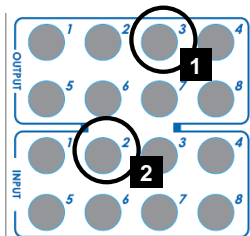
2. Example of function key

| 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 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	0
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	0
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** or **F** **0** (success) **F** (fail)
Learn EDID Port EDID	**Learn + Output 8 (EDID Port) +Input Number (input 1~8) + Take**	
Ex: Learn EDID Port Input 3	1.Press "LEARN" button	E L
	2.Press output number key "8" to select EDID Port	8 L
	3. Press input number key "3" to select Input 3	8 3
	4.Press "TAKE" button	**0** or **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
	3.Press "TAKE" button	0

Method C: Software Control through RS-232 port

1. System Requirement

(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
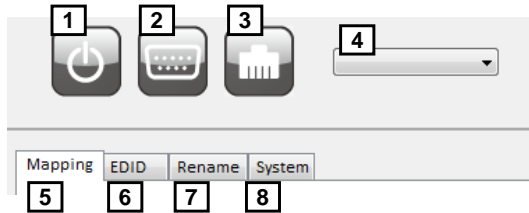
| 1	Power ON/ Standby mode	5	I/O Routing Tab
2	Control SW via RS-232	6	EDID Tab
3	Control SW via Network	7	Rename I/O Tab
4	COM Port Selection	8	System Tab

1. I/O Routing Tab
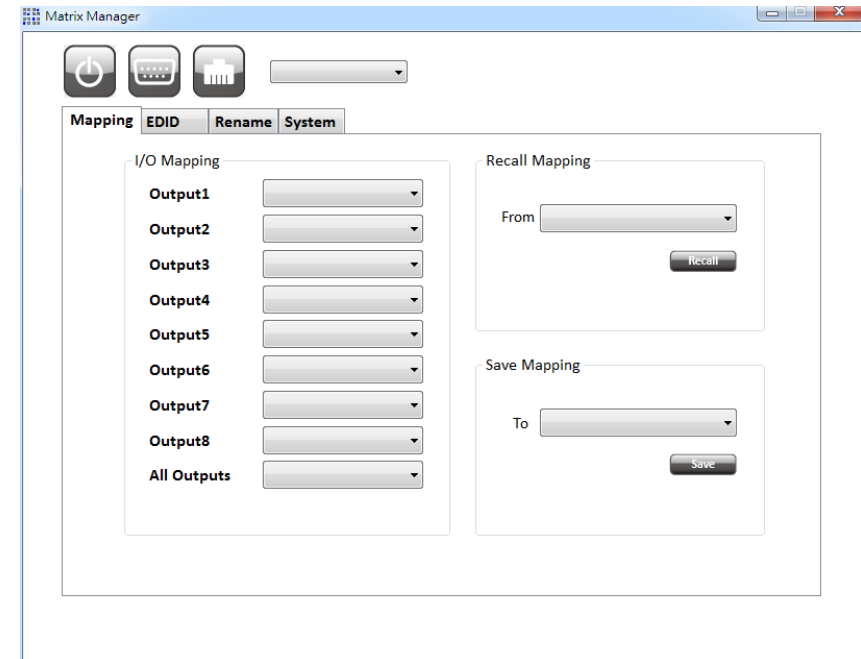
➢ I/O Mapping
- Switch the input for each output

➢ 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

2. EDID Tab

➢ 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 HDBT output EDID
    *Loopout does not support learning EDID function

➢ 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, HDBT output or EDID file
  • Click "View" button to read and analyze the EDID information

3. Rename I/O Tab
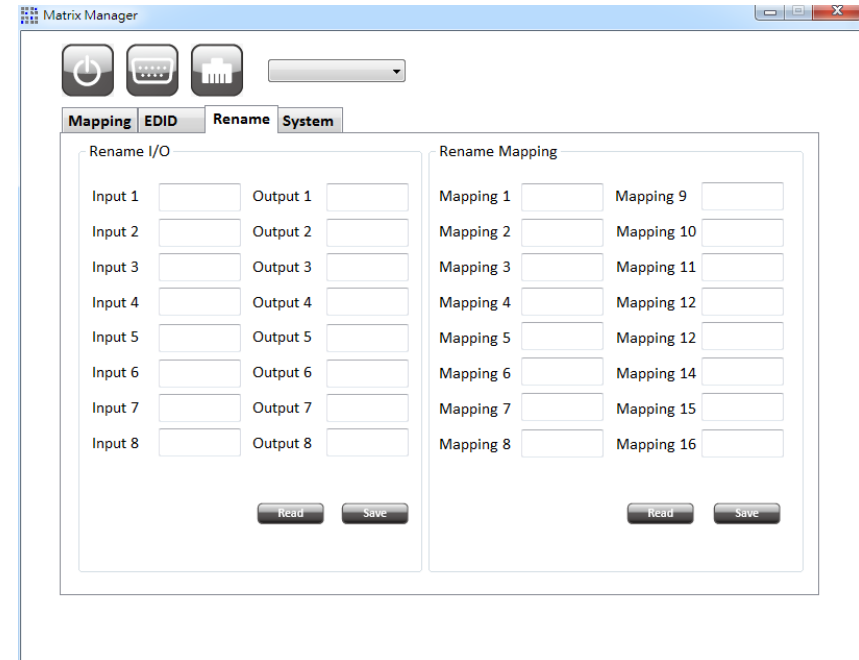
➢ Rename I/O
  • Rename the Inputs
  • Rename the Outputs

➢ Rename Mapping
  • Rename the Mappings

4. System Tab

➢ Network – DHCP Mode
  • Click DHCP and then click the "Read" button to automatically get the IP address Info

➢ Network – Static Mode
  • Click Static and then key in the "IP", "MASK", "GATEWAY" information. After setting IP address, please click "Save" to save IP address Info

➢ "Read" button *The default IP address is 192.168.1.100
  • Read the IP address from the device

➢ "Save" button
  • Save the key- in IP address

➢ Cloud setting – Association Code
  • To get an "association code". The device can use this code to pair with cloud server

➢ Cloud – Reset Cloud
  • To reset cloud after a successful pairing

➢ MAC
  • Read the device's MAC address information

➢ System – Factory Reset
  • To do factory default reset

➢ System – Firmware Version
 • To get the F/W version information

➢ Firmware Update
  Before you start to update, please make sure you have secured the connection between your computer COM port and the device.
  *When using Ethernet port to do software control, it cannot use firmware update function
  • Main Board
    ✧ Click the "Main Board" icon to open the Firmware Update Tool window
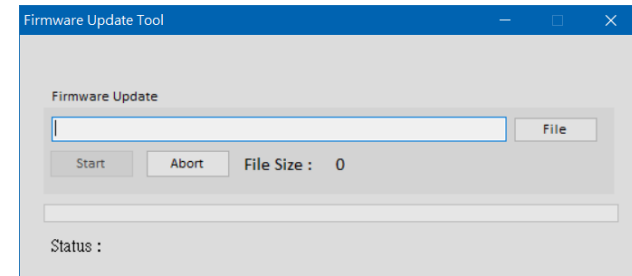
    ✧ Click the [File] button to select the file which you want to write into device
    ✧ Click the [Start] button and the firmware will start to update

  • Front Panel
    ✧ Click the "Front Panel" icon to do front panel firmware update, the firmware update window of front panel shows up as below
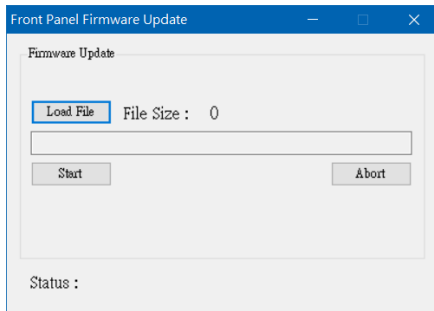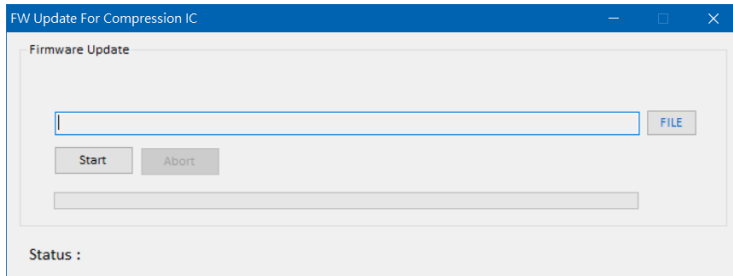
- ✧ Click the [Load File] button to select the file which you want to write into device
- ✧ Click the [Start] button and the firmware will start to update
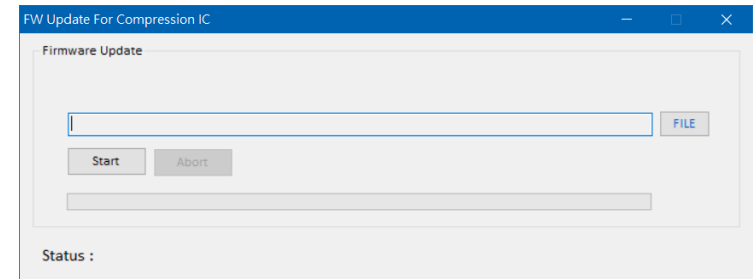- ✧ After updating, please power cycle the device

- Input
  - ✧ Before you start to do input firmware update, please ensure you have connected the software through RS-232 port
  - ✧ Click the "Input" icon to open the FW Update for Compression IC window

- ✧ Click the [File] button to select the firmware file which you want to write into device
- ✧ Click the [Start] button and the firmware will start to update
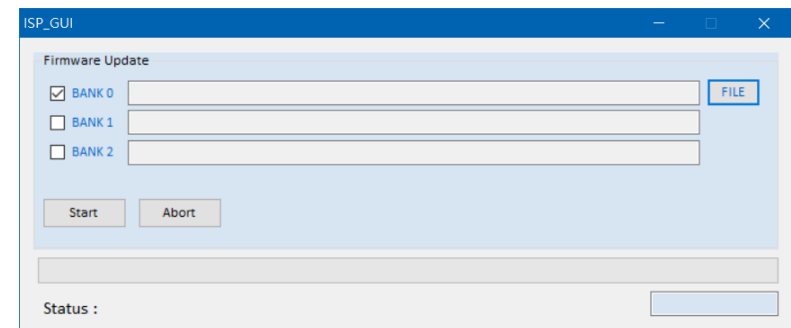- ✧ After updating, please power cycle the device

- Output
  - ✧ Before you start to do output firmware update, please ensure you have connected the software through RS-232 port
  - ✧ Click the "Output" icon to open the FW Update for Compression IC window

- ✧ Click the [File] button to select the firmware file which you want to write into device
- ✧ Click the [Start] button and the firmware will start to update
- ✧ After updating, please power cycle the device

- LoopOut
  - ✧ Before you start to do output firmware update, please ensure you have connected the software through RS-232 port
  - ✧ Click the "LoopOut" icon to open the firmware update window and the window of loopout shows up as below

- ✧ Click the [File] button to load the firmware file
- ✧ Click the [Start] button to do firmware update
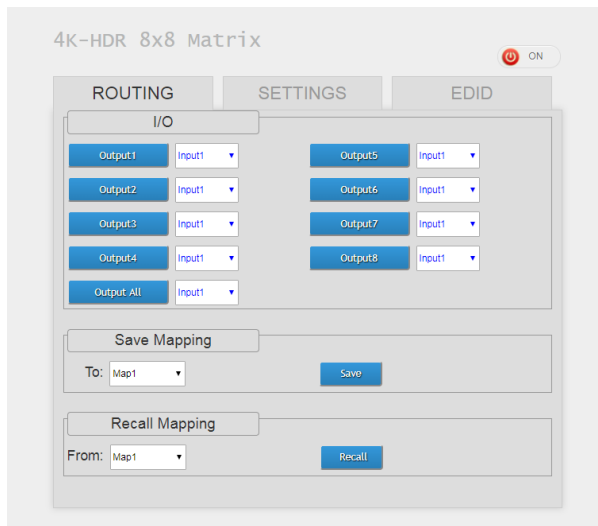- ✧ After updating, please power cycle the device

Method D: Web Interface Control
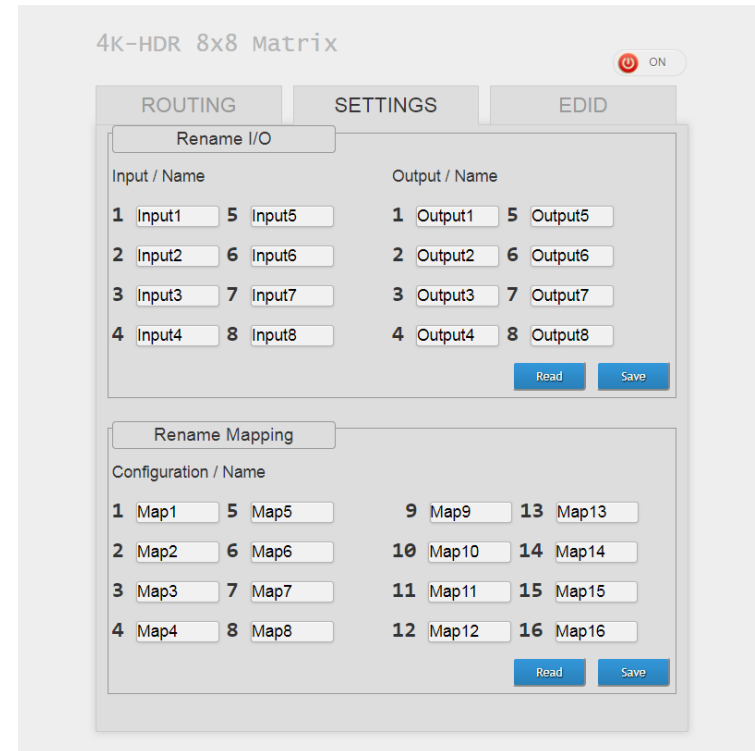
The default IP address: 192.168.1.70

| 1	I/O Routing Tab	3	EDID Tab
2	Rename I/O, Mapping Tab	4	Power ON/Standby mode

1. I/O Routing Tab

➢ I/O:

Switch the input for each output

➢ Save Mapping
- Select Mapping 1~16
- Click "Save" button to save current mapping

➢ Recall Mapping
- Select the stored Mapping 1~16
- Click "Recall" button to recall previous saved mapping

2. Rename I/O, Mapping Tab

➢ Rename I/O:
- Rename the Inputs
- Rename the Outputs

➢ Rename Mapping:
- Rename the Mappings

3. EDID Tab
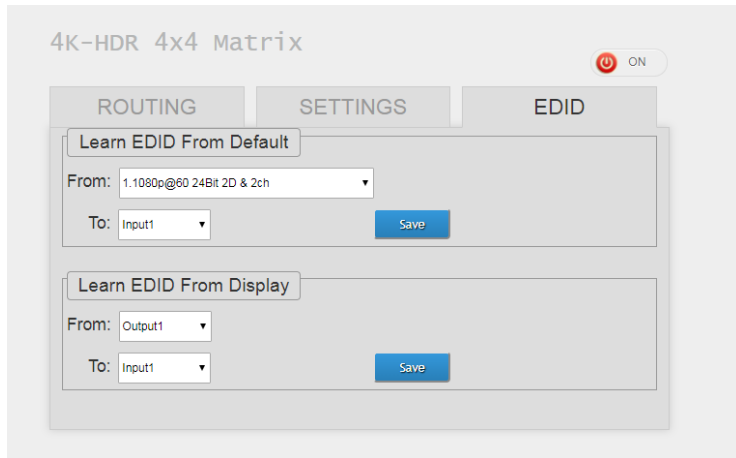
➤ Learn EDID from Default
  • Select Default EDID (1-17 default EDID)
  • Select input
  • Click "Send" button to learn default EDID

➤ Learn EDID from Display
  • Select output
  • Select input
  • Click "Send" button to learn display EDID

4. Power ON / Standby mode

Method E: Cloud Control (Eagleyes) through Ethernet port

Create Account
The first time to use 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. Firstly, please make sure the device is connected to the Ethernet. Then please executing the software with device to get the association code (Note: the status of software is connected).
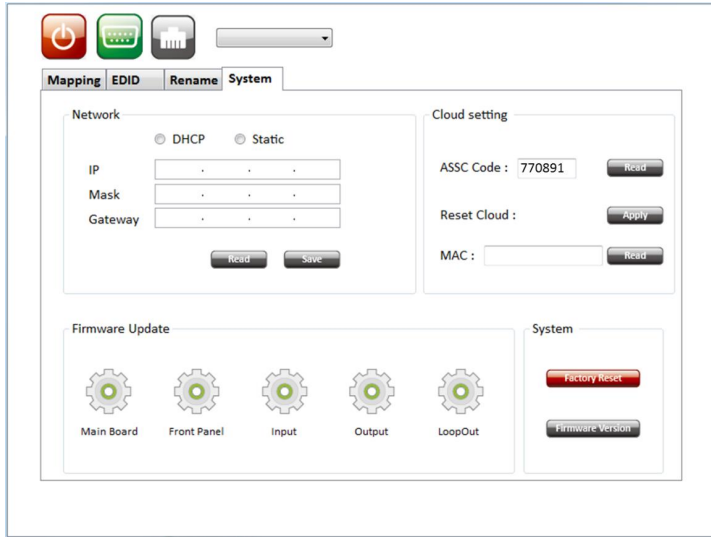

2. Access Eagleyes (http://www.eagleyes.io) or download Eagleyes APP and then log in your account on the right top corner. Click **Add device** to add the device which you just got its association code.
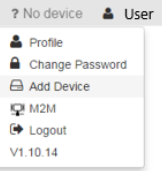
3. Enter the Installer Email for online support in the future, and the Association Code for pairing with your device.
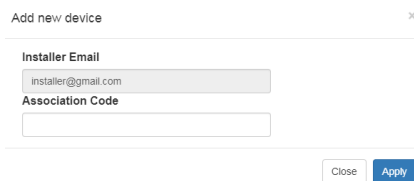
4. After adding the device, the list of device related to your account will show on the right top corner. You can click the button to switch device for control.
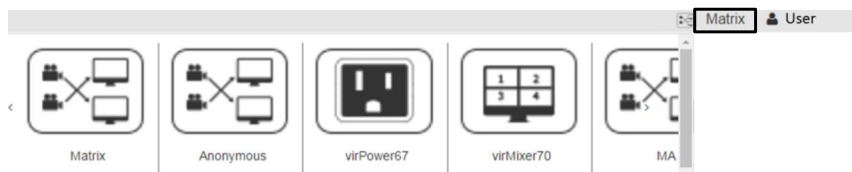
EDID LEARNING

The EDID learning function is to resolve audio and video playing issues at HDMI output port. 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 of playing the HDMI signals normally.

There are **THREE methods** to do EDID Learning as below,

1. IR Remote Control: Please refer to the **Operation Approach\ Method B: IR Remote Control**
2. Software Control: Please refer to the **Operation Approach\ Method C: Software Control through RS-232 port / Ethernet port**
3. Web Interface Control: Please refer to the **Operation Approach\ Method D: Web Interface Control**

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 <u>Can I use any kind of LAN cable?</u>

A Please check the NOTICE section for more information about how to pick up a suitable cable.

Q <u>Can every TV work with the HDMI matrix?</u>

A Basically, the answer is YES. But if your TV can not support 1080p, please refer the EDID LEARNING section to learn EDID from your TV.

Q <u>What is EDID? Why do I need to learn EDID?</u>

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 <u>What should I do to learn EDID for the matrix?</u>

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 <u>My TV can support 1080p, but why there is no audio?</u>

A Thefactory 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 <u>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?</u>

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 <u>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?</u>

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.

WARRANTY

The SELLER warrants the **MA-5588V 4K-HDR 8x8 HDBaseT Lite matrix with PoC** free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surge. This warranty is offered by the SELLER for its BUYER with direct transaction only. This warranty is void if the warranty seal on the metal housing is broken.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables and power adapters are limited to a 30 day warranty and must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the MA-5588V features and specifications is subject to change without further notice.**