

# MA-5544H

4X4 HDMI 2.0a Matrix

## User Manual



rev: 161116  
Made in Taiwan



## Safety and Notice

The **MA-5544H 4x4 HDMI 2.0a matrix** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the **MA-5544H** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.



### TABLE OF CONTENTS

INTRODUCTION.....	1
FEATURES.....	1
PACKAGE CONTENTS .....	1
SPECIFICATIONS .....	2
PANEL DESCRIPTIONS.....	3
HARDWARE INSTALLATION.....	4
CONNECTION DIAGRAM .....	4
OPERATION APPROACH .....	5
EDID LEARNING .....	7
FAQ .....	17
WARRANTY .....	18

# INTRODUCTION

The **MA-5544H 4x4 HDMI 2.0a matrix** 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 four HDMI sources to the remote displays at the same time. **MA-5544H** supports HDR and the true 4K2K video!

With the upmost HDR/4K2K@60 4:4:4 8bits and high definition audio support, MA-5544H is well suited for use in home theater, conference room presentation systems, or other similar setting or application

## FEATURES

- HDMI 2.0a compliant
- Supports 4K2K@60 4:4:4 8bits
- Supports HDR\*, which is 4K2K@60 4:2:0 10bits\*\*
- 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
- 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 IR remote control, RS-232, IP control and cloud control
- Easy installation with rack-mounting
- Fast response time – 5~7 seconds for channel switch



\* HDR = High Dynamic Range.

\*\* The video bandwidth of 4K2K@60 4:2:0 10bits (HDR) is about the 4K2K@60 4:4:4 8bits

## PACKAGE CONTENTS

- 1x MA-5544H
- 1x IR Receiver
- 1x DC 5V 6A
- 1x IR Remote control\*
- 1x Rack-mounting ear set
- 1x Installation software CD
- 1x User Manual



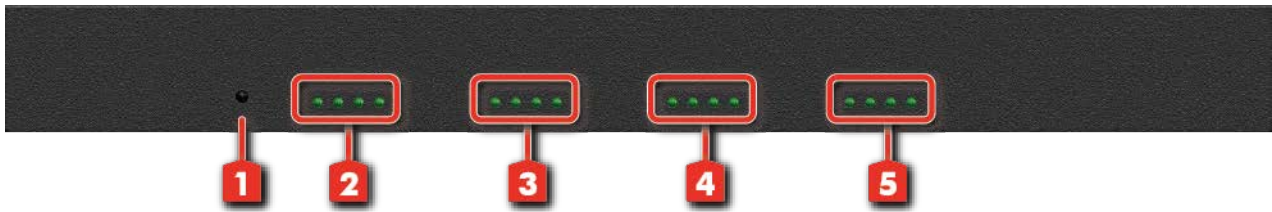
\* Additional IR remote controllers and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

# SPECIFICATIONS

Model Name	MA-5544H	
<b>Technical</b>		
Role of usage	True 4x4 matrix	
HDMI compliance	HDMI 2.0a	
HDCP compliance	HDCP1.4/HDCP 2.2	
Video bandwidth	Single-link 594MHz [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	
ESD protection	[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up	4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input	4x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver	
Output	4x HDMI	
HDMI Input selection	IR remote control / RS-232 control / Ethernet control	
IR remote control	Electro-optical characteristics: $\pi = 25^\circ$ / 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	<b>[System IR]</b> Receives IR commands from remote control	
<b>Mechanical</b>		
<b>MA-5544H</b>		
Enclosure	Metal case	
Dimensions (L x W x H)	Model	440 x 154 x 44mm [1'4" x 6" x 1.7"]
	Package	524 x 265 x 76 mm [1'7" x 10.4" x 3"]
	Carton	542 x 411 x 300 mm [1'8" x 1'3" x 11.8"]
Weight	Model	1742g [61.4oz]
	Package	2785g [6.2 lbs]
Fixedness	1RU rack-mount with ears Wall hanging holes	
Power supply	5V 6A DC	
Power consumption	20 Watts [max]	
Operation temperature	0~40°C [32~104°F]	
Storage temperature	-20~60°C [-4~140°F]	
Relative humidity	20~90% RH [no condensation]	

# PANEL DESCRIPTIONS

## Front Panel



1. **IR SENSOR:** IR sensor for receiving the IR commands from IR remote
2. **Output1 Selected Source Status LED:** the indicator LED shows selected source
3. **Output2 Selected Source Status LED:** the indicator LED shows selected source
4. **Output3 Selected Source Status LED:** the indicator LED shows selected source
5. **Output4 Selected Source Status LED:** the indicator LED shows selected source

## Rear Panel



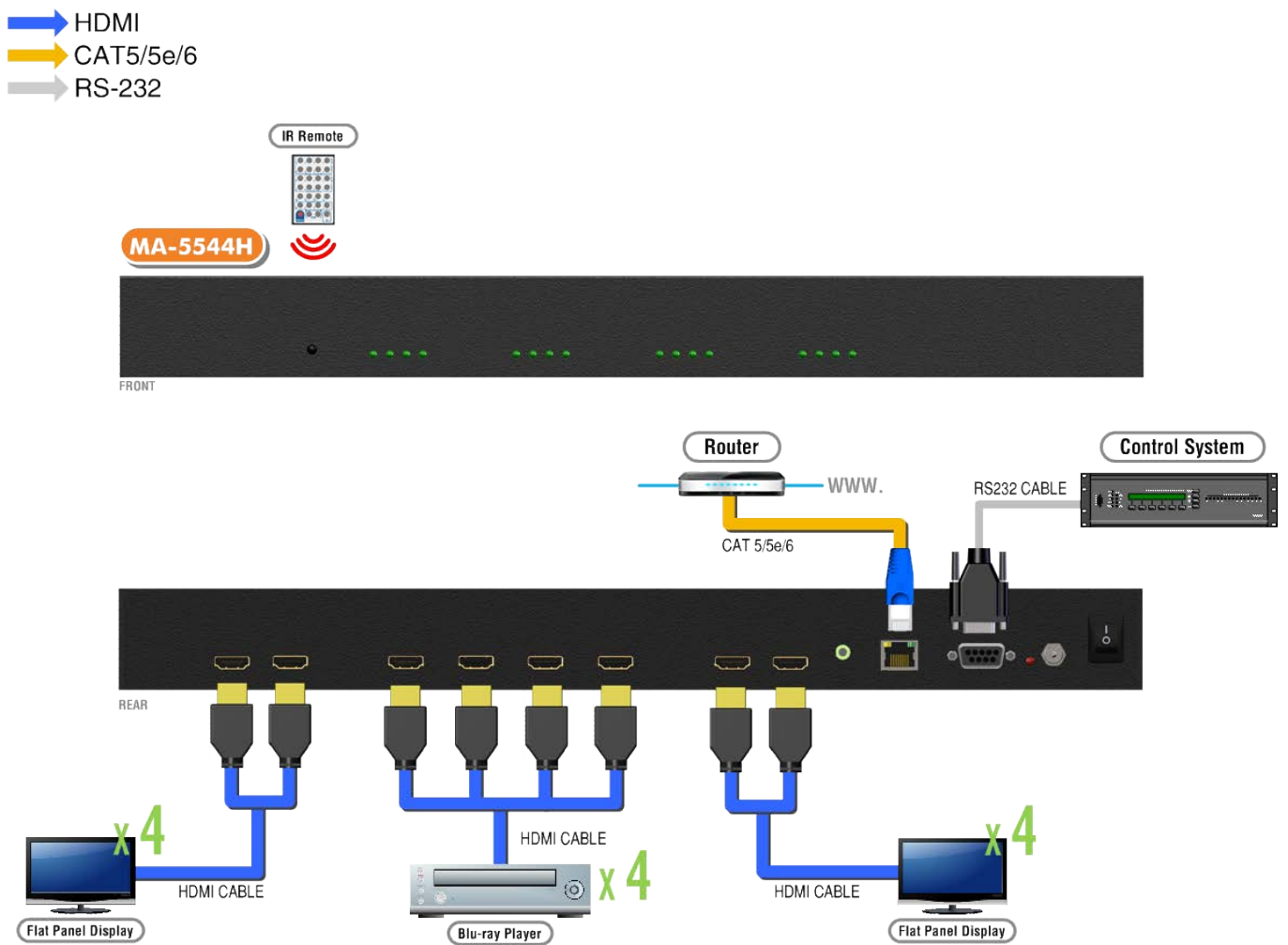
6. **INPUT 1-4:** HDMI inputs
7. **OUTPUT 1-4:** HDMI outputs
8. **System IR Receiver:** Ext. IR receiver
9. **Ethernet:** Ethernet control port
10. **RS-232:** RS-232 control port
11. **Power LED:** Power indicator LED
12. **+5V DC:** 5V DC power jack
13. **Power Switch**

# HARDWARE INSTALLATION

## MA-5544H as master

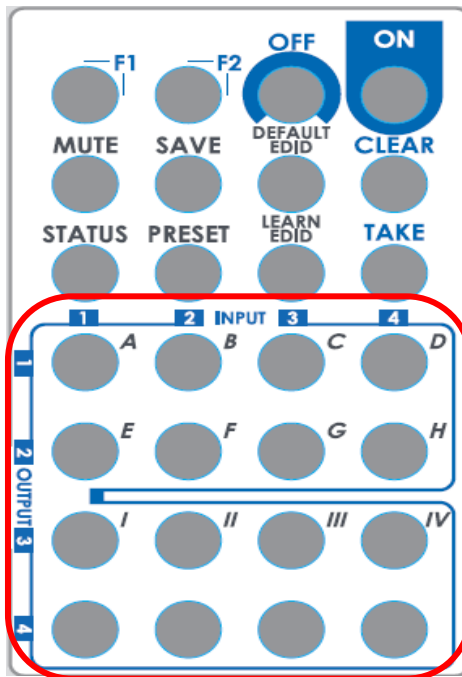
1. Connect all sources to HDMI Inputs on the 4x4 HDMI Matrix MA-5544H.
2. Connect all display to HDMI Outputs on the 4x4 HDMI Matrix MA-5544H
4. Connect the +5V 6A DC power supply to the 4x4 HDMI Matrix MA-5544H.

## CONNECTION DIAGRAM



# OPERATION APPROACH

## Method A: IR Remote Control

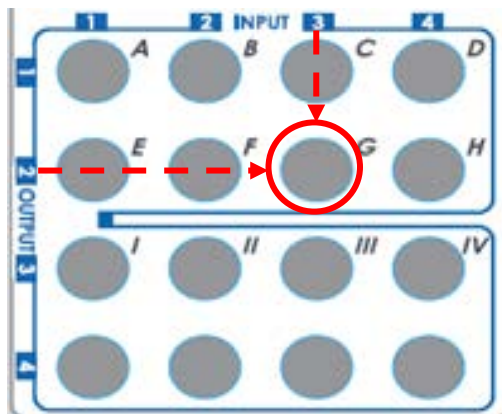


### 1. IN/OUT Switch

Push the button on the checkerboard to select Input & Output port.

Ex: Select Input 3 to Output 2

Push the red circle button as below to select Input 3 to Output 2



### 2. Function Key

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

Operation	Procedure
<b>Output Status</b>  Ex: Output 2 (Input 2)	<b>Status + A~B(Output 1~2) + Take</b> 1.Press "STATUS" button 2.Press number key "B" to select Output 2 3.Press "TAKE" button
<b>Save Current Mapping</b>  Ex: Save current mapping to 5	<b>Save + A~H(1-8 storage site) + Take</b> 1.Press "SAVE" button 2.Press number key "E" to select the storage site 5 3.Press "TAKE" button
<b>Preset Mapping</b>  Ex: Preset saved mapping from 5	<b>Preset + A~H(1-8 storage site) + Take</b> 1.Press "PRESET" button 2.Press number key "E" to select the storage site 5 3.Press "TAKE" button
<b>Learn default EDID</b>  Ex: Default EDID 2 Input 3	<b>Default EDID + A~H(1-8 default EDID) + I ~ IV(input 1~4) + Take</b> 1.Press "DEFAULT EDID" button 2.Press number key "B" to select default EDID 2 3.Press number key "      III" to select Input 3 4.Press "TAKE" button
<b>Learn Output EDID</b>  Ex: Learn Output 2 Input 3	<b>Learn + A~B(Output 1~2) + I ~IV(input 1~4) + Take</b> 1.Press "LEARN" button 2.Press number key "B" to select Output 2 3. Press number key "      III" to select Input 3 4.Press "TAKE" button
<b>Mute Output</b>  Ex: Mute Output 2	<b>Mute + A~B(Output 1~2) + Take</b> 1. Press "MUTE" button 2. Press number key "B" to select Output 2 3.Press "TAKE" button

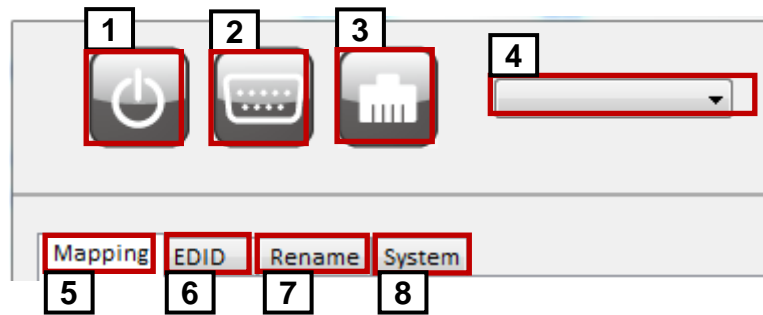


## Method B: Software Control through RS-232 port / Ethernet port

### 1. System Requirement

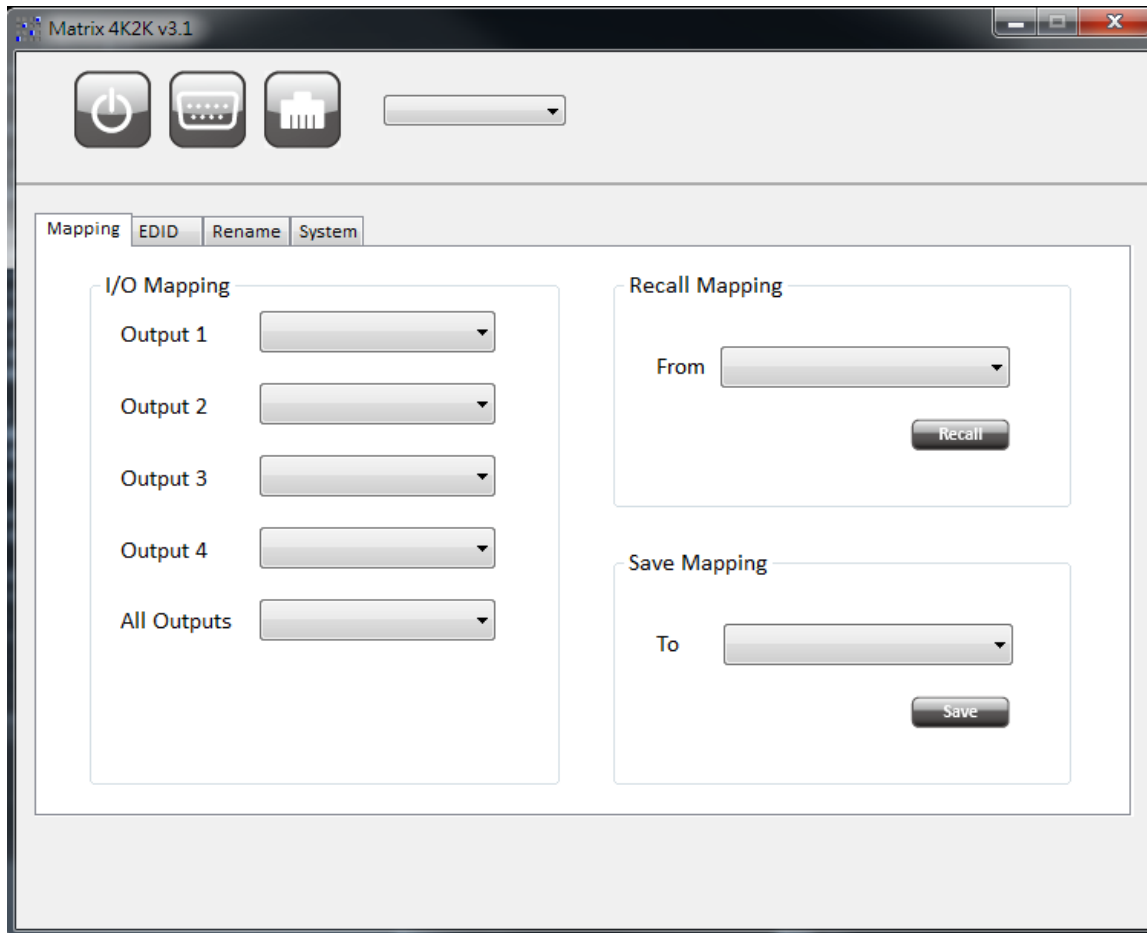
- 1) OS Information: MS WinXP/7/8/10
- 2) Baud rates: 9600
- 3) Software size: 3 MB
- 4) Minimum RAM requirement: 256 MB

### 2. Control interface



1	Power ON/ Standby mode	5	I/O Mapping Tab
2	Control SW via RS-232	6	EDID Tab
3	Control SW via Network	7	Rename Tab
4	COM port selection	8	System Tab

## 1. I/O Routing Button



1) I/O:

a) Switch the input for each output

2) Recall Mapping:

a) Select the stored Mapping(1-8)

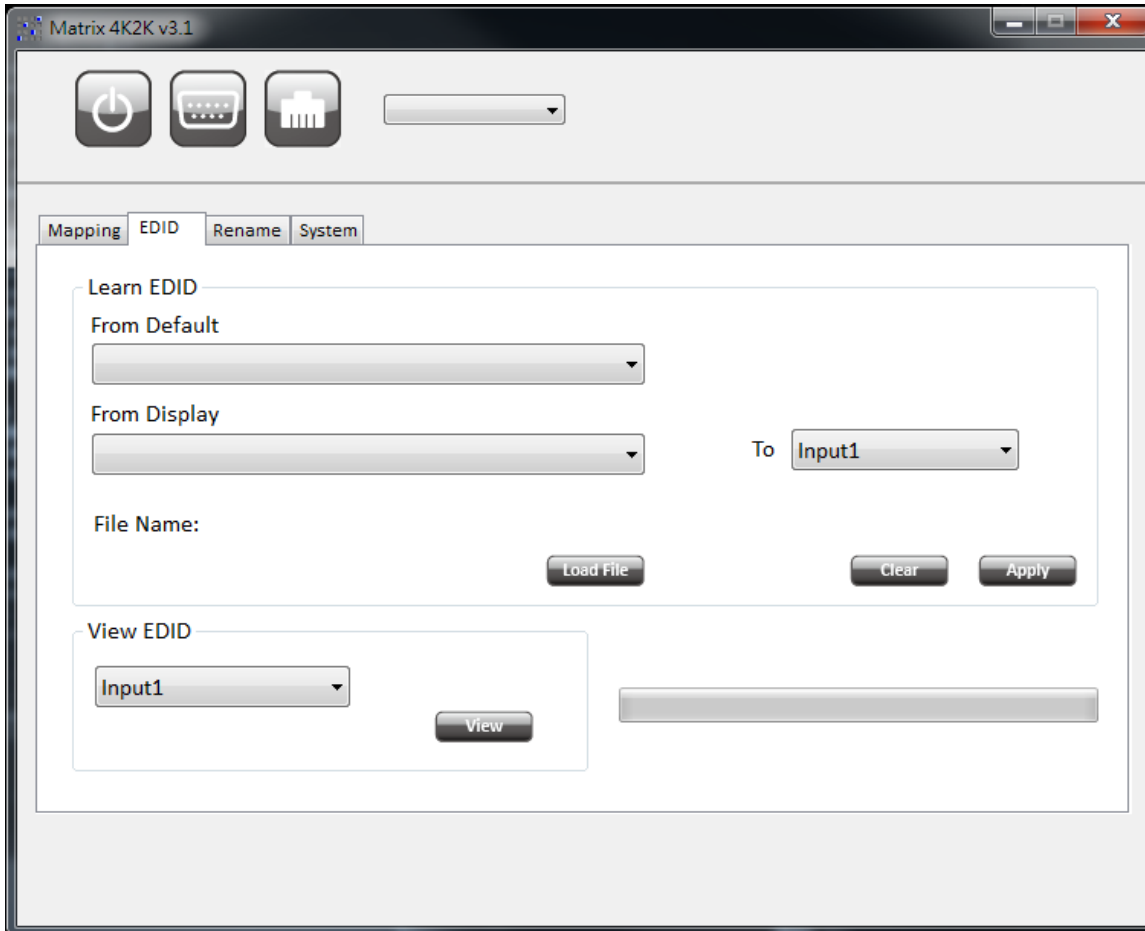
b) Click "Recall" button to recall previous mapping which are saved

3) Save Mapping:

a) Select Mapping(1-8)

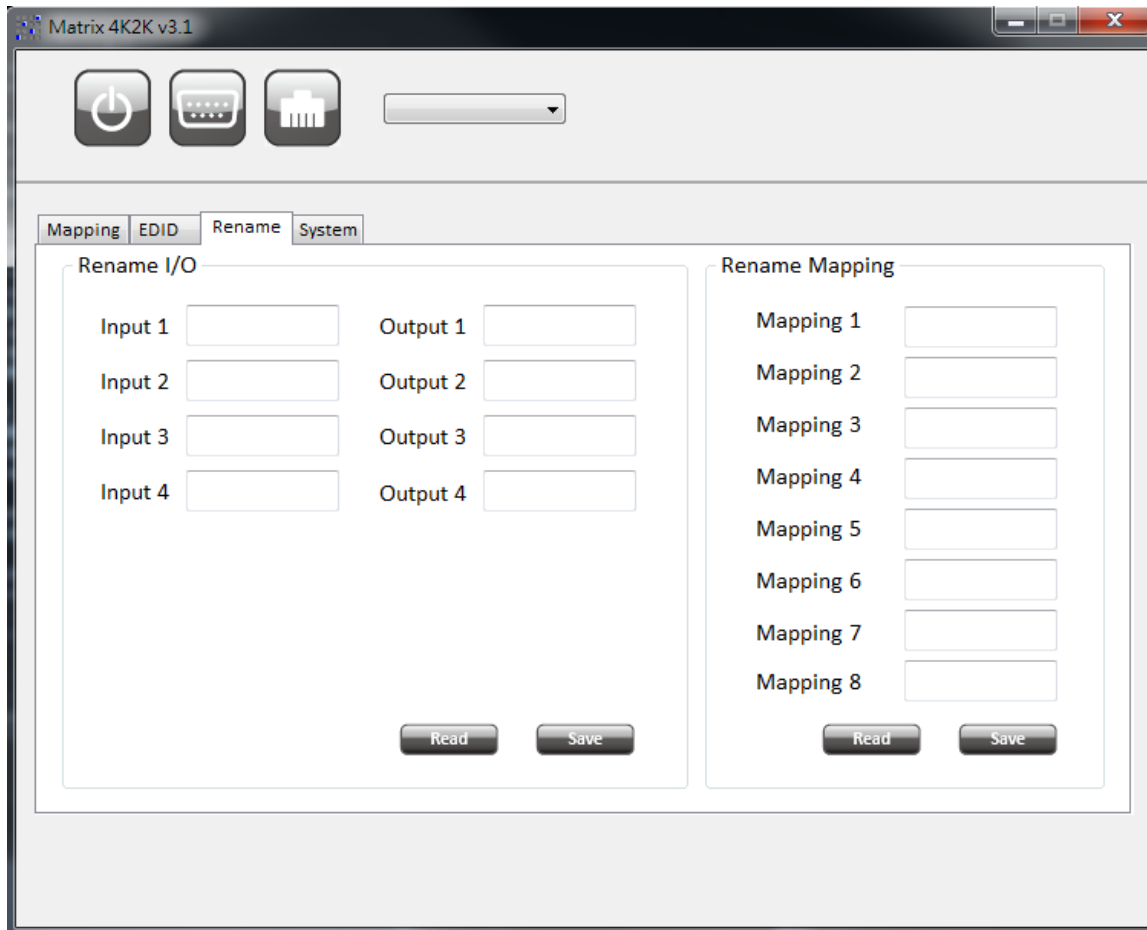
b) Click "Save" button to save current mapping

## 2. EDID Button



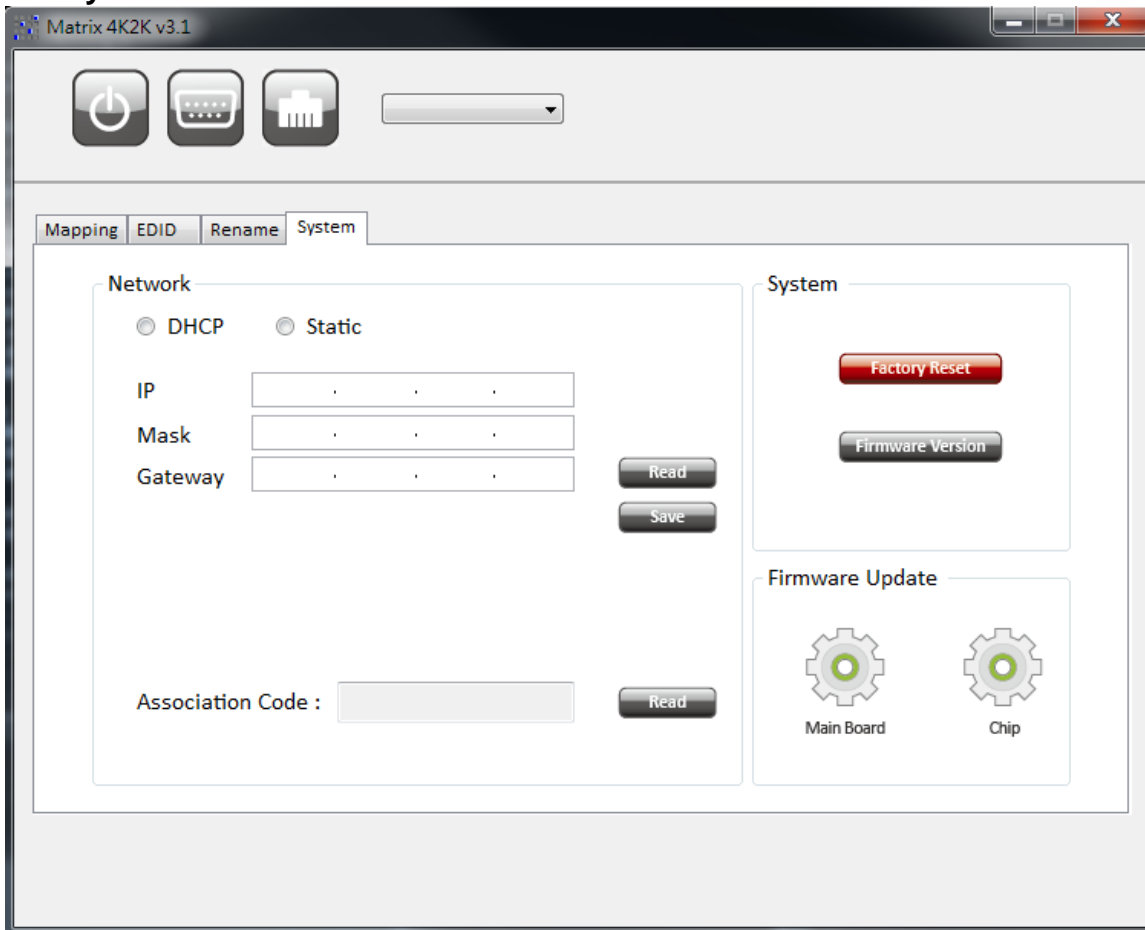
- 1) Learn EDID from Default to Input
  - a) Select Default EDID(1-8 Default EDID)
  - b) Select designated Input
  - c) Click "Apply" button to learn from default EDID
- 2) Learn EDID from Display to Input
  - a) Select output
  - b) Select designated Input
  - c) Click "Apply" button to learn from display EDID
- 3) Load EDID File to Input
  - a) Click "Load File" button to select the EDID file
  - b) Select designated Input
  - c) Click "Apply" button to load EDID File
- 4) View EDID
  - a) Select Input or HDMI output
  - b) Click "View" button to read and analyze the EDID

### 3. Rename I/O Button



- 1) Rename I/O:
  - a) Rename the Inputs
  - b) Rename the Outputs
- 2) Rename Mapping:
  - a) Rename the Mappings

## 4. System Button



### 1) Network

#### a) DHCP mode

=> Click DHCP and then click the "Read" button to get the IP address Info

#### b) Static mode

=> Click Static and then key in the "IP", "MASK", "GATEWAY" info. After setting IP Address, please click "Save" to save IP address Info

#### c) "Save" button

=> Save the key- in IP address

#### d) "Read" button:

=> Read the IP address from the device

Note: The default IP address is 192.168.1.111

#### e) Associate Code

=> To get an "association code". The device can use this code to pair with cloud server.

### 2) System

#### a) Factory Reset


#### b) Firmware Version

=> To get the F/W version information

### 3) Firmware Update

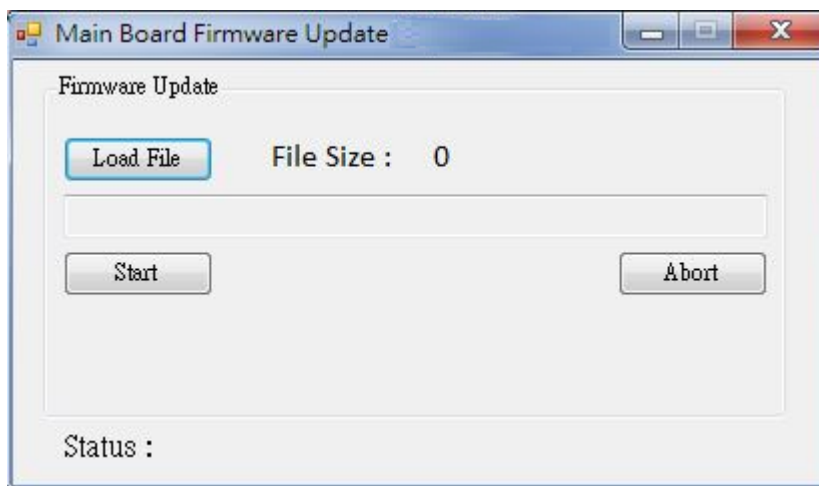
**\*The order of firmware update is main board first and chip afterwards.**

#### a) Main Board

- Before you start to update, please make sure you have secured the connection between your computer COM port and the device.
- Main board update procedure is in offline mode, please does not click  button to connect software.



- Click **Main Board** button to do firmware update. The firmware update window of main board 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 main board firmware will start to update.
- The process of main board firmware update will take about 3 minutes.

#### b) Chip

- Before chip firmware update process, please ensure your RS-232 cable is connecting and the status is "CONNECTED".





- Click **Chip** button to do firmware update. The firmware update window shows up as below.



- Click the **FILE** button to select the file which you want to write into device. Click the **Start** button and the chip firmware will start to update.
- Because of the chip update one after the other, the running time will take about 15 minutes, please wait patiently.

## Method C: 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.

Create new account

Please enter your email as account

example@gmail...

Please enter your password

1234XXX

Please enter your password again

please enter your password again

Cancel Apply

### 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).

Matrix 4K2K v3.1

Mapping EDID Rename System

Network

DHCP  Static

IP: . . .

Mask: . . .

Gateway: . . .

Read Save

Association Code: Read

System

Factory Reset

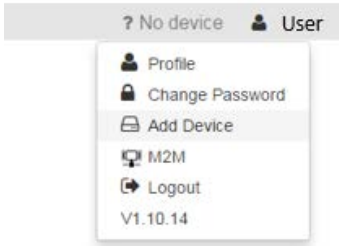
Firmware Version

Firmware Update

Main Board Chip



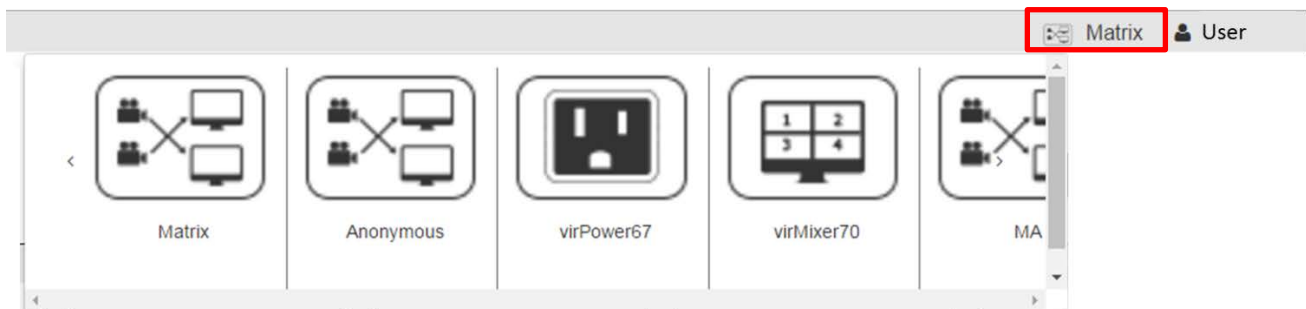
2. Access Eagleyes (<http://www.eagleyes.io>), and then log in your account on the right top corner. Click **Add device** to add the device which you just got its association code.



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

A screenshot of a form titled 'Add new device'. It has two input fields: 'Installer Email' and 'Association Code'. At the bottom right, there are two buttons: 'Close' and 'Apply'.

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.



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 A: IR Remote Control (Page 5. 6.)**
2. Software Control: Please refer to the **Operation Approach\ Method B: Software Control through RS-232 port (Page 8. 9.)**

There are **eight embedded default EDID** as below,

1. Ultra-HD(4K2K@60) – 8/10/12bit 3D HDR video & 7.1ch audio
2. Ultra-HD(4K2K@60) – 8/10/12bit 3D HDR video & 2ch audio
3. Ultra-HD(4K2K@30)(4K2K@60 420) - 8bit 3D HDR video & 7.1ch audio
4. Ultra-HD(4K2K@30)(4K2K@60 420) - 8bit 3D HDR video & 2ch audio
5. Full-HD(1080p@60) - 12bit 3D video & 7.1ch audio
6. Full-HD(1080p@60) - 8bit 2D video & 2ch audio
7. Full-HD(1080p@60) - 8bit 2D video & 7.1ch audio
8. HD(1080p@30)(1080i@60)(720p@60) - 8bit 2D video & 2ch audio

## Q Can every TV work with the HDMI matrix?

**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 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 output-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.

# WARRANTY

The SELLER warrants the **MA-5544H 4x4 HDMI 2.0a matrix** 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-5544H features and specifications is subject to change without further notice.**