

MA-5544H2

4X4 HDMI 2.0a Matrix

User Manual



x.v.Color



rev: 170809
Made in Taiwan



Safety and Notice

The **MA-5544H2 4x4HDMI 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-5544H2** 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.



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INTRODUCTION

The **MA-5544H2 4x4HDMI 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-5544H2** supports HDR and the true 4K2K video!

With the upmost HDR/4K2K@60 4:4:4 8bits and high definition audio support, MA-5544H2 is well suited for use in home theater, conference room presentation systems, or other similar setting or application.

FEATURES

- HDMI2.0a 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 display 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 and cloud control.
- Easy installation with rack-mounting
- Fast response time – 2~3 seconds for channel switch



* HDR = High Dynamic Range.

PACKAGE CONTENTS

- | | |
|-------------------------|-------------------------------|
| • 1x MA-5544H2 | • 1x Rack-mounting ear set |
| • 1x IR Receiver | • 1x Installation software CD |
| • 1x DC 12V 5A | • 1x User Manual |
| • 1x IR Remote control* | |



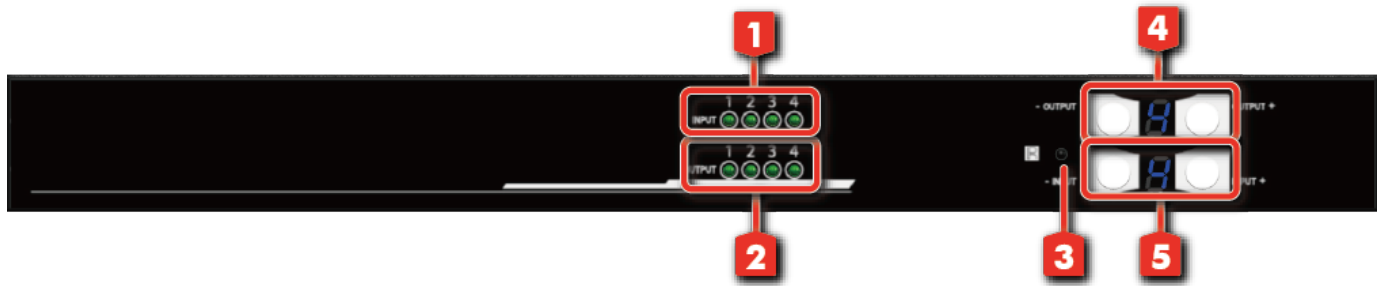
* Additional IR remote controllers and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

SPECIFICATIONS

Model Name		MA-5544H2
Technical		
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		Human body model — $\pm 15\text{kV}$ [air-gap discharge] & $\pm 8\text{kV}$ [contact discharge]
PCB stack-up		6-layer board [impedance control — differential 100 Ω ; single 50 Ω]
Input		4x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver
Output		4x HDMI
HDMI Input selection		Push-in button/IR remote control/RS-232 control / Cloud 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]
USB connector		Mini USB
3.5mm connector		[System IR] Receives IR commands from remote control
Mechanical		MA-5544H2
Enclosure		Metal case
Dimensions (L x W x H)	Model	440 x 176.3 x 42mm [17.3" x 6.9" x 1.7"]
	Package	526 x 318 x 156mm [20.7" x 12.5" x 6.1"]
	Carton	543 x 335 x 344mm [21.4" x 13.2" x 13.5"]
Weight	Model	2362g [83.3 oz]
	Package	2953g [6.5 lbs]
Fixedness		1RU rack-mount with earsWall hanging holes
Power supply		12V 5A DC
Power consumption		25 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]

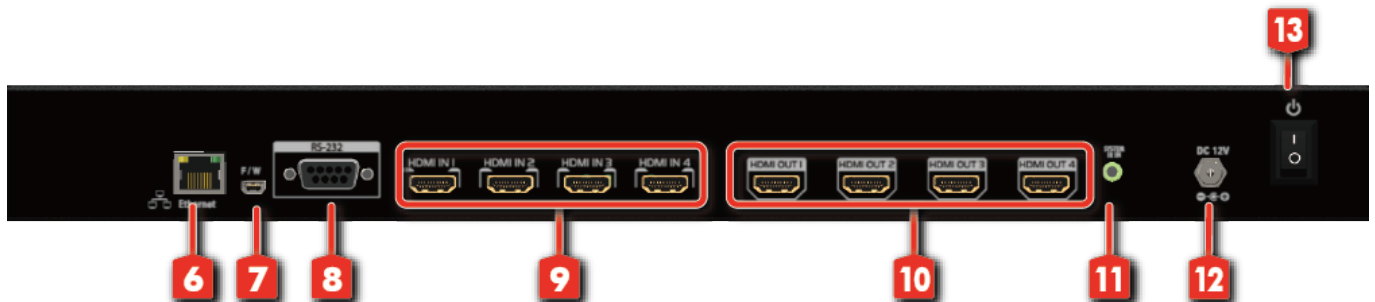
PANEL DESCRIPTIONS

Front Panel



- 1. **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

Rear Panel



- 6. **Ethernet:** Ethernet control port
- 7. **USB:** USB control port (for software control and firmware update)
- 8. **RS-232:** RS-232 control port (for software control and firmware update)
- 9. **INPUT 1-4** HDMI inputs
- 10. **OUTPUT 1-4** HDMI outputs
- 11. **System IR Receiver:** Ext. IR receiver
- 12. **+12V DC:** 12V DC power jack
- 13. **Power Switch**



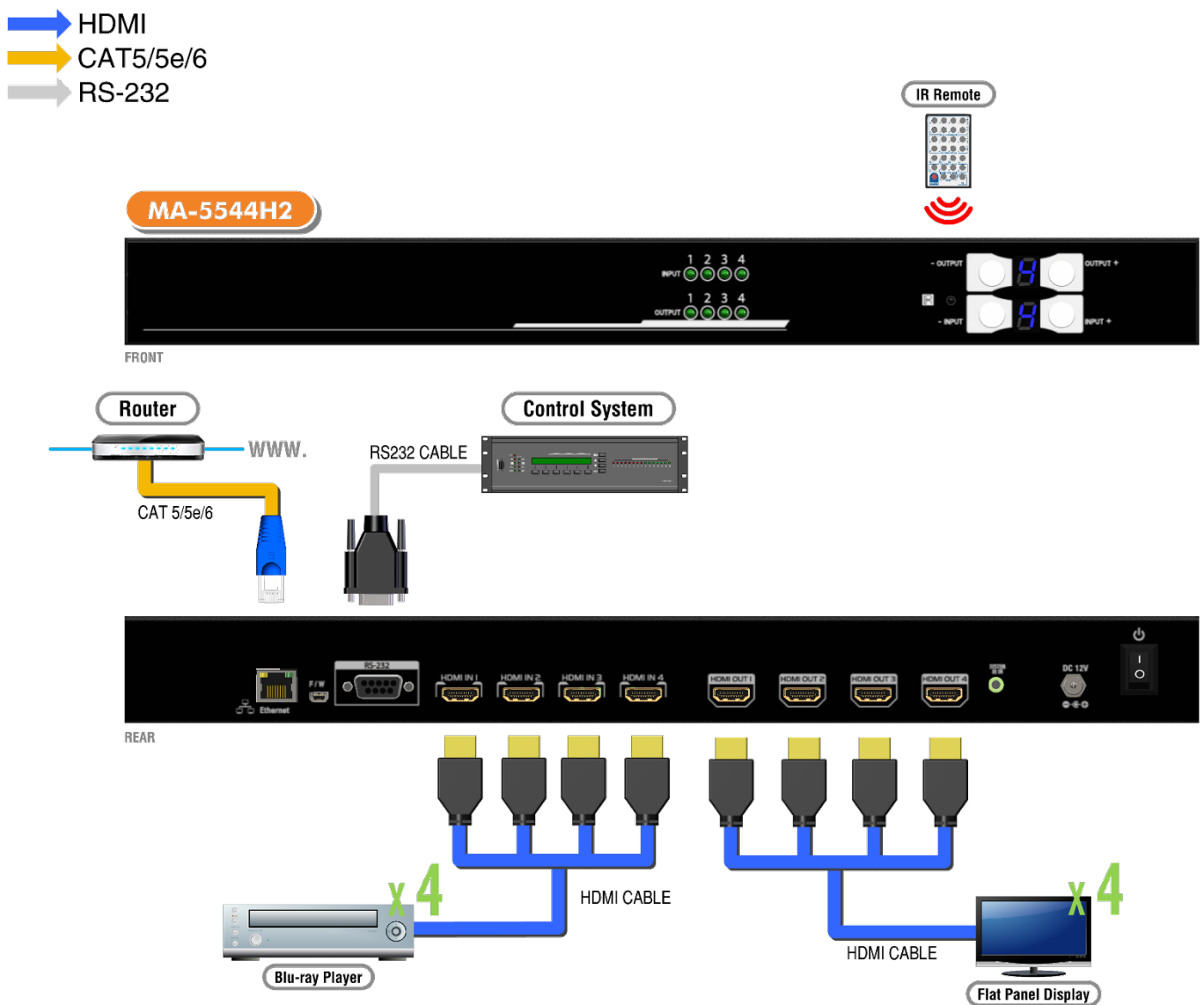
USB and RS-232 port cannot be used at the same time.

HARDWARE INSTALLATION

MA-5544H2 as master

1. Connect all sources to HDMI Inputs on the 4x4 HDMIMatrix MA-5544H2.
2. Connect all displays to HDMI Outputs on the 4x4 HDMI Matrix MA-5544H2.
3. Connect the +12V 5A DC power supply to the 4x4 HDMI Matrix MA-5544H2.
4. Connect the +12V 5A DC power supply to the 4x4 HDMI Matrix MA-5544H2.

CONNECTION DIAGRAM



OPERATION APPROACH

Method A: Push-in Button



IN/OUT MAP

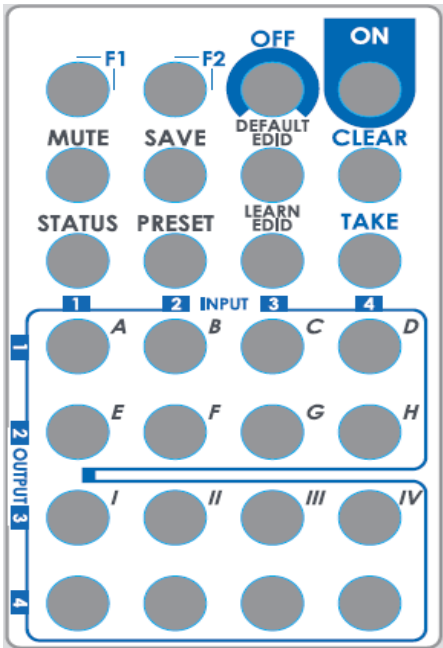
- 1) Use the “+” or “-” output push button to select the number of display
- 2) Use the “+” or “-” input push button to select the number of input source

“+”: 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

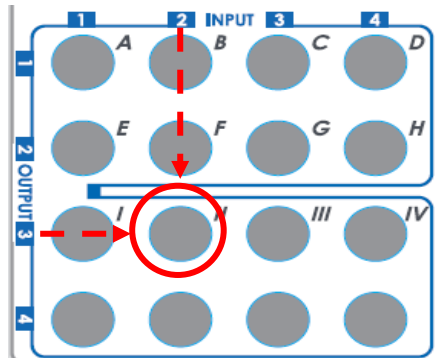
Method B: IR Remote Control



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	Push the button on the checkerboard to select input & output port	
Ex: Input 2 To Output 3	Push the red circle button as below to select input 2 to output 3	3 2



2. Example of function key

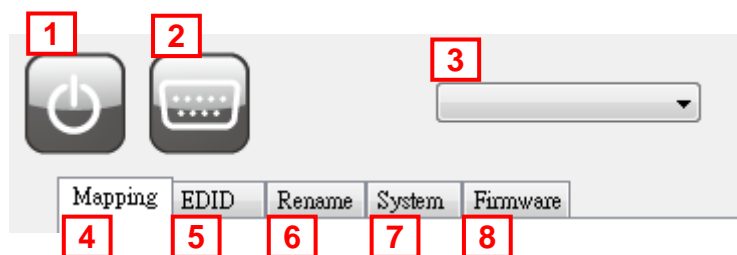
Operation	Procedure	7-Segment LED
Mute Output	Mute + A~D(Output 1~4) + Take	
Ex: Mute Output 3	1. Press "MUTE" button	- 0
	2. Press number key "C" to select Output 3	3 0
	3. Press "TAKE" button	3 0
Output Status	Status + A~D(Output 1~4) + Take	
Ex: Output 4 (Input 2)	1. Press "STATUS" button	- -
	2.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

	2.Press number key “B” to select default EDID 2	2 d
	3.Press number key “III” to select Input 3	2 3
	4.Press “TAKE” button	0 F 0 (success) F(fail)
Learn Output EDID	Learn + A~B(Output 1~2) + I ~IV(input 1~4) + Take	
Ex: Learn Output 4 Input 3	1.Press “LEARN” button	E L
	2.Press number key “D” to select Output 4	4 L
	3. Press number key “III” to select Input 3	4 3
	4.Press “TAKE” button	0 F 0 (success) F(fail)
Mute Output	Mute + A~B(Output 1~2) + Take	
Ex: Mute Output 3	1. Press “MUTE” button	- 0
	2. Press number key “C” to select Output 3	3 0
	3.Press “TAKE” button	3 0

Method C: Software Control through RS-232 port

1. System Requirement

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



1	Power ON/ Standby mode	5	EDID Button
2	Control SW via RS-232	6	Rename I/O Button
3	COM Port Selection	7	Network Setting & Default Reset Button
4	I/O Routing Button	8	Firmware Update Button

1. I/O Routing Button

The screenshot displays a software interface for I/O routing. At the top, there are two icons: a red power button and a green I/O port icon. To their right is a dropdown menu currently set to 'COM4'. Below these are four tabs: 'Mapping' (selected), 'EDID', 'Rename', 'System', and 'Firmware'. The main area is divided into three sections. The 'I/O Mapping' section on the left contains five rows, each with a label ('Output 1' through 'Output 4', and 'All Outputs') and a dropdown menu, all of which are currently set to 'Input3'. The 'Recall Mapping' section on the right features a 'From' dropdown menu and a 'Recall' button. The 'Save Mapping' section at the bottom right includes a 'To' dropdown menu and a 'Save' button.

- I/O:
 - Switch the input for each output
- Recall Mapping:
 - Select the stored Mapping(1-8)
 - Click “Recall” button to recall previous mapping which are saved
- Save Mapping:
 - Select Mapping(1-8)
 - Click “Save” button to save current mapping

2. EDID Button

COM4

Mapping EDID Rename System Firmware

Learn EDID

From Default

16.4K2K@60-3D-PCM2CH(2ch)

From Display

To Input1

File Name:

Load File Apply

View EDID

Input1 View

- 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

3. Rename I/O Button

COM4

Mapping EDID **Rename** System Firmware

Rename I/O

Input 1	<input type="text"/>	Output 1	<input type="text"/>
Input 2	<input type="text"/>	Output 2	<input type="text"/>
Input 3	<input type="text"/>	Output 3	<input type="text"/>
Input 4	<input type="text"/>	Output 4	<input type="text"/>

Read Save

Rename Mapping

Mapping 1	<input type="text"/>
Mapping 2	<input type="text"/>
Mapping 3	<input type="text"/>
Mapping 4	<input type="text"/>
Mapping 5	<input type="text"/>
Mapping 6	<input type="text"/>
Mapping 7	<input type="text"/>
Mapping 8	<input type="text"/>

Read Save

- Rename I/O:
 - Rename the Inputs
 - Rename the Outputs
- Rename Mapping:
 - Rename the Mappings

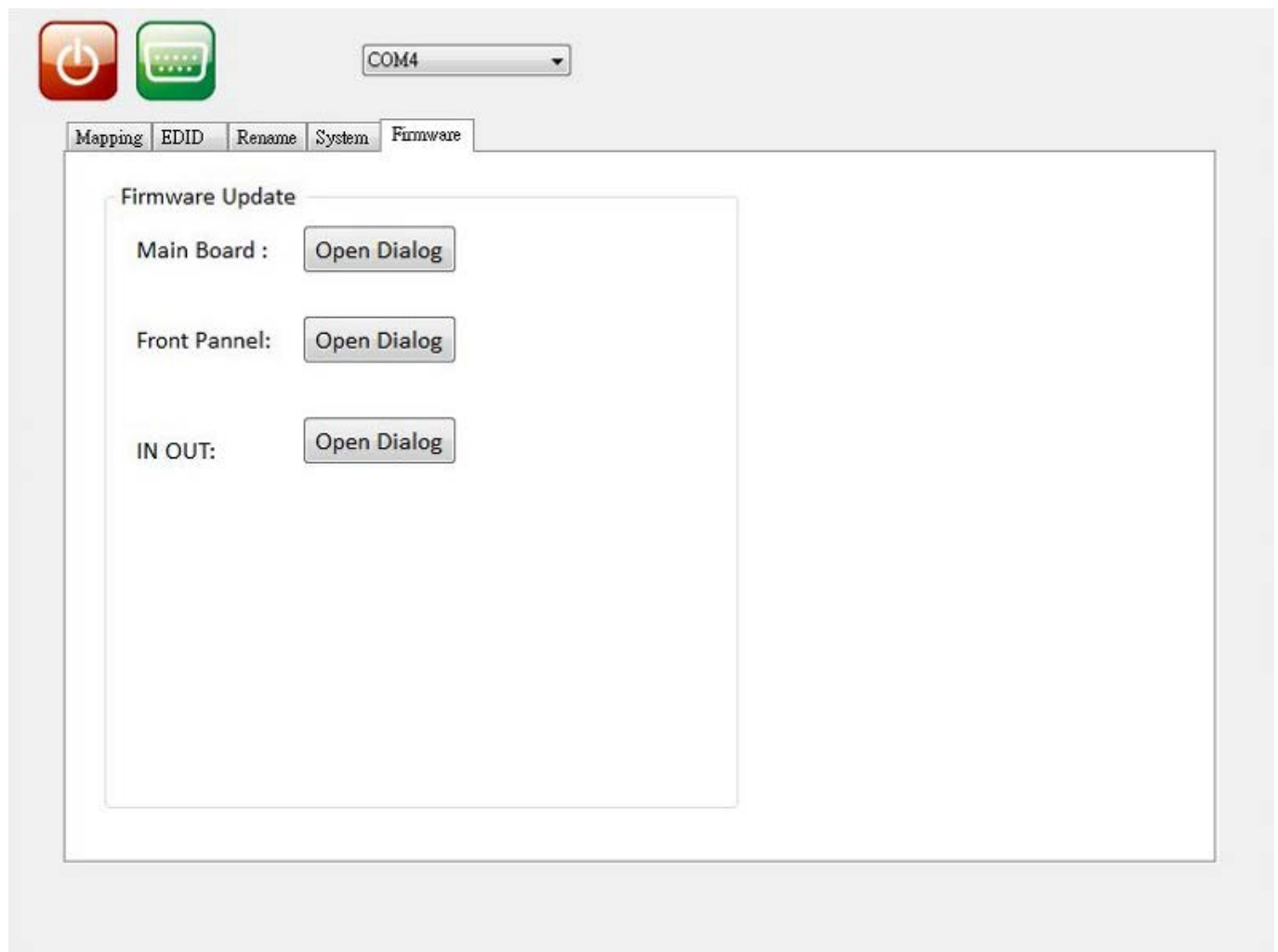
4. System Button

The screenshot displays a software interface for configuring a device. At the top, there are two icons: a red power button and a green USB icon, followed by a dropdown menu showing 'COM4'. Below these are five tabs: 'Mapping', 'EDID', 'Rename', 'System', and 'Firmware'. The 'System' tab is currently selected. The main content area is divided into three sections: 'Network', 'System', and 'Cloud setting'. The 'Network' section has two radio buttons for 'DHCP' and 'Static'. Below them are input fields for 'IP', 'Mask', and 'Gateway', each with a 'Read' button. A 'Save' button is at the bottom of the Network section. The 'System' section contains two buttons: 'Factory Reset' and 'Firmware Version'. The 'Cloud setting' section has an 'Association Code' input field with a 'Read' button, and a 'Reset Cloud' input field with an 'Apply' button.

- Network-DHCP mode
 - Select DHCP and click “Read” button to automatically get the IP address Information
- Network-Static mode
 - Click Static and then key in the “IP”, “MASK”, “GATEWAY” information. After setting IP address, please click “Save” button to save IP address Information
- “Save” Button
 - Save the IP address which is manually entered
- “Read” Button ***The default IP address is 192.168.1.111**
 - Read the IP address from the device

- System-Factory Reset
 - To do factory default reset
- Firmware Version
 - To get the F/W version information
- 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

5. Firmware Update Button



- Main Board
 - Before you start to update, please make sure you have secured the connection between your computer COM port and the device.

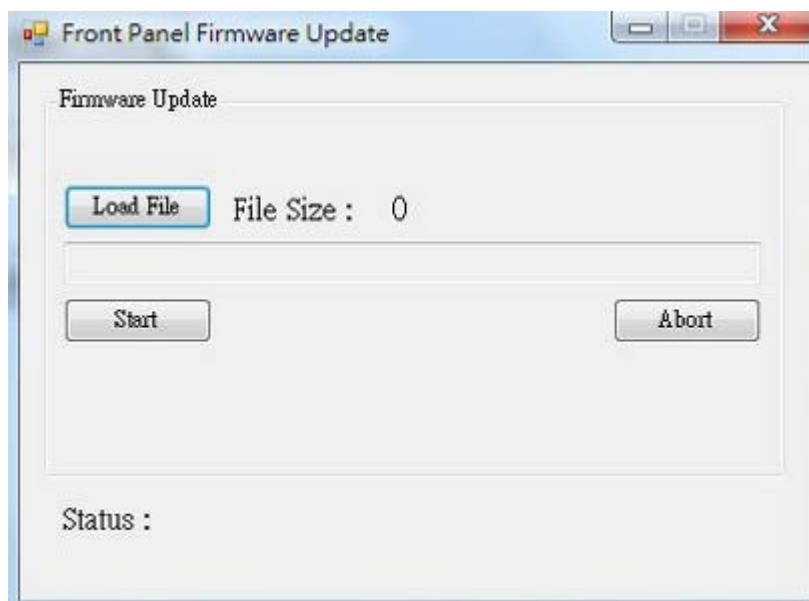
- Click the “Open Dialog” button to do firmware update, the firmware update window of main board shows up as below



- 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
- Power Cycle device to into the bootloader entry
- After updating, please power cycle the device

➤ Front Panel

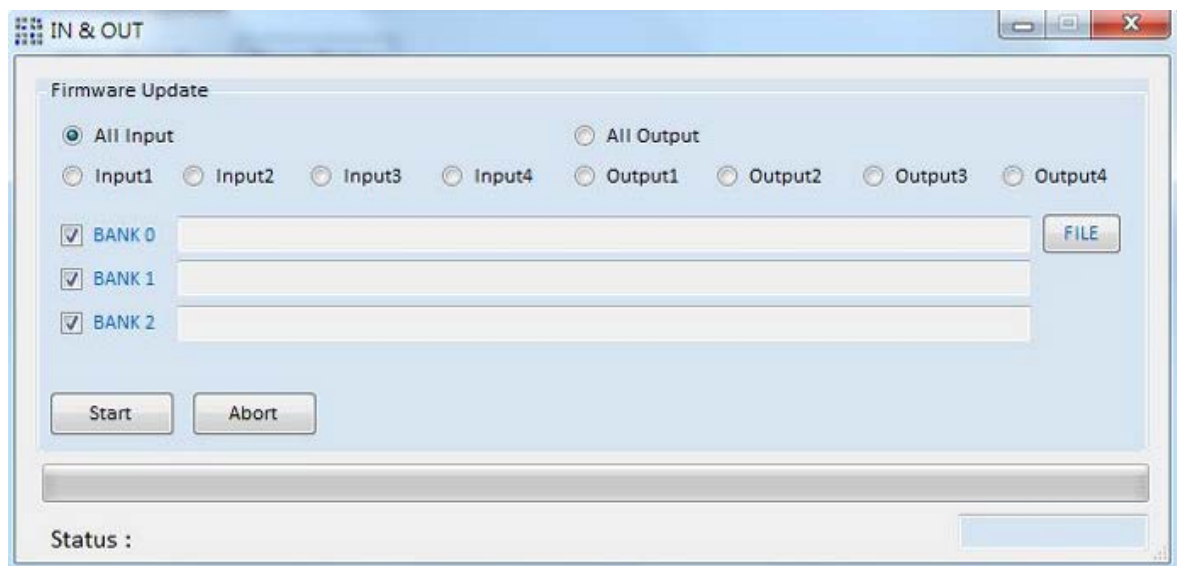
- Click the “Open Dialog” button and the firmware update window of front panel shows up as below



- Click the “Load File” button to select the front panel firmware file
- Click the “Start” button to do front panel firmware update

➤ IN OUT

- Click the “Open Dialog” button to open the firmware update window and the window of IN OUT shows up as below



- Select the input or output port which you want to do firmware update
- Click the “FILE” button to load the input/output firmware file
- Click the “Start” button to do firmware update

Method D: 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”.

Account

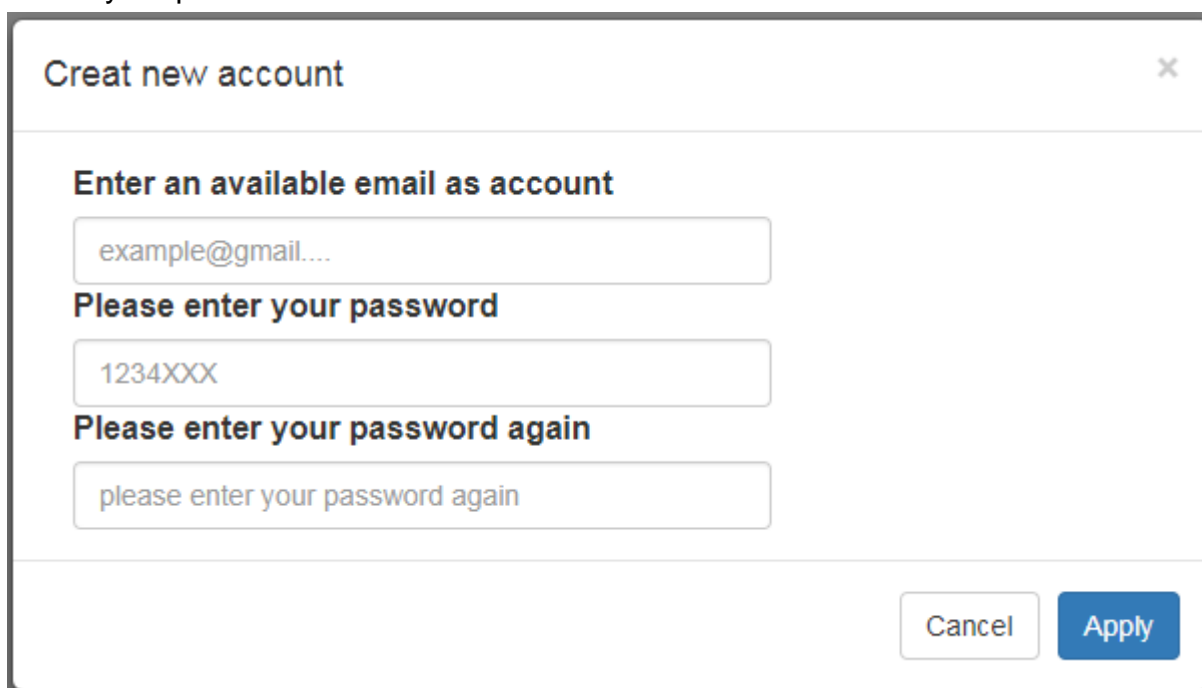
Password

Login

Create new account

Forgot password

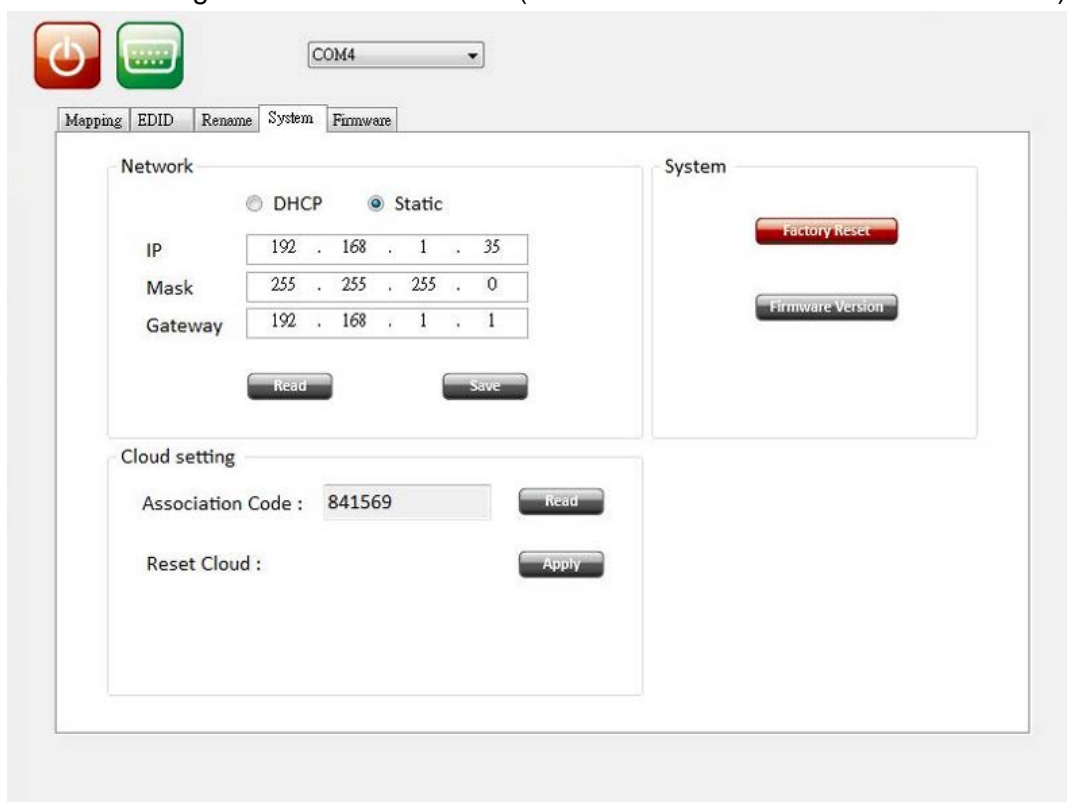
2. The Registration page will pop up and please fill in your email and password information to create your private account.



The screenshot shows a 'Creat new account' dialog box with a close button (X) in the top right corner. It contains three input fields: the first is labeled 'Enter an available email as account' and contains 'example@gmail....'; the second is labeled 'Please enter your password' and contains '1234XXX'; the third is labeled 'Please enter your password again' and contains 'please enter your password again'. At the bottom right, there are two buttons: 'Cancel' and 'Apply'.

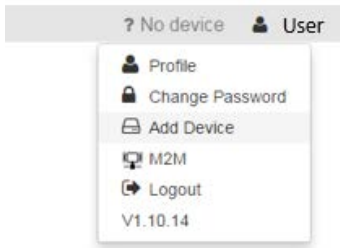
Add Device to Eagleyes

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).



The screenshot shows the Eagleyes software interface. At the top, there are two icons (a power button and a device icon) and a dropdown menu set to 'COM4'. Below these are five tabs: 'Mapping', 'EDID', 'Rename', 'System', and 'Firmware'. The 'Mapping' tab is selected. The interface is divided into two main sections: 'Network' and 'System'. The 'Network' section has radio buttons for 'DHCP' and 'Static' (selected). Below these are input fields for 'IP' (192 . 168 . 1 . 35), 'Mask' (255 . 255 . 255 . 0), and 'Gateway' (192 . 168 . 1 . 1), each with a 'Read' and 'Save' button. The 'System' section has a 'Factory Reset' button and a 'Firmware Version' button. Below the 'Network' section is a 'Cloud setting' section with an 'Association Code' field containing '841569' and a 'Reset Cloud' field, each with a 'Read' and 'Apply' button.

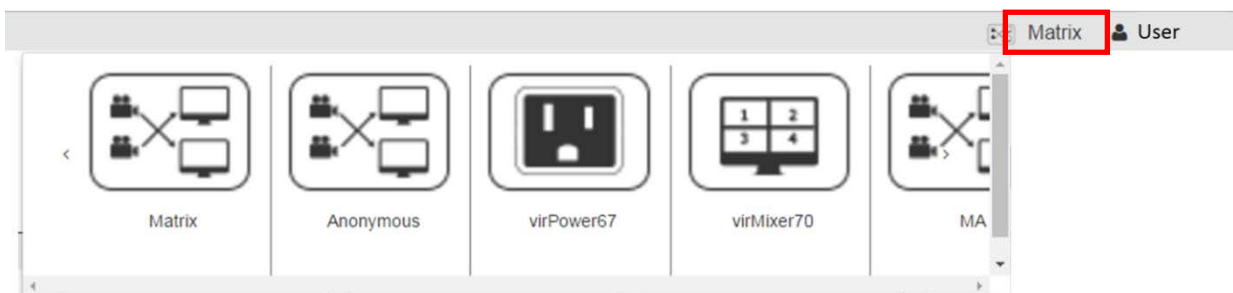
2. AccessEagleyes (<http://www.eagleyes.io>) or download Eagleyes APP, and then log in your account on the right top corner. Click **Add device** to add the device which you just got its association code.



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

A screenshot of a web form titled 'Add new device' with a close button (X) in the top right corner. The form has two main sections. The first section is labeled 'Installer Email' and contains a text input field with the value 'installer@gmail.com'. The second section is labeled 'Association Code' and contains an empty text input field. At the bottom right of the form, 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 B: IR Remote Control(Page 6. 7.)**
2. Software Control: Please refer to the **Operation Approach\Method C: Software Control through RS-232 port (Page 9.)**

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)

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-5544H2** 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-5544H2 features and specifications is subject to change without further notice.**