4x4 HDMI Matrix over Single Cat.X with HDBaseT, Ethernet and POC

P/N: AV-GM07S3-S1

Safety and Notice

The AV-GM07S3-S1 4x4 HDMI Matrix over Single Cat.X with HDBaseT, Ethernet & POC has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the AV-GM07S3-S1 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
SPECIFICATIONS.....2
PACKAGE CONTENTS.....1
PANEL DESCRIPTIONS.....3
Transmitting unit ► 3
Receiving unit ► 4
IR PASS-THROUGH.....6
HARDWARE INSTALLATION.....7
CONNECTION DIAGRAM.....8
OPERATION APPROACH.....9
EDID LEARNING.....16
FAQ.....**Error! Bookmark not defined.**23
NOTICE.....**Error! Bookmark not defined.**25
WARRANTY.....26

INTRODUCTION

The AV-GM07S3-S1 4x4 HDMI Matrix over Single Cat.X with HDBaseT, Ethernet & 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 four HDMI sources to the remote displays at the same time. 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 four HDMI sources using the push-in button or remote control. Furthermore, the built-in IR extension function makes users at display site access the DVD player, PS3 or any HDMI supported devices directly!

FEATURES

- Support HDMI Deep Color & full 3D (HDBaseT technology)
- Extend the transmission up to 100m (330ft) from the HDMI source at Full HD 1080p 48-bit
- Support POE(Power over Cable)
- HDCP compliant
- Allows controlling local HDMI sources or display through control path
- Allows to control main matrix center through control line at remote receiver
- 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
- The matrix master can switch every output channels to any HDMI inputs by IR remote control, RS-232 and IP control
- Integrated Ethernet port for LAN/ network device
- Easy installation with rack-mounting
- Fast response time – 2~4 seconds for channel switch

PACKAGE CONTENTS

- 1x AV-GM07S3-S1
- 1x IR receiver
- 1x Rack-mounting ear set
- 1x Installation software CD
- 1x DC 24V 3.75A
- 1x IR blaster*
- 1x IR Remote control*
- 1x User Manual

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

SPECIFICATIONS

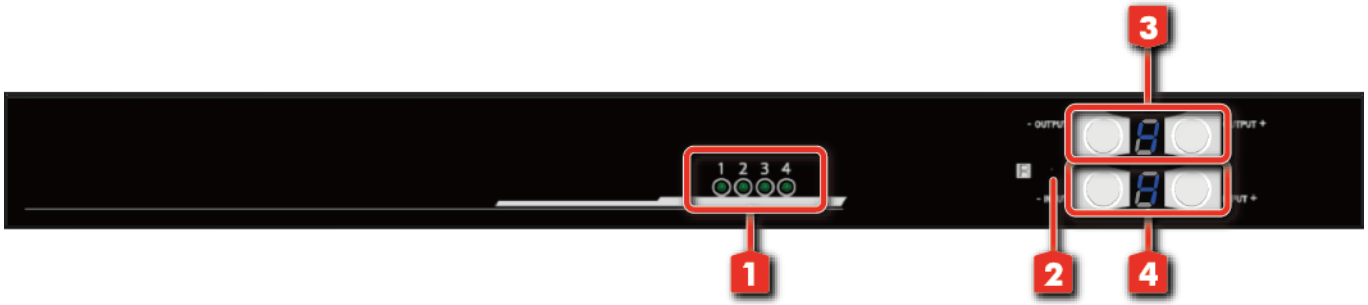
Model Name		AV-GM07S3-S1	
Technical		**AV-GM07S3-S1**	**AV-GM0813-S1E-RX**
Role of usage		True 4x4 matrix switcher Transmitter [TX]	Receiver [RX]
HDMI compliance		HDMI Deep Color & full 3D	
HDCP compliance		Yes	
Video bandwidth		Single-link 340MHz [10.2Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over UTP transmission range		1080p@60 100m (330ft) [CAT.X]	
Input TMDS signal		1.2 Volts [peak-to-peak]	
Input DDC signal		5 Volts [peak-to-peak, TTL]	
ESD protection		[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge]	
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		4x HDMI / 4x RJ-45(Ethernet) / 1x RS-232 / 1x RJ-45 for IP Control 1x IR socket for IR receiver	1x RJ-45(HDBaseT) / 1x IR socket for IR receiver
Output		4x RJ-45(HDBaseT) / 5x IR socket for IR blaster	1x HDMI / 2x RJ-45(Ethernet) 1x IR socket for IR blaster
HDMI Input selection		Push button / IR remote control / RS-232 control / IP control	IR remote 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: □ = 25° / Carrier frequency: 30-57kHz	
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		Earphone jack for IR blaster **[All IR Out]** IR control on all source devices **[IR1~IR4]** IR control on individual source device Earphone jack for IR receiver **[System IR]** Receives IR commands from remote control	Earphone jack for IR blaster **[IR]** IR control on individual display device Earphone jack for IR receiver **[IR]** Receives IR commands from remote control
Mechanical		**AV-GM07S3-S1**	**AV-GM0813-S1E-RX**
Enclosure		Metal case	
Dimensions (L x W x H)	Model	TBA	TBA
	Package	TBA	
	Carton	TBA	
Weight	Model	TBA	TBA

	Package	TBA	
Fixedness		1RU rack-mount with ears Wall hanging holes	Wall-mount with screws
Power supply		24V 3.75A DC	N/A
Power consumption		20 Watts [max]	1 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]	

PANEL DESCRIPTIONS

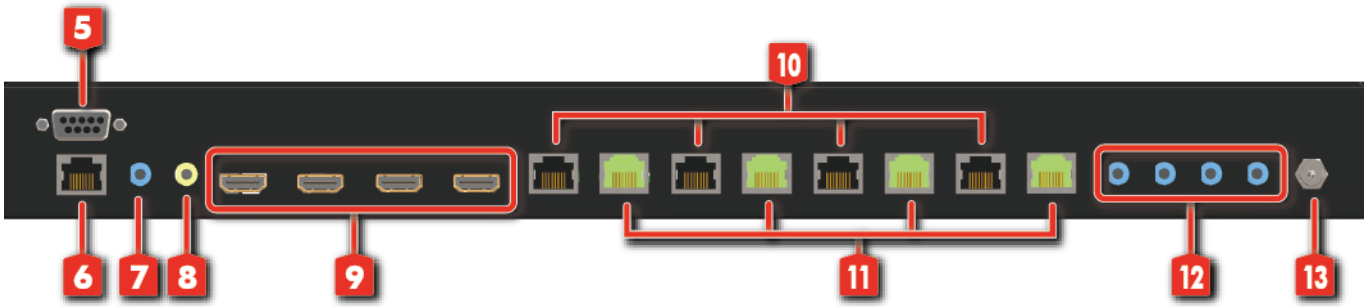
Transmitting unit ► AV-GM07S3-S1-TX

Front Panel



1. **Source Status:** Input source indicator LED
2. **IR SENSOR:** IR sensor for receiving the IR commands from IR remote
3. **Output Push Button & 7-segment LED:** Front panel push buttons used to select the number of display channel & LED display for output ports
4. **Input Push Button & 7-segment LED:** Front panel push buttons used to select the number of input source & LED display for input channels

Rear Pa



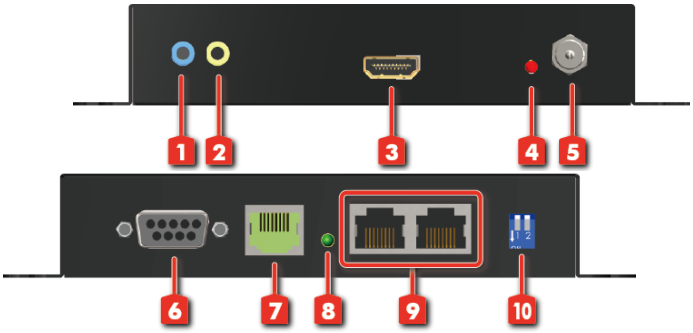
5. **RS-232:** RS-232 control port
6. **IP Control:** Ethernet control port
7. **All IR Output:** 3.5mm IR blaster socket for HDMI source control on all 4 inputs

8. **System IR Receiver:** Ext. IR receiver
9. **INPUT 1-4:** HDMI inputs
10. **Ethernet port 1-4 for LAN:** Connect to network device
11. **Output Port 1-4 [HDBaseT]:** RJ-45 outputs for each output channel
12. **IR Blaster 1-4:** 3.5mm IR blaster socket for individual HDMI source control
13. **+24V DC:** 24V DC power jack

Receiving unit ► AV-GM07S3-S1-RX

Front Panel

Rear Panel



1. **IR Blaster:** Infrared 3.5mm socket for plugging in the extension cable of IR blaster
2. **IR Receiver:** Infrared 3.5mm socket for plugging in the extension cable of IR receiver
3. **HDMI OUT:** Connect to a HDMI display with a HDMI male-male cable
4. **LED:** Power indicator
5. **Latch-locking power jack:** Connect to 5V DC power supply
6. **RS-232:** Connect to serial port device with a DSUB-9 male-male or male-female cable here
7. **RJ-45 [HDBaseT]:** Plug in a Cat-5/5e/6 cable that needs to be linked to the AV-GM07S3-S1
8. **LED:** Link indicator
9. **Ethernet port for LAN:** Connect to network device
10. **DIP Switch:** PIN#1: Setup the RS-232 mode for serial communication channel.
    PIN#2: For Firmware Update

IR PASS-THROUGH

IR Extenders

IR Blaster

IR Receiver

IR Sockets

AV-GM07S3-S1

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

IR BLASTER 1-4: IR blaster connected here can only transmit IR command signals from the remote receivers that are setting at respective input channel from 1 to 4.

System IR: Receives IR commands from remote control

IR RECEIVER 1-4: Receives IR commands from individual remote control

MA-5288RX

IR BLASTER: IR control on individual display device

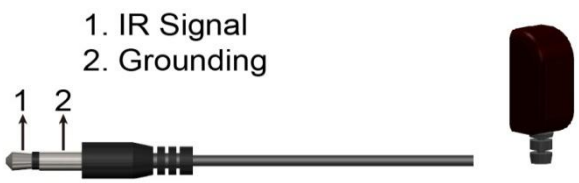
IR RECEIVER: IR receiver connected here can receive all IR command signals from the IR remote controls of AV-GM07S3-S1 and all other HDMI source devices.

CAUTION!

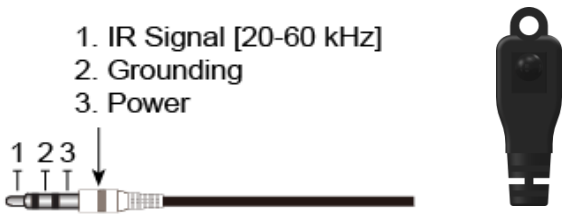
Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets. Warranty will not cover the damage.

Definition of IR Earphone Jack

IR Blaster



IR Receiver



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

HARDWARE INSTALLATION

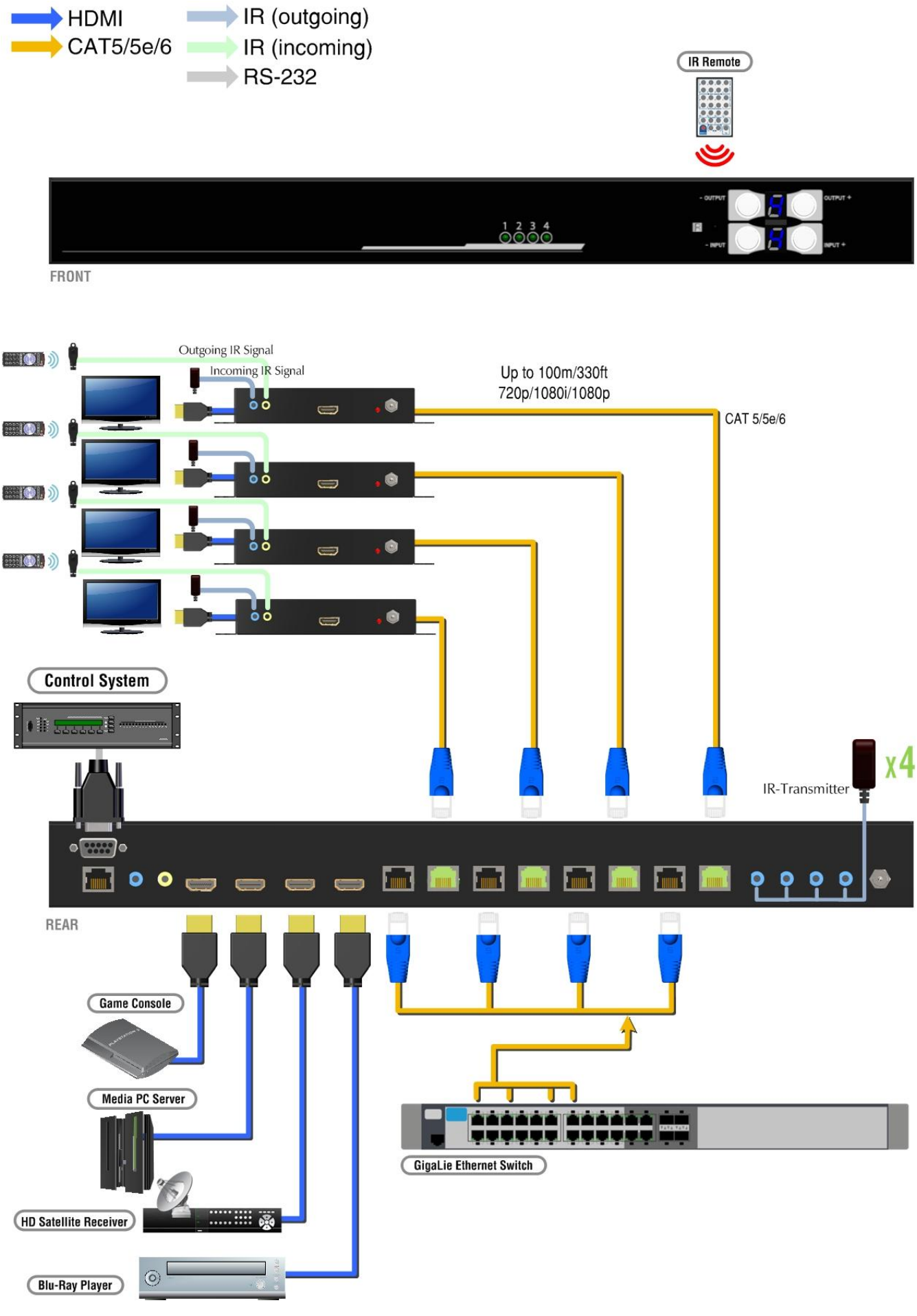
AV-GM07S3-S1 as master

1. Connect all sources to HDMI Inputs on the 8x8 HDMI over CAT.X matrix master AV-GM07S3-S1.
2. Connect each CAT.X output port on the AV-GM07S3-S1 to respective CAT.X input on the remote receiver MA-5288RX.
3. Connect IR blaster to the AV-GM07S3-S1 and direct the IR blaster to point towards the built-in IR receiver of the HDMI source devices.
4. Connect the +12V 5A DC power supply to the AV-GM07S3-S1.
5. Power on all HDMI sources.

MA-5288RX as receiver

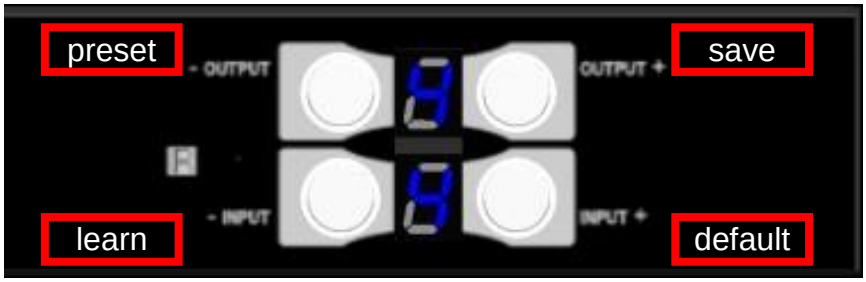
1. Connect each HDMI output to HDMI displays.
2. Connect the **CAT.X** input on the MA-5288RX to the **CAT.X** output port on the AV-GM07S3-S1.
3. Connect IR receiver and place the IR receiver at the appropriate position that can receive the IR signals sent from the users.
4. Dial the 8-level rotary control switch to adjust the HDMI signal level until the picture and sound are clear. It is recommended to dial from weakest to strongest to find the optimal visual experience

CONNECTION DIAGRAM



OPERATION APPROACH

Method A: Push-in Button



1. 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

2. Save Mapping Mode

1) Keep pushing “output+ (save)”button until the output LED shows “d.” to enter the Save Mapping Mode.
2) Use the “+”or “-“ input push button to select the mapping configuration (0~7) which you want to save current input/output mapping
3) After you select the desired mapping configuration number, the LED will blink twice and the mapping setting will be saved
4) If you push the “output- (preset)”button before the mapping setting is saved, the LED will show “—”“—”to quit the Save Mapping Mode

3. Preset Mapping Mode

1) Keep pushing “output- (preset)”button until the output LED shows “P.” to enter the Preset Mapping Mode.
2) Use the “+”or “-“ input push button to select the saved mapping configuration (0~7) which you want to recall
3) After you select the desired mapping configuration number, the LED will blink twice and the mapping setting will be effective

4) If you push the “output+ (save)”button before the mapping setting is effective, the LED will show “—”“—”to quit the Preset Mapping Mode

4. Default EDID Mode

1) Push “input+(default)”button to select the input channel which you want to learn default EDID and then keep pushing “input+(default)”button when you select your desired input channel
2) Push the “+”or “-” output push button and then the LED will show “E”“d” one time to enter Learn Default EDID Mode
3) Use “+”or “-” output push button to select the default EDID mode(1~8)
4) Release “input+(default)”button after selecting the desired default EDID mode, and then the LED will blink twice and the setting will be effective
5) It will quit the Learn Default EDID Mode if you push the “input- (learn)”button before the setting is effective
6) The LED will show “0”“0” if the setting is success

   The LED will show “F”“F” if the setting is failure

5. EDID Learning Mode

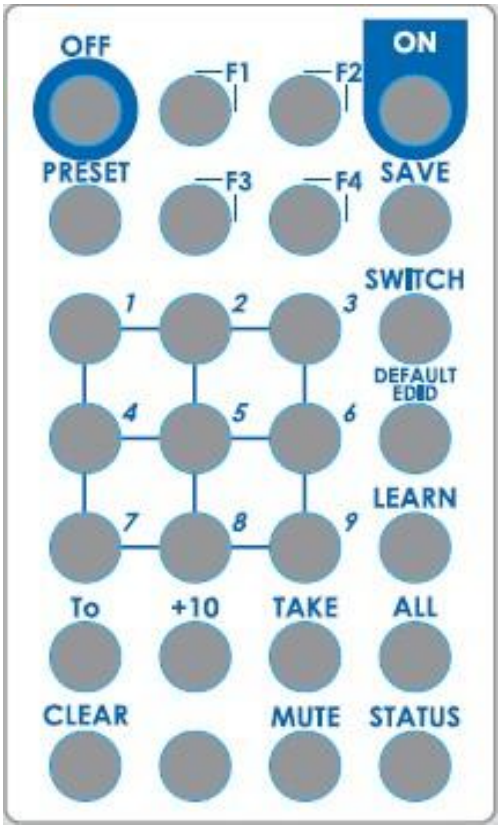
1) Push “input-(learn)”button to select the input channel which you want to learn EDID from HDMI output and then keep pushing “input-(learn)”button when you select your desired input channel
2) Push the “+”or “-” output push button and then the LED will show “E”“L” one time to enter Learn Output EDID Mode
3) Use “+”or “-” output push button to select the output port number
4) Release “input+(default)”button after selecting the desired output port number, and then the LED will blink twice and the setting will be effective
5) It will quit the Learn Output EDID Mode if you push the “input+ (default)”button before the setting is effective
6) The LED will show “0”“0” if the setting is success

   The LED will show “F”“F” if the setting is failure

Method B: IR Remote Control

Button	Function

ON	Power on the matrix switcher
OFF	Standby mode
PRESET	Preset mapping mode
MUTE	Turn off output's video and audio
SAVE	Save current mapping mode
Number buttons 1-9	Select a number
+10	Reserved
To	Transfer key
TAKE	Trigger the previous setting
SWITCH	Begin input and output selection
DEFAULT EDID	Begin default EDID selection
LEARN	Begin EDID learning from one output
ALL	Select all inputs or outputs
CLEAR	Clear the previous IR operation procedure
STATUS	Preset output status
F1	Reserved
F2	Reserved
F3	Reserved
F4	Reserved



Operation	Procedure	7-Segment LED
IN/OUT Switch	Switch + **number(input)** + To + **number(output)** + Take	

Ex: Input 3 To Output 4	1.Press “SWITCH” button	- -
	2.Press number key “3” to select Input	- 3
	3.Press “To” button	- 3
	4.Press number key “4” to select Output	4 3
	5.Press “TAKE” button	4 3
	Switch + **number(input)** + To + **All(output)** + Take	
Ex: Input 3 To Output All	1.Press “SWITCH” button	- -
	2.Press number key “3” to select Input	- 3
	3.Press “To” button	- 3
	4.Press “ALL” to select All Output	A 3
	5.Press “TAKE” button	4 3
Output Status	Status + **number(output)** + Take	
Ex: Output 4 (Input 2)	1.Press “STATUS” button	- -
	2.Press number key “4” to select Output	4 -
	3.Press “TAKE” button	4 2
Factory Reset	Status + Status + Status + Take	
	1.Press “STATUS” button	- -
	2.Press “STATUS” button	d -
	3.Press “STATUS” button	d

		d
	4.Press “TAKE” button	1 1
Learn default EDID	Default EDID + **number(1-8 default EDID)** + To + **number(input)** + Take	
Ex: Default EDID 2 Input 3	1.Press “DEFAULT EDID” button	E d
	2.Press number key “2” to select default EDID	2 d
	3.Press “To” button	2 d
	4. Press number key “3” to select Input	2 3
	5.Press “TAKE” button	0 F 0 (success) F(fail)
	Default EDID + **number(output)** + To + **All(input)** + Take	
Ex: Default EDID 2 Input All	1.Press “DEFAULT EDID” button	E d
	2.Press number key “2” to select default EDID	2 d
	3.Press “To” button	2 d
	4.Press “ALL” to select All Input	2 A
	5.Press “TAKE” button	0 F 0 (success) F(fail)
Learn Output EDID	Learn + **number(output)** + To + **number(input)** + Take	
Ex: Learn Output 2 Input 3	1.Press “LEARN” button	E L
	2.Press number key “2” to select Output	2 L
	3.Press “To” button	2 L

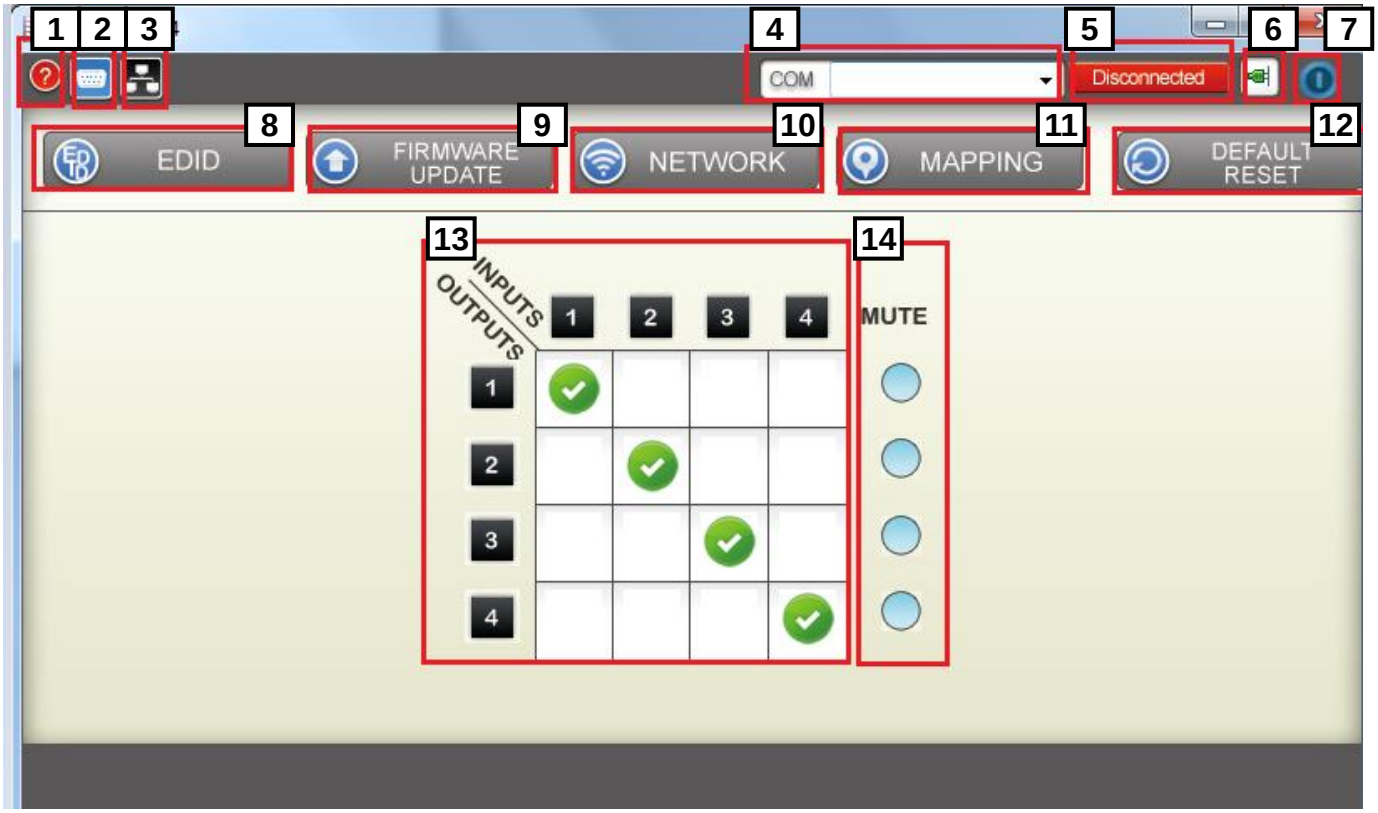
	4. Press number key “3” to select Input	2 3
	5.Press “TAKE” button	0 F 0 (success) F(fail)
	Learn + **number(output)** + To + **All(input)** + Take	
Ex: Learn Output 2 Input All	1.Press “LEARN” button	E L
	2.Press number key “2” to select Output	2 L
	3.Press “To” button	2 L
	4.Press “ALL” to select All Input	2 A
	5.Press “TAKE” button	0 F 0 (success) F(fail)
Save Current Mapping	Save + **number(1-8 storage site)** + Take	
Ex: Save current mapping to 5	1.Press “SAVE” button	d -
	2.Press number key “5” to select the storage site	5 -
	3.Press “TAKE” button	
Preset Mapping	Preset + **number(1-8 storage site)** + Take	
Ex: Preset saved mapping from 5	1.Press “PRESET” button	P -
	2.Press number key “5” to select the storage site	5 -
	3.Press “TAKE” button	

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

Method C: Software Control through RS-232 port / Ethernet port

1. System Requirement

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



1	Version Button for FW/ SW	8	EDID Button
2	RS-232 Button	9	Firmware Update Button
3	Ethernet Button	10	Network Button
4	COM Port Selection	11	Mapping Button
5	Connect/Disconnect Status	12	Default Reset Button
6	Connect Button	13	In/Out Switch Button
7	Power On/Off Button	14	Mute Output Button

2. Connecting matrix and controller

Step1: Use RS-232 cable to connect the RS-232 port on matrix and PC

Step2: Open the software and then choose the correct com port

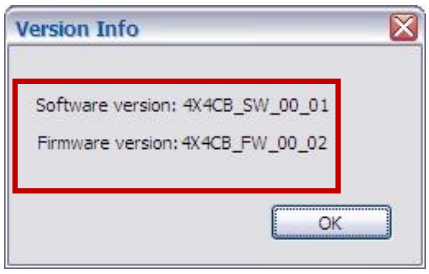
Step3: Click connection button " "

Step4: Make sure the connection status is on connected status "

"

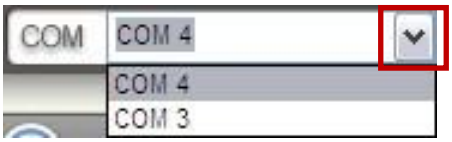
3. **FW/SW Version Button**

Click " " button to show version information



4. **RS-232 Button**
   1) Click " " button to switch to RS-232 function.
   2) If RS-232 is connected, the button will show the sign image to let you know.
5. **Ethernet Button**
   1) Click " " button to switch to Ethernet function
   2) If Ethernet is connected, the button will show the sign image to let you know.

6. **COM Port Selection**
   Click " " button to select COM Port



7. **Connection Status**

1) Connected Status:

2) Connecting Status:

3) Disconnected Status:

8. **Connect/Disconnect Button**

Click this button " " to change connection status

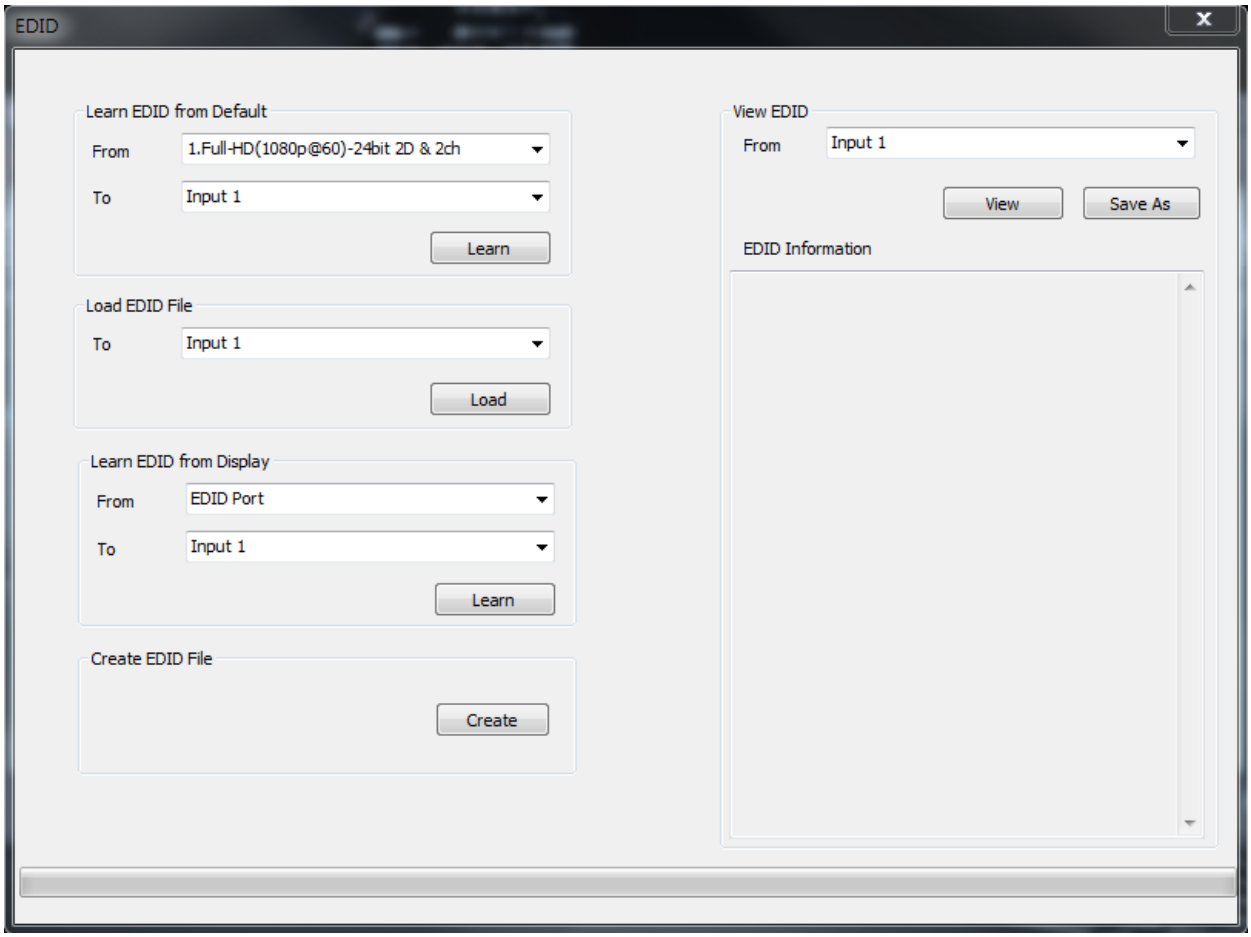
9. **Power On/Off Button**

Click this button to power on/off

" " **Power on status(Blue):** Click this button to power off device(Standby Mode)

“ ” **Power off status(Red):** Click this button to power on device

10. EDID Button



1) Learn EDID from Default
   a) Select Default EDID(1-8 Default EDID)
   b) Select Input
   c) Click “Learn” button to learn default EDID

2) Load EDID File to Input
   a) Select Input
   b) Click “Load” button to select the EDID file

3) Learn EDID From Display

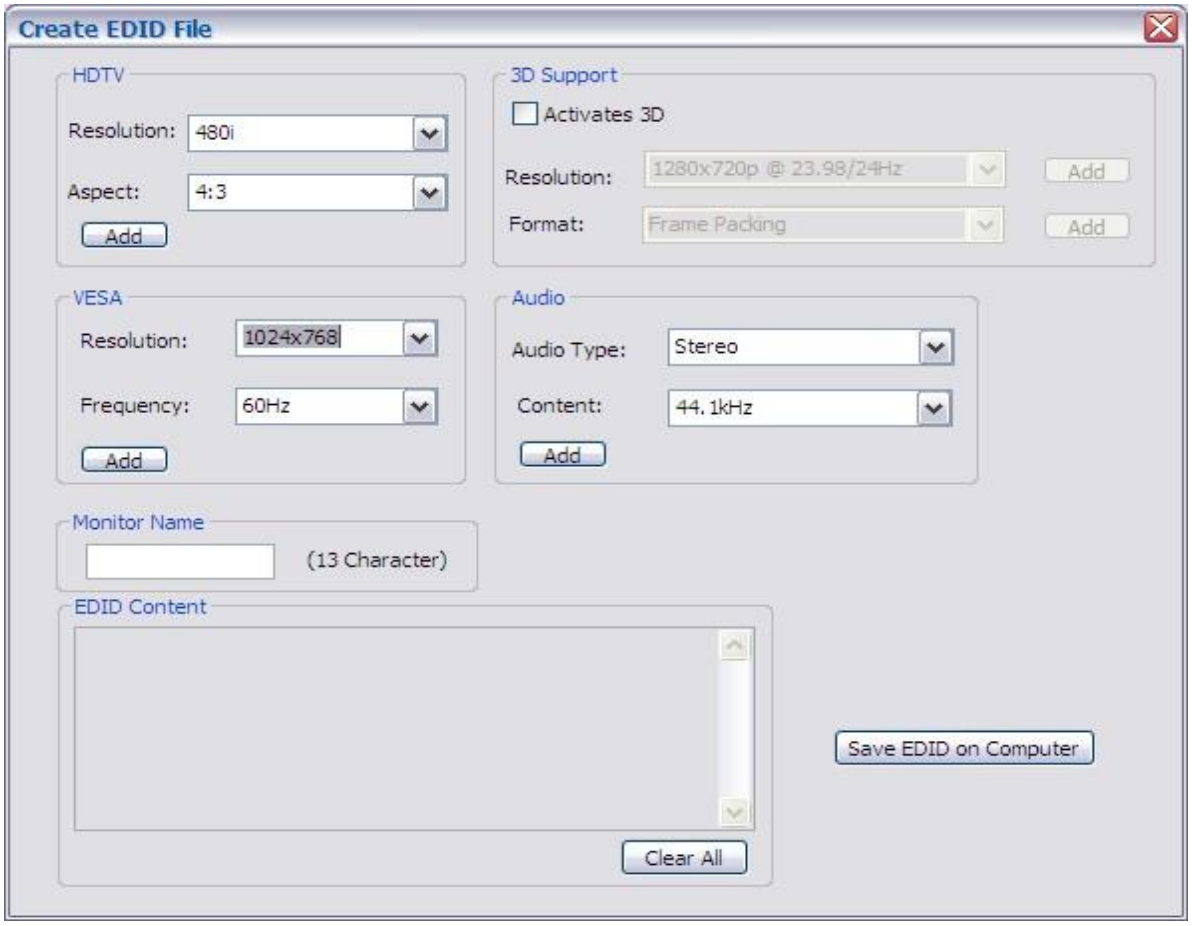
a) Select EDID Port

b) Select Input

c) Click “Learn” button to learn display EDID

4) Create EDID File

a) Click **“**Create**”** button to create EDID file



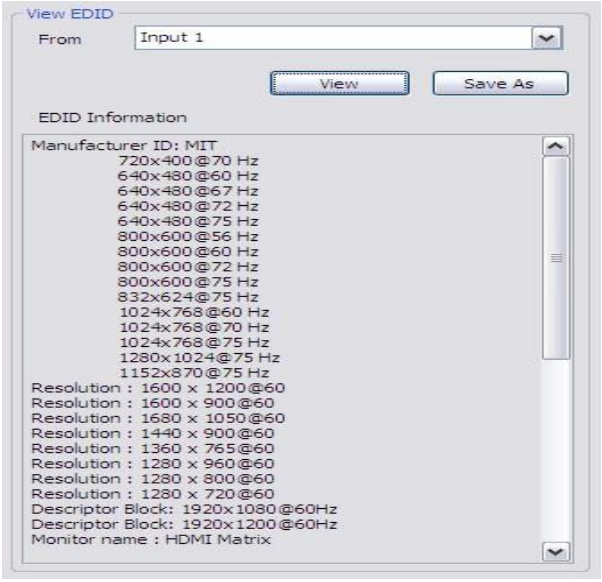
b) Select the EDID content

c) Click “Save EDID on Computer” to save the generated EDID as a file

5) View EDID Content

a) Select Input, or From File

b) Click “View” button to read the EDID and analysis

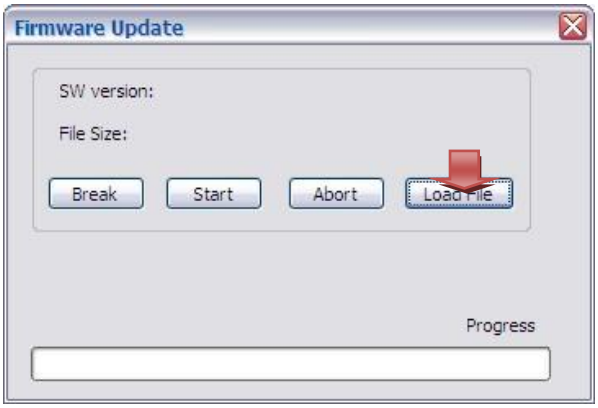


c) Click **"**Save As**"** to save the read EDID as a file on computer

11. Firmware Update Button

Step1: Make sure RS-232 is connecting and the connecting status is " Connected "

Step2: Click "FIRMWARE UPDATE" Button and then will be a pop-up windows



Step3: Click "Load File" to select the firmware file which you want to update

Step4: Click "Break" button

Step5: Quickly pull out and reconnect the power input connector

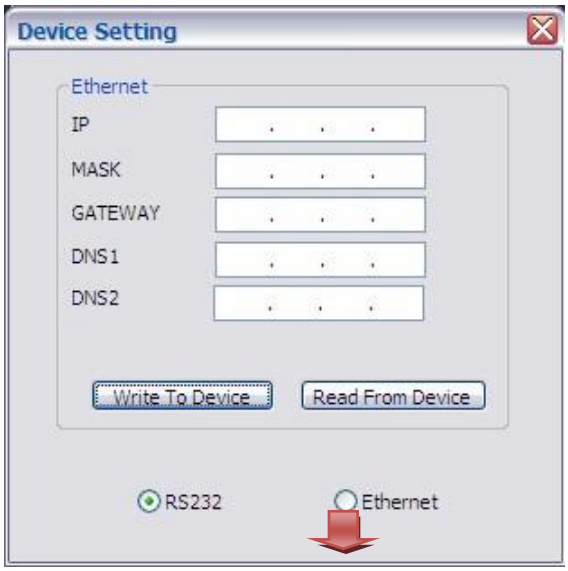
Step6: Click "Start" button and the firmware will start writing

12. Network Button

Step1: Make sure the connection status is on connected status "Connected"

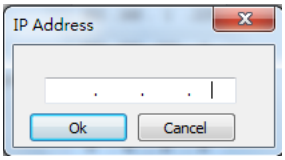
Step2: Connect matrix to network through IP control port

Step3: Click "NETWORK" Button and then will be a pop-up windows



Step4: Click "Read From Device" to read the device IP address

Step5: Select "Ethernet" button and then will be a pop-up windows



Step6: Key in the device IP address to the pop-up windows and click OK

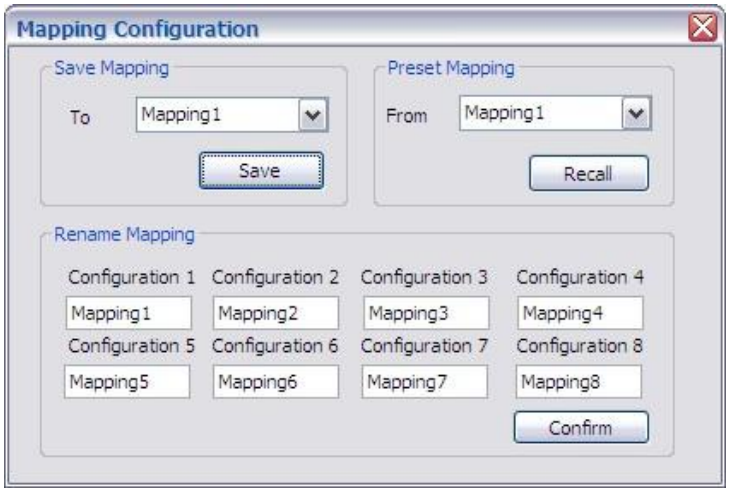
Step7: Click the Connect Button " "to connect then you start control by Ethernet

***Remark: Switch controlling by clicking the shortcut button**

RS-232 Button:
Click the button and then click "Connect Button" to start

Ethernet Button:
Click the button and then click "Connect Button" to start

13. Mapping Button



1) Save Mapping:
   a) Select Mapping(1-8)
   b) Click “Save” button to save current mapping

2) Preset Mapping:
   a) Select Mapping(1-8)
   b) Click “Recall” button to recall previous mapping which are saved

3) Rename Mapping:
   a) Rename the mapping(Mapping1-Mapping8)
   b) Click “Confirm” button to confirm the change

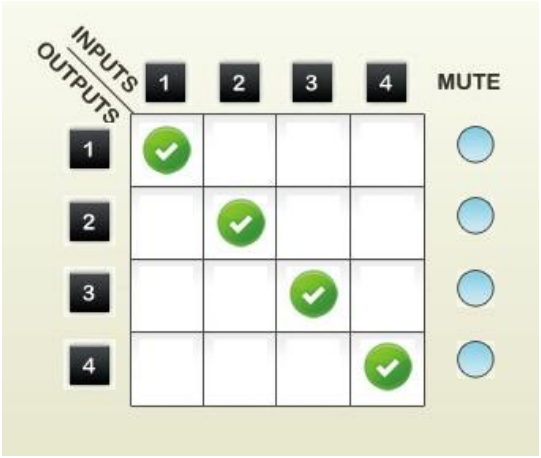
14. Default Reset Button

Click this button to do factory default reset

The default reset process will take about 80~90 seconds

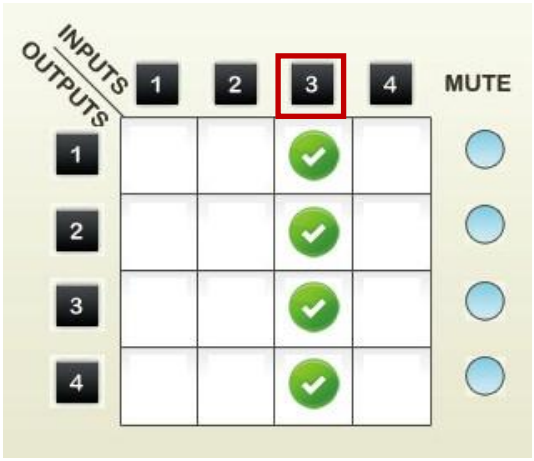
15. In/Out Switch Button

Click the button on the checkerboard to select Input & Output port



User can click the input number button to let all outputs select the same input

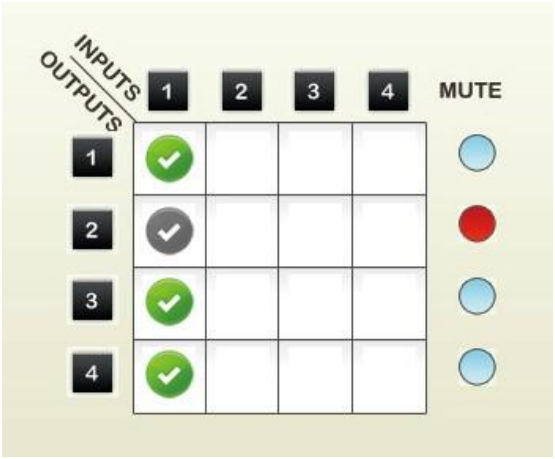
Ex: All outputs select input 3



16. Mute Output Button

Click the circle button to turn off output's video and audio

Ex: Mute Output 2



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

1. Front Panel Push-in Button: Please refer to the **Operation Approach\ Method A: Push-in Button**
2. IR Remote Control: Please refer to the **Operation Approach\ Method B: IR Remote Control**
3. Software Control: Please refer to the **Operation Approach\ Method C: Software Control through RS-232 port**

There are **eight 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

WARRANTY

The SELLER warrants the **AV-GM07S3-S1** 4x4 HDMI Matrix over Single Cat.X with HDBaseT, Ethernet & POC free from defects in the material and workmanship for 3 years from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 3 years 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 **AV-GM07S3-S1** features and specifications is subject to change without further notice.

Support
For more info or tech support
http://www.siig.com/support

April, 2018