



2x4 HDMI 1.3 Matrix



P/N: AV-GM0743-S1



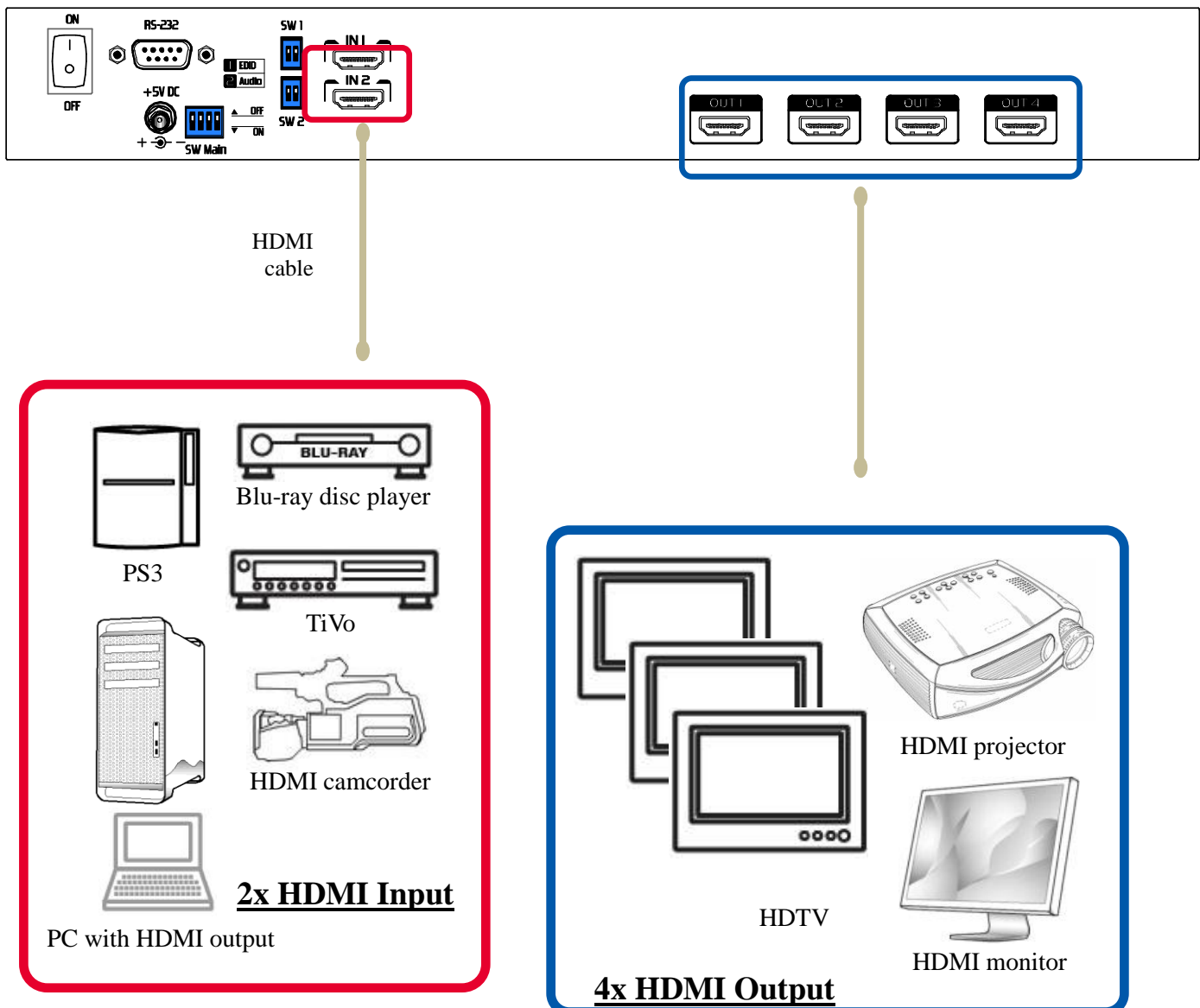
Safety and Notice

The **AV-GM0743-S1 2x4 HDMI 1.3 Matrix** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the AV-GM0743-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.

The 2x4 HDMI 1.3 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 two HDMI sources to the any four displays at the same time. This solution is well suited for use in home theater, conference room presentation systems, or other similar setting or application.

AV-GM0743-S1



Features

- State-of-the-art Silicon Image (founder of HDMI) chipset embedded for upmost compatibility and reliability
- HDMI 1.2a/1.3c* compliant
- HDCP 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
- The matrix master can switch every output channels to any HDMI inputs by push button, IR remote control, or RS-232 control



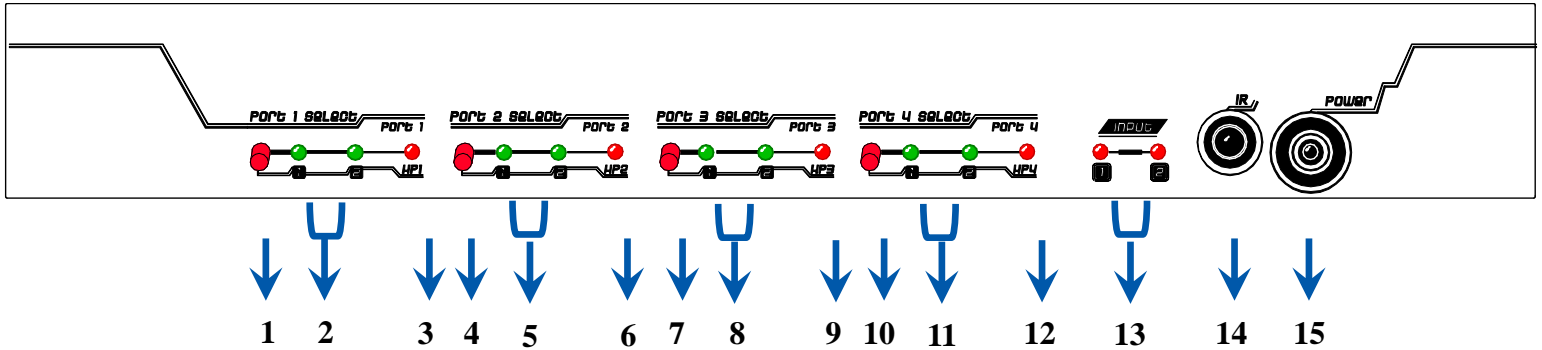
***HDMI 1.2a for AV-GM0743-S1
v1.2**

Specifications & Package Contents

Model Name		AV-GM0743-S1
Technical		
Role of usage		True 2x4 matrix
HDMI compliance		[AV-GM0743-S1 v1.2] - HDMI 1.2a [AV-GM0743-S1 v1.3] - HDMI 1.3c
HDCP compliance		Yes
Video bandwidth		[AV-GM0743-S1 v1.2] - Single-link 165MHz [4.95Gbps] [AV-GM0743-S1 v1.3] - Single-link 225MHz [6.75Gbps]
Video support		480i / 480p / 720p / 1080i / 1080p60 12-bit color
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		2x HDMI + 1x RS-232
Output		4x HDMI
HDMI Input selection		Push button / IR remote / RS-232
IR remote control		Electro-optical characteristics: $\tau = 25^\circ$ / Carrier frequency: 36~40kHz
HDMI connector		Type A [19-pin female]
RJ-45 connector		WE/SS 8P8C with 2 LED indicators [TMDS & DDC channels]
RS-232 connector		DE-9 [9-pin D-sub female]
DIP switch		[SW1~SW4] 2-pin for EDID learning, audio/video settings [SW Main] 4-pin operation mode & firmware update
Mechanical		MA-5144
Housing		Metal enclosure
Dimensions (L x W x H)	Model	340 x 110 x 44mm [1'1.4"x4.3"x1.7"]
	Package	490 x 225 x 70mm [1'7.3"x8.9"x2.8"]
	Carton	510 x 380 x 252mm [1'8"x1'3"x9.9"]
Weight	Model	1075g [2.4lbs]
	Package	2090g [4.6lbs]
Fixedness		1U rack-mount with ears and 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]
Package Contents		1x AV-GM0743-S1 2x Rack-mounting ears 1x User Manual 1x 5V 6A power adapter

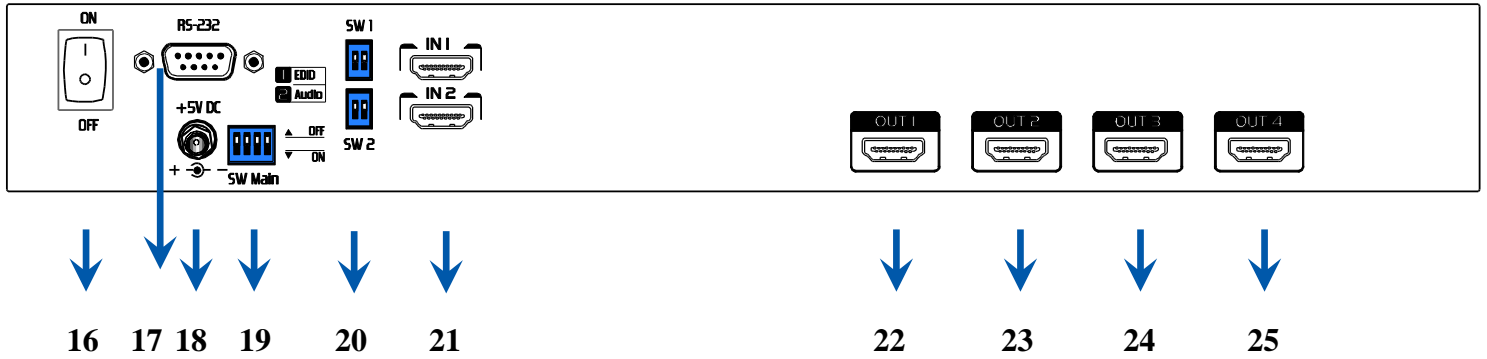
	1x IR remote
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Front Panel



1. **Port 1:** Push button for input switch on output port 1.
2. **Select 1-2:** Green LED lights up indicating the selected HDMI input for output port 1.
3. **HP1:** Hot-plug LED lights up indicating a valid connection status on output port 1.
4. **Port 2:** Push button for input switch on output port 2.
5. **Select 1-2:** Green LED lights up indicating the selected HDMI input for output port 2.
6. **HP2:** Hot-Plug LED lights up indicating a valid connection status on output port 2.
7. **Port 3:** Push button for input switch on output port 3.
8. **Select 1-2:** Green LED lights up indicating the selected HDMI input for output port 3.
9. **HP3:** Hot-Plug LED lights up indicating a valid connection status on output port 3.
10. **Port 4:** Push button for input switch on output port 4.
11. **Select 1-2:** Green LED lights up indicating the selected HDMI input for output port 4.
12. **HP4:** Hot-Plug LED lights up indicating a valid connection status on output port 4.
13. **INPUT 1-2:** Plug LED lights up indicating a valid connection status on output port 4
14. **IR:** IR receiver to receive IR commands from the matrix's IR remote control
15. **Power:** Power LED lights up indicating power-on status.

Rear Panel



16. **ON - OFF:** Power ON/OFF switch.
17. **RS-232:** Connect to a PC for RS-232 serial control.
18. **+5V DC:** Connect to a 5V DC power supply unit and with a C5-type power cord.
19. **SW Main:** 4-pin DIP switch for operation and firmware update. See DIP Switch section in p.9 for more detail.
20. **SW1 & SW2:** 2-pin DIP switch for EDID and audio/video settings. See DIP Switch section in p.8 for more detail.
21. **IN1 & IN2:** HDMI input 1 and 2 to connect to HDMI source devices.
22. **OUT 1:** HDMI over CAT5e/6 via TMDS and DDC RJ-45 ports for HDMI output 1.
23. **OUT 2:** HDMI over CAT5e/6 via TMDS and DDC RJ-45 ports for HDMI output 2.
24. **OUT 3:** HDMI over CAT5e/6 via TMDS and DDC RJ-45 ports for HDMI output 3.
25. **OUT 4:** HDMI over CAT5e/6 via TMDS and DDC RJ-45 ports for HDMI output 4.

SW1-SW2 for EDID/Audio

DIP Switch Position		Video	Audio	Description
Pin#1	Pin#2			
OFF [↑]	OFF [↑]	Up to 1080p	Stereo ¹	Default Mode² – Up to 1080p & stereo audio output for most HDTVs
OFF [↑]	ON [↓]	Up to 720p / 1080i	Stereo	Safe Mode³ – Enforce the system output at 720p/1080i video and stereo audio for basic compatibility among HDTVs
ON [↓]	OFF [↑]	Bypass ⁴	Bypass ⁴	EDID Learning Mode⁵ – for learning EDID from the display while playing any received HDMI audio format
ON [↓]	ON [↓]	Bypass	Stereo	EDID Learning & Stereo Mode⁵ – for learning EDID from the display while enforcing stereo output if any HDTV cannot play surround sound normally



Note

¹ If the HDTV shows video but without audio, please try to set audio mode to stereo.

² Factory default of SW1-SW2: Pin#1-OFF[↑] & Pin#2- OFF[↑] for 1080p with stereo.

³ If you encounter any unsolved audio/video output problem during system installation, please turn any SW1-SW2 to Pin#1-OFF[↑] & Pin#1-ON[↓], for safe mode to enforce the most compatible 720p stereo output for system check. However, the safe mode cannot be initiated if your HDMI source is set to enforce 1080p output. In this case, please reconfigure your HDMI source to all resolution output for troubleshooting.

⁴ Bypass means the matrix will maintain playing the original format of HDMI signals in video and perhaps audio. By setting at this mode, the users may encounter compatibility issue among different kinds of HDMI sources and displays. If you cannot get the audio and/or video output normally at the system installation, please change the DIP switch setting to default mode or even safe mode to verify the functionality of the device.

⁵ Set Pin#1 at ON[↓] first then connect the HDMI Input to HDTV through a HDMI cable. Wait for 20 seconds. The EDID learning procedure will be finished. If you want to learn the EDID from another HDTV, you must set Pin#1 at OFF[↑] first and repeat this procedure.

SW Main for firmware update (for technical support only)

DIP Switch Position	Pin#1	Pin#2	Pin#3	Pin#4
Normal Operation Mode ⁶	OFF [↑]	OFF [↑]	ON [↓]	OFF [↑]
Firmware Update Mode ⁷	ON [↓]	ON [↓]	OFF [↑]	OFF [↑]



Note

⁶ *Factory default for SW Main: Pin#1-OFF[↑], Pin#2-OFF[↑], Pin#3-ON[↓], Pin#4-OFF[↑].*
PLEASE MAINTAIN THIS SETTING AT ANYTIME FOR REGULAR USE!

⁷ *Sequence for firmware update*

[1]. Power off the matrix unit.

[2]. Set the SW Main DIP switch position to Firmware Update Mode [↓↓↑↑].

[3]. Power on the matrix unit.

[4]. Power off the matrix unit.

[5]. Set the DIP switch position to Normal Operation Mode [↑↑↓↑].

[6]. Power on the matrix unit.

Hardware Installation

MX-5124H

1. Connect all sources to HDMI Inputs on the 2x4 HDMI Matrix
2. Connect all outputs to HDMI devices
3. Connect the +5V 6A DC power supply to the 2x4 HDMI Matrix
4. Power on the 2x4 HDMI Matrix MX-5124H

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 by performing the procedures stated below.



SW1 / SW2's pin 1 must be set at ON for EDID Learning Mode

DIP Switch Position Pin 1	Video	Audio	Description
On [↓]	Bypass	Stereo	EDID Learning For learning EDID from the receiver

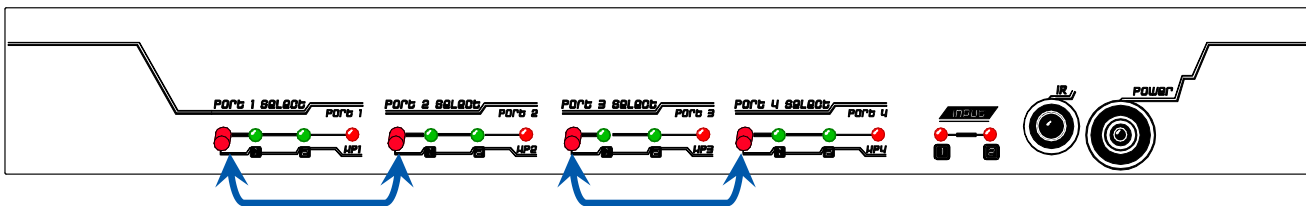
Manually connect displays to HDMI input ports

1. Power up the matrix master unit. Connect the HDMI display that its EDID needs to be learned to either/both of the HDMI INPUT 1 & INPUT 2 port where your source device has trouble to show the picture normally.
2. To learn the display's EDID for source device connected to respective HDMI INPUT 1-INPUT 2 port, pull both pins of respective DIP switch SW1-SW2 up-and-down to stay at on-on [↓-↓] and wait for about 5 seconds to complete the EDID learning process. You DON'T NEED to pull up the DIP switch again unless you want to learn another display's EDID by pulling both DIP switch pin 1 & pin 2 of SW1 / SW2 up-and-down one more time.
3. Repeat step1 & step2 if you want to learn the EDID of this HDMI display on any other HDMI input ports that have same trouble playing the audio/video properly.

Operation and IR Control

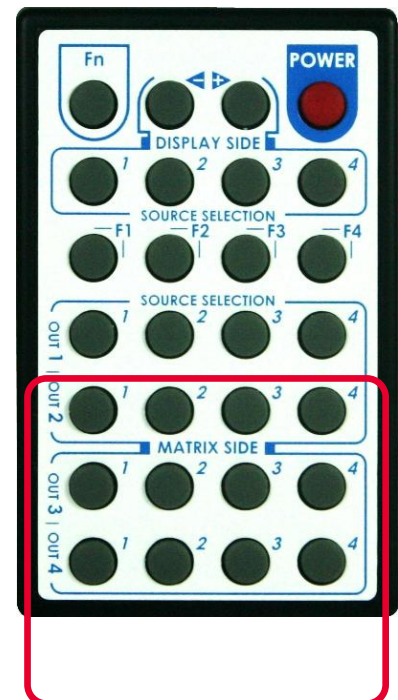
Method A: Push Button

Push the red switch button of the output port to select the input channels.

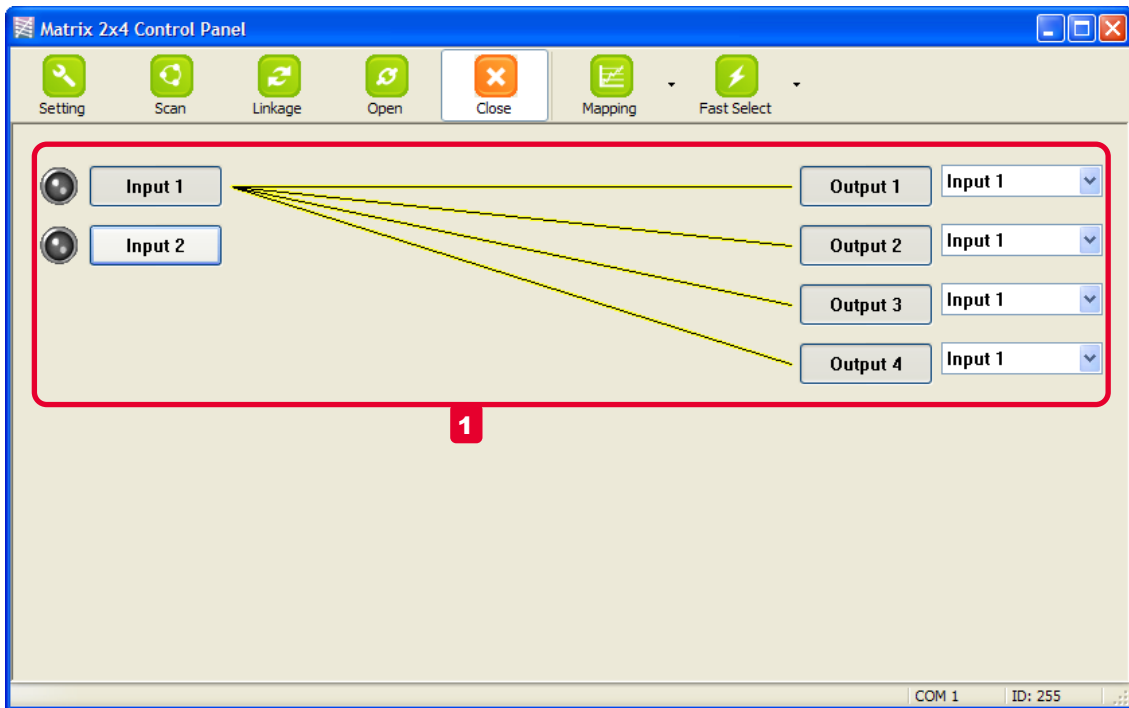


Method B: IR Remote Control

- a. Choose the output port you want to make channel switch from OUT 1 to OUT 4 then press 1 or 2 channel button to choose the HDMI input source shown on the chosen output display.



Method C: Software Control through RS-232



Input-Output Channel Setup:

A. Input ► Output

Click on either input button then click on the output buttons to assign them playing the selected input channel.

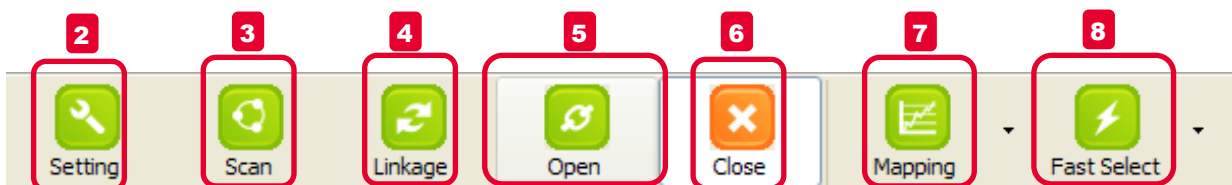
B. Output ► Input

Click on either output button then a quick selection table of inputs will show up. Users can therefore easily select the input

Input 1
Input 2

 for each output.

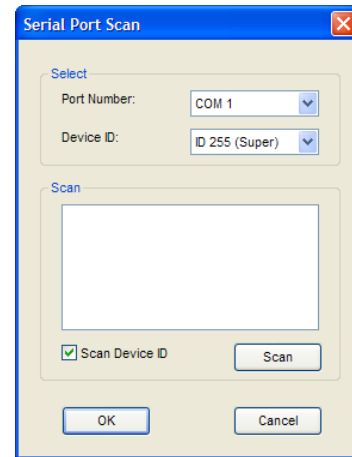
Function buttons:



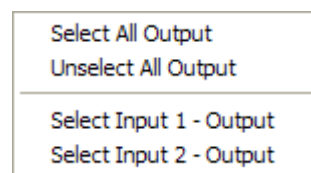
- 2** **Setting:** Set the ID of this device for cascading or other purposes in the future.



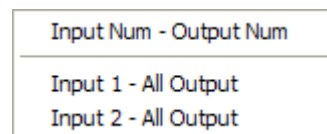
- 3 Scan:** Choose COM port number and Device ID for scan. Then tick "Scan Device ID" and press "Scan" button to know which COM port is connected based on this Device ID.



- 4 Linkage:** Indicate the connection status.
- 5 Open:** Open the COM port after scan to establish the connection between PC and the matrix.
- 6 Close:** Release the COM port after scan.
- 7 Mapping:** Click on this button, a quick selection table of inputs will show up. Users can therefore easily select the output video for each input by pressing "Output" button.



- 8 Fast Select:** Provide the fast setup between inputs and outputs of the matrix. "Input1 - All Output" means all four outputs playing HDMI input 1. "Input2 - All Output" means all four outputs playing HDMI input 2.



RS-232 transmission Format

Baud rate: 9600

Data bit: 8

Parity: None

Set Command

Command Code		Response	Description
Data	Check SUM	ACK	SET
0x08 0x4d 0x41 0x51 0x44 0x05 *0x01~0xff	0x31~0x2f	0xaa	SET MA-5144 Device ID
0x0c 0x4d 0x41 0x51 0x44 Device_Id 0x02 port1 port2 port3 port4	0x0c+...+port4	0xaa	Set MA-5144 Source Mapping of Output Port

Status Command

Command Code		Response		Description
Data	Check SUM	Get Status	Check SUM	Status
0x05 0x4d 0x4f 0x44	0xe5	0xaa 0x06 0x4d 0x41 0x51 0x44	0x29	Get Device Type (MA-5144)
0x07 0x4d 0x41 0x53 0x57 0x04	0x43	0xaa 0x03 0x01~0xff	0x04~0x02	Get Device ID
0x08 0x4d 0x41 0x51 0x44 *0x01~0xFF 0x01	0x2e~0x 2c	0xaa 0x06 port1 port2 port3 port4	0x06 + port1~port4	Get Source Mapping of Output Port
0x08 0x4d 0x41 0x51 0x44 *0x01~0xFF 0x04	0x30~0x 2e	0xaa 0x08 0x56 0x33 0x2e 0x30 0x31 0x61	0x81	Software Version V.3.01a

Check sum:

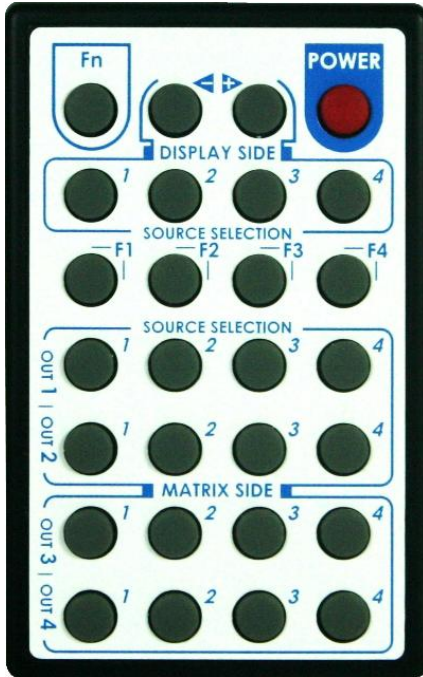
Check sum = (Data value sum)%256 The check sum of response is not included 0xaa.

0x01 ~ 0xFF:

This data is device ID. The Device ID saved in the device, if the device ID of the controlled device is 0xff , the device will ignore its own ID and carry out the commands.

Default Custom Code — IR2 Code: 00

FF



Function 0x17	◀ 0x0A	▶ 0x0C	POWER 0x02
SOURCE SEL. 1 0x54	SOURCE SEL. 2 0x55		
F1 0x57	F2 0x58	F3 0x59	F4 0x06
Output Port 1			
Input 1 - 0x18	Input 2 - 0x5B		
Output Port 2			
Input 1 - 0x1B	Input 2 - 0x5A		
Output Port 3			
Input 1 - 0x0E	Input 2 - 0x0D		
Output Port 4			
Input 1 - 0x1C	Input 2 - 0x1D		

Custom Code — IR3 Code: 0x12 0x21

	Output 1	Output 2	Output 3	Output 4
Source 1	0xA1	0xB1	0xC1	0xD1
Source 2	0xA2	0xB2	0xC2	0xD2

Custom Code — IR4 Code: 0x13 0x31

	Output 1	Output 2	Output 3	Output 4
Source 1	0xAE	0xBE	0xCE	0xDE
Source 2	0xAD	0xBD	0xCD	0xDD

Note: Using terminal to set Custom Code

Example: Set custom code from 0x01 0xEE to 0x13 0x31

>>IR4 ----- command (using RS-232 terminal command mode)

>>IR4 ----- echo

Command	Custom Code
IR2	0x00 0xFF
IR3	0x12 0x21
IR4	0x13 0x31

For further information, please check the installation CD.

Limited Warranty

The SELLER warrants the **AV-GM0743-S1 2x4 HDMI 1.3 Matrix** to be 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-GM0743-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