

# HDMI Matrix

## 4 x 4 HDMI Deep Color & Full HD 3D over Single CAT-5



Model: MAX-HDMI408A-G



### PRODUCT DESCRIPTION

The **MAX-HDMI408A-G 4x4 HDMI Deep Color & full 3D over single Cat-5 matrix with bi-directional IR** 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 cable, not only high quality video and audio can be transmitted to the display, users can also switch among four HDMI sources using the push-in button or remote control. Furthermore, the built-in IR extension function allows user to select the source from the display.

Model Name		MAX-HDMI408A-G	
Technical		MAX-HDMI408A-G	CAT-HDMI11RA-G
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 225MHz [6.75Gbps]	
Video Support		480i / 480p / 720p / 1080i / 1080p60 36-bit color	
Audio Support		Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over CAT5 Transmission Range		Full HD (1080p): 35m (115ft) [CAT-5] HD (720p/1080i): 50m (165ft) [CAT-5]	
HDMI Equalization		N/A	8-level digital rotary control
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] [2] Core chipset — ±8kV	
PCB Stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		4x HDMI / 1x RS-232 / 5x IR socket for IR receiver	1x RJ-45 / 1x IR socket for IR receiver
Output		4x RJ-45 / 4x HDMI / 5x IR socket for IR blaster	1x HDMI / 1x IR socket for IR blaster
HDMI Input Selection		Push-in button / IR remote control / RS-232 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: π = 25° / Carrier frequency: 20-60kHz	
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		3.5mm jack for IR blaster	3.5mm jack for IR blaster
Mechanical		MAX-HDMI408A-G	CAT-HDMI11RA-G
Enclosure		Metal Case	
Dimensions		Model 440 x 142 x 42mm [17.3" x 5.6" x 1.7"]	85 x 38 x 21mm [3.3" x 1.5" x 0.8"]
(L x W x H)	Package	525 x 270 x 180mm [20.7" x 10.6" x 7"]	
	Carton	542 x 411 x 296mm [21.3" x 16.2" x 11.7"]	
Weight	Model	1.8kg [4 lbs]	239g [8.4 oz]
	Package	12.3Kg [27.1 lbs]	
Fixedness		1RU rack-mount with ears Wall hanging holes	Wall-mount with screws
Power Supply		12V 5A DC	5V 2A DC
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]	

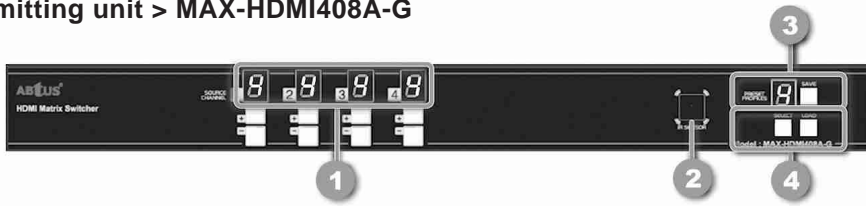
\* Specifications are subject to changes without notice.

## PRODUCT HIGHLIGHTS

- Support HDMI Deep Color & full 3D
- 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
- Bi-directional IR path
- Supports IR, RS-232 and ethernet control
- Extends video signal up to 35m (115 feet) over single CAT-5 at 1080p
- Easy installation with rack-mounting and wall-mounting designs for transmitter and receiver respectively
- Fast response time – 2~5 seconds for channel switch

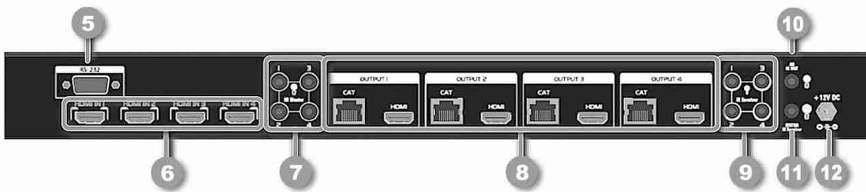
## FRONT PANEL OVERVIEW

### Transmitting unit > MAX-HDMI408A-G



Item	Description	Item	Description
1.	<b>Source Status:</b> Input source indicator LED	3.	<b>Output Push Button &amp; 7-Segment LED:</b> Front panel push buttons used to select the number of display channel & LED display for output ports
2.	<b>IR Sensor:</b> IR sensor for receiving the IR commands from IR remote	4.	<b>Input Push Button &amp; 7-Segment LED:</b> Front panel push buttons used to select the number of input source & LED display for input channels

## REAR PANEL OVERVIEW



Item	Description	Item	Description
5.	<b>RS-232:</b> RS-232 control port	9.	<b>IR Receiver 1-4:</b> Infrared 3.5mm socket for plugging in the extension cable of IR receiver
6.	<b>INPUT 1-4:</b> HDMI inputs	10.	<b>All IR Input:</b> 3.5mm IR blaster socket for HDMI source control on all 4 inputs
7.	<b>IR Blaster 1-4:</b> 3.5mm IR blaster socket for individual HDMI source control	11.	<b>System IR Receiver:</b> Ext. IR Receiver
8.	<b>Output Port 1-4:</b> RJ-45 & local loopout HDMI outputs for each output channel	12.	<b>+12V DC:</b> 12DC power jack

Operation	Procedure	7-Segment LED
<b>Mute Output</b>  Ex: Mute Output 3	<b>Mute + A~D(Output 1~4) + Take</b>  1. Press "MUTE" button  2. Press number key "C" to select Output 3  3. Press "TAKE" button	- 0 3 0 3 0
<b>Output Status</b>  Ex: Output 4 (Input 2)	<b>Status + A~D(Output 1~4) + Take</b>  1. Press "STATUS" button  2. Press number key "D" to select Output 4  3. Press "TAKE" button	- - 4 - 4 2
<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	d - d 5
<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	P - P 5
<b>Learn default EDID</b>  Ex: Default EDID 2 Input 3	<b>Default EDID + A~H(1-8 default EDID) + [ ] (input 1~4) + Take</b>  1. Press "DEFAULT EDID" button  2. Press number key "B" to select default EDID 2  3. Press number key "[ ]" to select Input 3  4. Press "TAKE" button	E d 2 d 2 3 0 0 (success) F (fail)
<b>Learn EDID Port EDID</b>  Ex: Learn Output 4 Input 3	<b>Learn + A~D(Output 1~4) + [ ] (input 1~4) + Take</b>  1. Press "LEARN" button  2. Press number key "D" to select Output 4  3. Press number key "[ ]" to select Input 3  4. Press "TAKE" button	E L 4 L 4 3 0 0 (success) F (fail)

## Definition of IR 3.5mm Jack

### IR BLASTER

1. IR Signal
2. Grounding



### IR RECEIVER

1. IR Signal [20-60 kHz]
2. Grounding
3. Power



Any IR extensions cables in the market that are compatible to the definition of the IR sockets for the matrix can be used as replacement. However, do note that IR cables longer than 2m (6ft) may not work.

## HARDWARE INSTALLATION

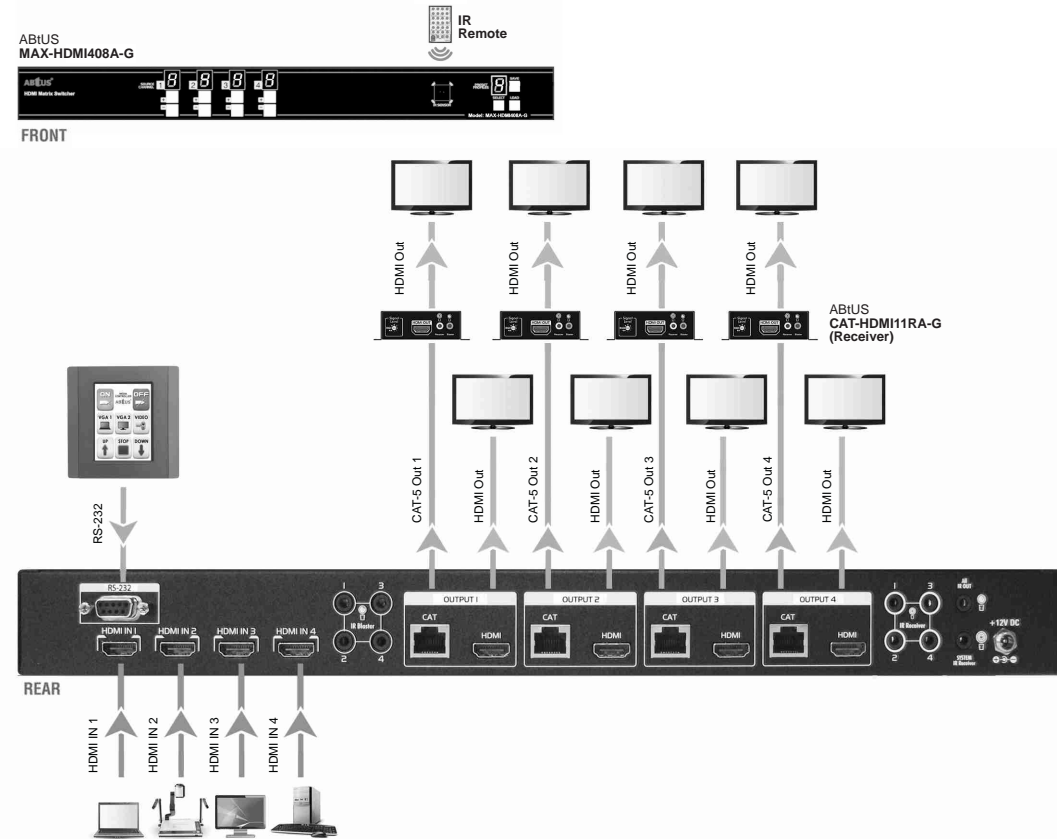
### MAX-HDMI408A-G as Transmitter

1. Connect all sources to HDMI Inputs on the 4x4 HDMI over CAT-5 matrix master MAX-HDMI408A-G.
2. Connect each CAT-5 output port on the MAX-HDMI408A-G to respective CAT-5 input on the remote receiver CAT-HDMI11RA-G.
3. Connect IR blaster to the MAX-HDMI408A-G 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 MAX-HDMI408A-G.
5. Power on all HDMI sources.

### CAT-HDMI11RA-G as Receiver

1. Connect each HDMI output to HDMI displays.
2. Connect the **CAT-5 input** on the CAT-HDMI11RA-G to the **CAT-5 output** port on the MAX-HDMI408A-G.
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 (1~8) which you want to save current input/output mapping
- 3) After you select the desired mapping configuration number, the LED will blink twice & 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



# User Operation Guide

### 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 (1~8) which you want to recall
- 3) After you select the desired mapping configuration number, the LED will blink twice & 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

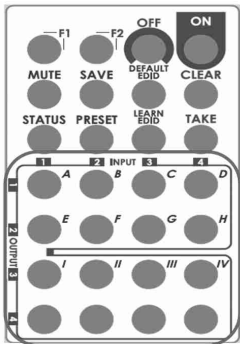
### 4. Default EDID Mode

- 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

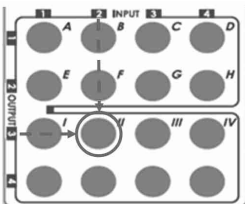
### 5. EDID Learning Mode

- 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- (learn)” 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



Ex: Select Input 2 to Output 3



#### 1. IN/OUT Switch

Push the button on the checkerboard to select Input & Output port.  
Ex: Select Input 2 to Output 3  
Push the red circle button as below to select Input 2 to Output 3

#### 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

## FRONT PANEL REAR PANEL

### Receiving unit > CAT-HDMI11RA-G



Item	Description
1.	<b>Signal Level:</b> 8-level equalization control used to adjust the received HDMI signals. The HDMI signal level varies from MAX (strongest) to MIN (weakest) for respective transmission length from longest possible range to a shorter distance. Please adjust the signal level from MIN to MAX and stop whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue which would shorten the product life significantly!
2.	<b>HDMI Out:</b> Connect to a HDMI display with a HDMI male to male cable
3.	<b>IR Receiver:</b> Infrared 3.5mm socket for plugging in the extension cable of IR receiver
4.	<b>IR Blaster:</b> Infrared 3.5mm socket for plugging in the extension cable of IR blaster
5.	<b>+5V DC:</b> Connect to 5V DC power supply
6.	<b>HDMI Signal IN:</b> Plug in a Cat-6 shielded cable that needs to be linked to the transmitting unit MAX-HDMI408A-G

## > IR PASS-THROUGH

### IR BLASTER

### IR RECEIVER

#### IR Extenders



#### IR Sockets

#### MAX-HDMI408A-G

**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

#### CAT-HDMI11RA-G

**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 MAX-HDMI408A-G 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. Damages arising from this would not be covered under warranty.