

# pragmatic

Innovators in wired & wireless systems

## User Guide for CATS-HDMI-MX8

# 8x8 HDMI over CAT5 Matrix with IR Pass-through

## User Manual



Full HD  
1080

**HDMI**<sup>™</sup>  
HIGH-DEFINITION MULTIMEDIA INTERFACE  
**HDCP**<sup>™</sup>  
HIGH-DEFINITION CONTENT PROTECTION

**7.1 CH**  
**AUDIO**

Remote Control  
**IR**  
Pass-through





## Safety and Notice

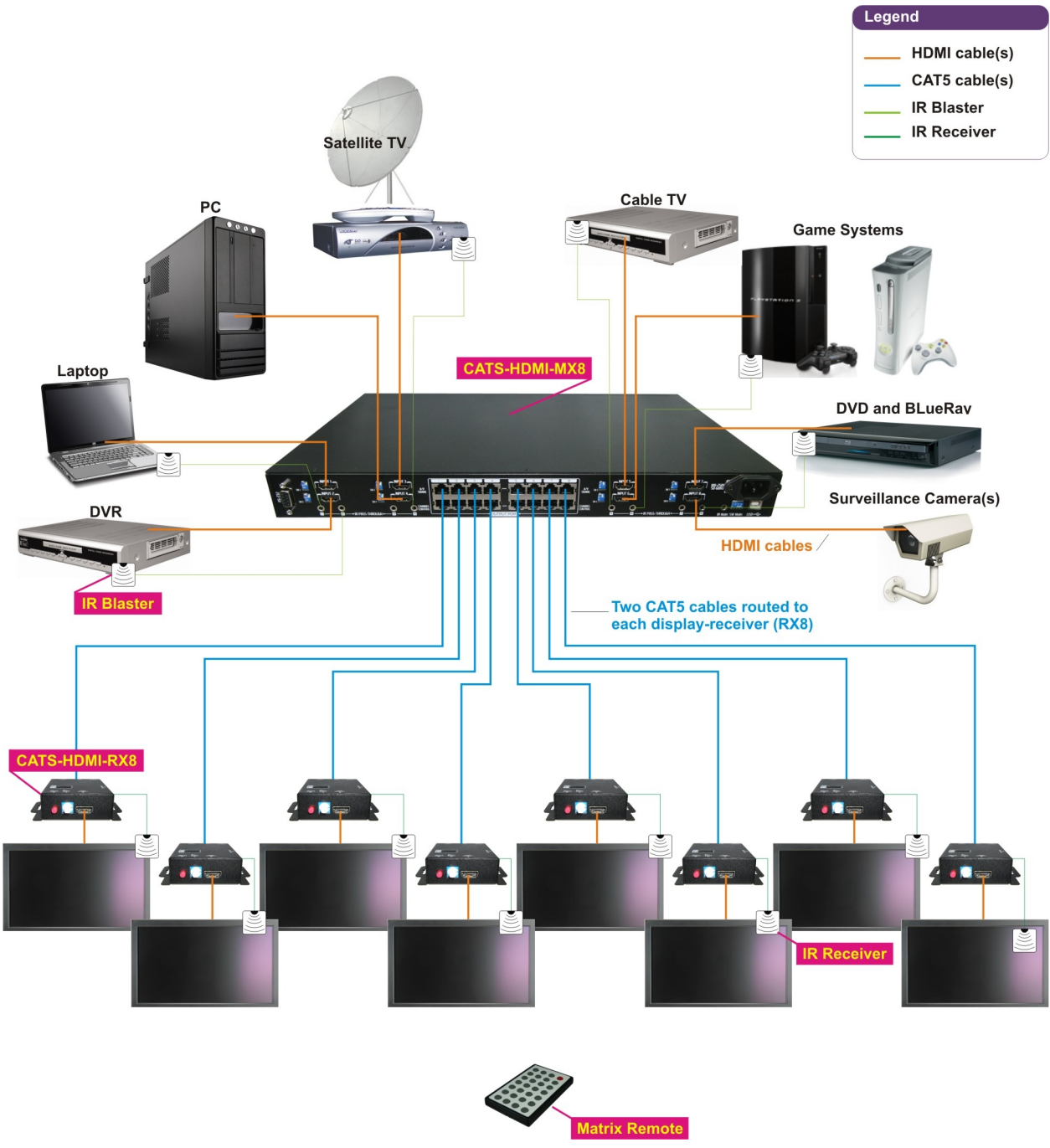
The **CATS-HDMI-MX8 v1.2/v1.3 8x8 HDMI over CAT5 Matrix with IR Pass-through** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the CATS-HDMI-MX8 should be used with care. Please read and follow 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.



# Introduction

The **CATS-HDMI-MX8 8x8 HDMI over CAT5 Matrix with IR Pass-through** provides the most flexible and cost effective solution in the market to route high definition video sources plus multichannel (up to 7.1-channel) digital-audio from any of the eight HDMI source devices to the remote displays at the same time. Through low cost Cat-5/5e/6 UTP/STP cables, not only high quality video and audio can be transmitted to the display sites, but also users can switch among eight HDMI sources using the push-in button or remote control. With single power design at the source site, each remote module is easily installed without power supply. Furthermore, the built-in IR extension function let users can control the HDMI source devices such as the Blu-ray Disc player or satellite receiver at display site directly!



# Features

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- State-of-the-art Silicon Image (Founder of HDMI) chip-set embedded for utmost 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-in button, IR remote control, or RS-232 control
- Allows controlling local HDMI sources such as DVD and TiVo by IR extender through control path at remote receiver
- Allows to control main matrix center through control line at remote receiver
- Extends video signal up to 35m (115 feet) over CAT5e at 1080p and likely longer with better HDMI source device, better grade HDMI display, and better quality solid CAT6 cable
- Easy installation with rack-mounting and wall-mounting designs for master and receiver respectively
- Fast response time – 2~5 seconds for channel switch



**\*HDMI 1.2a for CATS-  
HDMI-MX8 v1.2**



***The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ-45 connectors is recommended.***

# Specifications & Package Contents

Model Name		CATS-HDMI-MX8 v1.2 / CATS-HDMI-MX8 v1.3	
Technical		CATS-HDMI-MX8	CATS-HDMI-RX8
Role of usage		8x8 true matrix Transmitter [TX]	Receiver [RX]
HDMI compliance		[CATS-HDMI-MX8 v1.2] – HDMI 1.2a 1.3c [CATS-HDMI-MX8 v1.3] – HDMI 1.3c	
HDCP compliance		Yes	
Video bandwidth		[CATS-HDMI-MX8 v1.2] – Single-link 165MHz [4.95Gbps] [CATS-HDMI-MX8 v1.3] – Single-link 225MHz [6.75Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
HDMI over CAT5 transmission range		Full HD (1080p) – 35m (115ft) [CAT5e] / 40m (130ft) [CAT6] HD (720p/1080i) – 50m (165ft) [CAT5e] / 55m (180ft) [CAT6]	
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 — ±15kV [air-gap discharge] & ±8kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up		4-layer board [impedance control — differential 100W; single 50W]	
Input		8x HDMI 1x RS-232	1x RJ-45 [HDMI signal] 1x RJ-45 [Channel control] 1x IR socket for IR receiver
Output		8x RJ-45 [HDMI signal] 8x RJ-45 [Channel control] 9x IR socket for IR blaster	1x HDMI
HDMI Input selection		Push-in button / IR remote control / RS-232	Push-in button / 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: $t = 25^\infty$ / Carrier frequency: 38kHz	
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]	
USB connector <sup>3</sup>		Standard type-B [square shape]	
3.5mm connector		Earphone jack for IR blaster [IR Main] IR control on all source devices [IR PASS-THROUGH1~8] IR control on individual source device	Earphone jack for IR receiver [IR RECEIVER] Receives IR commands from remote control
DIP switch [CATS-HDMI-MX8]		[SW1~SW8] 2-pin for EDID & audio mode [SW Main] 4-pin for operation & firmware update	
Mechanical		CATS-HDMI-MX8	CATS-HDMI-RX8
Enclosure		Metal case	
Dimension s  (L x W x H)	Model	440 x 290 x 44mm [1'5" x 11.4" x 1.7"]	85 x 90 x 25mm [3.3" x 3.5" x 1"]
	Package	528 x 398 x 130mm [1'9" x 1'4" x 5.1"]	90 x 85 x 25mm [3.5" x 3.3" x 1"]
	Carton	585*242*565mm	
Weight	Model	3250g [7.2 lbs]	180g [6.3oz]
	Package	7.1 kg [15.6 lbs]	
Fixedness		1U rack-mount with ears	Wall-mount with screws

Power supply	AC Power 100-240V	Not necessarily required <sup>1</sup>
Power consumption	60 Watts [max]	1.5 Watt [max] (provided by CATS-HDMI-MX8)
Operation temperature	0~40°C [32~104°F]	
Storage temperature	-20~60°C [-4~140°F]	
Relative humidity	20~90% RH [no condensation]	
<b>Package Contents</b>	1x CATS-HDMI-MX8 1x IR blaster <sup>2</sup> 2x 1U rack mounting-ear 1x IR remote control <sup>2</sup> 1x User Manual	8x CATS-HDMI-RX8 8x IR receiver 16x Wall-mounting screws 1x UL AC power cord

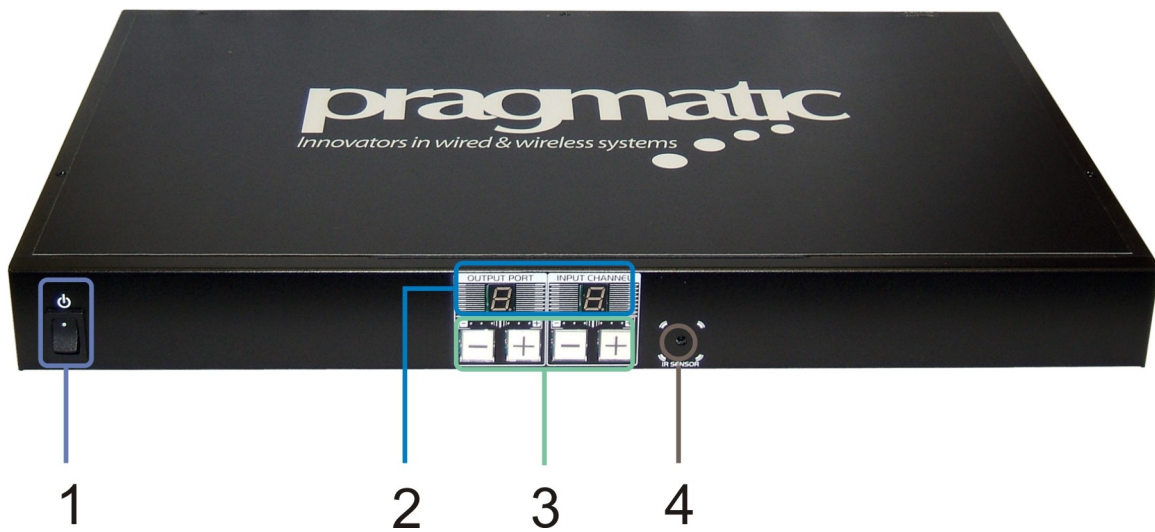


<sup>1</sup> *The CATS-HDMI-RX8 has been tested extensively and found that it doesn't require external power supply. If in rare situation you find it cannot work with the CATS-HDMI-MX8, please use any +5V power adapter to plug in the power jack and see if it can work. If not, please contact your technical support for further service.*

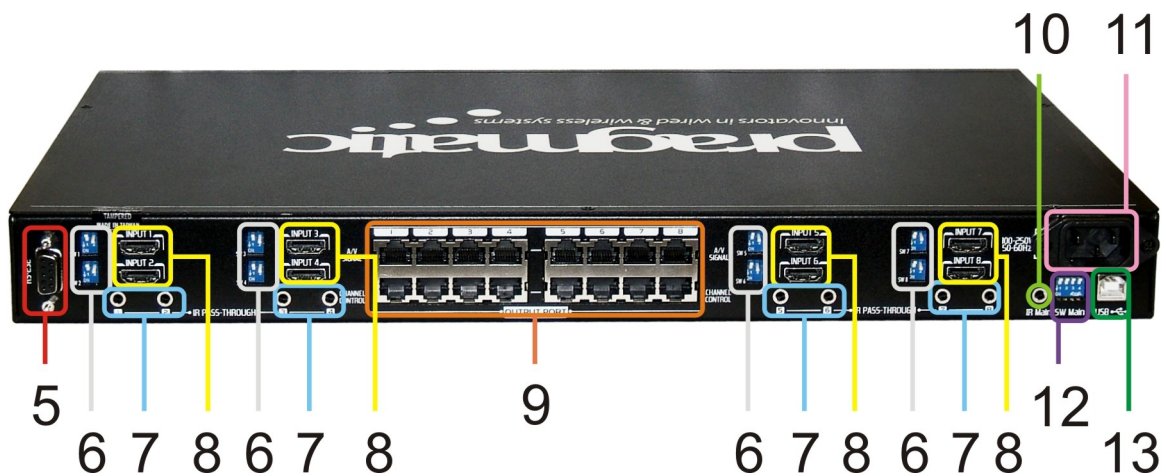
<sup>2</sup> *Additional IR remote control and IR blaster cable can be purchased as optional accessories to control the HDMI sources located separately.*

<sup>3</sup> *USB or RS-232 control must be connected either one at a time. Connecting both types of cables may cause command confusion.*

# CATS-HDMI-MX8

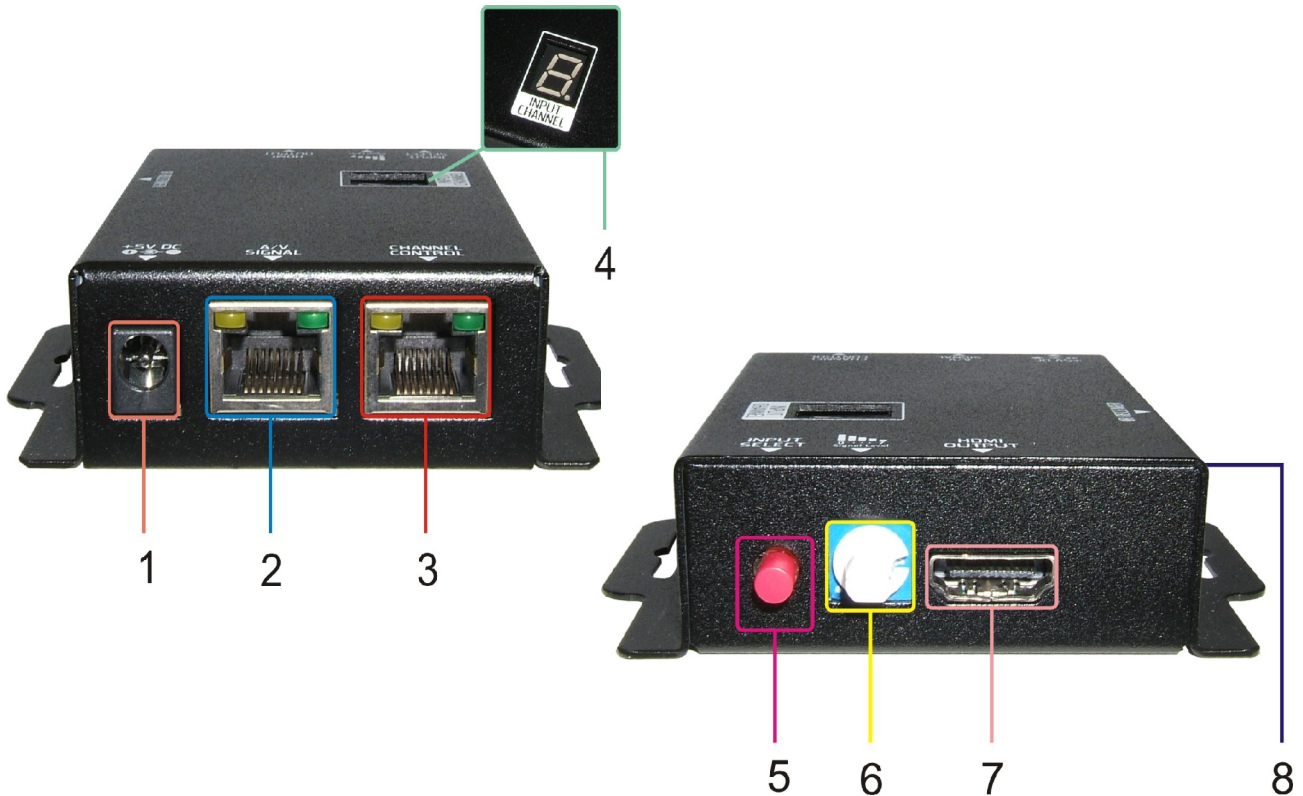


1. Power On/Off control switch
2. LED displays for output ports and input channels
3. Front panel push buttons used to select the number of input source and display channel
4. **IR SENSOR:** IR sensor for receiving the IR commands from the IR remote



5. **RS-232:** RS-232 control port **AC Power:** 100-240V
6. **SW 1–8:** DIP switch (see DIP Switch section in p.8)
7. **IR PASS-THROUGH 1–8:** 3.5mm IR blaster socket for individual HDMI source control
8. **INPUT 1 –8:** HDMI inputs
9. **OUTPUT PORT 1–8:** RJ-45 outputs for each output channel
10. **IR Main:** 3.5mm IR blaster socket for HDMI source control on all 8 inputs **[default socket for IR blaster]**
11. **AC Power:** 100-240V
12. **SW Main:** DIP switches (see DIP Switch section in p.8)
13. **USB:** USB control port

# CATS-HDMI-RX8



1. **+5V DC:** Spare power jack for over 60m transmission when the RX may need external power to work\*.
2. **A/V SIGNAL:** Plug in the CAT5 connected to the respective **A/V SIGNAL** port on the CATS-HDMI-MX8
3. **CHANNEL CONTROL:** Plug in the CAT5 connected to the respective **CHANNEL CONTROL** port on the CATS-HDMI-MX8
4. **INPUT CHANNEL:** Display the current showing HDMI source channel
5. **INPUT SELECT:** Push button for switching input source channel in sequential order
6. **Signal Level 0-7:** Adjust the 8-level equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Please adjust the signal level from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!
7. **HDMI Output:** Connect to HDTV with a HDMI cable
8. **IR RECEIVER:** Plug in IR receiver



*\*The CATS-HDMI-RX8 has been tested extensively and found that it doesn't require external power supply. If in rare situation you find it cannot work with the CATS-HDMI-MX8, please use any +5V power adapter to plug in the power jack and see if it can work. If not, please contact your technical support for further service.*



DIP Switch Position		Video	Audio	Description
Pin#1	Pin#2			
OFF [↑]	OFF [↑]	Up to 1080p	Stereo <sup>1</sup>	<b>Default Mode</b> <sup>2</sup> – Up to 1080p & stereo audio output for most HDTVs
OFF [↑]	ON [↓]	Up to 720p / 1080i	Stereo	<b>Safe Mode</b> <sup>3</sup> – Enforce the system output at 720p/1080i video and stereo audio for basic compatibility among HDTVs
ON [↓]	OFF [↑]	Bypass <sup>4</sup>	Bypass <sup>4</sup>	<b>EDID Learning Mode</b> <sup>5</sup> – for learning EDID from the display while playing any received HDMI audio format
ON [↓]	ON [↓]	Bypass	Stereo	<b>EDID Learning &amp; Stereo Mode</b> <sup>5</sup> – for learning EDID from the display while enforcing stereo output if any HDTV cannot play surround sound normally

## SW1-SW8 for EDID/Audio



### Note

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

<sup>2</sup> Factory default setting of [SW1]-[SW8] is pin#1-OFF[«] & pin#2- OFF[«] for 1080p with stereo.

<sup>3</sup> If you encounter any unsolved audio/video output problem during system installation, please turn any [SW1]-[SW8] to pin#1-OFF[«] & pin#2-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.

<sup>4</sup> 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.

<sup>5</sup> To learn the EDID of HDMI display for respective HDMI source devices, please see the [EDID Learning] section in the next page for more detail information.

## SW Main for firmware update (for technical support only)

DIP Switch Position		Pin#1	Pin#2	Pin#3	Pin#4
Normal Operation Mode [via RS-232 port] <sup>6</sup>		OFF[«]	OFF[«]	OFF[«]	OFF[«]
Normal Operation Mode [via USB port] <sup>7</sup>		OFF[«]	OFF[«]	OFF[«]	ON[»]
Firmware Update Mode <sup>8</sup>	Block A [main]	ON[»]	OFF[«]	OFF[«]	OFF[«]
	Block B [remote]	ON[»]	OFF[«]	ON[»]	OFF[«]
	Block C [HDMI]	ON[»]	ON[»]	OFF[«]	OFF[«]

### Note



<sup>6</sup> **Factory default for SW Main is pin#1-OFF[«], pin#2-OFF[«], pin#3- OFF[«], & pin#4-OFF[«].**  
PLEASE MAINTAIN THIS SETTING AT ANYTIME FOR REGULAR USE VIA RS-232 CONTROL!

<sup>7</sup> **Factory default for SW Main is pin#1-OFF[«], pin#2-OFF[«], pin#3- OFF[«], & pin#4- ON[»].**  
PLEASE MAINTAIN THIS SETTING AT ANYTIME FOR REGULAR USE VIA USB CONTROL!

### <sup>8</sup> Sequence for firmware update

**WARNING!** [Firmware update only can be done via RS-232 port and connection to PC set at COM1)

1. Power off the CATS-HDMI-MX8. Execute the firmware update program on your PC via COM1 port connection to the RS-232 port of the CATS-HDMI-MX8.
2. Set the pin#1 of [SW Main] at ON[»] for firmware update mode.
3. Set pin#2 and pin#3 at respective positions to assign which Block to be updated.
4. Power on the CATS-HDMI-MX8. The firmware update program should begin this update sequence automatically. If not, please check the RS-232 connection status between PC and CATS-HDMI-MX8.
5. After the OK message shows up to indicate the firmware update sequence for designated Block is complete, please turn off the CATS-HDMI-MX8.
6. Repeat step 3 ~ step6 if you want to update the firmware of the remaining Blocks.
7. Set the [SW Main] switch position to Normal Operation Mode.
8. Power on the CATS-HDMI-MX8.

## IR Extender

IR Blaster



IR Receiver



## IR Sockets

### CATS-HDMI-MX8

**IR Main:** The default location for IR blaster to transmit all IR command signals received from any of the eight remote receivers to all of the HDMI sources.

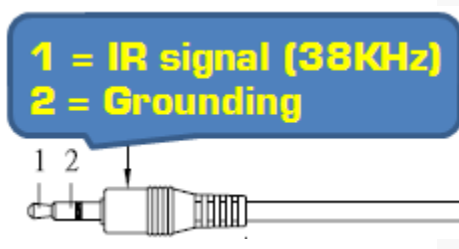
**IR PASS-THROUGH 1–8:** IR blaster connected here can only transmit IR command signals from the remote receivers that are setting at respective input channel from 1 to 8.

### CATS-HDMI-RX8

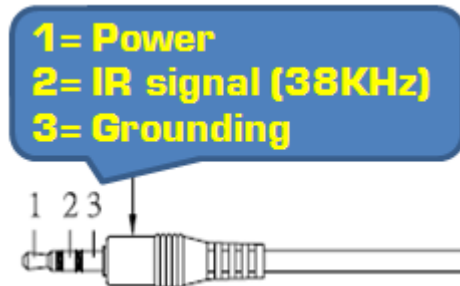
**IR RECEIVER:** IR receiver connected here can receive all IR command signals from the IR remote controls of CATS-HDMI-MX8 and all other HDMI source devices.

## 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.

# Supported IR Data Format

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Data Format	Suitable	Not Recommended
NEC	R	
RC5	R	
TOSHIBA MICOM CODE	R	
GRUNDIG CODE	R	
SONY 12 BIT CODE	R	
SONY 15 BIT CODE	R	
SONY 20 BIT CODE	R	
RCA CODE		R
RCM CODE		R
MATSUSHITA CODE		R
MITSUBISHI CODE	R	
ZENITH CODE	R	
JVC CODE	R	
M50560-001P	R	
MN6125H	R	
MN6125L	R	
MN6014_C5D7	R	
MN6014-C6D6	R	
MC14457P	R	
LC7464(AHEA)	R	
GEMINI_CM	R	

## CATS-HDMI-MX8 as master

1. Connect all sources to HDMI Inputs on the 8x8 HDMI over CAT5 matrix master CATS-HDMI-MX8
2. Connect each **CHANNEL CONTROL** output port on the CATS-HDMI-MX8 to respective **CHANNEL CONTROL** port on the remote receiver CATS-HDMI-RX8
3. Connect each **A/V SIGNAL** output port on the CATS-HDMI-MX8 to respective **A/V SIGNAL** input on the remote receiver CATS-HDMI-RX8
4. Connect IR blaster to the **IR MAIN** jack of CATS-HDMI-MX8 and direct the IR blaster to the built-in IR receiver of the sources
5. Connect the +5V 6A DC power supply to the CATS-HDMI-MX8
6. Power on all HDMI sources
7. Power on the CATS-HDMI-MX8

## CATS-HDMI-RX8 as receiver

1. Connect each HDMI output to HDMI displays
2. Connect the **A/V SIGNAL** port on the CATS-HDMI-RX8 to the **A/V SIGNAL** port on the CATS-HDMI-MX8
3. Connect the **CHANNEL CONTROL** port on the CATS-HDMI-RX8 to the **CHANNEL CONTROL** port on the CATS-HDMI-MX8
4. Connect IR receiver and place the IR receiver at the appropriate position that can receive the IR command signals sent from the users
5. Dial the 8-level rotary control switch to adjust the HDMI signal level until the picture and sound are clear

## Source Side

### Method A: Push Button

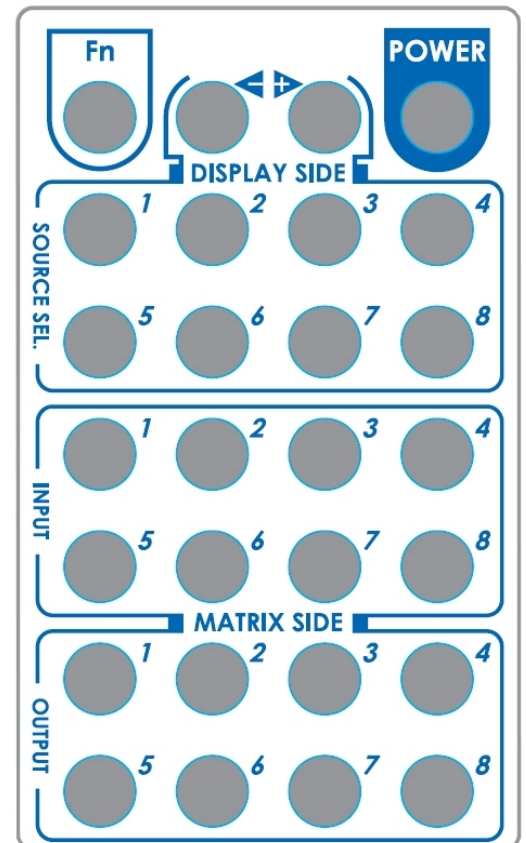
1. Use the “+” or “—” channel button on output port to select which port to be changed.  
 “+”: change selected output port in ascending order  
 “—”: change selected output port in descending order
2. Push the “+” or “—” channel button on Input channel to select the HDMI input source you want to display on this selected output port in step 1 in sequential order. Once you reach the desired input channel you want to display on this selected output port, leave it and the setting will be effective in a few seconds.

### Method B: IR Remote Control

- a. Firstly please push one of the INPUT buttons to choose which HDMI input source you are going to setup. After that, you can have multiple outputs playing the same content from the selected INPUT #1 - #8 by pushing the corresponding OUTPUT buttons. The setting will be effective in a couple of seconds.

#### INPUT & OUTPUT MAPPING

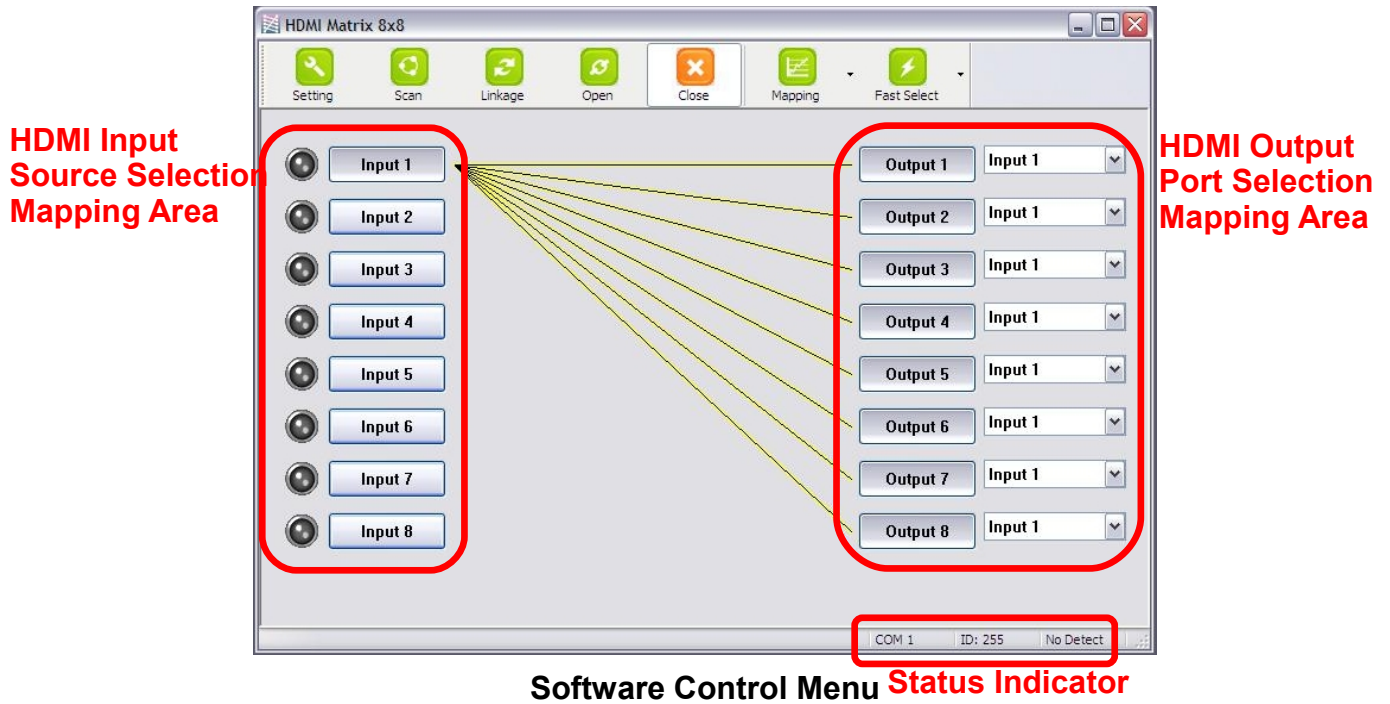
INPUT 1	HDMI input port #1
INPUT 2	HDMI input port #2
INPUT 3	HDMI input port #3
INPUT 4	HDMI input port #4
INPUT 5	HDMI input port #5
INPUT 6	HDMI input port #6
INPUT 7	HDMI input port #7
INPUT 8	HDMI input port #8
OUTPUT 1	HDMI output port #1
OUTPUT 2	HDMI output port #2
OUTPUT 3	HDMI output port #3
OUTPUT 4	HDMI output port #4
OUTPUT 5	HDMI output port #5
OUTPUT 6	HDMI output port #6
OUTPUT 7	HDMI output port #7
OUTPUT 8	HDMI output port #8



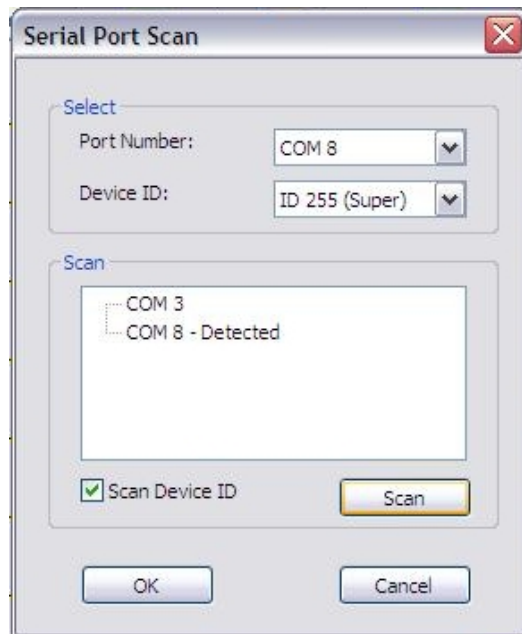
#### FUNCTION KEY

	FUNCTION
<b>FN + SOURCE SEL. 1</b>	Escape System LOCK
<b>FN + SOURCE SEL. 2</b>	Enter System LOCK (most buttons, IR control, and RS-232 control become inactive, except Escape System LOCK command)

# Method C: Software Control through RS-232 or USB port



## 1. Scan button:



### Serial Port Scan:

Press **Scan** button, the machine will scan the all com port and show them.

Select the RS232 serial port connected to the machine. And set device ID 255 is for all device.

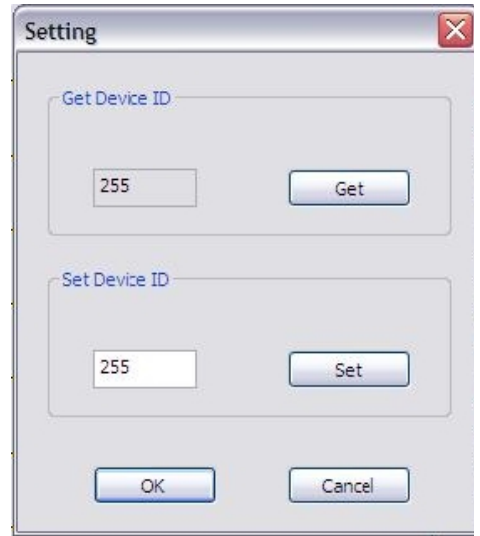
Only the same device id or 255 can get the command you sent.

Press **OK**. Get the new status from the machine you select.

**2. Setting button:**

Press **Get** button to read back device ID.

Press **Set** button to write device ID.



**3. Linkage button:**

Press **Linkage** button to read back all status.

**4. Open/Close button:**

Press this button to close or open COM port.

**5. Mapping button:**

Select All Output:

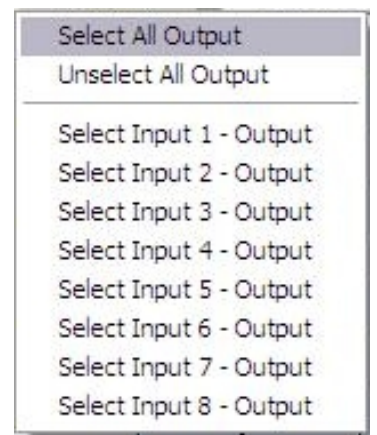
Select "set all output", then select the source on main-menu. You can quickly set all output to the same source.

Unselect All Output:

Release output selection.

Select Input1~8-Output:

Select Input Source. Then select the output port icon.



For example:

Select input source 1. Then select output port 1 and 2. The video and audio will be sent to port 1 and 2.

**6. Fast Select button:**

Press **Fast select** button for quick setting

Input one Output Port one

Input two Output Port two

.....

Press Fast select pull down menu

Select Input Num-Output Num

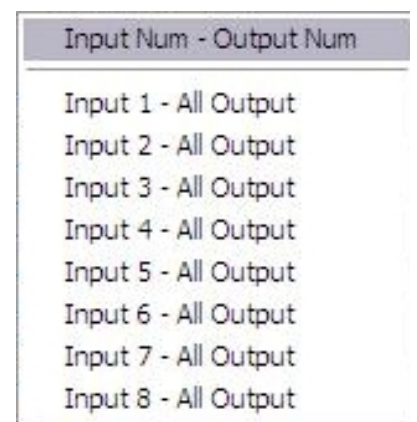
Input source #1 Output port #1

Input source #2 Output port #2

.....

Select Input - All Output

Send the same source to all output





## 7. Output Port:

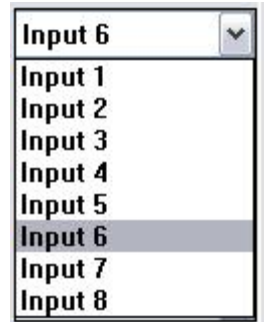
Pull down menu and select which source to be sent to this output port.

### One by one setting

On main menu screen

First select input source. Then select the output ports which you want to send the video and audio from this source. When you select the input source, the source will change to gray. When you select the output port one by one, the selected output port will change to gray.

The linking line will change to yellow.



### Group setting

First select output ports one by one. Then select the input source. The selected output ports change the setting at the same time.

### By using Terminal:

Baud rate: 9600  
 Data length: 8bit  
 Parity check: No  
 Stop bit: 1

### Command Set:

COMMAN D	ACTION	COMMAN D	ACTION	COMMAN D	ACTION
ST	System Status	C5	Output C select Input 5	F3	Output F select Input 3
VR	Firmware Version	C6	Output C select Input 6	F4	Output F select Input 4
A1	Output A select Input 1	C7	Output C select Input 7	F5	Output F select Input 5
A2	Output A select Input 2	C8	Output C select Input 8	F6	Output F select Input 6
A3	Output A select Input 3	D1	Output D select Input 1	F7	Output F select Input 7
A4	Output A select Input 4	D2	Output D select Input 2	F8	Output F select Input 8
A5	Output A select Input 5	D3	Output D select Input 3	G1	Output G select Input 1
A6	Output A select Input 6	D4	Output D select Input 4	G2	Output G select Input 2
A7	Output A select Input 7	D5	Output D select Input 5	G3	Output G select Input 3
A8	Output A select Input 8	D6	Output D select Input 6	G4	Output G select Input 4
B1	Output B select Input 1	D7	Output D select Input 7	G5	Output G select Input 5
B2	Output B select Input 2	D8	Output D select Input 8	G6	Output G select Input 6
B3	Output B select Input 3	E1	Output E select Input 1	G7	Output G select Input 7
B4	Output B select Input 4	E2	Output E select Input 2	G8	Output G select Input 8
B5	Output B select Input 5	E3	Output E select Input 3	H1	Output H select Input 1
B6	Output B select Input 6	E4	Output E select Input 4	H2	Output H select Input 2
B7	Output B select Input 7	E5	Output E select Input 5	H3	Output H select Input 3
B8	Output B select Input 8	E6	Output E select Input 6	H4	Output H select Input 4

<b>C1</b>	Output C select Input 1	<b>E7</b>	Output E select Input 7	<b>H5</b>	Output H select Input 5
<b>C2</b>	Output C select Input 2	<b>E8</b>	Output E select Input 8	<b>H6</b>	Output H select Input 6
<b>C3</b>	Output C select Input 3	<b>F1</b>	Output F select Input 1	<b>H7</b>	Output H select Input 7
<b>C4</b>	Output C select Input 4	<b>F2</b>	Output F select Input 2	<b>H8</b>	Output H select Input 8

## Display Side

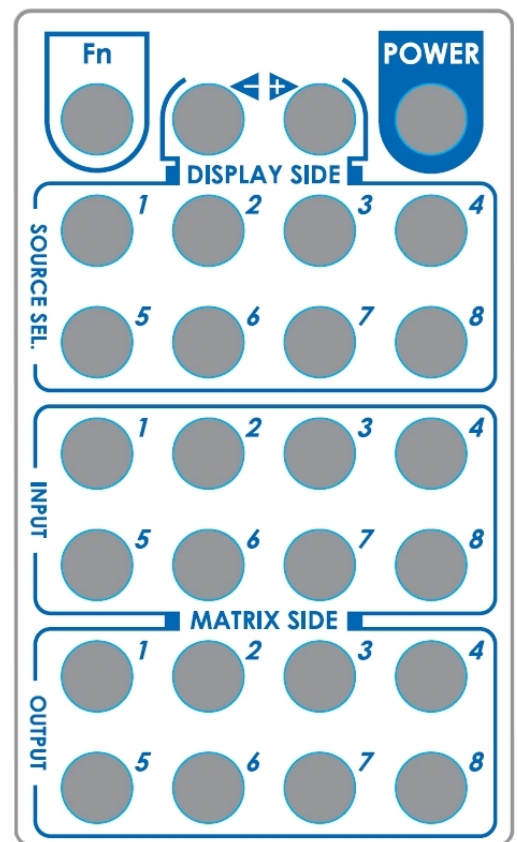
### Method A: Push button for switching input channels

Press the **INPUT SELECT** push button to switch the input source on the respective output port connected to the matrix receiver in sequential order. The selected input source will be displayed on the LED of **INPUT CHANNEL**.

### Method B1: IR remote control for switching input channels

Please decide which input channel to be selected by pressing Source Selection 1 to Source Selection 8. Or you can use left ◀ and right ▶ button to enter IR control mode and select the input channel in ascending and descending order respectively. The setting will be effective in a couple of seconds.

◀	Switch input port in descending order*
▶	Switch input port in ascending order*
<b>SOURCE SEL. 1</b>	Switch the display channel at the remote site to input port 1
<b>SOURCE SEL. 2</b>	Switch the display channel at the remote site to input port 2
<b>SOURCE SEL. 3</b>	Switch the display channel at the remote site to input port 3
<b>SOURCE SEL. 4</b>	Switch the display channel at the remote site to input port 4
<b>SOURCE SEL. 5</b>	Switch the display channel at the remote site to input port 5
<b>SOURCE SEL. 6</b>	Switch the display channel at the remote site to input port 6
<b>SOURCE SEL. 7</b>	Switch the display channel at the remote site to input port 7
<b>SOURCE SEL. 8</b>	Switch the display channel at the remote site to input port 8



#### Note

Right (▶) button to switch input source in ascending order (1, 2, 3, 4, 5, 6, 7, 8, 1, 2, .....)

Left (◀) button to switch input source in descending order (1, 8, 7, 6, 5, 4, 3, 2, 1, 2, .....)

### Method B2: IR remote control for controlling the HDMI sources

Users can use the corresponding IR remotes to control respective BD players, DVD players, or any HDMI input devices including CATS-HDMI-MX8 itself with IR control at any display site.

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-SW8 Pin#1 must be set “ON” for EDID Learning Mode

DIP Switch Position	Video	Audio	Description
Pin#1			
ON [↓]	Bypass	Stereo	<b>EDID Learning</b> – for learning EDID from the receiver

## Method 1: Manually connect HDMI displays to HDMI input ports

1. Power up the matrix master unit. Connect the HDMI display that its EDID needs to be learned to any of the HDMI **INPU1-INPU8** 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 INPU1-INPUT8 port, pull both pins of respective DIP switch **SW1-SW8** 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-SW8** 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.

## Method 2: Use the front panel of the master unit

Button	Function
<b>Output Port</b>	EDID will be read from display via the connected receiver unit from the respective output port
<b>Input Channel</b>	The EDID will be sent to the input source connected to respective HDMI input port

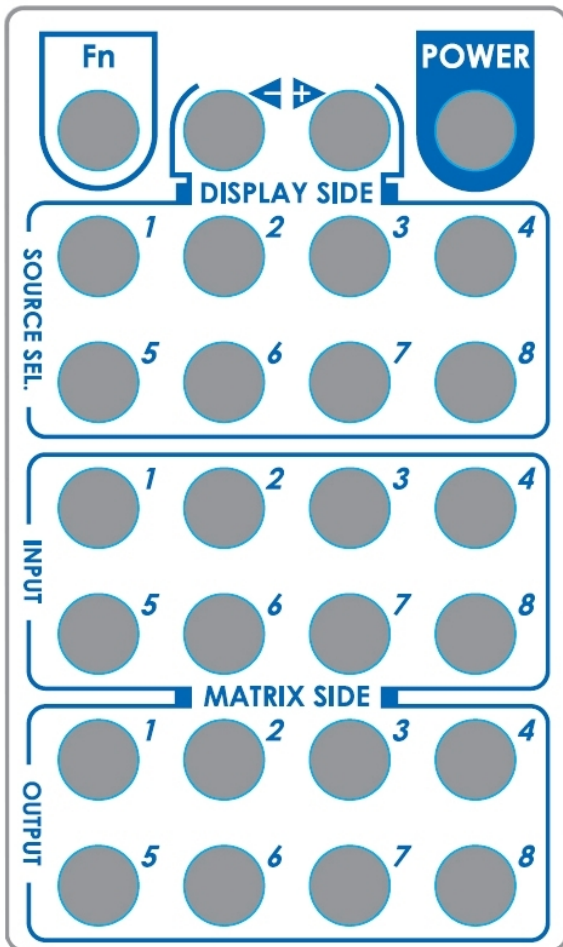
### One by One learning

1. Select the desired **Output Port** and **Input Channel** that you want the EDID of the display connected to this specified output port can be learned for the specified input channel.
2. Press the “+” button of the **Output Port** and “-” button of the **Input Channel** at the same time for 2 seconds.
3. Release these two buttons. The EDID will be read from the receiver unit connected to the display and sent the **Output Port** then written to the chosen **Input Channel**.
4. If the operation is successful, the Input Channel will show “O” (OK). If the operation is not successful, it will show “F” (failure).

### One to All learning

1. Press the “...” button of the **Output Port** and the “...” button of the **Input Channel** at the same time for 2 seconds.
2. Release these two buttons. . The EDID will be read from the receiver unit connected to the display and sent the **Output Port** then written to all eight **Input Channels**.
3. If the operation is successful, the Input Channels will show “O” (OK). If the operation is not successful, it will show “F” (failure).

## Default Custom Code — IR2 Code: 00 FF



Function 0x17	◀ 0x0A	▶ 0x0C	POWER 0x02
SOURCE SEL. 1 0x54	SOURCE SEL. 2 0x55	SOURCE SEL. 3 0x56	SOURCE SEL. 4 0x01
SOURCE SEL. 5 0x57	SOURCE SEL. 6 0x58	SOURCE SEL. 7 0x59	SOURCE SEL. 8 0x06
INPUT 1 0x18	INPUT 2 0x5B	INPUT 3 0x19	INPUT 4 0x07
INPUT 5 0x1B	INPUT 6 0x5A	INPUT 7 0x1A	INPUT 8 0x04
OUTPUT 1 0x0E	OUTPUT 2 0x0D	OUTPUT 3 0x12	OUTPUT 4 0x05
OUTPUT 5 0x1C	OUTPUT 6 0x1D	OUTPUT 7 0x1F	OUTPUT 8 0x1E

## Custom Code — IR3 Code: 0x12 0x21

Custom Code: 0x12 0x21								
	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8
Source 1	0xA1	0xB1	0xC1	0xD1	0xE1	0xF1	0x11	0x21
Source 2	0xA2	0xB2	0xC2	0xD2	0xE2	0xF2	0x12	0x22
Source 3	0xA3	0xB3	0xC3	0xD3	0xE3	0xF3	0x13	0x23
Source 4	0xA4	0xB4	0xC4	0xD4	0xE4	0xF4	0x14	0x24
Source 5	0xA5	0xB5	0xC5	0xD5	0xE5	0xF5	0x15	0x25
Source 6	0xA6	0xB6	0xC6	0xD6	0xE6	0xF6	0x16	0x26
Source 7	0xA7	0xB7	0xC7	0xD7	0xE7	0xF7	0x17	0x27
Source 8	0xA8	0xB8	0xC8	0xD8	0xE8	0xF8	0x18	0x28

## **Custom Code — IR4 Code: 0x13 0x31**

<b>Custom Code: 0x13 0x31</b>								
	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8
Source 1	<b>0xAE</b>	<b>0xBE</b>	<b>0xCE</b>	<b>0xDE</b>	<b>0xEE</b>	<b>0xFE</b>	<b>0x1E</b>	<b>0x2E</b>
Source 2	<b>0xAD</b>	<b>0xBD</b>	<b>0xCD</b>	<b>0xDD</b>	<b>0xED</b>	<b>0xFD</b>	<b>0x1D</b>	<b>0x2D</b>
Source 3	<b>0xAC</b>	<b>0xBC</b>	<b>0xCC</b>	<b>0xDC</b>	<b>0xEC</b>	<b>0xFC</b>	<b>0x1C</b>	<b>0x2C</b>
Source 4	<b>0xAB</b>	<b>0xBB</b>	<b>0xCB</b>	<b>0xDB</b>	<b>0xEB</b>	<b>0xFB</b>	<b>0x1B</b>	<b>0x2B</b>
Source 5	<b>0xAA</b>	<b>0xBA</b>	<b>0xCA</b>	<b>0xDA</b>	<b>0xEA</b>	<b>0xFA</b>	<b>0x1A</b>	<b>0x2A</b>
Source 6	<b>0xA9</b>	<b>0xB9</b>	<b>0xC9</b>	<b>0xD9</b>	<b>0xE9</b>	<b>0xF9</b>	<b>0x19</b>	<b>0x29</b>
Source 7	<b>0xA8</b>	<b>0xB8</b>	<b>0xC8</b>	<b>0xD8</b>	<b>0xE8</b>	<b>0xF8</b>	<b>0x18</b>	<b>0x28</b>
Source 8	<b>0xA7</b>	<b>0xB7</b>	<b>0xC7</b>	<b>0xD7</b>	<b>0xE7</b>	<b>0xF7</b>	<b>0x17</b>	<b>0x27</b>

**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**

<b>Command</b>	<b>Custom Code</b>
<b>IR2</b>	<b>0x00 0xFF</b>
<b>IR3</b>	<b>0x12 0x21</b>
<b>IR4</b>	<b>0x13 0x31</b>

**For further information, please check the installation CD.**

1. When adjusting the signal level on the receiver unit, please dial the rotary control switch from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!
2. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI display EDID information.
3. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C.
4. The transmission length is largely affected by the type of Cat-5/5e/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
5. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
6. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use shielded STP cables to improve EMI problems, which is worse in long transmission.
7. Because the quality of the CAT5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
8. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.
9. The CATS-HDMI-RX8 has been tested extensively and found that it doesn't require external power supply. If in rare situation you find it cannot work with the CATS-HDMI-MX8, please use any +5V power adapter to plug in the power jack and see if it can work. If not, please contact your technical support for further service.
10. Additional IR remote controls and IR blaster cables can be purchased as optional accessories to control the HDMI sources located separately.





## Performance Guide for HDMI over CAT5/6 Cable Transmission

Performance rating		Type of CAT5/6 cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	***	****	*****
	Shielded (STP)	***	***	****
Stranded	Unshielded (UTP)	*	**	**
	Shielded (STP)	*	*	**
<b>Termination</b>		Please use <b>EIA/TIA-568-B</b> termination ( <b>T568B</b> ) at any time		

The SELLER warrants the **CATS-HDMI-MX8 v1.2/v1.3 8x8 HDMI over CAT5 Matrix with IR Pass-through** to be 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 CATS-HDMI-MX8 v1.2/v1.3 features and specifications is subject to change without further notice.

