



INSTRUCTION MANUAL

# HSW44C Plus

## 4x4 HDMI Matrix Switch

with CAT5 OUTPUT and up to 60KHz IR



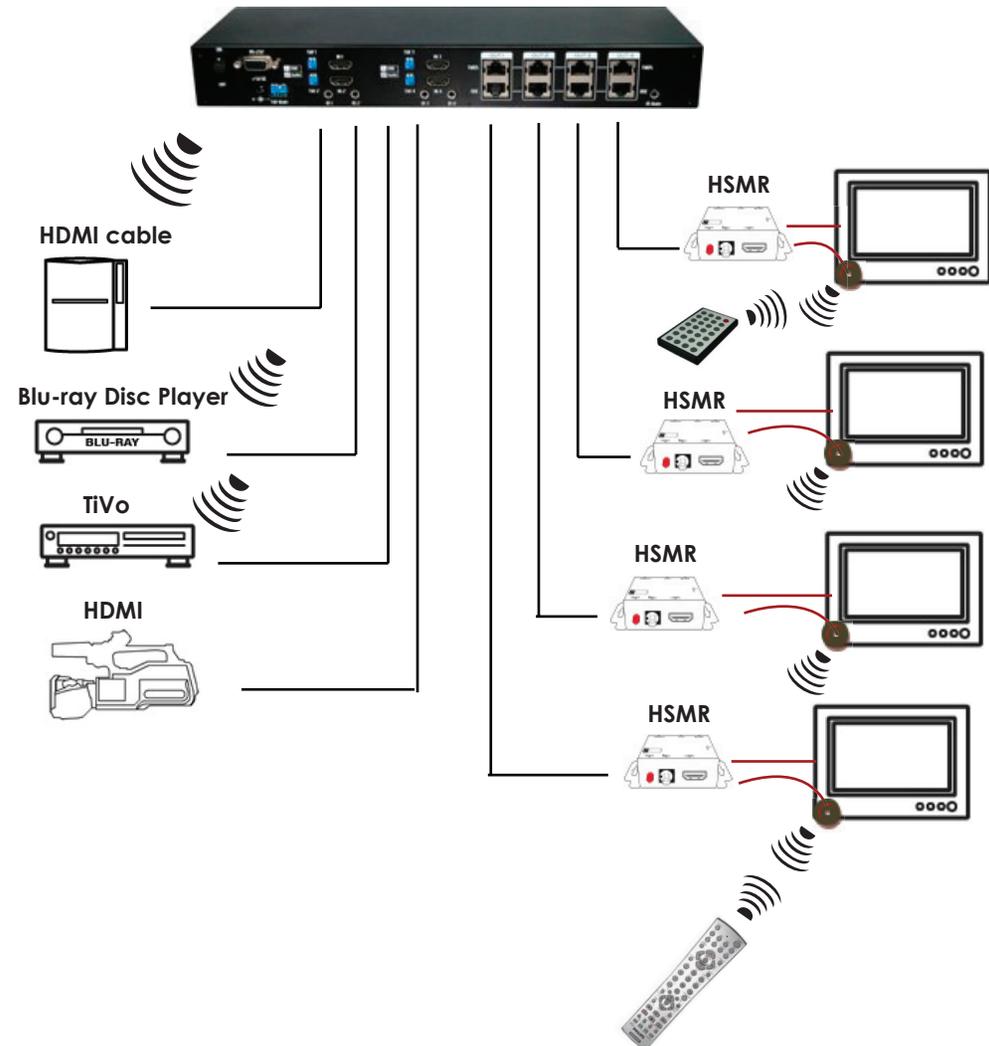
# Safety and Notice

The HSW44C Plus 4x4 HDMI Matrix Switch with CAT5 OUTPUT and up to 60KHz IR has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HSW44C Plus 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 **HSW44C Plus 4x4 HDMI & Full 3D support 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 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 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, Ethernet 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 makes users at display site access the DVD player, PS3 or any HDMI supported devices directly!



## Features

- State-of-the-art Silicon Image (Founder of HDMI) chipset embedded for utmost compatibility and reliability
- HDMI 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 full IR frequency 20kHz – 60kHz
- Supports default HDMI EDID and learns the EDID of displays
- The matrix master can switch every output channel to any HDMI input by push-in button, IR remote control, Ethernet, or RS-232 control
- Allows control of local HDMI sources such as DVD and TiVo® by IR extender through control path at remote receiver
- Allows control of main matrix switch 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 (such as PS3®), better grade HDMI display (such as Sony X-series HDTV®), 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



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.

TiVo is a registered trademark of TiVo Inc.

PS3 is a registered trademark of Sony Computer Entertainment.

Sony X-series HDTV is a registered trademark of Sony Electronics Inc.

## Specifications & Package Contents

Model Name	HSW44C Plus	
Technical	HSW44C Plus	HSMR Plus
Role of usage	True 4x4 matrix switcher Transmitter [TX]	Receiver [RX]
HDMI compliance	High Speed HDMI-Deep Color & Full 3D support	
HDCP compliance	Yes	
Video bandwidth	Single-link 225MHz [6.75Gbps]	
Video support	480i / 480p / 720p / 1080i / 1080p60 Hz up to 36-bit color	
Audio support	Surround sound (up to 7.1 ch) 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 100Ω; single 50Ω]	
Input	4x HDMI 1x RS-232 1xRJ-45 Ethernet Control	1x RJ-45 TMDS 1x RJ-45 DDC 1x IR socket for IR receiver
Output	4x RJ-45 TMDS 4x RJ-45 DDC 5x 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: $\tau = 25^\circ$ / Carrier frequency: 20~60kHz	
HDMI connector	Type A [19-pin female]	
RJ-45 connector	WE/SS 8P8C with 2 LED indicators for receiver connect & Ethernet	
RS-232 connector	DE-9 [9-pin D-sub female]	
3.5mm connector	Earphone jack for IR blaster <b>[IR Main]</b> IR control on all source devices <b>[IR1~IR4]</b> IR control on individual source device	Earphone jack for IR receiver <b>[IR RECEIVER]</b> Receives IR commands from remote control
DIP switch [Matrix]	[SW1~SW4] 2-pin for EDID and audio setting modes [SW Main] 4-pin operation mode & firmware update	

Mechanical		Matrix	HSMR
Enclosure		Metal enclosure	
Dimensions (L x W x H)	Model	440 x 142 x 44mm [17.3" x 5.6" x 1.7"]	90x 85x 25mm [3.5" x 3.3" x 1"]
	Package	533 x 230 x 114 mm [21" x 9" x 4.5"]	
	Carton	580 x 570 x 260mm [23" x 23" x 10.2"]	
Weight	Model	4.1 lbs	180g [6.3 oz]
	Package	8.6 lbs	
Fixedness	1U rack-mount with ears Wall hanging holes		Wall-mount with screws
Power supply	5V 6A DC		Not necessarily required <sup>1</sup>
Power consumption	20 Watts [max]		1 Watt [max] (provided by MATRIX)
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 Matrix 1x IR blaster <sup>2</sup> 2x Rack-mounting ear 1x IR remote control <sup>2</sup> 1x User Manual		4x HSMR 4x IR receiver 8x Wall-mounting screws 1x 5V 6A in-line power adapter 1x C5-type power cord

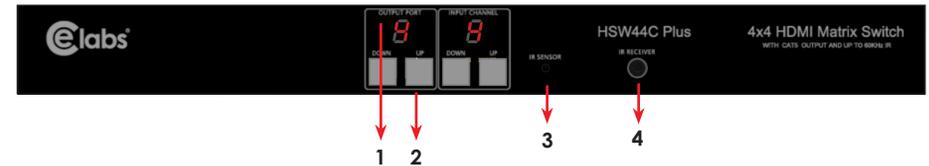


<sup>1</sup> The HSMR Plus has been tested extensively and found that it doesn't require external power supply. If in rare situation you find it cannot work with the HSW44C Plus, please use any +5V power adapter to plug in the power jack and see if it can work. If not, please contact your technical support for further service.

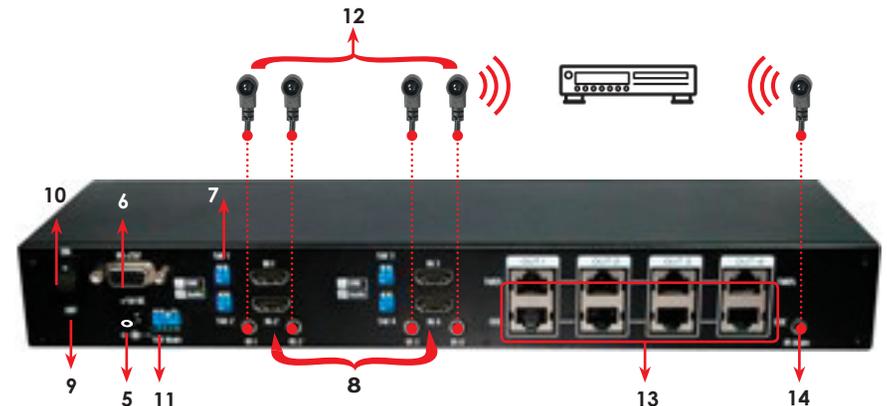
<sup>2</sup> Additional IR remote controllers and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

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

## HSW44C Plus

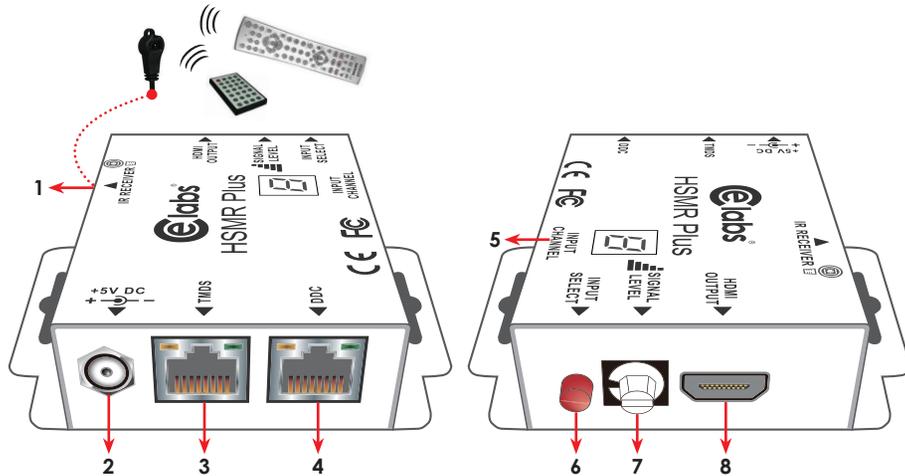


- Seven Segment LED Indicators:** Control display
- Front panel push buttons:** Used to select input source and display channel number
- IR Sensor:** IR sensor for receiving the IR commands from the IR remote
- IR Receiver:** Plug in IR receiver



- +5V DC:** 5V DC power jack
- RS-232:** RS-232 control port
- SW1-SW4:** DIP switch [see DIP Switch section in p.8]
- IN 1 - IN 4:** HDMI inputs
- Ethernet:** For IP control
- On/Off Switch**
- SW Main:** 4-pin DIP switch (Operation Mode See Pg. 9)
- IR 1 - IR 4:** IR extender jacks for individual HDMI source control
- OUT 1 - OUT 4:** RJ-45 TMD5/DDC outputs for each output channel
- IR MAIN:** IR extender jack for all HDMI source control [default socket for IR blaster]

## HSMR Plus



1. **IR RECEIVER:** Plug in IR receiver
2. **+5V DC:** Spare power jack for over 60m transmission when the RX may need external power to work\*.
3. **Channel Control:** Plug in the CAT5 connected to the respective **TMDS** port on the HSMR Plus
4. **DDC:** Plug in the CAT5e connected to the respective **DDC** port on the HSMR Plus
5. **INPUT CHANNEL:** Display the current showing HDMI source channel
6. **INPUT SELECT:** Push button for switching input source channel in sequential order.
7. **SIGNAL LEVEL:** 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 issues that would shorten the product life significantly!
8. **HDMI OUTPUT:** Connect to a HDTV with a HDMI cable.



\*The HSMR Plus 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 HSW44C Plus, please use any +5V power adapter to plug in the power jack and see if it can work. If not, please contact our technical support for further service.

## DIP Switch

### SW1 -SW4 for EDID/Audio

DIP Switch Position		Video	Audio	Description
Pin#1	Pin#2			
OFF [↑]	OFF [↑]	Up to 1080p	Surround <sup>1</sup>	<b>Default Mode 1<sup>2</sup></b> — Up to 1080p video & surround sound audio output up to 7.1ch (DTS-HD & Dolby TrueHD)
OFF [↑]	ON [↓]	Up to 1080p	Stereo <sup>2</sup>	<b>Default Mode 2</b> — Enforce the system output at 1080p video and stereo audio for basic compatibility among HDTVs
ON [↓]	OFF [↑]	Up to 720p/1080i	Stereo	<b>Safe Mode<sup>3</sup></b> — Up to 720p/1080i video and stereo audio for basic compatibility among HDTVs
ON [↓]	ON [↓]	Bypass <sup>4</sup>	Bypass <sup>4</sup>	<b>EDID Learning Mode<sup>5</sup></b> — for learning EDID from the display while playing any received HDMI audio



#### Note

- <sup>1</sup> Factory default setting of [SW1]-[SW4] is pin-1 at OFF [↑] & pin-2 at OFF [↑] for 1080p video and surround sound audio.
- <sup>2</sup> If the HDTV shows video but without audio, please try to set audio mode to stereo.
- <sup>3</sup> If you encounter any unsolved audio/video output problem during system installation, please turn any [SW1]-[SW4] to pin-1 at OFF [↑] & pin-2 at ON [↓] for safe mode to enforce the system EDID up to 1080i video and stereo audio 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 (p.23) 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 <sup>6</sup>	OFF [↑]	OFF [↑]	OFF [↑]	ON [↓]
Firmware Update Mode <sup>7</sup> (Block A)	ON [↓]	ON [↓]	OFF [↑]	ON [↓]
Firmware Update Mode <sup>7</sup> (Block B)	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-ON [↓]. PLEASE MAINTAIN THIS SETTING AT ANYTIME FOR REGULAR USE!

<sup>7</sup> Sequence for firmware update

[1]. Power off the HSW44C Plus.

[2]. Set the DIP switch position to Firmware Update Mode.

[3]. Power on the HSW44C Plus.

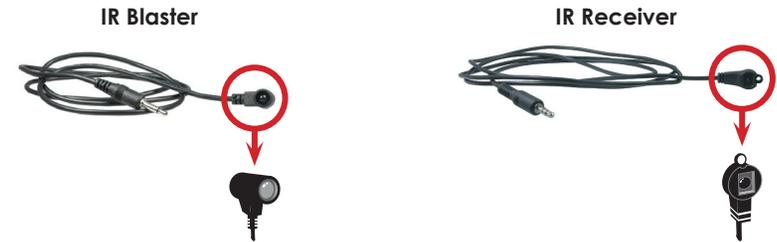
[4]. Power off the HSW44C Plus.

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

[6]. Power on the HSW44C Plus.

## IR PASS-THROUGH

### IR Extenders



### IR Sockets

#### HSW44C Plus

**IR Main:** 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 PASS-THROUGH 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.

#### HSMR Plus

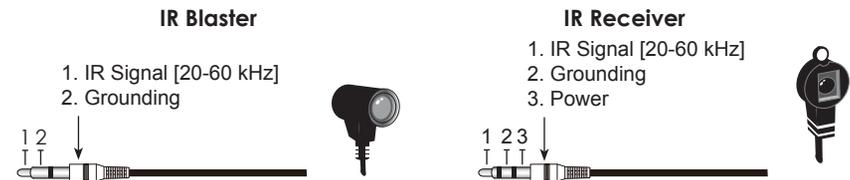
**IR RECEIVER:** IR receiver connected here can receive all IR command signals from the IR remote controls of HSW44C Plus and all other HDMI source devices.



### 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



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 (6ft) may not work.

## Supported IR Data Format

Data Format	Suitable	Not Recommended
NEC	<input checked="" type="checkbox"/>	
RC5	<input checked="" type="checkbox"/>	
TOSHIBA MICOM CODE	<input checked="" type="checkbox"/>	
GRUNDIG CODE	<input checked="" type="checkbox"/>	
SONY 12 BIT CODE	<input checked="" type="checkbox"/>	
SONY 15 BIT CODE	<input checked="" type="checkbox"/>	
SONY 20 BIT CODE	<input checked="" type="checkbox"/>	
RCA CODE		<input checked="" type="checkbox"/>
RCM CODE		<input checked="" type="checkbox"/>
MATSUSHITA CODE		<input checked="" type="checkbox"/>
MISUBISHI CODE	<input checked="" type="checkbox"/>	
ZENITH CODE	<input checked="" type="checkbox"/>	
JVC CODE	<input checked="" type="checkbox"/>	
M50560-001P	<input checked="" type="checkbox"/>	
MN6125L	<input checked="" type="checkbox"/>	
MN6014_C5D7	<input checked="" type="checkbox"/>	
MN6014-C6D6	<input checked="" type="checkbox"/>	
MC14457P	<input checked="" type="checkbox"/>	
LC7464(AHEA)	<input checked="" type="checkbox"/>	
GEMINI_CM	<input checked="" type="checkbox"/>	

## Hardware Installation

### HSW44C Plus as master

1. Connect all sources to HDMI Inputs on the 4x4 HDMI over CAT5 matrix master HSW44C Plus
2. Connect each DDC output on the HSW44C Plus to respective DDC input on the remote receiver HSMR Plus
3. Connect each TMDS output on the HSW44C Plus to respective TMDS input on the remote receiver HSMR Plus
4. Connect IR blaster to the HSW44C Plus and direct the IR blaster to point towards the built-in IR receiver of the HDMI source devices
5. Connect the +5V 6A DC power supply to the HSW44C Plus
6. Power on all HDMI sources
7. Power on the HSW44C Plus

### HSMR Plus as receiver

1. Connect each HDMI output to HDMI displays
2. Connect the TMDS input on the HSMR Plus to the TMDS output on the HSW44C Plus
3. Connect the DDC input on the HSMR Plus to the DDC output on the HSW44C Plus
4. Connect IR receiver and place the IR receiver at the appropriate position that can receive the IR 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. It is recommended to dial from 7 to 0 to find the optimal visual experience

# Operation and IR Control

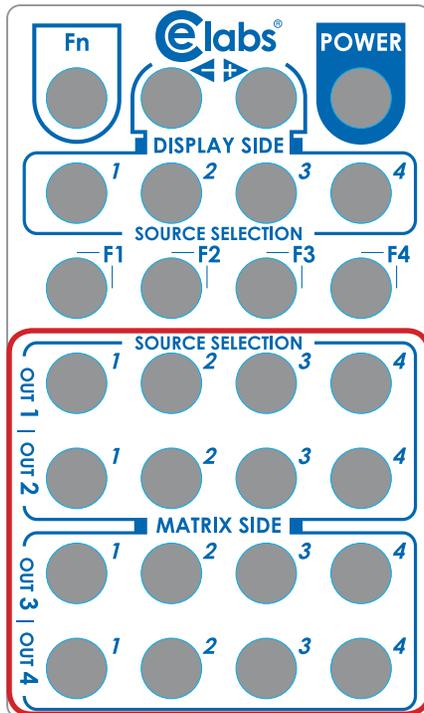
## Source Side

### Method A: Push-in Button

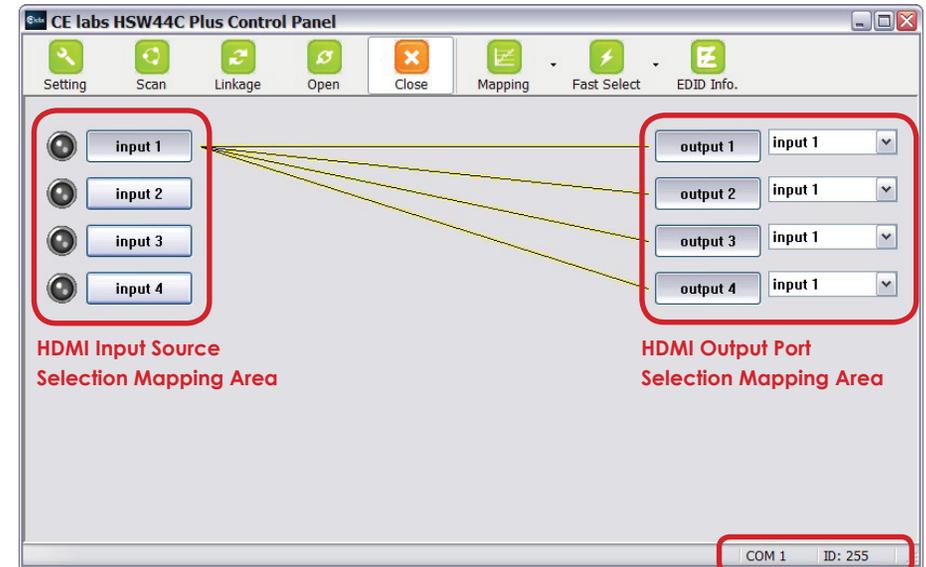
1. Use the "+" or "-" channel button on output channel to select which port to be changed.  
"+": change selected output port in ascending order  
"-": change selected output port in descending order
2. Push the "+" or "-" channel button on Input channel to select the HDMI input source you want to display on this selected output

### Method B: IR Remote Control

Choose the output port you want to make channel switch from OUTPUT1 to OUTPUT4 then press 1-4 channel button to choose the HDMI input source shown on the chosen output display.



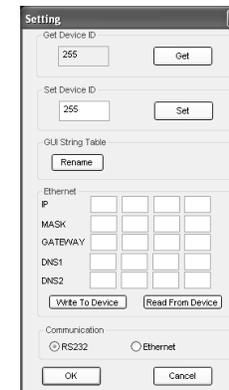
### Method C: Software Control through RS-232 or Ethernet port



Software Control Menu

Status Indicator

### 1. Setting button



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

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

Click **Rename** button to open the String Table.

Click **RS-232 or Ethernet** Control via Communication Selection.

Click **Write To Device** button to save the setting to matrix.

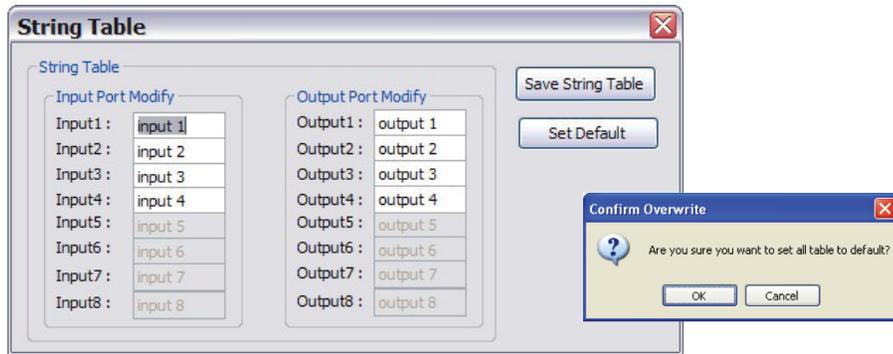
Click **Read From Device** to read the setting from matrix.

In the String Table, assign the captions for each input and output port for easy recognition.

### For example

Rename the Input1 to "Blu-ray player", Input2 to "Sat. receiver," input3 to "Game console," input4 to "AV receiver," input5 to "HDMI camcorder," ... etc., and rename output1 to "Conf. RM1," output2 to "Conf. RM2," output3 to "Lobby," output4 to "Main projector," ... etc.

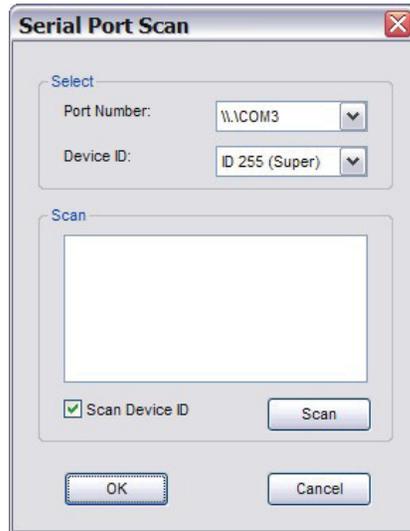
Click **Save String Table** to save the caption setting (turn effective after program restart).  
Click **Set Default** to pop up the confirmation message below to erase the captions and reset the string table back to default setting (turn effective after program restart).



### 2. Scan button

#### Serial Port Scan

Click **Scan** button, the machine will scan the all COM port and show them.  
Select the RS232 serial port connected to the Matrix switch.  
And set device ID 255 is for all device.  
Only the same device id or 255 can get the command you sent.  
Click **OK**. Get the new status from the Matrix switch (the port you select.)



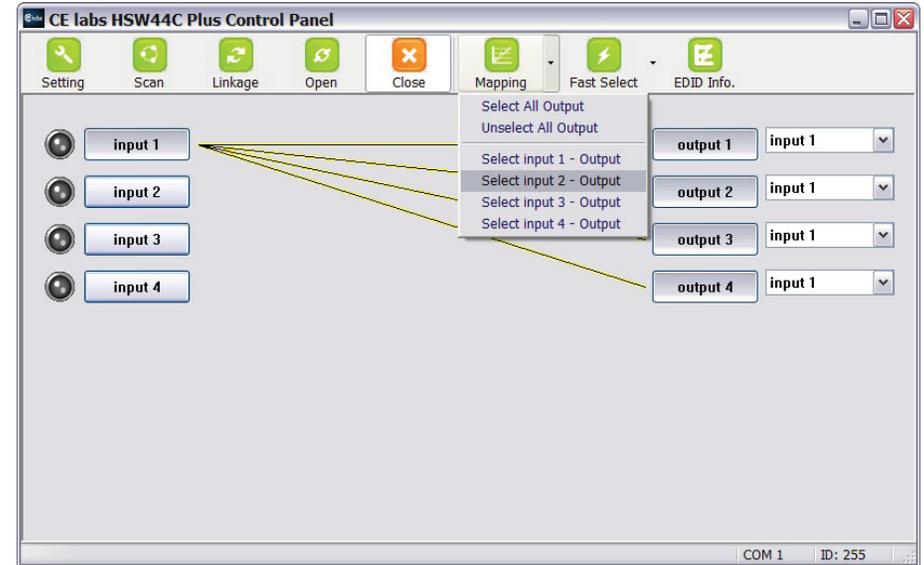
### 3. Linkage button

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

### 4. Open/Close button

Click **Open/Close** button to close or open COM port.

### 5. Mapping button



#### Select All Output

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

#### Unselect All Output

Release output selection.

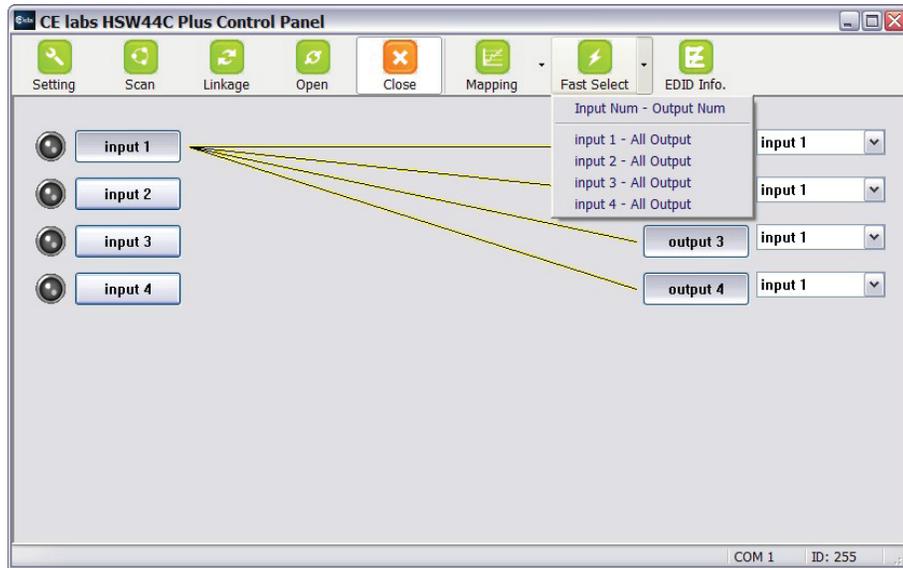
#### Select Input1~4 - Output

Select **Input Source**, and then select the output port icon.

#### For example

Select input source 1. Then select output ports one and two. The video and audio will be sent to ports one and two.

## 6. Fast Select button



Click **Fast select** button. Quick setting.

Input one > Output Port one

Input two > Output Port two

.....

Click **Fast select pull down menu**.

Select Input Num - Output Num

Input source #1 > Output port #1

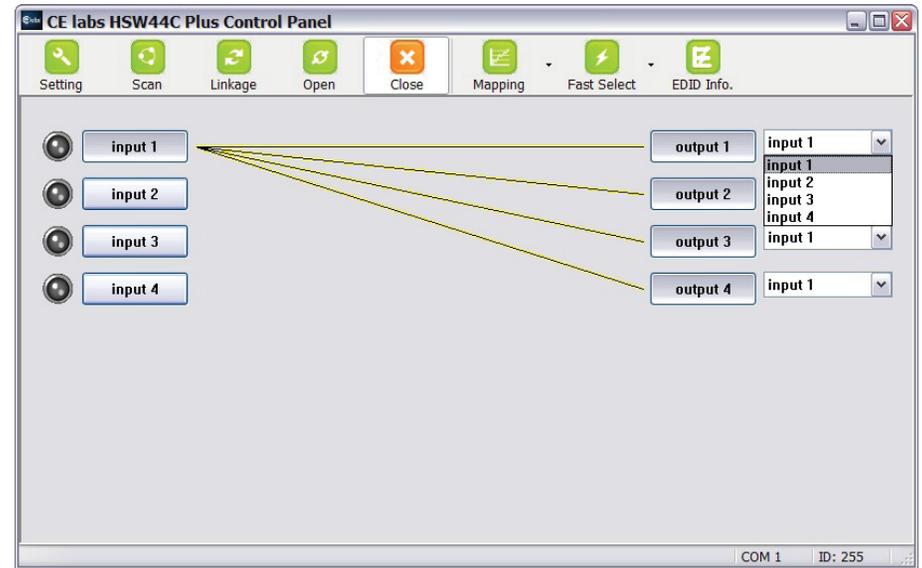
Input source #2 > Output port #2

.....

Select Input1~4 - 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

COMMAND	ACTION	COMMAND	ACTION
ST	System Status	VR	Firmware Version
A1	Output A select Input 1	C1	Output C select Input 1
A2	Output A select Input 2	C2	Output C select Input 2
A3	Output A select Input 3	C3	Output C select Input 3
A4	Output A select Input 4	C4	Output C select Input 4
B1	Output B select Input 5	D1	Output D select Input 5
B2	Output B select Input 6	D2	Output D select Input 6
B3	Output B select Input 7	D3	Output D select Input 7
B4	Output B select Input 8	D4	Output D 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 seven segment display of INPUT CHANNEL.

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

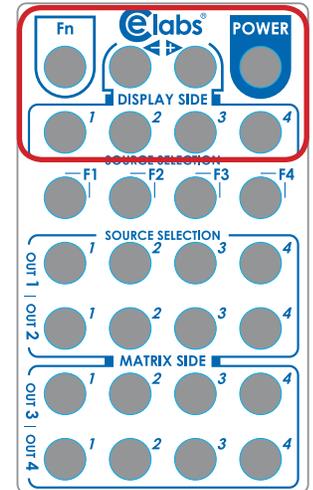
Select the input channel by pressing Source Selection 1 to Source Selection 4. Or you can use left ◀ and right ▶ button to enter IR control mode and select the input channel in ascending and descending order respectively. The setting will be effective in a couple of seconds.

◀	Switch input port in descending order*
▶	Switch input port in ascending order*
SOURCE SEL. 1	Switch the display channel at the remote site to input port 1
SOURCE SEL. 2	Switch the display channel at the remote site to input port 2
SOURCE SEL. 3	Switch the display channel at the remote site to input port 3
SOURCE SEL. 4	Switch the display channel at the remote site to input port 4

#### Note

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

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



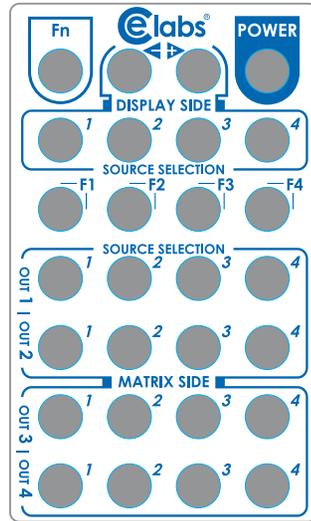
### Method B2: IR remote control for controlling the HDMI sources

Users can use the corresponding IR remote to control the HDMI source.

# IR Discrete Code

## 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
F1 0x57	F2 0x58	F3 0x59	F4 0x06
Output Port 1			
Input 1 - 0x18	Input 2 - 0x5B	Input 3 - 0x19	Input 4 - 0x07
Output Port 2			
Input 1 - 0x1B	Input 2 - 0x5A	Input 3 - 0x1A	Input 4 - 0x04
Output Port 3			
Input 1 - 0x0E	Input 2 - 0x0D	Input 3 - 0x12	Input 4 - 0x05
Output Port 4			
Input 1 - 0x1C	Input 2 - 0x1D	Input 3 - 0x1F	Input 4 - 0x1E



## 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
Source 3	0xA3	0xB3	0xC3	0xD3
Source 4	0xA4	0xB4	0xC4	0xD4

## 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
Source 3	0xAC	0xBC	0xCC	0xDC
Source 4	0xAB	0xBB	0xCB	0xDB

**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.

# 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-SW4 Pin#1 and Pin#2 must be set "ON" & "OFF" for EDID Learning Mode

DIP Switch Position		Video	Audio	Description
Pin 1	Pin 2			
ON [↓]	OFF [↑]	Bypass	Bypass	<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 **INPUT1-INPUT4** 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-INPUT4 port, pull both pins of respective DIP switch **SW1-SW4** up-and-down to stay at **ON[↓]-OFF[↑]** 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-SW4** 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
Output Port	EDID will read from display via connected receiver unit from the respective output port
Input Channel	The EDID will be sent to the input source connected to respective HDMI input port

For further information, please check the installation CD.

## 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 5 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 "+" button of the Input Channel at the same time for 5 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 the chosen Input Channel.
3. If the operation is successful, the Input Channel will show "O" (OK). If the operation is not successful, it will show "F" (Failure).

### Method 3: Use IR remote control to the HSMR Plus receiver units

**Step1.** Press FN key first

**Step2.** Wait until the LED on the receiver showing "U"

**Step3.** Then press the button

"1" Default A – 1080p & 7.1ch audio

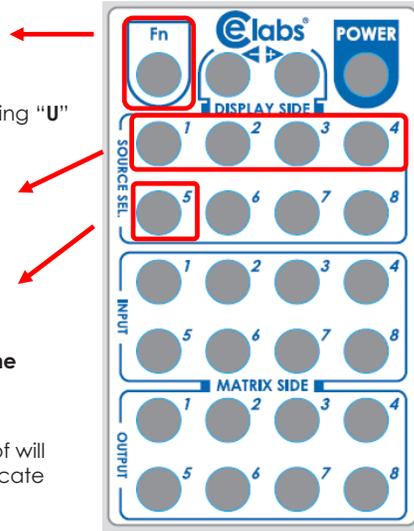
"2" Default B – 1080p & stereo audio

"3" Default C – 720p & stereo audio

"4" Default D – DVI Mode

"5" **Learning EDID from this display to the selected input**

**Step4.** If the procedure is successful, the LED of will show "0", otherwise it will be "F" to indicate failure



## Notice

1. 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.
2. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
3. 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.
4. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended.
5. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use double shielded STP cables to improve EMI problems, which is worsen in long transmission.
6. Because the quality of the category 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.
7. 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.
8. The HSMR Plus 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 HSW44C Plus, 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.
9. Additional IR remote controls and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.



### Performance Guide for HDMI over LAN Cable Transmission

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

**Q** The quality of output video is not good enough, how can I do?

**A** Please adjust the 8-level equalization on the receiver units. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. It is recommended to switch from 7 to 0 to find the optimal visual experience.

**Q** Can I use any kind of LAN cable?

**A** Please check the NOTICE section for more information about how to pick up a suitable cable.

**Q** Can every TV work with the HDMI matrix?

**A** Basically, the answer is YES. But if your TV can not support 1080p, please refer the EDID LEARNING section to learn EDID from your TV.

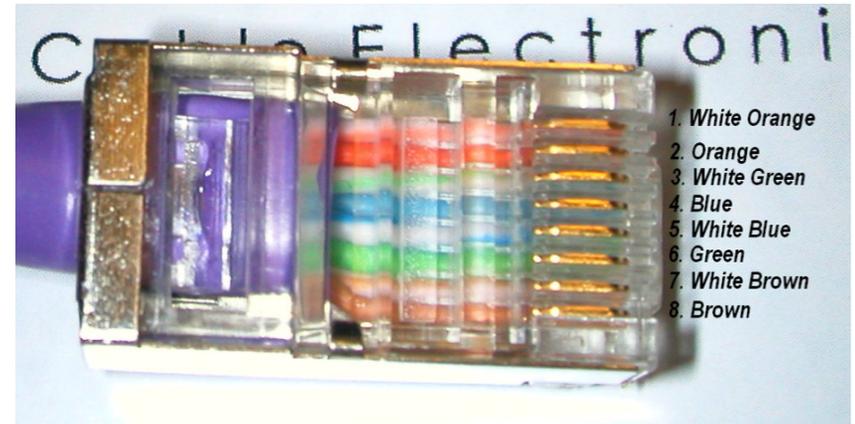
**Q** What is EDID? Why do I need to learn EDID?

**A** EDID contains the whole information of the display such as the resolution and audio setting which this display can support. Therefore, based on the EDID information, media player will pick up the most suitable resolution and audio setting to the display. In order to faithfully transmit the EDID information from display to the media player, learning EDID from display to this device is necessary.

**Q** What should I do to learn EDID for the matrix?

**A** Due to the limitation of HDMI, the source device can only output one format of video and audio. In other words, the source device cannot output 720p and 1080p video at the same time, or output stereo and surround sound at the same time. Therefore, you may need to manually setup the DIP switch for each HDMI input for desirable audio/video output format. The mechanism of EDID Learning is to pick up the HDMI display with the lowest capability among the ones you would use for this input source. For example, if user would like to play the Input-2 upon output-2, output-4 and output-4, and only output-3 cannot support 1080p [support up to 720p only], please learn the EDID from the display connected to the output-3 at the Input-2 port. Of course, if output-3 could get the HDMI signals from every HDMI input, please learn EDID information from output5 to all eight HDMI inputs. For more information about EDID Learning, please refer to EDID LEARNING section.

## RJ45 Configuration: T568 B And Pin Out Signal's



**TMDS:**

1. DATA0-
2. DATA0+
3. DATA1-
4. DATA2-
5. DATA2+
6. DATA1+
7. CLOCK-
8. CLOCK+

**DDC:**

1. HP
2. IR SIGNAL
3. PWD
4. PWD
5. GND
6. GND
7. CONTROL 1
8. CONTROL 2

CE labs can support many areas of your audio and video distribution needs

We manufacture:

- Digital Signage software and Media Players
- HD Matrix Switchers
- RF amplifiers
- HDMI and Component HD distribution amplifiers
- CAT 5 Signal Extenders
- VGA Extenders and Splitters
- and cables of all types.

See our full product line at [www.celabs.net](http://www.celabs.net)

## WARRANTY

Cable Electronics, Inc. warrants this product to be free from defects in material and workmanship, under normal use and service, for a period of one year from the purchase by the original purchaser. If this product is defective or malfunctions, Cable Electronics will replace or repair this unit (at their option) within a reasonable time. No expressed or implied warranty is made for any defects caused by immersion or exposure to liquids, a buse, and neglect, improper operation of unit, excess wear and tear and defects resulting from unauthorized disassembly and or modification.



3209 Wood Drive  
Garland, TX 75041  
Phone: (469) 429-9200  
Toll free: (800) 767-6189  
Fax: (469) 429-9205  
[www.celabs.net](http://www.celabs.net)

Document: HSW44C Plus\_manual.pdf