

# CMLUX-88S

8 by 8 HDMI V1.3 Matrix

Operation Manual



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## • **Safety Precautions**

Please read all instructions before attempting to unpack or install or operate this equipment, and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through module openings or empty slots, as you may damage parts.
- Do not attach the power supply cabling to building surfaces.
- Do not allow anything to rest on the power cabling or allow it to be abused by persons walking on it.
- To protect the equipment from overheating, do not block the slots and openings in the module housing that provide ventilation.

## • **Revision History**

<b>Version No</b>	<b>Date</b>	<b>Summary of Change</b>
<b>V1</b>	<b>20090805</b>	<b>Preliminary Release</b>
<b>V2</b>	<b>20100510</b>	<b>Rack Installation change</b>

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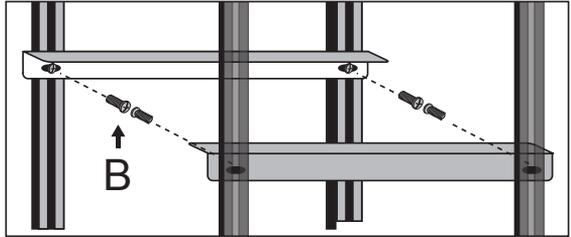
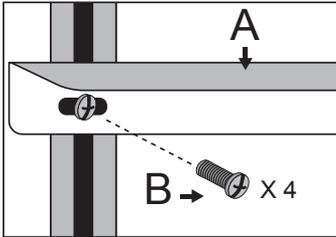
# I. Rack Installation Guideline

A L-Shaped rail x 2

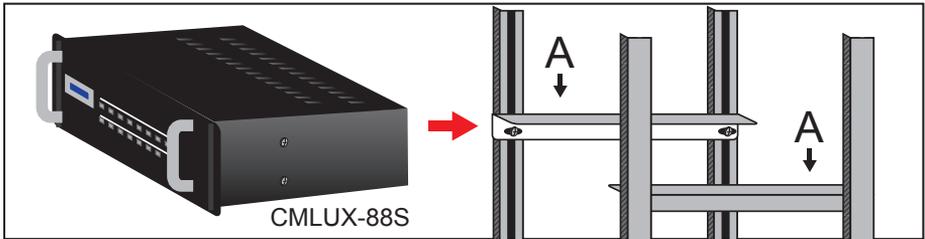


B  Mounting screws x 4

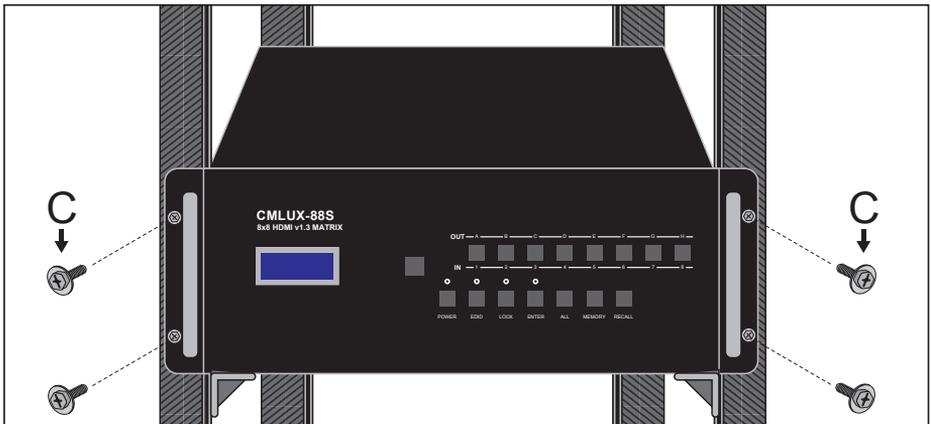
C  Flanged screws x 4



- ① Use Mounting screws to attach the L-Shape rail to the frame.
- ② Make sure the L-Shaped rail and the Mounting screws are properly aligned, with two screws per L-Shaped rail.



- ③ Slide the device on top of the L-Shaped rails.



- ④ Use four Flanged screws to attach the 8x8 Matrix to the rack frame.

## **1. Introduction**

The popularity of HDMI products has been increasing for several years and is now commonly seen in residential and commercial settings. As people become accustomed to HDMI and use it more often, they acquire multiple devices and then find that they need something to help them link them together. So the need for an HDMI matrix that can interconnect multiple sources and different inputs has become an obsession for some. Well no need to worry because our "HDMI V1.3 Matrix" is a powerful tool that you can use to handle all of your HDMI needs. Furthermore the matrix supports HDMI 1.3, HDCP 1.1 and DVI 1.0, and can transfer Deep Color video and bit stream digital audio with fantastic performance. Lastly the input EDID is independent allowing each input to switch between TV or the built-in EDID.

## **2. Applications**

- Multi-HDMI sources with multi-HDMI display controls
- Event entertainment integration
- Multi-task project presentation
- Showroom display
- Advertisement display control

## **3. Package Contents**

- 8 by 8 HDMI V1.3 Matrix
- Remote Control CR-71 with battery
- 24V DC power adaptor
- Power cord
- User Manual
- 2 x 2 - Shape holder

## **4. System Requirements**

HDMI input device(s) and HDMI output device(s) with HDMI cables.

## 5. Features

- HDMI 1.3, HDCP 1.1 and DVI 1.0 compliant
- Supports digital video formats in Deep Color 10 bits and new lossless compressed (Dolby TrueHD, Dolby Digital Plus and DTS HD Master Audio) digital audio
- The HDMI input is compensated, clock/phase adjusted and jitter free so all the user sees is a high quality HDMI signal.
- Supports recall, memory and key lock function
- Compatible with all HDMI sources and displays
- Supports a wide range of PC and HDTV resolutions from VGA to UXGA and 480i to 1080p
- Supports RS-232 control and firmware upgrading through USB port
- Supports IR remote control and IR extender
- Dolby Digital, DTS digital audio transmission (32-192kHz Fs sample rate)
- Supports LPCM 7.1 channel output from each of the independent HDMI ports
- HDMI cable testing showed that with a resolution 1080p/8bits&10bits the Input/Output source can be 10/15m(8bit) and 10/10m(10) away
- Independent switchable EDID function for choosing which resolution to display
- High performance HDMI 1.3 Matrix with 8 (eight) inputs and 8 (eight) outputs with a remote control in order to link multiple HDMI sources, such as movies, music and games, all at the same time.
- Supports 38KHz IR extender
- 4U's rack design for easy installation
- Useful hot keys for quick set up
- Strong build quality and an intelligent design allow the HDMI V1.3 Matrix to breathe properly and not overheat

## 6. Specifications

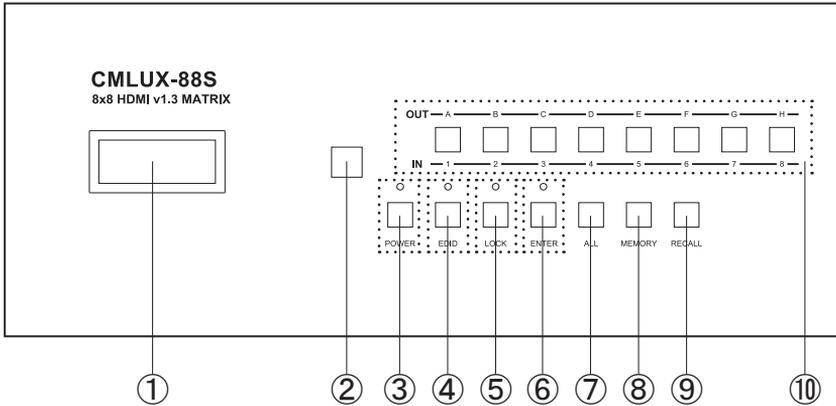
Input Ports	8 x HDMI
Output Ports	8 x HDMI
IR Frequency	20~60KHz
Power Supply	24VDC/6.25A (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human body model: $\pm 10\text{kV}$ (air-gap discharge) $\pm 6\text{kV}$ (contact discharge)
Dimensions (mm)	482(W) x385(D) x 176(H)
Weight(g)	9500
Chassis Material	Aluminum
Silkscreen Color	Metal Black
Power Consumption	100W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (no condensation)



## 7. Operation Controls and Functions

The following sections describe the hardware components of the unit.

### 7.1 Front Panel



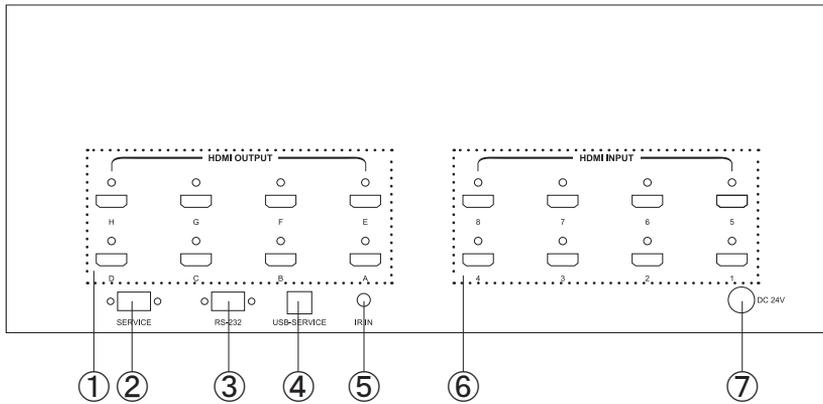
- ① LCM monitor: This monitor displays your settings information with each output and input selection.
- ② IR sensor.
- ③ POWER: Press this button to turn the system on. Once the system turns on the LED will turn Green and when entering Standby Mode it will turn Red. Once the system turns on the LED will turn Green and when entering Standby Mode it will turn Red.
- ④ EDID: There will be two selections shown on the LCM: 1. TV mode and 2. Standard Mode, press the number key to first select the desired input and then press one or two to select the EDID mode. The LED will turn on when setting the EDID. After the selection is made, press enter key to confirm. Standard mode means the device will use internal built-in EDID and TV mode means the device will use TV/display's EDID. When EDID is in TV mode,

#### Notes:

1. When EDID is switched to a TV the device will first detect the HDMI output source's EDID from A-D and then record it in the unit regardless of the HDMI output source from E-H. If the first detected output source is DVI it will pass on to the next source, until the first HDMI is detected. The detection priority is HDMI v1.3 > HDMI v1.2 > DVI. In order to ensure all output is displayable output from E-H must be of a lower standard than output from A-D.
2. When EDID is on STD, the device will use the built-in EDID  
Video Supports < 1080p 10 bits (max)  
Audio Supports = PCM2

- ⑤ LOCK: Press this button to lock all the functions and press it again to release the lock. When LED turns Green, the lock is activated and when it turns red the key lock has been released.
- ⑥ ENTER: Press this button after each and every selection to confirm the setting. If this button is not pressed after 20 seconds the selection will be cancelled.
- ⑦ ALL: Press this button to set all the outputs to display with the same input. After pressing the All button press an input number and then press enter to confirm the selection.
- ⑧ MEMORY: Press this button to choose your six pre-set settings. First press the setting number, and when all the input/outputs are being set, be sure to press MEMORY to record it into the system. The factory default settings are 1.12345678, 2.87654321, 3.11223344, 4.55667788, 5.11221122, 6.33443344.
- ⑨ RECALL: Select this button in order to retrieve your six pre-set settings, then press enter to confirm your selection.
- ⑩ OUT A~H & IN 1~8: Press the output source selection button in order to choose which input port corresponds to the desired output port. First select your output port from A-H, wait 2 sec, then choose the desired input port from ports 1-8, pressing enter will confirm your setting. Each output selection only allows a single input setting each time.

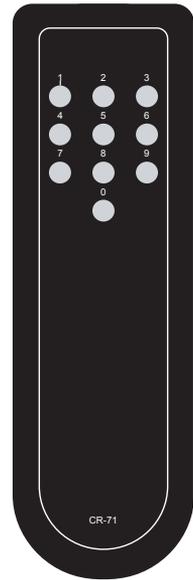
## 7.2 Rear Panel



- ① HDMI OUTPUT A~H: These slots are where you connect the HDMI displays.
- ② SERVICE: This slot is where you connect a D-sub 9 male pin connector cable to your host, in order to upgrade your firmware.
- ③ RS-232: This slot is where you connect a D-sub 9 female pin connector cable to your host so you can control an 8x8 HDMI Matrix.
- ④ USB SERVICE: This slot is where you connect a USB b type connector cable to your host for ISP (System Program) firmware burning, for a total of four.
- ⑤ IR IN: This slot is where you can extend your IR receiver with an IR extender cable that accepts only 38KHz.
- ⑥ HDMI INPUT 1~8: These slots are where you connect the output cable of your HDMI or DVI source, such as DVD players or Set Top Boxes.
- ⑦ DC 24V: Plug the 24V DC power supply into the unit and connect the adaptor to an AC wall outlet.

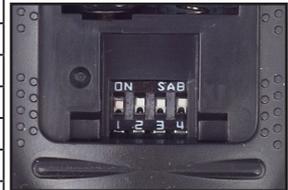
## 8. Remote Control

This remote control can be set with multiple format according to the dipswitch setting. There are total of four dipswitches with mainly two kinds of settings. When dipswitches are all set to ON/↑ the remote control is able to control all outputs and all inputs. For example, when output A wish to select input 5. Press 1 first and wait for a second then press 5, the output display A will display input source 5's image instantly. Other settings referring to below section 8.2 section 8.2 are output based to control input selections. For example, when all dipswitches are set to OFF/↓ this setting is base on output A and therefore, it can only control inputs selection. Hence, when output A wish to select input 3 press 3 only will switch output display A to display input source 3's contents. Further setting please refers to section 8.2.



### 8.1 IR Custom Code

NO.	DATA
1	88
2	89
3	8A
4	8C
5	8D
6	8E
7	90
8	91
9	92
0	95

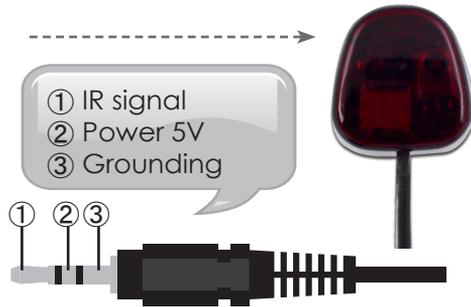


### 8.2 Discrete IR codes for 8x8 HDMI matrix (IR3)

Select / Dipswitch	input 1	input 2	input 3	input 4	input 5	input 6	input 7	input 8
output A ↓↓↓↓	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output B ↑↓↓↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output C ↓↑↓↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output D ↑↑↓↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output E ↓↓↑↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output F ↑↓↑↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output G ↓↑↑↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
output H ↑↑↑↓	0x88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91

## 9. IR Pin Assignment

### 9.1 IR Receiver



## 10. RS-232 Protocols

### 10.1 Pin Assignment

CMLUX-88S			Remote Control Console	
PIN	Assignment		PIN	Assignment
1	NC		1	NC
2	Tx	→	2	Rx
3	Rx		3	Tx
4	NC		4	NC
5	GND		5	GND
6	NC	←	6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

Baud Rate: 9600bps

Data bit: 8 bits

Parity: None

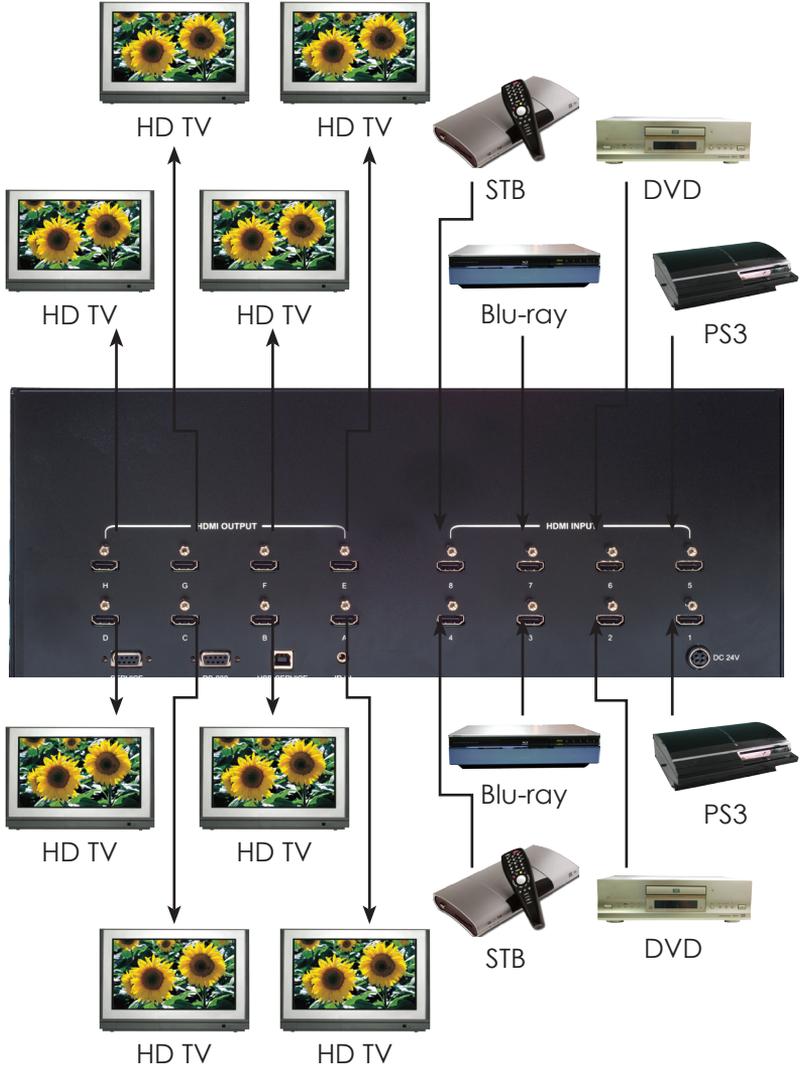
Flow Control: None

## 10.2 Commands

<b>COMMAND</b>	<b>ACTION</b>
POWER 00	Power Off (standby)
POWER 01	Power On
PORT 11	Output A select Input1
PORT 12	Output A select Input2
PORT 13	Output A select Input3
PORT 14	Output A select Input4
PORT 15	Output A select Input5
PORT 16	Output A select Input6
PORT 17	Output A select Input7
PORT 18	Output A select Input8
PORT 21	Output B select Input1
PORT 22	Output B select Input2
PORT 23	Output B select Input3
PORT 24	Output B select Input4
PORT 25	Output B select Input5
PORT 26	Output B select Input6
PORT 27	Output B select Input7
PORT 28	Output B select Input8
PORT 31	Output C select Input1
PORT 32	Output C select Input2
PORT 33	Output C select Input3
PORT 34	Output C select Input4
PORT 35	Output C select Input5
PORT 36	Output C select Input6
PORT 37	Output C select Input7
PORT 38	Output C select Input8
PORT 41	Output D select Input1
PORT 42	Output D select Input2
PORT 43	Output D select Input3
PORT 44	Output D select Input4
PORT 45	Output D select Input5
PORT 46	Output D select Input6

PORT 47	Output D select Input7
PORT 48	Output D select Input8
PORT 51	Output E select Input1
PORT 52	Output E select Input2
PORT 53	Output E select Input3
PORT 54	Output E select Input4
PORT 55	Output E select Input5
PORT 56	Output E select Input6
PORT 57	Output E select Input7
PORT 58	Output E select Input8
PORT 61	Output F select Input1
PORT 62	Output F select Input2
PORT 63	Output F select Input3
PORT 64	Output F select Input4
PORT 65	Output F select Input5
PORT 66	Output F select Input6
PORT 67	Output F select Input7
PORT 68	Output F select Input8
PORT 71	Output G select Input1
PORT 72	Output G select Input2
PORT 73	Output G select Input3
PORT 74	Output G select Input4
PORT 75	Output G select Input5
PORT 76	Output G select Input6
PORT 77	Output G select Input7
PORT 78	Output G select Input8
PORT 81	Output H select Input1
PORT 82	Output H select Input2
PORT 83	Output H select Input3
PORT 84	Output H select Input4
PORT 85	Output H select Input5
PORT 86	Output H select Input6
PORT 87	Output H select Input7
PORT 88	Output H select Input8

# 11. Connection and Installation







# Acronyms

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<b>Acronym</b>	<b>Complete Term</b>
DTS	Digital Theater System
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High-Definition Television
LCM	Liquid Crystal Monitor
USB	Universal Serial Bus
UXGA	Ultra Extended Graphics Array
VGA	Video Graphics Array







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