



# CMSI-1616

16 by 16 Modular Matrix



Operation Manual



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## SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, 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 any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

## REVISION HISTORY

VERSION NO.	DATE (DD/MM/YY)	SUMMARY OF CHANGE
RDV1	05/07/13	Preliminary Release
RDV2	31/10/13	Panel's Printing
RDV3	21/04/14	Package Contents Add IR Cables
RDV4	30/06/14	RS-232 Command & CIN-8DS model
RDV5	21/01/15	UART Command
RDV6	05/03/15	Add IR Command
RDV7	23/04/15	Add IR Pin Assignment
VS0	27/04/15	Updated Text/Diagrams



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## 1. INTRODUCTION

The 16 by 16 Modular Matrix is designed to allow the switching and distribution of up to 16 source devices to up to 16 connected displays, either directly via HDMI, DVI or via CAT5e/6/7 outputs to compatible receivers, providing control options (dependent on module configuration).

Providing unparalleled levels of flexibility, with an advanced modular design these models can be setup in a wide variety of combinations allowing users the ability to tailor the Matrix to their requirements by simply adding or removing the input or output modules as required.

The Modular Matrix is supplied with dual removable internal PSU's which allow for easy inspection and maintenance with zero down time. Also included is a DVI output for local monitoring of the output allowing installers to easily monitor, test, and configure the Inputs and Outputs on installation.

In addition, this matrix also features IP control allowing users to access and control the matrix remotely and also allow additional options for integration of third-party control systems.

## 2. APPLICATIONS

- Public information display
- Educational demo
- Professional presentation
- Advertising display

## 3. PACKAGE CONTENTS

- 1×16 by 16 Modular Matrix Enclosure (including CPU Control Board and Removeable Dual Power Supplies)
- 2×Input Module Boards - HDMI, DVI, CAT5e/6/7 or VGA (Optional)
- 2×Output Module Boards - HDMI, DVI or CAT5e/6/7 (Optional)
- 1×IR Extender
- 1×IR Blaster
- 1×Remote Control (with Battery)
- 2×Power Cords
- 1×Operation Manual

## 4. SYSTEM REQUIREMENTS

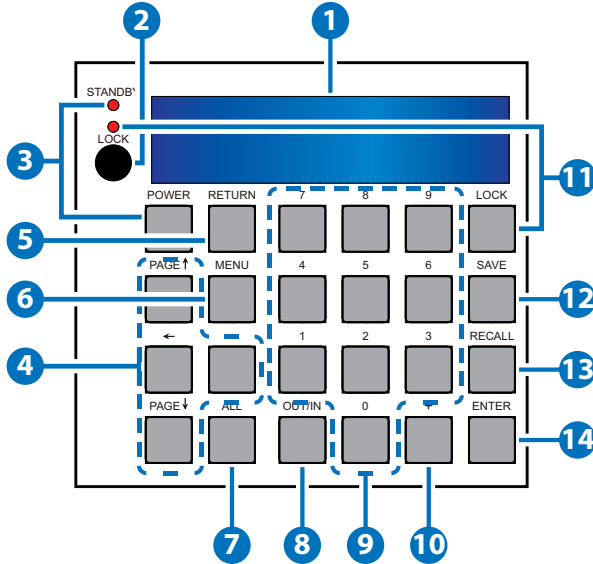
- Up to 16 HDMI, DVI, CAT5e/6/7 or VGA source devices (dependent on module configuration) connected with appropriate cables.
- Up to 16 displays (TV or monitor) or AV receivers, equipped with HDMI, DVI, CAT5e/6/7 connection (dependent on module configuration) connected with appropriate cables
- Industry standard CAT5e/6/7 cable (for CAT5e/6/7 inputs/outputs)
- Compatible PoC HDBaseT™ Transmitters/Receivers for CAT5e/6/7 Input/Output modules

## 5. FEATURES

- HDMI, HDCP 1.1 and DVI 1.0 compliant
- Interchangeable input and output modules
- Input and output module types can be mixed and added in multiples of 8 from 8×8 (1 Input module, 1 Output module) up to 16×16 (2 Input modules, 2 Output modules) with HDMI, DVI, CAT5e/6/7 and VGA (Input only) connection types
- Supports a wide range of PC and HDTV resolutions from VGA to WUXGA and 480i to 1080p and 4K2K@24/25/30
- Supports pass-through of LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio
- Supports control of the matrix via RS-232, Telnet and Web GUI controls
- Supports 10 available preset settings
- Support 3 EDID modes: Standard, Dynamic and Manual (see Section 6.1 for details)
- Dual removal power supply units
- Supports HDMI cable input and output lengths of up to 15m each way (1080p@8-bit resolution), 10m (1080p@12-bit resolution) or 5m (4K2K@30 resolution)
- Supports CAT5e/6/7 cable input and output lengths of up to 100m (1080p@8-bit/12-bit resolution) or 70m (4K2K@30 resolution) dependent on board capabilities
- HDBaseT 5Play™ convergence supports HD Video, HD Audio, PoC, Ethernet and IR/RS-232 Control
- HDBaseT 4Play convergence supports HD Video, HD Audio, PoC and IR/RS-232 Control
- HDBaseT 3Play convergence supports HD Video, HD Audio and IR/RS-232 Control

## 6. OPERATION CONTROLS AND FUNCTIONS

### 6.1 Front Panel

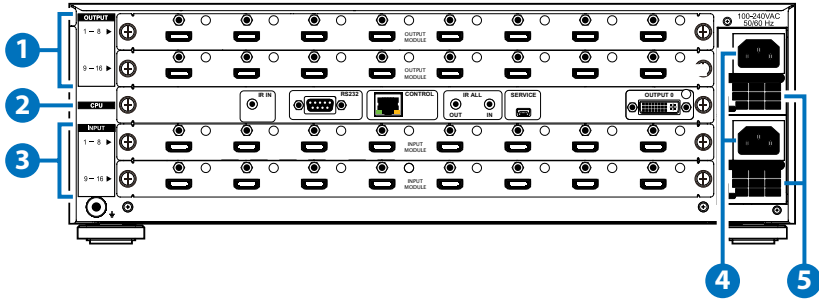


- 1 **LCM:** Displays the setting information of each input/output and other setting information according to the selected mode.
- 2 **IR WINDOW:** Accepts the IR remote control signal for the matrix only.
- 3 **POWER:** Press this button to turn the matrix on or press it again to put the matrix into standby mode. The LED will illuminate when the unit is in standby mode.  
*Note: If the LED is flashing it means the temperature inside is too high and air circulation may have been restricted.*
- 4 **PAGE (▲/▼/◀/▶):** Use these buttons to cycle through the LCM's pages for displaying the current I/O status or when entering into the settings menu.
- 5 **RETURN:** Press this button to return back or exit the current selection.
- 6 **MENU:** Press this button to enter the menu to change the following settings:
  - **EDID:** Support 3 EDID modes.



1. *Standard Mode*: Uses the built-in EDID settings that support video up to 1080p@60 or WUXGA@60 (RB) video and LPCM 2CH audio.
  2. *Dynamic Mode*: Reads the EDID settings from the display connected to the lowest numbered output port.
  3. *Manual Mode*: Supports independent EDID settings by selecting the input and output ports.
- **IP**: Displays the setting information of IP address, IP Netmask and IP Gateway.
  - **Temperature**: These figures show the internal temperature of the matrix.
  - **LCM**: Supports LCM contrast range from 1 to 4.
- 7 **ALL**: Press this button to assign the same input to all outputs.
  - 8 **OUT/IN**: Press to assign the source to be displayed on the required output. The sequence should be OUT/IN→Select the Input→OUT/IN→a Select the output→Enter.
  - 9 **NUMBERS (0~9)**: Use to select the appropriate numbered input or output.
  - 10 **PLUS (+)**: Press this button when multiple outputs are required for a selected input. This button only works in conjunction with the OUT/IN button.
  - 11 **LOCK**: Press this button to lock all the function buttons on panel. The LED will illuminate, to unlock press it again.
  - 12 **SAVE**: Press this button to store the present Input/Output configuration to one of the 10 available preset settings.
  - 13 **RECALL**: Press this button to recall a previously stored preset setting.
  - 14 **ENTER**: Press this button to confirm a setting or selection in the menu.

## 6.2 Rear Panel



- 1 **OUTPUTS 1~16:** Install up to 2 Output modules as required for up to 16 displays (TV or monitor) or CAT5e/6/7 outputs for compatible HDBaseT receivers (dependent on module configuration).  
*Note: The above panel is an example of 16×16 HDMI configuration.*

- 2 **CPU (Control Board)**

**IR IN:** For IR control of the matrix only. Connect to the IR Extender for IR signal reception of the IR remote control of the matrix. Ensure that the remote being used is within the direct line-of-sight of the IR Extender.

**RS-232:** Connect to a PC/Laptop with a D-sub 9-pin cable for RS-232 command sending and controlling over the Matrix.

**CONTROL:** Connect to an active network for LAN serving and Telnet/Web GUI control. LAN serving on compatible HDBaseT input/output modules and transmitters/receivers only.

**ALL IR OUT:** Connect the IR output to the IR Blaster for IR signal transmission of the equipment to be controlled. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.

**ALL IR IN:** Connect the IR input to the IR Extender for IR signal reception of the IR remote control of the equipment to be controlled. Ensure that remote being used is within the direct line-of-sight of the IR Extender.

*Note: For IR control of the HDBaseT input/output modules and transmitters/receivers only. IR signals received by all IR Extenders connected to the transmitters/receivers will be transmitted by all IR Blasters connected to the transmitters/receivers.*

**SERVICE:** Manufacturer use only.

**OUTPUT 0:** Connect to DVI equipped display or to an HDMI equipped display (with DVI to HDMI adaptor) for local monitoring of the output signal.

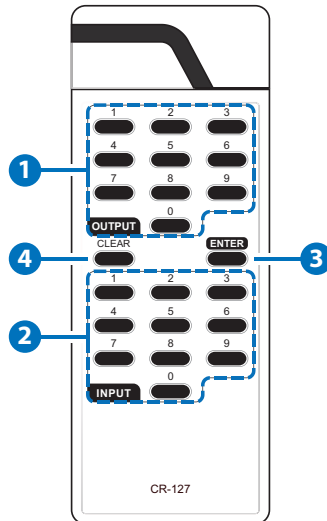
- 3 INPUT 1~16:** Install up to 2 Input modules as required for up to 16 source devices or CAT5e/6/7 inputs for compatible HDBaseT transmitters (dependent on module configuration).

*Note: The above panel is an example of 16×16 HDMI configuration.*

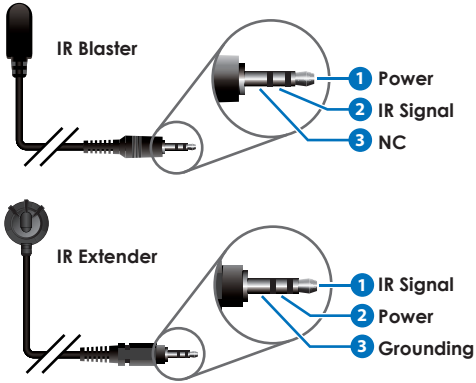
- 4 POWER SUPPLY:** The matrix will automatically turn on when connected to an active power supply.
- 5 VENTILATION FAN:** This fan will automatically operate when the matrix is switched on. Do not block the exhaust of the fan or cover it with any object. Please allow adequate space around the unit for air to circulate freely.

### 6.3 Remote Control

- 1 OUTPUT:** Output port selection
- 2 INPUT:** Input port selection.
- 3 ENTER:** Press to confirm the present input/output selection.
- 4 CLEAR:** Press to clear the present input/output selection.



## 6.4 IR Cable Pin Assignments



## 6.5 RS-232 Protocols

MATRIX	
Pin	Definition
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC



RS-232 CONTROLLER	
Pin	Definition
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 19200bps

Data Bit: 8 bits

Parity: None

Stop Bit: 1

Flow Control: None

## 6.6 RS-232 and Telnet Commands

COMMAND	DESCRIPTION
<b>P1</b>	Power on
<b>P0</b>	Power off
<b>Oxly</b>	Set output (x=1~16) to input (y=1~16)
<b>ALLOUT x</b>	Set all outputs to input (x=1~16)
<b>ACTIVE</b>	Report active I/O channels
<b>INDETECT</b>	Input channels detection indicator
<b>OUTDETECT</b>	Output channels detection indicator
<b>PORTSTATUS</b>	Report all output connection status
<b>HDCPON x</b>	Set input port (x=1~16) HDCP to 'on'
<b>HDCPOFF x</b>	Set input port (x=1~16) HDCP to 'off'
<b>HDCPONALL</b>	Set all input port's HDCP to 'on'
<b>HDCPOFFALL</b>	Set all Input port's HDCP to 'off'
<b>HDCPSTATUS</b>	Show the HDCP status of all outputs (0=disabled, 1=enable)
<b>MUTE0 x</b>	Mute video for output (x=1~16)
<b>UNMUTE0 x</b>	Unmute video for output (x=1~16)
<b>MUTEI x</b>	Mute video for input (x=1~16)
<b>UNMUTEI x</b>	Unmute video for input (x=1~16)
<b>MUTEALL</b>	Mute all outputs
<b>UNMUTEALL</b>	Unmute all outputs
<b>MUTESTATUS</b>	Show the mute status of all outputs (0=unmuted, 1=muted)
<b>HPDL x</b>	Pull the input (x=1~16) hot-plug-detect signal to 'low'.
<b>HPDH x</b>	Pull the input (x=1~16) hot-plug-detect signal to 'high'

COMMAND	DESCRIPTION
<b>HPDLALL</b>	Set the hot-plug-detect of all inputs to 'low'
<b>HPDHALL</b>	Set the hot-plug-detect of all inputs to 'high'
<b>HPDSTATUS</b>	Report the hot-plug-detect signal status of all inputs
<b>EDIDMODE x y</b>	Set the EDID mode of input (x=1~16) to y (1~3)
<b>EDIDMODEALL x</b>	Set the EDID mode of all input to x (1~3)
<b>EDIDPORT x y</b>	Set the EDID mode of assigned port (y=1~16) to input (x=1~16)
<b>EDIDPORTALL x</b>	The EDID mode of all ports is assigned to output (x=1~16)
<b>EDIDSTATUS</b>	Report the status of the EDID modes of all inputs
<b>*IRMASKOUT x y z</b>	Set the IR routing of HDBaseT output modules to the displays attached to receivers or the remote control of source devices (x=sink/src, y=1~16/all) and allow the IR control of the matrix on/off (z=0/1)
<b>*IRMASKCPU x y z</b>	Set the IR routing of CPU control board to the displays attached to receivers, the remote control of source devices or all IR signals control (x=sink/src/out, y=1~16/all) and allow the IR control of the matrix on/off (z=0/1)
<b>*SHOWIRMASKOUT x y</b>	Show the IR routing of HDBaseT output module(s) (x=sink/src, y=1~16/all)
<b>*SHOWIRMASKCPU x y</b>	Show the IR routing of CPU control board (x=sink/src/out, y=1~16/all)
<b>UART x y "str"</b>	Write UART string to output port (x=in/out, y=1~16, "str"="string")

COMMAND	DESCRIPTION
<b>UARTBAUD x y</b>	Set the UART Baud rate of output (x=1~16, y=rate)
<b>STATUSUART</b>	Show the UART Baud rate of output
<b>TEMPSTATUS</b>	Show temperature sensor values y1 and y2
<b>SETIPADDR</b>	Set the IP address (x.x.x.x)
<b>SETSNMASK</b>	Set the Subnet Mask address (x.x.x.x)
<b>SETGWADDR</b>	Set the Gateway address (x.x.x.x)
<b>IPCONFIG</b>	Show the current IP configuration
<b>RSTIP</b>	Reset the IP configuration to default values (DHCP)
<b>BUZZER x</b>	Set the buzzer (0=mute, 1=unmute)
<b>REBOOT</b>	Reboot the system
<b>SAVETO x</b>	Save as preset x (1~10)
<b>RECALLTO x</b>	Recall the preset x (1~10)
<b>RESET</b>	Reset the system to O111, O212, O313, O414, O515, etc.
<b>VERSION</b>	Show the firmware version

Note:

1. *HELP: Show command list.*
2. *Commands will be not executed unless followed by a carriage return. Commands are not case-sensitive.*
3. *Commands with one asterisk (\*) will function on compatible HDBaseT input/output modules and transmitters/receivers only.*

## 6.7 Telnet Control

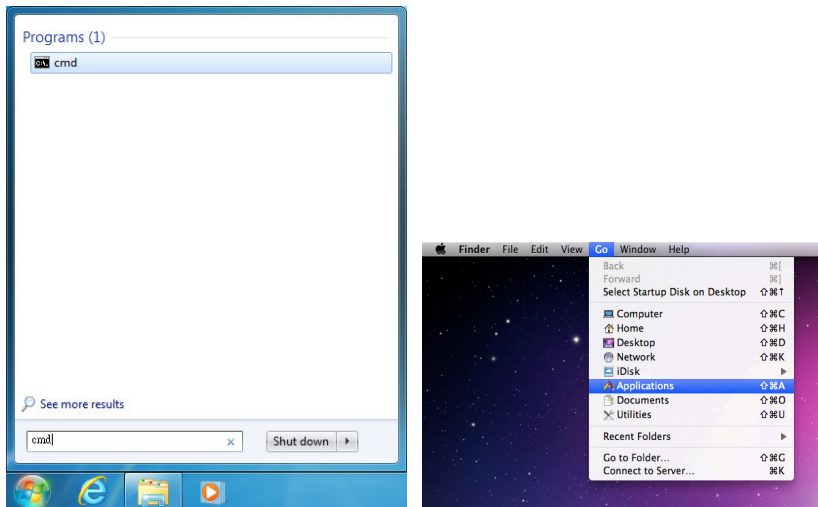
Before attempting to use the Telnet control, please ensure that both the Matrix (via the 'LAN /CONTROL' port) and the PC/Laptop are connected to the same active networks.

To access the Telnet control in Windows 7, click on the 'Start' menu and type "cmd" in the Search field then press enter.

Under Windows XP go to the 'Start' menu and click on "Run", type "cmd" with then press enter.

Under Mac OS X, go to Go→Applications→Utilities→Terminal

See below for reference.



Once in the command line interface (CLI) type "telnet", then the IP address of the unit and "23", then hit enter.

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>telnet 192.168.5.80 23
```

*Note: The IP address of the Matrix can be displayed on the unit's LCM monitor by pressing the MENU button twice.*



This will bring us into the unit which we wish to control. Type "help" to list the available commands.

```
telnet-> help

      P0 : Power Off
      P1 : Power On
      RESET : System Reset to 01i1,02I2,03I3,04I4,05I5....
      0xxIxx(x:01~8) : Output 0~8 set to Input 1~8
      ALLOUT xx(x:01~8) : All Output set to Input 1~8
      MUTE xx(x:0~8) : Video mute command at output interface
      UNMUTE xx(x:0~8) : Video unmute command at output interface
      MUTEALL : Mute all outputs
      UNMUTEALL : Unmute all outputs
      SHOWMUTE : Show mute status of all output(0=not muted,1=muted)
      RDMUTE xx(x:0~8) : Read MUTE Status at Output
      HPDLOW xx(x:01~8) : Pull the Hot-Plug-Detect signal to 'LOW'
      HPDHIGH xx(x:01~8) : Pull the Hot-Plug-Detect signal to 'HIGH'
      HPDLOW ALL : Set All Input HPD to Low
      HPDHIGH ALL : Set All Input HPD to High
      SHOWHPD : Report ALL Input Hot-Plug-Detect signal status
      STATUSHPD x(x:1~8) : Show HPD status of input(x)
      SHOWTEMP : Show temperature sensor values y1, y2
      STATUSIN xx(x:01~8) : Report Input connection status
      STATUSOUT xx(x:0~8) : Report Output connection status
      STATUSALL : Report ALL Output connection status
      STATUSEDID : Report ALL Input EDID mode&port
      SETEDIDMODE ii mm(ii:01~8 mm:1~3) : Set EDID mode(mm) to Input(ii)
      SETEDIDMODE ALL mm (mm=1~3) : The EDID mode(mm) of All Input(ii)
      SETEDIDPORT ii pp(ii:01~8 pp:01~8) : Set EDID Assigned Port(pp) to Input(ii)
      SETEDIDPORT ALL mm (pp=01-8) : The EDID of All Inports is assigned to Output
      pp
      ACTIVE : Report I/O active channels
      INDETECT : Input channels detect indicator
      OUTDETECT : Output channels detect indicator
      IPCONFIG : Display the current IP config
      SETIP <IP> <SubNet> <GW> : Setting IP.ShuNet.GateWay(Static IP)
      RSTIP : IP Configuration Was Reset To Factory Defaults(DHCP)
      SETIPADDR <IP> : Setting IP address
      SETSNMASK <SubNet> : Setting subnet mask
      SETGWADDR <GW> : Setting gateway IP address
      R
```

Type "IPCONFIG" To show all IP configurations. To reset the IP, type "RSTIP" and to use a static IP, type "SETIP" (For a full list of commands, see Section 6.4).

*Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive. If the IP is changed then the IP Address required for Telnet access will also change accordingly.*

## 6.8 Web GUI Control

On a PC/Laptop that is connected to the same active network as the Matrix, open a web browser and type the unit's IP address on the web address entry bar. The browser will display the unit's Status, Control and User Setting pages.

The screenshot shows the 'Status' tab with the following information:

- Power Status:** Power Status: ON
- IP Status:**
  - IP Address: 192.168.5.139
  - NetMask Address: 255.255.255.0
  - GateWay Address: 192.168.5.254
  - MAC Address: 82-E0-FA-A3-E0-8A
  - Http Port Number: 80
  - Telnet Port Number: 23
- Matrix Status:** A grid of 16 ports, each with an 'OutPut' and 'InPut' label.

Click on the 'Control' tab to control power, input/output ports, EDID and reset mode.

The screenshot shows the 'Control' tab with the following information:

- Power Control:** PowerON, PowerOFF
- Matrix Control:** A grid of 16 ports, each with an 'OutPut' and 'InPut' dropdown menu.
- All OutPut Set:** OutPut Input Port
- System Reset:** Reset

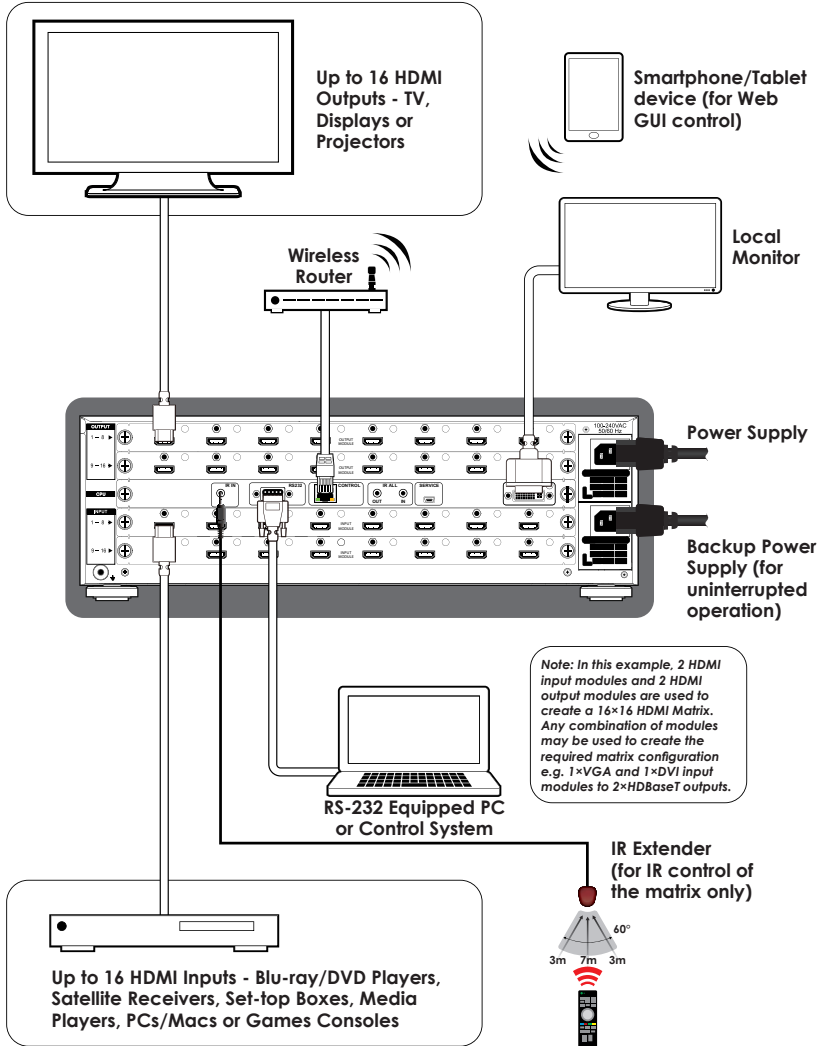
Click on the 'User Setting' tab allows you to reset the IP configuration. The system will ask for a reboot of the unit each time any of the settings are changed. The IP address needed to access the Web GUI control will also need to be changed accordingly on the web address entry bar.

The screenshot shows the 'User Setting' tab with the following information:

- IP Address Selection:**
  - Address Type: Static IP
  - Static IP Address: 192.168.5.139
  - Subnet Mask: 255.255.255.0
  - Default Gateway: 192.168.5.254
- Update Settings:** Update Settings

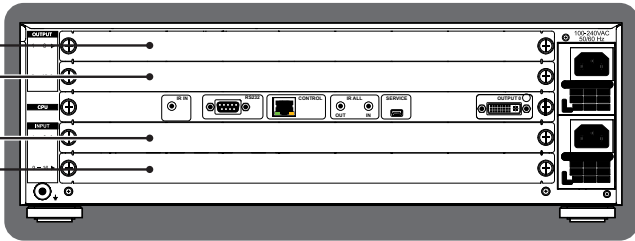
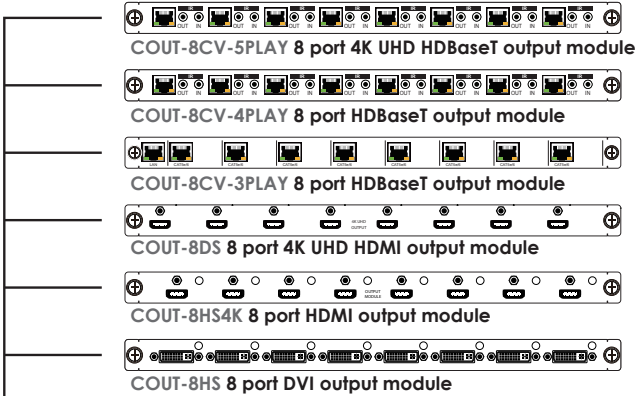
## 7. CONNECTION DIAGRAM

### 7.1 Example Installation (16x16 HDMI Matrix)

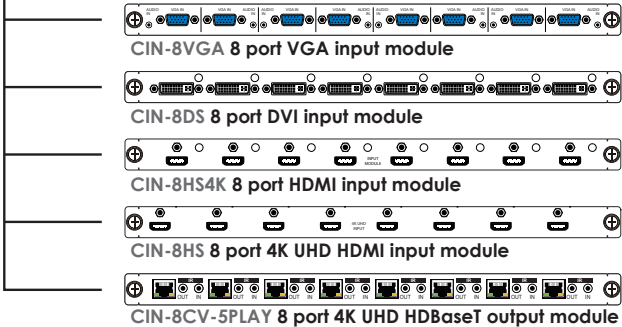


## 7.2 Input and Output Modules

### Output Modules (×2)



### Input Modules (×2)



## 8. SPECIFICATIONS

### 8.1 Technical Specifications (Enclosure)

<b>Input Ports</b>	Up to 16×HDMI or DVI or CAT5e/6/7 or VGA (dependent on module configuration)
<b>Output Ports</b>	Up to 16×HDMI or DVI or CAT5e/6/7 (dependent on module on module configuration)
<b>Power Supply</b>	2×AC 110~240V (US/EU standards, CE/FCC/UL certified)
<b>Dimensions</b>	482 mm (W)×484 mm (D)×145 mm (H)
<b>Weight</b>	14,400g
<b>Chassis Material</b>	Metal
<b>Color</b>	Black
<b>Operating Temperature</b>	0 °C~40 °C/32 °F~104 °F
<b>Storage Temperature</b>	-20 °C~60 °C/-4 °F~140 °F
<b>Relative Humidity</b>	20~90% RH (non-condensing)
<b>Power Consumption</b>	50 W

## 8.2 Technical Specifications (Input Modules)

CIN-8CV-5PLAY 8 Port HDBaseT Input Module	
<b>Video Bandwidth</b>	300MHz/10.2Gbps
<b>Features</b>	HD Video/Audio, PoC, Ethernet, IR/RS-232
<b>Input Ports</b>	8×CAT5e/6/7, 1×LAN, 8×IR Extender, 8×IR Blaster
<b>Ethernet Speed</b>	100Mbps
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30Hz
<b>IR Frequency</b>	30~50Hz
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
<b>Power Consumption</b>	45W+10W PoC/each port

CIN-8HS4K 8 Port 4K HDMI Input Module	
<b>Video Bandwidth</b>	300MHz/10.2Gbps
<b>Input Ports</b>	8×HDMI
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30Hz
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
<b>Power Consumption</b>	22W

CIN-8HS 8 Port HDMI Input Module	
<b>Video Bandwidth</b>	225MHz/6.75Gbps
<b>Input Ports</b>	8×HDMI
<b>Video Resolutions</b>	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p

CIN-8HS 8 Port HDMI Input Module	
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192 kHz Fs sample rate)
<b>Power Consumption</b>	20 W

CIN-8DS 8 Port DVI Input Module	
<b>Video Bandwidth</b>	225 MHz/6.75 Gbps
<b>Input Ports</b>	8×DVI
<b>Video Resolutions</b>	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192 kHz Fs sample rate)
<b>Power Consumption</b>	20 W

CIN-8VGA 8 Port VGA Input Module	
<b>Input Ports</b>	8×VGA, 8×2.5mm Audio Phone Jack
<b>Video Resolutions</b>	PC: VGA~WUXGA@60 (RB)
<b>Audio Transmission</b>	Stereo 2.5mm phone jack (included 2.5mm to 3.5mm adaptor)
<b>Power Consumption</b>	22 W

### 8.3 Technical Specifications (Output Modules)

COUT-8CV-5PLAY 8 Port HDBaseT Output Module	
<b>Video Bandwidth</b>	300 MHz/10.2 Gbps
<b>Features</b>	HD Video/Audio, PoC, Ethernet, IR/RS-232
<b>Output Ports</b>	8×CAT5e/6/7, 8×IR Extender, 8×IR Blaster, 1×LAN
<b>Ethernet Speed</b>	100 Mbps

COUT-8CV-5PLAY 8 Port HDBaseT Output Module	
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30Hz
<b>IR Frequency</b>	30~50Hz
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
<b>Power Consumption</b>	45W+10W PoC/each port

COUT-8CV-4PLAY 8 Port HDBaseT Output Module	
<b>Video Bandwidth</b>	225MHz/6.75 Gbps
<b>Features</b>	HD Video/Audio, PoC, IR/RS-232
<b>Output Ports</b>	8×CAT5e/6/7, 8×IR Extender, 8×IR Blaster
<b>Ir Frequency</b>	30~50Hz
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
<b>Power Consumption</b>	43W+10W PoC/each port

COUT-8CVL-3PLAY 8 Port HDBaseT Output Module	
<b>Video Bandwidth</b>	225MHz/6.75 Gbps
<b>Features</b>	HD Video/Audio, IR/RS-232
<b>Output Ports</b>	8×CAT5e/6/7, 8×IR Extender, 8×IR Blaster
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p
<b>Ir Frequency</b>	30~50Hz
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
<b>Power Consumption</b>	43W



<b>COU-8HS4K 8 Port 4K HDMI Output Module</b>	
<b>Video Bandwidth</b>	300 MHz/10.2 Gbps
<b>Output Ports</b>	8×HDMI
<b>Video Resolutions</b>	PC: VGA~WUXGA HDTV: 480i~1080p, 4K2K@30Hz
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192 kHz Fs sample rate)
<b>Power Consumption</b>	22 W

<b>COU-8HS 8 Port HDMI Output Module</b>	
<b>Video Bandwidth</b>	225 MHz/6.75 Gbps
<b>Input Ports</b>	8×HDMI
<b>Video Resolutions</b>	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192 kHz Fs sample rate)
<b>Power Consumption</b>	20 W

<b>COU-8DS 8 Port DVI Output Module</b>	
<b>Video Bandwidth</b>	225 MHz/6.75 Gbps
<b>Output Ports</b>	8×DVI
<b>Video Resolutions</b>	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
<b>Audio Transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192 kHz Fs sample rate)
<b>Power Consumption</b>	20 W



## 8.4 CAT5e/6/7 Cable Specifications

**CIN-8CV-5PLAY, COUT-8CV-5PLAY and COUT-8CV-4PLAY Cable Distance:**

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video Formats
CAT5e/6/7	100m	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p@60 Hz, 36-bit, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).
	70m	>225 MHz	>5.3 Gbps (Ultra HD Video)	4K2K@30 Hz video formats

**COUT-8CVL-3PLAY Cable Distance:**

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video Formats
CAT5e/6/7	60m	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p@60 Hz, 36-bit, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>CLI</b>	Command Line Interface
<b>DTS</b>	Digital Theater System
<b>DVI</b>	Digital Visual Interface
<b>EDID</b>	Extended Display Identification Data
<b>GUI</b>	Graphical User Interface
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High-Definition Multimedia Interface
<b>HDTV</b>	High-Definition Television
<b>LCM</b>	Liquid Crystal Module
<b>PoC</b>	Power over Cable
<b>VGA</b>	Video Graphics Array
<b>WUXGA</b>	Widescreen Ultra Extended Graphics Array



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