

# **HDMI Quad 4x4 Video Wall Matrix Switch # 15197**



## **Operation Manual**

## Introduction

This 4 by 4 HDMI Seamless Matrix is an advanced 4 Way HDMI switch with integrated Multi-view POP (Picture -out-of Picture) technology. This plug and play solution offers advanced control and display options for the integration of 4 sources onto 4 displays. It provides 3 output modes, Matrix, Dual and TV Wall. Matrix mode can route and switch just like a normal matrix, the Dual mode allows 2 sets of 2 selected sources to be displayed in a Picture-out-of-Picture configuration and the TV Wall mode displays a selected source over 4 displays as if it were a single video image.

The device supports resolutions up to WUXGA@60 (RB) and 1080p@60 Hz, audio formats up to 7.1CH LPCM at 192 kHz sampling rate based on the source EDID. It has the added benefit of control through IR, remote control, Telnet/IP, RS-232 or front panel buttons.

## Features

- HDMI, HDCP1.1 and DVI compliant
- Supports Deep Color 8/10/12 bit
- Seamless switching of HDMI sources
- Supports three different display modes: Matrix, Dual, Video Wall
  - *Matrix mode*: Can seamlessly switch between and output from any 4 sources to any 4 displays, as per a normal matrix switch
  - *Dual mode*: Can display a POP (Picture-out-of-Picture) image combined from 2 sources to be presented on the HDMI output ports (Dual A and Dual B)
  - *Video Wall mode*: Can split a single source to 4 displays e.g a 2 by 2 Video wall as a full image with adjustable Bezel Correction
- Supports control via On-screen Display (OSD), RS232, Telnet (IP), IR Remote control and on-panel controls
- Supports Input resolutions of VGA~WUXGA and 480i~1080p
- Supports Output resolutions of 480p~1080p
- Supports different input resolution and output resolution selectable from the OSD menu. The default setting for the output resolution is 720p@60 Hz/2CH LPCM
- Supports High definition Audio formats: LPCM 2CH/6CH/8CH, Dolby Digital, DTS, Dolby Digital Plus, Dolby TruHD and DTS-HD Master Audio

## Applications

- Broadcasting control room
- Surveillance control room
- Public advertisement displays
- HDMI Input extending
- Video Wall Systems

## System Requirements

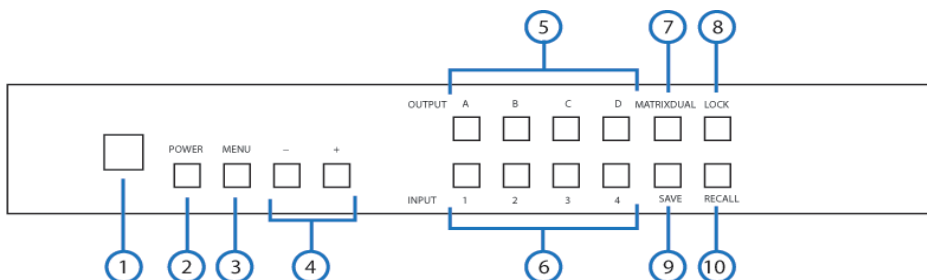
Input source equipment such as DVD/Blu-ray players or any video signal and PC/Notebook devices and output HD TV/monitor.



## Operation Controls and Functions

### Front Panel

The following sections describe the hardware components of the unit.



**1 IR Window:** Accepts the IR signal from the supplied remote control.

**2 POWER:** Press to turn the unit ON or to put it into standby mode.

*Note: Press and hold the POWER while connecting the power supply to reset the system to the default settings.*

**3 MENU:** Press this button to bring up the On-screen Display (OSD) menu on screen.

*Note: Press the MENU button simultaneously with the '-' (MINUS) button to immediately switch the output resolution to 720p@60 Hz. Press the MENU button with simultaneously '+' (PLUS) button to immediately switch the output resolution to XGA (1024×768@60 Hz).*

**4 Plus or Minus (-/+) Buttons:** Press these buttons to navigate down/ up the OSD then press the MENU' button to confirm.

**5/6 CHANNEL INPUT 1/2/3/4 and CHANNEL OUTPUT A/B/C/D:**

**Matrix mode:**

- 1) Press the 'MATRIX/DUAL/WALL' button to switch to Matrix mode. The LED will stay lit when in this mode.
- 2) Press an output from A/B/C/D and then press the corresponding input (from 1/2/3/4). For example, press output A then press input 1, output A will switch to input 1 and display the signal. The setting for each output must be set individually.

**Dual mode:** Combines 2 sources to be presented on each of the HDMI outputs (Dual A and Dual B). Dual Group A are outputs A and B combined, Dual group B are outputs C and D combined. Each group will output the same image simultaneously.

1) Press 'MATRIX/DUAL/WALL' button to switch to Dual mode. The LED will turn off when in this mode.

2) Press the 'A' or 'B' output buttons and then press the required

**input (1 or 2).** For example, press the output 'A' button then press the input 1 button, output A will display the video from input 1 on the left side of the screen, then press the output 'B' button and then press the button for input 2, output 'A' will display the video from input 2 on the right side of the screen. The video image will be identical for both output A and B.

3) Press button A or B for 3 seconds to switch the audio for Dual Group A between output A or B. Press button C or D for 3 seconds to switch the audio for Dual Group B between output C or D.

**TV Wall mode:**

1) Press the 'MATRIX/DUAL/WALL' button to switch to the TV Wall mode. The LED will blink constantly while in this mode.

2) Press input 1/2/3/4 to select a source to output to 4 displays (e.g. a 2 by 2 Video Wall).

3) The audio will be on output A only.

**7 MATRIX/DUAL/WALL:** Press to switch between Matrix mode, Dual mode and TV Wall mode. When in Matrix mode the LED will be lit constantly, when in DUAL mode the LED will not be lit and when in TV Wall mode the LED will blink.

**8 LOCK:** Press once to lock the keypad and remote control, press and hold for 3 seconds to release the lock function.

**9 SAVE:** Save the customized input and output settings.

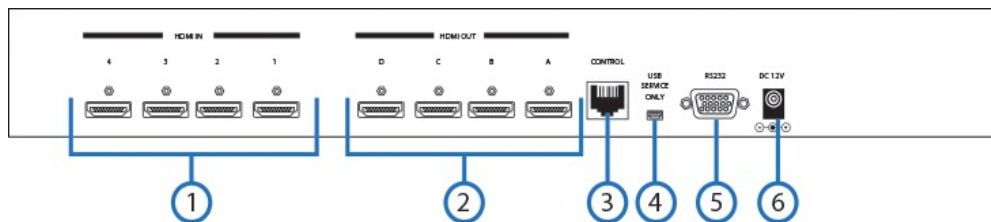
1) Press 'Matrix/Dual/Wall' button to select the desired mode.

2) Press each output channel A/B/C/D and then press corresponding input channel 1/2/3/4 as required.

3) Press 'SAVE', the input 1/2/3/4 LEDs will light at the same time, then press one of the input 1, 2, 3 or 4 buttons to save the settings to the system memory. For example, select Matrix mode, press output A then press input 4, then press 'SAVE'. This will correspond to the remote control FAV.1 to FAV.4 buttons.

**10 RECALL:** When in Matrix, Dual or Wall mode, press the 'RECALL' button, the input channel 1/2/3/4 LEDs will light at the same time. Select by pressing input channel 1, 2, 3 or 4 (or FAV1 to FAV4 on the remote control) to recall the customized screen settings.

## Back Panel



**1 HDMI IN 1/2/3/4:** Connect to HDMI source devices such as DVD/ Blu-ray players or PCs/Laptops.

**2 HDMI OUT A/B/C/D:** Connect with HDMI equipped displays such as HDTVs/Monitors.

**3 CONTROL:** Connect to an active network for telnet control (Please refer to Section 6.6 for RS-232/Telnet).

**4 USB SERVICE ONLY:** Reserved for manufacturer use only.

**5 RS-232:** Connect to a PC/Laptop or RS-232 control system with a D-Sub 15pin cable to control the device with RS-232 commands (Please refer to Section 6.6 for RS-232/Telnet).

**6 DC 12V:** Connect the 12V DC power supply to the unit and plug the adaptor into an AC outlet.

## Remote

**1 Power:** Press to turn the unit ON or to put it into standby mode.

**2 Info:** Press this button to show the device's firmware version.

**3 Out A/B/C/D and In 1/2/3/4:** Press output A~D and then press input 1~4 to assign the display input. For example: press Out A then press In 1, output A will display the video from input 1.

**4 Matrix/Dual/TV Wall:** Press to switch between Matrix mode, Dual mode and TV Wall mode.

**5 Lock:** Press once to lock the keypad and remote control, press again and hold for 3 seconds to release the lock function.

**6 Mute:** Press this button to mute the audio from the HDMI output.

**7 ▲/▼/◀/▶/OK:** Press these buttons to navigate the OSD menu and press OK to enter or confirm the settings.

**8 Exit:** Press this button to exit the OSD menu or the OSD settings.

**9 Menu:** Press this button to enter into the OSD menu.

**10 1024x768/720p/1080p:** Press the required button to switch to that resolution.

**11 Dual Audio AL/AR/BL/BR:** When in Dual mode, press these hot keys to switch the audio channel to the Left or Right side for Dual A and Dual B groups.

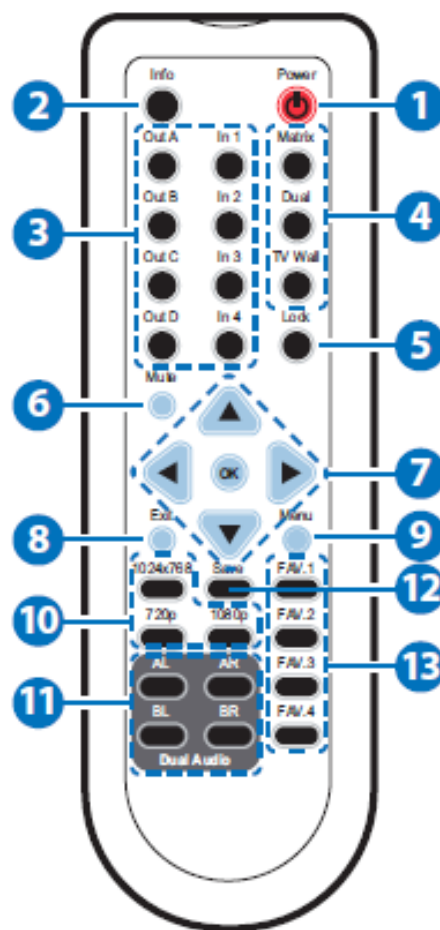
**12 Save:** To save the customized input and output settings.

1) Press "Matrix/Dual/Wall" button to select the desired mode.

2) Press each output channel A~D and then press corresponding input channel 1~4 as required.

3) Press "SAVE", the input 1~4 LEDs will light at the same time, then press one of the input 1,2,3 or 4 buttons to save the settings to the system memory. For example: Select Matrix mode, press output A then press input 4, then press "SAVE".

**13 FAV.1/2/3/4:** Press favorite key (1/2/3/4) to bring up the customized saved screen settings.



## Remote Control Dip Switch

Open the Remote control back cover to adjust the dip-switch settings (ON/OFF) to match the IR address setting in the OSD menu. Default setting is 0.



## RS-232 Protocol

Press once to reset current setting values back to factory default value

RS-232 IN			RS-232 OUT	
PIN	Assignment		PIN	Assignment
1	NC		1	NC
2	TxD		2	RxD
3	RxD	←	3	TxD
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: 115200 bps

Data bit: 8-bit

Parity: None

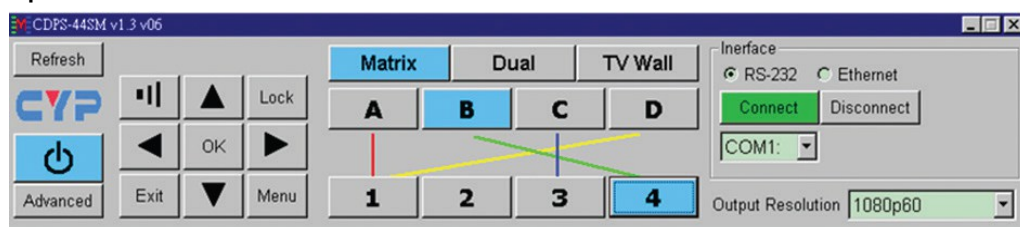
Stop Bit: 1

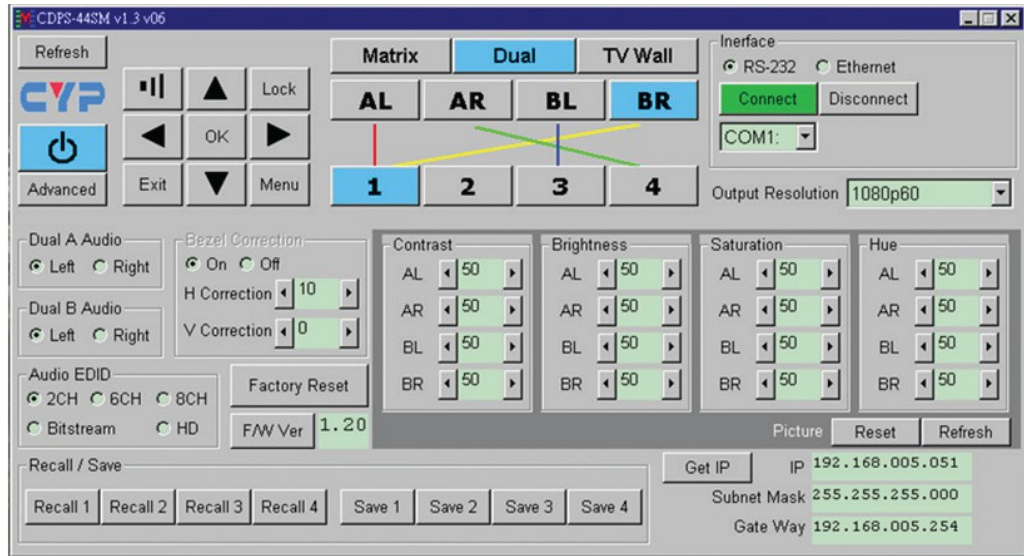
Flow Control: None

### RS-232 and Telnet Control

Using PC software or Hyper terminal to configure the setting. This software application can be downloaded from the product website.

#### Simple-function Control Panel:



**Full-function Control Panel:****Telnet Setting:**

The device can be controlled through Telnet over TCP/IP. Use Port 23 for Telnet communication. The Telnet connection settings can be checked via the OSD menu or via RS-232 commands.

**RS-232 and  
Telnet Commands**

COMMAND	DESCRIPTION	RESPONSE
AUA001 AUA002 AUA999	Dual A Audio channel in Left side Dual A Audio channel in Right side Check Dual A Audio channel status	AUA001 AUA002 AUA???
AUB001 AUB002 AUB999	Dual B Audio channel in Left side Dual B Audio channel in Right side Check Dual B Audio channel status	AUB001 AUB002 AUB???
AUD000 AUD001 AUD999	Audio output Off Audio output On Check Audio on/off status	AUD000 AUD001 AUD???
AUE000 AUE001 AUE002 AUE003 AUE004 AUE999	Audio EDID is LPCM 2CH Audio EDID is LPCM 6CH Audio EDID is LPCM 8CH Audio EDID is BITSTREAM Audio EDID is HD Check audio EDID setting	AUE000 AUE001 AUE002 AUE003 AUE004 AUE???
BEZ000 BEZ001 BEZ999	BEZEL CORRECTION Off BEZEL CORRECTION On Check BEZEL CORRECTION on/off status	BEZ000 BEZ001 BEZ???
BEH???	Horizontal (H) Bezel Correction ???=000~Maximum	BEH???

BEH998	Check current Horizontal (H) Bezel Correction maximum value	BEH???
BEH999	Check current Horizontal (H) Bezel Correction setting value	BEH???
BEV???	Vertical (V) Bezel Correction ??? =000~Maximum	BEV???
BEV998	Check current Vertical (V) Bezel Correction maximum value	BEV???
BEV999	Check current Vertical (V) Bezel Correction setting value	BEV???
BRI???	BRIGHTNESS setting - Matrix mode: ???=000~100 - Dual/TV Wall mode: ???=(000~100)+200×(OUT No.-1 e.g. To set OUT B brightness value to 57, it is (57)+200×(2-1)=257	No response
BRI99?	Check current BRIGHTNESS value 99?=999 (Matrix mode) 99?=991~994=OUT1~4 (Dual/TV Wall mode)	BRI???
CAL???	Recall customized screen settings ???=001~004=FAV.1~4	CAL???
CON???	CONTRAST setting	No response
CON999	Command setting as BRI???	CON???
EGW999	Check current Ethernet GATEWAY address (RS-232 command only)	aaa.bbb. ccc.ddd
EIP999	Check current Ethernet IP address (RS-232 command only)	aaa.bbb. ccc.ddd
EMK999	Check current Ethernet SUBNET MASK address (RS-232 command only)	aaa.bbb. ccc.ddd
HUE???	HUE setting	No response
HUE999	Command setting as BRI???	HUE???
INP???	INPUT selection???=001~004=IN 1~4 Execute OUT???	INP???
INP999	Check current INPUT	INP???
LCK000	Un-lock the keypad	LCK000
LCK001	Lock the keypad	LCK001
LCK999	Check current LOCK/UN-LOCK status	LCK???
MNE001	OSD Menu EXIT	No response
MND001	OSD Menu DOWN	No response
MNL001	OSD Menu LEFT (-)	No response
MNO001	OSD Menu OK	No response



MNR001	OSD Menu RIGHT (+)	No response
MNU001	OSD Menu UP	No response
MNX001	OSD Menu	No response
MOD001	Matrix mode	MOD001
MOD002	Dual mode	MOD002
MOD003	TV Wall mode	MOD003
MOD999	Check current output mode status	MOD???
OUT???	OUTPUT selection ???=001~004=OUT A~D	OUT???
OUT999	Check current OUTPUT	OUT???
PWR000	Power off (Standby)	PWR000
PWR001	Power on	PWR001
PWR999	Check current POWER status	PWR???
RES???	OUTPUT RESOLUTION setting ???=001~... corresponding to OSD menu	RES???
RES999	Check current OUTPUT RESOLUTION	RES???
RST001	FACTORY reset	RST001
RST002	PICTURE reset	RST002
SAT???	SATURATION setting	No response
SAT999	Command setting as BRI???	SAT???
SAV???	Save customized screen settings ???=001~004=FAV.1~4	SAV???
VER999	Check FIRMWARE version e.g. VER110=V1.1	VER???

Note: Commands will be not executed unless followed with a carriage return (0x0D). Commands are case-sensitive.

## Specifications

<b>Video Bandwidth:</b>	225Mhz / 6.75Gbps
<b>Input Ports:</b>	4 x HDMI(Female) 1x USB (service only)
<b>Output Ports</b>	4xHDMI (Female)
<b>Power Supply</b>	12 V/3 A DC (US/EU standards, CE/FCC/ UL certified)
<b>ESD Protection</b>	Human body model: ±8 kV (air-gap discharge) ±4 kV (contact discharge)
<b>Dimensions</b>	432 mm (W)×247 mm (D)×44 mm (H)
<b>Weight</b>	2200 g
<b>Chassis Material</b>	Aluminum
<b>Silkscreen 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>	15 W

## Resolution Supports

INPUT SUPPORT TIMING	OUTPUT SUPPORT TIMING
480i@59	480p@60
480p@60	576p@50
576i@50	720p@50
576p@50	720p@60
720p@25, 30, 50, 60,	1080i@50 (Matrix Mode Only)
1080i@50, 60	1080i@60 (Matrix Mode Only)
1080p@24, 25, 30, 50, 60	1080p@24
640×480@60, 72, 75, 85	1080p@50
720×400@70	1080p@60
800×600@56, 60, 72, 75, 85	1024×768@60
1024×768@60, 70, 75, 85	1280×800@60
1152×864@70, 75	1280×1024@60
1280×720@60 (CVT)	1366×768@60
1280×768@60 (RB), 60, 75	1440×900@60
1280×800@60 (RB), 60, 75	1600×900@60 (RB)
1280×1024@60, 60(CVT), 75	1600×1200@60
1360×768@60	1680×1050@60
1366×768@60 (RB), 60	1920×1200@60 (RB)
1400×1050@60 (RB), 60	
1440×900@60 (RB), 60, 75	
1600×900@60 (RB)	
1600×1200@60	
1680×1050@60 (RB),60	
1920×1200@60 (RB)	

## OSD Menu

Main Menu		Sub Menu		Adjustments	Default
Picture <sup>1</sup>	All	Contrast		0 ~ 100	50
		Brightness		0 ~ 100	50
		Saturation		0 ~ 100	50
		Hue		0 ~ 100	50
	Dual(D)	Dual AL			
		Dual AR			
		Dual BL			
		Dual BR			
	TV Wall (T)	Out A			
		Out B			
		Out C			
		Out D			
	D/T	Reset			
	All	Reset All			
		Exit			
Output Resolution		480p	1024×768		720p60
		576p	1280×800		
		720p50	1280×1024		
		720p60	1366×768		
		1080i50 <sup>2</sup>	1440×900		
		1080i60 <sup>2</sup>	1600×900		
		1080p24	1600×1200		
		1080p50	1680×1050		
		1080p60	1920×1200		
		EXIT			
Audio EDID <sup>3</sup>		LPCM 2CH			LPCM 2CH
		LPCM 6CH			
		LPCM 8CH			
		Bitstream			
		HD			
		Exit			
OSD Settings		Position		Left T	Left T
				Right T	
				Left B	
				Right B	
		H offset		0~20	10
		V offset		0~20	10
		Transparency		0~9	4
		Menu Timeout		5~50	8
				Off <sup>4</sup>	
		Info. Timeout		5~50	8
				Off	
		Info. Display		ON	ON
				OFF	
Brief Info		ON	ON		

		OFF	
	Exit		
<b>HDCP</b>	Input 5	Accept Not Accept	Accept
	Output 6	Follow Input Always On	Follow Input
	Exit		
<b>Bezel Correction 7</b>	Correction	On Off	<b>OFF</b>
	H Correction	0~ By Output Resolution	<b>0</b>
	V Correction	0~ By Output Resolution	<b>0</b>
	Exit		
<b>Recall/Save 8</b>	Recall	Cancel Fav.1~4	<b>Cancel</b>
	Save	Cancel Fav.1~4	<b>Cancel</b>
	Exit		
<b>Ethernet</b>	IP Mode	DHCP STATIC	<b>DCHP</b>
	Static Set	IP MASK GATE	<b>IP</b>
	Byte 1		<b>192</b>
	Byte 2		<b>168</b>
	Byte 3		<b>5</b>
	Byte 4		<b>155</b>
	Re-Link 9		
	Timeout 10 (Min.)	5 ~ 60 Off	<b>10</b>
	Exit		
<b>Others</b>	IR Address 11	0 ~ 3	<b>0</b>
	Exit		
<b>Factory Default</b>	Yes		<b>No</b>
	No		
	Exit		
<b>Information 12</b>	In/Out Resolution		
	Source HDCP		
	Audio		
	Out Mode		
	Firmware Version		
	Exit		
<b>Exit</b>			

**Note:**

1. PICTURE:

- In Matrix mode, the settings for all four pictures are adjusted simultaneously.
- In Dual/TV Wall mode, the settings for each picture can be adjusted individually and the last memory feature is supported individually.

2. OUTPUT RESOLUTION:

- The 1080i@50 and 1080i@60 output resolutions are supported in 'Matrix' mode only. When these output resolutions are used, Input Port 4 will not function and will not be selectable in the OSD Menu. In 'Dual' or 'TV Wall' modes these output resolutions are unavailable and can not be selected in the OSD menu.

3. AUDIO EDID:

- 1 Embedded EDID for input audio:
- 2 LPCM 2CH = LPCM 2CH
- 3 LPCM 6CH = LPCM 2CH/ 6CH
- 4 LPCM 8CH = LPCM 2CH/ 6CH/ 8CH
- 5 BITSTREAM = LPCM 2CH, AC3, DTS
- 6 HD = LPCM 2CH/ 6CH/ 8CH, AC3, DTS, Dolby Digital Plus, DTS-HD

4. MENU TIMEOUT:

When switched to OFF, MENU and INFO will continue showing on the screen

5. HDCP INPUT:

ACCEPT: Supports HDCP encrypted source (default setting)

NOT ACCEPT: Does not support HDCP encrypted source. For example: Apple TV.

6. HDCP OUTPUT:

FOLLOW INPUT: If the source has HDCP encryption the output will support HDCP. If the source does not have HDCP encryption the output will not support HDCP. If, when in Dual mode, either input (Left or Right) supports HDCP, the output will be HDCP encrypted.

ALWAYS ON: When in this mode, all connected TV/Monitors need to support HDCP in order to avoid switching the sources from non-HDCP to HDCP, or flashing or blank image.

7. BEZEL CORRECTION:

- TV Wall mode only. After adjustment the settings are stored in the last memory function.

8. RECALL/SAVE:

- To SAVE or RECALL the input/output settings, the system supports last memory function to save all the setting.

9. Ethernet RE-LINK:

- After the setup, use the RE-LINK option in the OSD menu to re-connect the system again.

10. Ethernet TIMEOUT:

- Select OFF to cancel the time out function. When no Telnet commands are received within the time limit set in the TIMEOUT setting the telnet system will be terminated.

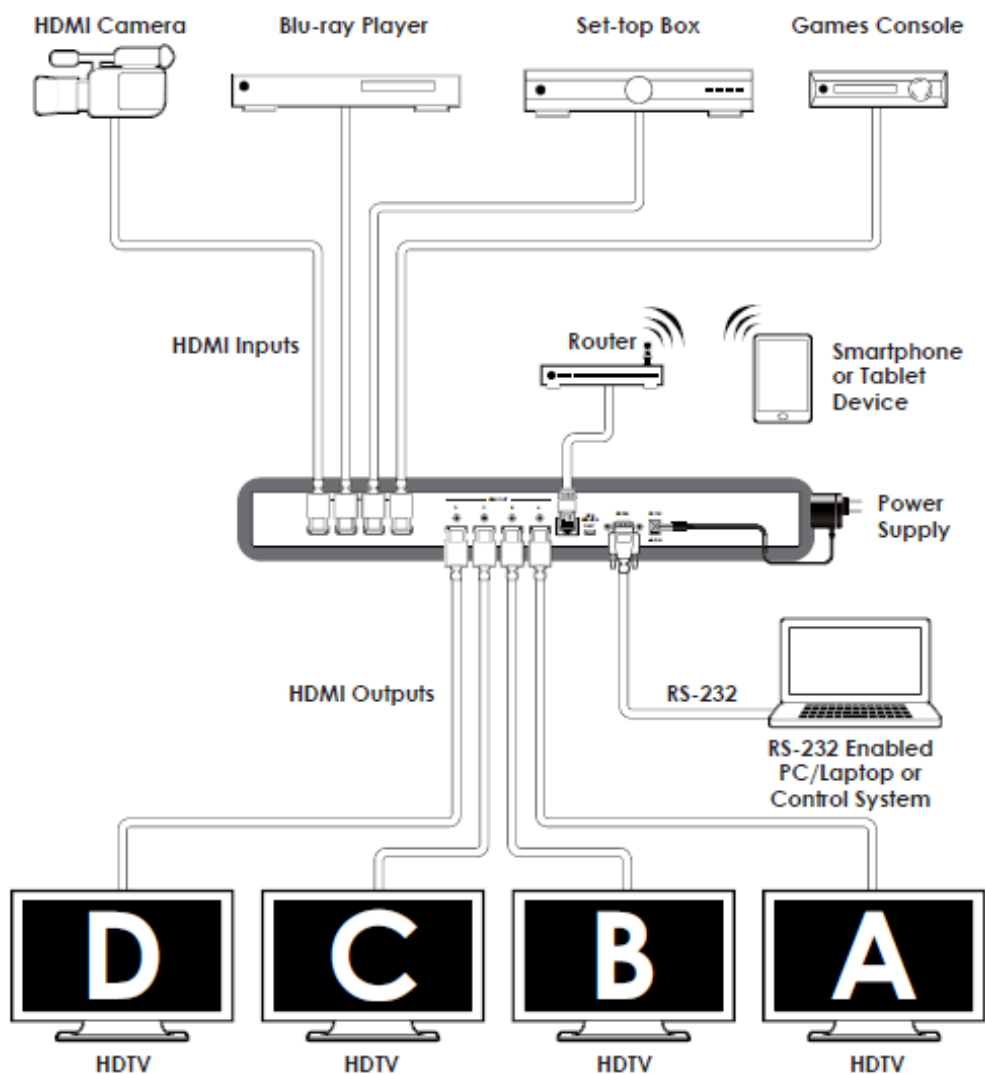
11. IR ADDRESS:

- This setting should correspond to the dip switch setting on the IR remote control (please refer to page 5)

12. INFORMATION:

- Shows the settings/information for the Input/Output/Audio/Mode/ Firmware version.

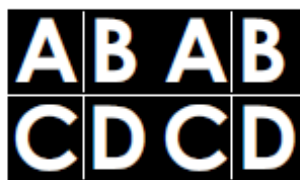
## Connection Diagram



### Screen Configurations:



Matrix Mode



Dual Mode



TV Wall Mode