



# CPLUS-V8H8HP

4K UHD+ 8×8 HDMI Matrix  
with USB Power Outputs



**HDMI**<sup>®</sup>  
HIGH-DEFINITION MULTIMEDIA INTERFACE

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	SUMMARY OF CHANGE
RDV1	19/09/17	Preliminary release
VS1	20/12/17	Final technical review
VS2	16/01/18	Additional input selection modes & Updated resolution support list



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## 1. INTRODUCTION

This 8 by 8 Matrix provides the ability to connect up to eight 4K UHD HDMI sources to up to eight 4K UHD HDMI displays and freely switch between them. This unit comes with full support for 18Gbps (600Mhz) resolutions up to, and including 4K@60Hz (4:4:4, 8-bit) as well as support for 16-bit Deep Color up to 1080p@60Hz, HDR (High Dynamic Range), HD audio and other features defined by the HDMI 2.0a specification. With a comprehensive EDID management feature that includes the ability to select between built in default EDID, EDID copied from connected sink devices, as well as a configurable EDID, this matrix can solve many interconnectivity problems.

This unit also features eight USB ports which supply up to 5V/1A power for use with connected AOC (Active Optical Cable) fiber cable extenders. By using these specialized cables your HDMI content can be extended much further than would be possible with normal HDMI cables. The built-in OSD has the ability to display user editable general information text so each output can display up to 2 lines of customized text on top of the video source in the color of your choice. This unit provides an intuitive set of front panel controls with an LCD as well as RS-232, Telnet, WebGUI, and IR remote control options.

## 2. APPLICATIONS

- Smart Home Control
- Control Center
- Function Room
- Product Showroom
- Ballroom

## 3. PACKAGE CONTENTS

- 1×8 by 8 HDMI Matrix with USB Power Outputs
- 1×24V/6.25A DC Power Adapter
- 1×Power Cord
- 1×IR Extender Cable
- 1×Remote Control (CR-177)
- 1×Rack Mount Ears (Set of 2)

- 1×Operation Manual

## 4. SYSTEM REQUIREMENTS

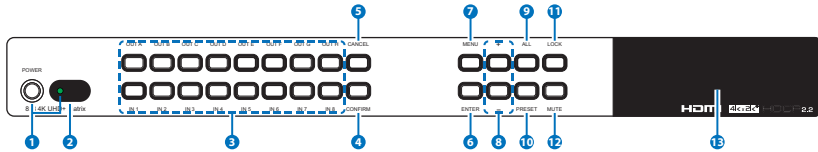
- HDMI source equipment such as media players, video game consoles or set-top boxes.
- HDMI receiving equipment such as HDTVs, monitors or audio amplifiers.
- The use of "Premium High Speed HDMI" cables is highly recommended.

## 5. FEATURES

- HDMI 2.0a and DVI 1.0 compliant
- HDCP 1.x and 2.2 compliant
- Eight HDMI inputs matrixed to eight HDMI outputs with 18Gbps (600MHz) 4K UHD support
- Supports HD resolutions up to 3840×2160@60Hz (4:4:4, 8-bit) & 4096×2160@60Hz (4:4:4, 8-bit)
- Supports 16-bit Deep Color up to 1080p@60Hz
- Supports pass-through of audio formats including LPCM 2.0/5.1/7.1, Bitstream, and HD Bitstream
- Supports six internal EDIDs, eight external EDIDs copied from connected devices, and four user provided EDIDs
- Eight USB ports to supply 5V/1A power to AOC (Active Optical Cable) fiber extension cables
- OSD with user customizable information text
- Controllable via front-panel buttons with LCD, WebGUI, Telnet, RS-232, and IR remote

## 6. OPERATION CONTROLS AND FUNCTIONS

### 6.1 Front Panel

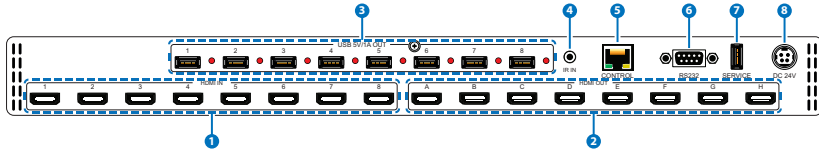


- 1 **POWER:** Press this button to power the unit on (green LED) or place it into stand-by mode (red LED).
- 2 **IR WINDOW:** Accepts IR signals from the included IR remote for control of this unit only.
- 3 **IN 1~8 & OUT A~H:** Press these buttons to configure the video routing. Behavior depends on the selected Keypad Action Mode.
  - 3a **In Standard Mode:** Press the “OUT” buttons (A~H) of the outputs you wish to route a source to (the letters will flash in the LCD to indicate selection). Next, press the “IN” button of the input (1~8) you wish to route to the selected outputs. Finally, press “CONFIRM” to confirm your selection and execute the routing change.
  - 3b **In User Mode:** Press the “OUT” button (A~H) of an output you wish to route a source to (the letter will flash in the LCD to indicate selection). Next, press the “IN” button of the input (1~8) you wish to route to the selected output. Repeat this process as many times as needed to select all new routes. Finally, press “CONFIRM” to confirm your selections and execute the routing changes.
- 4 **CONFIRM:** Press this button to confirm newly made input/output routing selections.
- 5 **CANCEL:** Press this button to cancel newly made input/output routing selections before they have been confirmed.
- 6 **ENTER:** Press to confirm a selection within the LCD menu or to go deeper into a menu item.
- 7 **MENU:** Press to enter the LCD menu, or to back out from menu items.
- 8 **PLUS (+) & MINUS (-):** Press to move up and down or adjust selections within menus.



- 9 **ALL:** Press this button to select all outputs simultaneously for routing. Next, press the "IN" key of the input (1~8) you wish to route to all outputs. Finally, press "CONFIRM" to confirm your selection and execute the routing change.
- 10 **PRESET:** Press to enter the preset recall menu in the LCD window. Press the "+/-" buttons followed by the "ENTER" button to select and activate the preferred preset.
- 11 **LOCK:** Press to lock all button functions on the front panel. Press and hold for 3 seconds to release the lock function. The LCD will display "Lock" when the function is active.
- 12 **MUTE:** The "MUTE" button functions as a blank audio/video source. To use it, follow the standard matrix routing instructions, but use the "MUTE" button as the input to blank out the selected outputs. When a "MUTE" input is in use it will show up as "M" within the routing display.
- 13 **LCD WINDOW:** Displays the unit's menu, settings and information.

## 6.2 Rear Panel



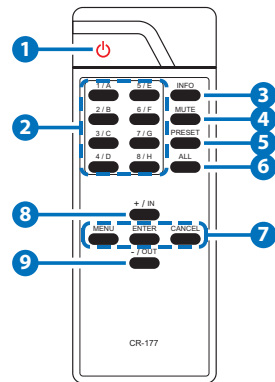
- 1 **HDMI IN 1~8:** Connect to HDMI source equipment such as media players, game consoles or set-top boxes.
- 2 **HDMI OUT A~H:** Connect the HDMI outputs to devices such as HDMI TVs, monitors or amplifiers for digital video and audio output.
- 3 **USB POWER OUTPUT 1~ 8:** Each USB port provides 5V/1A of power intended for use with HDMI over AOC (Active Optical Cables) fiber optic video extension cables. Power on each port may be individually enabled/disabled.  
  
*Note: If a USB device requiring more than 1A is connected, the port will automatically shut off to prevent an overload and the red LED will turn on.*
- 4 **IR IN:** Connect to the provided IR Extender to extend the IR control range of the unit. Ensure that the remote being used is within direct

line-of-sight of the IR Extender.

- 5 **CONTROL:** Connect directly, or through a network switch, to your PC/laptop to control the unit via Telnet/WebGUI.
- 6 **RS-232:** Connect directly to a PC, laptop or other serial control device to send RS-232 commands to control the unit.
- 7 **SERVICE:** This slot is reserved for firmware update use only.
- 8 **DC 24V:** Plug the 24V DC power adapter into the unit and connect it to an AC wall outlet for power.

### 6.3 Remote Control

- 1 **POWER:** Press to power the unit on or place it into stand-by mode.
- 2 **1/A ~ 8/H:** Press these keys to configure the video routing. Behavior depends on the selected Keypad Action Mode.
- 2a **In Standard Mode:** Press the "OUT" key followed by the keys (A~H) of the outputs you wish to route to. Next, press the "IN" key followed by the input (1~8) you wish to route to the selected outputs. Finally, press "ENTER" to confirm your selection.
- 2b **In User Mode:** Press the "OUT" key followed by the key (A~H) of the output you wish to route to. Next, press the "IN" key followed by the input (1~8) you wish to route to the selected output. Repeat this process as many times as needed. Finally, press "ENTER" to confirm your selection.
- 3 **INFO:** Switches the information displayed on each output's OSD between the user customized text and the current video/Ethernet details.
- 4 **MUTE:** The "MUTE" button functions as a blank audio/video source. To use it, follow the standard matrix routing instructions, but use the "MUTE" button as the input to blank out the selected outputs.
- 5 **PRESET:** Press to enter the preset call menu in the LCD window. Press the "+/-" buttons followed by the "ENTER" button to select and activate the preferred preset.
- 6 **ALL:** Press this key to select all outputs simultaneously for routing.



Next, press the key of the input (1~8) you wish to route to all outputs. Finally, press “ENTER” to confirm your selection and execute the routing change.

**7 MENU:** Press to enter the LCD menu, or to back out from menu items.

**ENTER:** Press to confirm a selection within the LCD menu or to go deeper into a menu item.

**CANCEL:** Press to cancel newly made input/output/preset routing selections before they have been confirmed.

**8 Plus (+)/IN:** Press “+/IN” to navigate up within menus or to begin the selection of an input for routing.

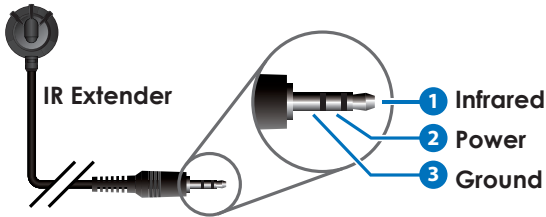
**9 Minus (-)/OUT:** Press “-/OUT” to navigate down within menus or to begin the selection of outputs for routing.

## 6.4 LCD Menu

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
<b>Video Setup</b>	EDID Setup	EDID Mode	Appoint Mode
			All Mode
		Appoint Mode EDID	IN1 ~ IN8
		All Mode EDID	IN1 ~ IN8
	Preset Setup	1 ~ 8	
	Downscale Setup	A ~ H	
<b>Drivers Setup</b>	USB Power Supply	A ~ H	
	Temperature	[Info Display]	
	Fan Ctrl.	Auto Mode	
		Always On Mode	
<b>System Setup</b>	Keypad Action Mode	Standard Mode	
		User Mode	
	Firmware	[Info Display]	
	Firmware Update	Yes/No	
	Factory Reset	Yes/No	
<b>Network Status</b>	[Info Display]		

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
<b>Network Setup</b>	Mode Static	IP:	
		Mask:	
		Gate:	
	Mode DHCP	[Info Display]	

## 6.5 IR Cable Pin Assignments



## 6.6 RS-232 Protocol

UNIT		TERMINAL		SERIAL PORT SETTINGS	
Pin	Pinout	Pin	Pinout		
1		1		<b>Baud Rate</b>	19200
2	TxD	2	RxD	<b>Data Bits</b>	8
3	RxD	3	TxD	<b>Parity Bits</b>	None
4		4		<b>Stop Bits</b>	1
5	GND	5	GND	<b>Flow Control</b>	None
6		6			
7		7			
8		8			
9		9			

## 6.7 Telnet Control

Before attempting to use Telnet control, please ensure that both the unit and the PC/Laptop are connected to the same active networks.

To access Telnet	
In Windows 7	Click <b>Start</b> , type "cmd" in the search field, and press <b>Enter</b> .
In Windows XP	Click <b>Start &gt; Run</b> , type "cmd", and press <b>Enter</b> .
In Mac OS X	Click <b>Go &gt; Applications &gt; Utilities &gt; Terminal</b> .

Once in the CLI (Command Line Interface) type "telnet" followed by 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 192.168.1.50 23
```

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

Notes:

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

## 6.8 RS-232 and Telnet Commands

6.8.1 General & System Commands	
COMMAND	
DESCRIPTION	VARIABLES
<b>HELP ↵</b>	
Show the full command list.	
<b>? ↵</b>	
Show the full command list.	
<b>SET FACTORY DEFAULT ↵</b>	
Reset all settings to the factory defaults. Unit will automatically reboot.	
<b>SET FACTORY IPCONFIG DEFAULT ↵</b>	
Reset Ethernet settings to the factory defaults.	
<b>SET FACTORY OUT ROUTE DEFAULT ↵</b>	
Reset all routing to the factory defaults.	
<b>SET POWER N1 ↵</b>	
Turn the unit on or off (standby).	Available values for <b>N1</b> : ON [Power On] STANDBY [Standby Mode]
<b>GET POWER ↵</b>	
Show the current power state.	
<b>SET UART 1 BAUDRATE N1 ↵</b>	
Set the baud rate of the RS-232 port to N1.	Available values for <b>N1</b> : 4800 [Baud Rate] 9600 [Baud Rate] 19200 [Baud Rate] 38400 [Baud Rate] 57600 [Baud Rate] 115200 [Baud Rate]

## 6.8.1 General & System Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>GET UART 1 BAUDRATE</b> ↵	
Show the current baud rate of the RS-232 port.	
<b>SET IR IN CHANNEL N1</b> ↵	
Set the IR remote channel to use.	<b>N1</b> = 0 ~ 15 [IR Channel]
<b>GET IR IN CHANNEL</b> ↵	
Show the current IR remote channel.	
<b>SET IR IN CUSTOM CODE N1</b> ↵	
Set the IR custom code.	<b>N1</b> = 0000 ~ 7FFF [Hex Code]
<b>GET IR IN CUSTOM CODE</b> ↵	
Show the current IR custom code.	
<b>SET FAN CONTROL MODE N1</b> ↵	
Set the internal fan control mode.	Available values for <b>N1</b> : 0 [Always On] 1 [Auto]
<b>GET FAN CONTROL MODE</b> ↵	
Show the current fan control mode.	
<b>GET FAN N1 SPEED</b> ↵	
Show the current RPM speed of fan N1.	<b>N1</b> = 1 ~ 2 [Fan Number]
<b>GET DEVICE TEMPERATURE</b> ↵	
Show the unit's current temperature.	
<b>SET USB N1 POWER SUPPLY N2</b> ↵	
Set the power state of USB port N1.	<b>N1</b> = A ~ H [USB Port] Available values for <b>N2</b> : ON [Power On] OFF [Power Off]

### 6.8.1 General & System Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>GET USB N1 POWER SUPPLY</b> ↵	
Show the power state of USB port N1.	<b>N1</b> = A ~ H [USB Port]
<b>SET KEYLOCK N1</b> ↵	
Enable or disable the front panel key lock.	Available values for <b>N1</b> : ON [Locked] OFF [Unlocked]
<b>GET KEYLOCK</b> ↵	
Show the current front panel key lock state.	
<b>GET FW VER</b> ↵	
Show the unit's firmware version.	

### 6.8.2 Matrix Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET OUT N1 ROUTE N2</b> ↵	
Route input N2 to output N1.	<b>N1</b> = A ~ H [Output Port] <b>N2</b> = 1 ~ 8 [Input Port]
<b>GET OUT N1 ROUTE</b> ↵	
Show the input currently routed to output N1.	<b>N1</b> = A ~ H [Output Port]
<b>SET OUT ROUTE N1,N2,N3,...</b> ↵	
Set one or more input/output routing pair(s).	<b>N1</b> = {A~H}{1~8},{A~H}{1~8},...



## 6.8.2 Matrix Commands

COMMAND	
DESCRIPTION	VARIABLES
<p><i>Note: Each routing pair consists of the output letter followed by the input number with no space between them. Additional routes are added by separating them with commas (without spaces). (For example: A8,B5,C3,etc.)</i></p>	
<b>SET ALL OUT ROUTE N1 ↵</b>	
Set all outputs to display input N1.	<b>N1</b> = 1 ~ 8      [Input Port]
<b>GET ALL OUT ROUTE ↵</b>	
Show the current routing for all inputs and outputs.	
<b>SET CURRENT ROUTE TO PRESET N1 ↵</b>	
Save the current input/output routing to preset N1.	<b>N1</b> = 1 ~ 8      [Preset Number]
<b>SET ROUTE PRESET N1 ↵</b>	
Load and activate routing preset N1.	<b>N1</b> = 1 ~ 8      [Preset Number]
<b>GET ROUTE PRESET N1 ↵</b>	
Show the contents of routing preset N1.	<b>N1</b> = 1 ~ 8      [Preset Number]
<b>SET ROUTE PRESET N1 NAME N2 ↵</b>	
Set the name of routing preset N1 to N2.	<b>N1</b> = 1 ~ 8      [Preset Number] <b>N2</b> = {Preset Name, 32 chars max}
<b>GET ROUTE PRESET N1 NAME ↵</b>	
Show the current name of routing preset N1.	<b>N1</b> = 1 ~ 8      [Preset Number]

## 6.8.2 Matrix Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET OUT N1 MASK N2↵</b>	
Enable or disable the A/V mute of output N1.	<b>N1</b> = A ~ H [Output Port] Available values for <b>N2</b> : ON [Mute A/V] OFF [Unmute A/V]
<b>GET OUT N1 MASK↵</b>	
Show the current A/V mute state of output N1.	<b>N1</b> = A ~ H [Output Port]
<b>SET IN N1 NAME N2↵</b>	
Set the name of input N1 to N2.	<b>N1</b> = 1 ~ 8 [Input Port] <b>N2</b> = {Input Name, 32 chars max}
<b>GET IN N1 NAME↵</b>	
Show the current name of input N1.	<b>N1</b> = 1 ~ 8 [Input Port]
<b>SET OUT N1 NAME N2↵</b>	
Set the name of output N1 to N2.	<b>N1</b> = A ~ H [Output Port] <b>N2</b> = {Output Name, 32 chars max}
<b>GET OUT N1 NAME↵</b>	
Show the current name of input N1.	<b>N1</b> = A ~ H [Output Port]
<b>GET IN NAME LIST↵</b>	
Show the full list of all input port names.	
<b>GET OUT NAME LIST↵</b>	
Show the full list of all output port names.	

## 6.8.2 Matrix Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET OUT N1 4K2K DOWNSCALE MODE N2</b> ↵	
Set the 4K to 1080P downscale mode for output N1.	<b>N1</b> = A ~ H [Output Port] Available values for <b>N2</b> : 0 [Bypass 4K] 2 [Downscale]
<b>GET OUT N1 4K2K DOWNSCALE MODE</b> ↵	
Show the current downscale mode for output N1.	<b>N1</b> = A ~ H [Output Port]

## 6.8.3 Test Pattern Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET PATTERN N1 MODE N2</b> ↵	
Enable or disable the test pattern on output N1.	<b>N1</b> = A ~ H [Output Port] <b>N2</b> = ON, OFF [Enable/Disable]
<b>GET PATTERN N1 MODE</b> ↵	
Show the current state of the test pattern mode on output N1.	<b>N1</b> = A ~ H [Output Port]
<b>SET PATTERN N1 TIMING N2</b> ↵	
Set the output timing and resolution for the test pattern on output N1.	<b>N1</b> = A ~ H [Output Port] Available values for <b>N2</b> : 6 [720p@60Hz] 10 [1080p@60Hz] 12 [720p@50Hz] 14 [1080p@50Hz] 22 [4K@25Hz] 24 [4K@30Hz] 25 [4K@50Hz] 27 [4K@60Hz]

### 6.8.3 Test Pattern Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>GET PATTERN N1 TIMING</b> ↵	
Show the current output timing and resolution for the test pattern on output N1.	<b>N1</b> = A ~ H [Output Port]
<b>GET PATTERN TIMING LIST</b> ↵	
Show a list of all available test pattern output timings.	
<b>SET PATTERN N1 TYPE N2</b> ↵	
Set the test pattern to use on output N1.	<b>N1</b> = A ~ H [Output Port] Available values for <b>N2</b> : 1 [Black] 2 [White] 3 [Red] 4 [Green] 5 [Blue] 6 [Magenta] 7 [Yellow] 8 [Cyan] 9 [Color Bar]
<b>GET PATTERN N1 TYPE</b> ↵	
Show the current test pattern selected for use on output N1.	<b>N1</b> = A ~ H [Output Port]

### 6.8.4 EDID Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET ALL IN EDID MODE N1</b> ↵	
Enable or disable the "All Input" EDID mode.	Available values for <b>N1</b> : ON [All Input] OFF [Appoint]

6.8.4 EDID Commands	
COMMAND	
DESCRIPTION	VARIABLES
<b>GET ALL IN EDID MODE↵</b>	
Show the current "All Input" EDID mode state.	
<b>SET ALL IN EDID N1↵</b>	
Set the EDID to use when the EDID mode is set to "All Input".	Available values for <b>N1</b> : 1 [Internal 1] 2 [Internal 2] 3 [Internal 3] 4 [Internal 4] 5 [Internal 5] 6 [Internal 6] 7 [User 1] 8 [User 2] 9 [User 3] 10 [User 4] 11 [User 5] 12 [User 6] 13 [User 7] 14 [User 8] 15 [Sink A] 16 [Sink B] 17 [Sink C] 18 [Sink D] 19 [Sink E] 20 [Sink F] 21 [Sink G] 22 [Sink H]
<b>GET ALL IN EDID↵</b>	
Show the EDID selected for use in the "All Input" EDID mode.	

## 6.8.4 EDID Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET IN N1 EDID N2↵</b>	
Set EDID N2 as the EDID to use with input N1 in "Appoint" mode.	<b>N1</b> = 1 ~ 8 [Input Port] Available values for <b>N2</b> : 1 [Internal 1] 2 [Internal 2] 3 [Internal 3] 4 [Internal 4] 5 [Internal 5] 6 [Internal 6] 7 [User 1] 8 [User 2] 9 [User 3] 10 [User 4] 11 [User 5] 12 [User 6] 13 [User 7] 14 [User 8] 15 [Sink A] 16 [Sink B] 17 [Sink C] 18 [Sink D] 19 [Sink E] 20 [Sink F] 21 [Sink G] 22 [Sink H]
<b>GET IN N1 EDID↵</b>	
Show the EDID currently used with input N1.	<b>N1</b> = 1 ~ 8 [Input Port]
<b>GET ALL IN EDID LIST↵</b>	
Show the current EDID selections for all inputs.	

6.8.4 EDID Commands	
COMMAND	
DESCRIPTION	VARIABLES
<b>GET IN EDID LIST↵</b>	
Show the full list of available EDIDs.	
<b>SET EDID N1 NAME N2↵</b>	
Set a custom name for EDID N1. <i>Note: Only User EDIDs may be renamed.</i>	<b>N1</b> = 7~14 [User EDID] <b>N2</b> = {EDID Name, 32 chars max}
<b>GET EDID N1 NAME↵</b>	
Show EDID N1's current name.	<b>N1</b> = 1 ~ 22 [EDID Number]
<b>GET INTERNAL N1 EDID DATA↵</b>	
Show the contents of Internal EDID N1 as hex data.	<b>N1</b> = 1 ~ 6 [Internal EDID]
<b>SET USER N1 EDID DATA N2↵</b>	
Set the EDID data used by User EDID N1. <i>Note : The data block is comma-delimited and cannot contain any spaces.</i>	<b>N1</b> = 1 ~ 8 [User EDID] <b>N2</b> = {EDID data, 256 hex pairs. Ex : 00,FF,A1,...}
<b>GET USER N1 EDID DATA↵</b>	
Show the contents of User EDID N1 as hex data.	<b>N1</b> = 1 ~ 8 [User EDID]
<b>GET SINK N1 EDID DATA↵</b>	
Show the contents of the EDID from output N1 as hex data.	<b>N1</b> = A ~ H [Output Port]
<b>GET IN N1 EDID DATA↵</b>	
Show the contents of the EDID used on input N1 as hex data.	<b>N1</b> = 1 ~ 8 [Input Port]

6.8.5 HDCP Commands	
COMMAND	
DESCRIPTION	VARIABLES
<b>SET IN N1 HDCP MODE N2↵</b>	
Set the HDCP mode for input N1.	<b>N1</b> = 1 ~ 8 [Input Port] Available values for <b>N2</b> : 0 [HDCP Disabled] 1 [Follow Source] 2 [Follow Display]
<b>GET IN N1 HDCP MODE↵</b>	
Show the current HDCP mode of input N1.	<b>N1</b> = 1 ~ 8 [Input Port]
<b>GET IN N1 HDCP STATUS↵</b>	
Show the current HDCP status of the source connected to input N1.	<b>N1</b> = 1 ~ 8 [Input Port] Available result codes: 0 [HDCP OFF] 1 [HDCP 1.x] 2 [HDCP 2.2]
<b>GET OUT N1 HDCP STATUS↵</b>	
Show the current HDCP status of output N1.	<b>N1</b> = A ~ H [Output Port] Available result codes: 0 [HDCP OFF] 1 [HDCP 1.x] 2 [HDCP 2.2] 3 [HDCP 1.x Failed] 4 [HDCP 2.2 Failed]
<b>GET IN N1 HDCP ABILITY↵</b>	
Show the HDCP capability supported by input N1.	<b>N1</b> = 1 ~ 8 [Input Port] Available result codes: 0 [No HDCP] 1 [HDCP 1.x] 2 [HDCP 2.2] 3 [HDCP 1.4+2.2]



### 6.8.5 HDCP Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>GET OUT N1 HDCP ABILITY</b> ↵	
Show the HDCP capability detected from the display connected to output N1.	<b>N1</b> = A ~ H [Output Port] Available result codes: 0 [No HDCP] 1 [HDCP 1.x] 2 [HDCP 2.2]

### 6.8.6 Ethernet Commands

COMMAND	
DESCRIPTION	VARIABLES
<b>SET IP MODE N1</b> ↵	
Set the IP address assignment mode.	Available values for <b>N1</b> : 0 [Static IP Mode] 1 [DHCP Mode]
<b>GET IP MODE</b> ↵	
Show the current IP mode.	
<b>GET IPCONFIG</b> ↵	
Show the current complete IP configuration.	<b>N1</b> = X.X.X.X [X = 0 ~ 255]
<b>SET IPADDR N1</b> ↵	
Set the static IP address.	
<b>GET IPADDR</b> ↵	
Show the current static IP address.	
<b>SET NETMASK N1</b> ↵	
Set the netmask address.	<b>N1</b> = X.X.X.X [X = 0 ~ 255]
<b>GET NETMASK</b> ↵	
Show the current netmask.	
<b>SET GATEWAY N1</b> ↵	
Set the gateway address.	<b>N1</b> = X.X.X.X [X = 0 ~ 255]

6.8.6 Ethernet Commands		
COMMAND		
DESCRIPTION	VARIABLES	
<b>GET GATEWAY↵</b>		
Show the current gateway.		
<b>GET MAC ADDR↵</b>		
Show the MAC address.		
<b>SET TELNET PORT N1↵</b>		
Set the Telnet port.	<b>N1</b> = 0 ~ 65535	[Port Number]
<b>GET TELNET PORT↵</b>		
Show the current Telnet port.		
<b>GET HOSTNAME↵</b>		
Show the current hostname.		
<b>SET WEBGUI USERNAME N1↵</b>		
Set the User login name for the WebGUI.	<b>N1</b> = {User Name, 16 chars max}	
<b>GET WEBGUI USERNAME↵</b>		
Show the WebGUI User login name.		
<b>SET WEBGUI PASSWORD N1↵</b>		
Set the User login password for the WebGUI.	<b>N1</b> = {User password, 16 chars max}	
<b>GET WEBGUI PASSWORD↵</b>		
Show the WebGUI User login password.		

*Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive.*

## 6.9 WebGUI Control

### • Device Discovery APP

Please obtain the “Device Discovery” software from your authorized dealer and save it in a directory where you can easily find it.

Connect the unit and your PC/Laptop to the same active network and execute the “Device Discovery” software. Click on “Find Devices on Network” and a list of devices connected to the local network will show up indicating their current IP address.

Find Devices on Network				
Product Name	Description	IP Address	MAC Address	

*Note: The unit's default IP address is 192.168.1.50.*

By clicking on one of the listed devices you will be presented with the network details of that particular device.

Product ID	
Product Name	
MAC Address	00:00:00:00:00:00
IP Address	<input type="text"/>
Subnet Mask	<input type="text"/>
Gateway IP	<input type="text"/>
DNS	<input type="text"/>
IP Mode	Static
Web GUI Port	Static
Telnet Port	DHCP
S / N	0
Firmware Version	
Hardware Version	
Description	
Web GUI	<a href="#">Web GUI</a>
<input type="button" value="Save"/> <input type="button" value="Reboot"/>	

- **IP Mode:** If you choose, you can alter the static IP network settings for the device, or switch the unit into DHCP mode to automatically obtain proper network settings from a local DHCP server. To switch to DHCP mode, please select DHCP from the IP mode drop-down, then click “Save” followed by “Reboot”.
- **WebGUI:** Once you are satisfied with the network settings, you may use them to connect via Telnet or WebGUI. The network information window provides a convenient link to launch the WebGUI directly.

## • WebGUI Control Page

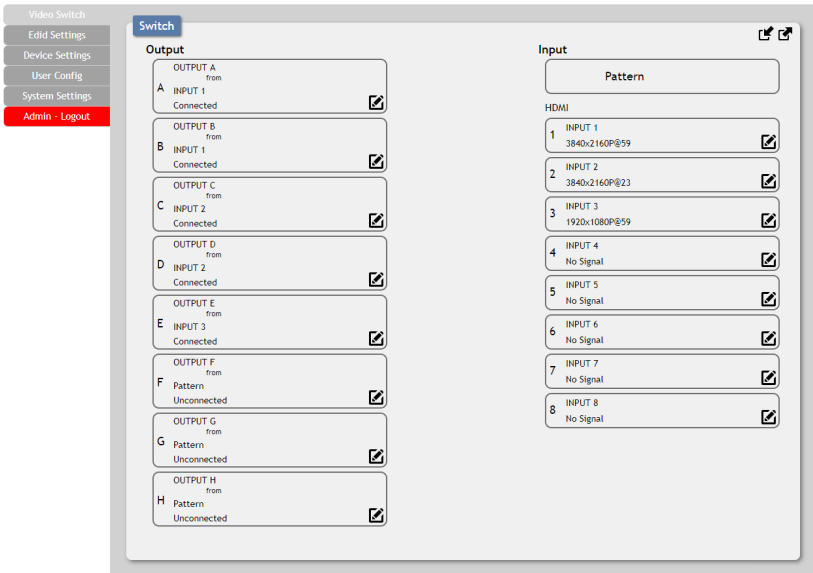
By default, both the Username and Password are “admin” for the WebGUI. The administrator password can be changed within the “System Settings” tab of the WebGUI if desired. The following function tabs will always display on left side of the WebGUI to aid with navigation.



*Note: The unit's default IP address is 192.168.1.50.*

### 1. Video Switch

This page provides video I/O routing, preset saving/loading, test pattern and OSD text configuration, and HDCP options.



## • Video Routing

To begin assigning a new video route, please click the button of the HDMI output you wish to send video to and then click on the button of the preferred HDMI input port. If desired, you may select more than one output prior to selecting the input. As you select each button they will change their color to orange. The new route will become active immediately after selecting the input port and the routing information displayed on the buttons will change accordingly.

The screenshot displays the 'Video Switch' configuration page. On the left is a navigation menu with options: 'Edid Settings', 'Device Settings', 'User Config', 'System Settings', and 'Admin - Logout'. The main area is titled 'Switch' and is divided into two columns: 'Output' and 'Input'.

**Output Column:** Lists eight outputs (A-H) with their source and connection status. Outputs C, D, and E are highlighted in orange, indicating they are selected. Each output has a checkmark icon in the top right corner.

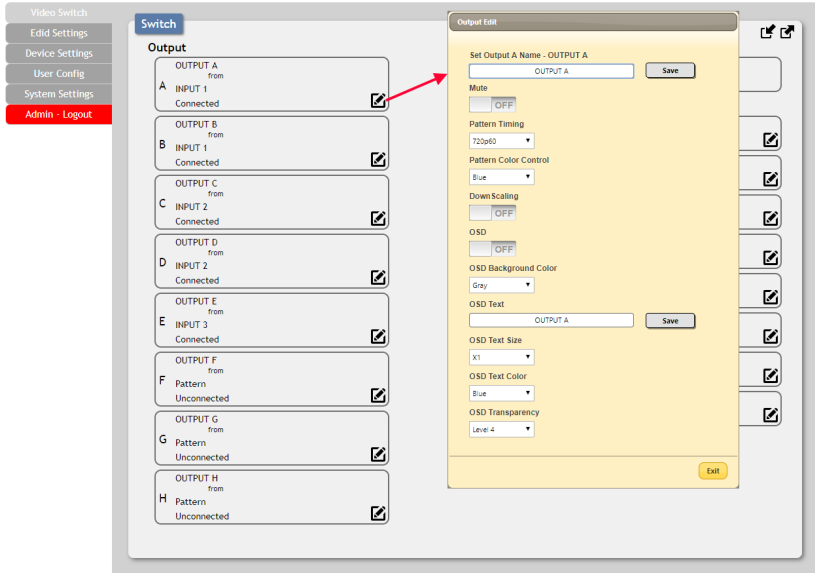
Output	Source	Status
A	INPUT 1	Connected
B	INPUT 1	Connected
C	INPUT 2	Connected
D	INPUT 2	Connected
E	INPUT 3	Connected
F	Pattern	Unconnected
G	Pattern	Unconnected
H	Pattern	Unconnected

**Input Column:** Lists eight HDMI inputs. Input 2 is highlighted in orange, indicating it is selected. Each input has a checkmark icon in the top right corner.

HDMI Input	Resolution/Type	Status
1	INPUT 1 3840x2160P@59	Connected
2	INPUT 2 3840x2160P@23	Connected
3	INPUT 3 1920x1080P@59	Connected
4	INPUT 4 No Signal	No Signal
5	INPUT 5 No Signal	No Signal
6	INPUT 6 No Signal	No Signal
7	INPUT 7 No Signal	No Signal
8	INPUT 8 No Signal	No Signal

## • Output Edit

A variety of output settings, including name, muting, test pattern configuration, downscaling, and OSD options can be configured here. Please click the “Edit” icon (✎) to open up the Output Edit window.



- **Set Output Name:** To rename the output port, type the new name in the space provided in the Edit window. Click the “Save” button to confirm the change.

*Note: Blank spaces (“ ”) are not allowed in names.*

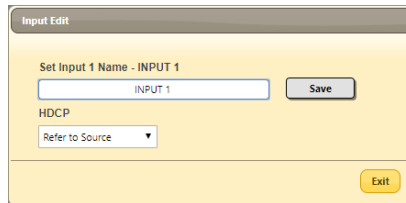
- **Output Video Mute:** Each output can be individually muted (black video, no audio). To mute an output, please click on the switch so it reads “ON”.
- **Pattern Timing:** This setting configures the output resolution used when “Pattern” has been selected as the input source. The following resolutions are supported: 4K@25/30/50/60Hz, 1080P@50/60Hz and 720P@50/60.
- **Pattern Color Control:** This setting configures the color of the test pattern when “Pattern” is selected as the input source.
- **Downscaling:** This switch enables or disables the downscaling functionality of the output. When this setting is turned on, 4K

sources will be automatically downscaled to 1080p while maintaining the original framerate.

- **OSD:** This switch enables or disables the custom text display for this output. When enabled, the OSD text will be displayed in the upper-left corner of the selected output.
- **OSD Text Settings:** Each output can display up to 2 lines of customized OSD text. The text can be customized in content, color, size, background color & transparency. Please click the "Save" button after making changes to the text content. All other changes occur as soon as they are made.

### • Input Edit

Each input allows for individual control over the name of the input and the behavior of HDCP. To edit the settings of an input port please click the "Edit" icon (✎).



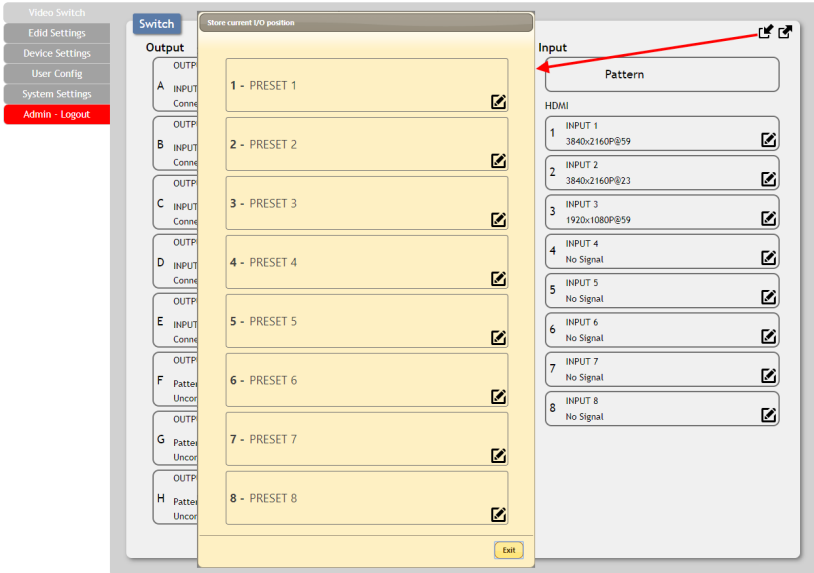
- **Set Input Name:** To rename the input port, type the new name in the space provided in the Edit window. Click the "Save" button to confirm the change.

*Note: Blank spaces (" ") are not allowed in names.*

- **HDCP:** There are 3 HDCP source behavior options available: HDCP Support Off, Refer to Source and Refer to Display. HDCP Support Off completely disables support for HDCP on that input. Refer to Source makes the input port support the same HDCP version as required by the connected source. Refer to Display makes the input support the HDCP version of the currently routed display.

## • Preset Setting

This matrix can store up to eight video routing presets. Presets can be utilized to store multiple different routing states in advance for rapid, hassle-free, recall.



- **Store:** Once you have the matrix set the way you like, you can click the “Preset Store” icon (📌) in the upper right corner of the window and the Preset Store window will open. Hovering the mouse over each button will display the current routing stored within it. You may also name the Preset at this stage by selecting the “Edit” icon (✎). Click the center of the Preset’s button to store the current routing state in that Preset.
- **Recall:** When you wish to load a previously stored Preset, please click the “Preset Recall” icon (📌) and you will be presented with a choice of the 8 available Presets. Hovering the mouse over each button will display the routing stored within it. The Preset will load immediately upon clicking the button.



## 2. EDID Settings

This matrix provides the option of six standard EDIDs, eight sink sourced EDIDs and eight user uploaded EDIDs that can be assigned to each input port individually. The names of the eight user uploaded EDIDs can be changed if desired.

The screenshot displays the EDID configuration interface. On the left, a navigation menu includes Video Switch, Edid Settings, Device Settings, User Config, System Settings, and Admin - Logout (highlighted in red). The main content area is titled 'EDID' and contains several sections:

- Customer EDID Settings:** A list of 8 user-defined EDIDs (USER1 to USER8). Each entry has a 'Save Name', 'Download', and 'Upload' button.
- Sink EDID Download:** A section with a 'Select' dropdown and a 'Download' button.
- Set EDID Input content:** A section titled 'Set EDID of all input port' with an 'APPOINT' button. It lists 8 input ports (INPUT 1 to INPUT 8) with their respective source types (e.g., UHD+ MCH, FHD 2CH). Input 5 is highlighted in yellow.
- Edid Source:** A table mapping EDID sources to sinks. An arrow points from the 'Set EDID Input content' section to this table.

Source	User	Sink
FHD 2CH	USER3	Sink C
FHD MCH	USER4	Sink D
UHD 2CH	USER5	Sink E
UHD MCH	USER6	Sink F
UHD+ 2CH	USER7	Sink G
UHD+ MCH	USER8	Sink H
USER1		Sink A
USER2		Sink B

- **Customer EDID Settings**

To upload a user EDID, please click the “Upload” button next to the Customer EDID Settings item you would like to change. An EDID Upload window will appear, allowing you to locate and upload the preferred EDID file (\*.bin format) from a local PC. Once the correct file has been selected, please click the “Upload” button in the window, and the file will be transferred to the matrix.

To save an existing user EDID to your local PC please press the “Download” button next to the EDID you would like to save.

Depending on your browser settings you will either be asked where to save the downloaded file, or the file will be transferred to the default



download location on your PC. To change the name of a Customer EDID, type the new name in the space provided, then click on the "Save Name" button.

- **Sink EDID Download**

To save the EDID from one of the connected displays to your local PC, select the appropriate sink from the dropdown list then press the "Download" button. Depending on your browser settings you will either be asked where to save the downloaded file, or the file will be transferred to the default download location on your PC.

- **Set EDID Input Content**

The Set EDID Input Content section provides controls for assigning EDID to the matrix's inputs. Selecting "Appoint" allows for different EDID to be assigned to each individual input, selecting "ALL" allows for a single EDID to be assigned to all inputs.

- **EDID Source**

Click on the preferred input(s) to open the EDID Source management window. Multiple inputs can be selected at once, if desired. Select the new EDID source to use and the change will occur immediately.

*Note: In most cases, assigning a new EDID to an input will cause the affected input to briefly blink out while the source adapts to the new information.*

- **Unit's Default EDIDs**

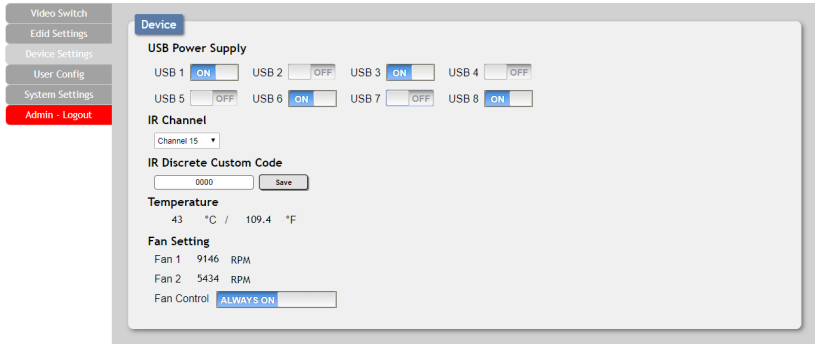
This matrix provides the following 6 default EDIDs:

<b>FHD/2CH</b>	1920×1080p@60Hz (148MHz), 8-bit color	LPCM 2.0
<b>FHD/MCH</b>	1920×1080p@60Hz (148MHz), 8-bit color	LPCM 7.1 & Bitstream
<b>UHD/2CH</b>	3840×2160p@30Hz (297MHz), Deep Color (8/10/12-bit)	LPCM 2.0
<b>UHD/MCH</b>	3840×2160p@30Hz (297MHz), Deep Color (8/10/12-bit)	LPCM 7.1 & Bitstream
<b>UHD+/2CH</b>	3840×2160p@60Hz (594MHz), Deep Color (8/10/12-bit)	LPCM 2.0
<b>UHD+/MCH</b>	3840×2160p@60Hz (594MHz), Deep Color (8/10/12-bit)	LPCM 7.1 & Bitstream

*Note: In some rare cases it is possible for custom or external EDIDs to cause compatibility issues with certain sources. If this happens, it is recommended to switch to one of the 6 default EDIDs for maximum compatibility.*

### 3. Device Settings

This page provides control over the matrix's hardware related settings and options including USB port power, IR and fan control.



- **USB Power Supply**

Provides controls to turn the power supplied by each USB port on or off.

- **IR Channel**

Use the dropdown to select the IR channel used to control the matrix using the included remote. If this setting is changed, the dipswitches inside the remote control's battery compartment must also be changed to match.

*Note: By default both the remote and the unit are set to channel 15.*

- **IR Discrete Custom Code**

Allows setting the discrete IR code prefix, primarily for use with learning remotes, to control the functions of this matrix.

*Note: To obtain a complete list of IR control codes please contact your authorized dealer.*

- **Temperature & Fan Settings**

Provides information about the unit's current temperature and the speed of both internal fans. The fan mode can be switched between "Always On" and "Auto". By default, the fan control is set to "Always

On".

#### 4. User Config

This tab provides User Configuration options including changing the password for the Administrator account, and both the user name and password for the General User account.

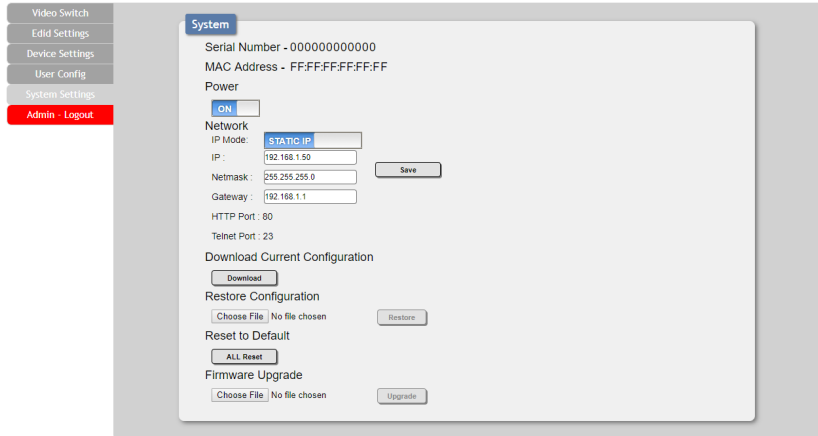
The screenshot shows the 'Web & Telnet Login Configuration' interface. On the left is a navigation menu with the following items: Video Switch, Edit Settings, Device Settings, User Config, System Settings, and Admin - Logout (which is highlighted in red). The main content area is titled 'Web & Telnet Login Configuration' and is divided into two sections:

- Administrator:** This section contains five input fields: 'Old Username' (pre-filled with 'admin'), 'Old Password', 'New Username' (pre-filled with 'admin'), 'New Password', and 'Confirm New Password'. A 'Save' button is located to the right of the 'New Username' field.
- General User:** This section contains three input fields: 'New Username', 'New Password', and 'Confirm New Password'. An 'Add' button is located to the right of the 'New Password' field.

*Note: The General User account has limited access to the WebGUI and can only change video routing, store/recall presets, and modify the General User's own account settings.*

## 5. System Settings

This tab provides system information, power control, Ethernet configuration options, system configuration backup/restore, and firmware update functions.



- **Power**

Press this switch to toggle the unit's power between ON and OFF (standby mode).

*Note: While in standby mode the unit's WebGUI, Telnet and RS-232 controls are still active.*

- **Network**

IP mode may be switched between Static IP or DHCP. In Static IP mode the IP, netmask and gateway addresses may be manually set. When in DHCP mode, the unit will attempt to connect to a local DHCP server and obtain IP, netmask and gateway addresses automatically. Please press "Save" after making any changes to the IP configuration or mode.

*Note: The unit's default IP address is 192.168.1.50. If the IP address is changed then the IP address required for WebGUI/Telnet access will also change accordingly.*

- **Download Current Configuration**

The current system configuration, including routing and presets, may be saved as an XML file to a PC. Click the "Download" button to save the current system configuration to your local PC.



- **Restore Current Configuration**

Previously saved system configurations may be restored from a saved XML file. Click the “Choose File” button to locate the saved XML file, then click the “Restore” button.

- **Reset to Default**

Press this button to reset the unit to its factory default state. After the reset is complete, the unit will reboot automatically.

- **Firmware Upgrade**

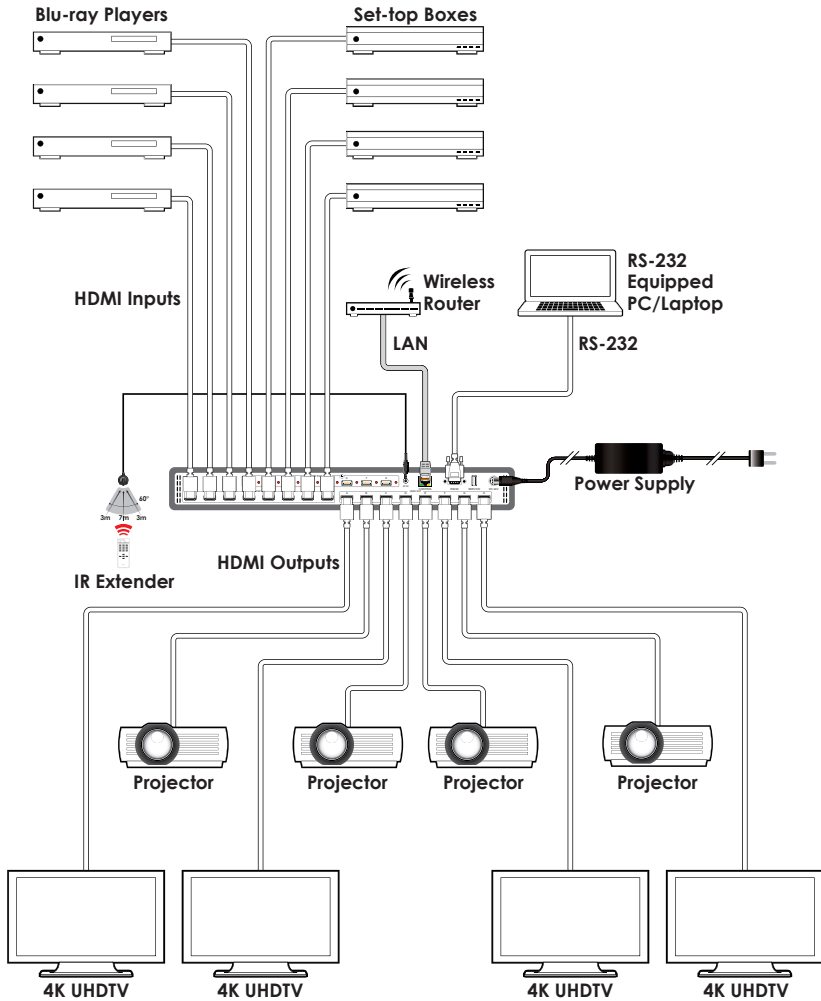
To update the unit's firmware, click the “Choose File” button to open the file selection window and then select the firmware update file (\*.bin format) located on your local PC.

After selecting the file, click the “Upgrade” button to begin the firmware update process.

## **6. Admin - Logout**

Clicking the red “Logout” tab will automatically log the currently connected user out of the WebGUI and return to login page.

## 7. CONNECTION DIAGRAM





## 8. SPECIFICATIONS

### 8.1 Technical Specifications

<b>Video Bandwidth</b>	600MHz/18Gbps
<b>Input Ports</b>	8×HDMI
<b>Output Ports</b>	8×HDMI 8×USB Type A (Power only, 5V/1A)
<b>Control Interfaces</b>	1×IR Extender (3.5mm) 1×RS-232 (9-pin D-sub) 1×IP Control (RJ45)
<b>HDMI Cable Length</b>	10m (1080p@60Hz, 12-bit) 5m (4K@60Hz, 4:4:4, 8-bit)
<b>IR Frequency</b>	30 - 50kHz (30 - 60kHz under ideal conditions)
<b>Baud Rate</b>	19200bps
<b>Power Supply</b>	24V/6.25A DC (US/EU standards, CE/FCC/UL certified)
<b>ESD Protection</b>	Human Body Model: ±12kV (Air Discharge) ±8kV (Contact Discharge)
<b>Dimensions</b>	438mm×44mm×269mm (W×H×D) [Case Only] 438mm×49mm×274mm (W×H×D) [All Inclusive]
<b>Weight</b>	3,600g
<b>Chassis Material</b>	Metal
<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)



Power Consumption 110W

## 8.2 Video Specifications

Supported PC Resolutions (Hz)		Input	Output
<b>640×480</b>	60, 72, 75, 85	✓	✓
<b>800×600</b>	56, 60, 72, 75, 85	✓	✓
<b>1024×768</b>	60, 70, 75, 85	✓	✓
<b>1280×768</b>	60, 70, 75, 85	✓	✓
<b>1280×800</b>	60	✓	✓
<b>1280×1024</b>	60	✓	✓
<b>1360×768</b>	60	✓	✓
<b>1600×1200</b>	60	✓	✓
<b>1920×1200</b>	60 (RB)	✓	✓

Supported TV Resolutions (Hz)		Input	Output
<b>720×480i</b>	59.94, 60	✓	✓
<b>720×576i</b>	50	✓	✓
<b>720×480p</b>	59.94, 60	✓	✓
<b>720×576p</b>	50	✓	✓
<b>1280×720p</b>	50, 60	✓	✓
<b>1920×1080i</b>	50, 60	✓	✓
<b>1920×1080p</b>	24, 25, 30, 50, 60	✓	✓
<b>3840×2160p (YUV 4:2:0)</b>	50, 59.94, 60	✓	✓
<b>4096×2160p (YUV 4:2:0)</b>	50, 59.94, 60	✓	✓
<b>3840×2160p</b>	24, 25, 30, 50, 59.94, 60	✓	✓
<b>4096×2160p</b>	24, 25, 30, 50, 59.94	✓	✓

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>CEC</b>	Consumer Electronics Control
<b>CLI</b>	Command Line Interface
<b>DVI</b>	Digital Visual Interface
<b>EDID</b>	Extended Display Identification Data
<b>GUI</b>	Graphical User Interface
<b>HD</b>	High-Definition
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High-Definition Multimedia Interface
<b>HDR</b>	High Dynamic Range
<b>HTTP</b>	HyperText Transfer Protocol
<b>IP</b>	Internet Protocol
<b>IR</b>	Infrared
<b>LCD</b>	Liquid-Crystal Display
<b>LPCM</b>	Linear Pulse-Code Modulation
<b>OSD</b>	On-Screen Display
<b>PC</b>	Personal Computer
<b>UHD</b>	Ultra-High-Definition
<b>USB</b>	Universal Serial Bus
<b>VGA</b>	Video Graphics Array (640×480@60Hz)
<b>WUXGA</b>	Wide Ultra Extended Graphics Array (1920×1200@60Hz)





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