CYP

CDPS-UH4H1HFS

4 By 1 HDMI UHD Switcher with
Fast Switching and Control System

μCS

Operation Manual

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Version 1.1 August 2011

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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
VR0	10/11/15	Preliminary release

CONTENTS

1. INTRODUCTION

This 4 by 1 HDMI UHD Switcher allows four HDMI sources to be routed to an HDMI display. With Fast Switching Technology it greatly reduces the time required to swap between inputs. The Control System not only provides direct control but also indirect control interfaces for all your connected devices. Supporting traditional direct control systems like IR, Relay and DC and indirect control systems like IR Learning, RS-232, Telnet and WebGUI controls, it allows the user with PC or APP based control systems great flexibility over devices. The operation of the system can be easily managed through software application on PC/Laptop or APP on mobile devices, on-panel buttons, IR remote control, RS-232, Telnet or Ethernet protocols.

2. APPLICATIONS

- Home entertainment & security control
- Showroom display & control
- Educational demo & control

3. PACKAGE CONTENTS

- 1×4 By 1 HDMI UHD Switcher with Fast Switch & Control System
- 1×IR Blaster
- 1×3.5mm phone jack to D-sub 9-pin male cable
- 1×Remote Control
- 1×24 V/3.75 A Power Adaptor
- 1× Power Cord
- 4×Terminal Block Connectors (2*3pin, 1*5pin, 1*8pin)
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

Input source equipment such as DVD/Blu-ray player and output HD display/Monitor with HDMI cables. Control system input sources such as light, TV, power switch and etc… and PC/Laptop for output control.

5. FEATURES

- HDMI (with 3D & 4K2K supported) and HDCP compliant
- Supports HDTV resolutions up to 4Kx2K (3840×2160@24/25/30 Hz & 50/60 Hz with YUV 420 or 4096×2160@24/25/30 Hz & 50/60 Hz with YUV 420)
- Supports HDMI data rate from 300Mbps to 3Gbps and 'Deep Color' up to 1080p/36-bit
- Supports simultaneous audio outputs on both HDMI and analog R/L
- HDMI inputs support 'Standard' and 'Apple' HDCP modes. Selecting 'Apple mode guarantees the compatibility of Apple devices
- Support RS-232, IR, Telnet and WebGUI controls
- Supports four inputs control with voltage of 0~3.3v
- Supports control system with 5 IR outputs, 4 Trigger inputs, 4 Relay outputs and 2 COM ports
- Supports COM port's Baud rate from 4800~115200bps
- Supports auto source detection with the latest input signal
- Speaker supports LPCM 2CH

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
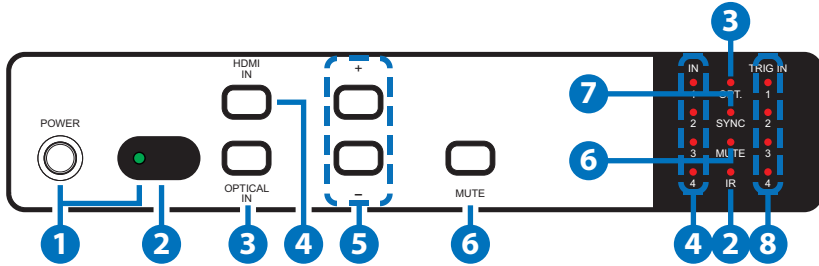
1 **POWER Button and LED:** Press this button to switch On or set the device to standby mode. The LED will illuminate in green when the device is power On and if it is switched to standby mode the LED will turn red.

Note: For IP reset from Static to DHCP mode, press and hold the power button for 3 seconds while the device is ON and the LED will blink once.

2 **IR Window and LED:** This IR Receiver receives the remote control signal from the package included remote control only and the LED will blink when IR signal is receiving.

3 **OPTICAL IN Button and LED:** Press this button to select output audio from optical input source and the LED will illuminate.

Note: HDMI output audio will always follow HDMI input selection's audio, only the output speakers will output optical LPCM 2CH's audio.

4 **HDMI IN Button and LEDs 1~4:** Press this button to select an input from the input sources 1~4 and the LED will illuminate according to the selection.

Note: For firmware update, press and hold this button then plug-in the AC power into the device and then the USB flash driver with updated firmware(s) inside.

**5** **+/-:** Press these buttons to adjust up/down the output audio sound.

6 MUTE Button and LED: Press this button to mute the SPEAKER output sound. The LED will illuminate when audio is set to mute either from front-panel's mute button, IR, Telnet, WebGUI or RS-232 and when the input audio format is non-PCM the LED will be blinking. Press it again to unmute and the LED will switch off.

Note: For restore back to factory default, press and hold this button then plug-in the AC power into the device.

7 SYNC LED: This LED will illuminate when the input detected HDMI signal from source equipment.

8 TRIGGER IN LED 1~4: These LEDs will illuminate when IN connection obtain active low DC voltage of 0~0.5V which is also when signals has been triggered. Under normal operation, the voltage is about 3.3V.

6.2 Rear Panel
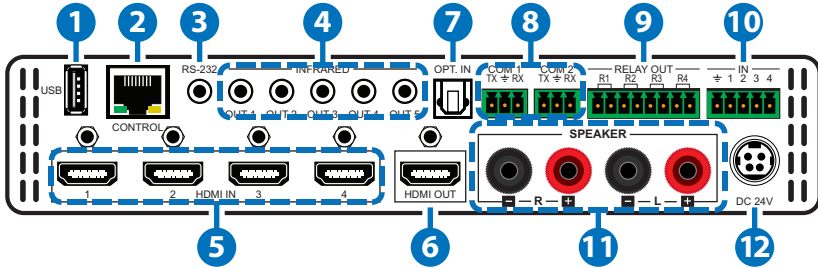
1 **USB:** This slot is reserved for firmware update use only.

2 **CONTROL:** Connect from PC/Laptop with active internet service for Telnet or WebGUI control with RJ-45 terminated cable.

3 **RS-232:** Connect from PC/Laptop for RS-232 command sending to control the device.

4 **INFRARED OUT 1~5:** Connect with IR Blaster for IR signal transmitting.

5 **HDMI IN:** Connect from source equipment such as Blu-ray/DVD/ PS3 players, Set-Top-Box or any HDMI equipped source device for input signal sending. This device has source auto-detection function from the latest input and when the latest input has been pulled out it will detect and follow the input number sequence.

6 **HDMI OUT:** Connect to HDMI TV/display or HD Amplifier for output image and or audio display.

7 **OPT. IN:** This slot is to connect with audio source equipment such as Blu-ray/PS3 player for audio signal input through optical cable.

8 **COM 1~2:** Connect from other devices that are to be controlled with 3.5mm terminal block cable for control through RS-232 commands.

9 **RELAY OUT R1~4:** Connect with control device's DC power such as curtain or projector screen.

10 **TRIGGER IN 1~4:** Connect with event device's signal lines such as window security alarm, door switch, and etc… for trigger signal sending back to Control System and or run the macro commands.

11 **SPEAKER R/L:** These slots are to connect with analog speakers through banana jack cables for audio signal output from HDMI or Optical.

*Note: These slots only support LPCM 2CH signal, other signals will be mute automatically.*

12 **DC 24V:** Connect the adaptor included in the package and connect to AC wall outlet for power supply.

6.3 Remote Control

1 **POWER:** Press this button to switch On or set the device to standby mode.

2 **INPUT 1~4:** Press these buttons once a time to select or switch input source.

3 **MUTE:** Press this button to mute the SPEAKER output sound press it again to unmute.

4 **OPTICAL:** Press this button to select audio from optical input source.

5 **-/← VOL +/→:** Press these buttons to move down/up the output speaker volume.
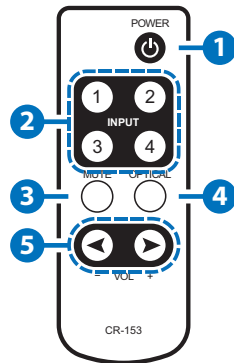
6.4 IR Cable Pin Assignment

IR Blaster

1. Power
2. IR Signal
3. NC
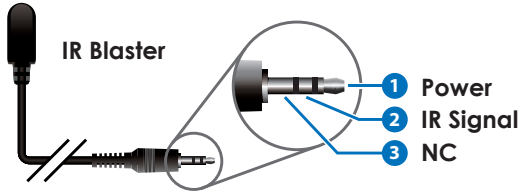
6.5 RS-232 Protocol

SWITCHER	
Pin	**Assignment**
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

REMOTE CONTROLLER	
Pin	**Assignment**
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 115200bps
Data bit: 8 bits
Parity: None
Flow Control: None
Stop Bit: 1

6.6 RS-232 and Telnet Commands

COMMAND	DESCRIPTION	PARAMETER
HELP (?)	*Show Command List*	NONE
HELP N	*Show Descript Of Command*	N=COMMAND NAME
P0	*Power Off (Standby)*	NONE
P1	*Power On*	NONE
MUTE	*Show AMP Mute Mode*	NONE
MUTE N	*Set AMP Mute Mode N*	N=0 (UNMUTE), 1 (MUTE)
SPEAKER	*Show Speaker Input Source*	NONE
SPEAKER N	*Set Speaker Input Source*	N=0 (HDMI), 1=(OPTICAL)
AUDIOFMT	*Show EDID Audio Format*	NONE
AUDIOFMT N	*Set EDID Audio Format N*	N=0 (PCM), 1 (BYPASS)
SOUNDSYS	*Show AMP Sound System*	NONE
SOUNDSYS N	*Set AMP Sound System N*	N=0 (STEREO), 1 (MONO)
VOL	*Show AMP Volume*	NONE
VOL N	*Set AMP Volume N*	N=0-100
A N	*Select Input N*	N=1-4*
IPCONFIG	*Display The Current IP Configure*	NONE
SIPADDR X.X.X.X	*Set Ethernet IP Address*	X=0~255
SNETMASK X.X.X.X	*Set Ethernet Net Mask*	X=0~255
SGATEWAY X.X.X.X	*Set Ethernet Gateway*	X=0~255
HTTPPORT N	*Set Http Port Number*	N=0~65535
RSTIP	*IP Configuration Reset To <DHCP>*	NONE
EDIDMODE	*Show EDID Mode*	NONE
EDIDMODE N	*Set EDID Mode*	N=0 (Appoint), 1 (All)
EDIDALL	*Show EDID Mode Source For All*	NONE
EDIDALL N	*Set EDID Mode Source For All*	N=1~9**

COMMAND	DESCRIPTION	PARAMETER
EDIDIN	*Show All Inputs EDID Source For Appoint*	NONE
EDIDIN N1	*Show Input N1 EDID Source For Appoint*	N1=1~4*
EDIDIN N1 N2	*Set Input N1 EDID Source For Appoint*	N1=1~4*, N2=1~9**
HDCPIN	*Show All Inputs HDCP Status*	NONE
HDCPIN N1	*Show Input N1 HDCP Status*	N1=1~4*
HDCPIN N1 N2	*Set Input N1 HDCP On/Off*	N1=1~4*, N2=0 (OFF), 1 (ON)
SOURCEDET	*Show All Inputs Signal*	NONE
SOURCEDET N1	*Show Input N1 Signal*	N1=1~4*
SINKINFO	*Show Output Information*	NONE
INNAME	*Show All Inputs Name*	NONE
INNAME N1	*Show Input N1 Name*	N1=1~4*
INNAME N1 N2	*Set Input N1 Name*	N1=1~4*, N2=ABCDEFGH (Max Length=8)
OUTNAME	*Show Output Name*	NONE
OUTNAME A N1	*Set HDMI Output Name*	N1=ABCDEFGH (Max Length=8)
RELAY N N1	*RELAY CONTROL*	>RELAY N N1 N[PORT]=1~4 N1[MODE]=CLOSE, OPEN, TOGGLE, STATUS
IREMIT N N1 N2 N3	*SEND IR CONTENT*	>IREMIT N N1 N2 N3 N[LOCATION]=IR N1[PORT]=1~5 N2[MODE]=(0)CYP N3=IR DATA

COMMAND	DESCRIPTION	PARAMETER
TRIGGER N N1 N2	TRIGGER STATUS&CONFIGURE	>TRIGGER N N1 N2 N[FUNC] = (STATUS)SHOW PHYSICAL IO STATUS (INFO)SHOW CONFIGURE INFOMATION (ACTIVE)ENABLE/ DISABLE TRIGGER FUNCTION (MODE)SET CONDITION OF TRIGGER EVENT N1[PORT]=1-4 N2[STATUS] = NONE [INFO] = NONE [ACTIVE] = (DISABLED),(ENABLED) [MODE] = (RAISING)EVENT ACTIVE WHEN TER MINAL BLOCK PORT STATUS FROM LOW TO HIGH (FALLING)EVENT ACTIVE WHEN TERMINAL BLOCK PORT STATUS FROM HIGH TO LOW (CHANGE)EVENT ACTIVE WHEN TERMINAL BLOCK PORT STATUS IN RAISING OR FALLING
COMSEND N N1 N2	*SEND COMMAND TO COM PORT*	>COMSEND N N1 N2 N[LOCATION]=COM N1[PORT]=1~2 N2=COMMAND DATA

COMMAND	DESCRIPTION	PARAMETER
COMCONF N N1 N2 N3 N4 N5	*DRIVER RS232 CONFIG*	SHOW COM PORT SETTINGS >COMCONF N N1 N[LOCATION]=COM N1[PORT]=1~2 COM PORT SETTING >COMCONF N N1 N2 N3 N4 N5 N[LOCATION]=COM N1[PORT]=1~2 N2[BAUDRATE]=4800, 9600, 19200, 38400, 57600, 115200 N3[DATA LEN]=5, 6, 7, 8 N4[PARITY]=(0)NONE (1)ODD (2)EVEN N5[STOP BIT]=1,2
MACRO RUN N	*MACRO CONTROL*	
VER	*Show Unit Firmware Version*	NONE
REBOOT	*System Reboot*	NONE
FADEFAULT	*All Configure Set To Factory Default*	NONE

*HDMI input port 1~4

**Internal EDID selection 1~9/Deep color/2D3D/audio/resolution: (1) HDMI output native, (2)8/2D/PCM/720p, (3) 8/2D/PCM/AC3/720p, (4) 8/2D/PCM/1080p, (5) 8/2D/PCM/AC3/1080p, (6) 8/2D/PCM/4K2K, (7) 8/2D/PCM/AC3/4K2K, (8) 8/2D/PCM/Y420, (9) 8/2D/AC3/Y420

Note:

1. *Any commands will not be executed unless followed by a carriage return. Commands are case-sensitive.*

2. *Once the device is power cycled the EDID mode will return back to Mode 1/HDMI output native.*

6.7 Software Application

Please download the software from www.cypress.com.tw with file name CDPS V2.000 and save it in a directory where you may use it later.

Connect the HDMI UHD Switcher with Fast Switching and Control System with an active network system and open the CDPS V2.000 application from the directory in a PC/Laptop. Click on Find Devices on Network and a list of the devices connected to the Control System will show up.

	Find Devices on Network			
Product Name	Description	IP Address	MAC Address	

Double click on the product name and an InfoFrom will appear to show the products' detail.

MAC Address	F8:22:85:00:04:3F
IP Address	192.168.1.50
Subnet Mask	255.255.255.0
Gateway IP	192.168.1.254
DNS	0.0.0.0
IP Mode	Static
Web GUI Port	80
Telnet Port	23
S / N	SN:2236
Firmware Version	v2.1
Hardware Version	v1.01

Then user may use the IP Address to find the control device through Telnet, WebGUI or even RS-232/Hyper Terminal tools.

6.8 Telnet Control

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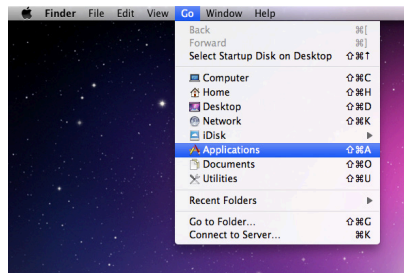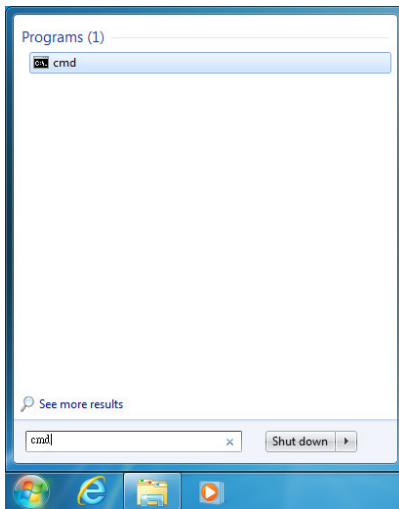
Once in the command line interface (CLI) type "telnet", then the IP address of the unit and "23", then hit enter.

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

```
Welcome to TELNET.
>?
?                : SHOW DESCRIPT OF COMMAND
                   USE <? N, N=COMMAND NAME> TO SHOW DESCRIPT OF COMMAND
HELP             : SHOW DESCRIPT OF COMMAND
                   USE <HELP N, N=COMMAND NAME> TO SHOW DESCRIPT OF COMMAND
P0               : POWER OFF
P1               : POWER ON
MUTE             : AMP MUTE MODE
AUDIOFMT         : EDID AUDIO FORMAT
SPEAKER          : SPEAKER MODE
SOUNDSYS         : SOUND SYSTEM
VOL              : VOLUME
IPCONFIG         : DISPLAY THE CURRENT IPCONFIG
SIPADDR          : SET ETHERNET IP ADDRESS
SNETMASK         : SET ETHERNET NETMASK
SGATEWAY         : SET ETHERNET GATEWAY
HTTPPORT         : SET HTTP PORT NUMBER
RSTIP            : IP MODE RESET TO DHCP
A                : SET HDMI OUTPUT SOURCE
EDIDMODE         : EDID MODE
EDIDALL          : EDID MODE SOURCE FOR ALL
EDIDIN           : INPUT EDID SOURCE
HDCPIN           : INPUT HDCP STATUS
SOURCEDET        : SOURCE SIGNAL DETECT <ON/OFF>
SINKINFO         : SINK INFORMATION
INNAME           : INPUT NAME
OUTNAME          : OUTPUT NAME
RELAY            : RELAY CONTROL
TRIGGER          : TRIGGER STATUS&CONFIGURE
IREMIT           : SEND IR CONTENET
COMSEND          : SEND COMMAND TO COM PORT
COMCONF          : DRIVER RS232 CONFIG
MACRO            : MACRO CONTROL
VER              : SHOW UNIT FIRMWARE VERSION
REBOOT           : SYSTEM REBOOT
FADEFAULT        : ALL CONFIGURE SET TO FACTORY DEFAULT
```

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

6.9 WebGUI Control

On a PC/Laptop that is connected to an active network system, open a web browser and type device's IP address (default setting IP: 192.168.1.50) on the web address entry bar.
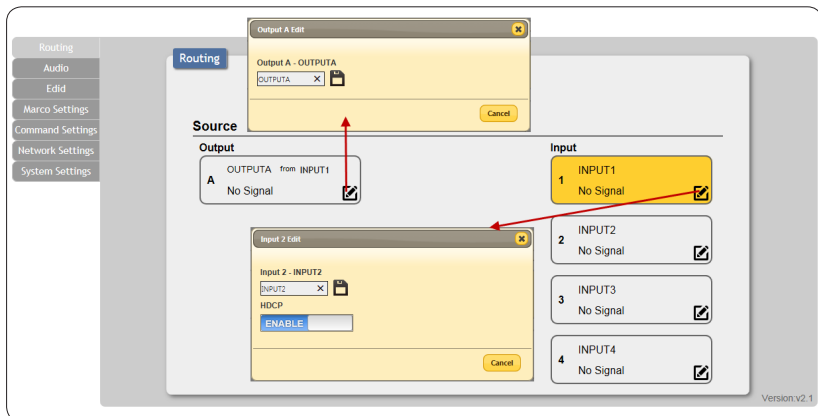
A security page will appear to ask for User and Password, please key in "admin" for both and click Submit to enter.

The browser will display device's Routing, Audio, EDID, Macro, Command, Network & System Settings control pages for users to control.
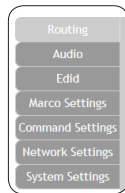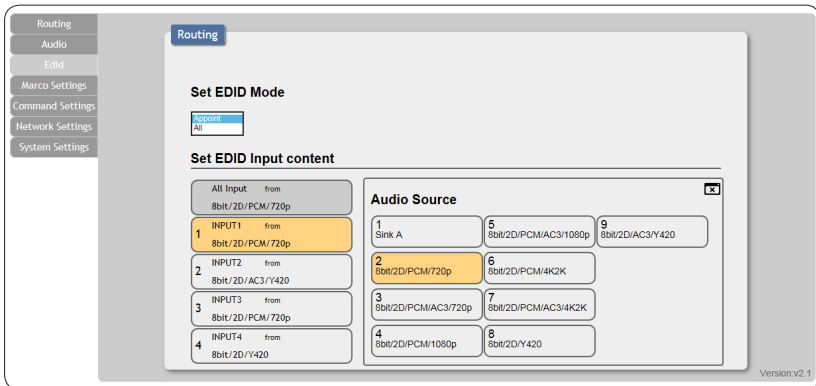

Click on Routing to view current connection status and rename input and output.

Click on Audio to adjust audio format, sound system, speaker mode and volume (volume for output speaker only).
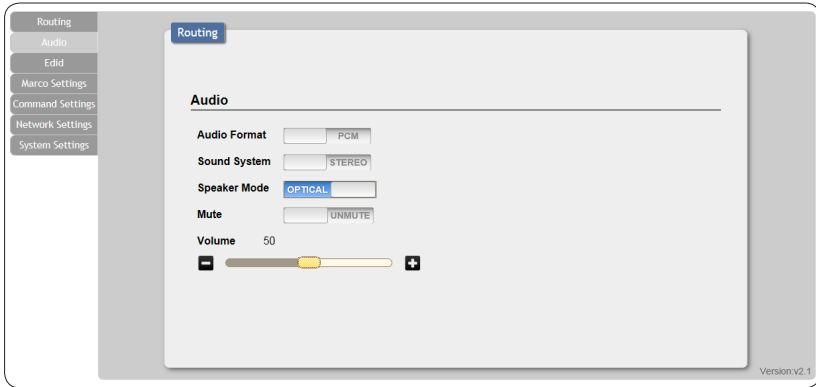
Click on EDID to select EDID setting on all inputs or appoint input(s).

Click on Macro Settings to insert up to 16 commands into a Macro button.
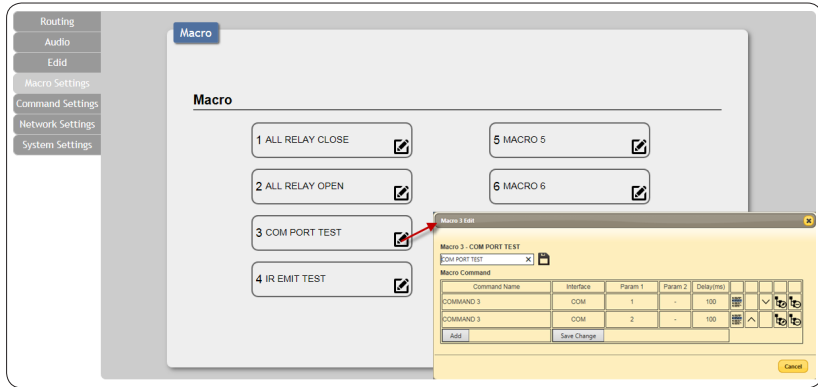
Click on the ![edit] mark to edit the command settings. ![up][down] Up/down arrows are to move the command up or down and ![delete] button is to delete the command.

Click on ![insert] Insert button/Add to insert commands. Command can be set to control the Wall-Plate Control Box/SysCMD, other devices connected within the same Telnet system/Internet area and Relay devices connected through the Relay outputs of Control System with delay time. It is suggested the delay time is >100ms once the setting is confirmed, double click on Save Change.
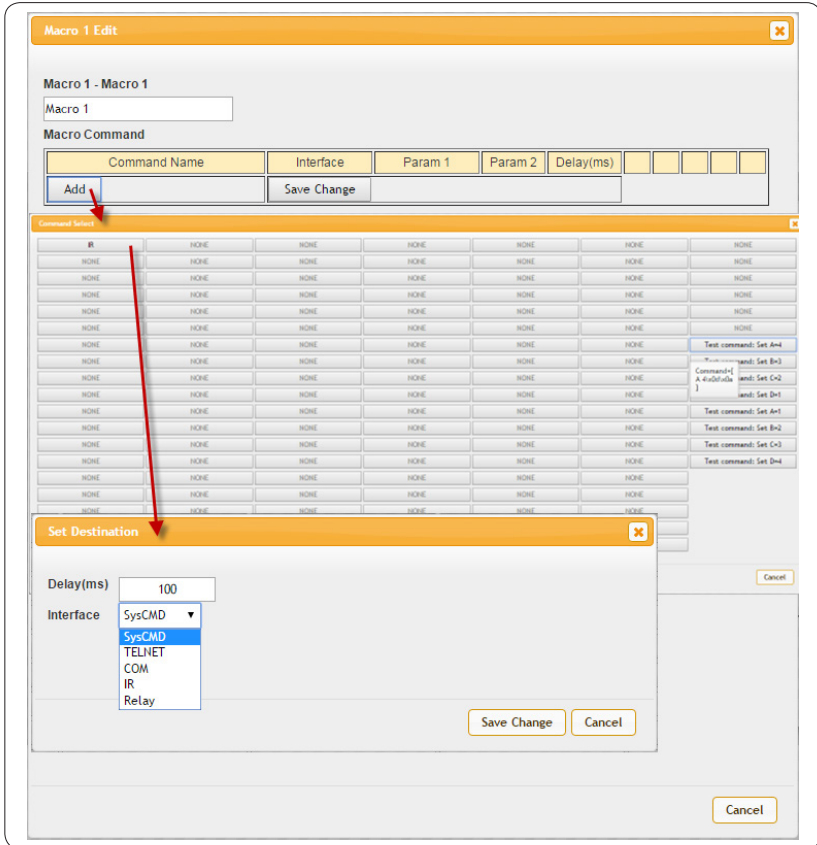
Command set to control the devices within the same telnet system or internet area require to set its IP and Port number and it is strongly recommend to set the delay time >500ms in order to secure a successful command sending. Command set to control the Relay devices require to set the Port number. Click on Save Change to confirm the setting.

Command under 128 characters including space can be build up to 128 commands, command over 128 characters and under 512 characters including space can be build up to 32 command in addition with 96 commands of 128 characters under. Click on Save Change to save the command inserted.
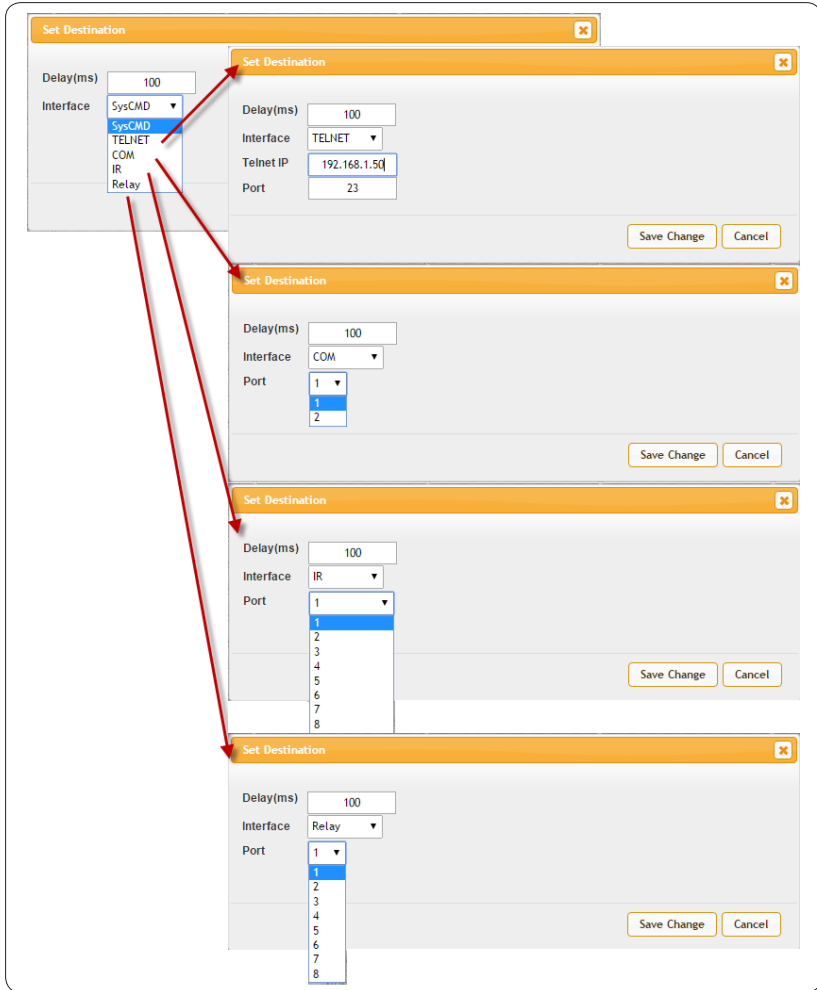
Click on 'Command Settings' to edit or delete commands up to 128 sets. Insert the command directly in the bottom column of Command Edit and name the command on the top column then click on Save Changes to store the command.

For IR command saving, insert the command on the bottom column and click on CYP/RAW HEX which indicate the IR command type and click on Save changes to store the command. Under uncertainty of the IR command type click on RAW HEX to ensure a successful command saving.
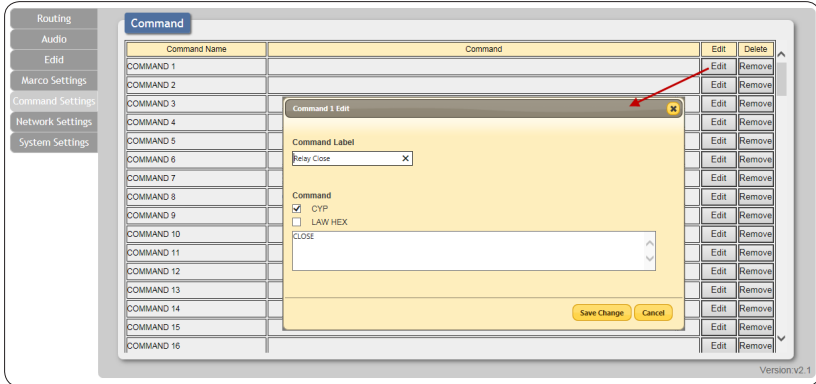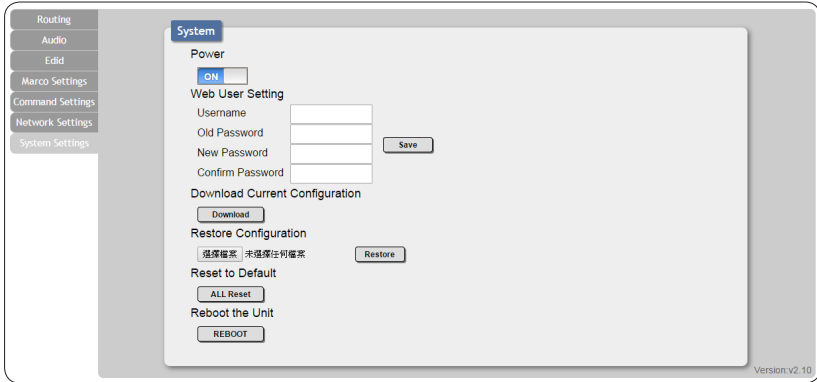
Click on Network Configuration to set the device's IP configuration. Once the changes are saved the system will reset the IP address on device automatically and user will need to re-enter the IP address to continue the WebGUI control.
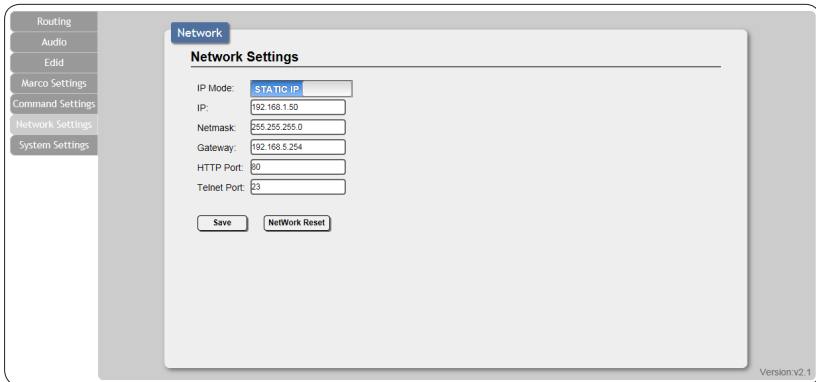
Click on System Settings to trigger device power or reset the settings back to default.

7. CONNECTION DIAGRAM

RS-232 Equipped PC/Laptop

IR Blasters

Amplifier

RS-232 Device to be Controlled

RS-232

Optical Input

LAN Connection

Network Router

Games Console

Power Supply

Projector Screen

Blu-ray Player

HDMI Inputs

Set-top Box

Security Window

Satellite Receiver

HDMI & Speaker Level Outputs

Security Door

Speaker

HDTV

Speaker
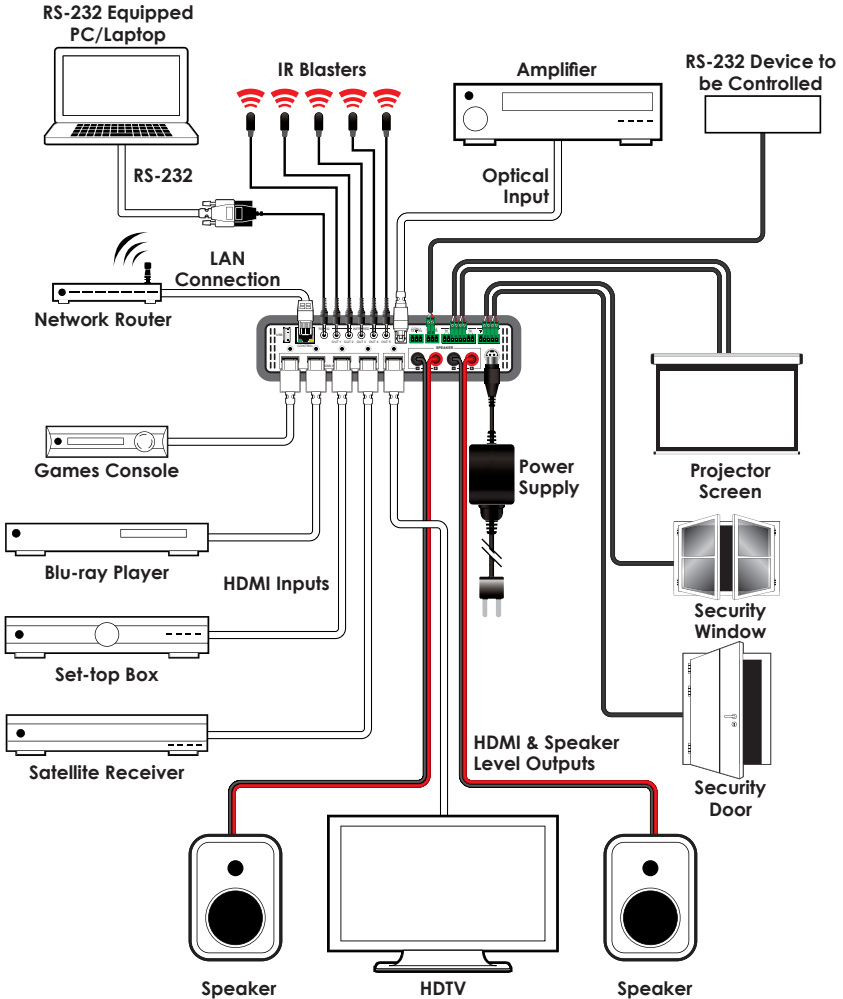
8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	340 MHz/10.2 Gbps
Input Ports	4×HDMI, 4×Triggers (0~15V), 1×Control (RJ-45), 2×COM (Terminal Block), 1×RS-232 (3.5mm), 1×USB (Service only), 1xOptical
Output Ports	1×HDMI, 1×R/L (Banana Jacks), 5×IR, 4×Replays
IR Out Frequency	30~50 kHz
Baud Rate	Up to 115200 bps
Power Supply	24 V/3.75 A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human body model: ±8 kV (air-gap discharge) ±6 kV (contact discharge)
Dimensions	219 mm (W)×156 mm (D)×43 mm (H)/ Jack Excluded 219 mm (W)×176.5 mm (D)×45 mm (H)/ Jack Included
Weight	1272 g
Chassis Material	Metal
Color	Black
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 (non-condensing)
Power Consumption	60 W

8.2 Supported Resolutions

Resolution	Input	Output
640×480@60/72/75	√	√
720×480@60	√	√
720×576p@50	√	√
800×600@60/72/75	√	√
1024×768@60/70/75	√	√
1280×720@50/60	√	√
1280×720p@60	√	√
1280×768@60	√	√
1280×800@60	√	√
1280×1024@60	√	√
1360×768@60	√	√
1600×1200@60	√	√
1920×1080i@50/60	√	√
1920×1080p@24/25/30/50/60/60(RB)	√	√
3840×2160@24/25/30	√	√
3840×2160@50/60 YUV420	√	√
4096×2160@24/25/30	√	√
4096×2160@50/60 YUV 420	√	√

8.3 Supported Audio Formats

AUDIO FORMAT (INPUT)	OUTPUT	
	HDMI	**SPEAKERS**
LPCM 2CH (HDMI/Optical)	√	√
LPCM 5.1CH (HDMI)	√	- (2CH only)
LPCM 7.1CH (HDMI)	√	- (2CH only)
Dolby Digital 2/5.1CH & DTS 2/5.1CH (HDMI/Optical)	√ (Follow HDMI)	- (Mute)
Dolby TrueHD & DTS-HD Master Audio (HDMI)	√	- (Mute)

8.4 Audio Performance

- 2×45W@4Ω<0.5%THD+N
- 2×12W@8Ω<0.5%THD+N
- Frequency Response <+/-1dB
- SNR>70dB@20Hz~20kHz a weighted
- THD+N@1W<0.05%@1kHz
- THD+N@1W<0.1%@20Hz~20kHz
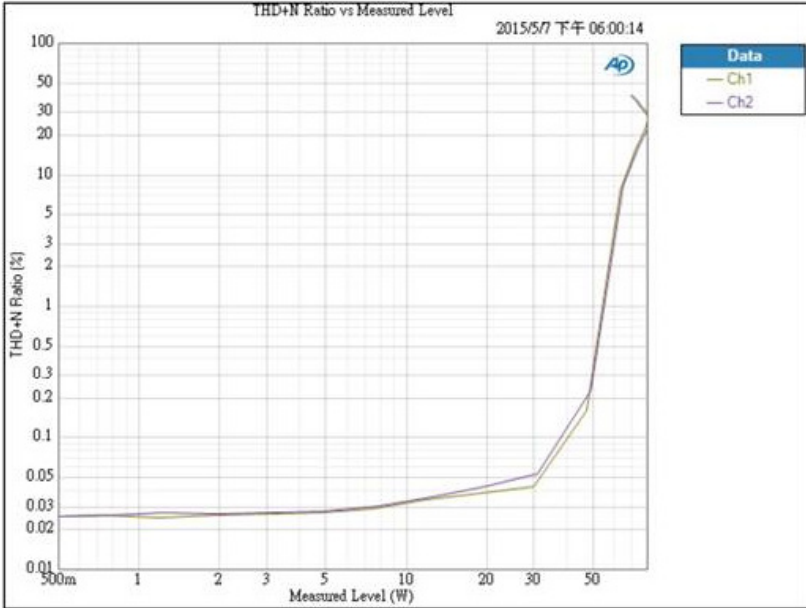
9. ACRONYMS

ACRONYM	COMPLETE TERM
CLI	Command Line Interface
DTS	Digital Theater System
EDID	Extended Display Identification Data
GUI	Graphical User Interface
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High-Definition Television
IP	Internet Protocol
IR	Infrared
OPT	Optical
USB	Universal Serial Bus