CYP

CMPRO-U4H4CVPL
4K2K 4×4 HDMI Matrix over CAT5e/6/7

HDBT

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	15/05/14	Preliminary Release
RDV2	18/09/14	Add RS-232 Command

CONTENTS

1. INTRODUCTION

The 4K2K 4 by 4 HDMI Matrix over CAT5e/6/7 supports the transmission of video (resolutions up to 4K2K Full HD), multi-channel digital audio and control via IR, RS-232, Telnet or Web GUI from four high definition sources to four outputs over a single CAT5e/6/7 cable (up to 60m) for each output.

It supports high resolution digital audio formats such as LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio as well as 3D content that can be displayed when connecting a 3D TV and 3D source.

2. APPLICATIONS

- HDMI Matrix System
- Video/TV wall display and control
- Security surveillance and control
- Commercial advertising, display and control
- University lecture hall, display and control
- Retail sales and demonstration

3. PACKAGE CONTENTS

- 4K2K 4×4 HDMI Matrix over CAT5e/6/7
- 1×IR Extender
- 1×IR Blaster
- 1×24 V/3.75A DC Power Adaptor
- 1×Power Cord
- 1×IR Remote Control with battery
- 1x Right and Left Ear Rack Sets
- Operation Manual

4. SYSTEM REQUIREMENTS

- HDMI equipped source devices, connect with HDMI cables or DVI equipped source, connect with DVI to HDMI cables
- HDMI equipped displays (TVs or monitors) or HDMI equipped AV receivers, connect with HDMI cables
- Industry standard CAT5e/6/7 cables
- HDBaseT™ Receivers

5. FEATURES

- HDMI, HDCP1.1 and DVI compliant
- Supports HDMI 3D features
- Supports resolutions VGA~WUXGA and 4K2K @50/60(YUV_420) dependent upon the output display's EDID settings
- Supports distances up to 60 meters through CAT5e/6/7 cables
- Supports 3D signal display dependent upon the output display EDID settings
- Supports HDMI input/output up to 10 meters at 8-bit/12-bit resolution or 5 meters at 4K2K resolution
- Supports bi-directional IR from input and output locations or 5 meters at 4K2K resolution
- Supports RS-232, remote control, on-panel control and IP Control (Telnet & Web GUI)
- 1U size design
- Supports external and internal EDID settings
- Supports LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio transmission

  Note:

  Do not connect the LAN/CONTROL port to CAT outputs of this device, doing so may tigger the device to shoot down.

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
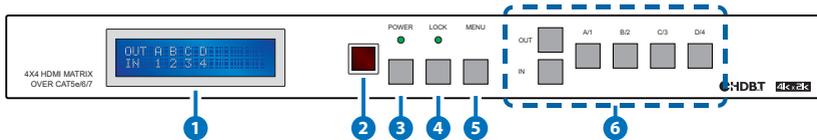
1 **LCM:** Displays the setting information of each input and output setting.

2 **IR:** IR Receiver window (accepts the remote control signal of this device only).

3 **POWER:** Press this button to power the device on/off. The LED will illuminate green when the power is on, red when it is in 'Standby' mode.

4 **LOCK:** Press this button to lock all the buttons on the panel; press again to unlock. The LED will illuminate when locked.

5 **MENU:** Press this button to access the LCM menu system, from here EDID settings can be managed and IP system settings are displayed.

6 **A~D/1~4 and OUT/IN:** Press the OUT or IN button to select the output or input mode and then press the required number button to make the selection accordingly.

For example, if outputs A~B need to be set to input 1 and outputs C~D need to be set to input 2, then the following sequence of button presses need to be performed:

Press: OUT→A→B→IN→1→MENU,
and then press: OUT→C→D→IN→2→MENU.

Note: If the MENU button is not pressed the selection will not be changed.
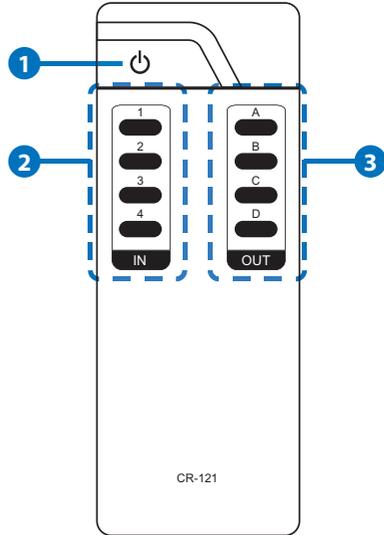
6.2 Rear Panel
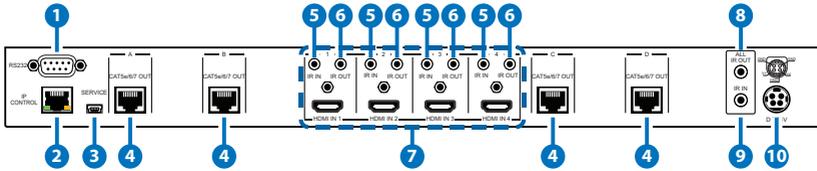
1 **RS-232:** Connect to a PC or control system with D-Sub 9-pin cable for the transmission of RS-232 commands.

2 **IP & CONTROL:** This port is the link for Telnet or Web GUI controls, connect to an active Ethernet link with an RJ45 terminated cable (for further details, please refer to section 6.8 & 6.9).

3 **SERVICE:** Manufacturer use only.

4 **CAT5e/6/7 OUT A~D:** Connect from these CAT outputs to the CAT input port of the receiver units with a single CAT5e/6/7 cable for HDMI Audio/Video and IR/RS-232 control signal transmission.

5 **IR IN 1~4:** Connect to the IR extenders for IR signal reception. Ensure that the remote being used is within the direct line-of-sight of the IR extender for it will send out the IR signal to the selected receiver's IR OUT.

6 **IR OUT 1~4:** Connect to the IR blasters for IR signal transmission. Place the IR blaster in direct line-of-sight of the equipment to be controlled for it will blaster out the IR signal received from the receiver side choosen by input selection.

7 **HDMI IN 1~4:** Connect to the HDMI input source devices such as a DVD player or a Set-top Box with HDMI cable or DVI to HDMI cable.

8 **ALL IR OUT:** Connect to the IR blaster for IR signal transmission to the source side. Place the IR blaster in direct line-of-sight of the equipment to be controlled for it will blaster out all signal received from the IR IN at the receiver sides.

9 **ALL IR IN:** Connect to the IR extender for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR extender for it will send out the signal to all receiver's IR OUT.

**10** **DC 24V:** Plug the 24 V DC power supply into the unit and connect the adaptor to an AC outlet.

Warning: Please do not connect the CAT5e/6/7 cable into the receiver's LAN port.

6.3 Remote Control

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

2 **IN**: Input ports selection 1~4.

3 **OUT**: Output ports selection A~D.

6.4 IR Cable Pin Assignment

IR Blaster

1 Power
2 IR Blaster Signal
3 NC

IR Extender

1 IR Signal
2 Power
3 Grounding
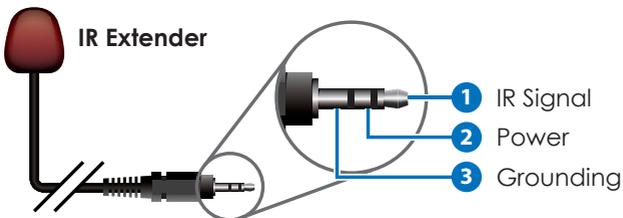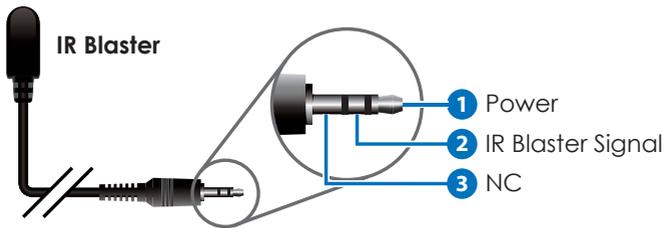
6.5 RS-232 Pin Assignment

CMPRO-U4H4CVPL		Remote Control Console	
PIN	**Assignment**	**PIN**	**Assignment**
1	NC	1	NC
2	Tx	2	Rx
3	Rx	3	Tx
4	NC	4	NC
5	GND	5	GND
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
9	NC	9	NC

Baud Rate: 19200 bps

Data Bit: 8-bit

Parity: None

Stop Bit: 1-bit

Flow Control: None

6.6 RS-232 and Telnet Commands

Command	Description
help	Dipslay all available commands
A1~A4	Switch Output A to 1~4
B1~B4	Switch Output B to 1~4
C1~C4	Switch Output C to 1~4
D1~D4	Switch Output D to 1~4
AB…1~AB…4	Switch Output ABCD to 1~4 at the same time
SETIP <IP> <SubNet> <GW>	Setting IP. SubNet. GateWay<Static IP>
RSTIP	IP configuration was reset to factory defaults<DHCP>
IPCONFIG	Display the current IP config
P0	Power Off
P1	Power On
STORE 01~04	Store current I/O position (01~04)
PRESET 01~04	Recall the store I/O Position (01~04)
SHOW 01~04	Show current port's I/O position (01~04)
NAME N1 N2	Name the stored port N1(01~04) no more than 8 charactors, N2 (ABCDEFGH)
I1~I4	Switch all the output to 1~4
ST	Display the current matrix state and firmware version
RS	System Reset to A1, B1, C2, D2, E3, F3, G4, H4
EM	Setting EDID MODE. 1-STD 2-TV.
?	Display all available commands
QUIT	Exit (Telnet only)

UARTBAUD?	Display baud rate setting 1~6 1: 9600bps 2: 14400bps 3: 19200bps 4: 38400bps 5: 57600bps 6: 115200bps
UARTBAUD1	Set output A's baud rate from 1~6
UARTBAUD2	Set output B's baud rate from 1~6
UARTBAUD3	Set output C's baud rate from 1~6
UARTBAUD4	Set output D's baud rate from 1~6
UARTSW?	Display output's UART status
UARTSW0	Switch to MCU. Allowing Receivers to send commands to Matrix.
UARTSW1	Switch to output A and allow Matrix to send commands to Receiver's connected device.
UARTSW2	Switch to output B and allow Matrix to send commands to Receiver's connected device.
UARTSW3	Switch to output C and allow Matrix to send commands to Receiver's connected device.
UARTSW4	Switch to output D and allow Matrix to send commands to Receiver's connected device.
Quit	Exit (for telnet only)

Note: 1. *All the command will be not executed unless followed with a carriage return. All letters are case-insensitive.*
2. *Commands are under RS-232 control only.*
3. *EDID STD@1080p/2CH, EDID TV@Output A.*

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 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.
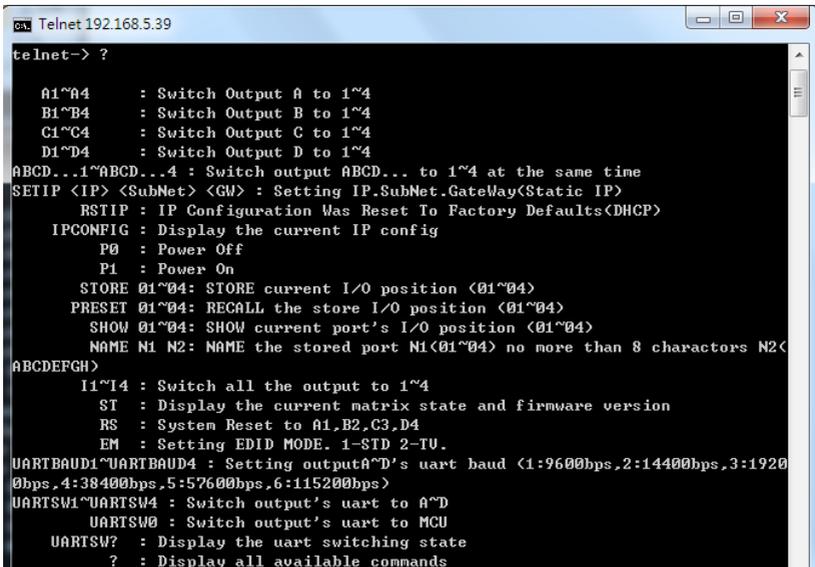
Note: The IP address of the Matrix can be displayed on the device's LCM monitor by pressing the Menu button twice.
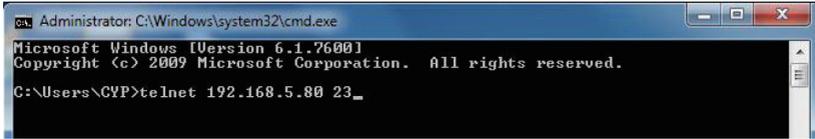
```
Administrator: C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\CYP>telnet 192.168.5.80 23_
```

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

```
Telnet 192.168.5.39

telnet-> ?

   A1~A4      : Switch Output A to 1~4
   B1~B4      : Switch Output B to 1~4
   C1~C4      : Switch Output C to 1~4
   D1~D4      : Switch Output D to 1~4
ABCD...1~ABCD...4 : Switch output ABCD... to 1~4 at the same time
SETIP <IP> <SubNet> <GW> : Setting IP.SubNet.GateWay(Static IP)
       RSTIP : IP Configuration Was Reset To Factory Defaults(DHCP)
     IPCONFIG : Display the current IP config
         P0  : Power Off
         P1  : Power On
      STORE 01~04: STORE current I/O position  (01~04)
      PRESET 01~04: RECALL the store I/O position  (01~04)
       SHOW 01~04: SHOW current port's I/O position  (01~04)
       NAME N1 N2: NAME the stored port N1(01~04) no more than 8 charactors N2(
ABCDEFGH)
       I1~I4 : Switch all the output to 1~4
         ST  : Display the current matrix state and firmware version
         RS  : System Reset to A1,B2,C3,D4
         EM  : Setting EDID MODE. 1-STD 2-TV.
UARTBAUD1~UARTBAUD4 : Setting outputA~D's uart baud (1:9600bps,2:14400bps,3:1920
0bps,4:38400bps,5:57600bps,6:115200bps)
UARTSW1~UARTSW4 : Switch output's uart to A~D
      UARTSW0 : Switch output's uart to MCU
   UARTSW? : Display the uart switching state
         ?  : Display all available commands
```

Type "IPCONFIG" To show all IP configurations. To reset the IP, type "RSTIP" and to use a set static IP, type "SETIP" (For a full list of commands, see Section 6.7).

Note: Any commands will not be executed unless followed by a carriage return. Commands are case-insensitive. If the IP is changed then the IP Address required for Telnet access will also change accordingly.
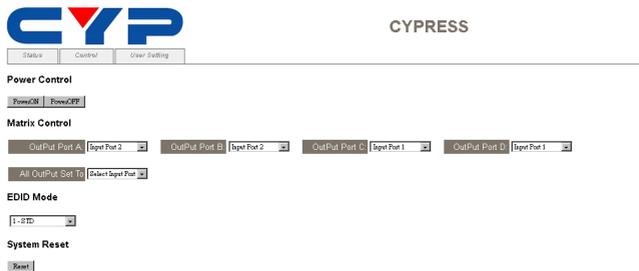
6.8 Web GUI Control

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


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

Clicking on the 'User Setting' tab allows you to reset the IP configuration. The system will ask for a reboot of the device every 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.

7. CONNECTION DIAGRAM
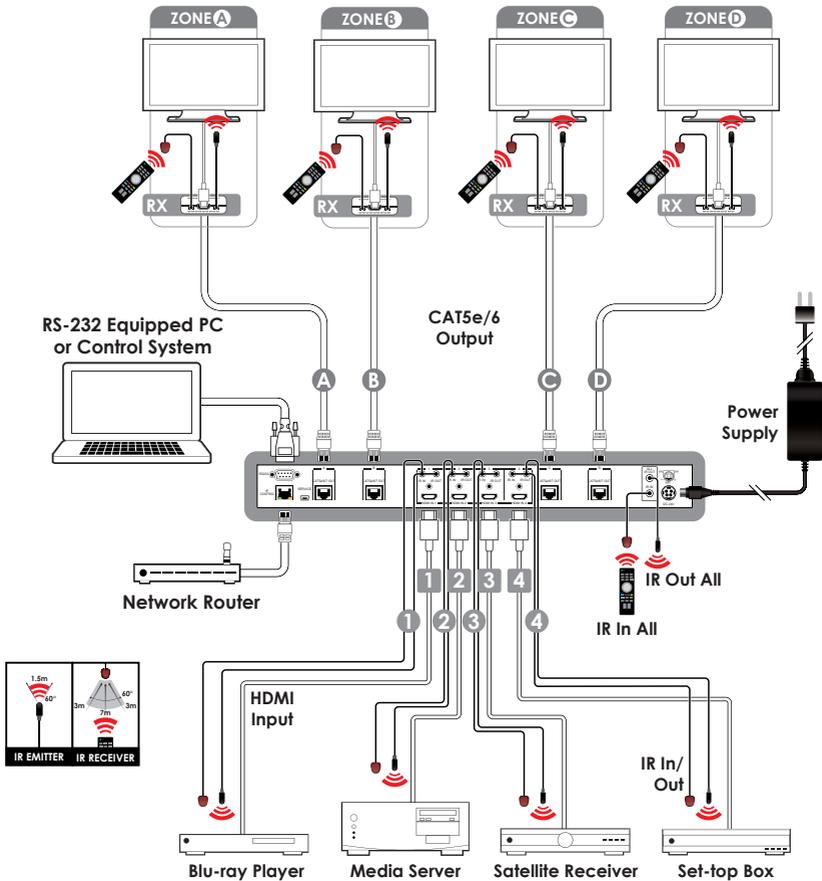
8. SPECIFICATIONS

Video Bandwidth	340 MHz/10.2 Gbps
Input Ports	4×HDMI, 5×IR Extender, 1×RS-232, 1×RJ-45(Control), 1×Mini USB Type B (For firmware updated only)
Output Ports	4×CAT5e/6/7, 5×IR Blaster
ESD Protection	Human-body Model:
	± 8kV (Air-gap discharge)
	± 4kV (Contact discharge)
Power Supply	24 V/3.75 A DC (US/EU standards, CE/FCC/UL certified)
Dimensions	436 mm (W)×249mm (D)×44 mm (H)/Jacks Excluded
	436 mm (W)×256.2mm (D)×48 mm (H)/Jacks Included
Weight	3352 g
Chassis Material	Metal
Silkscreen Color	Black
Operating Temperature	0 ℃~40 ℃/32 ℉~104 ℉
Storage Temperature	−20 ℃~60 ℃/−4 ℉~140 ℉
Relative Humidity	20~90% RH (non-condensing)
Power Consumption	66W

8.1 CAT5e/6/7 Cable Specification

Cable Type	Range	Pixel clock rate	Video Data Rate	Supported Video
CAT5e/6/CAT 7	60 m	<=225 MHz	<=5.3 Gbps (HD Video)	Up to 1080p, 60 Hz, 36 bits 3D(data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).

8.2 CAT5e/6/7 Cable Specification

	INPUT	OUTPUT
640x480@60/72/75/85	V	V
800x600@56/60/72/75/85	V	V
1024x768@60/70/75/85	V	V
1280x720@60	V	V
1280x1024@60	V	V
1600x1200@60	V	V
1920x1200@60RB	V	V
3840x2160p@24/25/30	V	V
4096x2160p@24	V	V
4096x2160p@50/60(YUV_420)	V	V
480I/576I	V	V
480P/576P	V	V
720P@50/60	V	V
1080I@50/60	V	V
1080P@50/60	V	V
1080P@24/25/30	V	V

9. ACRONYMS

ACRONYM	COMPLETE TERM
CLI	Command Line Interface
DTS	Digital Theater System
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
GUI	Graphical User Interface
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High-Definition Television
LCM	Liquid Crystal Module
USB	Universal Serial Bus
VGA	Video Graphics Array
WUXGA	Widescreen Ultra Extended Graphics Array