# EL-8300VA

**Advanced 4K HDMI, USB Type C, Display Port, VGA and HDBaseT Presentation Switch**

**OPERATION MANUAL**

**HDMI**®

HIGH-DEFINITION MULTIMEDIA INTERFACE

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Version 1.1

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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.

- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

## VERSION HISTORY

| REV. | DATE | SUMMARY OF CHANGE |
|------|------|-------------------|
| **RDV1** | 2020/03/18 | Preliminary release |
| **RDV2** | 2020/08/12 | Added Audio Delay and Trigger configuration |

# CONTENTS

# 1. INTRODUCTION

This 8 by 2 multi-format scaling switcher provides HDMI, USB-C, DisplayPort, and VGA inputs which can be freely selected for output at a scaled resolution of the user's choosing over the mirrored HDMI and HDBaseT outputs. The HDMI, DisplayPort, and USB-C inputs and HDMI output support resolutions up to 4K@60 (4:4:4, 8-bit) while the VGA input supports resolutions up to WUXGA. The HDBaseT output supports automatic colour subsampling of 4K50/60(4:4:4) sources to 4K50/60(4:2:0) and provides a great solution to extend your audio and video up to 100 metres over a single run of Cat.6A cable as well as providing PoH power to a compatible HDBaseT receiver.

This unit also includes multiple analogue stereo audio inputs and a microphone input along with an amplified analogue stereo output to provide a range of audio routing and mixing flexibility. The built-in audio mixer function allows the user to mix audio from any LPCM 2.0 source with the microphone input for presentation or lecture usage. The ability to switch back and forth between mixed and non-mixed audio greatly simplifies the presentation experience.

A trigger input interface is also provided to allow the easy addition of a remote control keypad, or other trigger-supporting products, which can be installed within a podium or within a table in a conference room or classroom. This interface can allow the user to activate functions with the simple press of a button. Standard control is available via front panel buttons with an On-Screen Display (OSD), WebGUI, Telnet, Triggers, and RS-232 making it exceptionally versatile.

# 2. APPLICATIONS

▰ Lecture room display and control

▰ Showroom display and control

▰ Meeting room presentation and control

▰ Classroom display and control

# 3. PACKAGE CONTENTS

- ⫽ 1× UHD⁺ 8x2 Multi-Format to HDMI/HDBaseT Switcher with Scaler
- ⫽ 1× 24V/6.25A DC Power Adapter
- ⫽ 1× Rackmount Ears (Set of 2)
- ⫽ 1× Shockproof Feet (Set of 4)
- ⫽ 1× Operation Manual

# 4. SYSTEM REQUIREMENTS

- ⫽ HDMI/DisplayPort/USB-C source equipment such as media players, video game consoles or set-top boxes.
- ⫽ VGA source equipment such as a PC, or laptop.
- ⫽ HDMI receiving equipment such as an HDTV, monitor, or audio amplifier.
- ⫽ Analogue audio receiving equipment such as audio amplifiers or powered speakers.
- ⫽ A compatible HDBaseT receiver with PoH(PD) support is recommended.
- ⫽ The use of Premium High Speed HDMI cables, and industry standard Cat.6, Cat.6A or Cat.7, is highly recommended.

# 5. FEATURES

▰ HDMI 2.0 and DVI 1.0 compliant

▰ HDCP 1.x and 2.2 compliant

▰ 8 video inputs (1×USB-C, 1×DisplayPort, 5×HDMI, 1×VGA)

▰ 2 mirrored video outputs (1×HDMI, 1×HDBaseT)

▰ Supports switching and scaling of all AV inputs for display over the mirrored HDMI and HDBaseT outputs

▰ Supports up to 4K UHD (18Gbps, 4K@50/60Hz 4:4:4, 8-bit) digital video input (HDMI, USB-C, DP) and output (HDMI)

▰ VGA input supports resolutions up to 1080p60/WUXGA (RB)

▰ HDBaseT output supports resolutions up to 4K@60Hz (4:2:0, 8-bit) or 4K@30Hz (4:4:4, 8-bit). 4K@50/60Hz (4:4:4, 8-bit) or 4K@any (10/12-bit) sources will be automatically colour space converted to fit within the available bandwidth

▰ Supports Deep Colour input and output up to 12-bit (Bypass only)

▰ Supports 10-bit and 12-bit HDR (High Dynamic Range) input/output (HDMI Bypass only)

▰ HDBaseT output extends video, audio, and data over a single Cat.5e/6/7 cable and can reach distances up to 100m/328ft at 4K when using Cat.6A/7

▰ Supports pass-through of many audio formats including LPCM (up to 8 channels), Bitstream and HD Bitstream

▰ Audio mixer function allows the mixing of audio from any LPCM 2.0 audio source with the microphone input

▰ Trigger Control Keypad support for easy, single-button, function activation (Optional)

▰ Supports standard PoH (PSE) from the HDBaseT output to a connected HDBaseT (PD) receiver (compatible receivers only)

▰ USB Type-C port provides up to 60W of power to connected devices

▰ Comprehensive EDID and HDCP management

▰ Controllable via front panel controls with OSD, RS-232, Telnet, WebGUI, and triggers

# 6. OPERATION CONTROLS AND FUNCTIONS

## 6.1 Front Panel
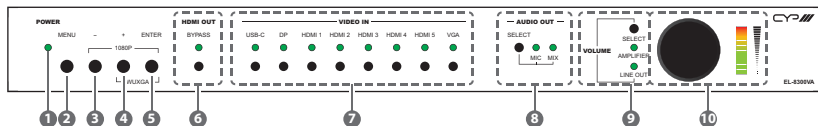


**1** **POWER LED:** This LED will illuminate to indicate the unit is on and receiving power.

**2** **MENU Button:** Press to enter the OSD menu, or to back out from menu items.

**3** **MINUS (-) Button:** Press to move down or adjust selections within OSD menus.

**4** **PLUS (+) Button:** Press to move up or adjust selections within OSD menus.

*Note: Pressing the "+" button when not in a menu will toggle the video freeze feature.*

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

*Note: Pressing "ENTER" and "+" together will reset the output resolution to WUXGA (1920×1200@60Hz). Pressing "ENTER" and "-" together will reset the output resolution to 1080p@60Hz.*

**6** **HDMI OUT BYPASS Button & LED:** Press this button to enable or disable the HDMI video Bypass function. When bypass is enabled, the LED will illuminate.

**7** **VIDEO IN Buttons & LEDs:** Press any of these buttons to switch immediately to the corresponding input. An LED will illuminate to indicate which source is currently selected.

**8** **AUDIO OUT SELECT Button & LEDs:** Press this button to select the microphone mix mode of the unit. The LED will illuminate to indicate the current mix mode. When both LEDs are off, the mixer is disabled.

*Note: Activating Mixer On mode, or MIC Only mode will automatically disable HDMI Out Bypass mode.*

**9** **VOL. Button & LEDs:** Press this button to select which audio output's volume is controlled by the volume knob. When both LEDs are off, the knob controls the HDMI audio output (LPCM 2.0 only).

**10** **VOL. Rotary Knob & LEDs:** Rotating the knob increases or decreases the currently selected audio output's volume level. The LED bar will change according to the current level. Pressing in on the knob toggles the audio mute function.

## 6.2 Rear Panel
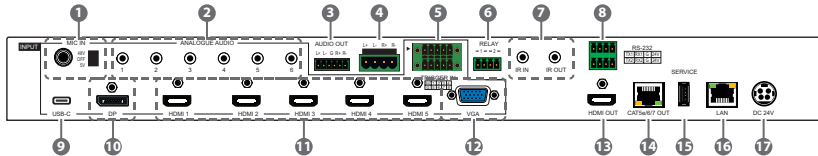


**1** **MIC IN Port & 48V/OFF/5V Switch:** Connect to a standard microphone using a 6.35mm plug. Set the switch based on the phantom power requirements of the connected microphone.

*Note: If no phantom power is required, this switch should remain in the "Off" position to avoid potential damage to connected equipment.*

**2** **ANALOGUE AUDIO INPUT 1~6 Ports:** Connect to the analogue stereo output of a device such as an audio player or PC.

*Note: By default, Analogue Audio 1 is paired with the VGA input.*

**3** **AUDIO OUT 5-pin Terminal Block:** Connect to powered speakers or an amplifier for analog stereo audio output.

**4** **AUDIO OUT L/R 2-pin Terminal Blocks:** Connect to unpowered 4Ω speakers for analogue stereo audio output. Up to 20W of power is provided to each speaker.

**5** **TRIGGER IN 10-pin Terminal Block:** Connect to the Trigger Control Keypad (Optional) or any device with trigger switch functionality such as window security alarms, motion detectors, door switches, etc. Each of the 8 triggers will activate an assigned unit function when triggered.

*Note: A minimum of 5V DC is required to activate a trigger.*

**6** **RELAY 1~2 2-pin Terminal Blocks:** Connect to devices that can be powered and controlled via a DC 0~24V/5A relay connection such as a curtain, projection screen, or lights.

**7** **IR IN Port:** Connect to an IR Extender to receive local IR control signals and extend them to devices connected to the other end of the HDBaseT connection. Ensure that the remote being used is within direct line-of-sight of the IR Extender.

**IR OUT Port:** Connect to an IR Blaster to transmit IR signals from the other end of the HDBaseT connection to devices within direct line-of-sight of the IR Blaster.

*Note: IR can only be routed across a single HDBaseT connection at a time. The HDBaseT connection to use is defined within the WebGUI or OSD menu.*

**8** **RS-232 1 4-pin Terminal Block 1 (Top):** Connect directly to a PC, laptop, or other serial control device with a 3-pin adapter cable to send RS-232 commands to control the unit.

**RS-232 2 4-pin Terminal Block (Bottom):** Connect to a PC, laptop, or serial controllable device with a 3-pin adapter cable for the extension of RS-232 signals between this unit and the designated HDBaseT connection.

*Note: The 24 volt pins are included to provide power to a dedicated external control product and should NOT be used when connecting a standard RS-232 device.*

**9** **USB-C INPUT Port:** Connect to USB Type-C video source equipment such as a PC or laptop.

*Note: Not all devices with USB Type-C ports can support video output. Please verify that the device supports video output from the USB Type-C port before connecting it.*

**10** **Display INPUT Port:** Connect to DisplayPort source equipment such as a PC or laptop.

*Note: For 4K sources, use of cable that supports DisplayPort 1.2 or higher is strongly recommended.*

**11** **HDMI INPUT 1~5 Ports:** Connect to HDMI source equipment such as media players, game consoles, or set-top boxes. DVI sources are supported with the use of an HDMI to DVI adapter.

**12** **VGA INPUT Port:** Connect to VGA source equipment such as PCs or laptops.

**13** **HDMI OUT Port:** Connect to an HDMI TV, monitor, or amplifier for digital video and audio output.

**14** **CAT5e/6/7 OUT Port:** Connect to a compatible HDBaseT receiver with a single Cat.5e/6/7 cable for transmission of all data signals. PoH will also be supplied to a connected compatible PD receiver.

**15** **SERVICE Port:** This port is reserved for firmware update use only.

**16** **LAN Port:** Connect directly, or through a network switch, to your

PC/laptop to control the unit via Telnet/WebGUI and to extend the network across the HDBaseT connection.

**⑰ DC24V 4-pin DIN Port:** Plug the 24V DC power adapter into this port and connect it to an AC wall outlet for power.

## 6.3 IR Cable Pinouts

**IR Blaster Cable**



1 Power
2 Infrared
3 Not Used

**IR Extender Cable**



1 Infrared
2 Power
3 Ground
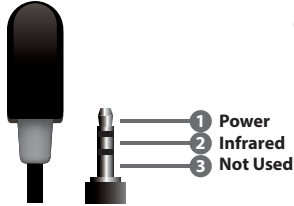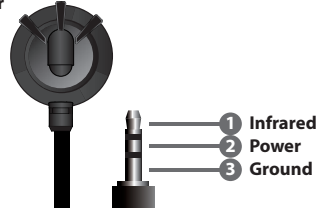
## 6.4 RS-232 Pinout and Defaults

| Serial Port Default Settings | |
|---|---|
| **Baud Rate** | 19200 |
| **Data Bits** | 8 |
| **Parity Bits** | None |
| **Stop Bits** | 1 |
| **Flow Control** | None |

**RS-232 Port 1 (Unit control)**

4-pin Terminal Block



1 24V
2 GND
3 RxD
4 TxD
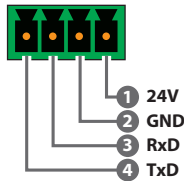
**RS-232 Port 2 (HDBaseT extension)**

4-pin Terminal Block



1 24V
2 GND
3 RxD
4 TxD
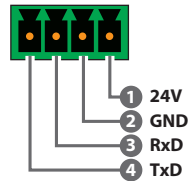
*Note: The 24 volt pins (pin 1) are included to provide power to a dedicated external control product and should NOT be used when connecting a standard RS-232 device*

### 6.5 OSD Menu

All functions of this unit can be controlled by using the OSD (On Screen Display) which is activated by pressing the MENU button on the front of the unit. Use the + (PLUS), – (MINUS), and ENTER buttons to navigate the OSD menu. Press the MENU button to back out from any menu item and then press it again to close the menu.

| MAIN MENU |
| --- |
| **Video** |
| **Picture** |
| **Audio** |
| **OSD** |
| **Ethernet** |
| **EDID** |
| **System** |
| **Factory** |
| **Information** |

The individual functions of the OSD will be introduced in the following section. Items marked in BOLD are the factory default settings.

| VIDEO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| HDMI Out Bypass | **OFF** | |
| | On | |
| Output Route | USB-C | |
| | DP | |
| | **HDMI 1** | |
| | HDMI 2 | |
| | HDMI 3 | |
| | HDMI 4 | |
| | HDMI 5 | |
| | VGA | |
| Output Resolution | **NATIVE HDMI** | |
| | Native HDBT | |
| | 640x480@60 | |
| | 800x600@60 | |
| | 1024x768@60 | |
| | 1280x768@60 | |
| | 1360x768@60 | |
| | 1280x720@60 | |
| | 1280x800@60 | |
| | 1280x1024@60 | |
| | 1440x900@60 | |
| | 1400x1050@60 | |
| | 1680x1050@60 | |
| | 1600x1200@60 | |
| | 1920x1080@60 | |

| VIDEO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| Output Resolution (Cont.) | 1920x1200@60RB | |
| | 2560x1600@60RB | |
| | 720x480p | |
| | 720x576p | |
| | 1280x720p50 | |
| | 1280x720p60 | |
| | 1920x1080p24 | |
| | 1920x1080p25 | |
| | 1920x1080p30 | |
| | 1920x1080p50 | |
| | 1920x1080p60 | |
| | 3840x2160p24 | |
| | 3840x2160p25 | |
| | 3840x2160p30 | |
| | 3840x2160p50 | |
| | 3840x2160p60 | |
| | 3840x2160p50(420) | |
| | 3840x2160p60(420) | |
| | 4096x2160p24 | |
| | 4096x2160p25 | |
| | 4096x2160p30 | |
| | 4096x2160p50 | |
| | 4096x2160p60 | |
| | 4096x2160p50(420) | |
| | 4096x2160p60(420) | |

| VIDEO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| Aspect | **BEST FIT** | |
| | Pan Scan | |
| | Letterbox | |
| | Under 1 | |
| | Under 2 | |
| | Follow In | |
| | Overscan | |
| | Full | |
| No Signal Colour | **BLACK** | |
| | White | |
| | Blue | |
| | Red | |
| | Green | |
| Blank | **OFF** | |
| | On | |
| Freeze | **OFF** | |
| | On | |
| Auto Setting | Auto Sync Off | **OFF** |
| | | 30s |
| | | 60s |
| | Auto Route | **OFF** |
| | | Auto Switch |
| HDCP Setting | HDCP On USB-C | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |

| VIDEO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| HDCP Setting (Cont.) | HDCP On DP | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |
| | HDCP On HDMI 1 | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |
| | HDCP On HDMI 2 | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |
| | HDCP On HDMI 3 | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |
| | HDCP On HDMI 4 | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |
| | HDCP On HDMI 5 | Refer to Source |
| | | **REFER TO DISPLAY** |
| | | Support Off |

1) **HDMI Out Bypass:** Enable or disable the video output bypass mode. When bypass is enabled, HDR video and bitstream audio can be supported, however it will disable the unit's scaling and video adjustment functions.

   *Note: This setting affects both the HDMI and HDBaseT outputs. This setting does not enable audio bypass.*

2) **Output Route:** Select the video input to route to both outputs.

3) **Output Resolution:** Select the output resolution to use when HDMI bypass is disabled. Selecting a "Native" resolution option will make the

unit automatically select an output resolution based on the detected EDID of the connected display.

*Note: Not active when HDMI bypass mode is enabled.*

4) **Aspect:** Select the aspect ratio to use when outputting the source. "Full" stretches the source to fill the output resolution, regardless of the original aspect ratio, while "Best Fit" will always attempt to retain the original source's correct aspect ratio by adding black bars if necessary. "Follow In" centers the source on the screen, without any scaling (1:1 pixel reproduction).

*Note: Not active when HDMI bypass mode is enabled.*

5) **No Signal Colour:** Select the colour to output when no input signal is detected.

6) **Blank:** Enable or disable blanking the video output.

*Note: Not available when HDMI bypass mode is enabled.*

7) **Freeze:** Enable or disable freezing the video output.

*Note: Not available when HDMI bypass mode is enabled.*

8) **Auto Setting:**

   ■ **Auto Sync Off:** Sets the amount of time to continue outputting sync with the free run colour if there is no live source and no operations have been executed on the unit. Setting this to "OFF" forces the unit to always output sync.

   ■ **Auto Route:** Enable or disable automatically switching to any newly detected source.

9) **HDCP Setting:** Selects the HDCP logic to use with the HDMI input. Setting this to "Support Off" will completely disable HDCP support.

*Note: The VGA input is not listed as it cannot support HDCP.*

| PICTURE | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| Colour Gain R | 0~1023 **(512)** | |
| Colour Gain G | 0~1023 **(512)** | |
| Colour Gain B | 0~1023 **(512)** | |
| Colour Offset R | 0~1023 **(512)** | |
| Colour Offset G | 0~1023 **(512)** | |
| Colour Offset B | 0~1023 **(512)** | |
| Brightness | 0~60 **(30)** | |
| Contrast | 0~60 **(30)** | |
| Fine Tune HDMI | Hue | 0~60 **(30)** |
| (Digital sources only) | Saturation | 0~60 **(30)** |
| | Sharpness | 0~63 **(0)** |
| | NR | **OFF** |
| | | Low |
| | | Middle |
| | | High |
| Fine Tune PC | PC Auto | **EXECUTE** |
| (Analogue sources only) | PC H Position | 0~250 |
| | PC V Position | 0~250 |
| | PC Clock | 0~250 |
| | PC Phase | 0~255 |
| | PC Reset | **NO** |
| | | Execute |
| Reset Picture | **NO** | |
| | Execute | |

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1) **Colour Gain R/G/B:** Set the red, green, and blue colour gain level of the scaled output.

2) **Colour Offset R/G/B:** Set the red, green, and blue colour offset level of the scaled output.

3) **Brightness/Contrast:** Set the overall brightness and contrast of the scaled output image.

4) **Fine Tune HDMI (Digital sources only):**
   - **Hue:** Set the hue shift of the scaled output image.
   - **Saturation:** Set the colour saturation level of the scaled output image.
   - **Sharpness:** Set the amount of sharpness processing to apply to the scaled output image.
   - **NR:** Set the aggressiveness of the digital noise reduction processing when applied to the scaled output image. Selecting "Off" disables all noise reduction processing.

5) **Fine Tune PC (VGA sources only):**
   - **PC Auto:** Provides a way to manually activate the auto detection of the VGA source's settings. Select "Execute" to run the auto set.
   - **PC H/V Position:** Set the horizontal and vertical position for the current VGA input.
   - **PC Clock:** Set the PC clock setting for the current VGA input.
   - **PC Phase:** Set the PC phase setting for the current VGA input.
   - **PC Reset:** Reset all PC picture settings back to their factory defaults. Select "Execute" to activate the reset.

6) **Reset Picture:** Reset all picture settings back to their factory defaults. Select "Execute" to activate the reset.

| AUDIO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| HDMI Out Bypass | **OFF** | |
| | On | |
| Audio Routing | Follow User | |
| | **FOLLOW VIDEO** | |
| | Fixed Analogue 1 | |
| | Fixed Analogue 2 | |
| | Fixed Analogue 3 | |
| | Fixed Analogue 4 | |
| | Fixed Analogue 5 | |
| | Fixed Analogue 6 | |
| Follow User Setting | Audio On USB-C | **EMBEDDED** |
| | | Analogue 1 |
| | | Analogue 2 |
| | | Analogue 3 |
| | | Analogue 4 |
| | | Analogue 5 |
| | | Analogue 6 |
| | Audio On DP | |
| | Audio On HDMI 1 | |
| | Audio On HDMI 2 | [Same options as for USB-C] |
| | Audio On HDMI 3 | |
| | Audio On HDMI 4 | |
| | Audio On HDMI 5 | |

| AUDIO | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| Follow User Setting | Audio On VGA | **Analogue 1** |
| | | Analogue 2 |
| | | Analogue 3 |
| | | Analogue 4 |
| | | Analogue 5 |
| | | Analogue 6 |
| Output Mixer | **MIXER OFF** | |
| | Mixer On | |
| | Mic Only | |
| Mic Gain | 0~100 **(0)** | |
| HDMI/HDBT Out Volume | 0~100 **(85)** | |
| Analogue Out Volume | 0~100 **(85)** | |
| Speaker Out Volume | 0~100 **(85)** | |
| HDMI/HDBT Out Mute | **OFF** | |
| | On | |
| Analogue Out Mute | **OFF** | |
| | On | |
| Speaker Out Mute | **OFF** | |
| | On | |
| Audio Delay | Off | |
| | **40MS** | |
| | 110ms | |
| | 150ms | |

1) **HDMI Out Bypass:** Enable or disable HDMI audio bypass mode. When enabled, all audio will automatically behave as if in "Follow Video"

mode and bitstream audio can be supported.

*Note: This bypass setting affects audio only.*

2) **Audio Routing:** Select the audio routing behavior of the unit.

   ■ **Follow User:** Audio routing will follow the selections made in the "Follow User Setting" section.

   ■ **Follow Video:** All digital sources will use their native embedded audio content. The VGA source will use the Analogue 1 audio input.

   ■ **Fixed Analogue 1~6:** Forces all video sources to be paired with the selected analogue audio source.

   *Note: When HDMI Out Bypass for audio is enabled, all audio will automatically behave as if in "Follow Video" mode.*

3) **Follow User Setting:** Options for defining the audio routing to use when the "Follow User" mode is enabled. Select the preferred Follow User source for each input.

4) **Output Mixer:** Set the microphone mixing mode of the unit.

   ■ **Mixer Off:** Disable the audio mixer.

   ■ **Mixer On:** Enable the audio mixer. Audio from the current source and the microphone will be mixed together.

   ■ **MIC Only:** Output only the microphone audio source. This mode will override all other audio selections.

   *Note: Activating Mixer On mode, or MIC Only mode will automatically disable HDMI Out Bypass mode.*

5) **Mic Gain:** Sets the microphone input's volume level when the microphone is an active audio source (mixed or unmixed).

6) **HDMI/Analogue/Speaker Out Volume:** Set the volume level for each audio output type.

   *Note: LPCM 2.0 sources only. Not active when HDMI audio Out Bypass is enabled.*

7) **HDMI/Analogue/Speaker Out Mute:** Enable or disable muting the audio of each output type.

8) **Audio Delay:** Set the amount of time (in milliseconds) to the delay the audio output if audio and video seem to be out of sync.

   *Note: LPCM 2.0 sources only. Not active when HDMI audio Out Bypass is enabled.*

| OSD | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| H Position | 0~100 **(50)** |
| V Position | 0~100 **(50)** |
| Transparency | 1~8 **(1)** |
| OSD Menu Timeout | **OFF** |
| | 5s |
| | 10s |
| | 15s |
| | 20s |
| | 25s |
| | 30s |
| | 35s |
| | 40s |
| | 45s |
| | 50s |
| | 55s |
| | 60s |
| Display | **INFO** |
| | Off |
| | On |

1) **H/V Position:** Controls the position of the OSD menu.

2) **Transparency:** Set the transparency level of the OSD menu's background. The available range is from Level 0 (fully opaque) to Level 8 (fully transparent).

3) **OSD Menu Timeout:** Set how long to wait before automatically closing the OSD menu if there is no user activity. The timeout can be set to up to 60 seconds, or disabled completely.

4) **Display:** Set the behavior of the OSD informational display. Selecting "Info" will show the information display for a short time after a source or display change. Selecting "Off" will disable the info display. Selecting "On" will always show the info display.

| ETHERNET | | |
|---|---|---|
| **2ND LEVEL** | **3RD LEVEL** | **4TH LEVEL** |
| IP Mode | **STATIC** | |
| | DHCP | |
| Static IP Setting | Static IP | 0~255 **(192)** |
| | | 0~255 **(168)** |
| | | 0~255 **(1)** |
| | | 0~255 **(50)** |
| | Mask | 0~255 **(255)** |
| | | 0~255 **(255)** |
| | | 0~255 **(0)** |
| | | 0~255 **(0)** |
| | Gate | 0~255 **(192)** |
| | | 0~255 **(168)** |
| | | 0~255 **(1)** |
| | | 0~255 **(254)** |
| IP | [Current IP address] | |
| MAC | [Unit's MAC address] | |

1) **IP Mode:** Set the unit to Static or DHCP mode. When DHCP mode is selected, all IP address information will be assigned automatically by the local DHCP server. When Static is selected, the IP address, netmask and gateway must be set manually and additional menu items become available.

2) **Static IP Setting:** The unit's static IP address, netmask, and gateway address can be set here. Press the "Enter" button to begin editing the

address and use the "+" and "-" buttons to adjust each value. Press the "Enter" button to store the current number segment and move to the next segment.

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

3) **IP/MAC:** Displays the unit's MAC address and current IP address.

| EDID | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| EDID On USB-C | **DEFAULT FHD 2CH** |
| | Default FHD MCh |
| | Default UHD 2Ch |
| | Default UHD MCh |
| | Default UHD+ 2Ch |
| | Default UHD+ MCh |
| | Default VGA |
| | User 1 |
| | User 2 |
| | Sink HDMI |
| | Sink HDBT |
| EDID On DP | [Same options as for USB-C] |
| EDID On HDMI 1 | [Same options as for USB-C] |
| EDID On HDMI 2 | [Same options as for USB-C] |
| EDID On HDMI 3 | [Same options as for USB-C] |
| EDID On HDMI 4 | [Same options as for USB-C] |
| EDID On HDMI 5 | [Same options as for USB-C] |
| EDID On VGA 1 | Default FHD 2Ch |
| | Default FHD MCh |
| | Default UHD 2Ch |
| | Default UHD MCh |
| | Default UHD+ 2Ch |
| | Default UHD+ MCh |

| EDID | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| EDID On VGA 1 (Cont.) | **DEFAULT VGA** |
| | User 1 |
| | User 2 |
| | Sink HDMI |
| | Sink HDBT |

1) **EDID Selection:** Select the EDID to use with each input.

   *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.*

| SYSTEM | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| Relay 1 | **OFF** |
| | On |
| Relay 2 | **OFF** |
| | On |
| Trigger In 1~8 | Off |
| | DP |
| | HDMI 1 |
| | HDMI 2 |
| | HDMI 3 |
| | HDMI 4 |
| | HDMI 5 |
| | VGA |
| Button Lock | **ALL** |
| | Video |
| | Audio |

1) **Relay 1~2:** Manually open or close Relay 1 and Relay 2. Selecting "ON" closes the relay, selecting "OFF" opens it.

2  **Trigger In 1~8:** Set the input to be selected, if any, when each trigger is activated.

3) **Button Lock:** Select which front panel buttons to lock out when Button Lock is enabled.

| FACTORY | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| Reset All | **NO** |
| | Execute |
| FW Update From USB | **NO** |
| | Execute |

1) **Reset All:** Selecting "Execute" will reset all of the unit's settings back to their factory defaults.

2) **FW Update From USB:** Provides a way to update the unit's firmware. Insert a USB thumb drive, with a valid firmware file (*.bin format) in the root directory, into the unit's USB service port then select this option. After the update is complete the unit will automatically reboot.

| INFORMATION | |
|---|---|
| **2ND LEVEL** | **3RD LEVEL** |
| Video HDMI Out Bypass | |
| Output Route | |
| Output Resolution | |
| Audio HDMI Out Bypass | [Current System Settings] |
| Output Route | |
| Output Mixer | |
| IP | |
| Version | [Current Firmware Version] |

1) **Information:** This screen displays information about the unit's current state, input and output status, as well as the current firmware version.

## 6.6 WebGUI Control

### Device Discovery

Please obtain the "Device Discovery" software from your authorised 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.

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



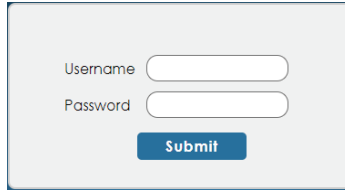By clicking on one of the listed devices you will be presented with the network details of that particular device.



1) **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".

2) **WebGUI Hotkey:** 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 Overview

After connecting to the WebGUI's address in a web browser, the login screen will appear. Please enter the appropriate user name and password then click "Submit" to log in.

*Note: The default user name and password is "admin".*



On the left side of the browser you will see the following menu tabs where all primary functions of the unit are controllable via the built in WebGUI. The individual functions will be introduced in the following sections.
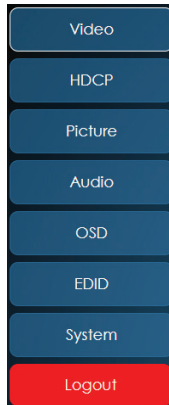


Clicking the red "Logout" tab will automatically log the currently connected user out of the WebGUI and return to login page.

<img alt="CYP logo" />

### 6.6.1 Video Tab

This page provides video routing settings, I/O renaming options and control over the video output signal's format and behavior.

To begin assigning a new video route, please click an output button and then click on the button of the preferred input port. As you select each button they will change their colour 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.

*Note: Both outputs are linked together, so selecting a source for one will automatically change the source for the other.*



1) **Output:** Buttons for selecting the output (A & B) to route A/V Inputs to. Details about the output names and currently selected Input are also displayed here. To change the name of an output, click on the edit icon (🖉).

2) **Input:** Buttons for selecting the input to route to the selected output. Detail about the input names is also displayed here. To change the name of an output, click on the edit icon (🖉).

CYP///

**3) Additional Settings:**

■ **HDMI Out Bypass:** Enable or disable the video output bypass mode. When bypass is enabled, HDR video and bitstream audio can be supported, however it will disable the unit's scaling and video adjustment functions.

*Note: This setting affects both the HDMI and HDBaseT outputs. This setting does not enable audio bypass.*

■ **Output Resolution:** Selects the output resolution to use when HDMI bypass is disabled. Selecting a "Native" resolution option will make the unit automatically select an output resolution based on the detected EDID of the connected display.

*Note: Not active when HDMI bypass mode is enabled.*

■ **Output Aspect:** Selects the aspect ratio to use when outputting the source. "Full" stretches the source to fill the output resolution, regardless of the original aspect ratio, while "Best Fit" will always attempt to retain the original source's correct aspect ratio by adding black bars if necessary. "Follow In" centers the source on the screen, without any scaling (1:1 pixel reproduction).

*Note: Not active when HDMI bypass mode is enabled.*

■ **Output No Signal Colour:** Use the dropdown to select the colour to display when there is no signal.

*Note: Not active when HDMI bypass mode is enabled.*

■ **Output Blank:** Enable or disable blanking the video output.

*Note: Not available when HDMI bypass mode is enabled.*

■ **Output Freeze:** Enable or disable freezing the video output.

*Note: Not available when HDMI bypass mode is enabled.*

■ **Output Auto Sync Off:** Sets the amount of time to continue outputting sync with the free run colour if there is no live source and no operations have been executed on the unit. Setting this to "OFF" forces the unit to always output sync.

■ **Output Auto Route:** Enable or disable automatically switching to any newly detected source.

*Note: Not active when HDMI bypass mode is enabled.*

■ **Output Blank:** Enable or disable blanking the video output.

*Note: Not available when HDMI bypass mode is enabled.*

■

- **Output Freeze:** Enable or disable freezing the video output.

  *Note: Not available when HDMI bypass mode is enabled.*

- **Output Auto Sync Off:** Sets the amount of time to continue outputting sync with the free run colour if there is no live source and no operations have been executed on the unit. Setting this to "OFF" forces the unit to always output sync.

- **Output Auto Route:** Enable or disable automatically switching to any newly detected source.

### 6.6.2 HDCP Tab

Provides control over the HDCP behavior of each input. To configure the HDCP support on one or more inputs, select the preferred inputs on the left, and then select the HDCP mode on the right. The change will occur immediately.

*Note: The VGA inputs are not listed as they cannot support HDCP.*
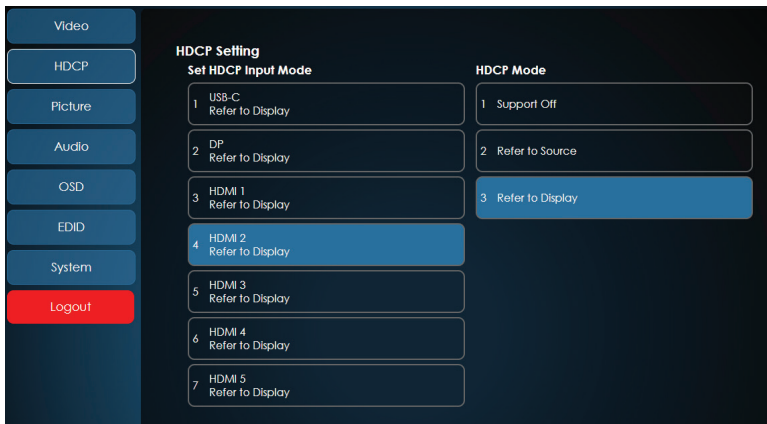


1) **HDCP Mode:**

- **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 connected displays.

### 6.6.3 Picture Tab

This tab provides controls over the scaled video output's colour, brightness, contrast. When a digital source is selected hue, saturation, sharpness and noise reduction are also controllable. When a VGA input is selected, the available controls will change and auto set, H/V position, clock and phase will become adjustable instead.

*Note: These features are not active when HDMI bypass mode is enabled.*
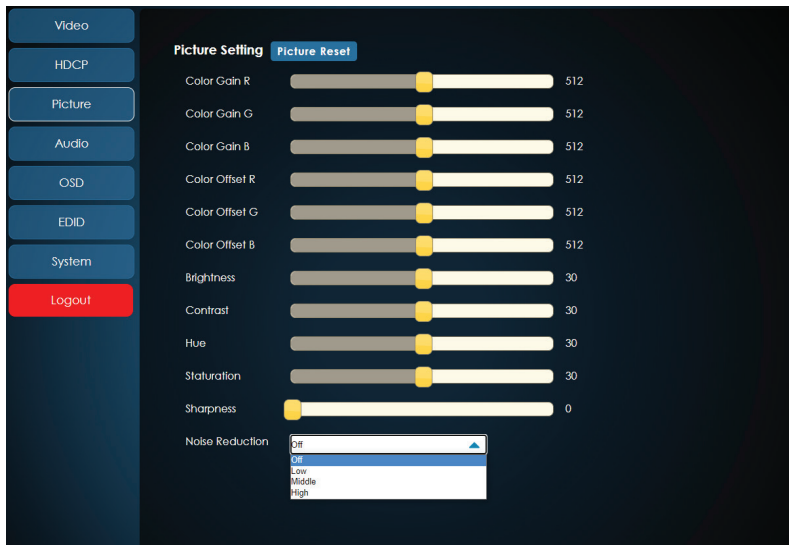


1) **Picture Settings (Global):**

- ■ **Colour Gain R/G/B:** These sliders provide control over the red, green, and blue colour gain level of the scaled output.

- ■ **Colour Offset R/G/B:** These sliders provide control over the red, green, and blue colour offset level of the scaled output.

- ■ **Brightness:** Provides control over the overall brightness of the scaled output image.

- ■ **Contrast:** Provides control over the overall contrast of the scaled output image.

**2) Picture Settings (Digital Sources):**

- **Hue:** Provides control over the hue shift of the scaled output image.
- **Saturation:** Provides control over the colour saturation level of the scaled output image.
- **Sharpness:** Provides control over the amount of sharpness processing to apply to the scaled output image.
- **Noise Reduction:** Provides control over the aggressiveness of the digital noise reduction processing when applied to the scaled output image. Selecting "Off" disables all noise reduction processing.

**3) Picture Settings (VGA Source):**



| PC Auto | Ok |
| PC H Position | 120 |
| PC V Position | 34 |
| PC Clock | 126 |
| PC Phase | 32 |
| PC Reset | No |

- **PC Auto:** Provides a way to manually activate the auto detection of the VGA source's settings.
- **PC H/V Position:** Set the horizontal and vertical position setting for the current VGA input.
- **PC Clock:** Set the PC clock setting for the current VGA input.
- **PC Phase:** Set the PC phase setting for the current VGA input.
- **PC Reset:** Reset all PC picture settings back to their factory defaults.

**4) Picture Reset:** Click this button to reset all picture settings to their factory defaults.

### 6.6.4 Audio Tab

This tab provides control over how audio is routed within the unit as well as control over audio mixing, individual output volume and the microphone's gain level.



1) **Audio Settings:**

- **HDMI Volume & Mute:** Set the volume level, or mute the audio, for the HDMI and HDBaseT audio outputs.

  *Note: Not active when HDMI audio Out Bypass is enabled.*

- **Analogue Volume & Mute:** Set the volume level, or mute the audio, for the unamplified (5-pin terminal block) analogue audio output.

  *Note: LPCM 2.0 sources only.*

- **Speaker Gain & Mute:** Set the volume level, or mute the audio, for the amplified (2x 2-pin terminal blocks) analogue audio output.

  *Note: LPCM 2.0 sources only.*

- **MIC Gain:** Sets the microphone input's volume level when the microphone is an active audio source (mixed or unmixed).

■ **Output Mixer:** Set the microphone mixing mode of the unit.

- **Mixer Off:** Disable the audio mixer.

- **Mixer On:** Enable the audio mixer. Audio from the current source and the microphone will be mixed together.

- **MIC Only:** Output only the microphone audio source. This mode will override all other audio selections.

  *Note: Activating Mixer On mode, or MIC Only mode will automatically disable HDMI Out Bypass mode.*

■ **HDMI Out Bypass (audio only):** Enable or disable HDMI audio bypass mode. When enabled, all audio will automatically behave as if in "Follow Video" mode and bitstream audio can be supported.

  *Note: This bypass setting affects audio only.*

■ **Audio Routing:** Use the dropdown to select the audio routing behavior of the unit.

- **Follow User:** Audio routing will follow the selections made in the "Follow User Setting" section.

- **Follow Video:** All digital sources will use their native embedded audio content. The VGA source will use the Analogue 1 audio input.

- **Fixed Analogue 1~6:** Forces all video sources to be paired with the selected analogue audio source.

  *Note: When HDMI Out Bypass (audio only) is enabled, all audio will automatically behave as if in "Follow Video" mode.*

■ **Audio Delay:** Use the dropdown to set the amount of time (in milliseconds) to the delay the audio output if audio and video seem to be out of sync.

  *Note: LPCM 2.0 sources only. Not active when HDMI audio Out Bypass is enabled.*

2) **Follow User Setting:** These routing settings are only enforced when Audio Routing has been set to "Follow User".

  *Note: Not active when HDMI audio Out Bypass is enabled.*

■ **Set Video and Audio Source:** Buttons for defining the audio routing to use when the "Follow User" mode is enabled. To begin assigning a new audio route, select one or more video sources on the left, then select the audio source to route with them on the right. As you select each button they will change their colour to orange. The new routing information will be displayed on the Video Source buttons after selection.

## 6.6.5 OSD Tab

This tab provides controls over the appearance of the unit's informational OSD and OSD menu.
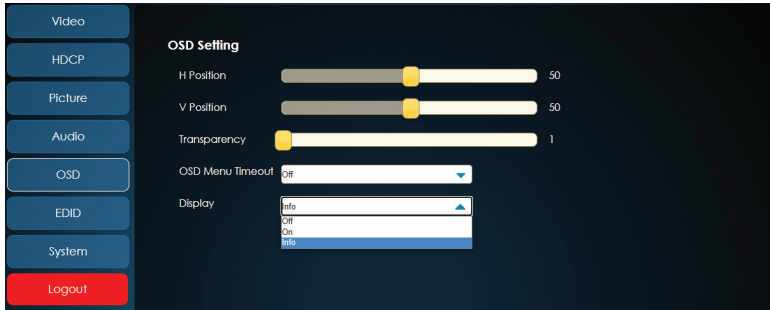


1)  **H/V Position:** Controls the position of the OSD menu.

2)  **Transparency:** Controls the transparency level of the OSD menu's background. The available range is from Level 0 (fully opaque) to Level 8 (fully transparent).

3)  **OSD Menu Timeout:** Controls how long to wait before automatically closing the OSD menu if there is no user activity. The timeout can be set to up to 60 seconds, or disabled completely.

4)  **Display:** Controls the behavior of the OSD informational display. Selecting "Info" will show the information display for a short time after a source or display change. Selecting "Off" will disable the info display. Selecting "On" will always show the info display.

### 6.6.6 EDID Tab

This tab provides control over the EDID settings of all inputs. This unit provides the option of seven standard EDIDs, two sink sourced EDIDs and two user uploaded EDIDs that can be assigned to each input port individually. The names of the two user uploaded EDIDs can changed if desired.



1)  **User EDID Settings:**

■ **Save Name:** To change the name of a User EDID, type the new name in the space provided, then click on the "Save Name" button.

■ **Download:** 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 directly to the default download location on your PC.

■ **Upload:** To upload a new User EDID, please click the "Upload" button next to the User 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 unit.

- ■ **2) 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 directly to the default download location on your PC.

- ■ **3) Set EDID Input Content:** This section provides controls for assigning EDID to the unit's inputs. Click on the preferred input(s) on the left and then select the EDID on the right and the change will occur immediately. Multiple inputs can be selected at once, if desired.

*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.*

This unit provides the following 7 default EDIDs:

| Unit's Default EDIDs | |
|---|---|
| **Default FHD 2CH** | 1920×1080p@60Hz (4.95Gbps) & 8-bit colour, LPCM 2.0 |
| **Default FHD MCH** | 1920×1080p@60Hz (4.95Gbps) & 8-bit colour, LPCM 7.1 & Bitstream |
| **Default UHD 2CH** | 3840×2160p@30Hz (10.2Gbps) & Deep Colour (8/10/12-bit), LPCM 2.0 |
| **Default UHD MCH** | 3840×2160p@30Hz (10.2Gbps) & Deep Colour (8/10/12-bit), LPCM 7.1 & Bitstream |
| **Default UHD+ 2CH** | 3840×2160p@60Hz (18Gbps) & Deep Colour (8/10/12-bit), LPCM 2.0 |
| **Default UHD+ MCH** | 3840×2160p@60Hz (18Gbps) & Deep Colour (8/10/12-bit), LPCM 7.1 & Bitstream |
| **Default VGA** | 1920×1080p@60Hz (148MHz) & 8-bit colour |

*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 7 default EDIDs for maximum compatibility.*

### 6.6.7 SYSTEM TAB

Click on the "System" tab to make changes to various system settings. From this tab you can change the WebGUI login username and password as well as configure the relay settings. Finally, this tab provides buttons to reset the unit to factory defaults and to update the firmware.



1) **Web User Setting:** This section allows for the login password to be changed.

   *Note: The default user name and password is "admin".*

2) **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: If the IP address is changed then the IP address required for WebGUI/ Telnet access will also change accordingly.*

3)  **Control Route Setting:** These settings control the unit's 2 relay ports.

  ■ **Relay 1 & 2:** Manually open or close Relay 1 and Relay 2. Selecting "ON" closes the relay, selecting "OFF" opens it.

4)  **Trigger In 1~8:** Use each dropdown to set the input to be selected, if any, when each trigger is activated.

5)  **Reset to Default:** Press the "Factory Default" button to reset the unit to its factory default state. After the reset is complete, the unit will reboot automatically.

6)  **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. After the upgrade is complete, the unit will reboot automatically.

## 6.7 Telnet Control

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

| To Access the Command Line Interface (CLI) | |
|---|---|
| Windows 7 | Click **Start**, type "cmd" in the search field, and press **Enter**. |
| Windows XP | Click **Start** > **Run**, type "cmd", and press **Enter**. |
| Mac OS X | Click **Go** > **Applications** > **Utilities** > **Terminal**. |

Once in the Command Line Interface (CLI) type **"telnet"** followed by the IP address of the unit (and the port number if it is non-standard) and then hit **"Enter"**. This will connect us to the unit we wish to control.

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

C:\Users\Administrator>telnet 192.168.1.50 23
```

*Note 1: If the IP address is changed then the IP address required for Telnet access will also change accordingly.*

*Note 2: The default IP address is 192.168.1.50.*

## 6.8 Serial and Telnet Commands

| COMMAND |
| --- |
| **Description and Parameters** |
| **help**↵ |
|     Show the full command list. |
| **?**↵ |
|     Show the full command list. |
| **help N1**↵ |
|     Show details about the specified command.<br><br>    **N1** = {Command name} |
| **get fw ver**↵ |
|     Show the unit's current firmware version. |
| **get command ver**↵ |
|     Show the unit's current command version. |
| **get mac addr**↵ |
|     Show the unit's MAC address. |
| **get model name**↵ |
|     Show the unit's model name |
| **get model type**↵ |
|     Show the index number of the unit's product type. |
| **set factory default**↵ |
|     Reset the unit to the factory defaults. |
| **set system reboo**t↵ |
|     Reboot the unit. |

| COMMAND |
|---|
| **Description and Parameters** |

**set ip mode static**↵

Set the IP address assignment mode to static.

**set ip mode dhcp**↵

Set the IP address assignment mode to DHCP.

**set ip mode N1**↵

Set the IP address assignment mode.

Available values for **N1**:
| | |
|---|---|
| 0 | [Static IP Mode] |
| 1 | [DHCP Mode] |

**get ip mode**↵

Show the current IP address assignment mode.

**get ipaddr**↵

Show the unit's current IP address

**set static ipaddr N1**↵

Set the unit's static IP address.

**N1** = X.X.X.X                    [X = 0 ~ 255, IP address]

**get static ipaddr**↵

Show the unit's current static IP address.

**set static netmask N1**↵

Set the unit's static netmask.

**N1** = X.X.X.X                    [X = 0 ~ 255, Netmask]

**get static netmask**↵

Show the unit's current static netmask.

# CYP///

| COMMAND |
| --- |
| **Description and Parameters** |

**set static gateway N1**↵

Set the unit's static gateway address.

**N1** = X.X.X.X            [X = 0 ~ 255, Gateway address]

**get static gateway**↵

Show the unit's current static gateway address.

**set webgui username N1**↵

Set the WebGUI login username.

**N1** = {Name}            [16 characters max]

**get webgui username**↵

Show the current WebGUI login username

**set webgui password N1**↵

Set the WebGUI login password.

**N1** = {Password}            [16 characters max]

**get webgui password**↵

Show the current WebGUI login password

**set out A route N1**↵

Route the specified input to both outputs.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

| COMMAND |
| --- |
| **Description and Parameters** |

**get out A route↵**

Show the current input routed to both outputs.

---

**set out auto mode N1↵**

Set the auto switching behavior of the unit.

Available values for **N1**:
| | |
| --- | --- |
| 0 | [Off] |
| 1 | [Auto switch] |

---

**get out auto mode↵**

Show the current auto switching mode of the unit.

---

**get in N1 timing↵**

Show the index number of the current resolution detected on the specified input.

Available values for **N1**:
| | |
| --- | --- |
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

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| COMMAND |
|---|
| **Description and Parameters** |

**get in N1 timing string**↵

Show the index number and description of the current resolution detected on the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

**get in port number**↵

Show the total number of inputs on the unit

**get out port number**↵

Show the total number of outputs on the unit

**set out A timing N1**↵

Set the output resolution to use for both outputs.

Available values for **N1**:
| | |
|---|---|
| 0 | [Native HDMI] |
| 1 | [Native HDBaseT] |
| 2 | [640x480@60] |
| 3 | [800x600@60] |
| 4 | [1024x768@60] |
| 5 | [1280x768@60] |
| 6 | [1360x768@60] |
| 7 | [1280x720@60] |
| 8 | [1280x800@60] |
| 9 | [1280x1024@60] |
| 10 | [1440x900@60] |
| 11 | [1400x1050@60] |

| COMMAND | |
|---|---|
| **Description and Parameters** | |
| 12 | [1680x1050@60] |
| 13 | [1600x1200@60] |
| 14 | [1920x1080@60] |
| 15 | [1920x1200@60RB] |
| 16 | [2560x1600@60RB] |
| 17 | [720x480p] |
| 18 | [720x576p] |
| 19 | [1280x720p50] |
| 20 | [1280x720p60] |
| 21 | [1920x1080p24] |
| 22 | [1920x1080p25] |
| 23 | [1920x1080p30] |
| 24 | [1920x1080p50] |
| 25 | [1920x1080p60] |
| 26 | [3840x2160p24] |
| 27 | [3840x2160p25] |
| 28 | [3840x2160p30] |
| 29 | [3840x2160p50] |
| 30 | [3840x2160p60] |
| 31 | [3840x2160p50(4:2:0)] |
| 32 | [3840x2160p60(4:2:0)] |
| 33 | [4096x2160p24] |
| 34 | [4096x2160p25] |
| 35 | [4096x2160p30] |
| 36 | [4096x2160p50] |
| 37 | [4096x2160p60] |
| 38 | [4096x2160p50(4:2:0)] |
| 39 | [4096x2160p60(4:2:0)] |

**get out A timing↵**

Show the index number of the current resolution used by both outputs.

**get out A timing string↵**

Show the description string of the current resolution used by both outputs.

| COMMAND |
|---|
| **Description and Parameters** |
| **get in source list**↵ |
| List the port type of all inputs on the unit. |
| **get out timing list**↵ |
| List all available output resolutions with their local index numbers. |
| **set out A contrast N1**↵ |
| Set the scaled output's contrast level. |
| **N1** = 0~60              [Contrast level] |
| **get out A contrast**↵ |
| Show the contrast level when the output is scaled. |
| **set out A brightness N1**↵ |
| Set the scaled output's brightness level. |
| **N1** = 0~60              [Brightness level] |
| **get out A brightness**↵ |
| Show the brightness level when the output is scaled. |
| **set out A saturation N1**↵ |
| Set the scaled output's saturation level. |
| **N1** = 0~60              [Saturation level] |
| **get out A saturation**↵ |
| Show the saturation level when the output is scaled. |
| **set out A hue N1**↵ |
| Set the scaled output's hue value. |
| **N1** = 0~60              [Hue value] |

**COMMAND**

**Description and Parameters**

**get out A hue↵**

Show the hue value when the output is scaled.

**set out A sharpness N1↵**

Set the scaled output's sharpness level.

**N1** = 0~63                     [Sharpness level]

**get out A sharpness↵**

Show the sharpness level when the output is scaled.

**set out A nr N1↵**

Set the amount of noise reduction to apply when the output is scaled.

Available values for **N1**:
| | |
|---|---|
| 0 | [Off] |
| 1 | [Low] |
| 2 | [Middle] |
| 3 | [High] |

**get out A nr↵**

Show the current amount of noise reduction applied when the output is scaled.

**set out A aspect ratio N1↵**

Set the aspect ratio of the video shown when the output is scaled.

Available values for **N1**:
| | |
|---|---|
| 1 | [Overscan] |
| 2 | [Full] |
| 3 | [Best fit] |
| 4 | [Pan & scan] |
| 5 | [Letterbox] |
| 6 | [Underscan 1] |
| 7 | [Underscan 2] |
| 8 | [Follow input] |

**CYP///**

| COMMAND |
|---|
| **Description and Parameters** |

**get out A aspect ratio↵**

Show the currently set aspect ratio for the video shown when the output is scaled.

**get out aspect ratio list↵**

List all available aspect ratio options.

**set out A auto sync off N1↵**

Enable or disable the Auto Sync Off function and set the timeout length.

Available values for **N1**:
| | |
|---|---|
| 0 | [Disabled] |
| 1 | [30 seconds] |
| 2 | [60 seconds] |

**get out A auto sync off↵**

Show the current Auto Sync Off setting.

**set out A r gain N1↵**

Set the scaled output's red gain level.

**N1** = 0~1023                [Red gain level]

**get out A r gain↵**

Show the scaled output's current red gain level.

**set out A g gain N1↵**

Set the scaled output's green gain level.

**N1** = 0~1023                [Green gain level]

**get out A g gain↵**

Show the scaled output's current green gain level.

| COMMAND |
| --- |
| **Description and Parameters** |

**set out A b gain N1↵**

Set the scaled output's blue gain level.

**N1** = 0~1023                    [Blue gain level]

---

**get out A b gain↵**

Show the scaled output's current blue gain level.

---

**set out A r offset N1↵**

Set the scaled output's red offset.

**N1** = 0~1023                    [Red offset]

---

**get out A r offset↵**

Show the scaled output's current red offset.

---

**set out A g offset N1↵**

Set the scaled output's green offset.

**N1** = 0~1023                    [Green offset]

---

**get out A g offset↵**

Show the scaled output's current green offset.

---

**set out A b offset N1↵**

Set the scaled output's blue offset.

**N1** = 0~1023                    [Blue offset]

---

**get out A b offset↵**

Show the scaled output's current blue offset.

---

**set in 8 phase N1↵**

Set the PC phase value for the VGA input.

**N1** = 0~255                    [PC phase]

CYP///

| COMMAND |
| --- |
| **Description and Parameters** |

**get in 8 phase**↵

Show the current PC phase value for the VGA input.

**set in 8 clock N1**↵

Set the PC clock value for the VGA input.

**N1** = 0~250                 [PC clock]

**get in 8 clock**↵

Show the current PC clock value for the VGA input.

**set in 8 hposition N1**↵

Set the PC horizontal position for the VGA input.

**N1** = 0~250                 [Horizontal position]

**get in 8 hposition**↵

Show the current PC horizontal position for the VGA input.

**set in 8 vposition N1**↵

Set the PC vertical position for the VGA input.

**N1** = 0~250                 [Horizontal position]

**get in 8 vposition**↵

Show the current PC vertical position for the VGA input.

**set out A video mode N1**↵

Enable or disable the video output bypass mode.

Available values for **N1**:
0                 [Video bypass disabled]
1                 [Video bypass enabled]

**get out A video mode**↵

Show the current video output bypass mode state.

## COMMAND

### Description and Parameters

**set factory vga default↵**

Reset the VGA input settings to the factory defaults.

**set vga auto adjust mode↵**

Activate the auto detection of the current VGA source's parameters.

**set out A blank N1↵**

Enable or disable blanking the video output

Available values for **N1**:
| | |
|---|---|
| 0 | [Video output normal] |
| 1 | [Video output blanked] |

**get out A blank↵**

Show the current video output blanking state.

**set out A freeze N1↵**

Enable or disable freezing the video output.

Available values for **N1**:
| | |
|---|---|
| 0 | [Video output normal] |
| 1 | [Video output frozen] |

**get out A freeze↵**

Show the current video output freeze state.

| COMMAND |
| --- |
| **Description and Parameters** |

**set out A osd timer N1↵**

Set the OSD menu's timeout value.

Available values for **N1**:

| | |
| --- | --- |
| 0 | [Timeout disabled] |
| 1 | [5 seconds] |
| 2 | [10 seconds] |
| 3 | [15 seconds] |
| 4 | [20 seconds] |
| 5 | [25 seconds] |
| 6 | [30 seconds] |
| 7 | [35 seconds] |
| 8 | [40 seconds] |
| 9 | [45 seconds] |
| 10 | [50 seconds] |
| 11 | [55 seconds] |
| 12 | [60 seconds] |

**get out A osd timer↵**

Show the current OSD menu timeout value.

**set out A osd vposition N1↵**

Set the vertical position of the OSD menu.

**N1** = 0~100        [Vertical position]

**get out A osd vposition↵**

Show the current vertical position of the OSD menu.

**set out A osd hposition N1↵**

Set the horizontal position of the OSD menu.

**N1** = 0~100        [Horizontal position]

**get out A osd hposition↵**

Show the current vertical position of the OSD menu.

## COMMAND

### Description and Parameters

**set out A osd transparency level N1**↵

Set the transparency level of the OSD menu.

**N1** = 1~8                    [Transparency level]

---

**get out A osd transparency level**↵

Show the current transparency level of the OSD menu.

---

**set out A osd info display N1**↵

Enable/disable the info OSD, or set it to display briefly.

Available values for **N1**:
OFF                    [Always off]
ON                     [Always on]
INFO                   [Display briefly]

---

**get out A osd info display**↵

Show the current info OSD state in plain text.

---

**set out A osd display N1**↵

Enable/disable the info OSD, or set it to display briefly.

Available values for **N1**:
0                      [Always off]
1                      [Always on]
2                      [Display briefly]

---

**get out A osd display**

Show the current info OSD state.

**CYP///**

| COMMAND |
|---|
| **Description and Parameters** |

**set audio out N1 mute N2↵**

Enable or disable muting the specified audio output.

Available values for **N1**:
| | |
|---|---|
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

Available values for **N2**:
| | |
|---|---|
| 0 | [Mute disabled] |
| 1 | [Mute enabled] |

*Note: The HDMI and HDBaseT outputs share their settings.*

---

**get audio out N1 mute↵**

Show the current mute state of the specified output.

Available values for **N1**:
| | |
|---|---|
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

---

**set audio out all mute N1↵**

Enable or disable muting all audio outputs.

Available values for **N1**:
| | |
|---|---|
| 0 | [Mute disabled] |
| 1 | [Mute enabled] |

| COMMAND |
| --- |
| **Description and Parameters** |

**set audio out A route N1**↵

Set the audio source selection behavior of the unit.

Available values for **N1**:
| | |
| --- | --- |
| 0 | [Follow user mode] |
| 1 | [Follow video mode] |
| 2 | [Analogue audio input 1] |
| 3 | [Analogue audio input 2] |
| 4 | [Analogue audio input 3] |
| 5 | [Analogue audio input 4] |
| 6 | [Analogue audio input 5] |
| 7 | [Analogue audio input 6] |

**get audio out A route**↵

Show the unit's current audio source selection behavior.

**set audio out N1 volume N2**↵

Set the volume level of the specified output's audio.

Available values for **N1**:
| | |
| --- | --- |
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

**N2** = 0~100              [Volume level]

*Note: The HDMI and HDBaseT outputs share their settings.*

**get audio out N1 volume**↵

Show the current volume level of the specified output's audio.

Available values for **N1**:
| | |
| --- | --- |
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

**COMMAND**

**Description and Parameters**

**get audio in type list↵**

List all available audio input sources.

**get audio out type list↵**

List all available audio output destinations.

**set audio mixer N1↵**

Set the state of the unit's audio mixer function.

Available values for **N1**:
| | |
|---|---|
| OFF | [Mixer disabled] |
| ON | [Mixer enabled] |
| MIC | [Microphone only] |

**get audio mixer↵**

Show the current state of the unit's audio mixer.

**set audio out A mode N1↵**

Enable or disable the HDMI/HDBaseT audio output bypass mode.

Available values for **N1**:
| | |
|---|---|
| 0 | [Audio bypass disabled] |
| 1 | [Audio bypass enabled] |

**get audio out A mode↵**

Show the current HDMI/HDBaseT audio output bypass mode state.

**COMMAND**

  **Description and Parameters**

**set audio out N1 delay N2**↵

Set the audio delay for the specified output's audio.

Available values for **N1**:
| | |
|---|---|
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

Available values for **N2**:
| | |
|---|---|
| 0 | [Off] |
| 1 | [40ms] |
| 2 | [110ms] |
| 3 | [150ms] |

**get audio out N1 delay**↵

Show the current audio delay for the specified output's audio.

Available values for **N1**:
| | |
|---|---|
| A | [HDMI audio output] |
| B | [HDBaseT audio output] |
| C | [Standard analogue audio output] |
| D | [Amplified analogue audio output] |

**COMMAND**

**Description and Parameters**

**set video in N1 audio route N2↵**

Set the audio source to use with the specified video input when Follow User Mode is enabled.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

Available values for **N2**:
| | |
|---|---|
| 0 | [Analogue audio input 1] |
| 1 | [Analogue audio input 2] |
| 2 | [Analogue audio input 3] |
| 3 | [Analogue audio input 4] |
| 4 | [Analogue audio input 5] |
| 5 | [Analogue audio input 6] |
| 6 | [Embedded audio] |

**get video in N1 audio route↵**

Show the audio source currently assigned to the specified video input to be used when Follow User Mode is enabled.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

## COMMAND

### Description and Parameters

**set audio mixer in 1 volume N1↵**

Set the mixer's gain level for the microphone input.

**N1** = 0~100                      [Microphone gain]

**get audio mixer in 1 volume↵**

Show the current microphone input mixer gain level.

**set in N1 edid N2↵**

Set the EDID to use on the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

Available values for **N2**:
| | |
|---|---|
| 0 | [Default FHD 2CH] |
| 1 | [Default FHD MCH] |
| 2 | [Default UHD 2CH] |
| 3 | [Default UHD MCH] |
| 4 | [Default UHD+ 2CH] |
| 5 | [Default UHD+ MCH] |
| 6 | [Default VGA] |
| 7 | [User EDID 1] |
| 8 | [User EDID 2] |
| 9 | [HDMI sink] |
| 10 | [HDBaseT sink] |

# CYP///

## COMMAND

### Description and Parameters

**get in N1 edid↵**

Show the EDID currently being used on the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |
| 8 | [VGA input] |

**get in edid list↵**

List all available EDID selections.

**set in N1 hdcp mode N2↵**

Set the HDCP behavior of the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |

Available values for **N2**:
| | |
|---|---|
| 0 | [HDCP support disabled] |
| 1 | [HDCP support enabled] |

## COMMAND

### Description and Parameters

**get in N1 hdcp mode**↵

Show the current HDCP behavior used by the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |

**get in N1 hdcp status**↵

Show the current HDCP status of the specified input.

Available values for **N1**:
| | |
|---|---|
| 1 | [USB-C input] |
| 2 | [DisplayPort input] |
| 3 | [HDMI input 1] |
| 4 | [HDMI input 2] |
| 5 | [HDMI input 3] |
| 6 | [HDMI input 4] |
| 7 | [HDMI input 5] |

Possible response values:
| | |
|---|---|
| 0 | [No HDCP] |
| 1 | [HDCP 1.x] |
| 2 | [HDCP 2.2] |

| COMMAND |
| --- |
| **Description and Parameters** |

**get out N1 hdcp status↵**

Show the current HDCP status of the specified output.

Available values for **N1**:
| | |
| --- | --- |
| A | [HDMI output] |
| B | [HDBaseT output] |

Possible response values:
| | |
| --- | --- |
| 0 | [No HDCP] |
| 1 | [HDCP 1.x] |
| 2 | [HDCP 2.2] |
| 3 | [HDCP 1.x failed] |
| 4 | [HDCP 2.x failed] |

**set relay N1 N2↵**

Open or close the specified relay.

| **N1** = 1~2 | [Relay port number] |
| --- | --- |

Available values for **N2**:
| | |
| --- | --- |
| ON | [Closed] |
| OFF | [Open] |

**get relay N1↵**

Show the current state of the specified relay.

| **N1** = 1~2 | [Relay port number] |
| --- | --- |

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

# 7. CONNECTION DIAGRAM
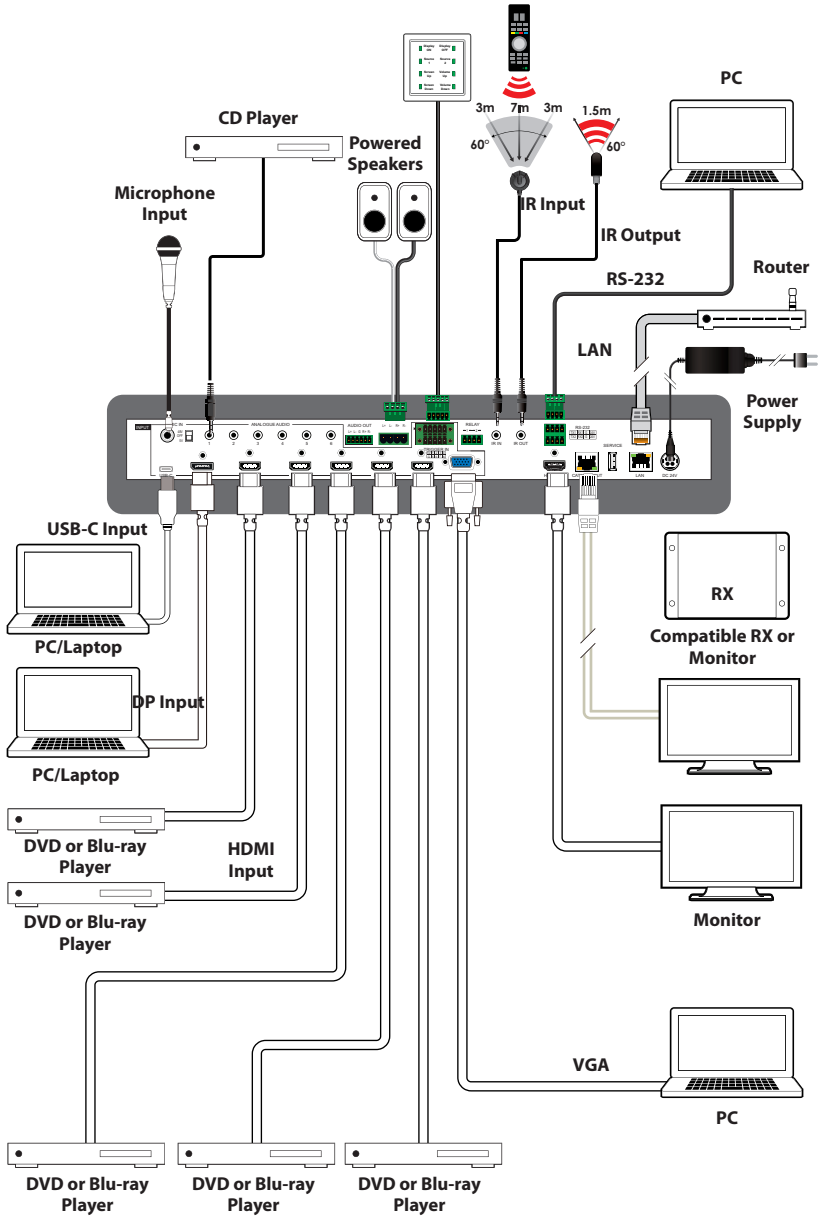
# 8. SPECIFICATIONS

## 8.1 Technical Specifications

| | |
|---|---|
| **HDMI Bandwidth** | 18Gbps |
| **DisplayPort Bandwidth** | 21.6Gbps |
| **USB-C Bandwidth** | 21.6Gbps |
| **VGA Bandwidth** | 165MHz |
| **HDBaseT Bandwidth** | 10.2Gbps |
| **Input Ports** | 1×USB (Type-C) |
| | 1×DisplayPort |
| | 5×HDMI (Type-A) |
| | 1×VGA (HD-15) |
| | 6×Stereo Audio (3.5mm) |
| | 1×Microphone (6.35mm) |
| **Output Ports** | 1×HDMI (Type-A) |
| | 1×HDBaseT (RJ-45) |
| | 1×Stereo Audio (5-pin Terminal Block) |
| | 1×Stereo Audio (2×2-pin Term. Blocks) |
| **Pass-through Ports** | 1×IR Extender (3.5mm) |
| | 1×IR Blaster (3.5mm) |
| | 1×RS-232 (4-pin Terminal Block) |
| | 2×Power Relay (2-pin Terminal Block) |
| **Pass-through/Control Port** | 1×LAN (RJ-45) |
| **Control Ports** | 1×RS-232 (4-pin Terminal Block) |
| | 1×Trigger (10-pin Terminal Block) |
| **Service Port** | 1×USB 2.0 (Type-A) |
| **IR Frequency** | 30 ~ 50kHz |
| | (30 ~ 60kHz under ideal conditions) |
| **Baud Rate** | Up to 115200 (19200 Control Default) |

| | |
|---|---|
| **Power Supply** | 24V/6.25A DC<br>(US/EU standards, CE/FCC/UL certified) |
| **ESD Protection (HBM)** | ±8kV (Air Discharge)<br>±4kV (Contact Discharge) |
| **Dimensions (W×H×D)** | 432mm×43mm×164mm [Case Only]<br>432mm×43mm×174mm [All Inclusive] |
| **Weight** | 2488g |
| **Chassis Material** | Metal (Steel) |
| **Chassis Colour** | 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** | 143W |

# CYP

## 8.2 Video Specifications

### 8.2.1 Bypass Output

| Supported Resolutions (Hz) | Input | | | | Bypass Output | |
|---|---|---|---|---|---|---|
| | HDMI | DP | USBC | VGA | HDMI | HDBT |
| 720×400p@70/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 640×480p@60/72/75/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 720×480i@60 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 720×480p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 720×576i@50 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 720×576p@50 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 800×600p@56/60/72/75/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 848×480p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1024×768p@60/70/75 /85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1152×864p@75 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1280×720p@50/60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1280×768p@60/75/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1280×800p@60/75/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1280×960p@60/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1280×1024p@60/75/85 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1360×768p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1366×768p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1400×1050p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1440×900p@60/75 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1600×900p@60RB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1600×1200p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1680×1050p@60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| Supported Resolutions (Hz) | Input | | | | Bypass Output | |
|---|---|---|---|---|---|---|
| | HDMI | DP | USBC | VGA | HDMI | HDBT |
| 1920×1080i@50/60 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 1920×1080p@24/25/30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1920×1080p@50/60 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1920×1200p@60RB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2560×1440p@60RB | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 2560×1600p@60RB | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 2048×1080p@24/25/30 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 2048×1080p@50/60 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 3840×2160p@24/25/30 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 3840×2160p@50/60 (4:2:0) | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 3840×2160p@24, HDR10 | ✓ | ✓ | ✓ | ✗ | ✓ | 8-bit |
| 3840×2160p@50/60 (4:2:0), HDR10 | ✓ | ✓ | ✓ | ✗ | ✓ | 8-bit |
| 3840×2160p@50/60 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 4096×2160p@24/25/30 | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| 4096×2160p@50/60 (4:2:0) | ✓ | ✓ | ✓ | ✗ | ✓ | ✗ |
| 4096×2160p@24, HDR10 | ✓ | ✓ | ✓ | ✗ | ✓ | 8-bit |
| 4096×2160p@50/60 (4:2:0), HDR10 | ✓ | ✓ | ✓ | ✗ | ✓ | 8-bit |
| 4096×2160p@50/60 | ✓ | ✓ | ✓ | ✗ | ✓ | ✗ |

**8.2.2 Scaled Output**

| Supported Resolutions (Hz) | Scaled Output | |
| --- | --- | --- |
| | HDMI | HDBT |
| **720×400p@70/85** | × | × |
| **640×480p@60/72/75/85** | 60 | 60 |
| **720×480i@60** | × | × |
| **720×480p@60** | ✓ | ✓ |
| **720×576i@50** | × | × |
| **720×576p@50** | ✓ | ✓ |
| **800×600p@56/60/72/75/85** | 60 | 60 |
| **848×480p@60** | × | × |
| **1024×768p@60/70/75/85** | 60 | 60 |
| **1152×864p@75** | × | × |
| **1280×720p@50/60** | ✓ | ✓ |
| **1280×768p@60/75/85** | 60 | 60 |
| **1280×800p@60/75/85** | 60 | 60 |
| **1280×960p@60/85** | × | × |
| **1280×1024p@60/75/85** | 60 | 60 |
| **1360×768p@60** | ✓ | ✓ |
| **1366×768p@60** | × | × |
| **1400×1050p@60** | ✓ | ✓ |
| **1440×900p@60/75** | 60 | 60 |
| **1600×900p@60RB** | × | × |
| **1600×1200p@60** | ✓ | ✓ |
| **1680×1050p@60** | ✓ | ✓ |
| **1920×1080i@50/60** | × | × |

| Supported Resolutions (Hz) | Scaled Output | |
| --- | --- | --- |
| | HDMI | HDBT |
| 1920×1080p@24/25/30 | ✓ | ✓ |
| 1920×1080p@50/60 | ✓ | ✓ |
| 1920×1200p@60RB | ✓ | ✓ |
| 2560×1440p@60RB | ✕ | ✕ |
| 2560×1600p@60RB | ✓ | ✓ |
| 2048×1080p@24/25/30 | ✕ | ✕ |
| 2048×1080p@50/60 | ✕ | ✕ |
| 3840×2160p@24/25/30 | ✓ | ✓ |
| 3840×2160p@50/60 (4:2:0) | ✓ | ✓ |
| 3840×2160p@24, HDR10 | ✕ | ✕ |
| 3840×2160p@50/60 (4:2:0),HDR10 | ✕ | ✕ |
| 3840×2160p@50/60 | ✓ | ✕ |
| 4096×2160p@24/25/30 | ✓ | ✓ |
| 4096×2160p@50/60 (4:2:0) | ✓ | ✓ |
| 4096×2160p@24, HDR10 | ✕ | ✕ |
| 4096×2160p@50/60 (4:2:0),HDR10 | ✕ | ✕ |
| 4096×2160p@50/60 | ✓ | ✕ |

## 8.3 Audio Specifications

### 8.3.1 Digital Audio

| HDMI Input / Output | |
|---|---|
| **LPCM** | |
| **Max Channels** | 2 Channels (8 Channels in bypass) |
| **Sampling Rate (kHz)** | 32, 44.1, 48, 88.2, 96, 176.4, 192 |
| **Bitstream (Bypass Only)** | |
| **Supported Formats** | Standard & High-Definition |

| DisplayPort Input | |
|---|---|
| **LPCM** | |
| **Max Channels** | 2 Channels (8 Channels in bypass) |
| **Sampling Rate (kHz)** | 32, 44.1, 48, 88.2, 96, 176.4, 192 |
| **Bitstream (Bypass Only)** | |
| **Supported Formats** | Standard & High-Definition |

| USB-C Input | |
|---|---|
| **LPCM** | |
| **Max Channels** | 2 Channels (8 Channels in bypass) |
| **Sampling Rate (kHz)** | 32, 44.1, 48, 88.2, 96, 176.4, 192 |
| **Bitstream (Bypass Only)** | |
| **Supported Formats** | Standard & High-Definition |

| HDBaseT Output | |
|---|---|
| **LPCM** | |
| **Max Channels** | 2 Channels (8 Channels in bypass) |
| **Sampling Rate (kHz)** | 32, 44.1, 48, 88.2, 96, 176.4, 192 |
| **Bitstream (Bypass Only)** | |
| **Supported Formats** | Standard & High-Definition |

### 8.3.2 Analogue Audio

| Analogue Input (3.5mm) | |
|---|---|
| Max Audio Level | 1Vrms |
| Impedance | 10kΩ |
| Type | Unbalanced |
| **Mic Input** | |
| Max Audio Level | 50Vrms |
| Impedance | 6.8kΩ |
| Type | Unbalanced |

| Analogue Output (5-pin Terminal Block) | |
|---|---|
| Max Audio Level | 4Vrms |
| THD+N | < −84dB@0dBFS 1kHz (A-wt) |
| SNR | > 104dB@0dBFS |
| Frequency Response | < ±3dB@20Hz~20kHz |
| Crosstalk | < −70dB@10kHz |
| Impedance | 499Ω |
| Type | Balanced |
| **Amplified Analogue Output (2-pin Terminal Block Pair)** | |
| Max Audio Power | 20W+20W |
| THD+N | < −66dB@0dBFS 1kHz (A-wt) |
| SNR | > 96dB@0dBFS |
| Frequency Response | < ±3dB@20Hz~20kHz |
| Crosstalk | < −70dB@10kHz |
| Impedance | 4Ω |
| Type | Balanced |

## 8.4 Cable Specifications

| Cable Length | 1080p | | 4K30 | 4K60 |
|---|---|---|---|---|
| | 8-bit | 12-bit | (4:4:4) 8-bit | (4:4:4) 8-bit |
| **High Speed HDMI Cable** | | | | |
| **HDMI Input** | 5m | 5m | 5m | 2m |
| **HDMI Output** | 5m | 5m | 5m | 2m |
| **VGA Cable** | | | | |
| **VGA Input** | 2m | | ✕ | |
| **Ethernet Cable** | | | | |
| **Cat.5e/6** | 100m | ✕ | | |
| **Cat.6a/7** | 100m | ✕ | | |

### Bandwidth Category Examples:

**1080p (FHD Video)**
- Up to 1080p@60Hz, 12-bit colour
- Data rates lower than 5.3Gbps or below 225MHz TMDS clock

**4K30 (4K UHD Video)**
- 4K@24/25/30Hz & 4K@50/60Hz (4:2:0), 8-bit colour
- Data rates higher than 5.3Gbps or above 225MHz TMDS clock but below 10.2Gbps

**4K60 (4K UHD⁺ Video)**
- 4K@50/60Hz (4:4:4, 8-bit)
- 4K@50/60Hz (4:2:0, 10-bit HDR)
- Data rates higher than 10.2Gbps

## 8.5 HDBaseT Features

| HDBaseT Feature Set | Transmitter |
|---|---|
| **Video & Audio Extension** | Supported |
| **LAN Extension** | Supported |
| **Send power to Receiver** | Supported (PoH) |
| **Accept power from Receiver** | Unsupported |
| **IR Extension** | Supported |
| **RS-232 Extension** | Supported |
| **USB 2.0 Extension** | Unsupported |

# 9. ACRONYMS

| ACRONYM | COMPLETE TERM |
|---------|---------------|
| **ADC** | Analogue-to-Digital Converter |
| **ASCII** | American Standard Code for Information Interchange |
| **Cat.5e** | Enhanced Category 5 cable |
| **Cat.6** | Category 6 cable |
| **Cat.6A** | Augmented Category 6 cable |
| **Cat.7** | Category 7 cable |
| **CLI** | Command-Line Interface |
| **DAC** | Digital-to-Analogue Converter |
| **dB** | Decibel |
| **DHCP** | Dynamic Host Configuration Protocol |
| **DP** | DisplayPort |
| **DVI** | Digital Visual Interface |
| **EDID** | Extended Display Identification Data |
| **Gbps** | Gigabits per second |
| **GUI** | Graphical User Interface |
| **HDBT** | HDBaseT |
| **HDCP** | High-bandwidth Digital Content Protection |
| **HDMI** | High-Definition Multimedia Interface |
| **HDR** | High Dynamic Range |
| **HDTV** | High-Definition Television |
| **HPD** | Hot Plug Detection |
| **IP** | Internet Protocol |
| **IR** | Infrared |
| **kHz** | Kilohertz |

| ACRONYM | COMPLETE TERM |
|---------|---------------|
| LAN | Local Area Network |
| LCD | Liquid-Crystal Display |
| LED | Light-Emitting Diode |
| LPCM | Linear Pulse-Code Modulation |
| MAC | Media Access Control |
| MHz | Megahertz |
| OSD | On-Screen Display |
| PD | Powered Device |
| PoH | Power over HDBaseT |
| PSE | Power Sourcing Equipment |
| SNR | Signal-to-Noise Ratio |
| TCP | Transmission Control Protocol |
| THD+N | Total Harmonic Distortion plus Noise |
| TMDS | Transition-Minimised Differential Signaling |
| 4K UHD | 4K Ultra-High-Definition (10.2Gbps max) |
| 4K UHD+ | 4K Ultra-High-Definition (18Gbps max) |
| UHDTV | Ultra-High-Definition Television |
| USB | Universal Serial Bus |
| VGA | Video Graphics Array |
| WUXGA (RB) | Widescreen Ultra Extended Graphics Array (Reduced Blanking) |
| XGA | Extended Graphics Array |
| Ω | Ohm |

# EL-8300VA

**Advanced 4K HDMI, USB Type C, Display Port, VGA and HDBaseT Presentation Switch**

**Driver User Guide**

**HDMI**®
HIGH-DEFINITION MULTIMEDIA INTERFACE

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI licensing Administrator, Inc.

## 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 |
|---|---|---|
| v1.00 | 22/07/2020 | First release |
| | | |

# CONTENTS

# 1. INTRODUCTION

This driver has been designed to provide two-way control of the CYP 9x2 Multi-format Presentation Scaler, via RS232 or TCP/IP.

# 2. DRIVER PROPERTIES

The property of this driver is shown below.

| | |
|---|---|
| Driver Version | 1 |
| Debug Mode | Print and Log |
| Debug Level | 5 - Debug |
| Connected To Network | false |

Figure 1: Driver Properties

- /// **Driver Version** Driver version number
- /// **Debug Mode** Support use only
- /// **Debug Level** Support use only
- /// **Command Delay Milliseconds** a delay of millisecond between commands
- /// **Connected To Network** Shows operational status of driver

# 3. IP NETWORK CONNECTION

If an IP driver used, the IP address of the A/V Scaler is entered in the usual way in connections -> Network.

# 4. DEVICE SPECIFIC COMMAND

In addition to the usual A/V Scaler functionality supported by Control4, there are a number of device specific commands for the A/V Scaler switching.

## 4.1 Set Power Reboot

/// **Power Status** Reboot

## 4.2 Set Out Video Mode

/// **Video Mode** Bypass or Scale

## 4.3 Set Auto Switching Mode

/// **Switching Mode** OFF or Auto switch

## 4.4 Set Timing

/// **Video Timing**

| | | | |
|---|---|---|---|
| 0 | [Native HDMI] | 21 | [1920x1080p24] |
| 1 | [Native HDBaseT] | 22 | [1920x1080p25] |
| 2 | [640x480@60] | 23 | [1920x1080p30] |
| 3 | [800x600@60] | 24 | [1920x1080p50] |
| 4 | [1024x768@60] | 25 | [1920x1080p60] |
| 5 | [1280x768@60] | 26 | [3840x2160p24] |
| 6 | [1360x768@60] | 27 | [3840x2160p25] |
| 7 | [1280x720@60] | 28 | [3840x2160p30] |
| 8 | [1280x800@60] | 29 | [3840x2160p50] |
| 9 | [1280x1024@60] | 30 | [3840x2160p60] |
| 10 | [1440x900@60] | 31 | [3840x2160p50(4:2:0)] |
| 11 | [1400x1050@60] | 32 | [3840x2160p60(4:2:0)] |
| 12 | [1680x1050@60] | 33 | [4096x2160p24] |

| 13 | [1600x1200@60] | 34 | [4096x2160p25] |
| 14 | [1920x1080@60] | 35 | [4096x2160p30] |
| 15 | [1920x1200@60RB] | 36 | [4096x2160p50] |
| 16 | [2560x1600@60RB] | 37 | [4096x2160p60] |
| 17 | [720x480p] | 38 | [4096x2160p50(4:2:0)] |
| 18 | [720x576p] | 39 | [4096x2160p60(4:2:0)] |
| 19 | [1280x720p50] | | |
| 20 | [1280x720p60] | | |

## 4.5 Set Audio Out Route

### /// Audio Out Route

| 0 | [Follow user mode] |
| 1 | [Follow video mode] |
| 2 | [Analogue audio input 1] |
| 3 | [Analogue audio input 2] |
| 4 | [Analogue audio input 3] |
| 5 | [Analogue audio input 4] |
| 6 | [Analogue audio input 5] |
| 7 | [Analogue audio input 6] |

**4.6 Set Video In Audio Route**

/// **Video Input**

1       [USB-C input]

2       [DP input]

3       [HDMI input 1]

4       [HDMI input 2]

5       [HDMI input 3]

6       [HDMI input 4]

7       [HDMI input 5]

8       [VGA input 1]

/// **Audio Output**

0       [Analogue audio input 1]

1       [Analogue audio input 2]

2       [Analogue audio input 3]

3       [Analogue audio input 4]

4       [Analogue audio input 5]

5       [Analogue audio input 6]

6       [Embedded audio]

## 4.7 Set Audio Out Mute

/// **Audio Output Channel**

ALL     [All audio outputs]

A        [HDMI audio output]

B        [HDBaseT audio output]

C        [Standard analogue audio output]

D        [Amplified analogue audio output]

/// **Audio Mute Status** OFF or ON

## 4.8 Set Audio Out Volume

/// **Audio Output Channel**

A        [HDMI audio output]

B        [HDBaseT audio output]

C        [Standard analogue audio output]

D        [Amplified analogue audio output]

/// **Audio Output Volume** 0 to 100

## 4.9 Set Audio Mixer Mic Volume

/// **Audio Mic Volume** 0 to 100

## 4.10 Set Audio Out Mixer

/// **Audio Mixer Status** OFF / ON / Mic Only

## 4.11 Set Relay

/// **Relay Port** 1 or 2

/// **Relay Status** Closed or Open