IP-XTREAM-R4K

**Standalone 4K (H.265) Streaming & Recording System
with HDMI In, HDMI Monitor & Balanced Audio Output**

/// **OPERATION MANUAL**

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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	2022/05/05	Preliminary release

CONTENTS

1. INTRODUCTION

This Video Streaming Recorder makes online broadcasting of live video, with a locally stored archive, an easy and simple process. Video sources from cameras, PCs, video game consoles, etc. are a breeze to connect for immediate broadcast and recording. Video content up to 4K UHD+ is supported and is automatically scaled to a resolution that is more appropriate for efficient streaming to popular services. An HDMI output is provided for local monitoring of the selected input source.

All video content is encoded and streamed with minimal latency and high quality making it ideal for live streaming events to a variety of popular online streaming services or within the local network. A secondary audio stream may also be transmitted from the analogue audio input (requires the primary video stream to be active). The video may also be recorded locally (via USB thumb drive) or to a local network drive while it is being streamed.

Comprehensive EDID management provides improved compatibility with different sink devices. The intuitive WebGUI provides easy control of your live event stream including source selection, resolution, bitrate and more. Audio functions include volume level adjustment, and mute. This unit can be controlled and configured via front panel buttons, an intuitive WebGUI, Telnet, or RS-232.

2. APPLICATIONS

/// Webcasting

/// Social Media Broadcasting

/// Live Event Streaming

/// Video on Demand Streaming

/// Live recording and storage

3. PACKAGE CONTENTS

/// 1× UHD$^+$ H.264/H.265 Live Video Recorder/Streamer

/// 1× 12V/3A DC Power Adapter

/// 1× 3-pin Terminal Block

/// 1× 5-pin Terminal Block

/// 1× Shockproof Feet (Set of 4)

/// 1× Operation Manual

4. SYSTEM REQUIREMENTS

/// HDMI source equipment such as a media player, video game console, PC, or video camera.

/// Available streaming server destination such as YouTube or Facebook or a recording storage target such as a NAS or USB thumb drive.

/// HDMI receiving equipment such as an HDTV, monitor or audio amplifier.

/// The use of Premium High Speed HDMI cables, and industry standard Cat.6, Cat.6A, or Cat.7 is highly recommended.

/// To view RTSP streams directly on the local network, RTSP stream compatible video player software (such as VLC Media Player or PotPlayer) must be used.

Note: For security reasons it is strongly advised to maintain a firewall between this unit and the internet.

5. FEATURES

◢ HDMI 2.0 and DVI 1.0 compatible

◢ HDCP 1.x and HDCP 2.2 compliant

  Note: HDCP encrypted sources cannot be streamed, and will only be visible via the HDMI output

◢ 1 HDMI input and 1 HDMI output

◢ Generates streams using H.265 (Primary stream) and H.264 (3 Service targeted streams)

◢ Supports live streaming to Facebook, YouTube, Twitch channels, and more!

◢ Supports independent recording to a user-determined destination

◢ Recorded video can be stored on locally connected USB storage (FAT or exFAT format) or to a designated network drive supporting NFS or CIFS

◢ Supports encrypting streams using 802.1X security (PEAP, TLS, TTLS)

◢ Supports secure logins using HTTPS and SSH

◢ May be powered directly by PoE when connected to a Gigabit Ethernet switch that provides PoE (802.3at)

◢ Basic unit configuration is provided via front panel buttons with an OSD menu and streaming configuration controls are via an intuitive WebGUI, Telnet, or RS-232.

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
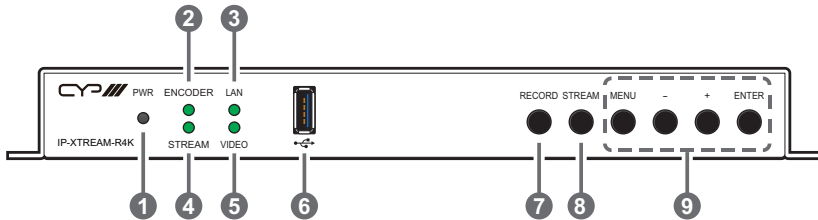
① **PWR LED:** This LED will illuminate to indicate the unit is on and receiving power.

② **ENCODE LED:** The LED will illuminate when the unit is encoding.

③ **LAN LED:** This LED will illuminate when a live Ethernet connection is detected.

④ **STREAM LED:** This LED will flash when a targeted stream is active.

⑤ **VIDEO LED:** This LED will illuminate when a video source is connected and active.

⑥ **USB 2.0 (Type-A) Port:** Attach a standard USB thumb drive for storage of recorded video.

Note: Storage media must be formatted as FAT32 or exFAT. Video files are stored in *.mp4 format. Up to 1A is available to power an external USB device.

⑦ **RECORD Button:** Press this button to immediately start recording to the designated recording target, and press again to immediately stop any current recording session.

⑧ **STREAM Button:** Press this button to start all RTMP (service targeted) streams, and press again to stop them all.
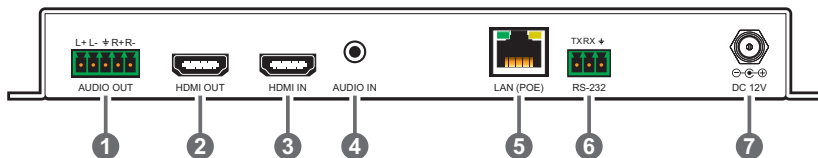
Note: The primary stream is always active.

⑨ **Menu Access Button Block:** MENU Button: Press to enter the OSD menu, or to back out from menu items.

- (MINUS)/+ (PLUS) Buttons: Press to move up and down or adjust selections within OSD menus.

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

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6.2 Rear Panel

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

   Note: Only LPCM 2.0 sources are supported.

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

3. **HDMI IN Port:** Connect to HDMI source equipment such as a media player, game console, or set-top box.

4. **AUDIO IN Port:** Connect to the analogue stereo output of a device such as an audio player or PC.

   Note: This audio is output ONLY as a secondary audio-only stream. It cannot currently be combined with the video stream. There will be an update to enable this at a later stage.

   To access the unit's audio only stream on the LAN enter the stream key of "rtsp://"ip_addr"/audio2" into your desired streaming platform to stream the line in audio.

5. **LAN (PoE) Port:** Connect to a network switch, or router for transmission of streamed video as well as to control the unit via Telnet or WebGUI.

   Note: This unit can be powered via PoE when the LAN(PoE) port is directly connected to a Gigabit Ethernet switch that provides PoE (802.3at).

6. **RS-232 3-pin Terminal Block:** Connect to a PC, laptop, or serial controllable device for the extension of RS-232 signals.
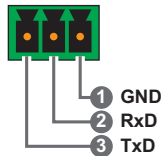
7. **DC 12V Port:** Plug the 12V DC power adapter into this port and connect it to an AC wall outlet for power.

   Note: Optional, not required if the unit is powered via PoE

6.3 Serial Pinout and Defaults

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

3-pin Terminal Block

① GND
② RxD
③ TxD

6.4 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
Audio
OSD
Ethernet
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**
HDMI HDCP Support	**ON**
	Off
HDMI EDID	Copy Sink
	FHD 2Ch
	UHD 2Ch
	UHD$^+$ 2Ch
	User

1) **HDMI HDCP Support:** Enable or disable HDCP support on the HDMI input.

   Note: HDCP encoded sources cannot be streamed. In most cases, this should be set to "OFF" in order to ensure the source does not attempt to encode the video with HDCP.

2) **HDMI EDID:** Select the EDID to use with the local HDMI input.

AUDIO	
2ND LEVEL	**3RD LEVEL**
HDMI Mute	**OFF**
	On
Analogue Out Mute	**OFF**
	On
Analogue Out Volume	0~100 **(80)**

1) **HDMI Mute:** Enable or disable muting the HDMI output's audio.
2) **Analogue Out Mute:** Enable or disable muting the analogue audio output.
3) **Analogue Out Volume:** Set the volume level of the analogue audio output.

OSD	
2ND LEVEL	**3RD LEVEL**
H Position	0~60 **(30)**
V Position	0~60 **(30)**
Timer	**OFF**
	5s
	10s
	15s
	20s
	25s
	30s
	35s
	40s
	45s
	50s
	55s
	60s
Transparency	0~7 **(0)**
Display	10s
	5s
	On
	OFF

1) **H/V Position:** Set the horizontal and vertical position of the OSD menu.

2) **Timer:** 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.

3) **Transparency:** Set the transparency level of the OSD menu's background. The available range is from 0 (fully opaque) to 7 (fully transparent).

4) **Display:** Set how long to display the OSD information window. Selecting "Off" will disable the OSD information window. Selecting "On" will always display the OSD information window.

ETHERNET		
2ND LEVEL	**3RD LEVEL**	**4TH LEVEL**
IP Mode	**DHCP**	
	Static IP	
Setup Static IP	Static IP	0~255 **(192)**
		0~255 **(168)**
		0~255 **(1)**
		0~255 **(50)**
	Netmask	0~255 **(255)**
		0~255 **(255)**
		0~255 **(0)**
		0~255 **(0)**
	Gateway	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 using the "Setup Static IP' menu.

Note: The unit is set to DHCP by default.

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: These values can be set even when the unit is in DHCP mode, but they will not be used until the mode is changed to Static IP.

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

4) **MAC:** Displays the unit's MAC address.

FACTORY	
2ND LEVEL	**3RD LEVEL**
Reset	

1) **Reset:** Pressing the "Enter" button will cause a reset confirmation window to pop up. Press the "Enter" button again, within 10 seconds, to reset all of the unit's settings back to their factory defaults.

   Note: The full reset process can take 10-15 seconds and the unit will automatically reboot afterwards. Please be patient while it performs the reset process.

INFORMATION	
2ND LEVEL	**3RD LEVEL**
Model Name	[Unit's Model Name]
SN	[Unit's Serial Number]
Version	[Current Firmware Version]

1) **Information:** This screen displays information about the unit's serial number and the current firmware version.

6.5 WebGUI Control

- **Device Discovery**

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

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

Note: This unit defaults to DHCP mode. The current IP address can be verified via the OSD menu or RS-232 if the Device Discovery software is not available.
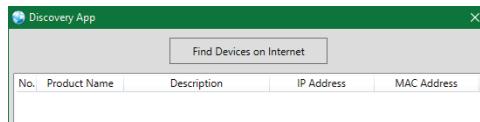
By clicking on one of the listed devices you will be presented with the network details of that particular device.
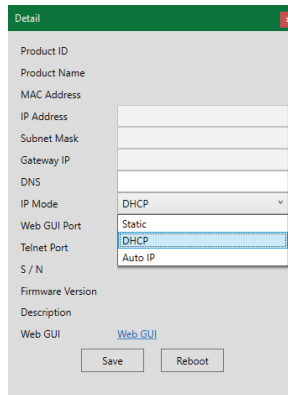
1) **IP Mode:** If you choose, you can alter the static IP network settings for the device, or switch the unit into DHCP mode to automatically obtain proper network settings from a local DHCP server. To switch to DHCP mode, please select DHCP from the IP mode drop-down, then click "Save" followed by "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.
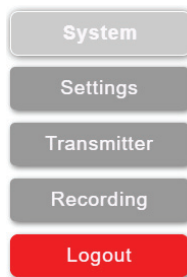
Clicking the red "Logout" tab will automatically log the currently connected user out of the WebGUI and return to login page.

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6.5.1 System Tab

This tab provides access to system configuration options including device information, network configuration, firmware update, security configuration, and account configuration.
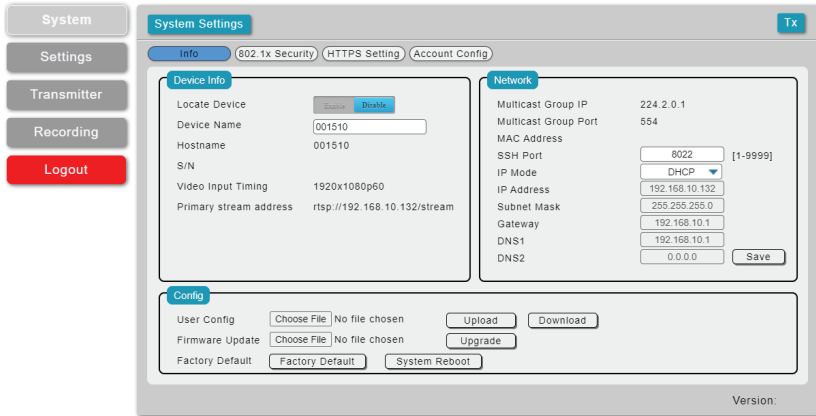
1) **Info:** This section provides information and control over the unit's device name, and network configuration. Options for updating the firmware, saving/restoring the unit's configuration, and performing a factory reset are also provided.

■ **Device Info:**

– **Locate Device:** Clicking this switch will enable or disable the unit's "Hello" mode. When enabled it will cause the unit's Encoder LED to begin flashing on the front of the unit to make it easy to find.

– **Device Name:** A custom name to identify the unit can be set here. After changing the name, press the enter key to store the change.

Note: The default device name is the same as the hostname.

– **Hostname:** Displays the unit's network hostname.

Note: The hostname is based on the unit's MAC address to avoid potential network conflicts and cannot be changed.

– **S/N:** Displays the unit's serial number.

– **Video Input Timing:** Displays the resolution of the current HDMI video source.

- **Primary Stream Address:** Displays the address of the primary local video stream.

■ **Network:** The unit's IP mode may be switched between Static IP and 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. The SSH port used by the unit may also be manually changed, if required. Please press "Save" after making any changes to the IP configuration or mode. The unit's multicast group IP address, multicast port, and MAC address are also displayed here.

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

■ **Config:**

- **User Config:** The user can download or upload the unit's complete configuration. The system configuration is sotred as a *.json file. To save the current configuration, click the "Download" button to save the current system configuration to your local PC. To upload a previously saved configuration, click the "Choose File" button to locate the saved *.json file on your PC, then click the "Upload" button.

- **Firmware Update:** 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.

- **Factory Default:** Press this button to return the unit to its factory default state. After the factory reset is complete, the unit will reboot automatically.

- **System Reboot:** Press this button to reboot the unit.

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2) **802.1x Security:** This section provides a way to enable network security support for the video streams, if desired.

Note: If an incoming video stream has security enabled, all receiving units must be configured to support the same security method as the transmitter.
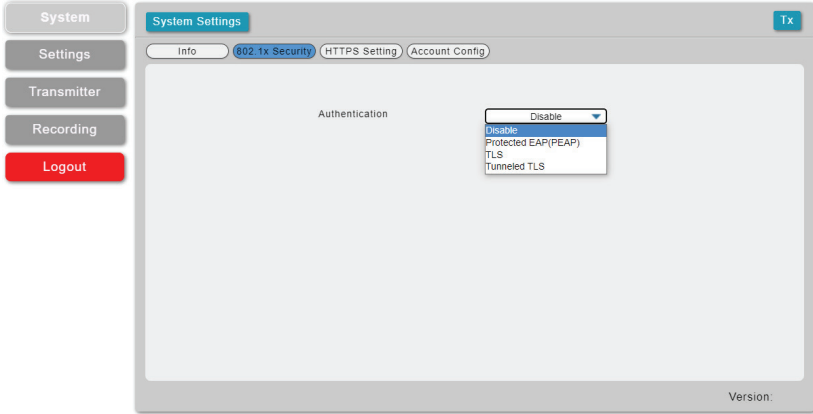
■ **Authentication:** Use the dropdown to select the network security protocol, if any, to use for stream transmission. Available choices are Disabled, PEAP, TLS, and Tunneled TLS.

■ **Protected EAP (PEAP):** After selecting PEAP, the following settings must be configured and saved in order to enable PEAP authentication on this unit. Press "Save" to save the current configuration. Press "Revert" to undo all unsaved changes made to the current configuration. Press "Test" to test the PEAP authentication.

- **Anonymous Identity:** Set the publicly viewable identification name for the connection.

  Note: This is optional, but highly recommended to be set.

- **CA Certificate:** Click on the "Browse" button and locate the CA Certificate file on your local PC then click "Open" to install the certificate in the unit. To remove an installed CA Certificate, click on the "Remove" button.

- **Username:** Set the shared username required for authentication.

- **Password:** Set the shared password required for authentication.

■ **TLS:** After selecting TLS, the following settings must be configured and saved in order to enable TLS authentication on this unit. Press "Save" to save the current configuration. Press "Revert" to undo all unsaved changes made to the current configuration. Press "Test" to test the TLS authentication.

Authentication	TLS ▼		
Anonymous Identity			
CA Certificate		Browse	Remove
User Certificate		Browse	Remove
Private Key		Browse	Remove
Private key password			
	Save	Revert	Test

- **Anonymous Identity:** Set the publicly viewable identification name for the connection.

  Note: This is optional, but highly recommended to be set.

- **CA Certificate:** Click on the "Browse" button and locate the CA Certificate file on your local PC then click "Open" to install the certificate in the unit. To remove an installed CA Certificate, click on the "Remove" button.

- **User Certificate:** Click on the "Browse" button and locate the User Certificate file on your local PC then click "Open" to install the certificate in the unit. To remove an installed User Certificate, click on the "Remove" button.

- **Private Key:** Click on the "Browse" button and locate the Private Key file on your local PC then click "Open" to install the key in the unit. To remove an installed Private Key, click on the "Remove" button.

- **Private Key Password:** Set the shared password required for authentication.

■ **Tunneled TLS:** After selecting Tunneled TLS, the following settings must be configured and saved in order to enable TTLS authentication on this unit. Press "Save" to save the current configuration. Press "Revert" to undo all unsaved changes made to the current configuration. Press "Test" to test the TTLS authentication.

Authentication	Tunneled TLS ▼	
Identity		
CA Certificate		Browse Remove
Username		
Password		
	Save Revert Test	

- **Identity:** Set the publicly viewable identification name for the connection.

- **CA Certificate:** Click on the "Browse" button and locate the CA Certificate file on your local PC then click "Open" to install the certificate in the unit. To remove an installed CA Certificate, click on the "Remove" button.

- **Username:** Set the shared username required for authentication.

- **Password:** Set the shared password required for authentication.

3) HTTPS Setting: This section provides a way to enable network security support for the WebGUI connection, if desired. After making changes, press the "Save" button to activate them.

Note: Enabling HTTPS support will NOT disable access via normal HTTP.
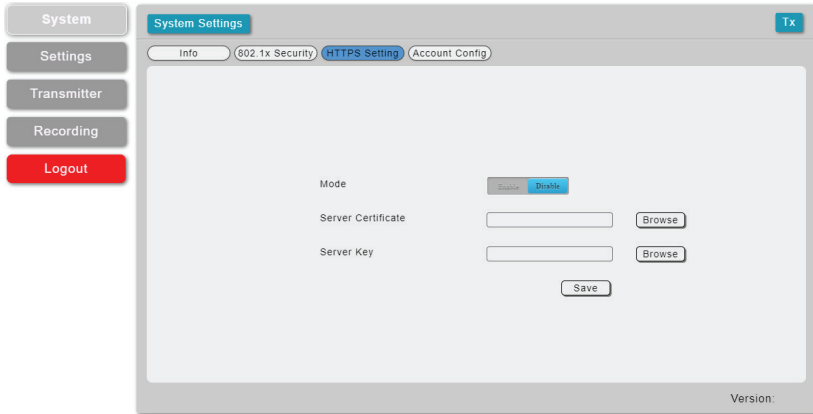
- ■ **Mode:** Enable or disable HTTPS support for WebGUI access.
- ■ **Server Certificate:** Click on the "Browse" button and locate the Server Certificate file on your local PC then click "Open" to install the certificate in the unit.
- ■ **Server Key:** Click on the "Browse" button and locate the Server Key file on your local PC then click "Open" to install the key in the unit.

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4) Account Config: This section provides control over login authentication and access to the WebGUI itself.
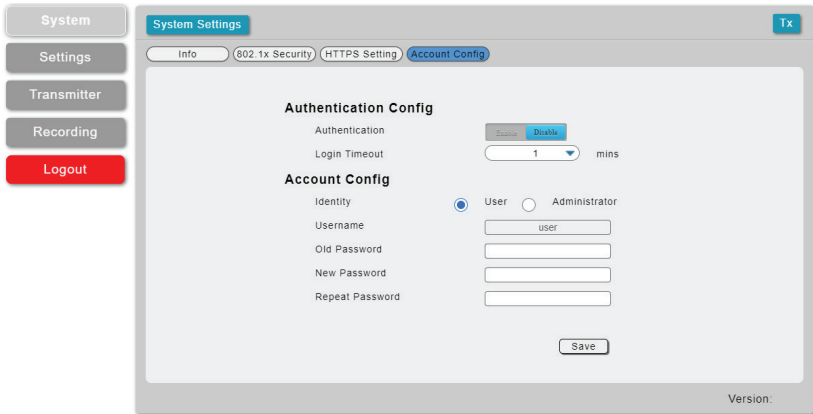
- ■ **Authentication Config:** Settings related to requiring authentication to connect to the WebGUI.

  - – **Authentication:** Enable or disable requiring a login to access the WebGUI.

  - – **Login Timeout:** Select the length of time to wait before logging the user out of the WebGUI due to inactivity. Available range is from 1 to 30 minutes.

- ■ **Account Config:** The WebGUI access passwords are set here and two management levels are available: "Administrator" and "User". The "Administrator" user has access to all tabs and can change all settings. The "User" user only has access to the "Streaming" section of the Transmitter tab to allow easy remote video stream control. Only their passwords may be changed, the usernames are locked. After making a change to an account's password, click on the "Save" button to activate the change.

  Note: The default admin password is "admin" and the default user password is "user".

6.5.2 Settings Tab
This tab provides access to system time configuration.

1) **Time Setting:** This section provides a way to set the system's time, date, and time zone. The system time can be set manually, or automatically using a defined NTP server. If your country uses DST (Daylight Saving Time), you can enable or disable it here and configure the start and end times/dates so that your scheduled events will always occur at the correct times throughout the year.

- ■ **NTP:** Enable or disable the use of an NTP server to set the unit's clock. When disabled, the clock must be set manually.
- ■ **NTP Server:** Enter the address of the network time server to use for automatic time and date configuration. Click the "Save" button to set and store the address in the unit. Click the "Sync" button to force synchronization of the unit's time and date with the defined server.

  Note: Time synchronization occurs automatically when the unit is first powered on, and every 24 hours afterwards, if an NTP server has already been defined. Synchronization requires a live connection to the internet.
- ■ **Time Zone:** Select the preferred time zone from the options in the dropdown.
- ■ **Server Time:** Shows the unit's current time and date.

- **Date & Time:** The unit's time and date can be manually configured here if an internet connection, or NTP server is not available. Click on the calendar icon (📅) to open the time and date configuration screen and select the preferred values or click "Now" to auto-fill in the PC's current time and date then click on "Done". After entering a new time and date, click the "Save" button to store it in the unit and start the clock running.

- **Live Time:** Displays how long since the unit was most recently powered on.
- **Daylight:** Enable or disable the use of Daylight Saving Time (DST) adjustments for the unit's time.

  Note: Enabling Daylight Saving Time while outside the configured DST range will result in no change to the current time.

- **Start Time:** Set the month, week, day and time for the start of DST in the current time zone.
- **End Time:** Set the month, week, day and time for the start of DST in the current time zone.
- **Adjust Time:** Set the amount of time to add when DST is active.

6.5.3 Transmitter Tab

This tab provides access to multicast and port configuration, video profile control, service streaming configurations, EDID settings, and Audio routing control.

1) Casting Mode: Set the encoder's multicast IP configuration and set the unit's streaming port. After making changes, press the "Save" button to activate them.

System	**Transmitter** `Tx`
Settings	Casting Mode Video Profile Streaming Video Setting Audio Setting
Transmitter	
Recording	Multicast IP `224.2.0.1`
Logout	TTL `1`
	Port `554`
	`Save`
	Version:
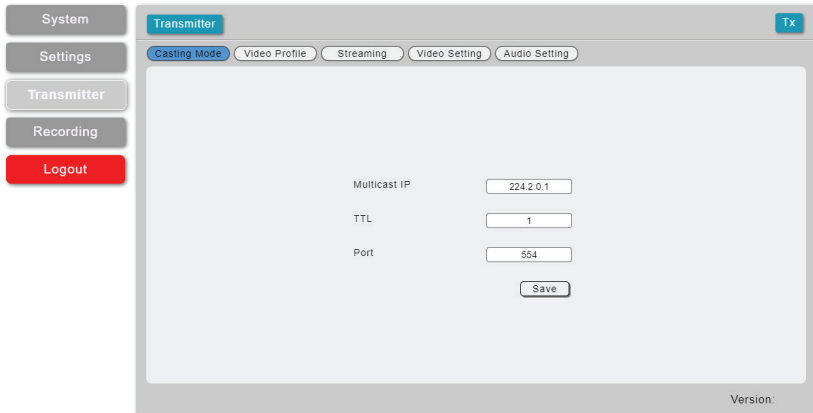
- **Multicast IP:** Set the multicast group IP address used by decoders that require it.

  Note: It is recommended to select an address between 224.2.0.1 and 224.2.255.255.

- **TTL:** Set the Time to Live routing value for the multicast group.

- **Port:** Set the unit's general streaming port.

  Note: All connected decoders must be set to the same port.

2) Video Profile: This section provides access to the settings which are used when streaming to standard network targets such as web browsers or PCs running video software. The Primary stream's settings can be configured here. Pressing the "Save" button will activate the settings for the stream.

Note: The Primary channels is always active and available to be viewed directly by connecting to the unit using 3rd party video player software such as VLC or PotPlayer.
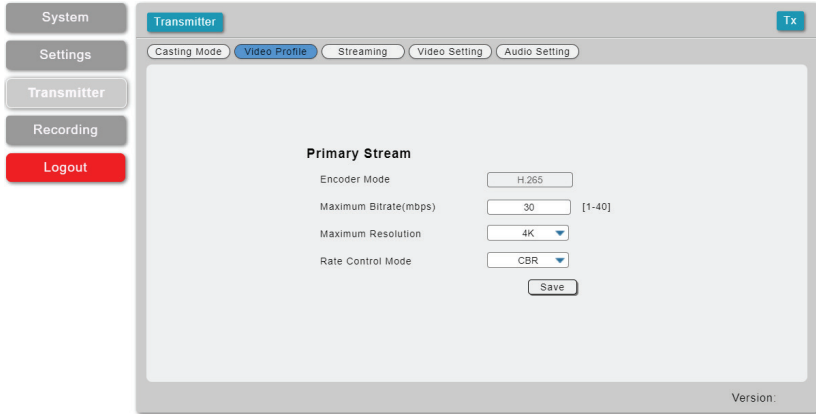
- ■ **Primary Stream:** This are the settings for the main, high resolution/bitrate stream.

  - – **Encoder Mode:** Shows the codec used when transmitting this stream.

    Note: H.265 is always used by the Primary stream to better support 4K streaming.

  - – **Maximum Bitrate (Mbps):** Select the maximum bitrate available for use by the Primary stream. Available bitrate is from 1to 40Mbps.

  - – **Maximum Resolution:** Select the maximum resolution for the primary stream. Available resolutions are: 4K (3840x2160) and 1080p (1920x1080).

    Note: The streaming resolution will not exceed the original source's resolution even if a higher maximum is selected.

  - – **Rate Control Mode:** Select between the VBR (Variable Bit Rate) or CBR (Constant Bit Rate) encoding mode. Typically VBR provides overall better compression and adjusts the bitrate based on the complexity of the video content, however, because of this variability, is not recommended for streaming across the Internet. CBR uses a constant bitrate regardless of video complexity, but because of this it tends to use considerably more storage space when recorded.

3) **Streaming:** This section provides access to controls for the streaming channels which are used when streaming directly to streaming services such as YouTube or Facebook. The unit can support up to 3 service streams simultaneously. Pressing the "Save" button will store any changes made to these settings.

System	Transmitter				Tx
Settings	Casting Mode	Video Profile	Streaming	Video Setting	Audio Setting
Transmitter					
Recording		Stream1		Start Stop	
Logout		Stream2		Start Stop	
		Stream3		Start Stop	
		Maximum Bitrate(mbps)	5	[1-15]	
		Maximum Resolution	1080P ▼		
		Streaming Port	Stream 1 ▼		
		Server URL			
		Stream Key			
			Save		
					Version:
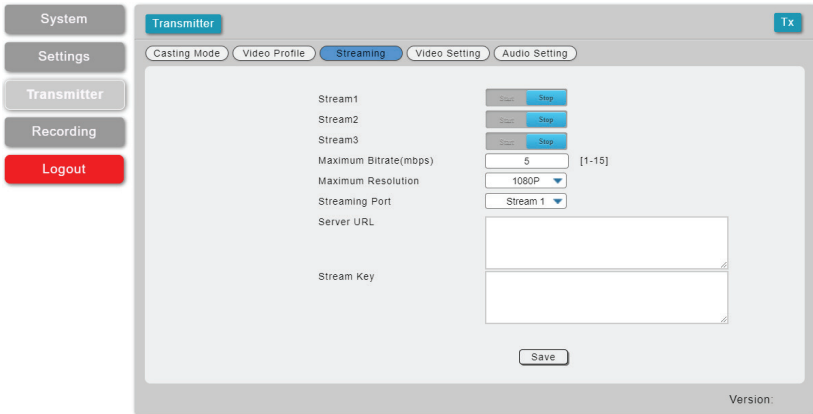
- **Stream1/Stream2/Stream3:** Click on these toggle switches to start or stop streaming to the associated streaming target.

- **Maximum Bitrate(Mbps):** Select the maximum bitrate used by all service streaming channels. Available bitrate is from 1 to 15Mbps.

- **Maximum Resolution:** Select the maximum resolution for all service streaming channels. Available resolutions are: 1080p(1920x1080), 720p(1280x720), 480p(640x480).

  Note: The streaming resolution will not exceed the original source's resolution even if a higher maximum is selected.

- **Streaming Port:** Use the dropdown to select the service stream configure.

  Note: Each service stream should have a unique Stream URL and Stream Key.

- **Stream URL:** Please enter the Stream URL provided by the target streaming service. This is the address of the specific target streaming server. Type the Stream URL EXACTLY as provided by the streaming service. The URL will start with "rtmp://", "rtmps://", or "rtsp://" followed by the specific destination information of the server.

■ **Stream Key:** Please enter the Stream Key provided by the target streaming service. This is an encrypted key that provides the streaming server with your unique login and identification credentials. Type the Stream Key EXACTLY as provided by the streaming service. A typical stream key is a very long string of letters, numbers and symbols.

4) **EDID & HDCP:** This section provides control over HDCP support and EDID management for the HDMI input.
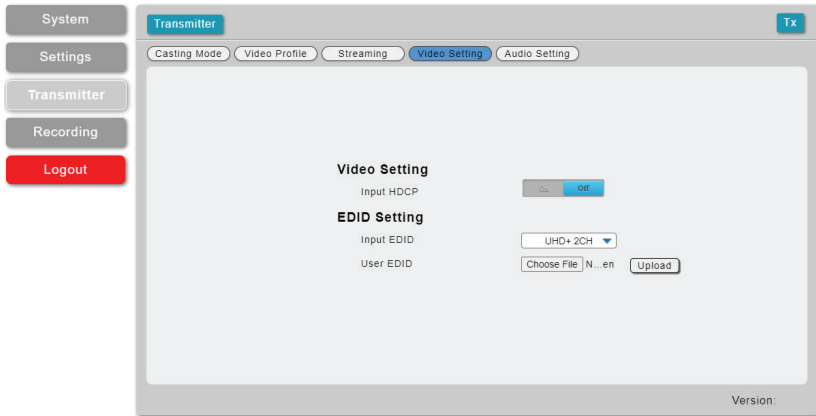
■ **Input HDCP:** Enable or disable HDCP support on the HDMI input.

Note: HDCP encoded sources cannot be streamed. In most cases, this should be set to "OFF" in order to ensure the source does not attempt to encode the video with HDCP.

■ **EDID Setting:** Use the dropdown to select the EDID to use with the input. The new EDID source will be used immediately.

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

■ **User EDID:** To upload a new User EDID, click the "Choose File" button to open the file selection window and then select an appropriate EDID file (*.bin format) located on your local PC. After selecting the file, click the "Upload" button to load the firmware into the unit.

This unit provides the following 3 default EDIDs:

Unit's default EDIDs	
FHD 2CH	1920×1080p@60Hz (4.95Gbps) & 8-bit colour, LPCM 2.0
UHD 2CH	3840×2160p@30Hz (10.2Gbps) & Deep Colour (8/10/12-bit), LPCM 2.0
UHD+ 2CH	3840×2160p@60Hz (18Gbps) & Deep Colour (8/10/12-bit), LPCM 2.0

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 3 default EDIDs for maximum compatibility.

5) Audio Setting: This section provides control over the local HDMI and analogue audio output of the unit.
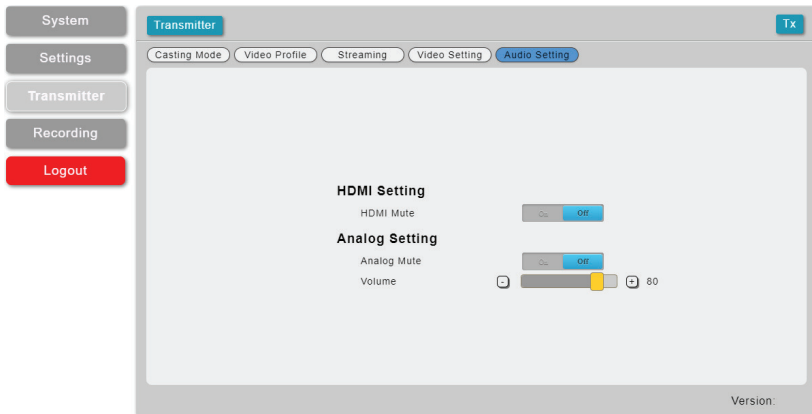
- **HDMI Mute:** Enable or disable muting the local HDMI output's audio.

- **Analogue Mute:** Enable or disable muting the local analogue audio output.

- **Volume:** Use the slider to set the volume level of the local analogue audio output. The available range is from 0 to 100.

6.5.4 Recording Tab

This tab provides access to the settings and controls for configuring and making a recording of the primary broadcast stream to a local or network storage location. When recording is enabled, the stream is saved as a *.mp4 file, encoded with the same settings as the primary stream, to one of three possible target destinations: USB storage, network storage using NFS, or network storage using CIFS. The file will be placed within an automatically named folder structure based on the current date and time of the recording to facilitate easy sorting and file management. It is also possible to set up automatic daily recording times based on a repeating weekly schedule structure.

1) **Recording:** This section provides configuration options for recording. Pressing the "Save" button will update and activate the associated settings.
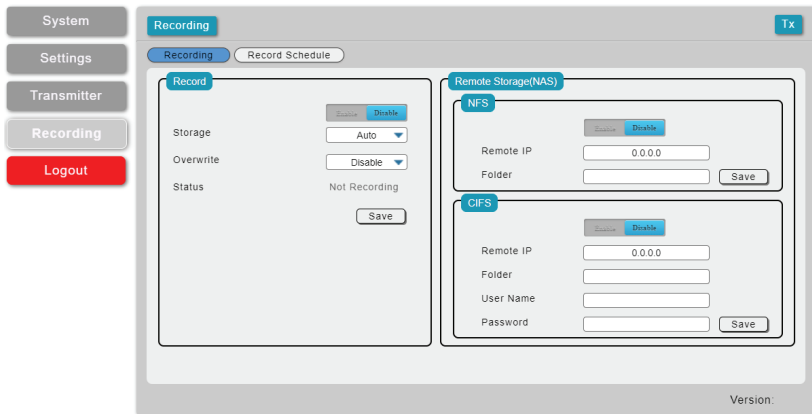
- ■ **Record:** Click on the toggle switch to enable or disable recording the primary video stream. When enabled, recording will begin immediately to the selected storage location.

  Note: HDCP encrypted sources cannot be recorded.

  – **Storage:** Use the drop-down to select the storage target to use when recording. Available choices are: Auto, USB (USB storage), NFS (NFS based network storage), and CIFS (CIFS based network storage). Selecting "Auto" will use the first available valid storage location using the following priority order: NFS > CIFS > USB.

- **Overwrite:** Enables or disables the file overwrite function. When enabled, the unit will automatically delete older recordings, when space runs out on the selected storage location, to make room for new recordings.

- **Status:** Displays the current recording status.

■ **Remote Storage (NAS) NFS:** This section provides a way to configure access to a NAS (Network Attached Storage) device using the NFS protocol.

- **Enable/Disable:** Enable or disable access to the defined NFS based network storage server.

- **Remote IP:** Enter the IP address of the target NFS based NAS device.

- **Folder:** Enter a valid share name on the target server. The share name cannot contain spaces or special characters. This is where the recording folder structure and video files will be created.

  Note: The target folder on the NFS server must, at a minimum, provide anonymous read, write and delete permissions.

■ **Remote Storage (NAS) CIFS:** This section provides a way to configure access to a NAS (Network Attached Storage) device using the CIFS protocol.

- **Enable/Disable:** Enable or disable access to the defined CIFS based network storage server.

- **Remote IP:** Enter the IP address of the target CIFS based NAS device.

- **Folder:** Enter a valid share name on the target server. The share name cannot contain spaces or special characters. This is where the recording folder structure and video files will be created.

  Note: The target folder on the CIFS server must, at a minimum, provide read, write and delete permissions for the designated user.

- **Username/Password:** Enter the user name and password required for access to the specified server.

2) Record Schedule: This section provides a way to enable or disable the scheduled time recording function and configure the times to record. Each hour of each day is divided into two half-hour blocks. Currently selected recording times are indicated by orange blocks. White blocks indicate that no recording is currently scheduled. Blocks may be activated or deactivated by clicking on them. To easily select multiple blocks, you may click and drag across the preferred range. After setting the preferred recording blocks, press the "Save" button. To undo changes and return to the previous schedule configuration, press the "Revert" button.

6.6 Telnet Control

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

Start your preferred Telnet/Console client, or use the built in client provided by most modern computer operating systems. After starting the client, connect by using the current IP address of the unit and port 23 (if the communication port number used by the unit has not been changed previously). This will connect us to the unit we wish to control and commands may now be entered directly.

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

Note 2: This unit defaults to DHCP mode. The current IP address can be verified via the OSD menu or RS-232 if the Device Discovery software is not available. The default communication port is 23.

6.7 Serial and Telnet Commands

COMMAND
Description and Parameters
help↵
Show the full command list.
help N1↵
Show details about the specified command.
N1 = {Command}
?↵
Show the full command list.
? N1↵
Show details about the specified command.
N1 = {Command}

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COMMAND
Description and Parameters

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 unit's product type.

set factory default↵

Reset the unit to the factory defaults.

set factory ipconfig default↵

Reset the unit's network settings to the factory defaults.

set factory out route default↵

Reset the unit's routing to the factory defaults.

set feedback broadcast N1↵

Enable or disable the broadcast of console command feedback.

Available values for **N1:**
ON	[Enable]
OFF	[Disable]

get feedback broadcast↵

Show the current console command feedback broadcast state.

set system reboot↵

Reboot the unit.

COMMAND
Description and Parameters

set system usb fw update↵

Trigger the unit's firmware update state and load the new firmware file via USB.

get usb 1 connect status↵

Show the current connection status for the specified USB port.

Possible response values:
0	[Disconnected]
1	[Connected]

set ip mode N1↵

Set the unit's IP address assignment mode.

Available values for **N1**:
STATIC	[Static IP mode]
DHCP	[DHCP mode]

get ip mode↵

Show the current IP address assignment mode.

get ipaddr↵

Show the unit's current IP address.

get netmask↵

Show the unit's current netmask.

get gateway↵

Show the unit's current gateway address.

set static ipaddr N1↵

Set the unit's static IP address.

N1 = X.X.X.X   [X = 0~255]

CYP

COMMAND
Description and Parameters
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]
get static netmask ↵
Show the unit's current static netmask.
set static gateway N1 ↵
Set the unit's static gateway address.
N1 = X.X.X.X   [X = 0~255]
get static gateway ↵
Show the unit's current static gateway address.
set telnet login N1 ↵
Enable or disable requiring a login to access the unit via Telnet.
Available values for **N1**:   ON   [Login authentication required]   OFF   [No login required]
get telnet login ↵
Show the current state of the Telnet login requirement.
get hostname ↵
Show the unit's current hostname.

COMMAND
Description and Parameters

set webgui login timeout N1↵

Set the WebGUI inactivity timeout value.

Available values for **N1**:
0	[No timeout]
1~30	[Timeout in minutes]

get webgui login timeout↵

Show the current WebGUI inactivity timeout value.

get in name list↵

List the names of all inputs on the unit.

get out name list↵

List the names of all outputs on the unit.

get in 1 hactive↵

Show the horizontal active pixel value of the HDMI input's current video source.

get in 1 vactive↵

Show the vertical active pixel value of the HDMI input's current video source.

get in 1 refresh rate↵

Show the refresh rate of the HDMI input's current video source.

get in 1 interlace↵

Show the interlace state of the HDMI input's current video source.

Possible response values:
0	[Not interlaced]
1	[Interlaced]

CYP///

COMMAND
Description and Parameters

get in 1 sync status ↵

Show the current sync state of the HDMI input.

0	[No sync]
1	[Sync without HDCP]
2	[Sync with HDCP 1.4]
3	[Sync with HDCP 2.2]

get out A sync status ↵

Show the current sync state of the HDMI output.

Possible response values:

0	[No sync]
1	[Sync active]

set out A osd timeout N1 ↵

Set the menu OSD's timeout value for the HDMI output (in seconds).

Available values for **N1**:

0	[Timeout disabled]
5~60	[Timeout in seconds]

get out A osd timeout ↵

Show the current menu OSD timeout value for the HDMI output.

set out A osd info display N1 ↵

Enable or disable the info OSD for the HDMI output.

Available values for **N1**:

0	[Always off]
1	[Always on]
2	[On for 5 seconds]
3	[On for 10 seconds]

get out A osd info display ↵

Show the current info OSD state for the HDMI output.

COMMAND
Description and Parameters

set out A osd vposition N1 ↵

Set the vertical position of the menu OSD on the HDMI output.

N1 = 0~60 [Vertical position]

get out A osd vposition ↵

Show the current vertical position of the menu OSD on the HDMI output.

set out A osd hposition N1 ↵

Set the horizontal position of the menu OSD on the HDMI output.

N1 = 0~60 [Horizontal position]

get out A osd hposition ↵

Show the current horizontal position of the menu OSD on the HDMI output.

set out A osd transparency level N1 ↵

Set the transparency level of the menu OSD on the HDMI output.

N1 = 0~7 [Transparency level]

get out A osd transparency level ↵

Show the current transparency level of the menu OSD on the HDMI output.

set audio out N1 mute N2 ↵

Enable or disable muting the specified audio output.

Available values for **N1**:
A [HDMI output]
B [Analogue audio output]
Available values for **N2**:
ON [Mute]
OFF [Unmute]

CYP///

COMMAND
Description and Parameters

get audio out N1 mute↵

Show the current mute state of the specified output.

Available values for **N1**:
| A | [HDMI output] |
| B | [Analogue audio output] |

set audio out all mute N1↵

Enable or disable muting on all audio outputs.

Available values for **N1**:
| ON | [Mute] |
| OFF | [Unmute] |

set audio out B volume N1↵

Set the volume level of the analogue audio output.

N1 = 0~100   [Volume level]

get audio out B volume↵

Show the current volume level of the analogue audio output.

set audio out B volume up↵

Increase the volume level of the analogue audio output by 1 unit.

set audio out B volume down↵

Decrease the volume level of the analogue audio output by 1 unit.

set audio out N1 name N2↵

Set the name for the specified output's audio.

Available values for **N1**:
A	[HDMI output]
B	[Analogue audio output]
N2 = {Name}	[16 characters max]

COMMAND
Description and Parameters

get audio out N1 name↵

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

Available values for **N1**:

A	[HDMI output]
B	[Analogue audio output]

get audio in type list↵

List all available audio input sources.

get audio out type list↵

List all available audio output destinations.

set in 1 edid N1↵

Set the EDID to use on the HDMI input.

Available values for **N1**:

1	[FHD 2CH]
2	[UHD 2CH]
3	[UHD+ 2CH]
4	[User EDID]
5	[Sink EDID]

get in 1 edid↵

Show the EDID currently being used on the HDMI input.

get in edid list↵

List all available EDID selections.

set user 1 edid data N1↵

Upload a new EDID (in hex format) for use as the User EDID.

N1 = {EDID data}   [Comma delimited hex pairs]

COMMAND
Description and Parameters

get user 1 edid data↵

Show the current contents of the User EDID as hex data.

get sink A edid data↵

Show the EDID from the display connected to the HDMI output as hex data.

get in 1 edid data↵

Show the EDID currently used by the HDMI input as hex data.

get all in edid list↵

List the EDIDs assigned to all inputs.

get internal N1 edid data↵

Show the specified internal EDID as hex data.

Available values for **N1**:
1	[FHD 2CH]
2	[UHD 2CH]
3	[UHD+ 2CH]

set hello mode N1↵

Enable or disable Hello Mode to flash the unit's LEDs for easy visual detection.

Available values for **N1**:
ON	[Enable]
OFF	[Disable]

get hello mode↵

Show the current Hello Mode state.

COMMAND
Description and Parameters

set encoder 1 profile 1 resolution N1↵

Set the maximum resolution for the primary streaming channel on the encoder.

Available values for **N1**:
0	[4K (3840×2160)]
1	[1080p (1920×1080)]

get encoder 1 profile 1 resolution↵

Show the current maximum resolution used by the primary streaming channel on the encoder.

set encoder 1 profile 1 bitrate N1↵

Set the maximum bitrate (in Kbps) for the primary streaming channel on the encoder.

N1 = 1~40   [Bitrate in Mbps]

get encoder 1 profile 1 bitrate↵

Show the current maximum bitrate (in Mbps) used by the primary streaming channel on the encoder.

set live N1 stream url N2↵

Set the URL used to access the specified streaming target service.

N1 = 1~3   [Target service number]

N2 = {Stream URL}   [Target service URL]

get live N1 stream url↵

Show the URL used to access the specified streaming target service.

N1 = 1~3   [Target service number]

COMMAND
Description and Parameters

set live N1 stream key N2↵

Set the stream key used to authenticate with the specified live streaming target service.

N1 = 1~3   [Target service number]

N2 = {Stream Key}   [Target service Stream Key]

get live N1 stream key↵

Show the stream key used to authenticate with the specified live streaming target service.

N1 = 1~3   [Target service number]

set live encode resolution N1↵

Set the encoding resolution to use with all live streaming target services.

Available values for **N1**:
1   [1080p (1920×1080)]
2   [720p (1280×720)]
3   [480p (640×480)]

get live encode resolution↵

Show the encoding resolution used with all live streaming target services.

set live encode bitrate N1↵

Set the maximum streaming bitrate (in Mbps) to use with all live streaming target services.

N1 = 1~15   [Bitrate in Mbps]

COMMAND
Description and Parameters

get live encode bitrate↵

Show the maximum streaming bitrate (in Mbps) used with all live streaming target services.

set live N1 stream mode N2↵

Start or stop live streaming to the specified live streaming target service.

N1 = 1~3	[Target service number]

Available values for **N2**:
ON	[Start streaming]
OFF	[Stop streaming]

get live N1 stream mode↵

Show the current state of the live stream to the specified live streaming target service.

N1 = 1~3	[Target service number]

set record mode N1↵

Start or stop recording video to the currently set target destination.

Available values for **N1**:
ON	[Start recording]
OFF	[Stop recording]

get record mode↵

Show the current recording status.

set record overwrite N1↵

Enable or disable the record overwrite function.

Available values for **N1**:
| ON	[Enable overwrite]
OFF	[Disable overwrite]

COMMAND

Description and Parameters

get record overwrite⏎

Show the current state of the record overwrite function.

set record media path N1⏎

Set the target destination for video recording.

Available values for **N1**:

AUTO	[Automatic selection]
USB	[Local recording to USB port]
NFS	[Network recording via NFS]
CIFS	[Network recording via CIFS]

get record media path⏎

Show the current target destination for recording.

set schedule record mode N1⏎

Enable or disable scheduled recording support.

Available values for **N1**:

ON	[Enable scheduled recordings]
OFF	[Disable scheduled recordings]

get schedule record mode⏎

Show the current state of scheduled recording support.

get record state⏎

Show the current recording state of the device.

get memory N1 free size⏎

Show the current storage space available on the specified storage interface.

Available values for **N1**:

USB	[Local USB storage]
NFS	[Network storage via NFS]
CIFS	[Network storage via CIFS]

COMMAND
Description and Parameters
set unmount usb↵
Unmount the current USB storage devices, for safe removal.

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

7. CONNECTION DIAGRAM
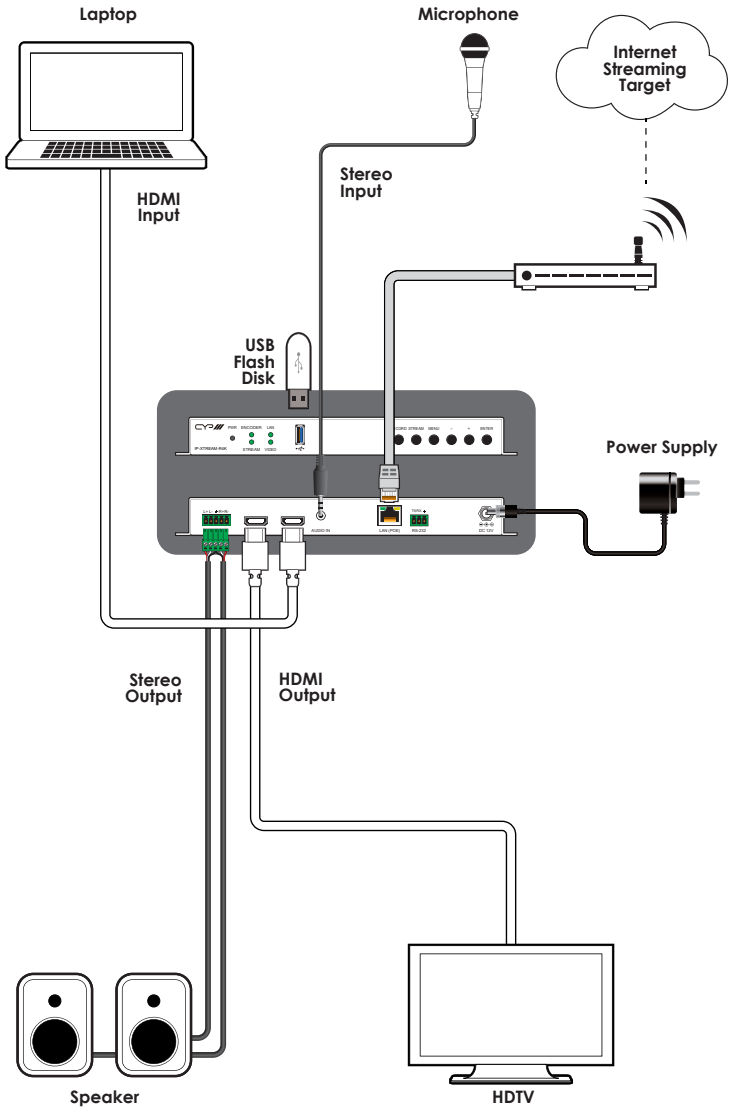
8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	18Gbps
Ethernet Bandwidth	1Gbps
Streaming Output Max.	3840x2160@60Hz (H.265)
Input Ports	1×HDMI (Type-A) 1×Stereo Audio (3.5mm)
Output Ports	1×HDMI (Type-A) 1×Stereo Audio (5-pin Terminal Block)
Output/Control Port	1×LAN (RJ-45)
Output/Service Port	1×USB 2.0 (Type-A)
Control Ports	1×RS-232 (3-pin Terminal Block)
Baud Rate	19200
Power Supply	12V/3A DC or PoE (802.3at) (US/EU standards, CE/FCC/UL certified)
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions (W×H×D)	231mm×25mm×116mm [Case Only] 231mm×25mm×117mm [All Inclusive]
Weight	661g
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	10.45W

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8.2 VIDEO SPECIFICATIONS

Supported Resolutions (Hz)	Input HDMI	Output HDMI	Output Streaming
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	✓	✓	60
1152×864p@75	✓	✓	✗
1280×720p@50/60	✓	✓	✓
1280×768p@60/75/85	✓	✓	✗
1280×800p@60/75/85	✓	✓	✗
1280×960p@60/85	✓	✓	60
1280×1024p@60/75/85	✓	✓	60
1360×768p@60	✓	✓	✗
1366×768p@60	✓	✓	✗
1400×1050p@60	✓	✓	✗
1440×900p@60/75	✓	✓	✗
1600×900p@60RB	✓	✓	✗
1600×1200p@60	✓	✓	✗
1680×1050p@60	✓	✓	✗
1920×1080i@50/60	✓	✓	✗

Supported Resolutions (Hz)	Input	Output	
	HDMI	HDMI	Streaming
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	✗	✗	✗

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8.3 Audio Specifications

8.3.1 Digital Audio

HDMI Input / Output	
LPCM	
Max Channels	2 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	None

Streaming Output	
LPCM	
Max Channels	2 Channels
Sampling Rate (kHz)	48
Bitstream	
Supported Formats	None

8.3.2 Analogue Audio

Analogue Input	
Max Audio Level	2Vrms
Impedance	10kΩ
Type	Unbalanced

Analogue Output	
Max Audio Level	4Vrms
THD+N	< −80dB@0dBFS 1kHz (A-wt)
SNR	> 70dB@0dBFS
Frequency Response	< ±3dB@20Hz~20kHz
Crosstalk	< −60dB@10kHz
Impedance	499Ω
Type	Balanced

8.4 Cable Specifications

Cable Length	1080p		4K30	4K60
			(4:4:4)	(4:4:4)
	8-bit	12-bit	8-bit	8-bit
High Speed HDMI Cable				
HDMI Input	15m	10m	5m	3m
HDMI Output	15m	10m	5m	3m

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

9. ACRONYMS

ACRONYM	COMPLETE TERM
4K UHD	4K Ultra-High-Definition (10.2Gbps max)
4K UHD⁺	4K Ultra-High-Definition (18Gbps max)
ADC	Analogue-to-Digital Converter
ASCII	American Standard Code for Information Interchange
AVoIP	Audio/Video over IP
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
DAC	Digital-to-Analogue Converter
dB	Decibel
DHCP	Dynamic Host Configuration Protocol
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
GbE	Gigabit Ethernet
Gbps	Gigabits per second
GUI	Graphical User Interface
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
IP	Internet Protocol
kHz	Kilohertz
LAN	Local Area Network
LED	Light-Emitting Diode

ACRONYM	COMPLETE TERM
LPCM	Linear Pulse-Code Modulation
MAC	Media Access Control
Mbps	Megabits per second
MHz	Megahertz
OSD	On-Screen Display
PD	Powered Device
PoE	Power over Ethernet
PSE	Power Sourcing Equipment
SNR	Signal-to-Noise Ratio
TCP	Transmission Control Protocol
THD+N	Total Harmonic Distortion plus Noise
TMDS	Transition-Minimized Differential Signaling
USB	Universal Serial Bus
VGA	Video Graphics Array
VoIP	Video over IP
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduced Blanking)
XGA	Extended Graphics Array
Ω	Ohm