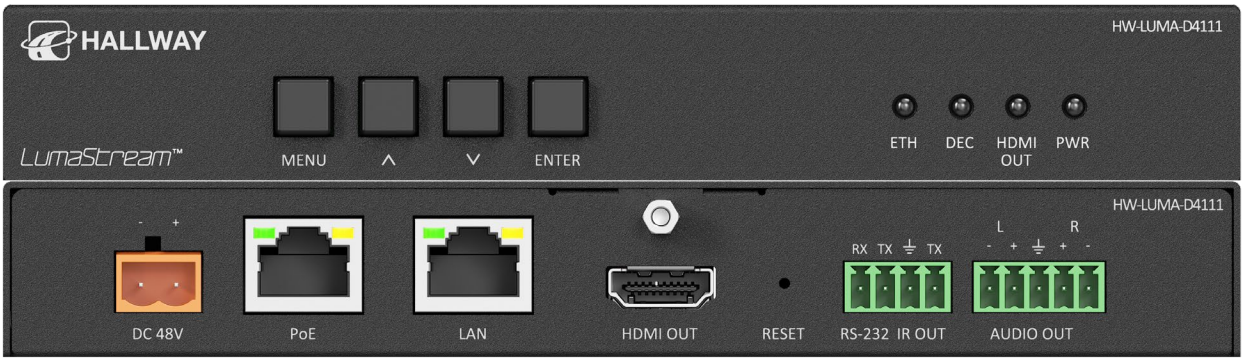
HW-LUMA-D4111

LumaStream™ Decoder

Instructions for Use

Version 1.X



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Version Information

This section lists document revisions. Update the table whenever the manual is revised.

Version	Date	Notes
R1.X2 (Draft)	*[Release Date]*	Initial draft release

Sales, Marketing & Customer Support

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Website	https://www.hallresearch.com
Product Page	https://www.hallresearch.com/product/HW-LUMA-D4111

IMPORTANT: Visit https://www.hallresearch.com/product/HW-LUMA-D4111 for the latest firmware updates and Instructions for Use.

Warranty

To view the product warranty, use the following link: https://hallresearch.com/warranty

Important Safety Information

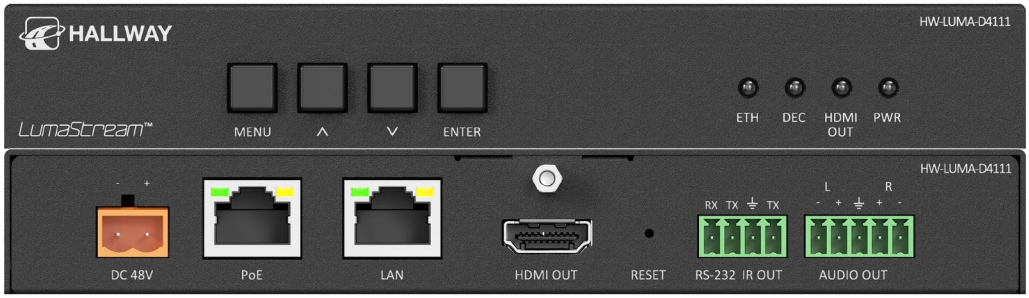
CAUTION: Risk of electric shock. Do not open the enclosure or expose to rain or moisture. No user-serviceable parts inside. Refer servicing to qualified service personnel.

- Do not expose this apparatus to rain, moisture, dripping, or splashing and ensure no objects filled with liquids are placed on the unit.
- Do not install in a bookcase, cabinet, or other confined space. Ensure the unit is well ventilated.
- Do not obstruct ventilation openings with newspapers, tablecloths, curtains, or similar items.
- Do not install near any heat sources such as radiators, heat registers, stoves, or amplifiers.
- Do not place sources of naked flames, such as lighted candles, on the unit.
- Clean this apparatus only with a dry cloth.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Protect the power cord from being walked on or pinched, particularly at plugs.
- Only use attachments and accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel.

FCC Compliance

This hardware device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Introduction



Atlona HW-LUMA-D4111 LumaStream™ Decoder

The Atlona HW-LUMA-D4111 is a LumaStream™ 4K IP video decoder designed for enterprise AV-over-IP distribution. LumaStream products operate on a similar basic concept as matrix switch endpoints: A/V signals are transmitted from one location to another over category cable. However, LumaStream differs from traditional matrix switchers because it is an IP-based solution, allowing data to be distributed over a standard IP network.

These endpoints are referred to as encoders and decoders. Encoders function like transmitters, capturing and streaming A/V content, while decoders function like receivers, subscribing to and displaying those streams. The HW-LUMA-D4111 receives compressed H.265/H.264 video streams over the network and outputs them via HDMI to a connected display, with additional support for balanced analog audio output, RS-232/IR control, and video wall configuration.

Network Architecture

Each LumaStream encoder and decoder is assigned a management IP address, used for web-based configuration, and a separate multicast IP address, used to transmit or receive the A/V stream. When connected to a PoE-capable network switch, the decoder powers itself via the network connection. If no DHCP server is available, the unit assigns itself an IP address in the 169.254.xxx.xxx/16 range.

> **NOTE:** The encoder and decoder management IP address is different from the multicast IP address used for streaming. Do not confuse the two when configuring stream subscriptions.

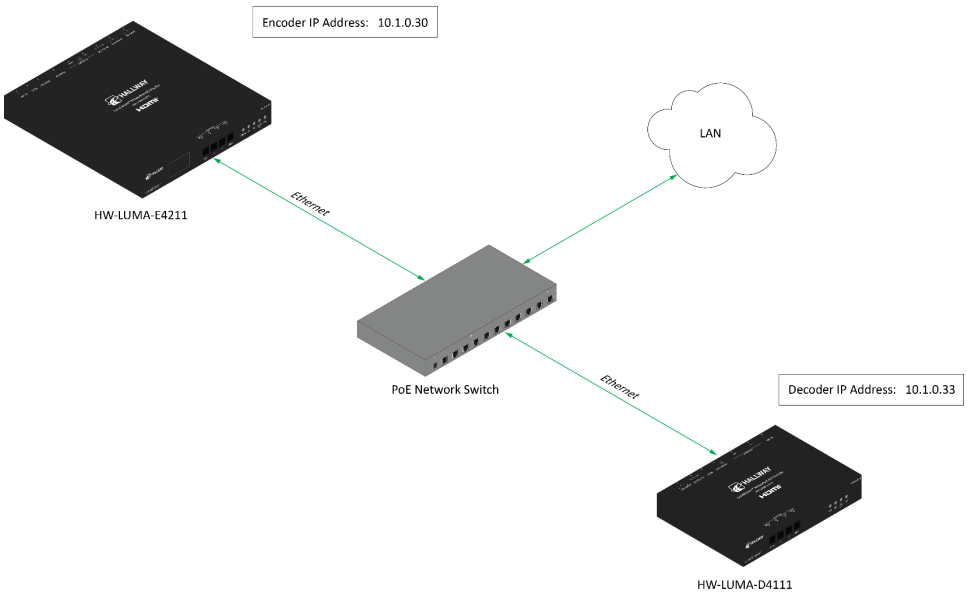


Figure 1.1 — Encoder and decoder connected through a network switch

Subscribing to a Stream

To receive content from an encoder, the decoder must subscribe to the multicast IP address and UDP port of the desired stream. This process is analogous to changing channels on a set-top box. For example, to view content on a specific multicast group, the decoder must be configured with the correct multicast IP address and port number.

Stream selection can be performed through the web interface (Stream > Multicast Stream), through the front-panel OSD, or via API commands. The decoder supports both "By Source Name" and "By Multicast IP:Port" stream selection modes.

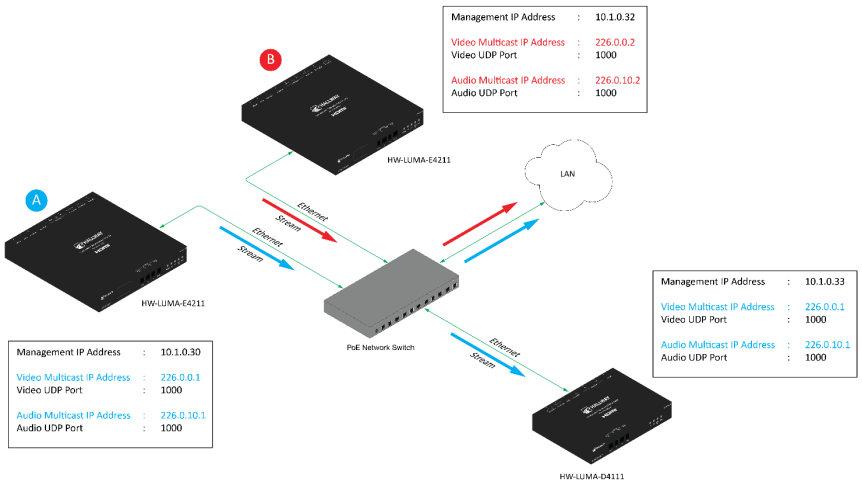


Figure 1.2 — Two encoders and a single decoder connected to a network switch

Configuration

Typically, it is required that installers configure each decoder individually by specifying the multicast IP address and port number of the encoder it should receive. When powered on and connected to the network, each decoder automatically boots and selects an available stream. However, specific stream assignments may need to be configured manually to ensure the correct content is displayed on each output.

Configuration is performed through the built-in web server, accessible via any standard web browser on the same network, or through the front-panel OSD menu system.

Features

- 4K/60 HDMI output supporting resolutions up to 3840×2160 with HDR.
- H.265 and H.264 video decoding with configurable chroma sub-sampling (4:4:4, 4:2:2, 4:2:0).
- Multicast stream reception — subscribe by source name or multicast IP:Port.
- Video wall support with configurable tile position, bezel compensation, and rotation.
- HDCP 1.4 / 2.2 compliant for protected content distribution.
- Balanced analog audio output via 5-pin captive screw connector.
- RS-232 and IR output for external device control (display power on/off, volume, custom commands).
- Dual Gigabit Ethernet ports: PoE (IEEE 802.3at) for power and streaming, plus a secondary LAN port.
- Built-in scaler — configurable output resolution independent of source resolution.
- Text overlay and logo overlay for on-screen messaging and branding.
- Configurable image display when no active stream is present.
- Failover stream support — automatically switches to a backup stream if the primary is lost.
- CEC support for display control over HDMI.
- Web-based configuration via built-in web server; supports HTTP, HTTPS, SSH, and Telnet.
- IEEE 802.1X network authentication (PEAP-MSCHAPv2 and EAP-TLS).
- Front-panel LCD OSD menu for local status and configuration.
- Front-panel buttons: MENU, UP, DOWN, ENTER.
- NDAA Section 889 compliant.

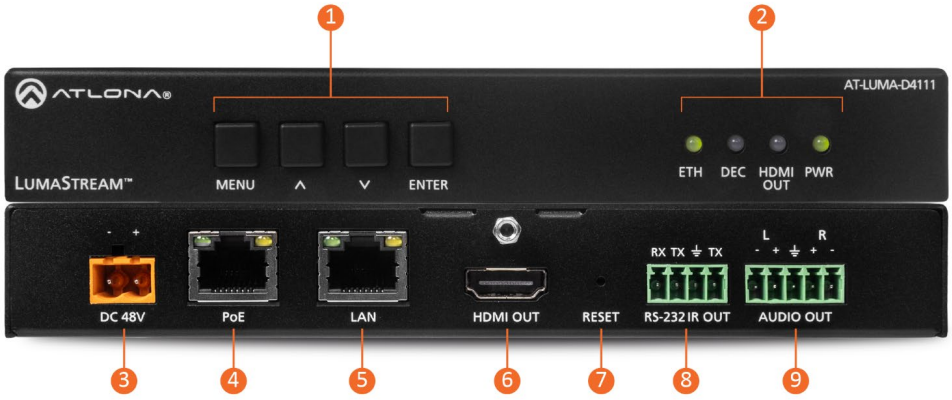
Package Contents

Verify that the following items are included in the box. Contact your Hall Research dealer if any items are missing or damaged.

Package Contents	
1×	HW-LUMA-D4111 LumaStream™ Decoder
1×	Surface-mount / rack-mount brackets (pair)
1×	4-pin captive screw connector (RS-232/IR)
1×	5-pin captive screw connector (Audio Out)
1×	2-pin captive screw connector (DC Power)
1×	Quick-start guide

NOTE: A PoE+ (IEEE 802.3at) network switch or the optional AT-PS-48083-C 48 V DC power supply (sold separately) is required to power the unit.

Panel Description



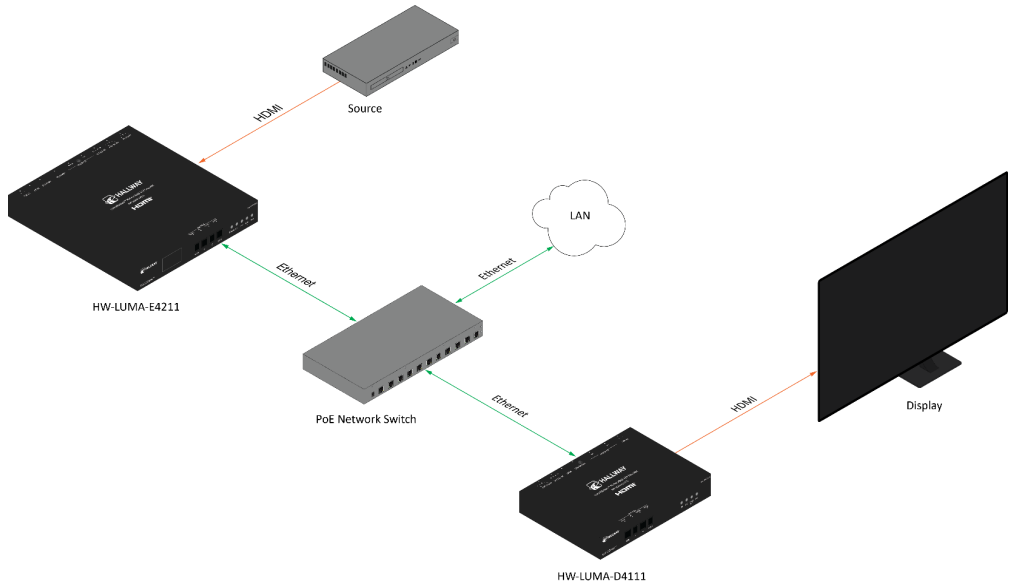
HW-LUMA-D4111 Panel Overview

Front Panel

#	Name	Description
1	**MENU**	Press to display the OSD menu system on the connected HDMI display. Press again to exit.
	UP	Press to scroll up through OSD menu screens or increase a selected value.
	DOWN	Press to scroll down through OSD menu screens or decrease a selected value.
	ENTER	Press to confirm a selection or access sub-menus. Press and hold for 5 seconds to factory reset.
2	**LED Indicators** **ETH**	This LED is green when a valid Ethernet link is established between the decoder and the network switch.
	ENC	This LED will be green when decoding is active.
	HDMI OUT	This LED will be green when an active sink device is connected to the **HDMI OUT** port.
	PWR	This LED will be green when the decoder is powered.
3	**DC 48V**	Connect a 48 V DC power supply (AT-PS-48083-C, sold separately) to this 2-pin captive screw connector to power the unit without PoE. *NOTE: The decoder can be powered by either a 48 V DC power adapter or a PoE/PoE+ switch. When both power sources are connected, the device gives priority to the 48V DC power adapter.*

4	**PoE**	Connect to a PoE or PoE+ (IEEE 802.3at) compliant network switch using a standard Ethernet cable. This port provides both network connectivity and device power (PoE).
5	**LAN**	Secondary Gigabit Ethernet port. Connect to the LAN for additional network connectivity or pass-through applications.
6	**HDMI OUT**	Connect an HDMI cable to a display or sink device. Supports resolutions up to 4K/60, HDCP 1.4/2.2, and HDR.
7	**RESET**	Recessed button. Press and hold with a small, pointed object (e.g., paper clip) to restore the unit to factory-default settings.
8	**RS-232/IR OUT**	Connect RS-232 and/or IR blaster cables to this 4-pin captive screw connector for external device control (display power, volume, custom commands).
9	**AUDIO OUT**	Connect this 5-pin captive screw connector to a balanced or unbalanced stereo analog audio input on the destination device. Pin-out: L+, L–, GND, R+, R–.

Connection Diagram



HW-LUMA-D4111 Connection Diagram

Installation

The HW-LUMA-D4111 can be mounted using the included surface-mount or rack-mount brackets, or placed on a flat surface in a well-ventilated location. Ensure adequate airflow around the unit. Do not stack units directly on top of one another without ventilation space.

Network Connection

Connect the PoE port to a PoE+ (IEEE 802.3at) compliant Gigabit network switch using a standard Cat5e or better Ethernet cable. The unit will power up from the PoE connection. Alternatively, connect the optional 48 V DC power supply to the DC 48V terminal.

> **NOTE:** The network switch must support IGMPv3 snooping for proper multicast operation. Consult your network administrator to confirm that IGMP snooping is enabled on the switch.

HDMI Output Connection

Connect an HDMI cable from the HDMI OUT port to the HDMI input of the destination display. The HW-LUMA-D4111 supports HDMI output up to 4K/60 4:4:4 with HDR. Ensure the display supports the desired resolution and HDCP version.

Audio Output Connection (Optional)

The AUDIO OUT port provides 2-channel balanced analog audio via a 5-pin captive screw connector (L+, L–, GND, R+, R–). Connect to the analog audio input of an amplifier or audio distribution system. The output level is software-adjustable from –80 dB to 0 dB via the web interface.

RS-232/IR Output Connection (Optional)

Connect RS-232 and/or IR blaster cables to the 4-pin captive screw connector (RS-232/IR OUT) to enable external device control. RS-232 baud rates of 9600 to 115200 bps are supported. IR commands use Pronto or Global Cache formats.

IP Configuration

By default, the decoder is set to DHCP mode and will obtain an IP address from the network automatically. If no DHCP server is present, the unit self-assigns an address in the 169.254.xxx.xxx range.

To determine the assigned IP address, use the front-panel OSD (MENU → IP Addressing screen), use IP scanner software on the same network, or access the unit via its default hostname (LUMA-D4-[last 6 digits of MAC address]).

For static IP assignment, access the web interface at System > Network and switch the IP Mode to Static. Enter the desired IP address, netmask, gateway, and DNS settings, then click Save.

Device Operation

OSD Menu System

To display the on-screen display (OSD) on the monitor connected to the decoder, press the MENU button on the front panel. The OSD remains on screen for approximately 10 seconds after the last button press, then automatically dismisses.

Use the UP and DOWN buttons to scroll through the available status screens. Press ENTER to access sub-menus where applicable. Press MENU at any time to exit the OSD.

OSD — Decoder and Stream Status (main screen)

OSD Screens

1. Audio / Video Status — Displays stream information including the active video source, output resolution, and current audio format.

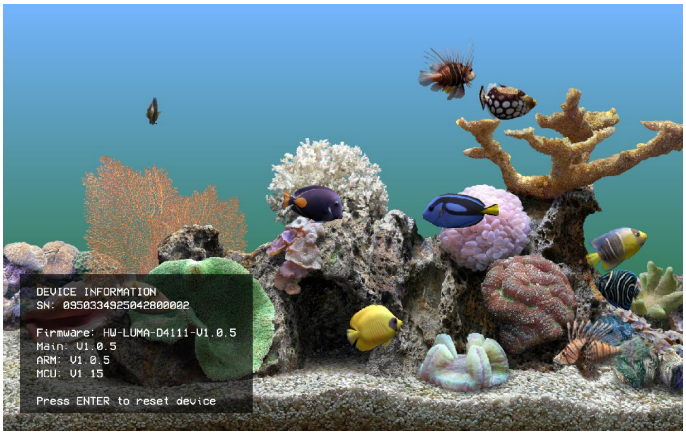
OSD — Screen 1: Audio / Video Status

2. IP Addressing — Displays the current IP mode (DHCP or Static), hostname, management IP address, subnet mask, and MAC address. Press ENTER to switch to Static IP mode. Press ENTER again to confirm, or press MENU to cancel. The decoder reboots to apply the change.

OSD — Screen 2: IP Addressing

OSD — Screen 2: Static IP entry mode

3. Device Information — Displays the device serial number and detailed firmware version information for both the ARM and MCU processors. Press ENTER to access reset options; press ENTER again to reboot. Press and hold ENTER for 5 seconds to perform a factory reset. Press MENU to cancel.



OSD — Screen 3: Device Information

OSD — Screen 3: Reset / Reboot options

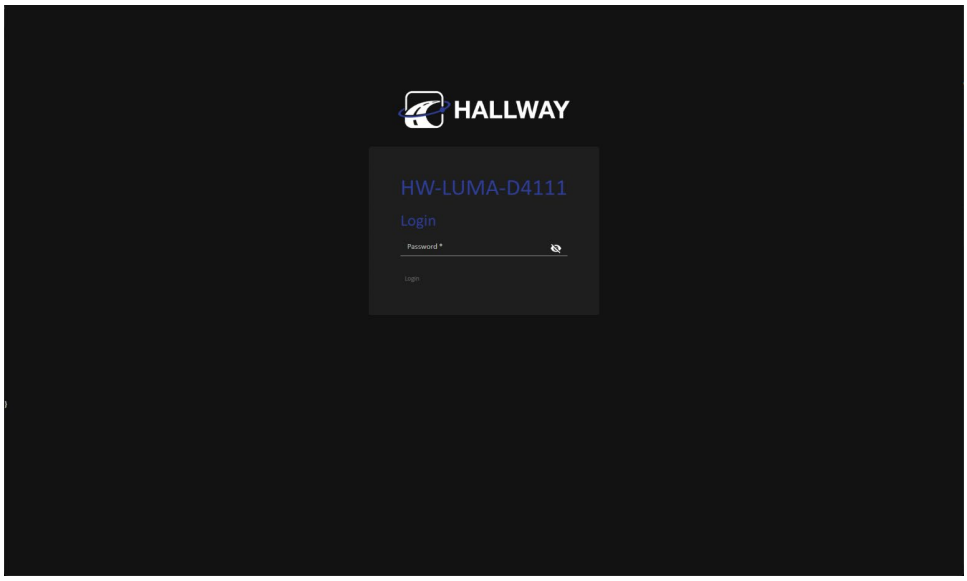
Web Server

The HW-LUMA-D4111 includes a built-in web server for complete configuration and monitoring. To access it, open a web browser on a computer connected to the same network and enter the decoder's IP address or hostname in the address bar.

> **NOTE:** The computer and the LumaStream decoder must be on the same network. Use the front-panel OSD or IP scanner software to identify the decoder's IP address if unknown.

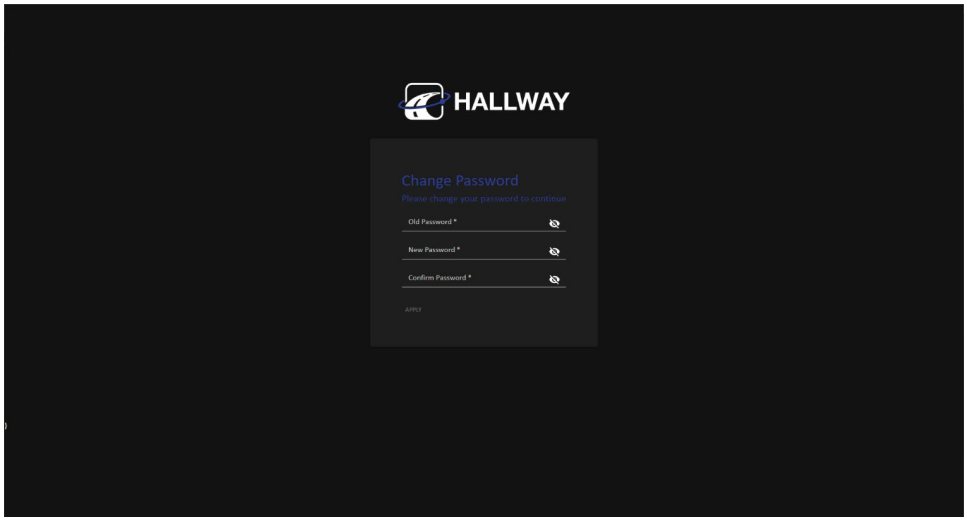
Logging In

Launch your web browser and enter the decoder's IP address or hostname in the address bar. The login screen will appear.



Web Server — Login screen

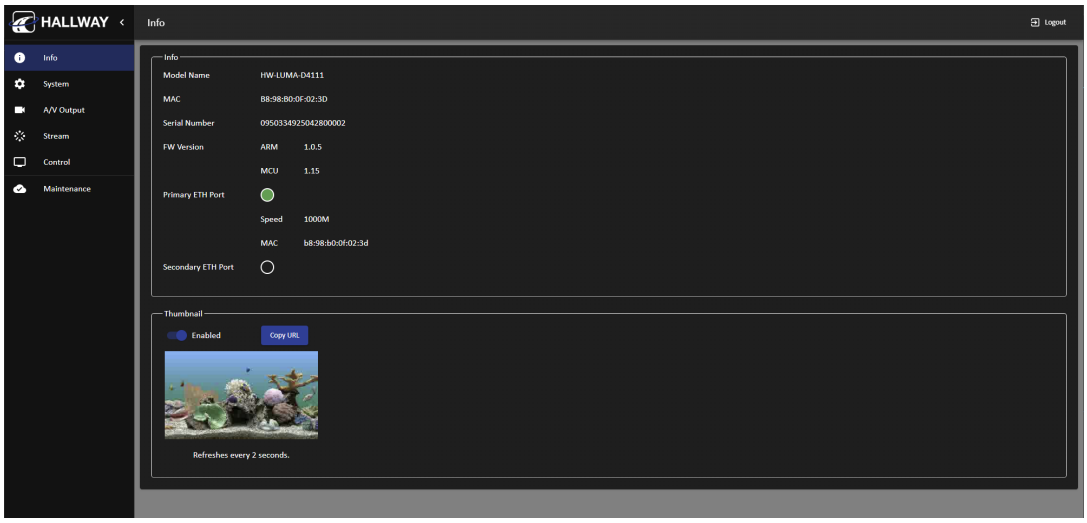
Enter the password. The default password is password. After logging in for the first time, you will be prompted to change the password. Enter the old password in the Old Password field, enter a new password in the New Password field, re-enter it in the Confirm Password field, then click Apply.



Web Server — Change password screen

Info

The Info page provides a real-time summary of the decoder's status and device information.



Web Server — Info page

Model Name — Displays the model number of the decoder.

MAC — Displays the MAC (Media Access Control) address of the decoder.

Serial Number — Displays the serial number of the decoder.

FW Version — Displays the current firmware versions for both the ARM and MCU processors.

Primary ETH Port — Refers to the PoE port on the decoder. Indicator is green when the PoE port is active.

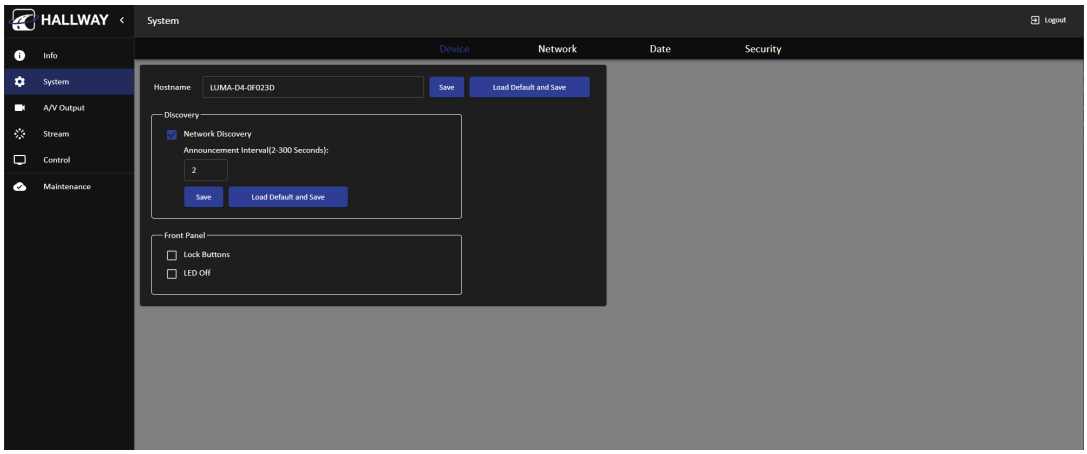
Secondary ETH Port — Refers to the LAN port. If in use, displays port speed and MAC address.

Thumbnail — Enabled — Click this toggle to enable or disable the thumbnail preview of the active input stream.

Thumbnail — Copy URL — Copies the thumbnail URL to the clipboard. Thumbnails update every 2 seconds at 320×180 resolution.

System > Device

The Device page configures general device settings including the hostname, front-panel controls, and LED behavior.



Web Server — System > Device page

Hostname — Displays the hostname of the decoder. The default format is LUMA-D4-[last 6 characters of MAC address]. Edit and click Save to apply a custom hostname.

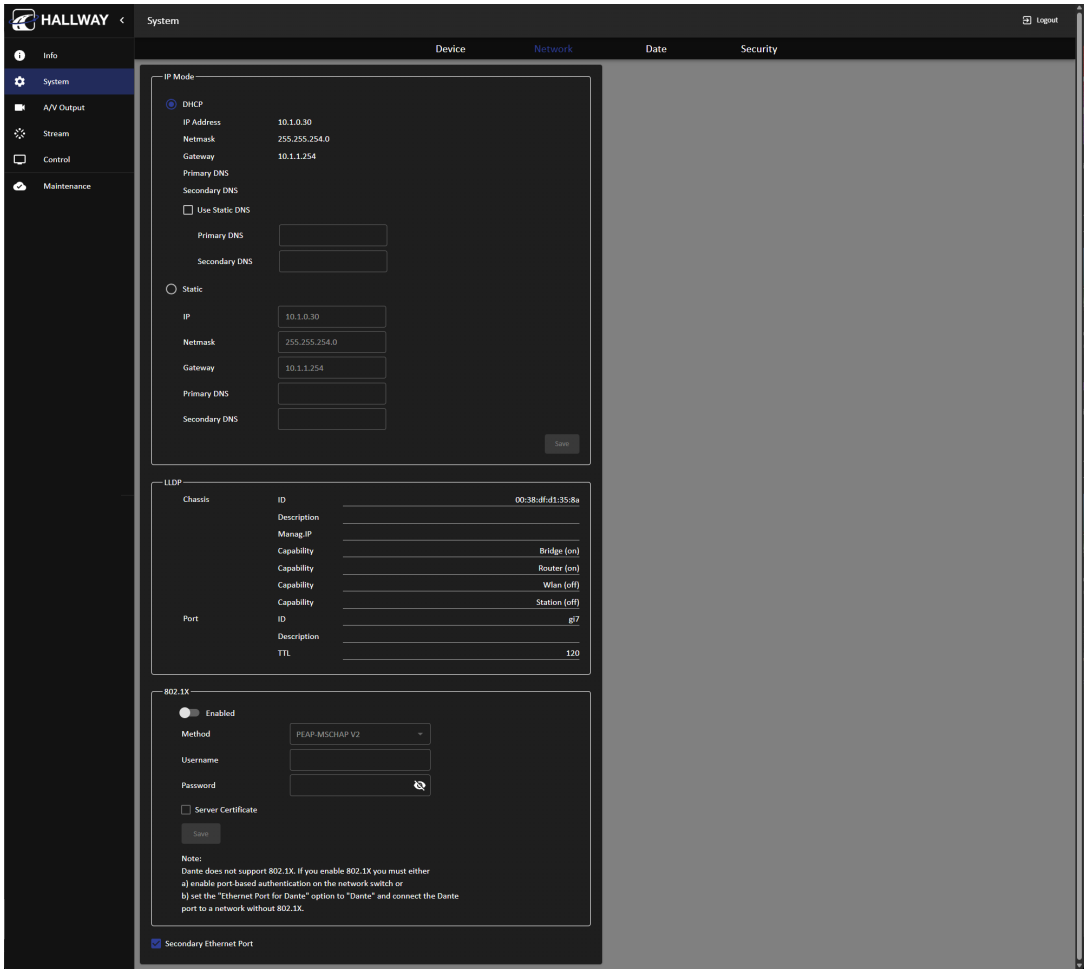
Network Discovery — Click this checkbox to enable or disable network discovery (enabled by default).

Lock Buttons — Click this checkbox to lock the front-panel buttons and prevent accidental input.

LED Off — Click this checkbox to turn off all front-panel LED indicators.

System > Network

The Network page configures the decoder's IP address, DNS settings, LLDP, and 802.1X network authentication.



Web Server — System > Network page

IP Mode

DHCP — Select this radio button to use DHCP. The assigned IP address, netmask, gateway, and DNS are displayed automatically. Optionally select Use Static DNS to enter custom primary and secondary DNS addresses.

Static — Select this radio button to assign a fixed IP address. Enter the IP address, netmask, gateway, and DNS settings manually. Click Save to apply.

LLDP

The Link Layer Discovery Protocol (LLDP) window displays information about the network switch to which the decoder is connected, including switch name, port, and VLAN information.

802.1X

IEEE 802.1X is a port-based network access control protocol used to prevent unauthorized devices from connecting to a LAN. When enabled, the decoder must authenticate with the network before receiving an IP address.

Enabled — Click this toggle to enable or disable 802.1X authentication.

Method — Select PEAP-MSCHAPv2 (requires user credentials and a CA certificate) or EAP-TLS (requires a client certificate, private key, and CA certificate).

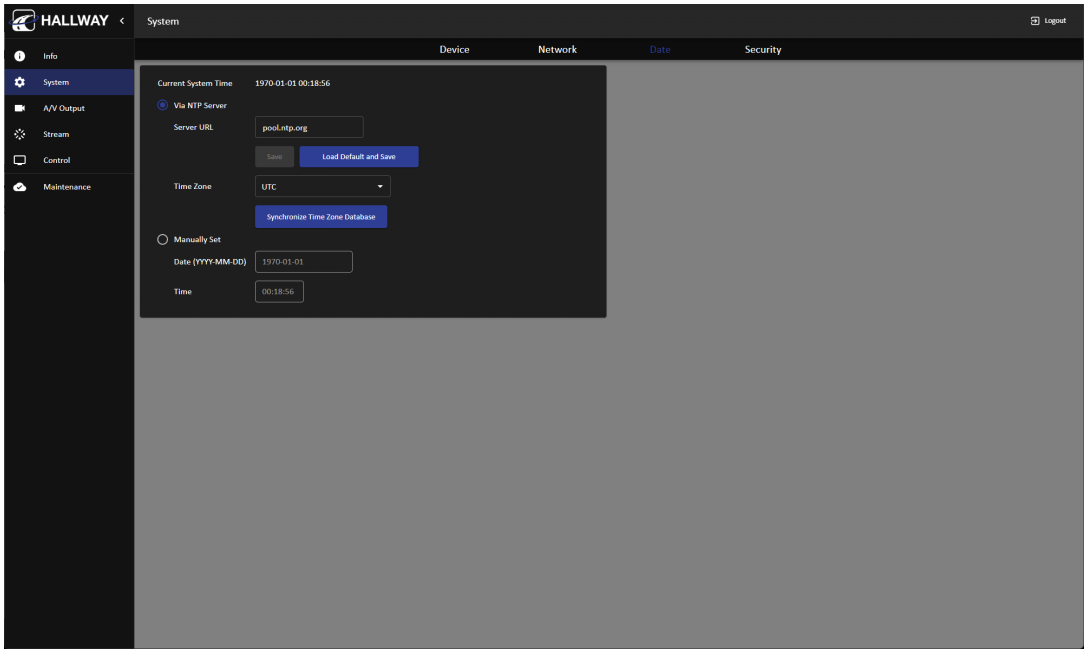
Username / Password — Enter the network authentication credentials.

Server Certificate — Click this checkbox to use and validate the server CA certificate.

> **IMPORTANT:** If 802.1X is enabled and the decoder loses network access, use the front-panel RESET button to restore factory defaults and regain access.

System > Date

The Date page configures the decoder's date, time, and time zone settings.



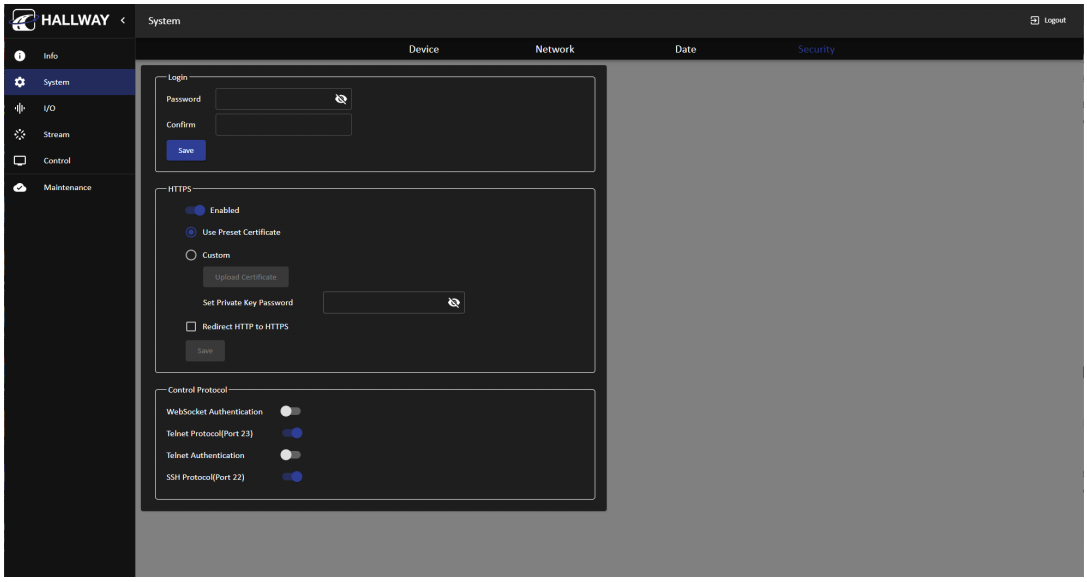
Web Server — System > Date page

Via NTP Server — Select this radio button to synchronize time from an NTP server. The default server is pool.ntp.org. Select the appropriate time zone from the drop-down list.

Manually Set — Select this radio button to set the date and time manually. Useful when the unit is not connected to the internet.

System > Security

The Security page manages the login password, HTTPS configuration, certificate management, and protocol access controls.



Web Server — System > Security page

Password / Confirm — Enter and confirm a new password. Click Save to apply. The default password is password.

HTTPS — Enabled — Toggle to enable HTTPS for secure access. When enabled, all web interface traffic is encrypted.

Use Preset Certificate — Uses the decoder's built-in self-signed certificate for HTTPS. Suitable for most deployments.

Custom Certificate — Allows upload of a custom HTTPS certificate and private key for IT policy compliance.

Redirect HTTP to HTTPS — Automatically redirects all HTTP requests to HTTPS.

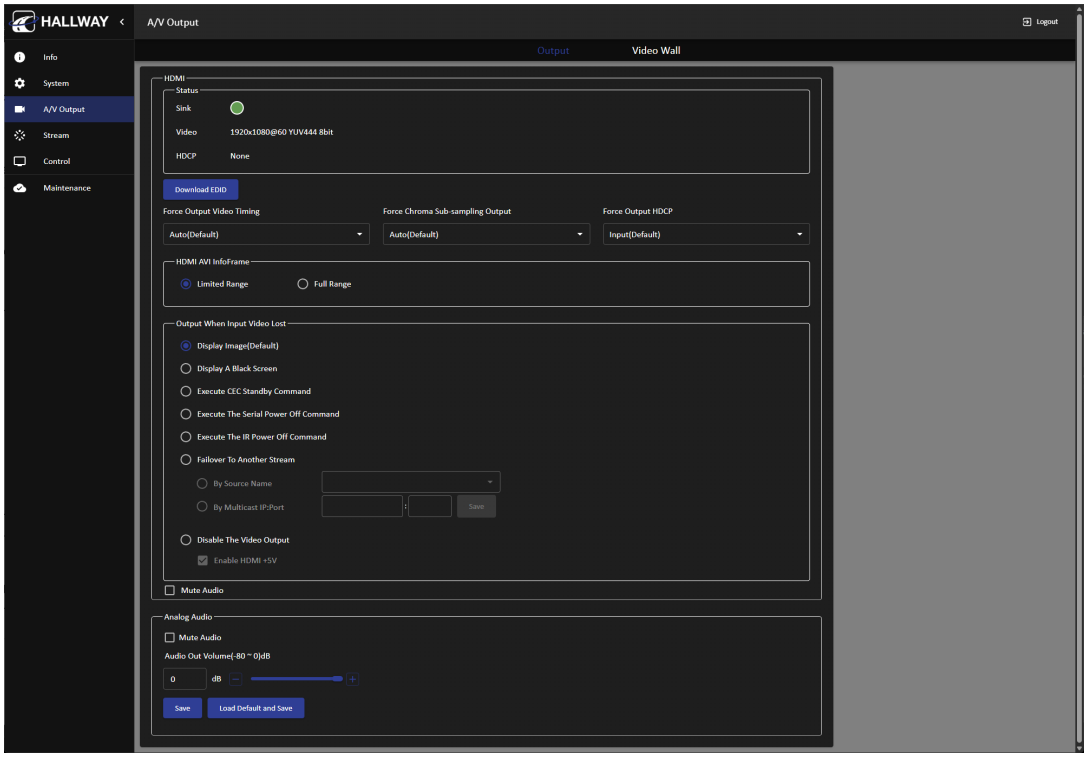
WebSocket Authentication — Enables or disables authentication for WebSocket connections.

Telnet Protocol (Port 23) — Enables or disables the Telnet control protocol.

SSH Protocol (Port 22) — Enables or disables the SSH control protocol.

A/V Output > Output

The Output page configures HDMI and analog audio output behavior.



Web Server — A/V Output > Output page

HDMI

HDMI Status — Displays the current status of the connected HDMI display, including connection state, output video format, and HDCP status.

Download EDID — Downloads the EDID information from the connected display for diagnostic purposes.

Force Output Video Timing — Selects a fixed output video timing for the HDMI output. Default: Auto.

Force Chroma Sub-sampling Output — Sets the chroma sub-sampling format for HDMI output. Default: Auto.

Force Output HDCP — Selects HDCP behavior: Input (follows source), Always On, or Off.

HDMI AVI InfoFrame — Selects the HDMI quantization range: Limited Range or Full Range.

Output When Input Video Lost — Selects the action taken when the input stream is lost: Display Image (default), Display A Black Screen, Execute CEC Standby Command, Execute The Serial Power Off Command, Execute The IR Power Off Command, Failover To Another Stream, or Disable The Video Output.

Mute Audio — Mutes or unmutes HDMI audio output.

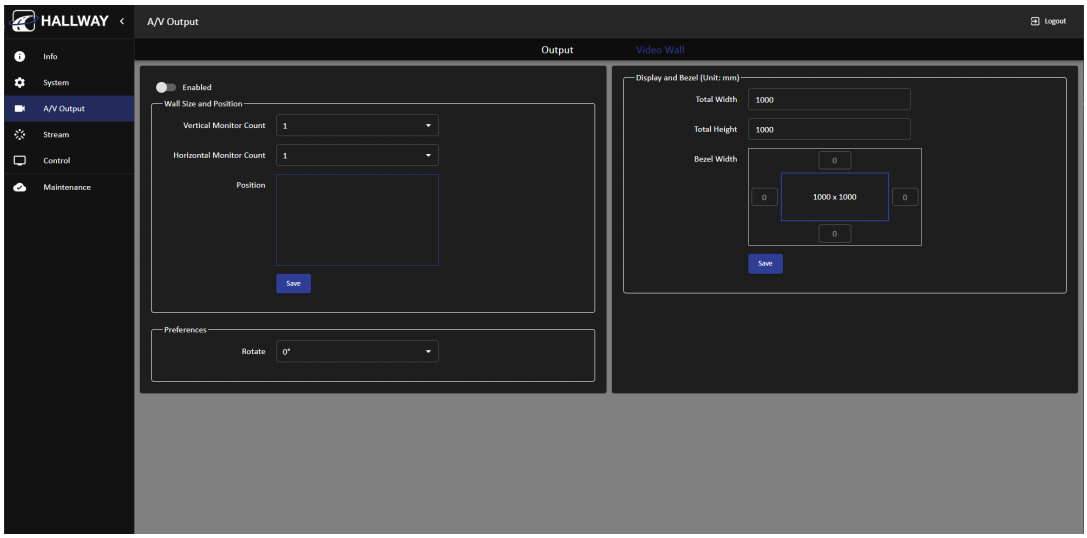
Analog Audio

Mute Audio — Mutes or unmutes analog audio output on the AUDIO OUT port.

Audio Out Volume — Sets the analog output level. Adjustment range: –80 dB to 0 dB.

A/V Output > Video Wall

The Video Wall page configures the decoder for multi-display video wall applications. Each decoder in a video wall is assigned a unique tile position, and the source image is scaled and cropped accordingly.



Web Server — A/V Output > Video Wall page

Enabled — Click to enable or disable video wall mode.

Vertical Monitor Count — Specifies the number of display rows in the video wall.

Horizontal Monitor Count — Specifies the number of display columns in the video wall.

Position — A selectable grid reflects the current wall configuration. Click the tile corresponding to this decoder's physical position in the wall.

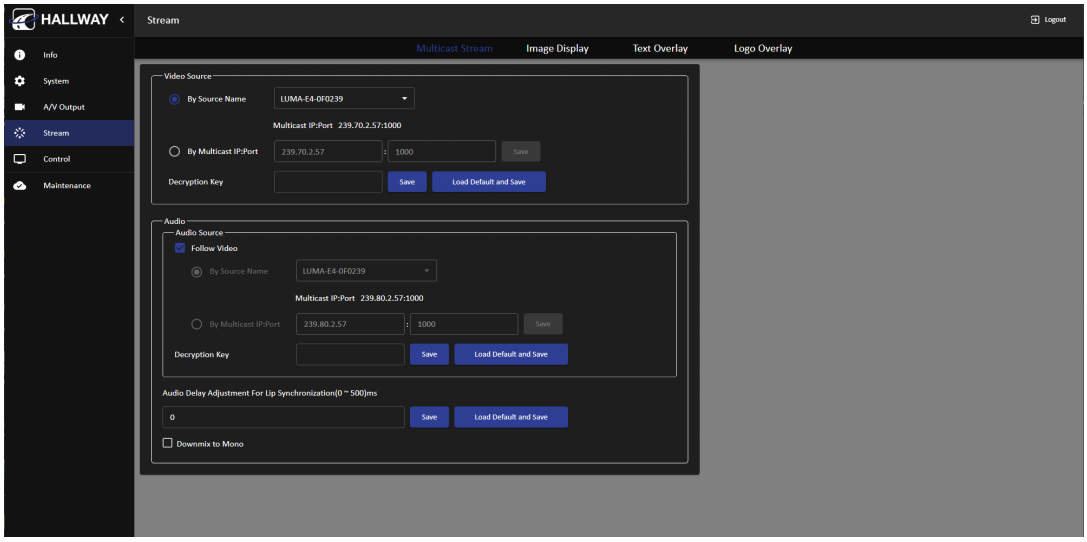
Rotate — Selects the image rotation angle for the assigned display position.

Total Width / Total Height — Specifies the total visible dimensions of the display panel in millimeters.

Bezel Width — Specifies bezel compensation values in millimeters to create a seamless image across adjacent displays.

Stream > Multicast Stream

The Multicast Stream page configures the video and audio streams that the decoder subscribes to.



Web Server — Stream > Multicast Stream page

Video Source

By Source Name — Selects the video stream by its source name as broadcast by the encoder.

By Multicast IP:Port — Selects the video stream by entering the multicast IP address and UDP port directly.

Decryption Key — Enter the AES-128 decryption key if the video stream is encrypted.

Audio

Follow Video — Causes audio stream selection to automatically follow the selected video source.

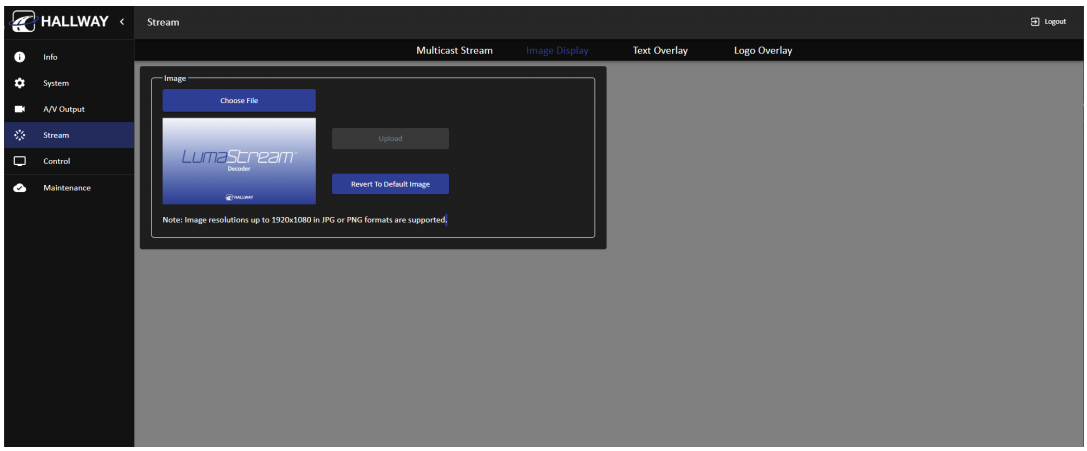
By Source Name / By Multicast IP:Port — Selects the audio stream independently by source name or multicast IP:Port.

Audio Delay Adjustment — Sets a delay (in milliseconds) to align audio with video for lip synchronization. Range: adjustable.

Downmix to Mono — Mixes the stereo audio output to a single mono channel.

Stream > Image Display

The Image Display page defines the still image shown by the decoder when no active video stream is available. Supported formats: JPG or PNG up to 1920×1080.



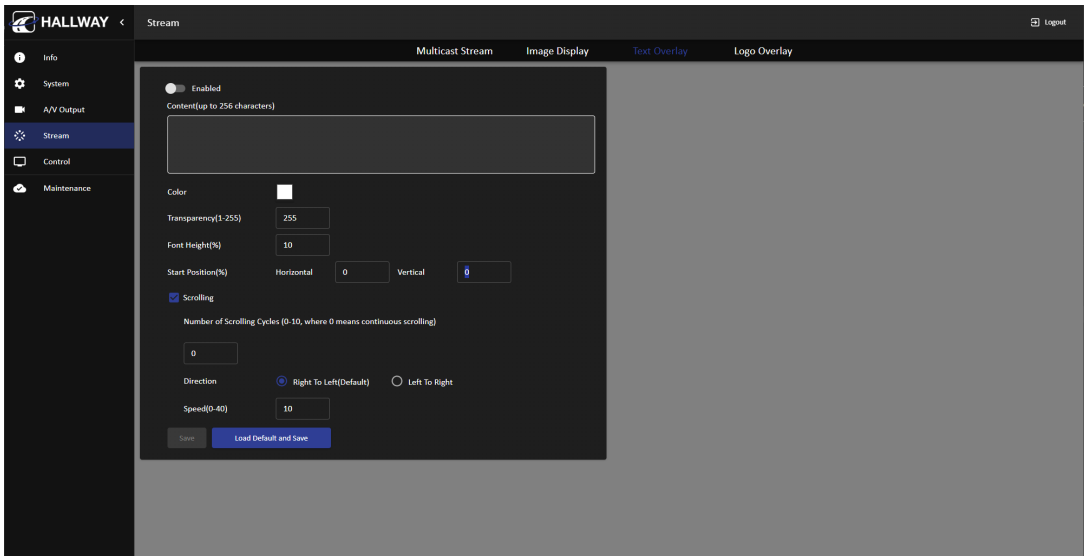
Web Server — Stream > Image Display page

Choose File / Upload — Browse for and upload a custom image file.

Revert To Default Image — Restores the factory-default placeholder image.

Stream > Text Overlay

The Text Overlay page allows scrolling or static text to be displayed over the decoded video output, useful for messaging, announcements, or labeling.



Web Server — Stream > Text Overlay page

Enabled — Toggle to enable or disable the text overlay.

Content — Enter the overlay text (up to 256 characters).

Color / Transparency — Set the text color and transparency (1–255).

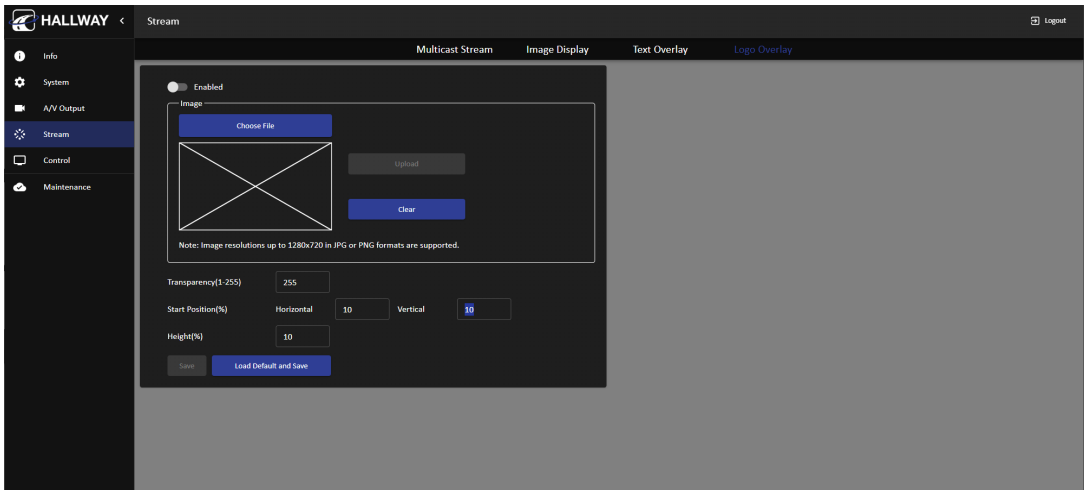
Font Height — Sets the text height as a percentage of the display area.

Start Position (Horizontal / Vertical) — Sets the starting position of the overlay as percentages of the display dimensions.

Scrolling — Enable scrolling text. Set direction (Right to Left or Left to Right), speed (0–40), and number of scroll cycles.

Stream > Logo Overlay

The Logo Overlay page allows a brand logo or image to be displayed over the video output. Supported formats: JPG or PNG up to 1280×720.



Web Server — Stream > Logo Overlay page

Enabled — Toggle to enable or disable the logo overlay.

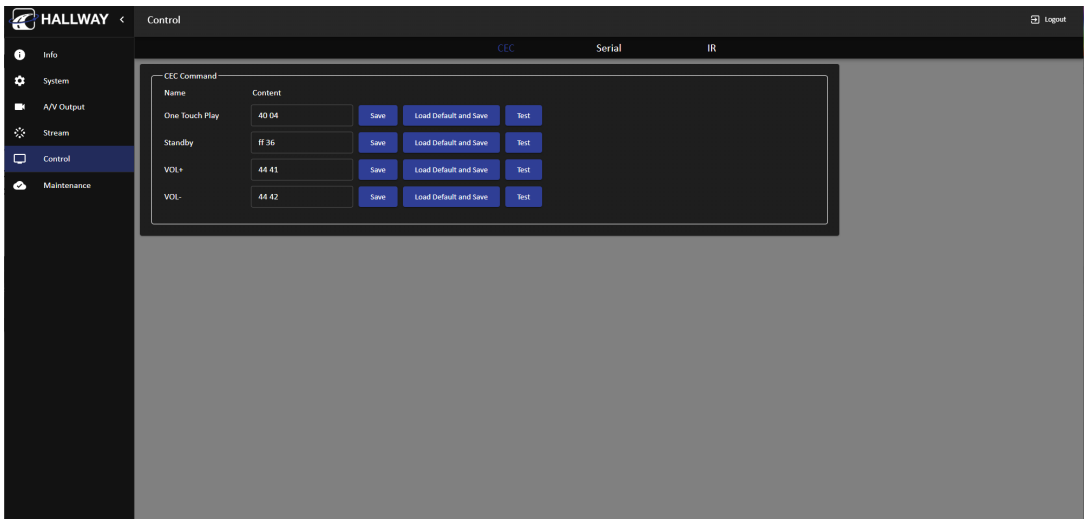
Choose File / Upload / Clear — Browse for and upload a logo image, or remove the current one.

Transparency — Sets the transparency of the logo (1–255).

Start Position / Height — Sets the horizontal/vertical start position (as % of display resolution) and logo height (as % of screen height).

Control > CEC

The CEC page configures HDMI Consumer Electronics Control (CEC) command codes for controlling the connected display device. Predefined entries for Power On, Power Off, Volume Up, and Volume Down are provided.



Web Server — Control > CEC page

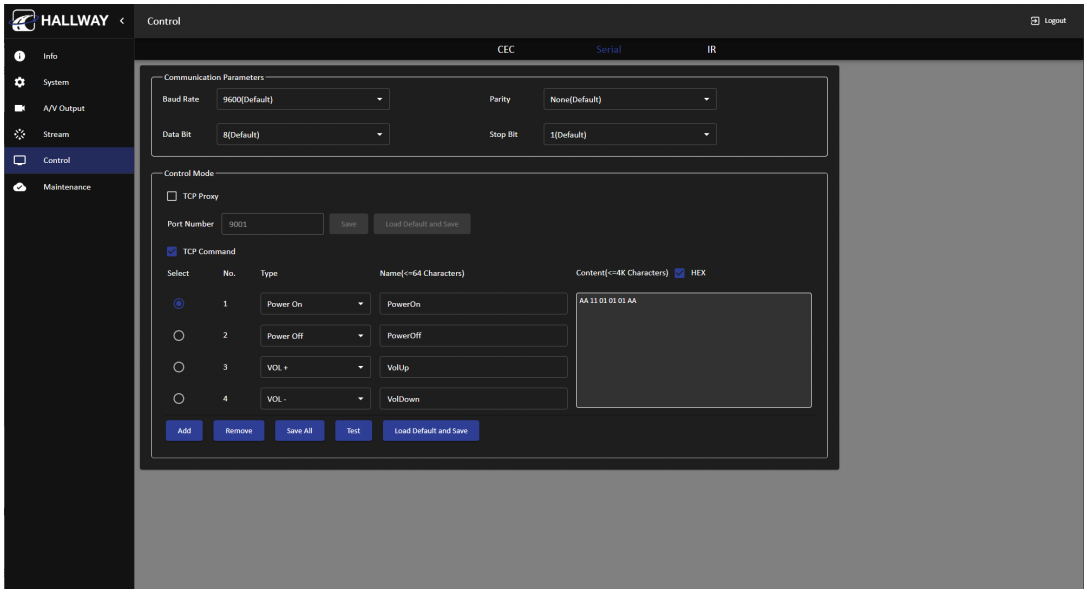
Name — Displays the name of the CEC command entry.

Content — Specifies the hexadecimal CEC command code.

Save / Load Default and Save / Test — Save the entry, restore its default value, or transmit the command for testing.

Control > Serial

The Serial page configures RS-232 communication parameters and defines command strings for controlling external devices connected to the RS-232/IR OUT port.



Web Server — Control > Serial page

Baud Rate — Sets the RS-232 baud rate. Default: 9600. Options: 9600, 19200, 38400, 57600, 115200.

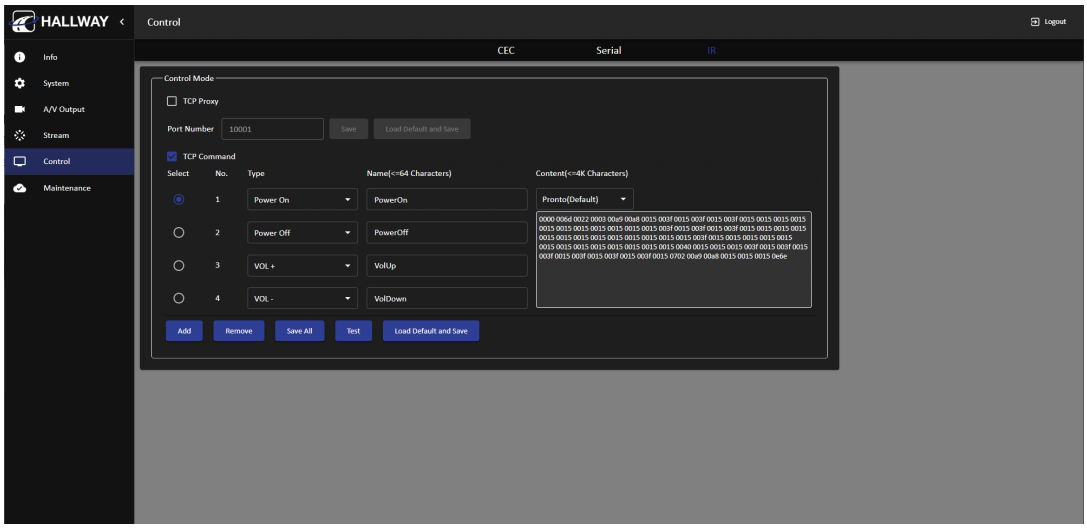
Parity / Data Bit / Stop Bit — Sets serial communication parameters. Defaults: None / 8 / 1.

TCP Proxy — When enabled, serial data can be sent to the device over TCP on the configured port (default: 9001).

TCP Command — Define named RS-232 command strings (Power On, Power Off, VOL+, VOL–, Custom) for transmission via trigger or schedule. Supports HEX input format.

Control > IR

The IR page configures infrared control commands for devices connected to the RS-232/IR OUT port using an IR blaster cable.



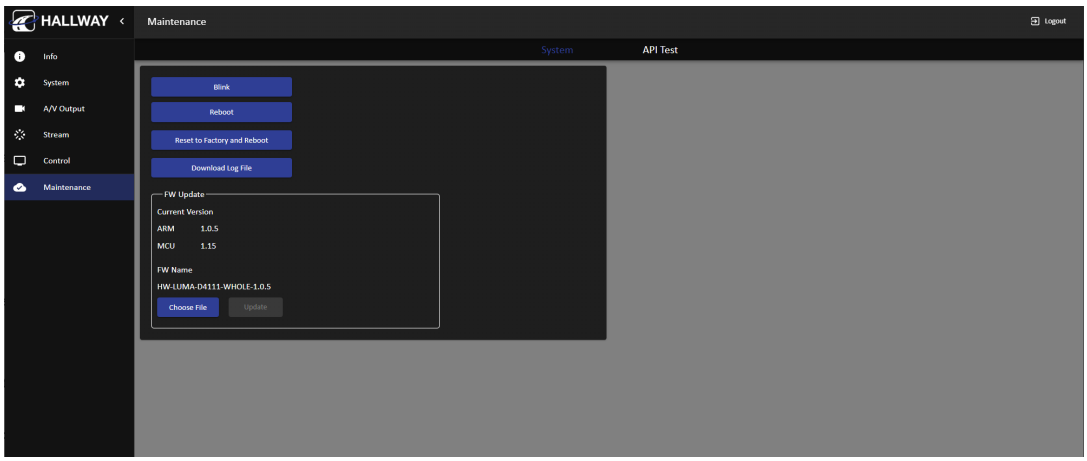
Web Server — Control > IR page

TCP Proxy — When enabled, IR data can be sent over TCP on the configured port (default: 10001).

TCP Command — Define named IR commands using Pronto or Global Cache protocol formats. Supports Power On, Power Off, VOL+, VOL–, and Custom types.

Maintenance > System

The System page provides tools for device management, firmware updates, and diagnostics.



Web Server — Maintenance > System page

Blink — Makes all front-panel LED indicators blink to help identify the unit in a multi-device installation.

Reboot — Restarts the decoder.

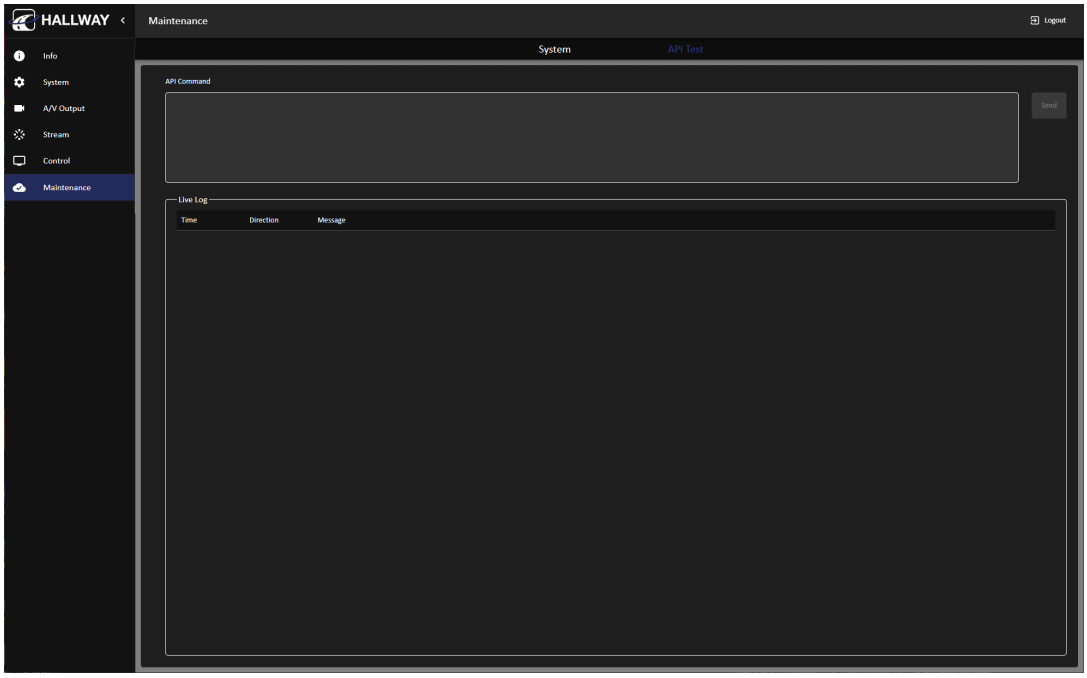
Reset to Factory and Reboot — Restores all settings to factory defaults and reboots the unit.

Download Log File — Downloads the device log file for troubleshooting or support purposes.

Firmware Update — Displays the current firmware versions (ARM and MCU). Use Choose File and Update to upload a new firmware package.

Maintenance > API Test

The API Test page provides a simple interface for sending API commands directly to the decoder and viewing real-time command/response activity.



Web Server — Maintenance > API Test page

API Command — Enter the API command string to be sent to the device.

Send — Transmits the entered command.

Live Log — Displays a real-time log of API activity, including timestamps, message direction (sent/received), and message content.

Troubleshooting

If the issue you are experiencing is not addressed below, contact Hall Research technical support at https://www.hallresearch.com.

Symptom	Possible Cause / Remedy
No video output on the display	Verify the HDMI cable is securely connected to both the decoder's HDMI OUT port and the display. Confirm the display is set to the correct HDMI input. Check that the decoder is powered and the STREAM LED is green (active stream). Ensure the encoder and decoder are on the same network and the decoder is subscribed to the correct multicast stream.
No power — STATUS LED is off	Verify the PoE switch port is active and supplies IEEE 802.3at (PoE+). If using the optional DC 48V power supply, ensure the cable is firmly seated in the DC 48V captive screw connector. Try a different switch port or power supply.
Cannot access the web interface	Confirm the computer and decoder are on the same network. Verify the decoder's IP address using the front-panel OSD (MENU → IP Addressing). Ensure no firewall is blocking port 80 (HTTP) or 443 (HTTPS). Try clearing the browser cache or using a different browser.
STREAM LED is off — no stream received	Verify the encoder is powered and streaming. Confirm the decoder is subscribed to the correct multicast IP address and port. Ensure the network switch has IGMP snooping enabled. Check that both encoder and decoder are on the same multicast-enabled VLAN.
Video is present but audio is missing	Check the audio stream subscription settings under Stream > Multicast Stream. Verify the Audio Mute toggle in A/V Output > Output is off. If using analog audio output, confirm the AUDIO OUT wiring is correct (L+, L–, GND, R+, R–) and the volume level is above –80 dB.
Poor video quality or image artifacts	Verify the network bandwidth is sufficient for the configured bit rate. Check for network congestion or packet loss using the log file (Maintenance > System > Download Log File). Consider reducing the encoder's bit rate or switching to H.265 compression.
Factory reset does not respond	Press and hold the recessed RESET button using a small pointed object for at least 5 seconds. Alternatively, press and hold the front-panel ENTER button for 5 seconds while in the OSD Device Information screen.
Video wall tiles show incorrect content	Verify that each decoder's position is set correctly in A/V Output > Video Wall. Confirm all decoders in the wall are subscribed to the same multicast stream. Ensure the Horizontal and Vertical Monitor Count values are identical across all wall decoders.

Specifications

Video	
Signal	Input: Network (encoded video) Output: HDMI
Copy Protection	HDCP 1.4 / 2.2
Pixel Clock	600 MHz
UHD/HD/SD	3840×2160 @ 60/50/30/25/24 Hz 1920×1080p @ 60/50/30/25/24 Hz 1280×720p @ 60/59.94/50 Hz 720×576p @ 50 Hz 720×480p @ 60 Hz
VESA	2560×1600, 1920×1200, 1680×1050, 1600×1200, 1440×900, 1366×768, 1280×1024, 1280×800, 1024×768, 800×600, 640×480 (4:4:4 and 4:2:2)
Chroma Sub-Sampling	4:4:4, 4:2:2, 4:2:0
Decoding	
Video Compression	H.265, H.264
Bit Rate	128 kbps – 60 Mbps
Scaler	Configurable to any supported output resolution and frame rate
Latency	150 ms max end-to-end
Thumbnails	1 thumbnail per device, 320×180 px, JPG, updated every 2 seconds
Audio	
Signal Type	Input: Network Output: HDMI, Balanced Analog, Network
HDMI Audio	Format: LPCM 2.0 Bit Depth: Up to 16 bits Sample Rate: 32 kHz, 44.1 kHz, 48 kHz
Analog Audio	2-channel balanced analog Output Level: +20 dBu max Frequency Response: 20 Hz – 20 kHz ± 0.5 dB THD+N: < 0.025%
Network	
Ports	2 × RJ45 (PoE port + LAN port)
Speed	10/100/1000 Mbps
Protocols	
Video Streaming	RTP
Audio Streaming	RTP, up to 2 channels
Addressing	DHCP, Static

Encryption	AES-128
IP Multicast	IGMPv3
Management	HTTP, HTTPS, SSH, Telnet, WebSocket, LLDP
Authentication	IEEE 802.1X: PEAP-MSCHAPv2, EAP-TLS
Time	NTPv4
QoS Tagging	RFC 2475
Connectors	
HDMI OUT	1 × Type A, 19-pin female
PoE / LAN	2 × RJ45
RS-232/IR OUT	1 × 4-pin captive screw
AUDIO OUT	1 × 5-pin captive screw
DC Power	1 × 2-pin captive screw
Buttons & Indicators	
Buttons	4 × momentary tact-type: MENU, UP, DOWN, ENTER
LED Indicators	ETH, STREAM, STATUS
Power	
PoE Standard	IEEE 802.3at (PoE+)
Power Consumption	Up to 9 W
Heat Dissipation	30.1 BTU/h
Optional Power Supply	AT-PS-48083-C (48 V DC, sold separately)
Environmental	
Operating Temperature	+32 to +104 °F (0 to +40 °C)
Storage Temperature	-4 to +140 °F (-20 to +60 °C)
Operating Humidity	20% to 90%, non-condensing
Mechanical	
Dimensions (H × W × D)	0.98 × 6.89 × 4.34 in. (24.9 × 175 × 110.2 mm)
Weight	1.21 lbs (0.55 kg)
Compliance & Certification	
Certifications	CE, FCC

NDAA Section 889	Compliant
Warranty	3 years — visit hallresearch.com/warranty

Appendix

Sustainability

We know sustainability is a journey, not a destination. As we continue to grow, Hall Research remains focused on identifying new opportunities to reduce our environmental footprint — from packaging and logistics to product development and operations. We are committed to making thoughtful, measurable improvements that support both our customers and the environment.

Warranty

Hall Research products are warranted against defects in material and workmanship. Visit https://hallresearch.com/warranty for full warranty terms, coverage period, and claim instructions.

Technical Support

For technical assistance, product registration, and firmware downloads, visit https://www.hallresearch.com or contact Hall Research technical support during business hours (Monday – Friday, 8:00 a.m. – 5:00 p.m. CST).