

OmniStream™ Wallplate Networked AV Encoder



Version Information

Version	Release Date	Notes
1	Sep 2019	Initial release
2	Sep 2019	Documentation updated to support OmniStream 1.2.5; various bug fixes and added Virtual Reality EDID resolution.
3	Feb 2020	Added web server documentation reflecting changes to 1.2.6 firmware. Refer to the release notes for a complete listing features and bug fixes.
4	Jan 2021	Firmware 1.2.7 - FPGA information now available under the System Information page. Refer to System information page (page 67) for more information. - NTP server set to pool.ntp.org, by default; change under the System Information page. Refer to System information page (page 67) for more information. - Custom SAP multicast address can now be configured under the SAP page. Refer to SAP page (page 69) for more information. - Telnet session can now be disabled under the Network page. Refer to Network page (page 88) for more information.
5	Aug 2021	Firmware 1.2.8 - Added Link Test button to Session page (page 78) . - Renamed Alarms menu to Notifications . - Several security improvements and bug fixes. Refer to the AT-OMNI Release Notes, included in the 1.2.8 firmware download, for more information.

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Operating Notes

- The Atlona Management System (AMS) is a free downloadable application from Atlona that provides network configuration assistance for this product. This application is available only for the Windows® Operating System and can be downloaded from the Atlona web site.



IMPORTANT: Visit <http://www.atlona.com/product/AT-OMNI-111-WP> for the latest firmware updates and User Manual.



NOTE: Scaling and deinterlacing is not supported at 1080i.

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The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.



The information bubble is intended to alert the user to helpful or optional operational instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of a polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the product.
11. Only use attachments/accessories specified by Atlona.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this product during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.



FCC Compliance

FCC Compliance and Advisory Statement: 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. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) reorient or relocate the receiving antenna; 2) increase the separation between the equipment and the receiver; 3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; 4) consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Where shielded interface cables have been provided with the product or specified additional components or accessories elsewhere defined to be used with the installation of the product, they must be used in order to ensure compliance with FCC regulations.

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Table of Contents

Introduction	9
Features	9
Package Contents	9
Panel Description	10
Connection Instructions	11
Connection Diagram	12
Configuration	13
Accessing Encoders in AMS	13
Configuring a Static IP Address	17
Input Selection	18
Input Selection	18
Verifying the Input	19
Session Configuration	20
Basic Operation	21
LED Indicators	21
Rebooting OmniStream	22
Unicast Mode	23
Multicast Mode	25
802.1X Authentication	27
AES67 Audio	30
EDID Management	31
Selecting an EDID Preset	31
Using a Custom EDID	31
Copying an EDID from the Display	33
Encoder Grouping	36
Scrambling	38
Standard Method	38
Using the Virtual Matrix	39
Setting the Video Mode	40
Slate / Logo Insertion	41
Adding Slates / Logos	41
Deleting Slates / Logos	44
Text Insertion	45
The AMS Interface	46
Device Info page	46
Input page	48
Serial page	51
Session page	52
Network page	55
Other page	57
Logo	57
Text	58
PTP	59
The Virtual Matrix	61
Layout and Operation	62
Web Server	64
Accessing the Web Server	64
Getting the IP Address	64
Logging In	65
System information page	67
SAP page	69
Input page	70
EDID page	73
Encoding page	74

Table of Contents

Serial page	76
Session page	78
Logo page	84
Text page	86
Network page	88
PTP page	90
LLDP page	92
Configuration page	93
Users page	94
License page	95
Upgrade page	96
Appendix	97
Updating the Firmware	97
Updating the Firmware using the Web Server	99
Performing a Link Test	100
FEC Details	103
Matrix Size, Overhead, and Latency	103
FEC and Video Bitrate	103
FEC, Latency, and Lip Sync	104
Specifications	105

Introduction

The Atlona **OmniStream™ 111 Wallplate (AT-OMNI-111-WP)** is a single-channel networked AV encoder for HDMI 2.0 sources up to 4K @ 60 Hz and HDR (High Dynamic Range), plus embedded audio. It features a US two-gang, Decora-style wallplate form factor, and includes interchangeable black and white wallplates and faceplates. The OmniStream 111 WP is part of the OmniStream Pro Series, designed for high performance, flexible distribution of AV over standard, off-the-shelf Gigabit Ethernet switches in commercial audiovisual applications. It is HDCP 2.2 compliant and ideal for the latest Ultra High-Definition and HDR sources. This networked AV encoder features advanced high-quality, VC-2 visually lossless video compression technology with user-selectable, video quality optimization engines designed for computer-generated imaging, or motion video content. The Atlona OmniStream 111 WP achieves extremely low, sub-frame latency when paired with OmniStream AV decoders.

With its wallplate form factor, the OmniStream 111 WP enables convenient installation wherever an aesthetically appealing or discreet AV source connection is required.

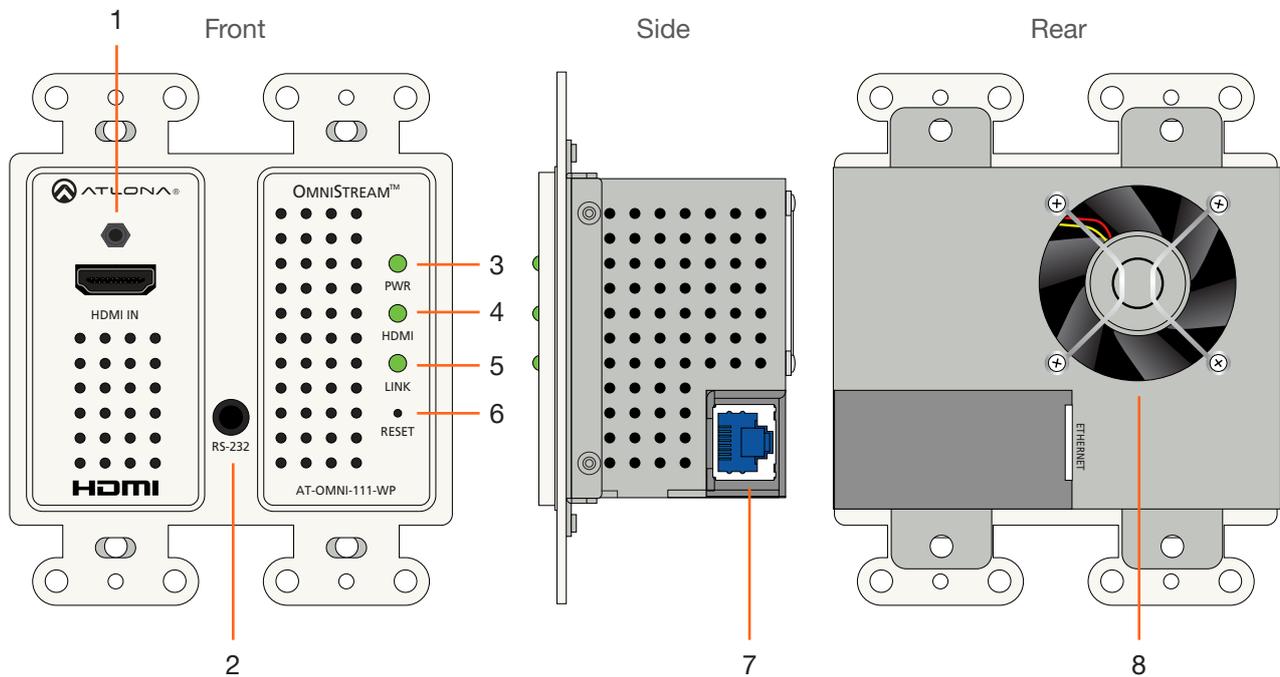
Features

- Best-in-class AV over IP performance and reliability over Gigabit Ethernet.
- US two-gang enclosure for Decora-style wallplate openings – interchangeable black or white trim kits.
- AV encoder for HDMI up to 4K/UHD, plus embedded audio.
- Networked AV redundancy.
- Supports UHD @ 60 Hz plus HDR formats.
- High performance, visually lossless video compression.
- HDCP compliance.
- Network error resilience with FEC (forward error correction).
- Simplify integration with plug-and-play network switch compatibility.
- Remote PoE (Power over Ethernet) powering.
- Secure content distribution with AES-128 encryption.
- Supports industry-standard, network security features and protocols.
- AES67-compatible audio over IP streaming.
- Simultaneous OmniStream and AES67 audio streaming.
- Enhance AV presentations with visual enhancements.
- EDID management.
- Encoder grouping.
- Audio processing and pass-through.
- System management.
- Award-winning 10 year limited product warranty.

Package Contents

- 1 x AT-OMNI-111-WP
- 1 x Black faceplate
- 1 x White Decora® wallplate
- 1 x Black Decora® wallplate
- 1 x 3.5 mm-to-DE-9 (M-F) cable
- 4 x Spare screws
- 1 x Installation Guide

Panel Description



1 HDMI IN

Connect an HDMI cable from this port to a UHD/HD source.

2 RS-232

This is a service port used for future management purposes.

3 PWR

This LED indicator is green when the unit is powered.

4 HDMI

This LED indicator is green when the link between source and encoder is good.

5 LINK

This LED indicator is green when the link integrity between the AT-OMNI-111-WP and the switch is good.

6 RESET

Press and release this button to reboot the AT-OMNI-111-WP. Note that this operation *does not* reset the unit to factory-default settings.

7 ETHERNET

Connect an Ethernet cable from this port to the Local Area Network (LAN).

8 Fan

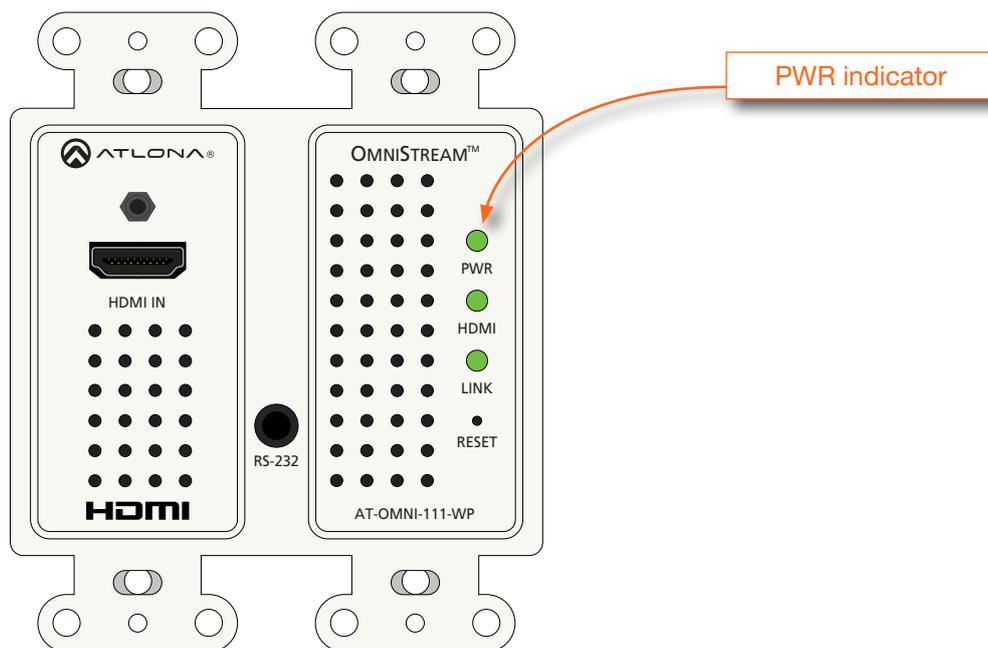
This fan provides internal cooling by forcing hot air from the wallplate chassis. Make sure adequate ventilation is provided when installing the AT-OMNI-111-WP.

Connection Instructions

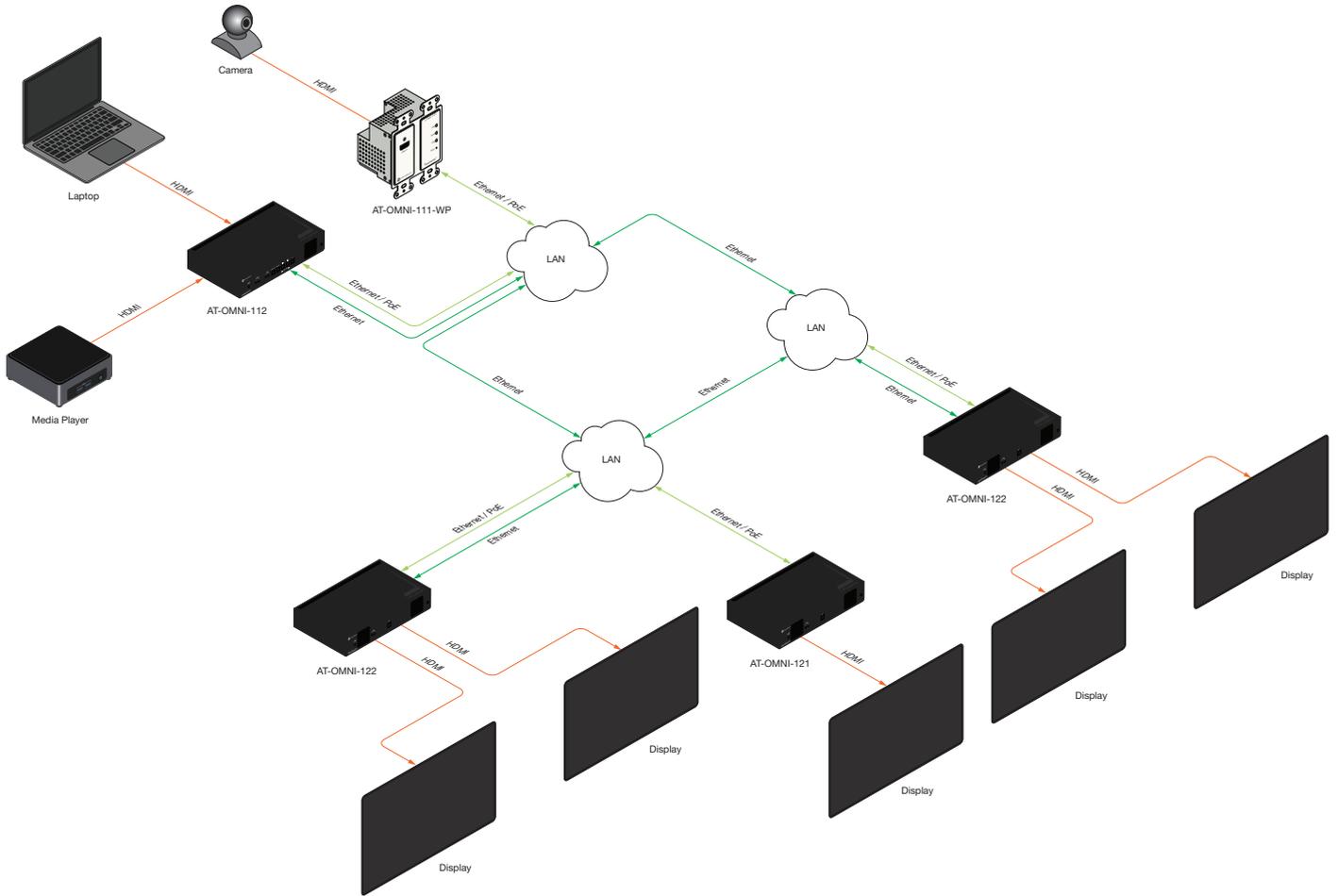


IMPORTANT: The venting holes, surrounding the enclosure, along with the fan assembly on the back of the unit, provides cooling by expelling warm air from the enclosure. To prevent overheating, make sure these holes and the fan assembly are not blocked.

1. Connect an Ethernet cable from the **ETHERNET** port on the AT-OMNI-111-WP to a PoE-capable switch on the Local Area Network (LAN).
2. Install the AT-OMNI-111-WP into a 2-gang electrical box or mud ring.
3. Attach the included Decora® wallplate to secure the AT-OMNI-111-WP to the wall/surface.
4. Connect an HDMI cable from a HD/UHD source to the **HDMI IN** port on the AT-OMNI-111-WP.
5. The **PWR** indicator, on the front panel, displays the power status. When the AT-OMNI-111-WP is powered, the **PWR** LED initially turns red. After a few moments it will turn amber, and finally green.
6. The AT-OMNI-111-WP is now ready for operation.



Connection Diagram



Configuration

Accessing Encoders in AMS

It is recommended that the Atlona Management System (AMS) be used to configure and control OmniStream devices. AMS uses multicast Domain Name Server (mDNS) to automatically discover each encoder on the network. AMS is free and can be downloaded from <https://www.atlona.com/ams>.

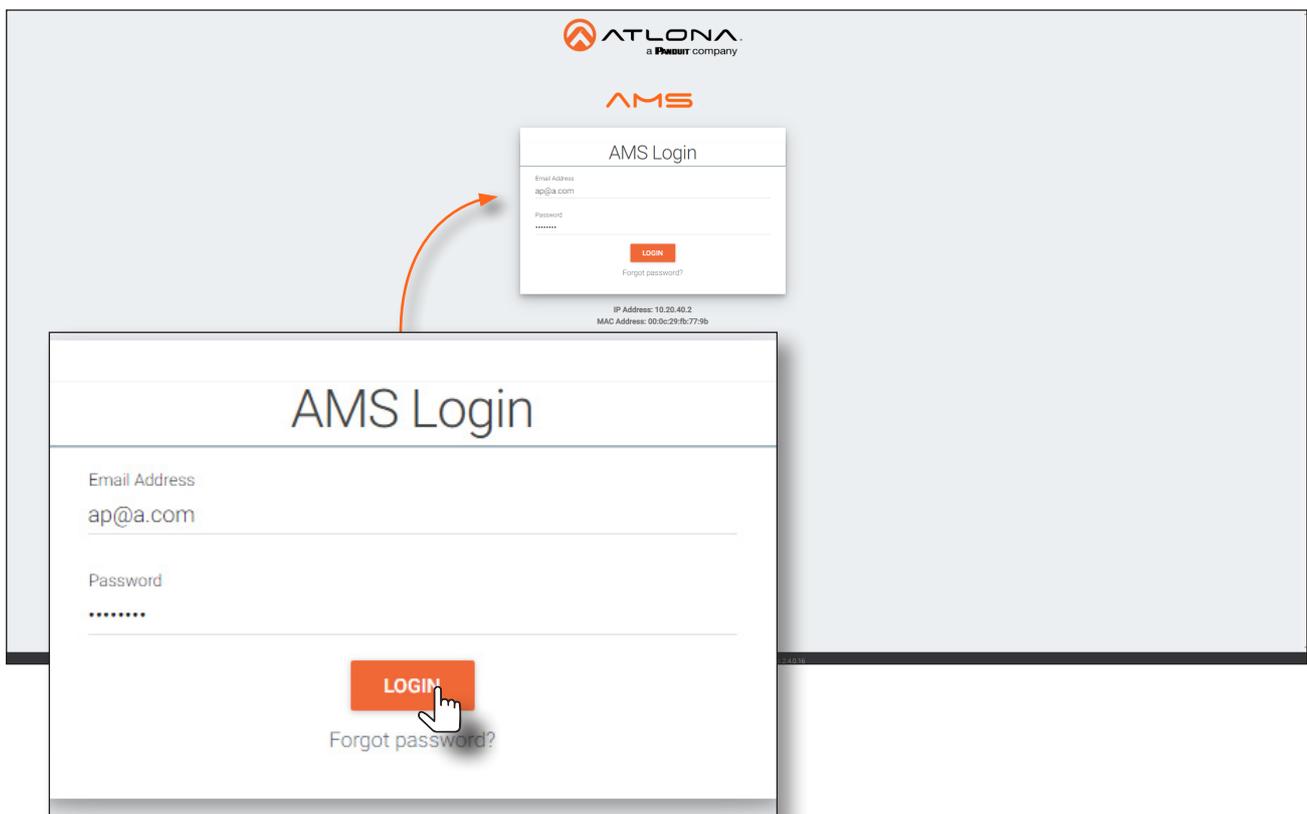
By default, encoders are set to DHCP mode, allowing a DHCP server (if present) to assign the encoder an IP address. Once an IP address has been assigned, the Atlona Management System (AMS) can be used to manage the product on the network. Note that AMS will only be able to discover encoders if they are on the same VLAN.

In order for AMS to automatically assign multicast IP addresses to OmniStream encoders, the destination IP addresses for the session streams must be cleared.

 **NOTE:** The following steps are required *only if a pre-existing multicast IP address* is assigned to each session and if automatic assignment of these multicast IP addresses, using AMS, is desired.

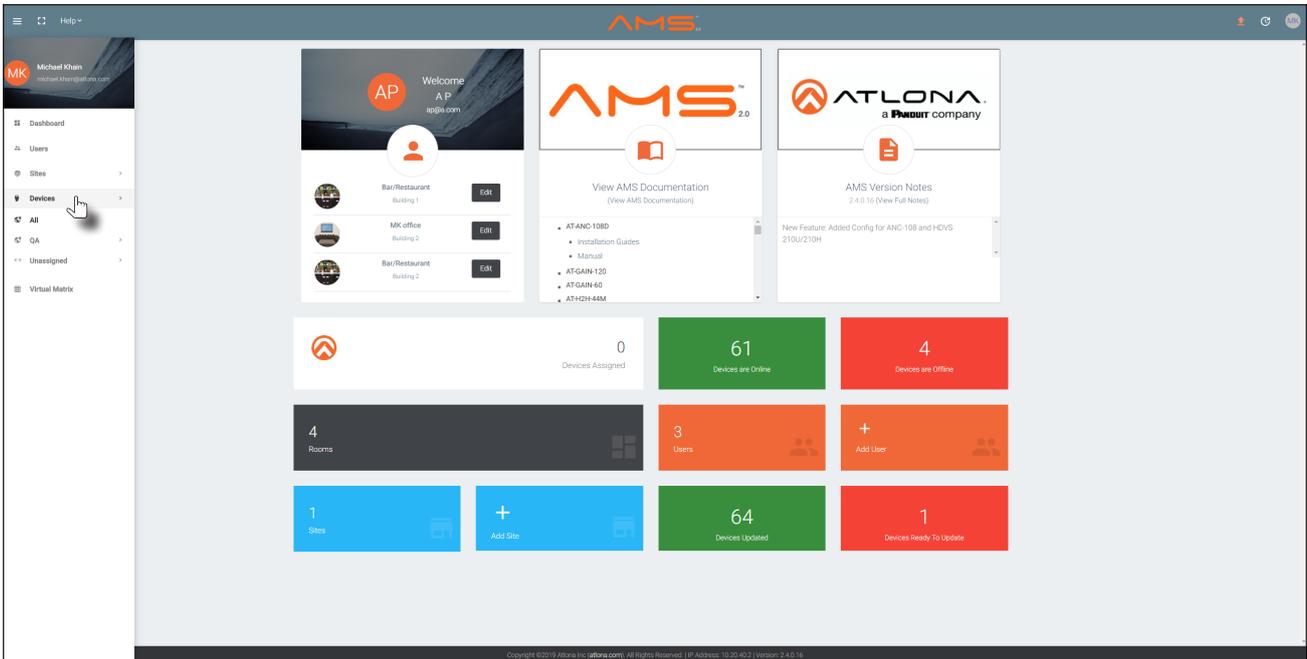
1. Launch a web browser and enter the IP address of AMS, in the address bar.
2. Enter the required login credentials. The default login is:

Username: admin
Password: Atlona



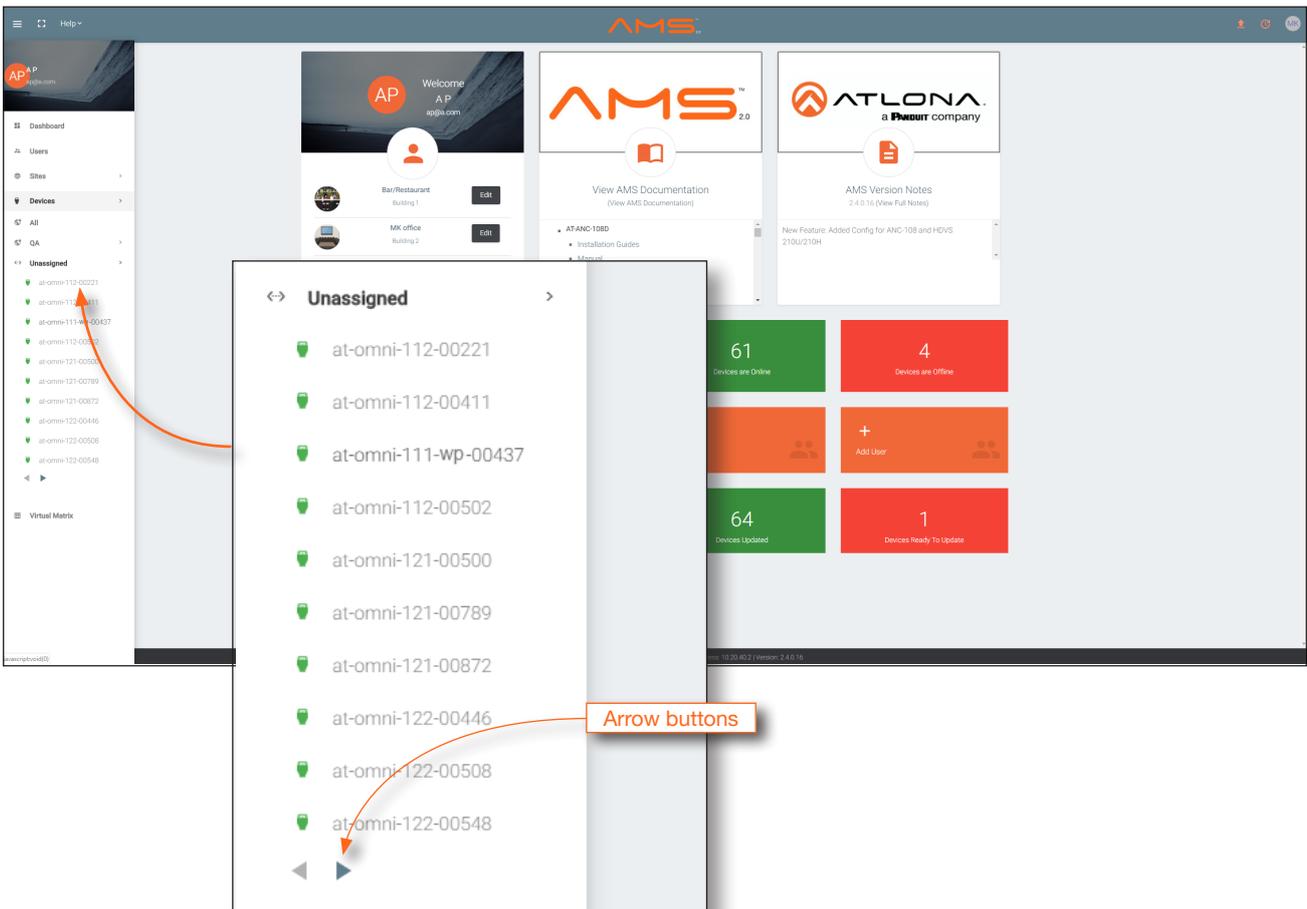
3. Click the **Login** button.
4. The AMS Dashboard will be displayed.
5. Click the  icon, in the upper-left corner of the AMS Dashboard.

6. Click **Devices** from the fly-out menu.



7. Click the **Unassigned** option.

8. If the device isn't immediately listed, click the left and right arrows, at the bottom of the **Unassigned** list, to scroll through all available devices.



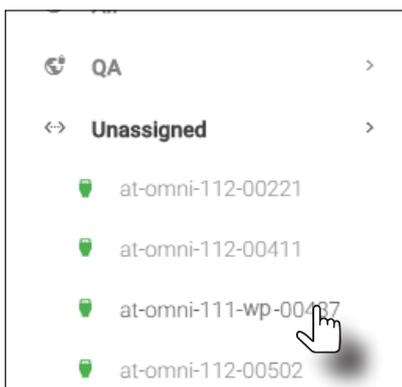
All available encoders will be displayed under the **Unassigned** category. When an encoder is unassigned, it means that it has not been assigned to a site, building, and/or room. Refer to the AMS User Manual for more information on these topics.

If a DHCP server is not found within 60 seconds, the encoder will be placed in Auto IP mode and assigned an IP address within the range of 169.254.xxx.xxx. If this occurs, configure the network interface of the computer that is running AMS, located on the same subnet (169.254.xxx.xxx, subnet mask 255.255.0.0). Refer to [Configuring a Static IP Address \(page 17\)](#) for more information on configuring an encoder in Auto IP mode.

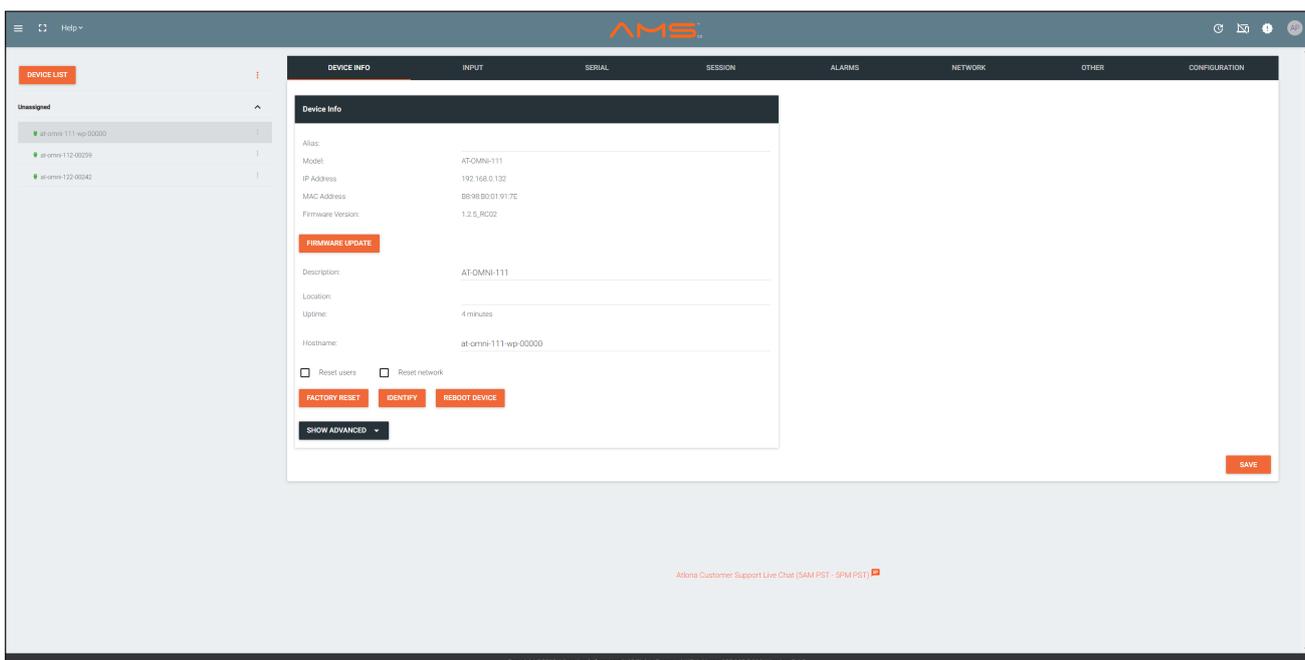
If no OmniStream encoders are found, then verify the following:

- The computer that is running AMS must be on the same network as the OmniStream device.
- Remove any network restrictions that may be in place. In order for mDNS to function properly, there must not be restrictions applied to the network.

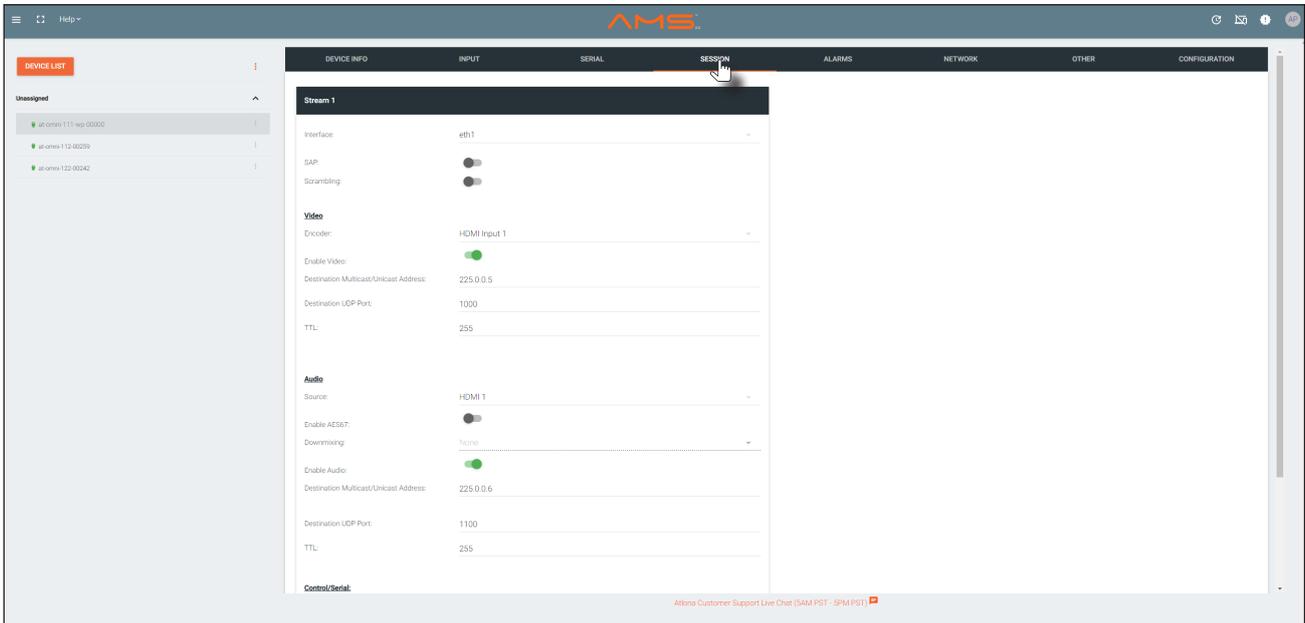
9. Click the desired encoder within the **Unassigned** list.



10. Once the unit is selected, the control interface for the encoder will be displayed.



11. Click **SESSION** in the top menu bar.

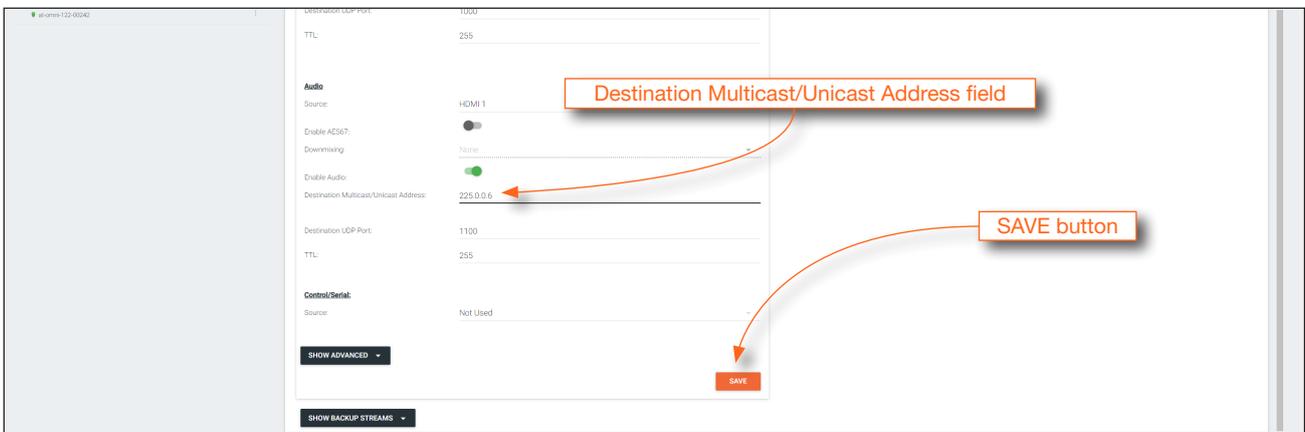


12. Locate the **Video** section.

13. Delete the value in the **Destination Multicast / Unicast Address** field.



14. Locate the **Audio** section and delete the value in the **Destination Multicast / Unicast Address** field.



15. Scroll down to the bottom of the page and click the **SAVE** button at the bottom of the **Stream 1** window group.

Configuring a Static IP Address

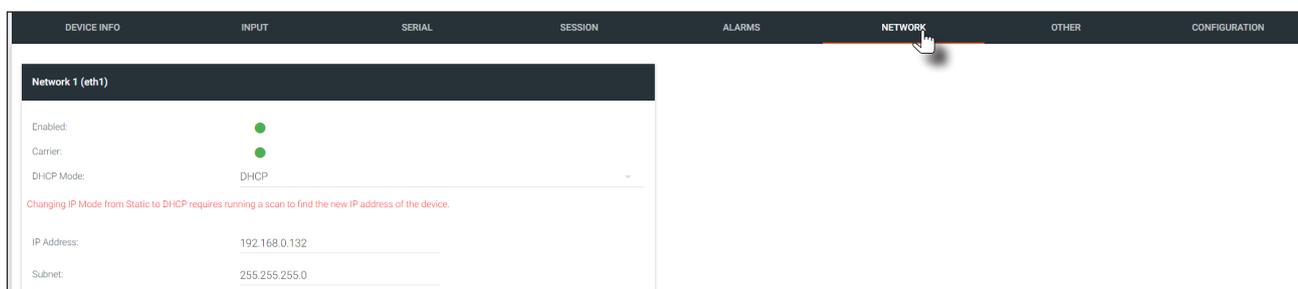
The following section is only required to when setting an encoder to a static IP address. If a DHCP server is not found within 60 seconds, encoders are automatically placed in Auto IP mode and will be assigned an IP address within the range 169.254.xxx.xxx. If this occurs, a static IP address can be assigned to the encoder in order for AMS to locate it on the network.

1. Make sure that the encoder is powered. The AT-OMNI-111-WP is powered by connecting an Ethernet cable from the encoder to a PoE-capable switch.
2. Connect an Ethernet cable from the PC, directly to the Ethernet port on the rear of the encoder. Make sure that the computer being used has AMS installed.
3. Configure the PC to a static IP address that is on the same subnet as the encoder.

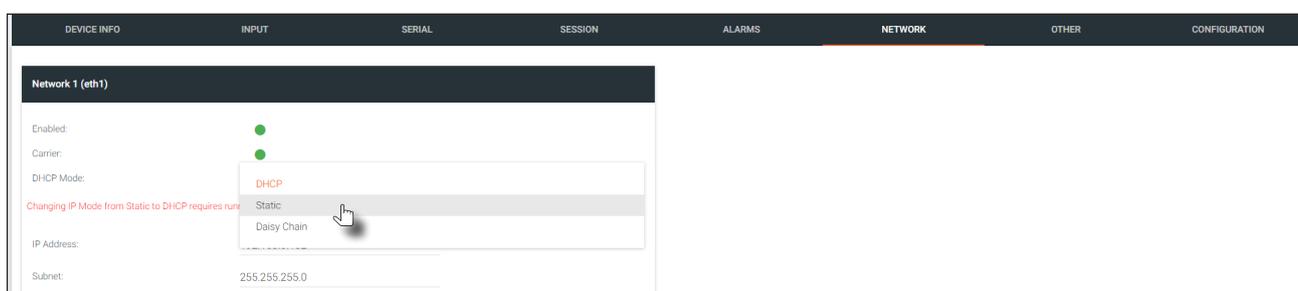


IMPORTANT: Windows: Before continuing, write down the current IP settings in order to restore them, later. If *Obtain an IP address automatically* and *Obtain DNS server automatically* are selected, then this step is not required.

4. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#) for information on the login process.
5. Locate the encoder under the **Unassigned** section within AMS.
6. Click on the device.
7. Under AMS, click **NETWORK** in the menu bar.



8. Click the **DHCP Mode** drop-down list and select **Static**.



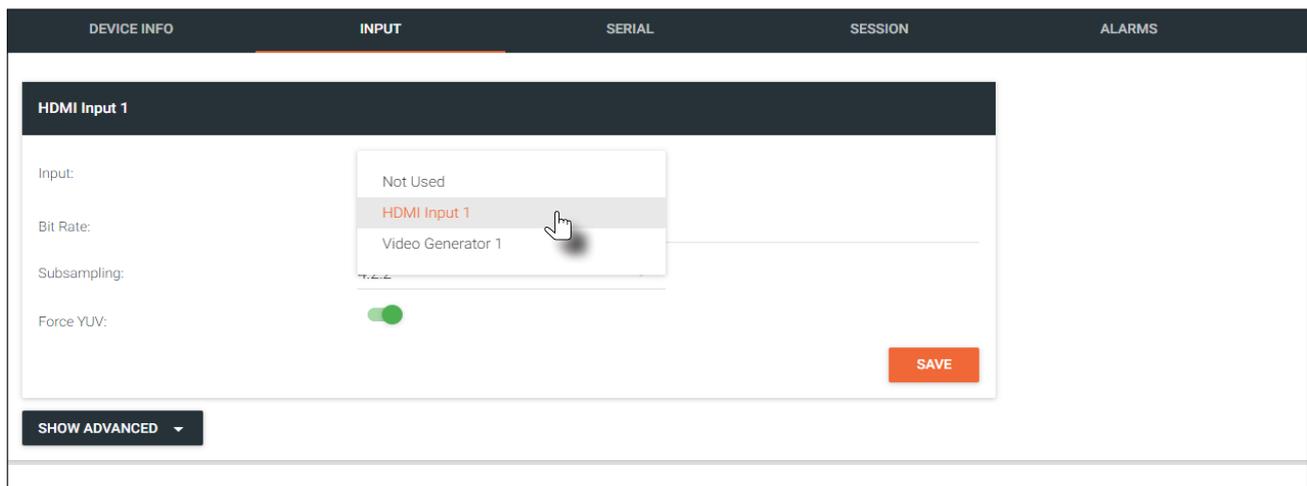
9. Enter the required network information for the encoder in the **IP Address**, **Subnet**, and **Gateway** fields.
10. Click the **Save** button in the bottom-right corner, to apply the changes.
11. Disconnect the encoder from the PC and connect the encoder to the network.
12. The encoder is now ready for use.

Input Selection

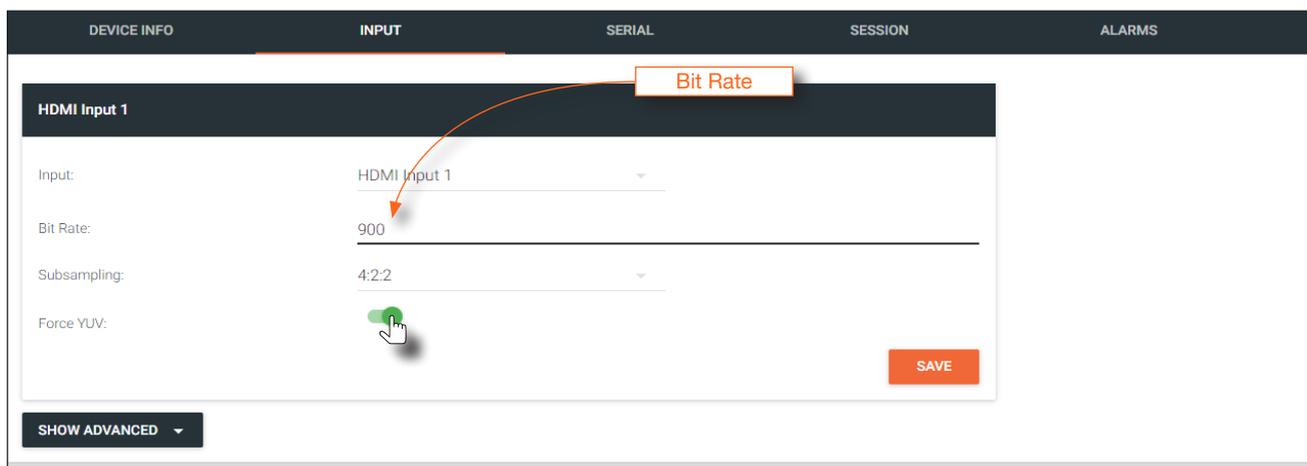
Once the OmniStream encoder is configured, and can be located on the network, the encoder will need to be instructed on how to handle source devices and to which stream each source is assigned.

Input Selection

1. Under AMS, click **INPUT** in the menu bar.
2. Click the **Input** drop-down list for **HDMI Input 1** and select the input.



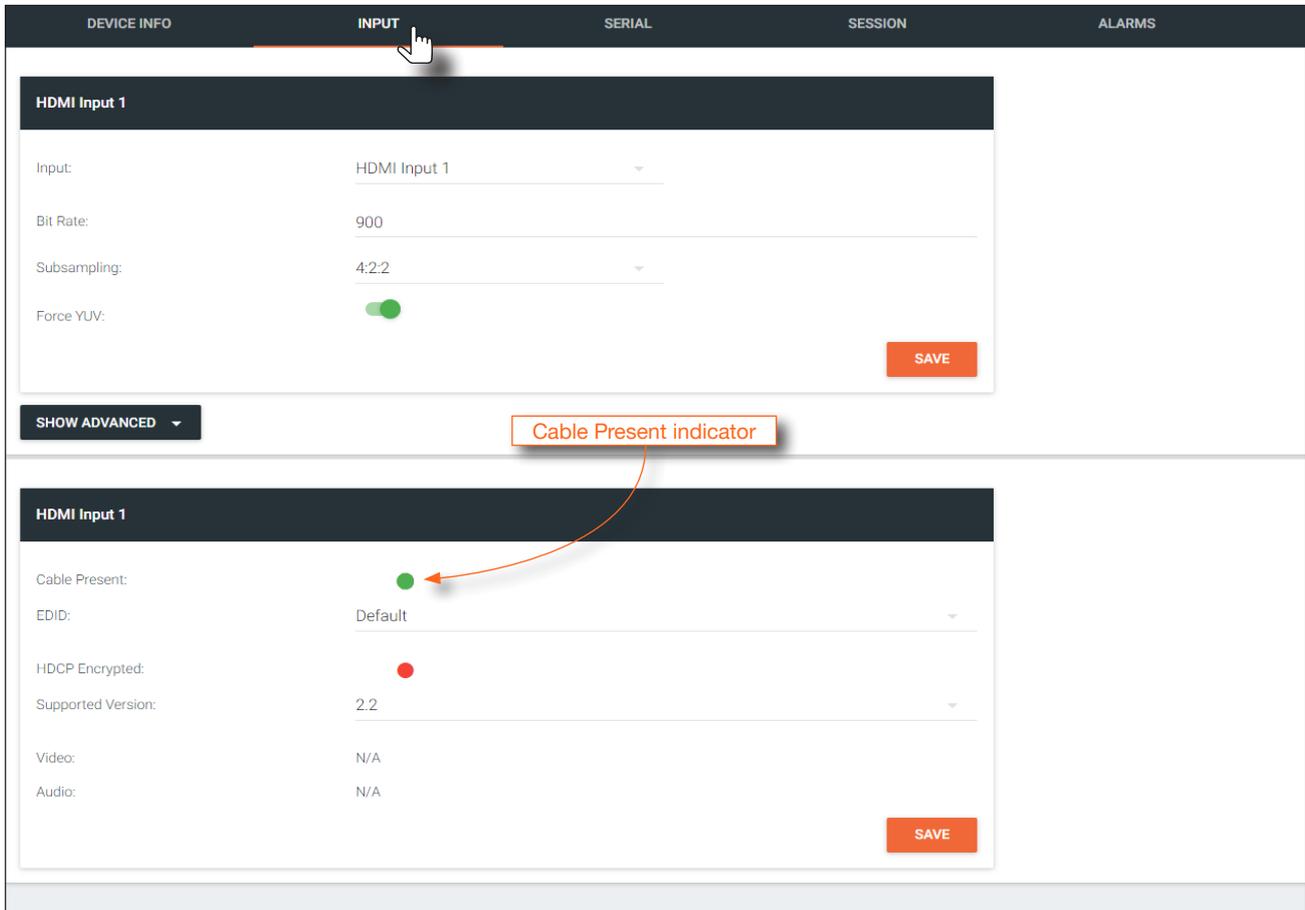
3. Enter the desired bit rate in the **Bit Rate** field. Specifying lower bit rates will reduce video quality. This value is in megabits-per-second (Mbps). 4K/UHD streams should be set to 900 Mbps. The recommended bandwidth for 1080p60 video is also 450 Mbps. Setting this field below these recommended values will result in lower-quality video.
4. Enter the bit depth from the **Bit Depth** drop-down list.
5. Select the chroma subsampling value from the **Subsampling** drop-down list. Available values are 4:2:0, 4:2:2, and 4:4:4.
6. Click the **Force YUV** toggle switch to enable or disable the use of YUV color space. Enable (the toggle switch will be green) this feature to force the output of the encoder to output YUV, regardless of whether the input is RGB or YUV. In order for the chroma scaling to work on RGB inputs, this feature must be enabled.



7. Click the **SAVE** button in the right-hand corner of the **HDMI Input 1** window group to commit changes.

Verifying the Input

1. Click **INPUT** in the menu bar.



2. Check the **Cable Present** indicator. If a cable is connected from a source to an input on the encoder, then the indicator will be green. If no cable is connected, then the indicator will be red.

Note that this indicator may also reflect the integrity of the cable: if the cable is bad or does not maintain a secure connection, then the **Cable Present** indicator may also be displayed as red. If this is the case, try a different HDMI cable.

Session Configuration

Once the inputs have been assigned to the desired source, the next step is to configure each *session*. A *session* is a class-D multicast IP address that is assigned to an AV stream. If each stream is configured for bit rates less than 450 Mbps (only recommended for 1080p and lower resolutions), a single Ethernet cable can transport two sessions. The single-channel encoder supports a maximum of two sessions to enable redundancy for single 1080p-use cases.

Video

1. Under AMS, click **Session** in the menu bar.
2. Click the **eth1** physical interface from the **Interface** drop-down list.
3. Select the **HDMI Input 1** from the **Encoder** drop-down list.
4. Under the **Video** section, make sure that the **Enable Video** toggle switch is enabled (green). To disable video at any time, click the toggle switch so that it appears gray.
5. Enter the destination multicast IP address in the **Destination Multicast/Unicast IP Address** field, within the range 224.0.0.0 through 239.255.255.255.
6. Enter the port number in the **Destination UDP Port** field.

Audio

1. Locate the **Audio** section.
2. Click the **Source** drop-down list and select the HDMI source.



NOTE: If AES67 audio will be used, refer to [AES67 Audio \(page 30\)](#) for more information.

3. Click the **Enable Audio** toggle switch and make sure it is enabled (green). To disable audio at any time, click the toggle switch so that it appears gray.
4. Enter the specific destination IP address, if desired, in the **Destination Multicast/Unicast IP Address** field. By default, AMS will automatically populate this field.
5. Enter the port number in the **Destination UDP Port** field.



IMPORTANT: AMS does not allow the same port numbers to be used on both video and audio. Always specify unique ports for both video and audio.

Basic Operation

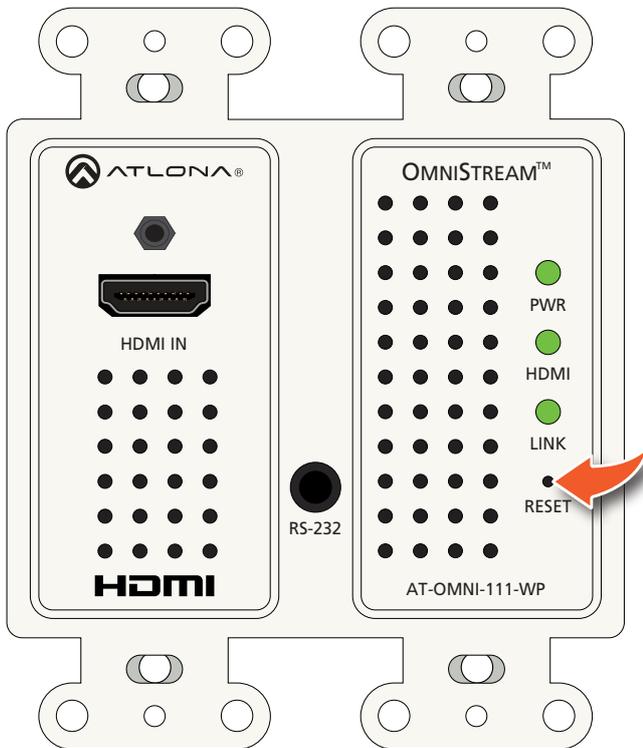
LED Indicators

The following table provides a listing of front-panel LED indicators and their status:

LED		Description
PWR	Off 	<ul style="list-style-type: none"> If using a PoE switch, make sure that the port on the switch that is connected to the encoder, has PoE enabled. When the encoder is powered using PoE, the PWR indicator will be green. Check the Ethernet cable for possible damage or loose connections.
	Red 	<ul style="list-style-type: none"> The encoder is booting.
	Green 	<ul style="list-style-type: none"> The encoder is ready.
HDMI	Red 	<ul style="list-style-type: none"> No source is connected to the input. Check the HDMI cable for possible damage or loose connections.
	Green 	<ul style="list-style-type: none"> The link integrity between the source and the encoder is good.
LINK	Red 	<ul style="list-style-type: none"> Check the Ethernet cable for possible damage or loose connections.
	Green 	<ul style="list-style-type: none"> Link integrity is good between the encoder and the network.

Rebooting OmniStream

To reboot the OmniStream encoder, press and release the recessed button, on the far-right side of the unit, using a small, pointed object. Rebooting the encoder does not reset the encoder to factory-default settings.



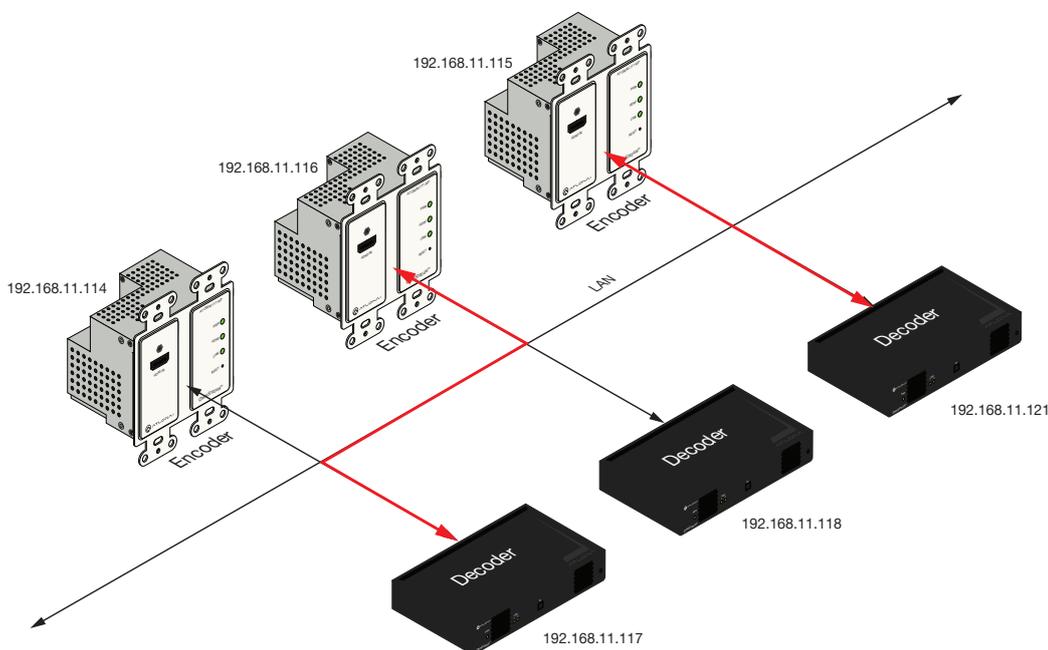
Unicast Mode

The term *unicast* is used to describe a configuration where information is sent from an encoder to a single decoder. Although it is common to have multiple encoder and decoder units within a system, it may also be desirable to restrict a single encoder to communicate with one decoder. In *unicast* mode, OmniStream encoders and decoders function similar to an n x 1 switcher. Changing the destination IP address at the encoder, will direct the stream to be received by a different decoder.

The illustration below shows three encoders and three decoders on a network, operating in *unicast* mode. The red lines indicate the data paths from each encoder to a separate (single) decoder.



NOTE: By default, both encoders and decoders are shipped in multicast mode.



1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **SESSION** in the menu bar and locate the **Video** section.
3. Enter the IP address of the decoder in the **Destination Multicast/Unicast Address** field.

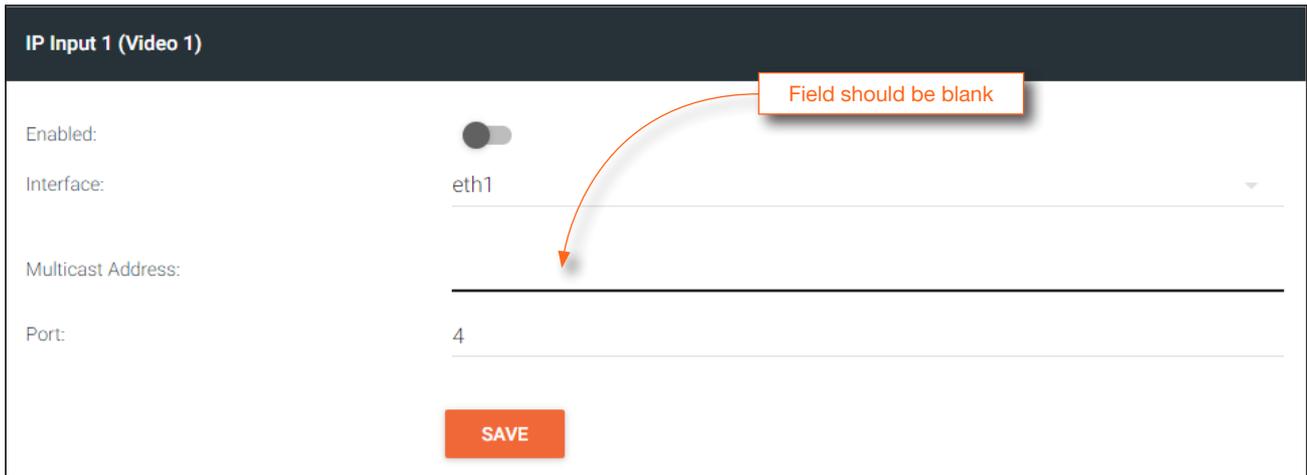
Encoder:	HDMI Input 1
Enable Video:	<input checked="" type="checkbox"/>
Destination Multicast/Unicast Address:	225.0.0.5
Destination UDP Port:	1000
TTL:	255

IP address of decoder

← (Arrow points from the callout box to the 'Destination Multicast/Unicast Address' field)

4. Scroll down to the bottom of the page and click the **SAVE** button to commit all changes.

5. Go to the decoder AMS interface. Refer to the *OmniStream Single-Channel / Dual Channel A/V Decoder User Manual*, if necessary.
6. Click **IP INPUT** from the menu.
7. Remove the IP address from the **Multicast Address** field.
8. Click the **SAVE** button to commit changes.



IP Input 1 (Video 1)

Enabled:

Interface: eth1

Multicast Address:

Port: 4

SAVE

9. Unicast setup is complete. The decoder unit will now receive streams exclusively from the encoder containing the IP address of this decoder.

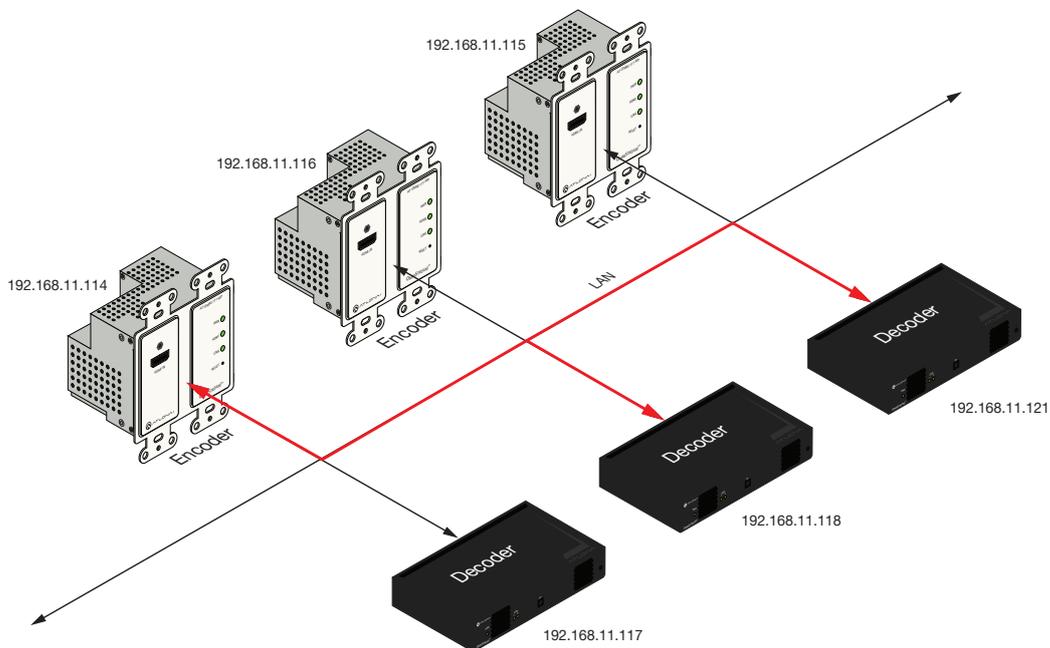
Multicast Mode

The term *multicast* is used to describe a configuration where information is sent from one or more points to a set of other points. For example, a single encoder can transmit data to multiple decoders. In addition, if multiple encoders are used, each encoder can stream data to any decoder that is not already receiving data from an encoder. In *multicast* mode, the OmniStream encoders and decoders function similar to a matrix switcher.

The illustration below shows three encoders and three decoders on a network, operating in *multicast* mode, where multiple decoders are subscribed to a single encoder. The red lines indicate the data paths from an encoder (192.168.11.117) to multiple decoders.



NOTE: By default, both encoders and decoders are shipped in multicast mode.



1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. The AMS Dashboard will be displayed.
3. Click the  icon, in the upper-left corner of the AMS Dashboard.
4. Click **Virtual Matrix** from the fly-out menu. Refer to [The Virtual Matrix \(page 61\)](#), if necessary.
5. Locate the desired encoder in the Virtual Matrix, as shown on the next page.
6. Create a cross-connection to the desired decoder. When a cross-connection is created, AMS will automatically assign a multicast IP address to both the encoder and decoder. By default, AMS automatically assigns a multicast IP address to each OmniStream encoder and decoder.

Refer to the illustration on the following page, if necessary.

OmniStream Virtual Matrix

Encoders / Decoders **LEGEND**

Encoder / Decoder	Legend	AT-OMNI-121 192.168.11.34 at-omni-121-00461	Andrew's AT-OMNI-122 192.168.11.117 at-omni-122-00548	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omni-122-00242	AT-OMNI-521 192.168.11.39 at-omni-521-00064
AT-OMNI-111 192.168.11.50 at-omni-111-00200 Connected	HDMI 1	Matrix Icon	Matrix Icon	Matrix Icon	Matrix Icon
AT-OMNI-112 192.168.11.178 at-omni-112-00349 Connected	HDMI 1	Matrix Icon	Matrix Icon	Matrix Icon with Green Checkmark	Matrix Icon
Andrew's AT-OMNI-112 192.168.11.116 at-omni-112-00722 Connected	HDMI 2	Matrix Icon with Blue Checkmark	Matrix Icon	Matrix Icon	Matrix Icon with Blue Checkmark
AT-OMNI-112 192.168.11.178 at-omni-112-00349 Connected	HDMI 2	Matrix Icon	Matrix Icon	Matrix Icon	Matrix Icon with Blue Checkmark

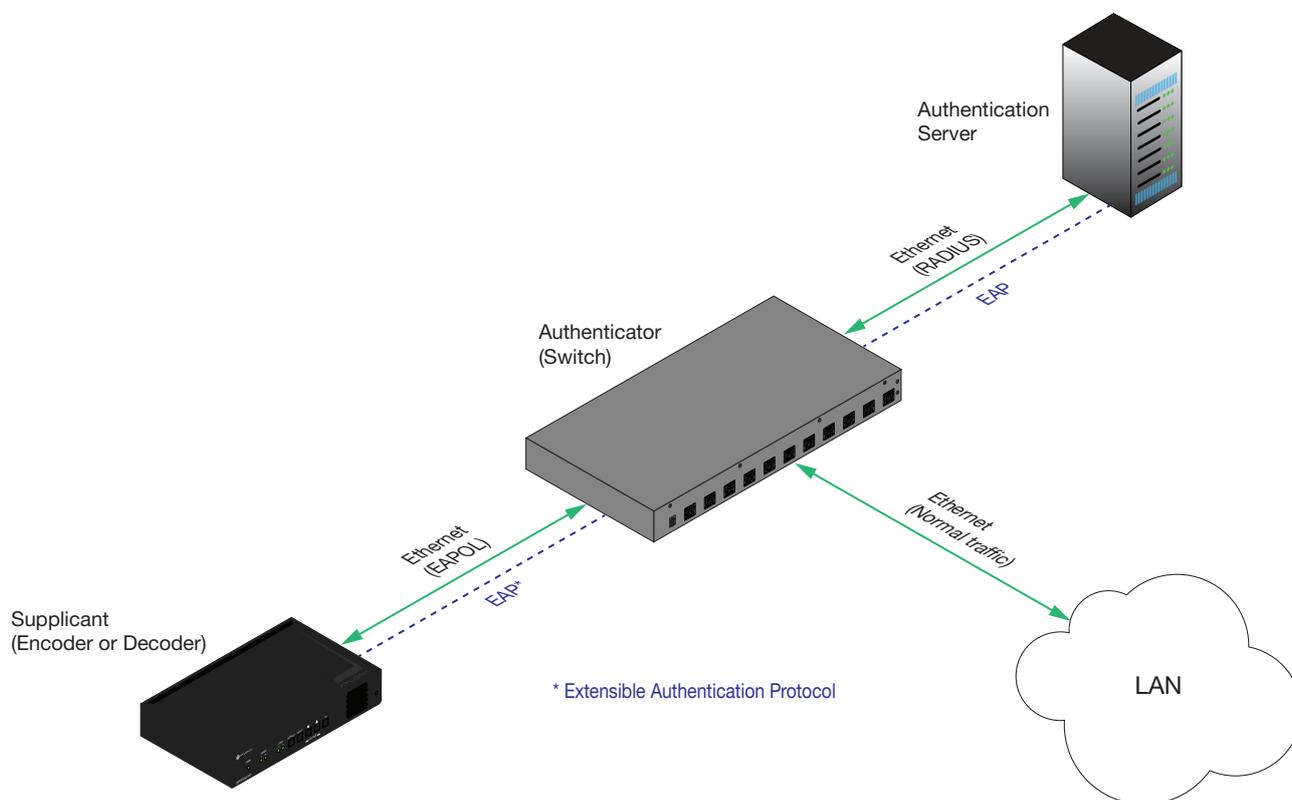
Legend: Matrix Icon with Green Checkmark, Matrix Icon with Blue Checkmark, Matrix Icon

802.1X Authentication

802.1X is a server-based port authentication which restricts unauthorized (rogue) clients from connecting to a Local Area Network through a public port. In its simplest form, 802.1X usually involves three parties: supplicant (client device), authenticator (Ethernet switch or WAP), and an authentication server. Before the device is permitted on the network, port communication is restricted to Extensible Authentication Protocol over LAN (EAPOL) traffic. If the device passes the authentication process, the authentication server notifies the switch, allowing the client to access the LAN. The illustration below shows the basic architecture.



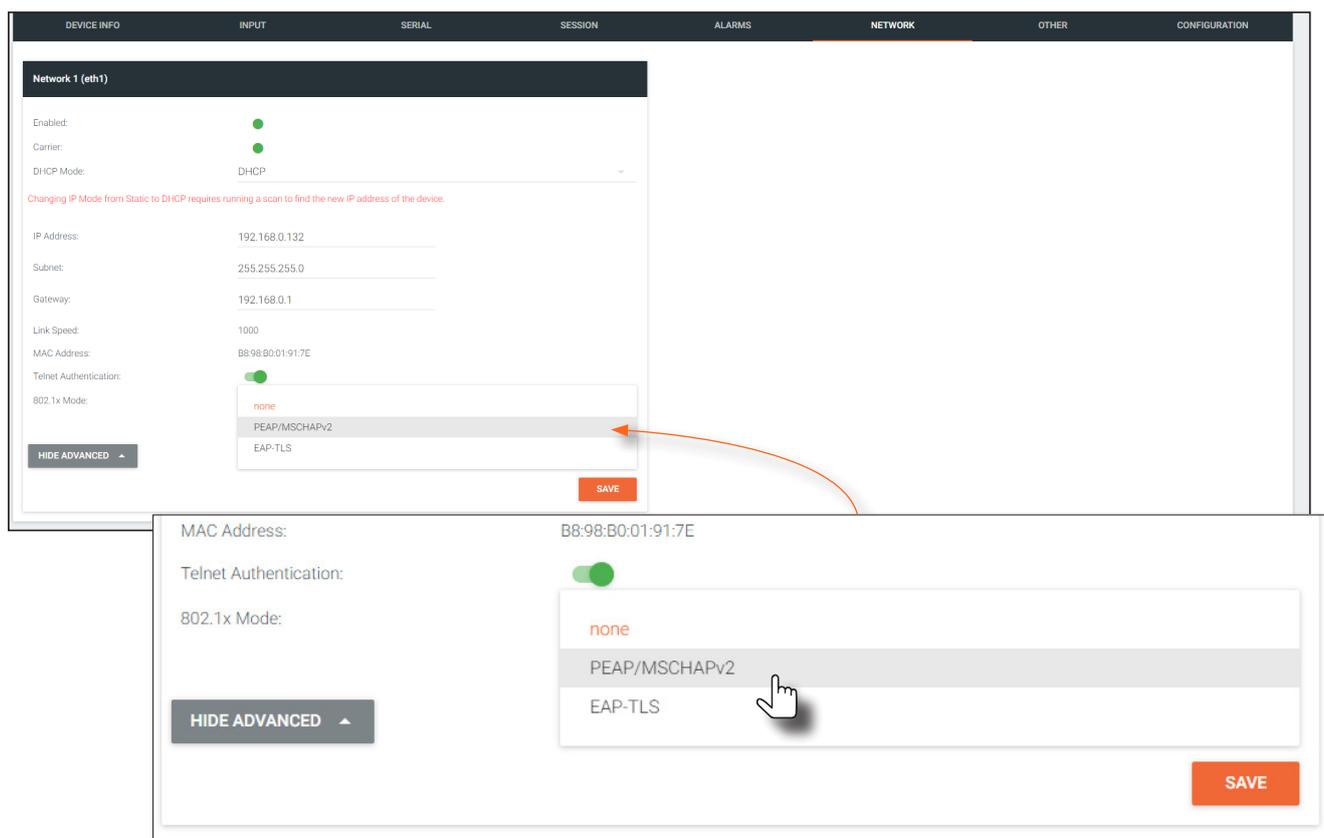
WARNING: Connecting an 802.1X-enabled encoder to a network without an active or operational authentication server, will result in an encoder that does not function until the expected message is returned from a RADIUS server. If it is unclear as to whether the network uses 802.1X authentication, consult the IT administrator for assistance.



Three options are available on both the OmniStream encoder and decoder.

Protocol	Description
none	802.1X protocol disabled
PEAP/MSCHAPv2	Protected EAP; requires basic credentials in addition to a CA (certificate authority) certificate.
EAP-TLS	EAP Transport Layer Security; requires a client certificate, client private key, and CA (certificate authority) certificate.

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **Devices** > **All** and select the desired encoder from the **Device List**.
3. Click **NETWORK** in the menu bar.
4. Click the **SHOW ADVANCED** button to expand the options under both **Network** window groups.
5. Click the **802.1x Mode** drop-down list, at the bottom of the page, and select the desired authentication method. In the example below, **PEAP/MSCHAPv2** is selected.



6. Once a method is selected, the required fields for that method will be displayed. Enter the required information in each field. For the **PEAP/MSCHAPv2** option, the fields are described as follows:
 - **Identity**
Enter the identity of the authentication server in this field. PEAP uses this field to identify the correct authentication server which will process the credentials. For example, if `foo@authserv.com` is entered, then this identifies AUTHSERV as the RADIUS (authentication) server.
 - **CA certificate**
Click the **Browse...** button to select the certification authority (CA) certificate. To remove a certificate, click the **Remove** button.
 - **Username**
Enter the username in this field
 - **Password**
Enter the password in this field.
7. Click **SAVE** to commit changes.

MAC Address:	B8:98:60:01:90:22
Telnet Authentication:	<input checked="" type="checkbox"/>
802.1x Mode:	PEAP/MSCHAPv2
Identity:	foo@server.com
Password:	t0ughpA55w0rd
CA certificate:	

HIDE ADVANCED ▲

SAVE

8. Refer to the table below for a list of available authentication methods. An orange dot indicates that this field will be displayed as part of the method.

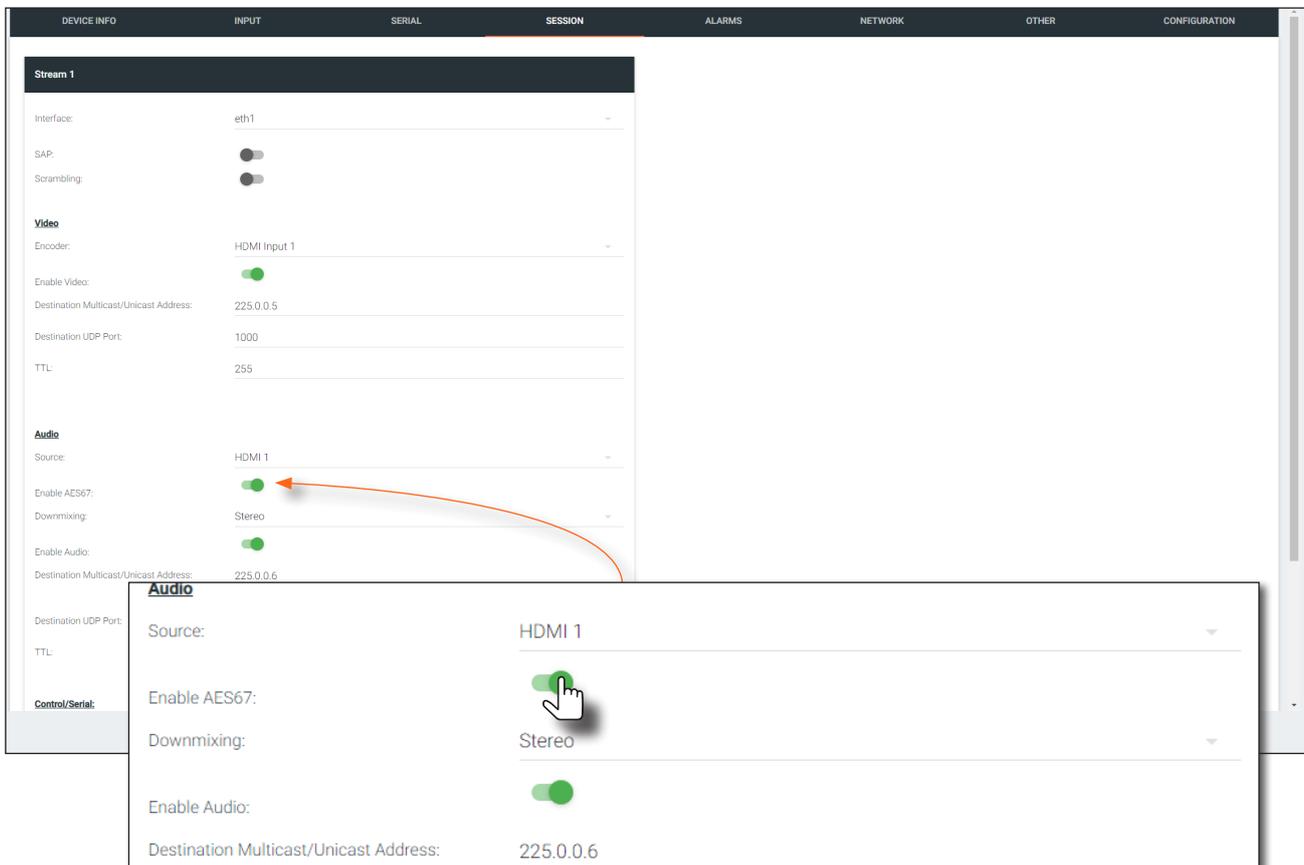
Authentication Method	Identity	Password	CA Certificate	CA Certificate	Client Private Certificate
PEAP/MSCHAPv2	●	●	●		
EAP-TLS			●	●	●

9. 802.1X authentication configuration is complete. If desired, click the **HIDE ADVANCED** button to collapse the options under both **Network** window groups.

AES67 Audio

AES67 audio is a standard for high-performance audio streaming over IP, providing several features such as synchronization, media clock identification, and connection management. AES67 does not support compressed audio formats, such as Dolby® Digital, and others. Source audio must be transmitted as LPCM 2.0 or 5.1.

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **Devices** > **All** and select the desired encoder from the **Device List**.
3. Click **SESSION** in the menu bar.
4. Locate the **Audio** section, under the desired **Stream**, and click the **Enable AES67** toggle switch to enable this feature. When enabled, the toggle switch will be green.



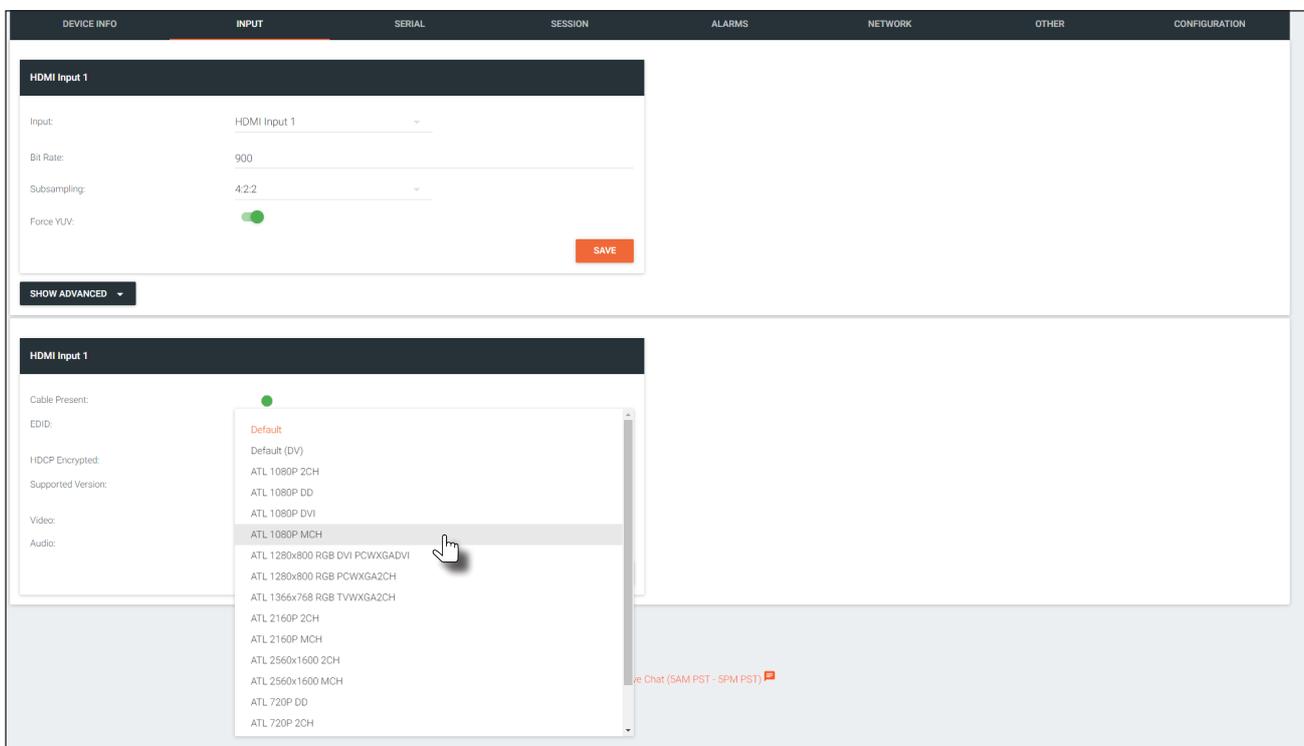
5. Select the type of downmixing from the **Downmixing** drop-down list, if desired. Available options are: **None**, **Mono**, or **Stereo**.
6. Click the **SAVE** button within the **Stream** window group.
7. Go to the decoder interface and click **OTHER** in the menu bar.
8. Click **SAP** in near the upper-left corner of the AMS screen.
9. Click the **Enable** toggle switch to enable SAP. When enabled, the toggle switch will be green. Refer to the *OmniStream Single-Channel / Dual Channel A/V Decoder User Manual*, if necessary. If the decoder is to receive AES67 audio, this step is *required*.
10. Click the **SAVE** button on the **SAP** page.

EDID Management

OmniStream encoders provide EDID management for each input. The encoder can be assigned one of several included EDID presets or can be assigned a custom EDID. Raw EDID data can be copied from displays or other sink devices, that are connected to OmniStream decoders.

Selecting an EDID Preset

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **INPUT** in the menu bar.
3. Click the **EDID** drop-down list, within the desired **HDMI Input** window group, and select the EDID.



4. Click the **SAVE** button to commit changes.

Using a Custom EDID

Encoders can be assigned a custom EDID. The raw EDID data must be in hexadecimal format. Commas or spaces can be included as delimiters to separate each hexadecimal value.

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **INPUT** in the menu bar.
3. Click the **EDID** drop-down list.
4. Scroll down to the bottom of the list and select **+ Add Custom EDID**.
5. Enter the name of the EDID in the **EDID Name field**. Spaces and special character are valid entries. Use a descriptive name for this field.

Add Custom EDID

EDID Name
3840 x 2160 YUV 60 Hz

Raw EDID
|

Raw EDID

CANCEL
SUBMIT

6. Enter the EDID data in the **Raw EDID** field. EDID data can be copy and pasted from an EDID editor and must be in hexadecimal format. Commas or spaces can be included as delimiters to separate each hexadecimal value.
7. Click the **SUBMIT** button to commit changes or click **CANCEL** to abort the addition of a custom EDID. Once a custom EDID is created, it will be added to the drop-down list and can be selected without re-entering the information.

The following tables provide a list of which EDID to use with each video mode. Note that the available EDID selections will depend upon the current video mode. Refer to [Setting the Video Mode \(page 40\)](#) for more information.

Common

EDID	2CH LPCM	MCH LPCM	DTS	Dolby	Dolby Digital*	DTS-HD MA [†]	Dolby True HD*
1080P 2CH	Yes	No	No	No	No	No	No
1080P DD	No	No	Yes	Yes	No	No	No
1080P MCH	No	Yes	Yes	Yes	Yes	Yes	Yes

PC application mode only

EDID	2CH LPCM	MCH LPCM	DTS	Dolby	Dolby Digital*	DTS-HD MA [†]	Dolby True HD*
Default	Yes	No	Yes	Yes	Yes	Yes	Yes
1080P DVI	No	No	No	No	No	No	No
1280x800 RGB DVI PCWXGADVI	No	No	No	No	No	No	No
1280x800 RGB PCWXGA2CH	Yes	No	No	No	No	No	No
1366x768 RGB TVWXGA2CH	Yes	No	No	No	No	No	No
2160P 2CH	Yes	No	No	No	No	No	No
2160P MCH	No	Yes	Yes	Yes	Yes	No	No
2560x1600 2CH	Yes	No	No	No	No	No	No
2560x1600 MCH	No	Yes	Yes	Yes	Yes	No	No

Video mode only

EDID	2CH LPCM	MCH LPCM	DTS	Dolby	Dolby Digital*	DTS-HD MA †	Dolby True HD*
Default -Video Mode	No	Yes	Yes	Yes	Yes	Yes	Yes
Default - Video Mode (No HDR)	No	Yes	Yes	Yes	Yes	Yes	Yes
4K60 MCH	No	Yes	Yes	Yes	Yes	Yes	Yes
4K60 PCM-MCH	No	Yes	No	No	No	No	No
460 LPCM 2CH	Yes	No	Yes	Yes	Yes	Yes	Yes
720P DD	No	No	Yes	Yes	No	No	No
720P 2CH	Yes	No	No	No	No	No	No

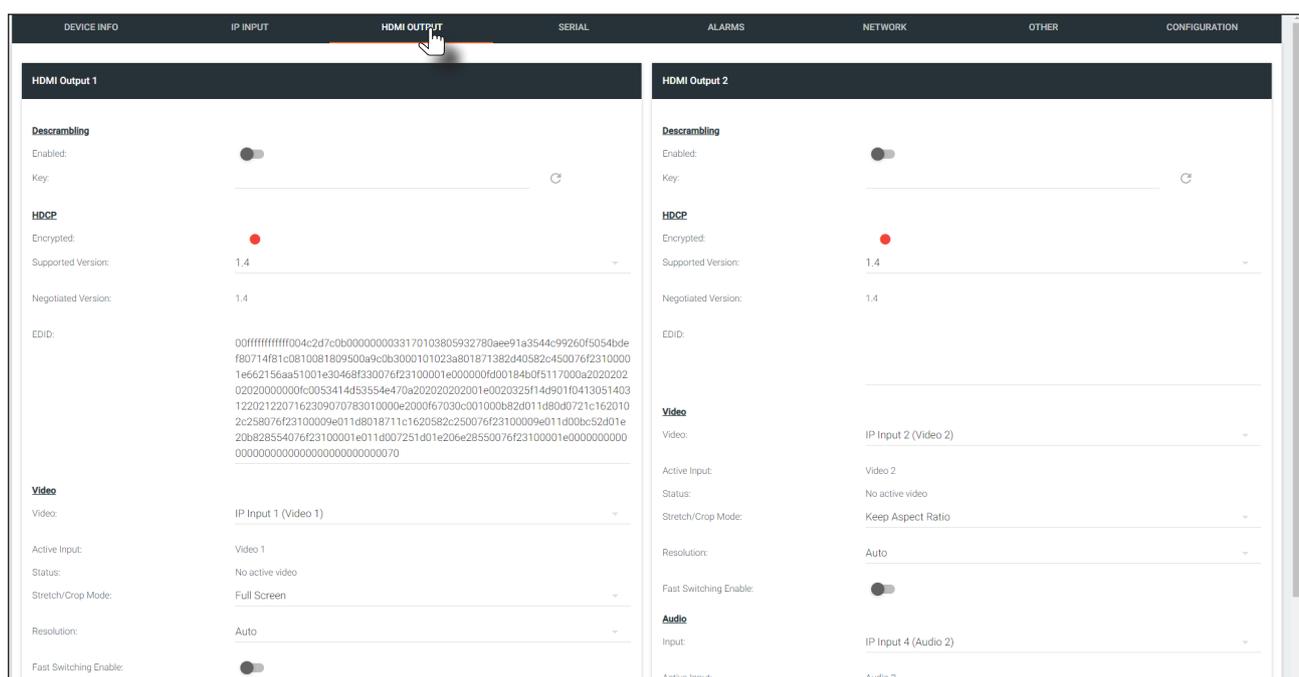
* Dolby Atmos® is carried with either Dolby Digital Plus or Dolby True HD audio streams.

† DTS:X is carried with DTS-HD MA audio streams.

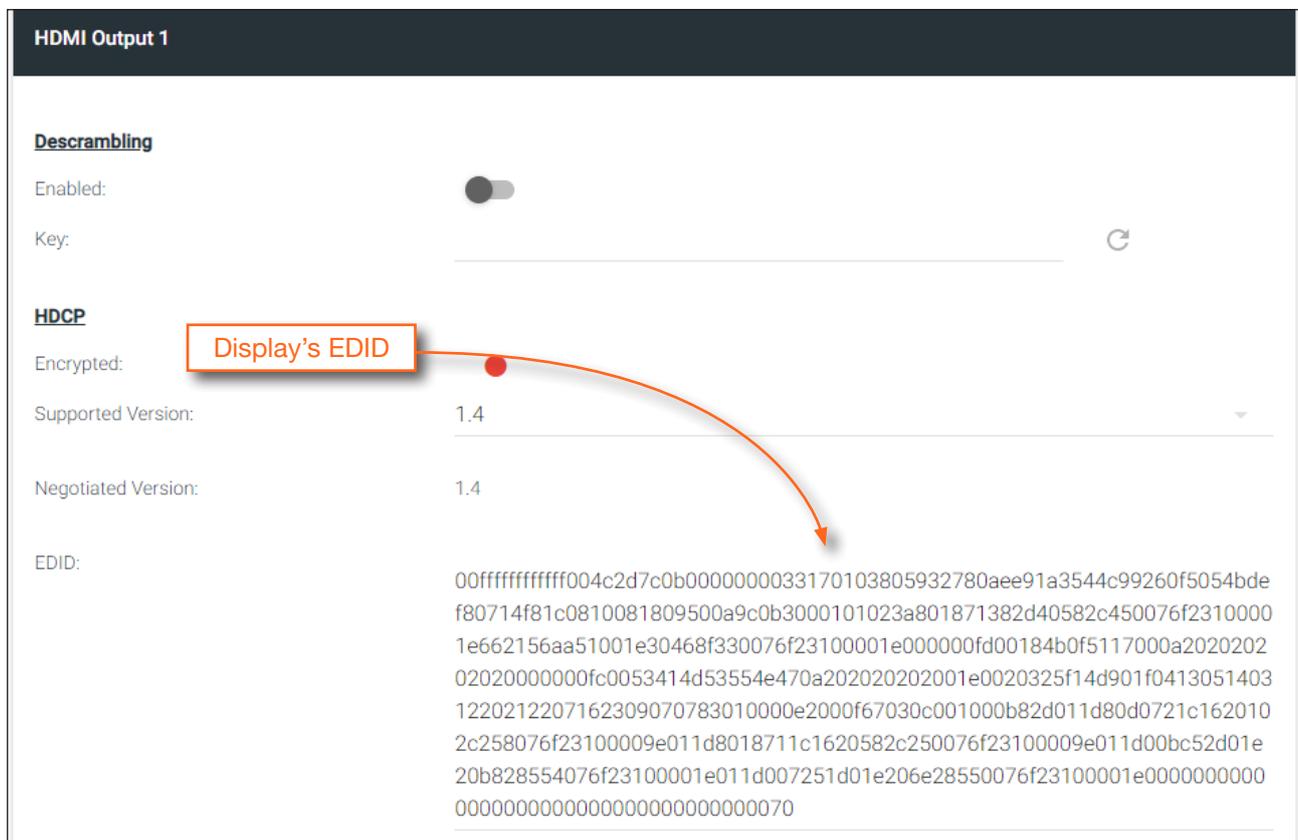
Copying an EDID from the Display

In order to allow the source device to send all AV formats that are supported by the display device, the EDID from the decoder must be copied to the encoder. Access to a decoder will be required.

1. Login to AMS and access the desired decoder. Refer to [Accessing Encoders in AMS \(page 13\)](#) except instead of clicking on an encoder, click on a decoder (AT-OMNI-121, AT-OMNI-122, or AT-OMNI-521).
2. Make sure the display, where the EDID will be fetched, is connected to the decoder. Select the desired decoder from within AMS.
3. Click **HDMI OUTPUT** in the menu bar.



4. Locate the **EDID** section. This is the EDID of the display which is connected to the decoder. Click and select the data in this field, then press [CTRL]+[C] to copy the data.



HDMI Output 1

Descrambling

Enabled:

Key:

HDCP

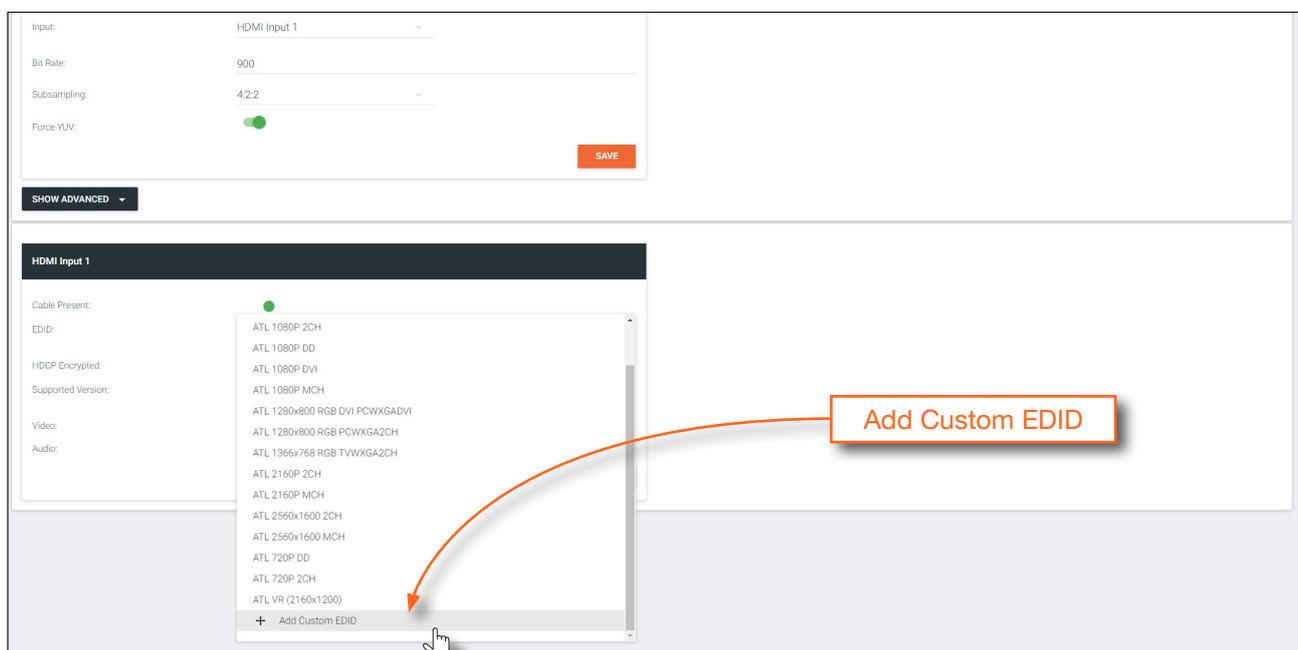
Encrypted:

Supported Version: 1.4

Negotiated Version: 1.4

EDID: 00ffffffff004c2d7c0b000000033170103805932780aee91a3544c99260f5054bde
f80714f81c0810081809500a9c0b3000101023a801871382d40582c450076f2310000
1e662156aa51001e30468f330076f23100001e00000fd00184b0f5117000a2020202
0202000000fc0053414d53554e470a202020202001e0020325f14d901f0413051403
122021220716230907078301000e2000f67030c001000b82d011d80d0721c162010
2c258076f23100009e011d8018711c1620582c250076f23100009e011d00bc52d01e
20b828554076f23100001e011d007251d01e206e28550076f23100001e000000000
00000000000000000000000000000070

5. Select the desired encoder, within AMS.
6. Click **INPUT** in the menu bar.
7. Click the **EDID** drop-down list, in the desired **HDMI Input** window group.
8. Scroll down to the bottom of the list and select **+ Add Custom EDID**.



Input: HDMI Input 1

Bit Rate: 900

Subsampling: 4:2:2

Force YUV:

SAVE

SHOW ADVANCED

HDMI Input 1

Cable Present:

EDID:

HDCP Encrypted:

Supported Version:

Video:

Audio:

ATL 1080P 2CH

ATL 1080P DD

ATL 1080P DVI

ATL 1080P MCH

ATL 1280x800 RGB DVI PCWXGADVI

ATL 1280x800 RGB PCWXGA2CH

ATL 1366x768 RGB TVWXGA2CH

ATL 2160P 2CH

ATL 2160P MCH

ATL 2560x1600 2CH

ATL 2560x1600 MCH

ATL 720P DD

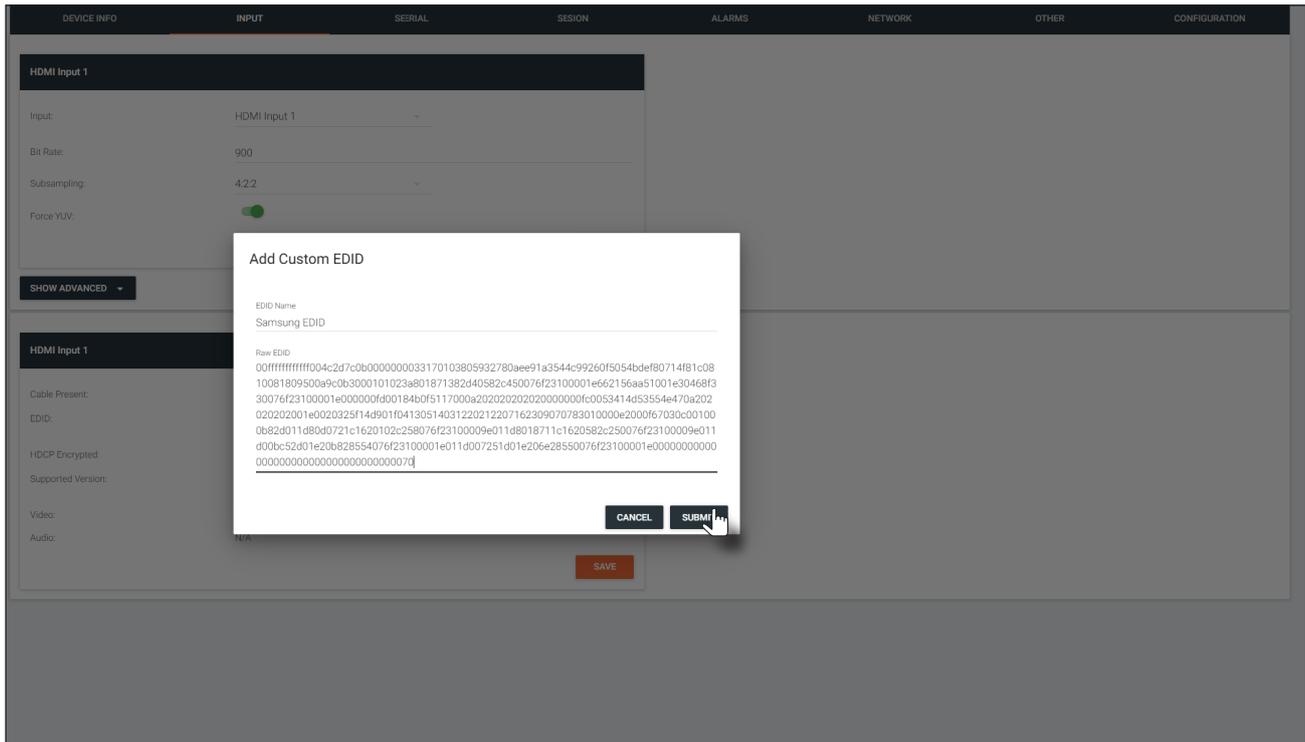
ATL 720P 2CH

ATL VR (2160x1200)

+ Add Custom EDID

Add Custom EDID

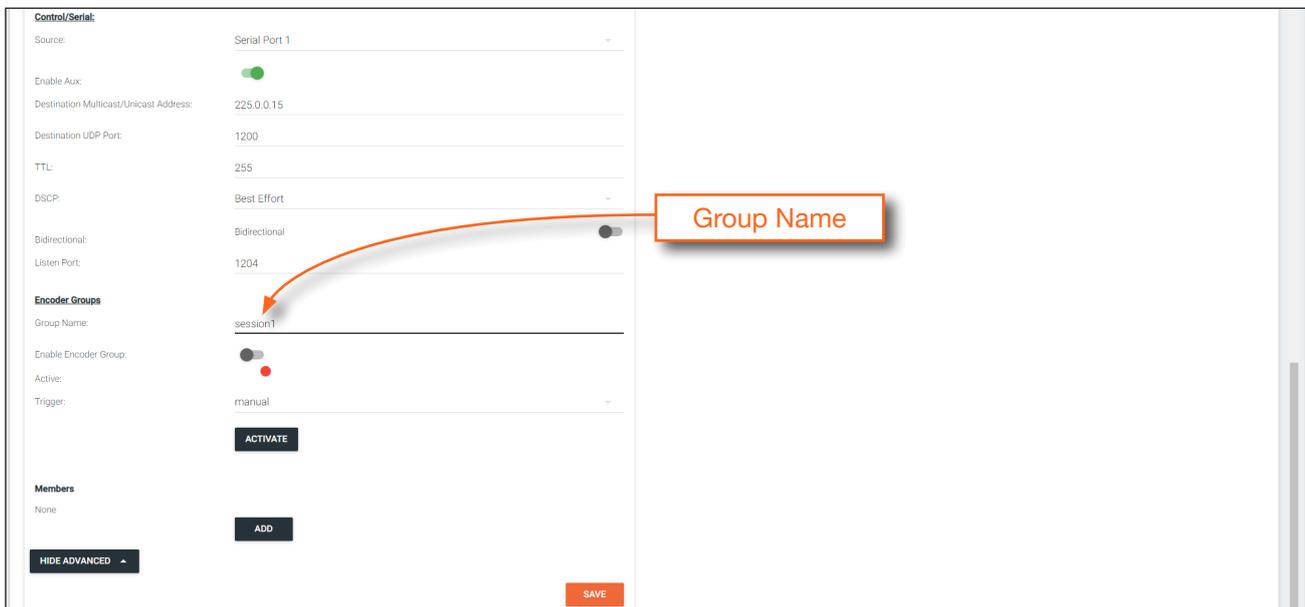
9. Enter the name of the EDID in the **EDID Name field**. Spaces and special character are valid entries. Use a descriptive name for this field.
10. Paste the EDID data into the **Raw EDID** field by pressing [CTRL]+[V].
11. Click the **SUBMIT** button to commit changes or click **CANCEL** to abort the addition of the custom EDID. Once a custom EDID is created, it will be added to the drop-down list and can be selected without re-entering the information.



Encoder Grouping

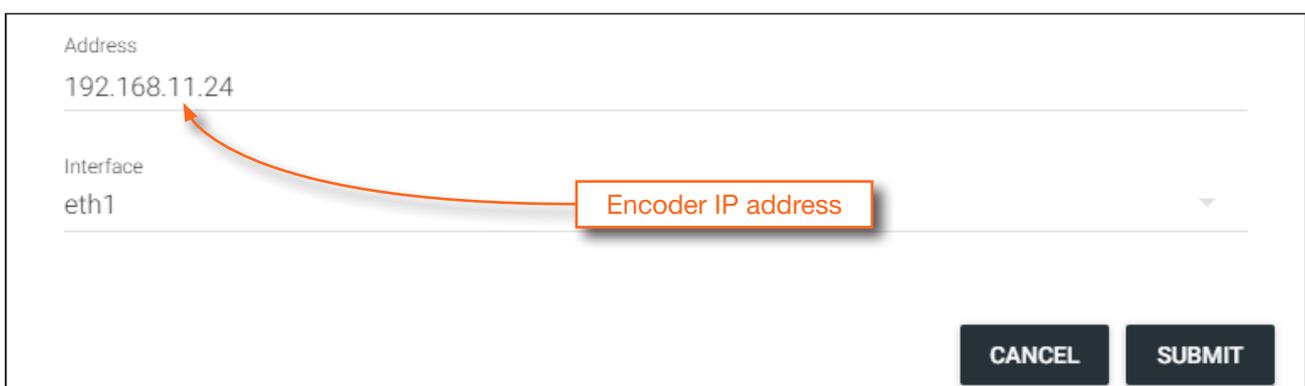
Grouping encoders allows a group of encoders to feed a single decoder, simultaneously. The stream will be displayed by the decoder using either manual or automatic input-selection, based on the presence of a source signal.

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **SESSION** in the menu bar.
3. Click the **SHOW ADVANCED** button to expand options for the desired **Stream**.
4. Locate **Encoder Groups** and enter a name for the group in the **Group Name** field. The default group names for **Stream 1** is **session1**.

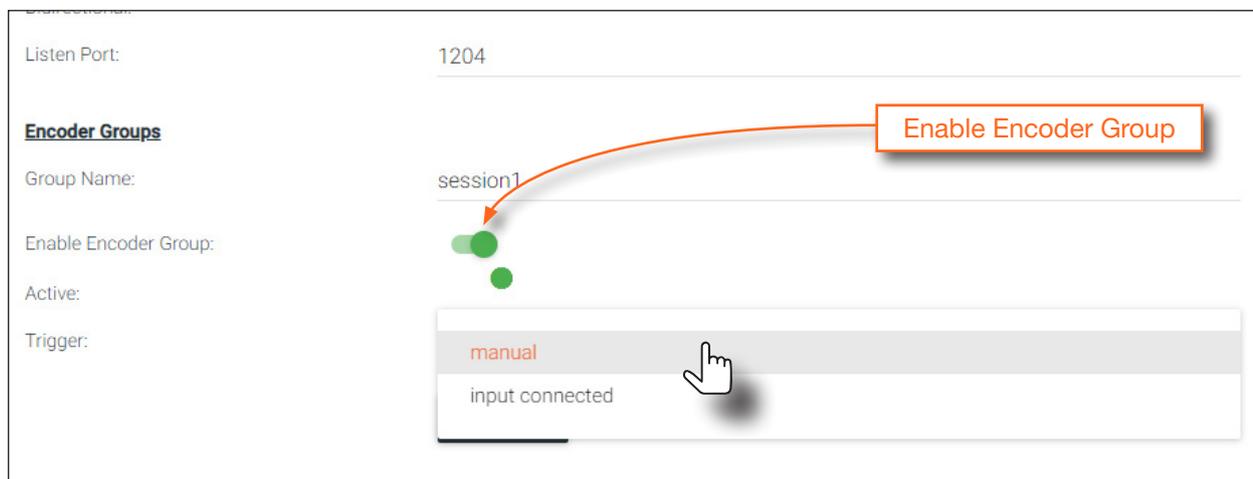


5. Under **Members**, click the **ADD** button and enter the IP address of the encoder to be added to the group.
6. Click the **Interface** drop-down list to select the desired interface.
7. Click the **SUBMIT** button to commit changes to the encoder group.
8. Repeat steps 5 through 8 for each encoder to be added to the encoder group.

 **IMPORTANT:** The IP address for each encoder must be added to the group. This includes the IP address of the encoder that is being used to create the group.



9. Click the **Enable Encoder Group** toggle switch to enable encoder grouping. When enabled, this toggle switch will be green.
10. Click the **Trigger** drop-down list and select the desired trigger mode.



Mode	Description
manual	Use this setting to manually enable the input. When set to manual, click the Activate button to perform the input switching.
input connected	Use this setting to allow the encoder group to use automatic input detection. Once a new source is connected, that source becomes the active source.

NOTE: Setting **Trigger** to **input connected** should not be used when **Slate Mode** is set to **Auto**. Doing so will cause the slate to be displayed when switching inputs. If encoder auto-switching is being used, set the **Slate Mode** to **Auto**, on the decoder. Refer to [Slate / Logo Insertion \(page 41\)](#) for more information.

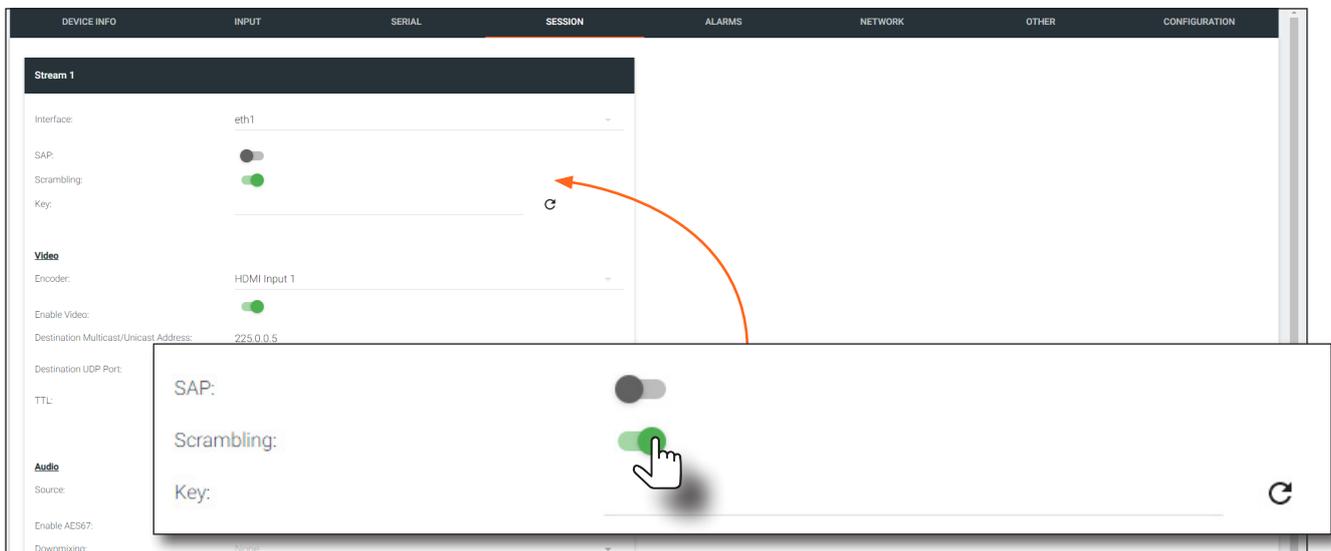
11. Click the **SAVE** button, at the bottom of the **Stream** window group to commit all changes.

Scrambling

OmniStream supports 128-bit Advanced Encryption Standard (AES) scrambling for both audio and video streams. Scrambling can be enabled or disabled through AMS, and can be individually applied to video, audio, or both. Scrambling can be enabled either before or after the decoding process is started. Data streams cannot be scrambled. By default, scrambling is disabled.

Standard Method

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **SESSION** in the menu bar.
3. Under the desired **Stream**, click the **Scrambling** toggle switch to enable it. Once enabled, the toggle switch will be green and the **Key** field will be displayed.



4. Enter the desired scrambling key in the **Key** field. If a random key is desired, click the  icon to generate a key. Each time this icon is clicked, a new scrambling key will be generated.



IMPORTANT: If a user-defined key is specified, then it must be a minimum of eight alphanumeric characters. Special characters and spaces are not permitted. Also note that if a key is generated, the same generated key (on the encoder) must also be used on the decoder, in order to de-scramble the signal.

5. Click the **Save** button at the bottom of the page to commit the changes.

Using the Virtual Matrix

1. Access the Virtual Matrix. Refer to [The Virtual Matrix \(page 61\)](#) for more information.
2. Locate the desired encoder or decoder. Scrambling is managed on the encoder; descrambling is managed on the decoder.
3. Click the key icon. The Scrambling dialog box will be displayed. If the key icon for a decoder is clicked, then the Descrambling dialog box will be displayed.

AT-OMNI-112 10.20.40.26 10.20.40.26 at-omni-112-0041 Connected 	HDMI 1 In	
	HDMI 2 In	
AT-OMNI-512 10.20.40.17	HDMI 1 In	

4. Click the **Enable** toggle switch to enable scrambling for the desired session.

Scrambling - AT-OMNI-111 : 192.168.0.132

Session: session1

Enable 

Key 

CLOSE
SAVE

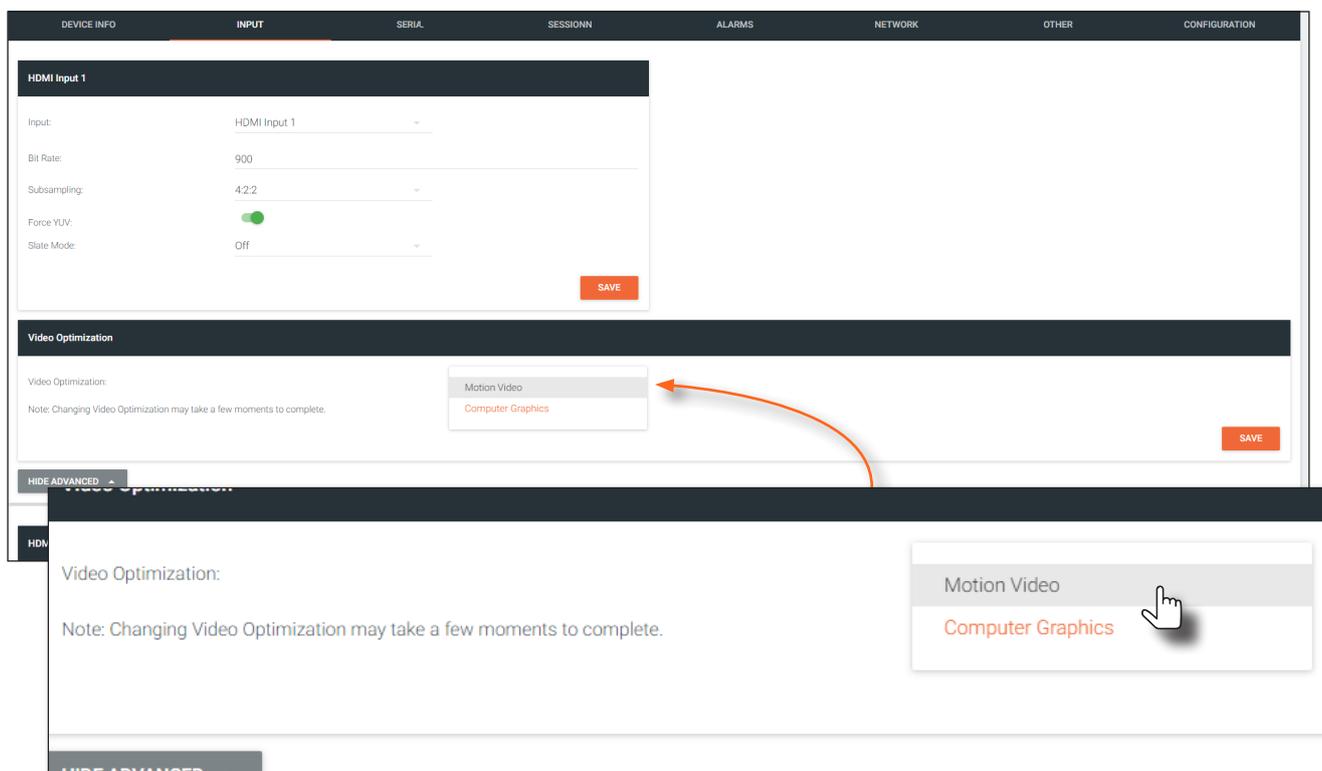
5. Enter the desired scrambling key using one of the following methods:
 - Manual enter a user-defined key in the **Key** field.
 - Click the  icon to generate a random key using AMS. Each time this icon is clicked, a new scrambling key will be generated.
6. Repeat the above process for each session.
7. Click the **Save** button to commit the changes.

Setting the Video Mode

OmniStream offers two video modes: Video and PC application. These two modes will optimize the video, based on the type of information that is being displayed. Use the **Video** mode when display motion graphics/video. Set this mode to **PC application** when viewing static images, such as spreadsheets or similar content.

 **IMPORTANT:** In order to use 3840x2160p60 signals, **Video Optimization** must be set to **Motion Video**.

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **INPUT** in the menu bar.
3. Click the **SHOW ADVANCED** button, under the **HDMI Input 1** window group.
4. Click the **Video Optimization** drop-down list to select the desired mode.



Mode	Description
Computer Graphics	Optimizes the image when viewing static images, such as spreadsheets or similar content.
Motion Video	Provides the best viewing experience when streaming motion graphics and/or video.

4. Click the **SAVE** button, within the **Video Optimization** window group to commit changes. Note that switching between video modes may take a few moments to complete.
5. Go to the decoder interface and repeat the process. Refer to the *OmniStream Single-Channel / Dual Channel A/V Decoder User Manual*, if necessary.

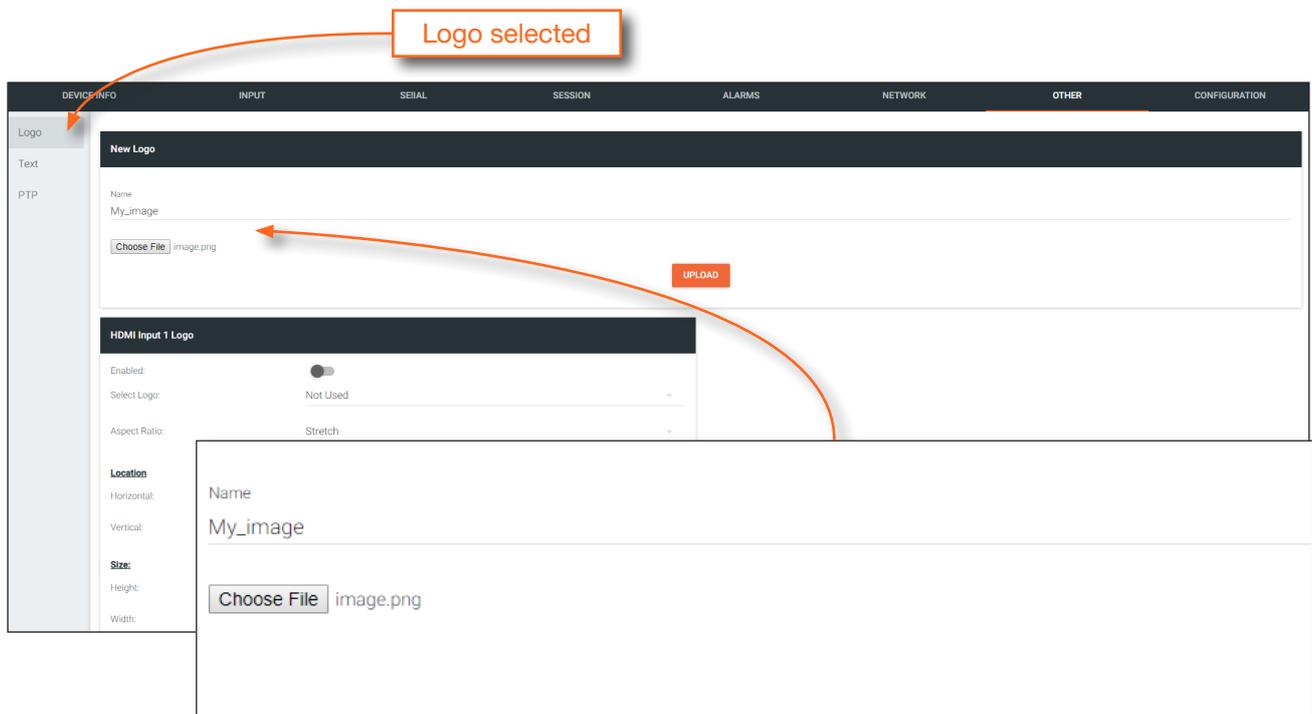
Slate / Logo Insertion

Slate / logo insertion is managed from within AMS. The difference between a “slate” and “logo” is in the size of the image and how it is used: Logos are classified as smaller, low-resolution images that can be positioned at specified locations on the screen. Slates occupy the entire screen. Note that while logos may be used as slates, the image quality will be degraded, as the image will be scaled to fill the screen.

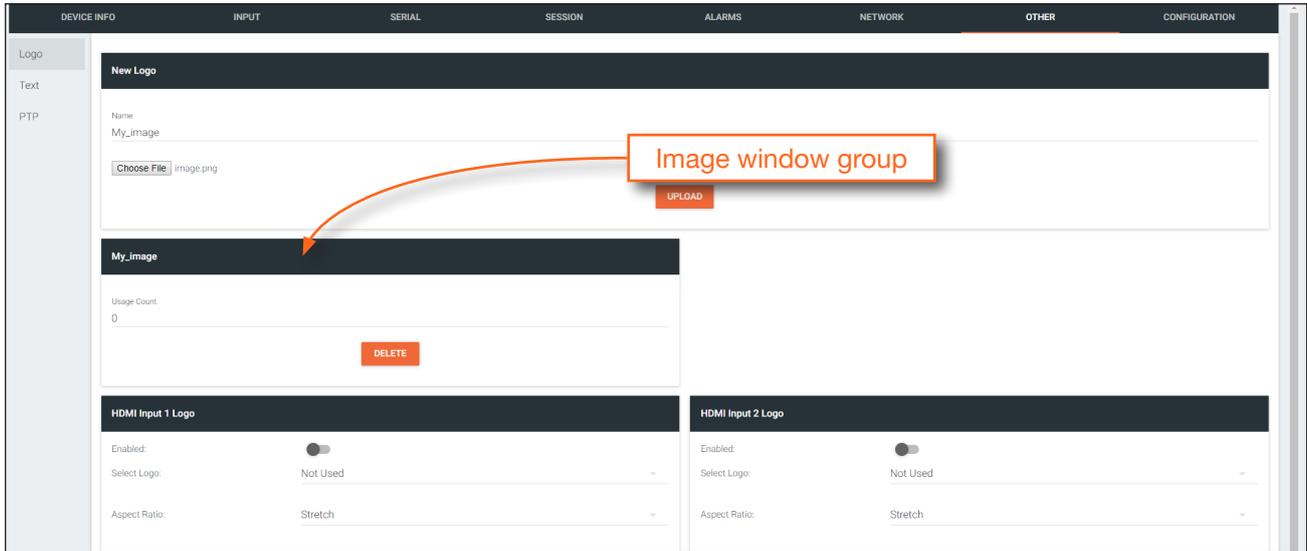
Slate / logo insertion can be performed on both the encoder and decoder. When configured on the encoder, the image that is displayed on the output (decoder) will be from the encoder IP address(es) to which each decoder is subscribed. When configured on the decoder, the image is unique to the specified HDMI output. Refer to the *OmniStream Single-Channel / Dual Channel A/V Decoder User Manual*, for information on managing slate / logo insertion on decoder units.

Adding Slates / Logos

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **OTHER** in the menu bar.
3. Verify that **Logo** is selected, near the upper-left corner of the screen. **Logo** is the default selection and applies to both logo and slate images.
4. Enter the name of the image in the **Name** field. If a name is not specified, then the **UPLOAD** button will be disabled.
5. Under the **New logo** window group, click the **Choose File** button and select the image to be used. Only .png files are valid selections.
6. Click the **UPLOAD** button to upload the file.



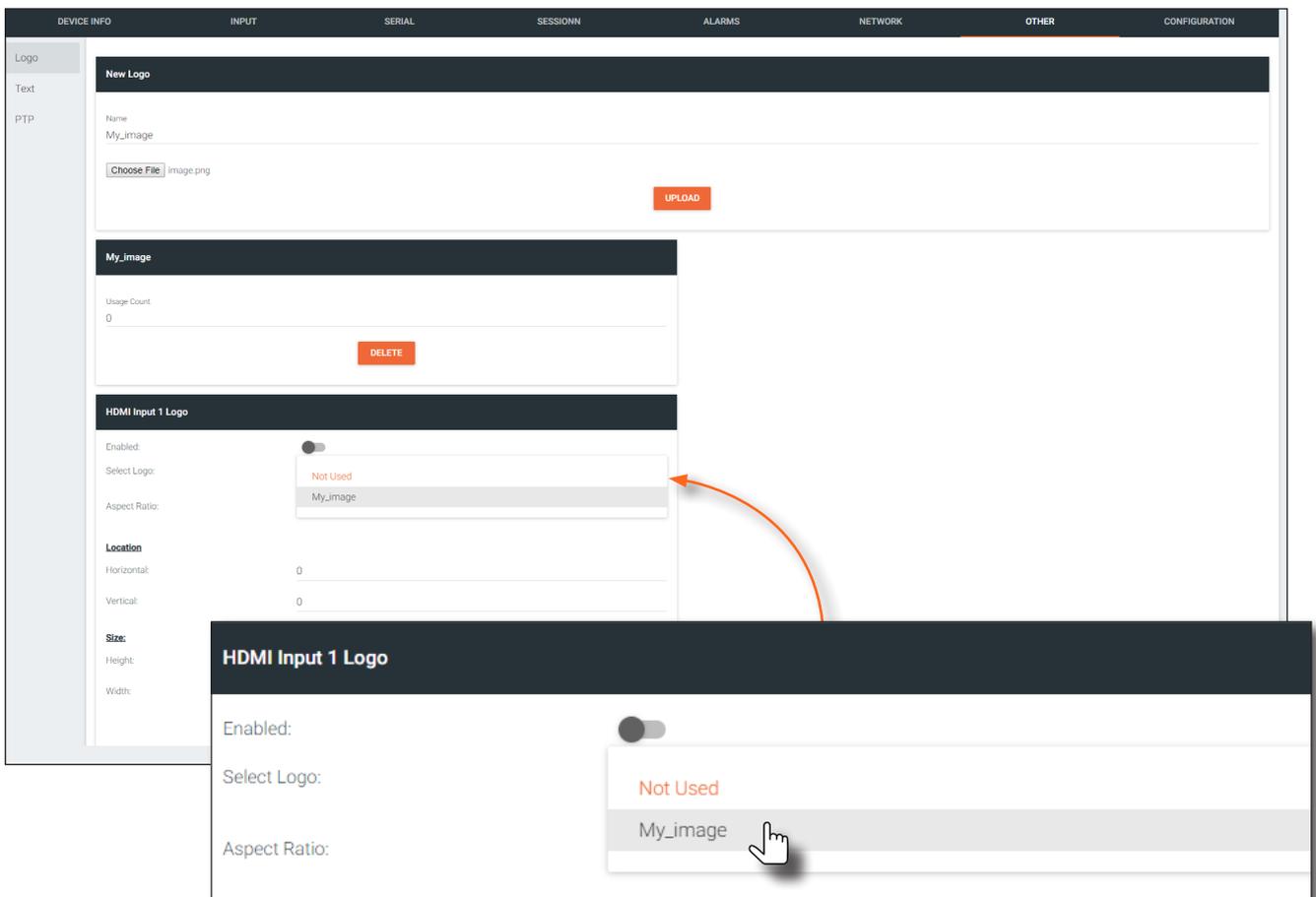
7. A new window group will be created with the name of the logo that was provided in Step 4.



8. Perform one of the following:

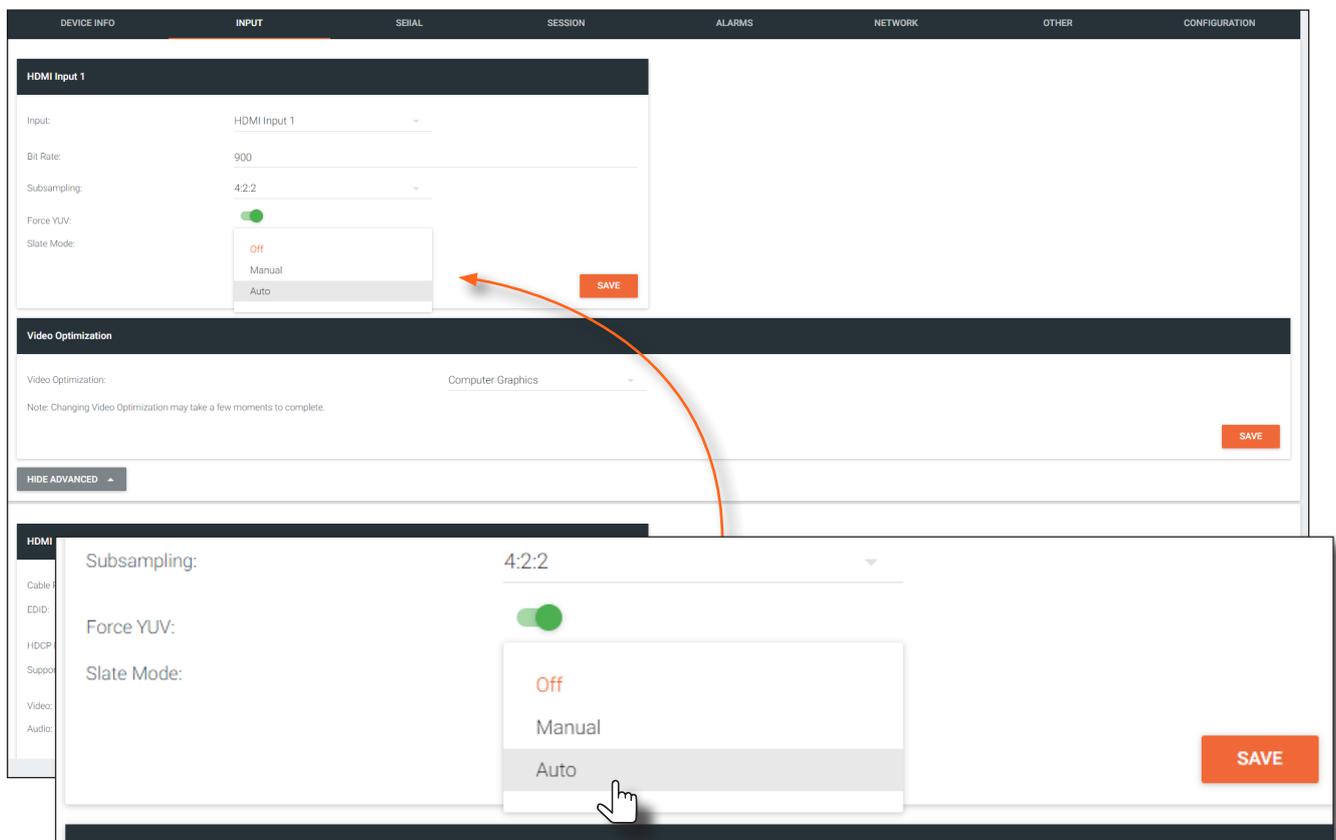
- If the selected image will be used as a *logo*, then proceed with Steps 9 through 13.
- If the image will be used as a *slate*, skip to Step 14.

9. Under the **HDMI Input Logo** window group, click the **Select Logo** drop-down list and select the desired logo. To prevent the image from being displayed, select the **Not used** option.



10. Click the **Aspect Ratio** drop-down list to set the aspect ratio of the image. Selecting **Keep** will maintain the aspect ratio. Select **Stretch** to scale the image to fill the screen.
11. Enter the location of the on-screen image, in pixel values, by entering the desired values in the **Horizontal** and **Vertical** fields.
12. Click the **Enabled** toggle switch to activate the logo/slate feature. When enabled, this toggle switch will be green.
13. Click the **SAVE** button to commit changes.
14. Click **INPUT** in the menu bar, then click the **SHOW ADVANCED** button.
15. Click the **Slate mode** drop-down list, and select **Off**, **Manual**, or **Auto**.

Mode	Description
Off	Disables the image from being displayed.
Manual	The image will always be displayed, superimposed on the source signal, and will remain even if the source signal is lost.
Auto	The image will only be displayed when the source signal is lost. For example, this mode is useful in conference room applications for displaying system instructions when no sources are connected.



16. Click the **Slate Logo** drop-down list and select the desired image. Note that if **Slate Mode** is set to **Off**, then this field will not be visible.
17. Click the **SAVE** button to apply all changes.

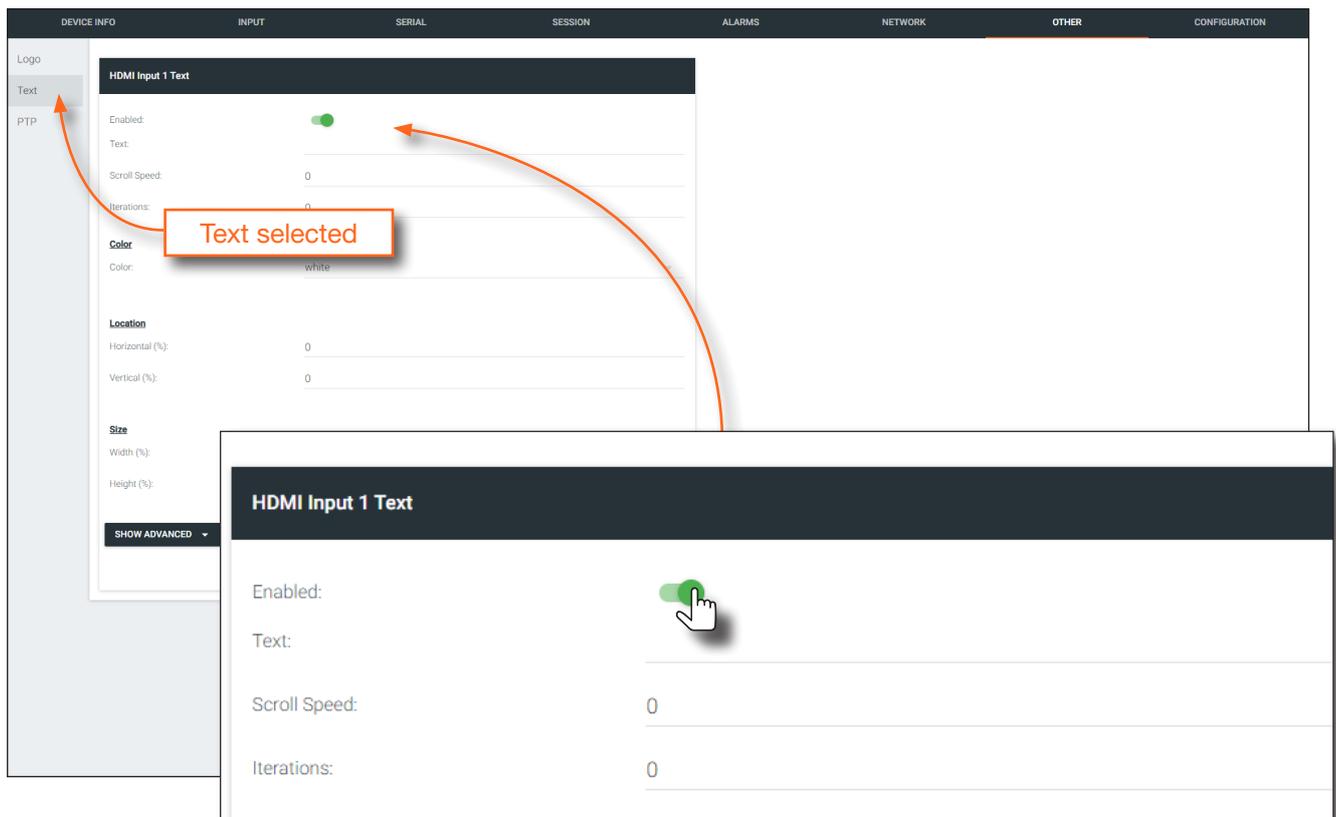
Deleting Slates / Logos

Follow the instructions below to remove a logo/slate image.

1. Click **OTHER** in the menu bar.
2. Click the **DELETE** button in the desired image window group. When the **DELETE** button is clicked, the window group and the associated image will be deleted from the encoder. If the **DELETE** button is disabled, do the following:
 - a. Locate the **HDMI Input Logo** window groups.
 - b. Click the **Select Logo** drop-down list and select **Not Used**.
 - c. Click the **SAVE** button.
 - d. Refresh the page.
 - e. Click the **DELETE** button to remove the logo.

Text Insertion

1. Login to AMS. Refer to [Accessing Encoders in AMS \(page 13\)](#), if necessary.
2. Click **OTHER** in the menu bar.
3. Click **Text** in the side menu bar, in the upper-left corner of the AMS screen.
4. Click the **Enabled** toggle switch, to allow the text to be displayed. When enabled, this toggle switch will be green.

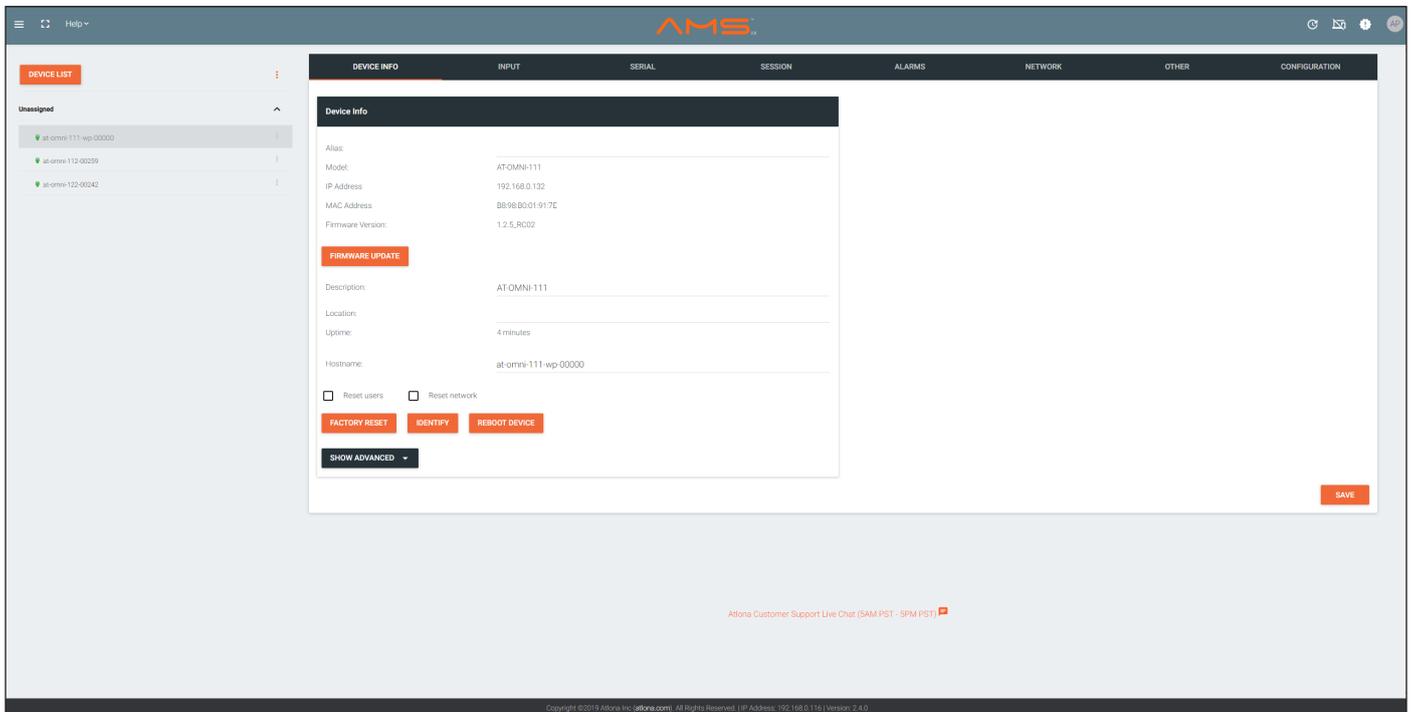


4. In the **Text** field, enter the desired text.
5. Specify the speed of the scrolling text in the **Scroll Speed** field. Values from -255 to 255 are valid. Negative numbers will scroll the text from left to right. Positive numbers will scroll text from right to left.
6. Enter the number of iterations in the **Iteration** field. Set this field to 0 (zero) to set the number of iterations to infinity.
7. Click the **Color** drop-down list to select the color of the text. The **Red**, **Green**, and **Blue** fields can be changed to further modify the color of the text. Adjust the **Alpha** field to control the transparency of the text. A value of 255 is opaque and a value of 0 is transparent. Numbers from 0 to 255 are valid for each of these fields.
8. Specify the location of the text in the **Horizontal (%)** and **Vertical (%)** fields. Each of these values is based on the horizontal and vertical resolution of the screen.
9. Specify the size of the text in the **Width (%)** and **Height (%)** fields. Each of these values is based on the horizontal and vertical resolution of the screen.
10. Click the **SAVE** button to commit all changes.

The AMS Interface

Device Info page

The **Device Info** page provides general information about the encoder.



Alias

Enter a name for the unit in this field. This is optional.

Model

The model number of the unit. The OmniStream Wallplate will use the name AT-OMNI-111-WP.

IP Address

Displays the IP address of the encoder.

MAC Address

Displays the MAC address of the encoder.

Firmware version

The version of firmware that the encoder is running. Always make sure the latest version of firmware is installed.

FIRMWARE UPDATE

Click this button to update the firmware.

Description

Provides the option of assigning descriptive name to the unit.

Location

Provides the option of assigning descriptor for the location of the unit.

Uptime

Time elapsed since the last reboot operation.

Hostname

The hostname of this unit. This can be changed if desired. By default, the host name is automatically created using the model of the unit and adding the last five digits of the unit serial number.

FACTORY RESET

Click this button to reset the encoder to factory-default settings. When performing a factory reset, the following options can be selected, by clicking the check box. If no options are selected, then the encoder is reset with no factory-default settings.

Option	Description
None Checked	Resets the encoder with no factory-default settings.
Reset User	Resets the encoder to factory-default settings and resets custom user information.
Reset Network	Resets the encoder to factory-default settings and resets network information.
Reset Defaults	Resets the encoder to factory-default settings. In addition, static multicast addresses are configured. This option can be used to configure a single encoder to transmit to any number of decoders without using the Virtual Matrix within AMS.  IMPORTANT: This option will not work for multiple encoders on the same network.

IDENTIFY

Click this button to physically identify a unit on the network. Clicking this button will cause all front-panel LED indicators to flash for 10 seconds.

REBOOT DEVICE

Click this button to perform a soft reboot of the encoder.

Advanced Settings

Click the **SHOW ADVANCED** button to view the following options.

Timezone

Click this drop-down list to select the time zone, expressed in Universal Coordinated Time (UTC).

System Temperature

The current internal temperature of the unit listed in both degrees Fahrenheit and Celsius.

Die Temperature

The component chip temperature listed in both degrees Fahrenheit and Celsius.

Power Consumption

The current power consumption value.

NTP Server

Specify the desired NTP server in this field. This provides timestamps for any logs and alarms.

Buttons

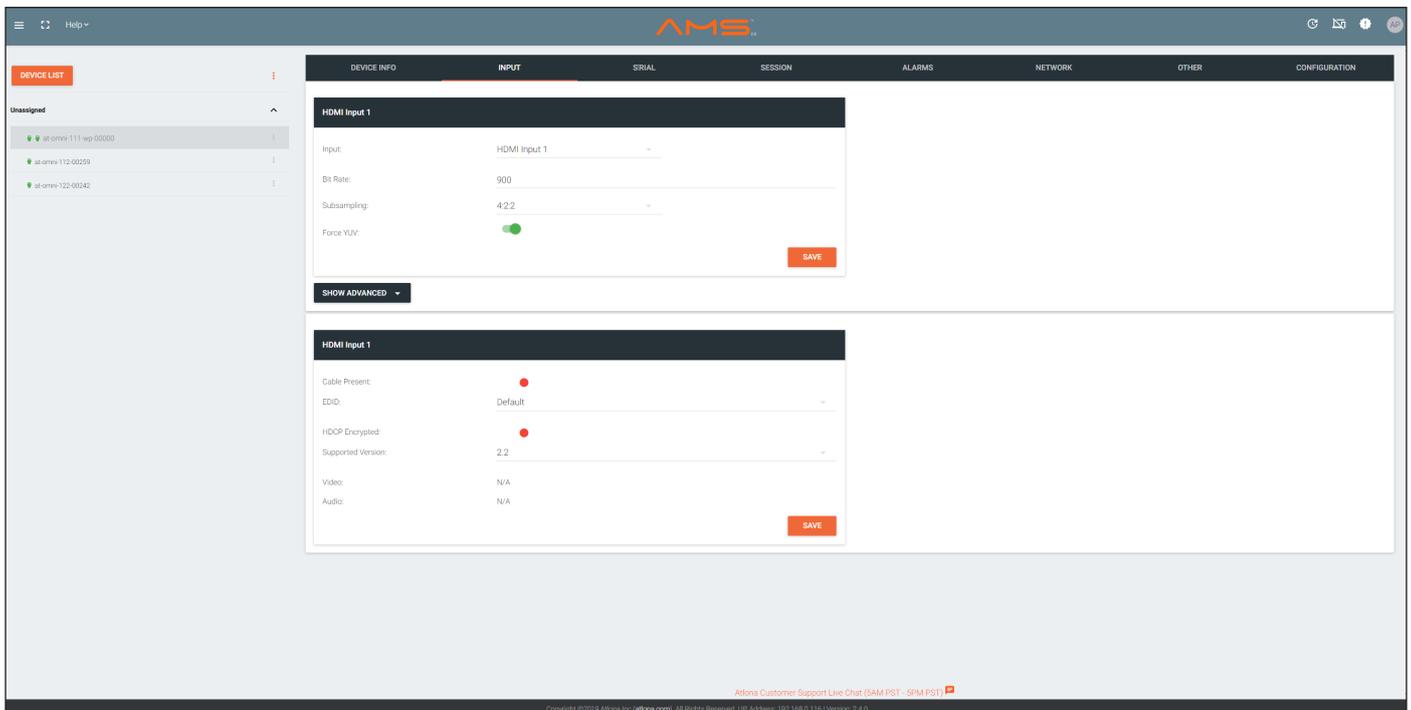
Disabling this feature will lock the ID button on the front panel. This feature is enabled by default.

LEDs

Disabling this feature will turn off all LED indicators on the front panel. This is enabled by default.

Input page

The **Input** page provides signal information for each channel (input). If using the single-channel encoder, only a single (input) channel will be displayed.



Input

The selected input. This value can be **HDMI Input 1**, **Video Generator 1**, or **None**.

Bit Rate

The current video bit rate. Specifying lower bit rates will reduce video quality. This value is in megabits-per-second (Mbps). 4K/UHD streams should be set to 900 Mbps. The recommended bandwidth for 1080p60 video is also 450 Mbps. Setting this field below these recommended values will result in lower-quality video.

Subsampling

Click this drop-down list to select the desired maximum chroma subsampling value. Any input with a higher chroma subsampling will have their chroma scaled to the configured value using a very high quality chroma scaler to preserve quality.

Force YUV

When this toggle switch is enabled (green), it will force the output of the decoder to output YUV regardless of whether the input to the encoder is RGB or YUV. In order for the chroma scaling to work on RGB inputs, this option must be enabled.

Cable Present

Indicates whether or not a connection is detected. The indicator, to the left, indicates the current state. If the indicator is green, then a source signal is detected. If the indicator is red, then check the cable connection and make sure that the source is powered. Damaged cables may also display a red indicator.

EDID

Click the drop-down list to select the desired EDID. Refer to the table below for a list of available EDID selections.

EDID	Description
Default	Default OmniStream EDID
ATL 1080P 2CH	1920x1080p60 with two-channel PCM audio
ATL 1080P DD	1920x1080p60 with Dolby Digital audio
ATL 1080P DVI	1920x1080p60 with video formatted as DVI
ATL 1080P MCH	1920x1080p60 with multichannel PCM audio
ATL 1280x800 RGB DVI PCWXGADVI	1280x800p60 with video formatted as DVI
ATL 1280x800 RGB PCWXGA2CH	1280x800p60 PC format with two-channel PCM audio
ATL 1280x800 RGB TVWXGA2CH	1280x800p60 TV format with two-channel PCM audio
ATL 2160P 2CH	3840x2160p30 with two-channel PCM audio
ATL 2160P MCH	3840x2160p30 with multichannel PCM audio
ATL 2560x1600 2CH	2560x1600p60 with two-channel PCM audio
ATL 2560x1600 MCH	2560x1600p60 with multichannel PCM audio
ATL 4K60 MCH	3840x2160p60 with multichannel PCM audio
ATL 4K60 PCM_MCH	3840x2160p60 with two-channel / multichannel PCM audio
ATL 720P DD	1280x720p60 with Dolby Digital audio
ATL 720P 2CH	1280x720p60 with Dolby Digital two-channel audio

HDCP Encrypted

Indicates if the content being transmitted from the source is HDCP-encrypted. If using HDCP-encrypted content is being used, then this indicator will be green.



NOTE: Disabling **HDCP compliance** does not decrypt HDCP content.

Supported Version

Click this drop-down list to select the version of HDCP to be supported: **2.2**, **1.4**, or **None**. If **None** is selected, then HDCP-encrypted content cannot be passed-through.

Video

The current sampling rate for the input video signal.

Audio

The sampling frequency for the input audio signal.

Advanced Settings

Click the **SHOW ADVANCED** button to view the following options.

Slate Mode

Click this drop-down list to enable slate mode or select the desired slate to be used. Refer to [Slate / Logo Insertion \(page 41\)](#) for more information.

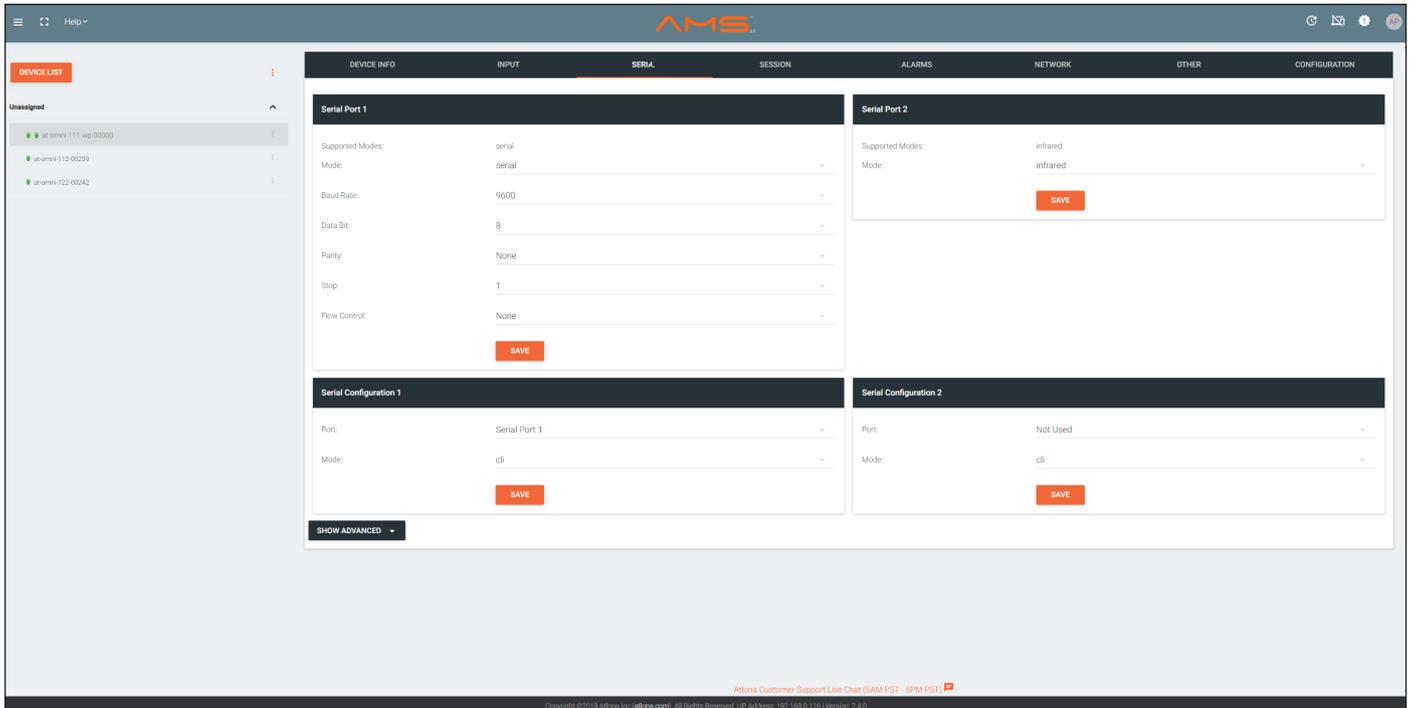
Video Optimization

Sets the output video mode. Refer to [Setting the Video Mode \(page 40\)](#) for more information.

Serial page

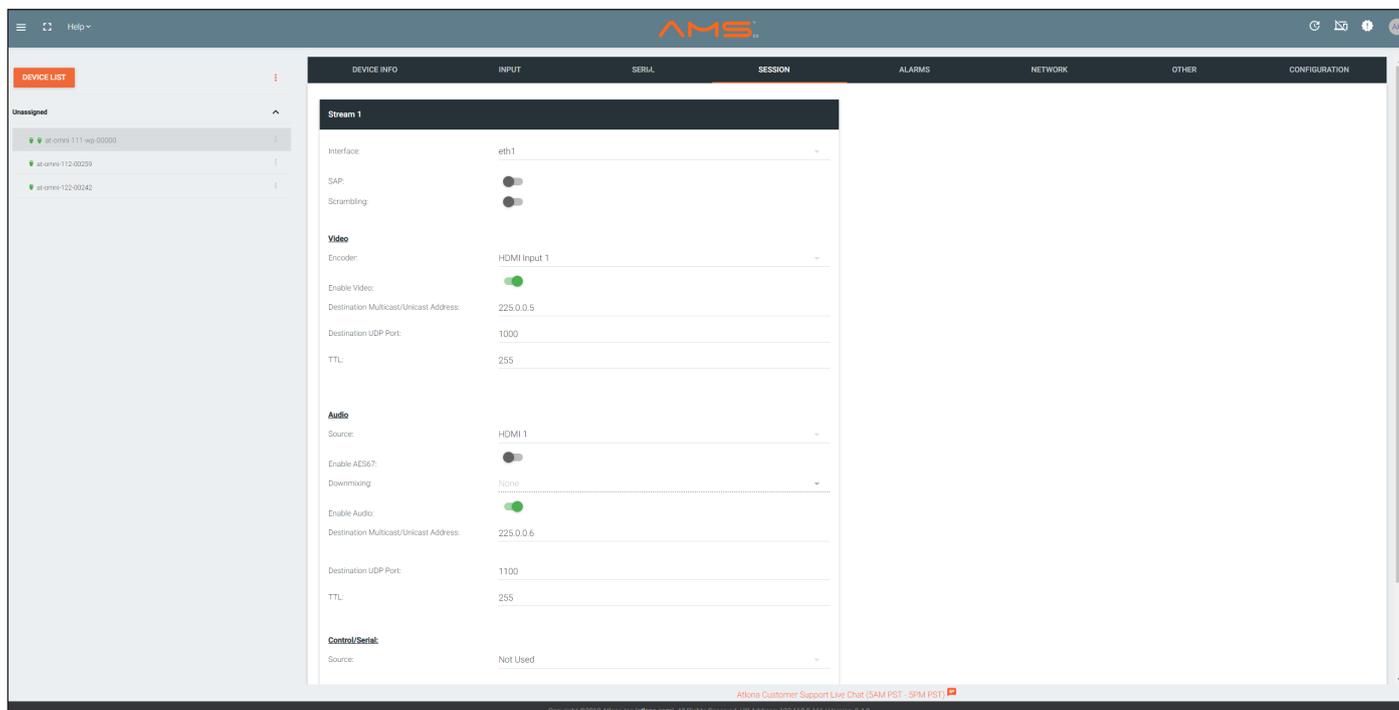


IMPORTANT: The AT-OMNI-111-WP does not currently support serial (RS-232) functionality. However, the page is listed within AMS.



Session page

The **Session** page provides the ability to configure all session parameters. Up to two sessions are supported on the AT-OMNI-111-WP.



Interface

Click this drop-down list to select the desired interface.

Interface	Description
eth1	ETHERNET 1 port
Not Used	Ethernet interface is disabled

SAP

Click this switch to enable to disable the Session Announcement Protocol. When enabled, the toggle switch will be green.

Scrambling

Click this toggle switch to enable (green) or disable scrambling.

Key

This field is only displayed if the **Scrambling** toggle switch is enabled (green). Enter the scrambling key in this field. The scrambling key must be ASCII and must contain a minimum of eight characters. Special characters and spaces are not permitted.

Encoder

Click this drop-down list to select the desired HDMI input.

Enable Video

Click the toggle switch to enable or disable the video stream. When enabled, the toggle switch will be green. By default, video streaming is *enabled*. Disabling the video stream can be used to “mask” the video on the decoder endpoints.

Destination Multicast/Unicast Address

Enter the IP address of the decoder that will be receiving the video stream. By default, AMS will automatically populate multicast IP addresses for the encoder.

Destination UDP Port

Enter the destination UDP port in this field.

TTL

Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

Source

Input

Select the desired HDMI input from the **Source** drop-down list.

Enable AES67

Click this toggle switch to enable AES67. When this feature is enabled, the toggle switch will be green.

Downmixing

This field will only be available when AES67 is enabled.

Enable Audio

Click the toggle switch to enable the audio stream. By default, audio streaming is *disabled*.

Destination Multicast/Unicast Address

Enter the IP address of the decoder that will be receiving the audio stream.

Destination UDP Port

Enter the destination UDP port in this field.

TTL

Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

Source

Click this drop-down list to select the method of how commands are transmitted.



IMPORTANT: The AT-OMNI-111-WP does not currently support serial (RS-232) functionality. However, the page is listed within AMS.

Advanced Settings

Click the **SHOW ADVANCED** button to view the following options. **DSCP**, **FEC Enable**, **FEC Rows**, and **FEC Columns** apply to both **Video** and **Audio** sections.

DSCP

Select the Differentiated Services Code Point (DSCP) type from the **DSCP** drop-down list. This value will be used to determine the Quality of Service (QoS) on a network. The available values are: **Best Effort**, **Low**, **Normal**, **High**, and **Highest**. The **Best Effort** setting will provide normal priority for data packets, while a setting of **Highest** will prioritize data packets as critical. However, it should be noted that a higher priority setting may also result in high data packet loss, depending upon network traffic.

FEC Enable

Click this toggle switch to enable (green) or disable Forward Error Correction (FEC). This feature can be used when transporting streams over a network that is suspected to be unreliable, due to noise or other factors. By default, this feature is enabled. Refer to [FEC Details \(page 103\)](#) for more information.

FEC rows

Specify the number of FEC rows in this field. Refer to [FEC Details \(page 103\)](#) for more information.

FEC Columns

Specify the number of FEC columns in this field. Refer to [FEC Details \(page 103\)](#) for more information.

Group Name

The name of the encoder group.

Enable Encoder Groups

Click this toggle switch to enable (green) or disable encoder groups for the stream.

Active

Indicates if the encoder group is active. If active, this indicator will be green.

Trigger

Click this drop-down list to select the trigger type: **manual** or **input connected**.

ACTIVATE

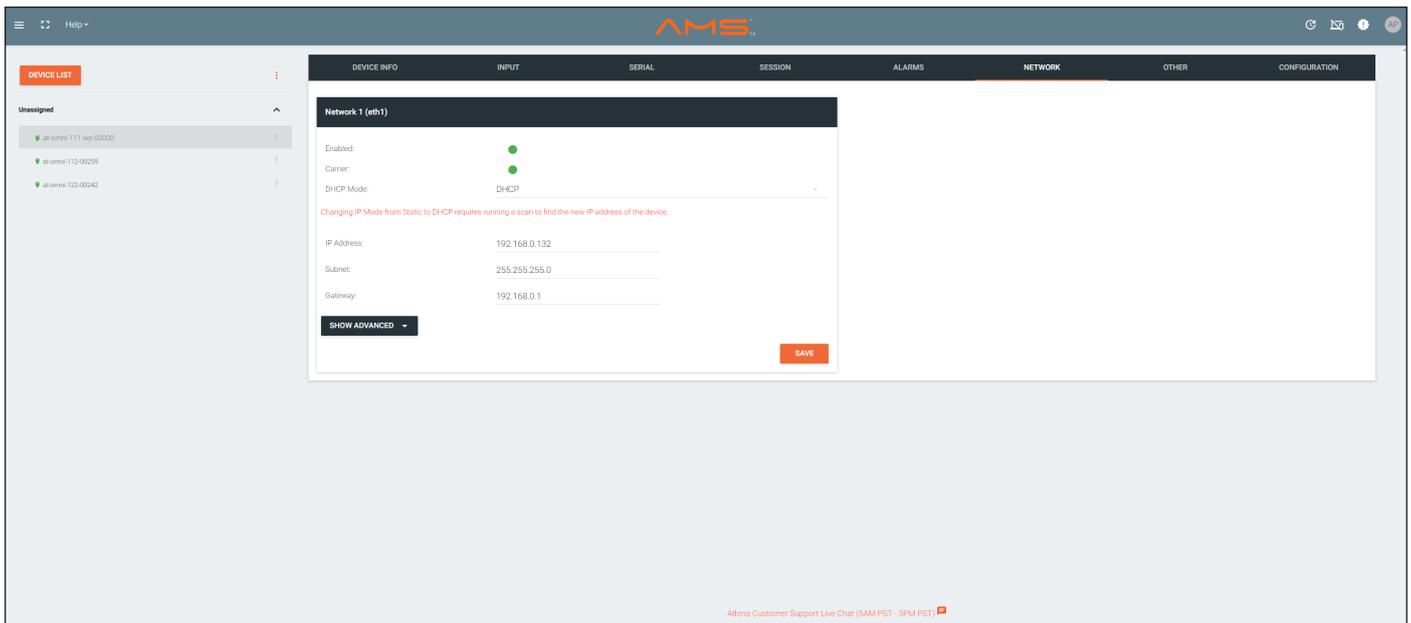
Click this button to activate the encoder group.

ADD

Click this button to add the IP address of an encoder to the encoder group.

Network page

The **Network** page provides the ability to enable or disable DHCP mode for each video channel. When DHCP mode is disabled, the IP address, subnet mask, and gateway must be provided. This screen is identical to the **Network** page for the decoder.



Enabled

This indicator displays whether or not the video stream for this channel is active. If the indicator is green, then the video stream is active.

Carrier

If this indicator is green, then an active link exists. Otherwise, if no link exists, this indicator will be red.

DHCP Mode

Click this drop-down list to select the desired network mode. Select DHCP to let the DHCP server (if present) assign the encoder the IP settings; **Subnet** and **Gateway** fields will automatically be populated. When **Static** mode is selected, the information for the **IP Address**, **Subnet**, and **Gateway** fields must be entered.

IP Address

Displays the IP address used by the channel. This field can only be changed if **Static** mode is selected.

Subnet

Displays the subnet mask for the channel. This field can only be changed if **Static** mode is selected.

Gateway

Displays the gateway (router) address for the channel. This field can only be changed if **Static** mode is selected.

Advanced Settings

Click the **SHOW ADVANCED** button to view the following options.

Link Speed

Displays the port speed in Mbps.

MAC Address

The MAC address of the Ethernet channel.

Telnet Authentication

Click this toggle switch to enable or disable Telnet authentication. If enabled, then the toggle switch will be green. Once enabled, connecting to the encoder using Telnet will require login credentials. The default credentials are:

Username: admin
Password: Atlona

802.1x Mode

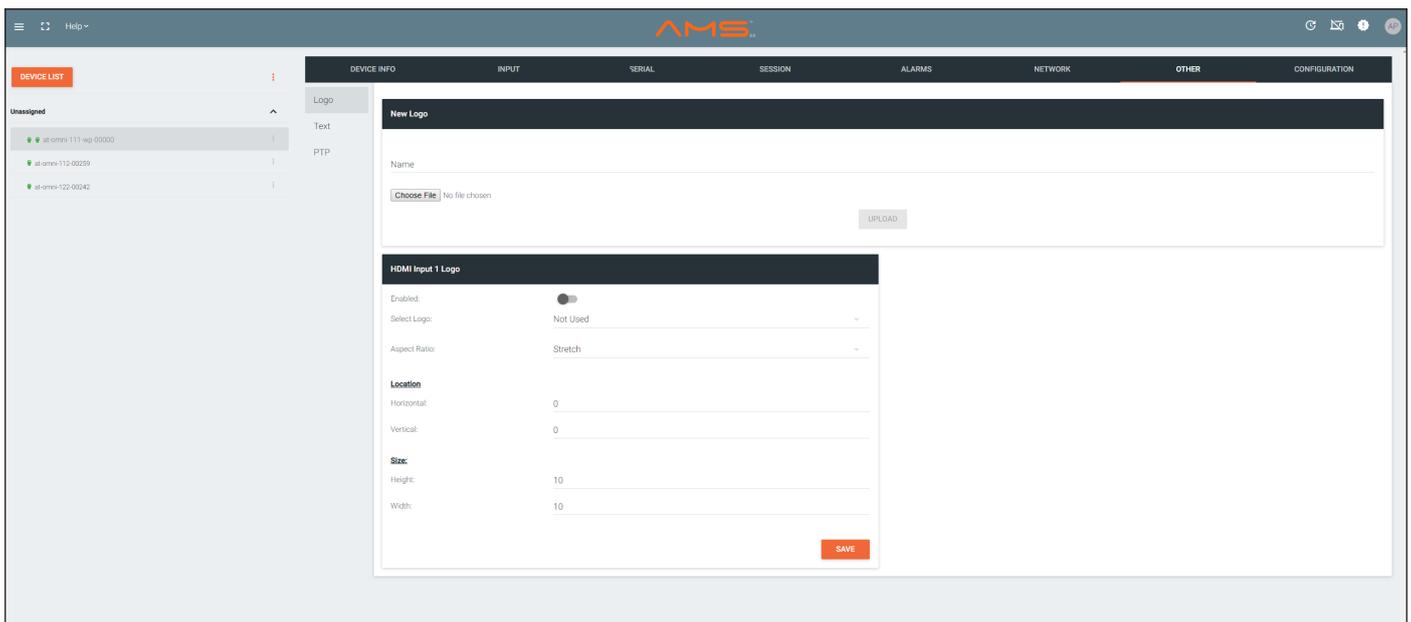
Click this drop-down list to select the desired authentication mode. Refer to [802.1X Authentication \(page 27\)](#) for more information.

Other page

The **Other** page provides logo/slate, text, and PTP management. Click the menu in the upper-left corner of the AMS screen to switch between **Logo**, **Text**, and **PTP** screens.

Logo

The **Logo** page provides the ability to upload a custom logo. This logo will be displayed when no video signal is detected. Separate logos can be uploaded: one for each channel. Refer to [Slate / Logo Insertion \(page 41\)](#) for more information on these settings.



Name

Enter a name for the logo in this field.

Choose File

Click this button to select the logo file to be uploaded. Files must be in .png format and must not exceed 5 MB (5120000 bytes) in size. When an image file is uploaded, it will appear in the **Logo** drop-down list.

UPLOAD

Click this button to upload the logo file to the encoder.

Enabled

Click the toggle switch to enable or disable the logo. If the toggle switch is green, then the logo will be enabled.

Target

The name used by AMS to identify the encoder.

Select Logo

Click this drop-down list to select the desired logo. To disable the use of a logo, set to **Not Used**.

Aspect Ratio

Click this drop-down list to select the type of aspect ratio to be applied to the logo.

Horizontal

Enter the horizontal position of the logo on the screen.

Vertical

Enter the vertical position of the logo on the screen.

Height

Enter the horizontal resolution of the logo, in pixels.

Width

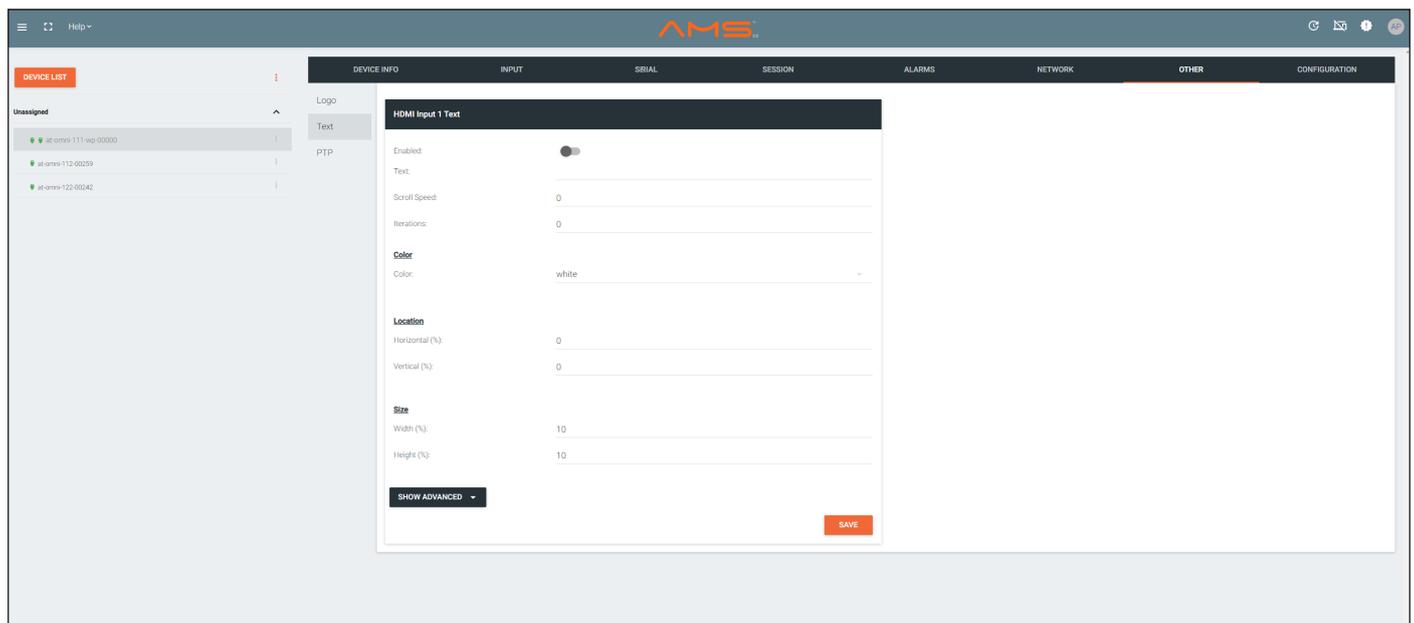
Enter the vertical resolution of the logo, in pixels.



IMPORTANT: Maximum logo resolution (both height and width) is 1/4 of the video resolution.

Text

The **Text** page provides the ability to display scrolling or stationary text superimposed on the source image. Refer to [Text Insertion \(page 45\)](#) for more information.



Enabled

Click this toggle switch to enable or disable the text. When the toggle switch is green, the text will be enabled.

Text

Enter the desired text in this field.

Scroll Speed

Enter the scrolling speed in this field. Values from -255 to 255 are valid. Negative numbers will scroll the text from left to right. Positive numbers will scroll text from right to left.

Iterations

Enter the number of iterations in the **Iteration** field. Set this field to 0 (zero) to set the number of iterations to infinity.

Color

Click this drop-down list to select a solid color preset: **red, green, black, white, yellow, or blue.**

Horizontal (%), Vertical (%)

Specify the location of the text in the Horizontal (%) and Vertical (%) fields. Each of these values is based on the horizontal and vertical resolution of the screen.

Width (%), Height (%)

Specify the size of the text in the Width (%) and Height (%) fields. Each of these values is based on the horizontal and vertical resolution of the screen.

Advanced Settings

Click the **SHOW ADVANCED** button to view the following options.

Red, Green, Blue, Alpha

Enter the RGBA values for each of the respective fields, to specify a custom color and transparency of the text. Enter the desired value in the Alpha field to control the transparency of the text. A value of 255 is opaque and a value of 0 is transparent. Numbers from 0 to 255 are valid for each of these fields.

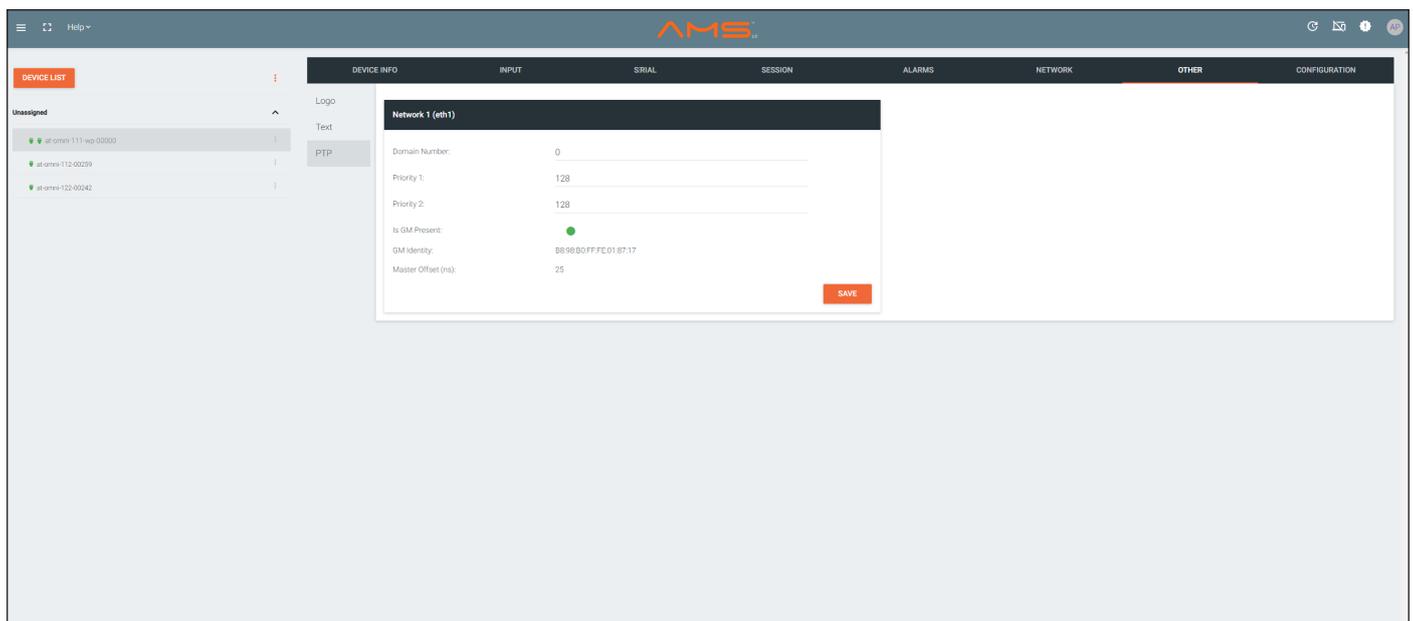
PTP

The **PTP** page provides options for adjust Precision Time Protocol (PTP) for AES-67 audio streams. PTP is used by AES67 to keep all audio streams synchronized.

For a system utilizing PTP, all devices undergo an automatic self-election process to choose the interface to be used as the PTP grandmaster (GM) clock, based on the accuracy of the device's clock and the device's configured priority. A lower priority number means the unit is more likely to get selected as GM.



IMPORTANT: If a new device is added to the network and the GM changes, a brief outage will be experienced while all connected devices synchronize with the new clock. Because of this, Atlona recommends that one unit gets manually defined as the GM and have both **Priority 1** and **Priority 2** fields be set to 1.



The screenshot shows the AMS interface with a navigation bar at the top containing 'DEVICE LIST', 'DEVICE INFO', 'INPUT', 'SERIAL', 'SESSION', 'ALARMS', 'NETWORK', 'OTHER', and 'CONFIGURATION'. The 'PTP' tab is selected in the left sidebar. The main content area displays the configuration for 'Network 1 (eth1)' with the following fields:

- Domain Number: 0
- Priority 1: 128
- Priority 2: 128
- Is GM Present:
- GM Identity: 88:98:80:FF:FE:01:87:17
- Master Offset (ms): 25

A 'SAVE' button is located at the bottom right of the configuration form.

Domain Number

Enter the domain number in this field. Valid entries are 0 through 127.

Priority 1

Enter the priority number in this field.

Priority 2

Enter the priority number in this field.

Is GM Present

This indicator displays the existence of a grandmaster clock for the specified PTP domain number. If the indicator is green, then the grandmaster clock exists on this interface.

GM Identity

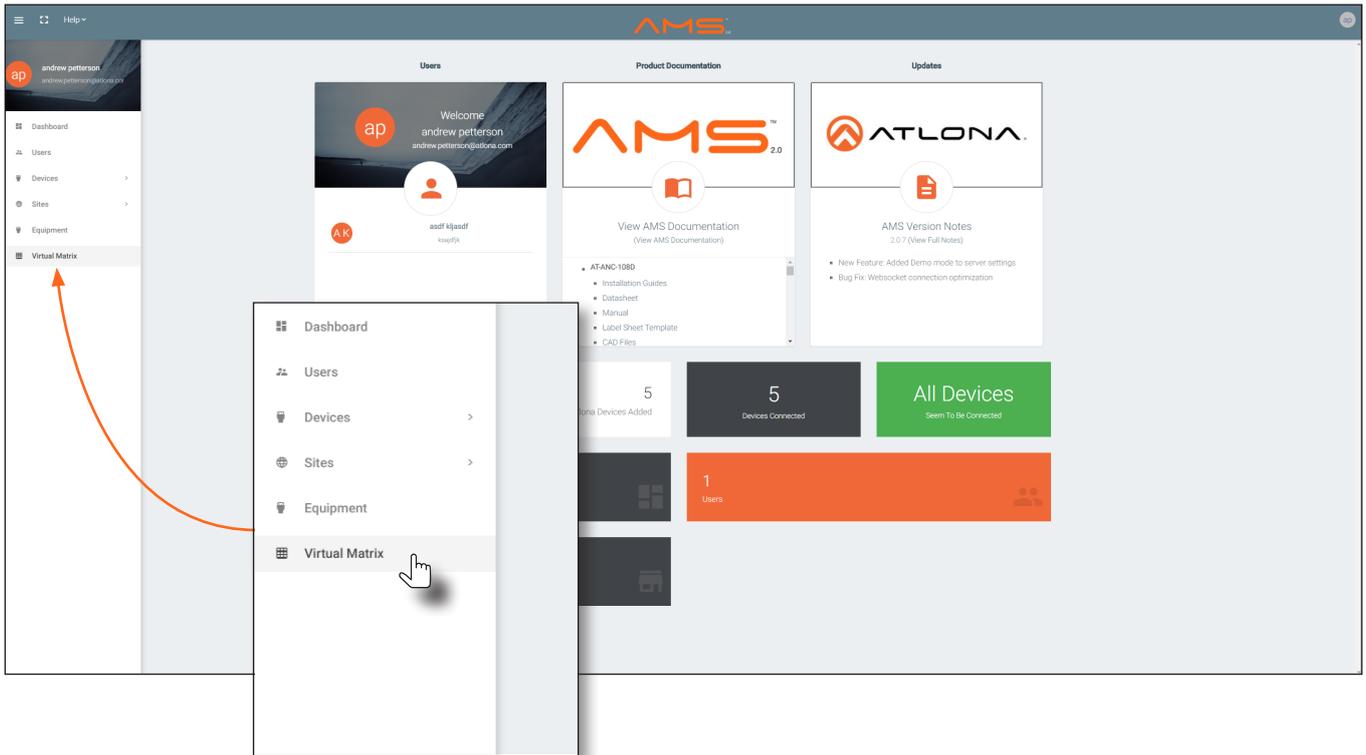
The grandmaster clock identity. If this field is blank, then it means that this interface is the grandmaster clock.

Master Offset

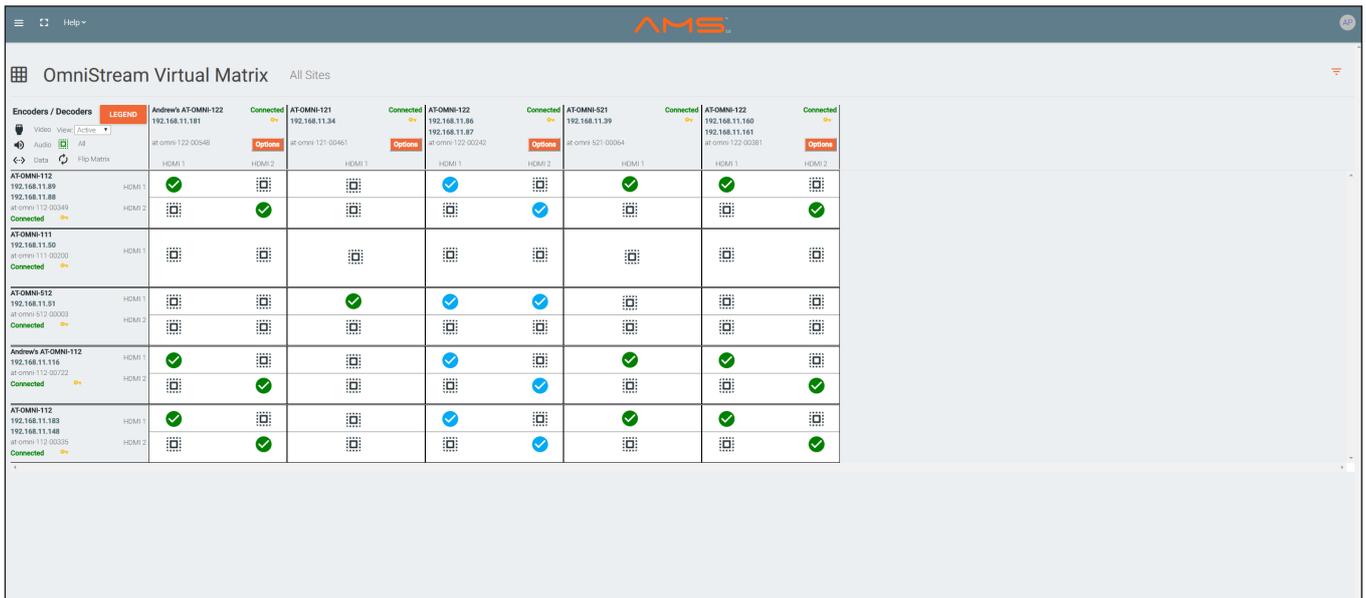
Displays the grandmaster clock offset.

The Virtual Matrix

1. Login to AMS. Refer to **Accessing Encoders in AMS (page 13)**, if necessary.
2. Click the  icon, in the upper-left corner of the AMS Dashboard.
3. Click **Virtual Matrix**.



4. The **OmniStream Virtual Matrix** page will be displayed.



The screenshot displays the 'OmniStream Virtual Matrix' page. It features a table with columns for encoder models and IP addresses, and rows for different HEM (Host Encoder Module) ports. The table indicates the connection status for each encoder-HEM pair.

Encoders / Decoders	LEGEND	Andrew's AT-OMNI-122 192.168.11.181 at-omni-122-00548 Connected	AT-OMNI-121 192.168.11.134 at-omni-121-00461 Connected	AT-OMNI-122 192.168.11.85 192.168.11.87 at-omni-122-00242 Connected	AT-OMNI-521 192.168.11.29 at-omni-521-00064 Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381 Connected
AT-OMNI-112 192.168.11.89 192.168.11.88 at-omni-112-00249 Connected	HEM1 HEM2	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:
AT-OMNI-111 192.168.11.50 at-omni-111-00200 Connected	HEM1					
AT-OMNI-512 192.168.11.51 at-omni-512-00200 Connected	HEM1 HEM2	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:
Andrew's AT-OMNI-112 192.168.11.116 at-omni-112-00222 Connected	HEM1 HEM2	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:
AT-OMNI-112 192.168.11.183 192.168.11.148 at-omni-112-00209 Connected	HEM1 HEM2	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:	HEM1: HEM2:

Layout and Operation

The illustration below, shows a multiple OmniStream units (encoders and decoders). The Virtual Matrix is organized into rows and columns.

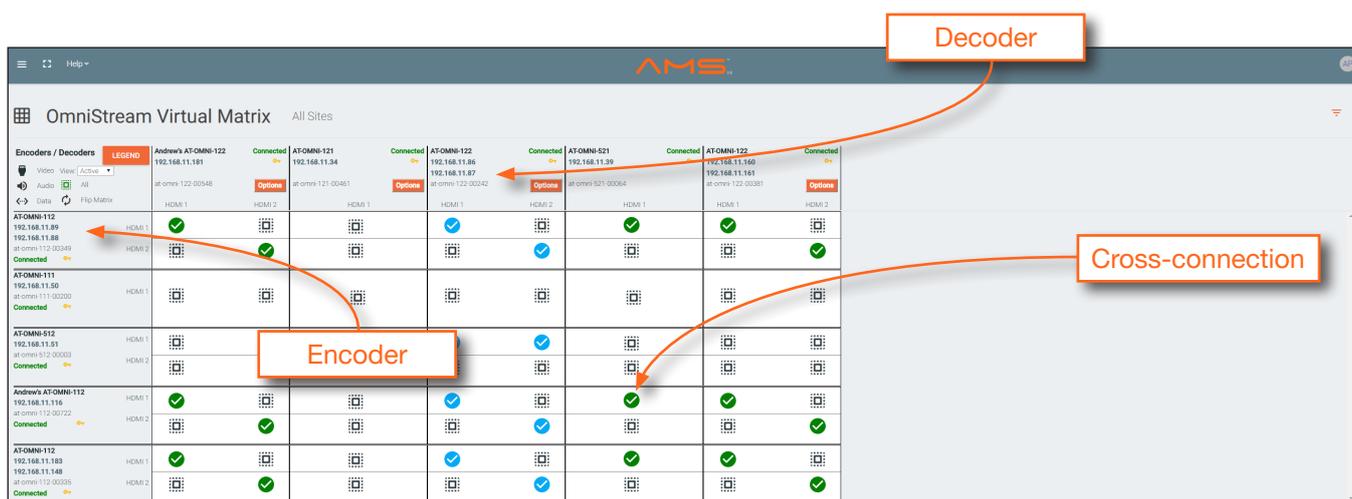
The blue circle with the checkmark indicates that these two OmniStream units are connected to one another. The second column identifies a dual-channel decoder (AT-OMNI-122). The third row shows a dual-channel encoder (AT-OMNI-112). In this example, the source signal on **HDMI 1 IN** (encoder) is being sent out, over the network, and will be displayed on **HDMI 1** on the decoder. This will create a *cross-connection*, which connects both the encoder and decoder together.

- **Creating a cross-connection**

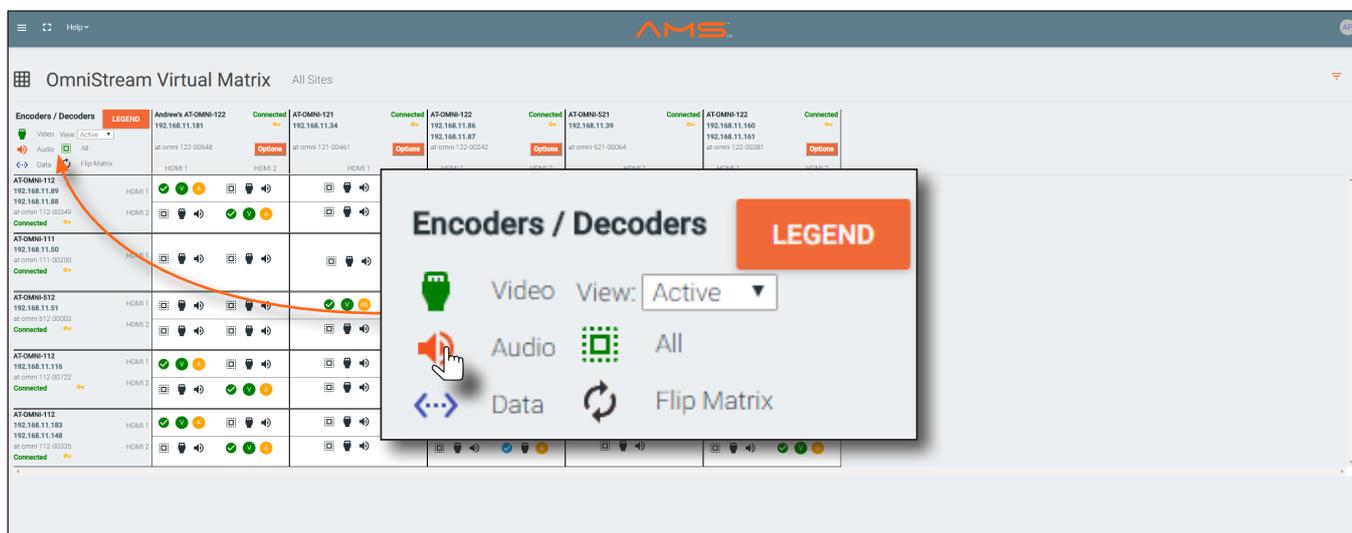
To route an input on an encoder to an output, locate the row and column where an input and output intersect, then click the square with the dots around it.

- **Removing a cross-connection**

To remove a *cross-connection*, click on the desired circle icon with the check mark symbol. The square with the dots around it will be displayed indicating that the *cross-connection* has been removed.

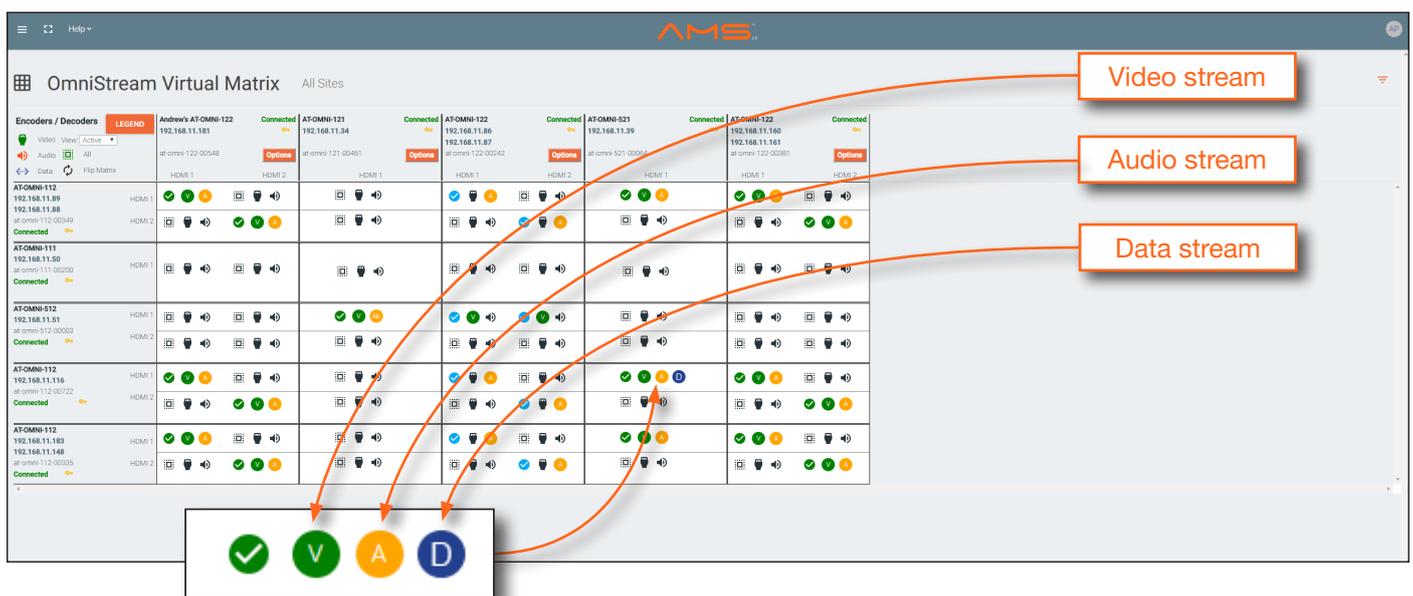


- To view the individual streams for video, audio, and data, click the icons on the upper-left corner of the screen.



When these icons are clicked, the associated icons will be displayed in the rows and columns of the Virtual Matrix.

Symbol	Description
	Video only
	Audio only
	Data only
	Connected; not all signals are active
	Connected; all streams are being used



The screenshot shows the AMS interface with a grid of connections between encoders and decoders. The legend at the bottom indicates that the V icon represents Video only, the A icon represents Audio only, and the D icon represents Data only. The blue circle with a checkmark indicates a connection that is not fully active, while the green circle with a checkmark indicates a connection where all streams are being used. Callouts in the image point to these icons in the matrix grid.



IMPORTANT: R-Type and Pro compatibility: R-Type encoders (AT-OMNI-512) and decoders (AT-OMNI-521) operate in Video Mode, only. Pro encoders can be set to either Video Mode or PC Mode. Video Mode is incompatible with PC Mode. Therefore, in order for both R-Type and Pro encoders/decoders to work within a system, Pro encoders/decoders must be set to Video Mode. Refer to [Setting the Video Mode \(page 40\)](#) for more information.

- Click the **Video**, **Audio**, and **Data** icons to return to the normal view.
- Since only HDMI (both audio and video) is being used, the V (video) and A (audio) icons are displayed. The blue circle with the checkmark indicates that the cross-connection has been created. However, not all streams are being used. Refer to the chart below.
- This illustration also shows that the data stream (the icon with two arrows and three dots), which is used for control, is also being used and is displayed as a dark-blue circle with the letter “D”.
- The icons in the upper-left corner can also act as a filter. This allows for a clear breakdown of where signals are being routed and is useful when several encoders and decoders are used on a network.

Web Server

Accessing the Web Server

In order to access the web server of the desired encoder/decoder, the IP address of the encoder must be known. This can be accomplished by more than one method. Running IP scanner software or using the Address Resolution Protocol (ARP) are two possibilities. When running an IP scanner or using ARP, both the computer and the OmniStream encoders/decoders must be connected to the same network.



TIP: Atlona recommends downloading and using the Network Assignment Planner, when setting up OmniStream products on the network. Recording this information in this document will provide a “snapshot” of the current OmniStream network configuration. The Network Assignment Planner is available for download on the OmniStream product pages, under the Resources tab.

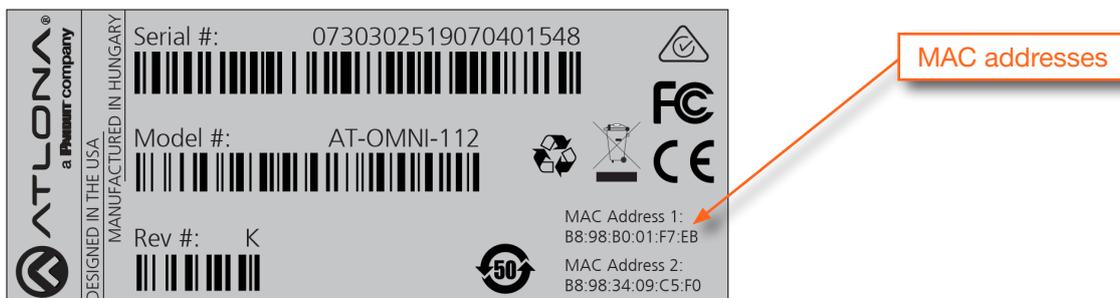
Getting the IP Address

The following method uses the `arp` command, which is available from the command line in Windows. The `arp` command will display the IP-to-physical address translation tables used by the Address Resolution Protocol (ARP). The following procedure can be used for both encoders and decoders.

1. Identify the desired encoder/decoder by locating the MAC address on the back panel of the unit. *Figure 1.1* shows a sample label from an AT-OMNI-112 dual-channel encoder.

The MAC address for the Ethernet 1 physical interface is B8:98:B0:01:F7:EB.

Figure 1.1 - Sample label from a dual-channel encoder, showing the location of the MAC address.



2. Connect a PC to the same network where the OmniStream encoders/decoders are connected.
3. Type `cmd` in the search bar, then press [ENTER] to launch the command line interface.
4. At the command prompt, type `arp -a`. Make sure to include a space between `arp` and the `-a` argument, then press [ENTER].
5. Press [ENTER]. Several lines of information will be displayed. Locate the MAC address of the encoder/decoder, under the **Physical Address** column. Directly across from the MAC address, the IP address of the encoder/decoder will be listed under the **Internet Address** column. Refer to the illustration on the next page.

```

Interface: 10.1.0.4 --- 0x16
Internet Address      Physical Address      Type
10.1.0.3              30-cd-a7-37-26-bb    dynamic
10.1.0.8              b8-98-b0-01-fa-58    dynamic
10.1.0.11             b8-98-b0-01-f2-56    dynamic
10.1.0.12             b8-98-b0-01-f7-eb    dynamic
10.1.1.254            00-38-df-d1-35-8a    dynamic
10.1.1.255            ff-ff-ff-ff-ff-ff    static
224.0.0.2             01-00-5e-00-00-02    static
224.0.0.22           01-00-5e-00-00-16    static
224.0.0.230          01-00-5e-00-00-e6    static
224.0.0.252          01-00-5e-00-00-fc    static
239.255.255.250      01-00-5e-7f-ff-fa    static
255.255.255.255      ff-ff-ff-ff-ff-ff    static
  
```

Encoder IP address

MAC address

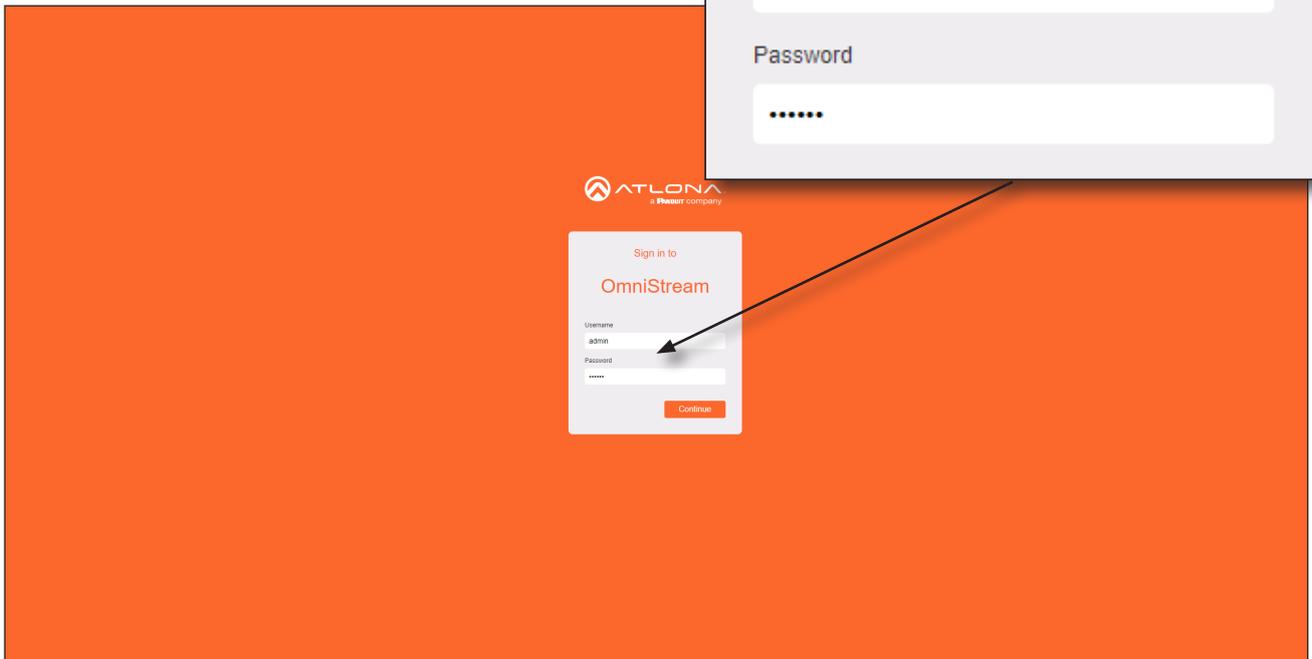
Logging In

1. Launch the desired web browser and enter the IP address of the encoder in the address bar.
2. Enter the username and password. Note that the password field will always be masked. The default credentials are:

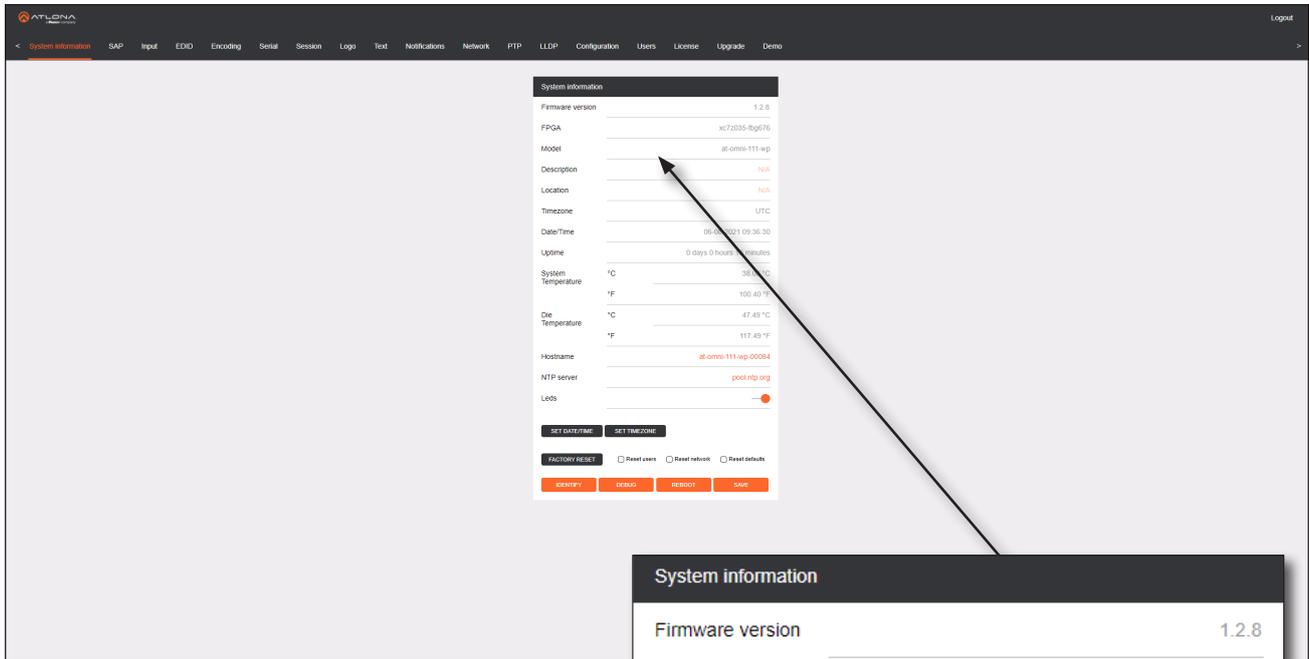
Username: admin
 Password: Atlona

Username

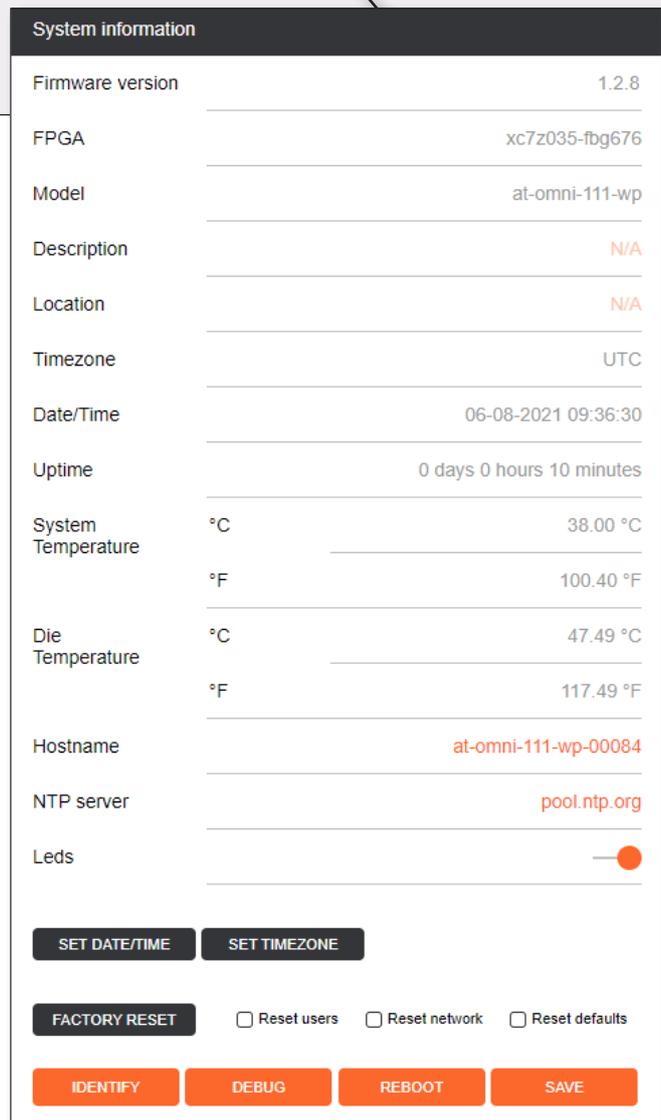
Password



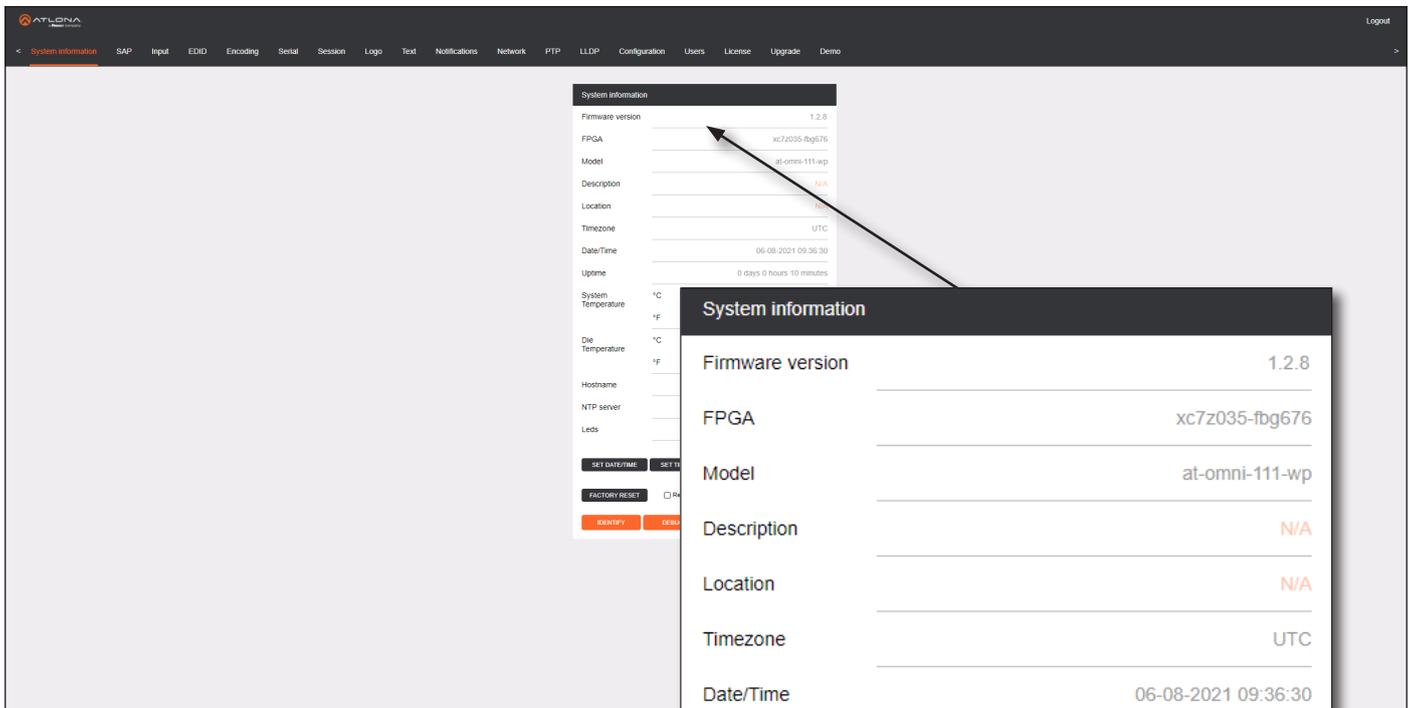
3. The **System Information** page will be displayed.



4. The login process is complete.



System information page



Firmware version

The version of firmware that the encoder is running. Always make sure the latest version of firmware is installed.

FPGA

Displays the FPGA model number and the size.

Model

The model number of the unit. This will be AT-OMNI-111-WP.

Description

Provides the option of assigning descriptive name to the unit.

Location

Provides the option of assigning a description of where the unit is located.

Timezone

Displays the time zone format. Click the **SET TIMEZONE** button, to assign the time zone.

Date/Time

Displays the current date and time. Click the **SET DATE/TIME** button to set these values.

System information

Firmware version	1.2.8
FPGA	xc7z035-fbg676
Model	at-omni-111-wp
Description	N/A
Location	N/A
Timezone	UTC
Date/Time	06-08-2021 09:36:30
Uptime	0 days 0 hours 10 minutes
System Temperature	°C 38.00 °C °F 100.40 °F
Die Temperature	°C 47.49 °C °F 117.49 °F
Hostname	at-omni-111-wp-00084
NTP server	pool.ntp.org
Leds	<input checked="" type="checkbox"/>

SET DATE/TIME
SET TIMEZONE

FACTORY RESET
 Reset users
 Reset network
 Reset defaults

IDENTIFY
DEBUG
REBOOT
SAVE

Uptime

Displays the elapsed time since the unit was powered-on or rebooted.

System Temperature

Displays the ambient enclosure temperature.

Die Temperature

Displays the value returned from the die temperature sensor (DTS) on the chip of the PCB.

Power Consumption

Displays the precise power consumption of the encoder.

Hostname

Displays the hostname of the encoder. By default, OmniStream encoders are assigned a default hostname, which is constructed as follows: `at-omni-111-wp-[last five digits of MAC address]`. If using a custom hostname, it must meet the hostname standards, defined here: <https://tools.ietf.org/html/rfc1123>.

NTP Server

Displays the NTP server. This field is set to `pool.ntp.org` by default. Click this field to enter the desired NTP server address.

LEDs

Click this toggle switch to enable or disable all front-panel LED indicators and button backlight indicators.

SET DATE/TIME

Click this button to set the current date and time.

SET TIMEZONE

Click this button to set the desired time zone.

FACTORY RESET

Click this button to reset the encoder to factory-default settings. When performing a factory reset, the following options can be selected, by clicking the check box. If no options are selected, then the encoder is reset with no factory-default settings.

Option	Description
None Checked	Resets the encoder with no factory-default settings.
Reset User	Resets the encoder to factory-default settings and resets custom user information.
Reset Network	Resets the encoder to factory-default settings and resets network information.
Reset Defaults	Resets the encoder to factory-default settings. In addition, static multicast addresses are configured. This option can be used to configure a single encoder to transmit to any number of decoders without using the Virtual Matrix within AMS.  IMPORTANT: This option will not work for multiple encoders on the same network.

IDENTIFY

Click this button to physically identify a unit on the network. Clicking this button will cause all front-panel LED indicators to flash for 10 seconds.

DEBUG

Click this button to instruct the unit to create a debug file. This file is used by Atlona Technical Support Engineers to diagnose internal issues with the unit.

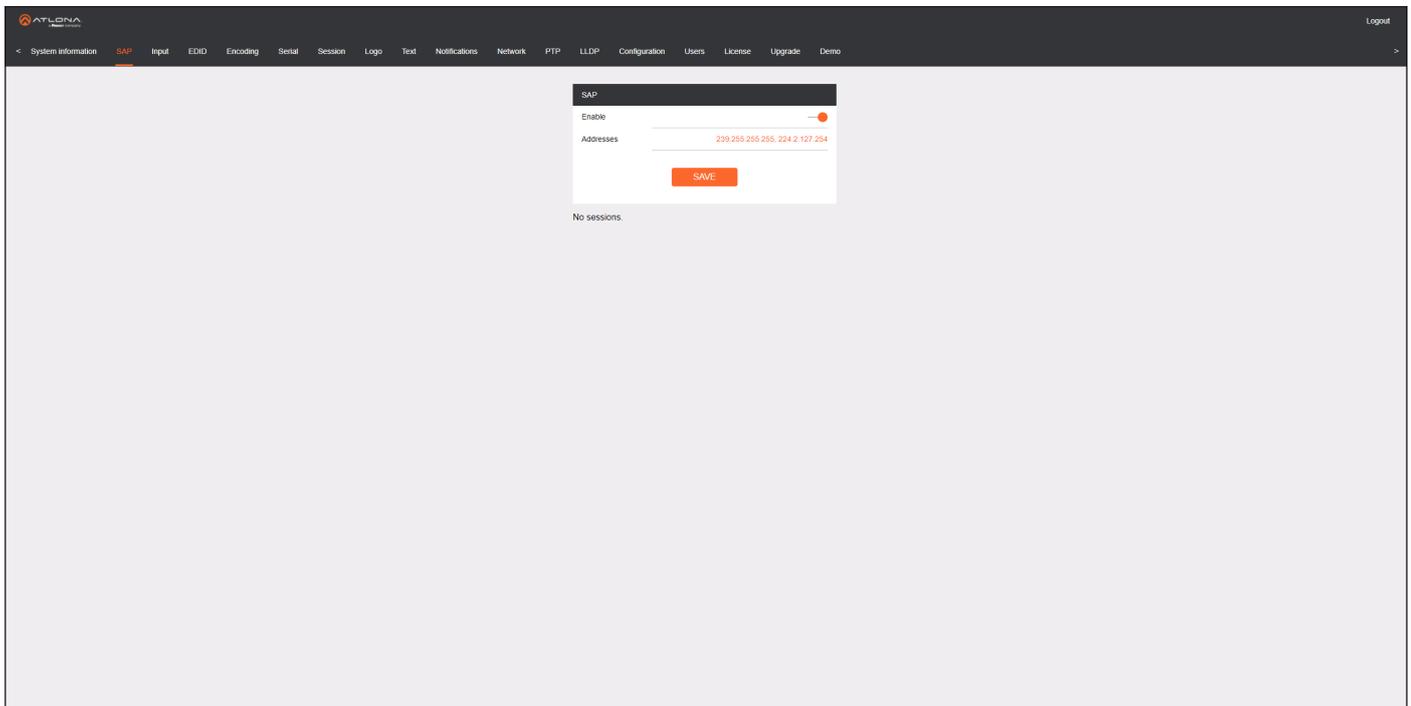
REBOOT

Click this button to perform a soft reboot of the encoder.

SAVE

Click this button to commit changes to the settings on this page.

SAP page



Enable

Click this toggle to enable or disable SAP. This feature is enabled when the toggle switch is orange. This is the default setting.

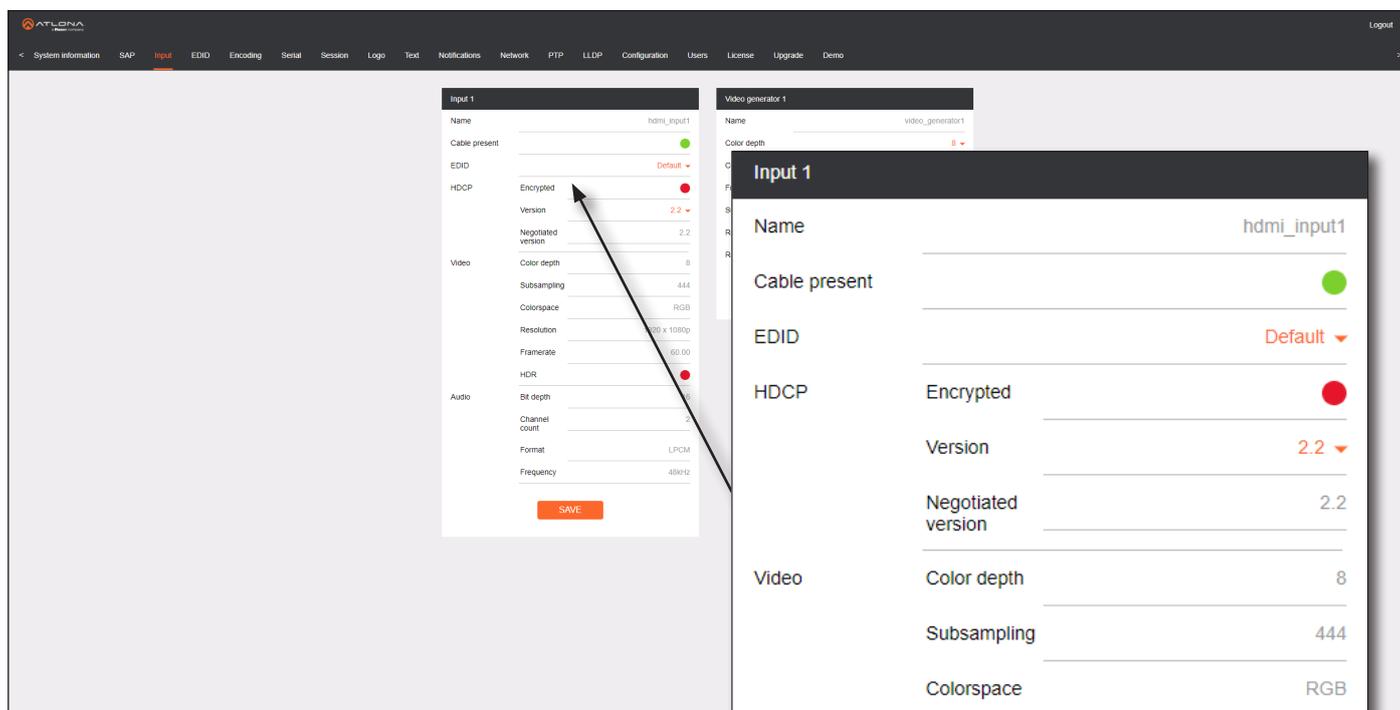
Addresses

Encoders currently send SAP announcements on two multicast addresses: 224.2.127.254 and 239.255.255.255. In some rare instances, this can conflict with other network address settings. Custom SAP addresses can be specified in this field.



NOTE: If the **Addresses** field is changed, then the same changes must be applied to all devices, in order for all devices to see the SAP multicast.

Input page



Input window groups

Name

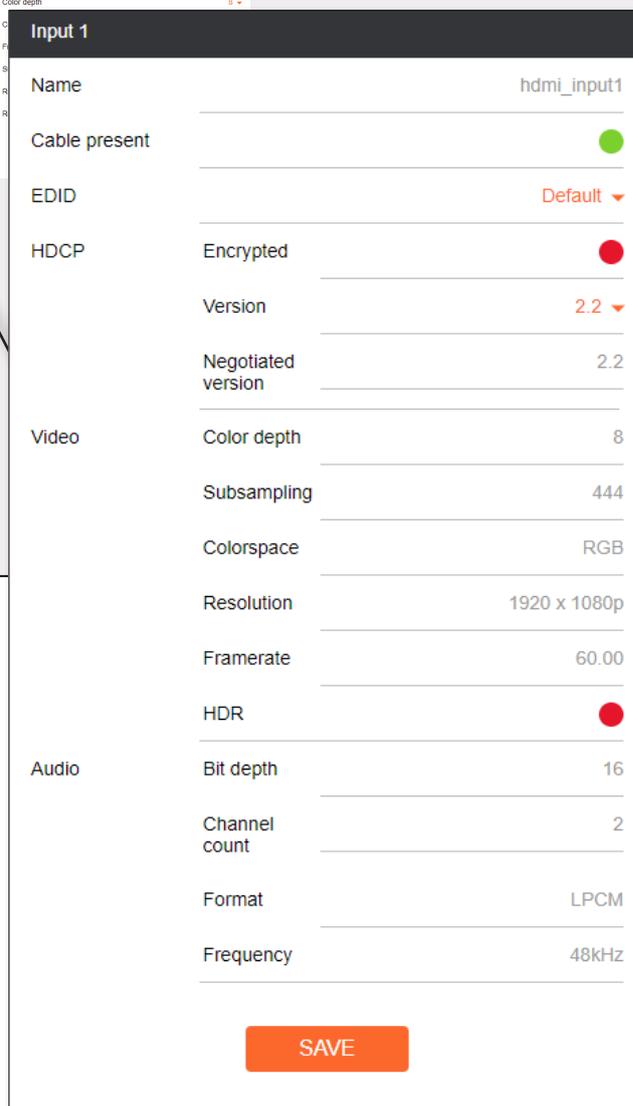
The name of the input. This field cannot be changed.

Cable present

This indicator will be red if the encoder is unable to detect the source signal. This may indicate a damaged HDMI cable. If this indicator is green (shown), then the cable integrity is good, and additional fields for both the Video and Audio sections will be displayed.

EDID

Click this drop-down list to select the desired EDID. The default EDID is selected as a default setting.



EDID	Description
Default	Default EDID (3840x2160p30)
Default (DV)	Default EDID with Dolby Vision (3840x2160p30)
ATL 1080P 2CH	1920x1080p60 with two-channel PCM audio
ATL 1080P DD	1920x1080p60 with Dolby Digital
ATL 1080P DVI	1920x1080p60 formatted as DVI
ATL 1080P MCH	1920x1080p60 with multichannel audio
ATL 1280x800 RGB DVI PCWXGADV1	1280x800 formatted as DVI
ATL 1280x800 RGB PCWXGA2CH	1280x800p60 PC format with two-channel PCM audio
ATL 1280x800 RGB TVWXGA2CH	1280x800p60 TV format with two-channel PCM audio

EDID	Description
ATL 2160P 2CH	3840x2160p30 with two-channel PCM audio
ATL 2160P MCH	3840x2160p30 with multichannel PCM audio
ATL 2560x1600 2CH	2560x1600p60 with two-channel PCM audio
ATL 2560x1600 MCH	2560x1600p60 with multichannel PCM audio
ATL 720P DD	1280x720p60 with Dolby Digital audio
ATL 720P 2CH	1280x720p60 with Dolby Digital two-channel audio
ATL VR (2160x1200)	2160x1200p90 (Compatible with HTC VIVE® VR system)

HDCP

Encrypted

Indicates if the content being transmitted from the source is HDCP-encrypted. If using HDCP-encrypted content is being used, then this indicator will be green.

Version

Click this drop-down list to select the version of HDCP to be supported: **2.2**, **1.4**, or **None**. If **None** is selected, then HDCP-encrypted content cannot be passed-through.

Video

The following fields will only be displayed if the **Cable present** indicator is green.

Color Depth

Displays the color depth of the source content.

Subsampling

Displays the chroma subsampling value of the source content.

Colorspace

Displays the color space of the source content.

Resolution

Displays the resolution of the source content.

Framerate

Displays the frame rate of the source content.

HDR

This indicator displays the presence of HDR source content. If the indicator is green, then the source is outputting HDR content. If the indicator is red, then no HDR content is detected.

Audio

The following fields will only be displayed if the **Cable present** indicator is green.

Bit Depth

Displays the bit depth of the source audio.

Channel count

Displays the number of audio present that are present in the source audio.

Format

Displays the audio format of the source content.

Frequency

Displays the audio frequency of the source content.

Video generator 1

Name	video_generator1
Color depth	8 ▼
Colorspace	YUV ▼
Framerate	60
Subsampling	444 ▼
Resolution width	1920
Resolution height	1080

SAVE

Video generator window group

This signal can be used to test the video capability of the network.

Name

The name of the input. This field cannot be changed.

Color Depth

Click this drop-down list to select the color depth. Available values are 8, 10, and 12.

Colorspace

Click this drop-down list to select the color space. Available values are YUV and RGB.

Framerate

Click in this field to change the frame rate of the video generator signal. The default value is 60 Hz.

Subsampling

Click this drop-down list to select the chroma subsampling value. Available values are 444, 442, and 420.

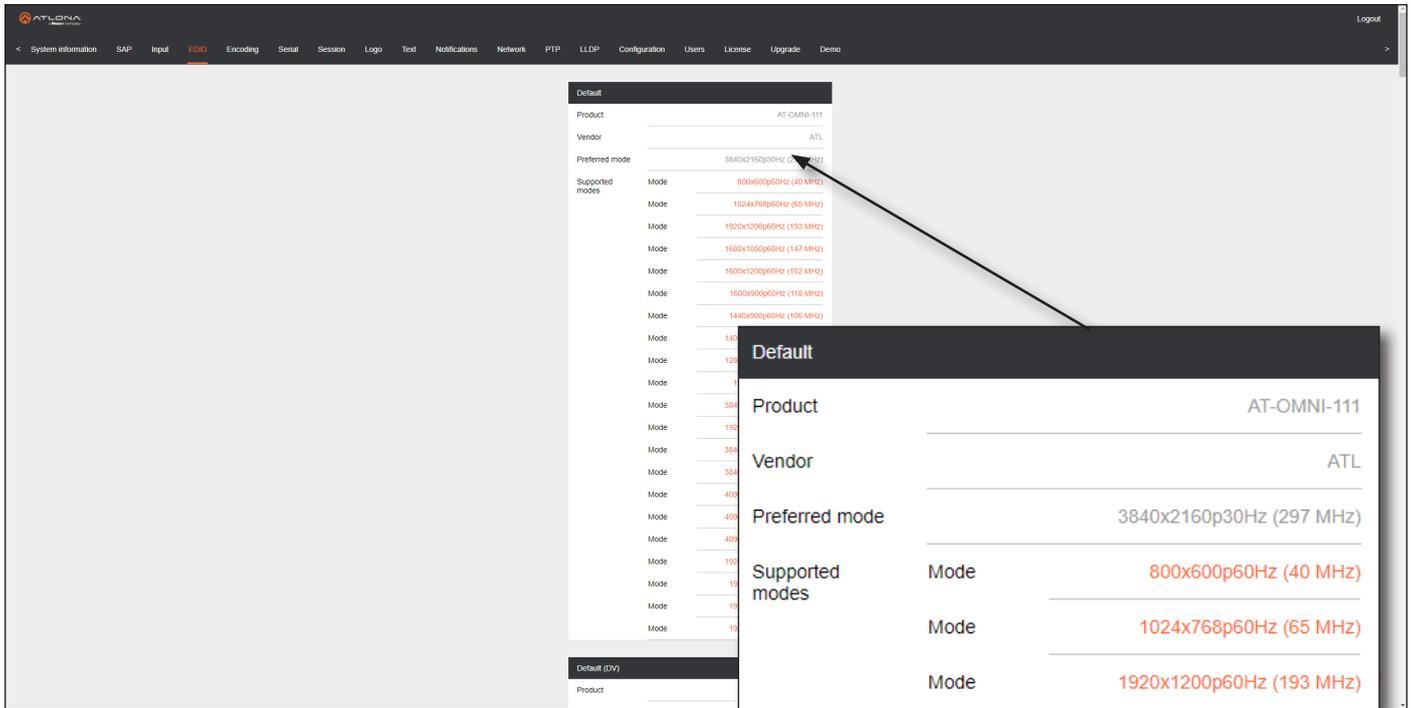
Resolution width

Click in this field to change the horizontal resolution of the signal.

Vertical width

Click in this field to change the vertical resolution of the signal.

EDID page



Product

Displays the SKU of the OmniStream encoder. This field cannot be changed.

Vendor

Displays the vendor name (ATL). This field cannot be changed.

Preferred mode

Displays the preferred timing and resolution of the EDID. This field cannot be changed.

Supported modes

Mode

In addition to the preferred timing and resolution, each EDID structure contains a listing of supported timings/resolutions. The number of available supported timings/resolutions depends on the EDID.

Add EDID

Click this button, located at the bottom-right of the page, to create a new EDID.



Default

Product AT-OMNI-111

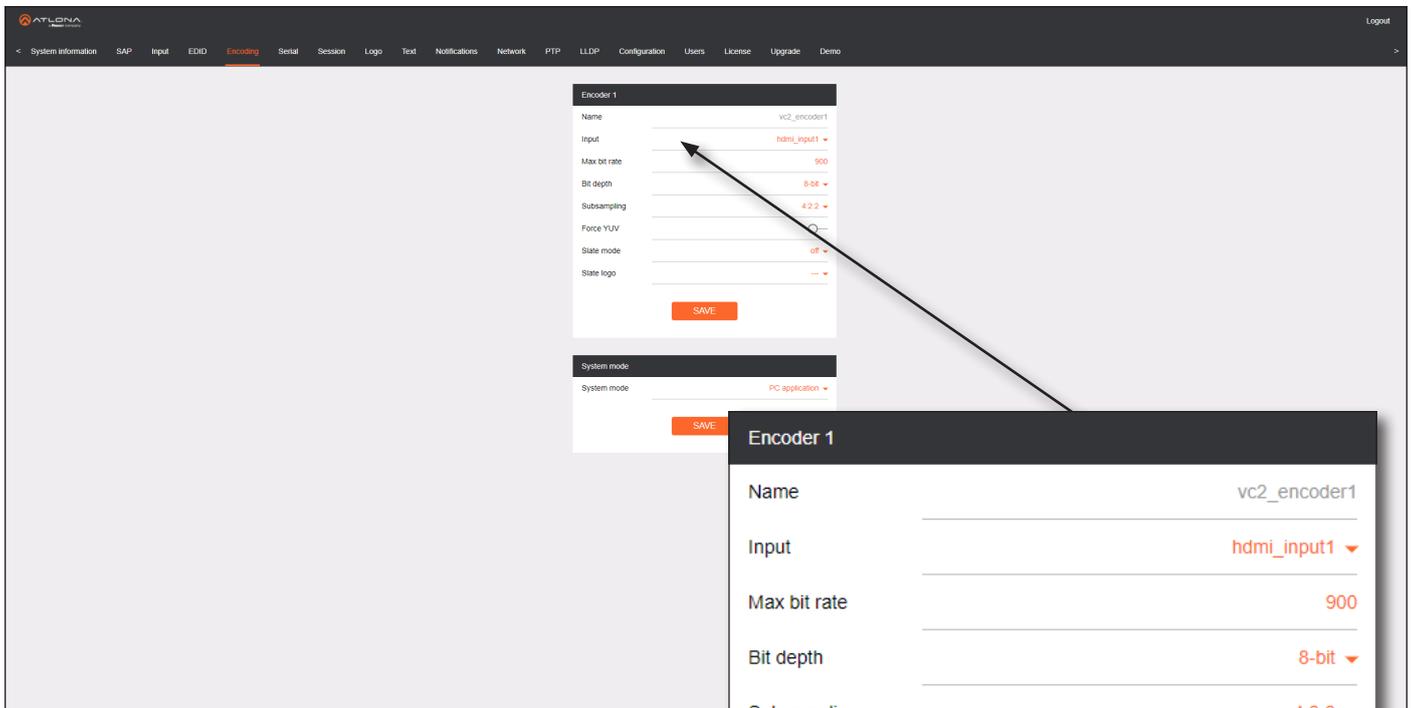
Vendor ATL

Preferred mode 3840x2160p30Hz (297 MHz)

Supported modes

Mode	800x600p60Hz (40 MHz)
Mode	1024x768p60Hz (65 MHz)
Mode	1920x1200p60Hz (193 MHz)
Mode	1680x1050p60Hz (147 MHz)
Mode	1600x1200p60Hz (162 MHz)
Mode	1600x900p60Hz (118 MHz)
Mode	1440x900p60Hz (106 MHz)
Mode	1400x1050p60Hz (122 MHz)
Mode	1280x1024p60Hz (108 MHz)
Mode	1280x800p60Hz (83 MHz)
Mode	3840x2160p30Hz (297 MHz)
Mode	1920x1080p60Hz (148 MHz)
Mode	3840x2160p25Hz (297 MHz)
Mode	3840x2160p24Hz (297 MHz)
Mode	4096x2160p30Hz (297 MHz)
Mode	4096x2160p25Hz (297 MHz)
Mode	4096x2160p24Hz (297 MHz)
Mode	1920x1080p50Hz (148 MHz)
Mode	1920x1080p30Hz (74 MHz)
Mode	1920x1080p25Hz (74 MHz)
Mode	1920x1080p24Hz (74 MHz)

Encoding page



Encoder window groups

Name

The name of the encoder. This field cannot be changed.

Input

Click this drop-down list to select the input. Available options are: **not used**, **hdmi_input1**, **hdmi_input2**, **video_generator1**, and **video_generator2**. Single-channel encoders will only have the following options: **not used**, **hdmi_input1**, and **video_generator1**.

Max bit rate

Click this field to enter the maximum bit rate. The default setting is **900** Mbps. Specifying lower bit rates will reduce video quality. 4K/UHD streams should be set to 900 Mbps. The recommended bandwidth for 1080p60 video is 450 Mbps. Setting this field below these recommended values will result in lower-quality video.

Bit depth

Click in this drop-down list to select the desired bit depth. Available values are: **8-bit**, **10-bit**, and **12-bit**.

Subsampling

Click this drop-down list to select the chroma subsampling value. Available values are: **4:4:4**, **4:4:2**, and **4:2:0**.

Force YUV

When this toggle switch is enabled (green), the encoder will stream YUV content over the network, regardless of which color space is used by the HDMI source. When the decoder receives the YUV stream, it will output YUV on the HDMI output. However, if the decoder is connected to a display that requires RGB, as determined by the EDID of the display, then the decoder will convert the video signal to RGB on the HDMI output. In order for the chroma scaling to work on RGB inputs, this option must be enabled.

Slate mode

Click this drop-down list to enable or disable slate mode. Available values are: **off**, **manual**, and **auto**.

Mode	Description
Off	Disables the image from being displayed.
Manual	The image will always be displayed, superimposed on the source signal, and will remain even if the source signal is lost.
Auto	The image will only be displayed when the source signal is lost. For example, this mode is useful in conference room applications for displaying system instructions when no sources are connected.

Slate logo

Click this drop-down list to select the desired slate logo.

System mode

System mode

Click this drop-down list to select **PC application** or **Video** mode. By default, units are set to **PC Application** mode.

System mode

System mode PC application ▼

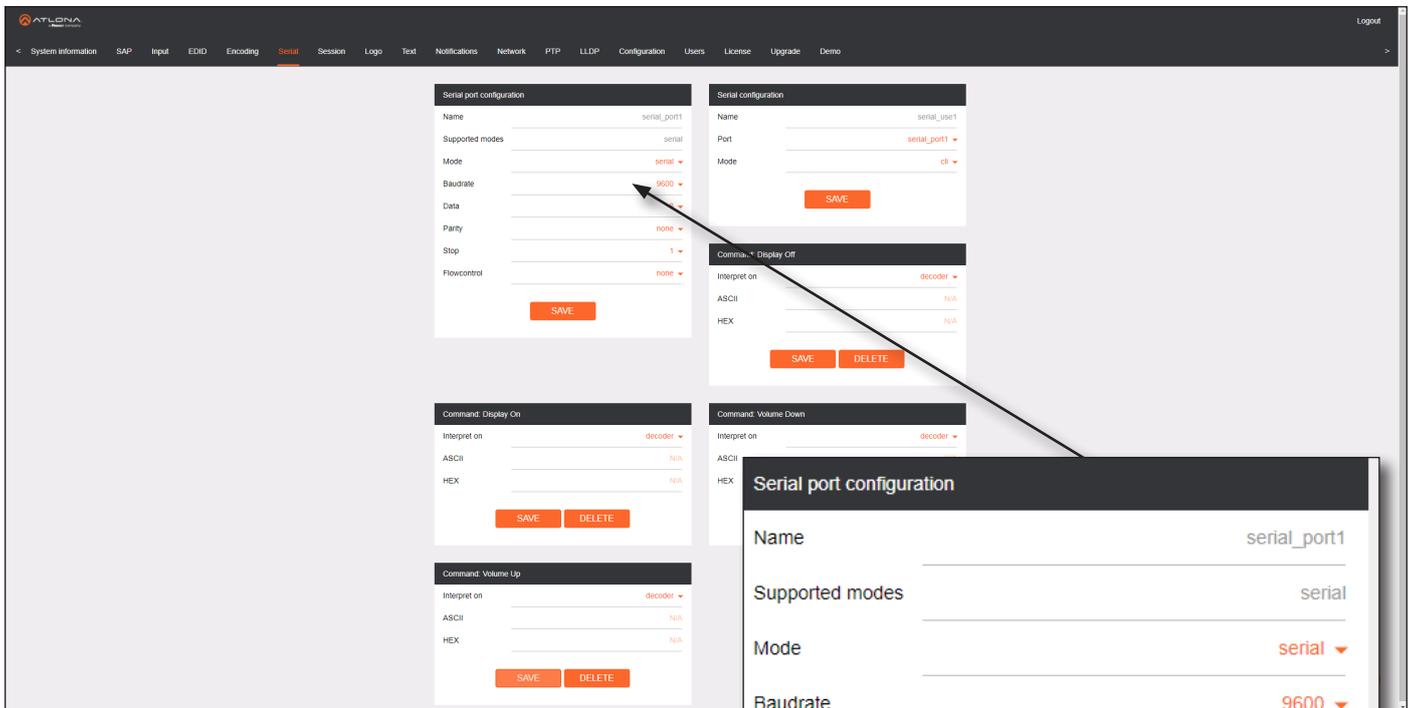
SAVE



IMPORTANT: If decoders are configured to be used in a video wall application, then Force YUV must be enabled.

Mode	Description
PC Application	Optimizes the image when viewing static images, such as spreadsheets or similar content.
Video	Provides the best viewing experience when streaming motion graphics and/or video.

Serial page



Serial port configuration window groups

The following fields apply to both **Serial port configuration** window groups. Although single-channel encoders will also have two **Serial port configuration** window groups, serial port 2 only supports IR.

Name

The name of the serial port. This field cannot be changed.

Supported Modes

Displays the supported protocols for the serial port. This field cannot be changed.

Mode

Click this drop-down list to select the desired serial mode. Available values will be reflected in the **Supported Modes** field.

Baudrate

Click this drop-down list to select the desired baud rate: **115200, 57600, 38400, 19200, or 9600.**

Data

Click this drop-down list to select the number of data bits: **6, 7, or 8.**

Parity

Click this drop-down list to select the parity bit: **None, Odd, Even, Mark, or Space.**

Stop

Click this drop-down list to select the stop bit: **1, 1.5, or 2.**

Flow Control

Click this drop-down list to select the type of flow control: **none**, **xonxoff**, or **hw**.

SAVE

Click this button to commit all changes within the **Serial port configuration** window group.

Serial configuration window groups

The following fields apply to both **Serial configuration** window groups. The single-channel encoder will only have one **Serial configuration** window group.

Name

The name of the port. This field cannot be changed.

Port

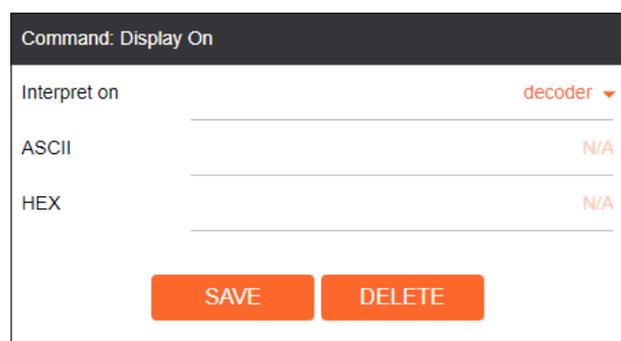
Click this drop-down list to select the desired serial port.

Mode

Click this drop-down list to select the desired control mode. Available values are: **cli** and **tcp-proxy**. Select **tcp-proxy** to send IP commands directly to the decoder, which are then output over RS-232 to the display (sink) device. Selecting the **cli** option will pass through RS-232 data, directly from a control system, to the sink device that is connected to the decoder.

SAVE

Click this button to commit all changes within the **Serial configuration** window group.



Command window groups

By default, window groups for the following commands are created: **Display Off**, **Display On**, **Volume Down**, and **Volume Up**.

Interpret on

Click this drop-down list to select the endpoint where the command will be processed: **encoder** or **decoder**.

ASCII

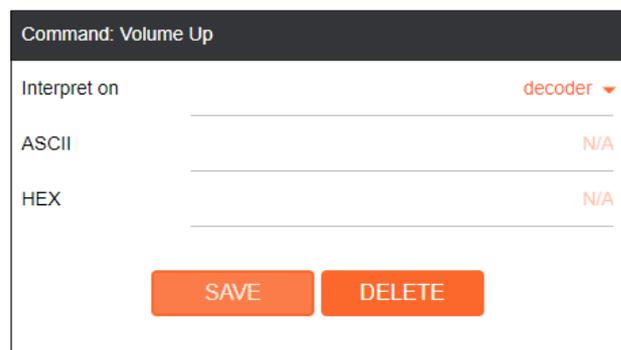
Enter the ASCII representation of the command string in this field.

HEX

Enter the hexadecimal representation of the command in this field.

SAVE

Click this button to commit all changes within the **Command** window group.



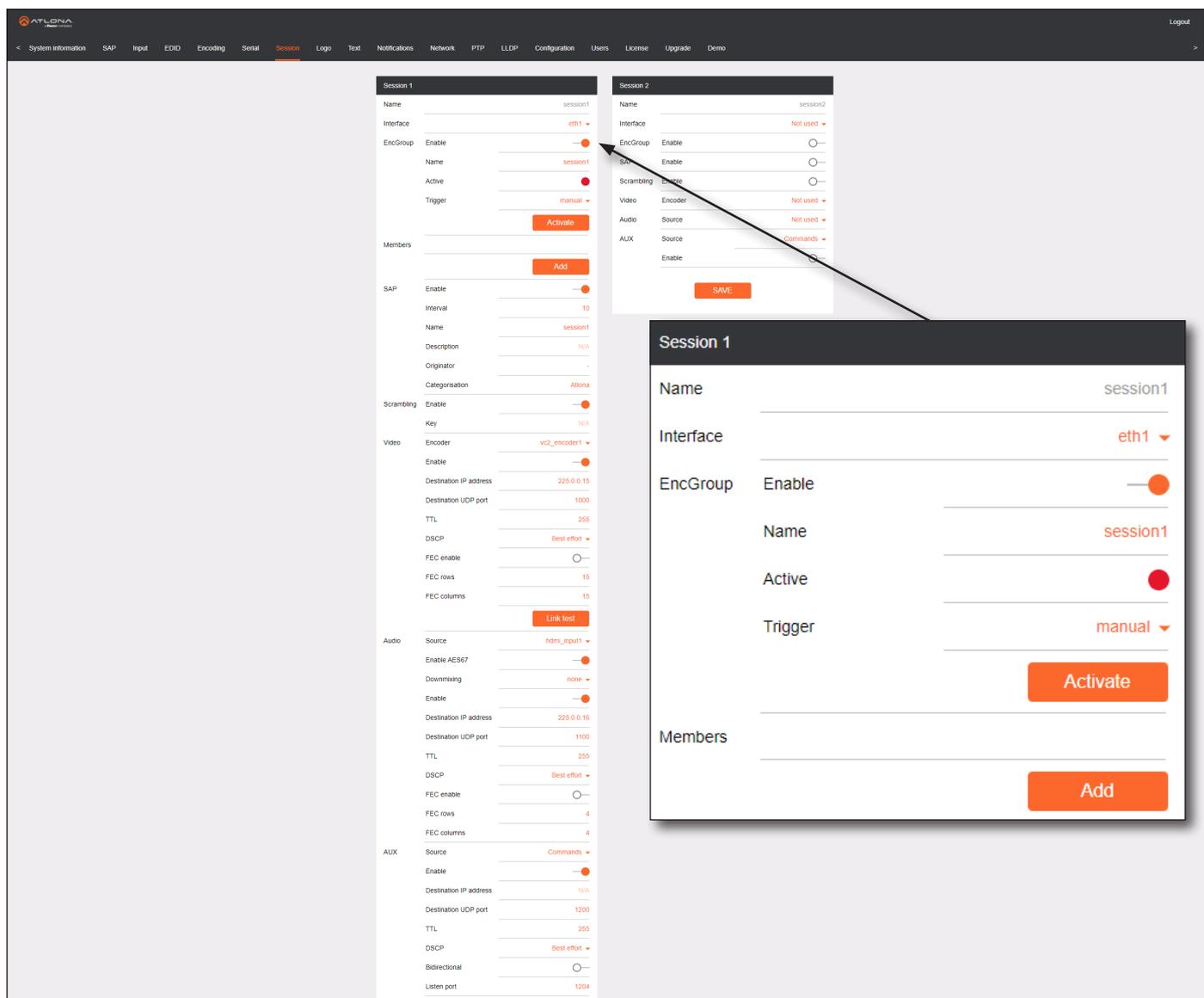

NOTE: When entering the command string, it is not required to enter the string under both the ASCII and HEX fields. The encoder requires that one field be completed.



New Command

Click this button to create a new command window group. Provide a name for the command in the displayed dialog box, then click the **Create** button. Complete each of the fields, as described above.

Session page



Session window groups

The following fields apply to all **Session** window groups. The dual-channel encoder has six **Session** window groups. The single-channel encoder will only have two **Session** window groups.

Name

The name of the session. This field cannot be changed.

Interface

Click this drop-down list to select the desired interface.

Interface	Description
eth1	ETHERNET 1 port
eth2	ETHERNET 2 port

EncGroup

Enable

Click this toggle switch to enable (orange) or disable encoder grouping.

Name

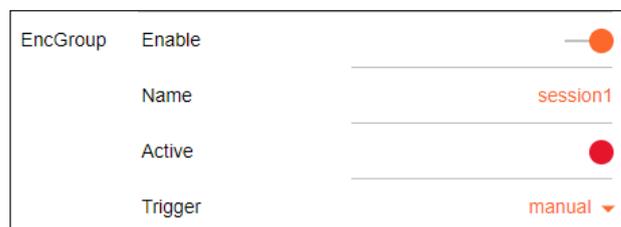
Enter the name of the encoder in this field. Only available if encoder grouping is enabled.

Active

Indicates if the encoder group is active. If active, then this indicator will be green. Only available if encoder grouping is enabled.

Trigger

Click this drop-down list to select the trigger type: **manual** or **input connected**. Only available if encoder grouping is enabled.



Mode	Description
manual	Use this setting to manually enable the input. When set to manual, click the Activate button to perform the input switching.
input connected	Use this setting to allow the encoder group to use automatic input detection. Once a new source is connected, that source becomes the active source.

Activate

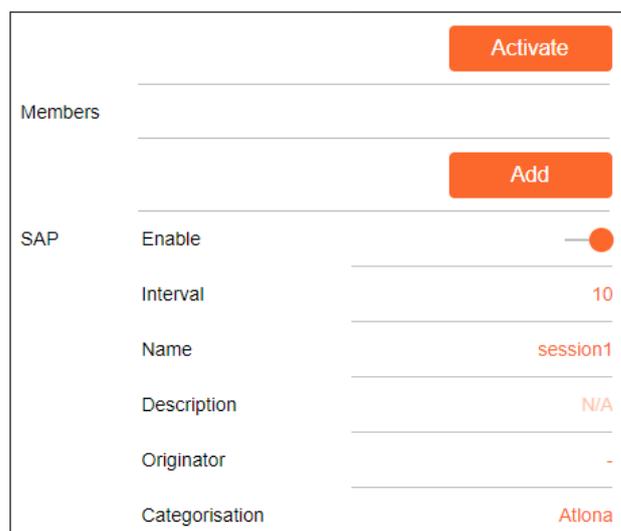
Click this button to activate the encoder group.

Members

This field lists all members (encoder IP addresses) that have been added to the group. Use the **Add** button to add members to the group.

Add

Click this button to add the IP address of an encoder to the group. Note that when adding encoders to the group, the IP address of the encoder, which is being used to create the group, must be included.



SAP

SAP

Click this switch to enable or disable the Session Announcement Protocol. When enabled, the toggle switch will be orange.

Interval

Sets the announcement interval.

Name

The name of the SAP session. By default, this is the same as the session name.

Description

The SAP description.

Originator

The ID of the SAP message originator.

Categorisation

The SAP category. This field can be changed, if desired.

Scrambling

Enable

Click this toggle switch to enable or disable scrambling on the encoder. Atlona recommends enabling scrambling for security purposes. Session Announcement Protocol. When enabled, the toggle switch will be orange.

Scrambling	Enable	<input checked="" type="checkbox"/>
	Key	N/A

Key

This field is only displayed if the **Scrambling** toggle switch is enabled (green). Enter the scrambling key in this field. The scrambling key must be ASCII and must contain a minimum of eight characters. Special characters and spaces are not permitted.

Video

Encoder

Click this drop-down list to select the encoder input.

Enable

Click this toggle switch to enable or disable the video signal. When enabled (orange), video will pass from the encoder to the decoder.

Destination IP address

Enter the IP address of the decoder that will be receiving the video stream.

Destination UDP port

Enter the destination UDP port in this field.

TTL

Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

DSCP

Differentiated Services Code Point (DSCP) is a method of managing network traffic, in addition to providing *Quality of Service* (QoS) within the Layer-3 (Network Layer) of the OSI network model. DSCP uses the 6-bit Differentiated Services (DS) field in the IP header in order to determine packet classification/priority. Normally, all routers and switches will forward network traffic to the proper destination with the same priority, no matter what type of data it is. This methodology is what is known as *Best Effort*.

The **Best Effort** setting will provide normal priority for data packets, while other settings will raise the priority on data packets. However, it should be noted that a higher priority setting on one type of data type may also result in data packet loss for other data types, depending upon network traffic.

When QoS or differentiated services policy is used, all network devices such as routers, networks switches, and end-devices must be configured properly in accordance with QoS policies on the network. There are two main methodologies for tagging traffic: Assured Forwarding and Class Selectors.

The tables on the next page provide a list of the available selections and their description.

Video	Encoder	vc2_encoder1
	Enable	<input checked="" type="checkbox"/>
	Destination IP address	225.0.0.15
	Destination UDP port	1000
	TTL	255
	DSCP	Best effort
	FEC enable	<input type="checkbox"/>
	FEC rows	15
	FEC columns	15

[Link test](#)



IMPORTANT: Consult the IT administrator as to what methods to use and the required settings for each encoder on the network.

Table 1.1 - Assured Forwarding

Selection	Queue Classification	Drop Probability
AF11	Class 1	Low
AF21	Class 2	Low
AF31	Class 3	Low
AF41	Class 4	Low

Table 1.2 - Class Selectors

Selection	Class Selector Name
CS0 / Best Effort	Routine
CS1	Priority
CS2	Immediate
CS3	Flash
CS4	Flash Override
CS5	Critical
CS6	Interwork Control
CS7	Network Control
EF	Expedited Forwarding

FEC enable

Click this toggle switch to enable (green) or disable Forward Error Correction (FEC). This feature can be used when transporting streams over a network that is suspected to be unreliable, due to noise or other factors. By default, this feature is enabled. Refer to [FEC Details \(page 103\)](#) for more information.

FEC rows

Specify the number of FEC rows in this field. Refer to [FEC Details \(page 103\)](#) for more information.

FEC Columns

Specify the number of FEC columns in this field. Refer to [FEC Details \(page 103\)](#) for more information.

Link Test

Click this button to perform a link integrity test. This feature validates the quality of the link between the encoder and decoder. Link tests are initiated at an encoder, and any decoders that are configured to join that encoder's video multicast address will return packet loss statistics to the encoder, which displays the combined results under the **Notifications** tab. Refer to [Performing a Link Test \(page 100\)](#) for more information.

Audio

Source

Click this drop-down list to select the desired input. Available values are: **Not used**, **audio_generator1**, **hdmi_input1**, and **hdmi_input2**.

Enable AES67

Click this toggle switch to enable AES67. When this feature is enabled, the toggle switch will be green.

Downmixing

This field will only be available when AES67 is enabled. Available values are: **none**, **mono**, and **stereo**.

Enable Audio

Click this toggle switch to enable or disable the audio signal. When enabled (orange), audio will pass from the encoder to the decoder.

Destination IP address

Enter the IP address of the decoder that will be receiving the audio stream.

Destination UDP port

Enter the destination UDP port in this field.

TTL

Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

DSCP

Refer to the previous page for information on DSCP settings.

FEC enable

Click this toggle switch to enable (green) or disable Forward Error Correction (FEC). This feature can be used when transporting streams over a network that is suspected to be unreliable, due to noise or other factors. By default, this feature is enabled. Refer to [FEC Details \(page 103\)](#) for more information.

FEC rows

Specify the number of FEC rows in this field. Refer to [FEC Details \(page 103\)](#) for more information.

FEC Columns

Specify the number of FEC columns in this field. Refer to [FEC Details \(page 103\)](#) for more information.

Bidirectional

Click this toggle switch to enable or disable bidirectional control. When enabled (orange), control signals will be able to pass from encoder to decoder, or from decoder to encoder.

Listen port

Enter the listening port in this field.

SAVE

Click this button to commit all changes within the **Session** window group.

Audio	Source	hdmi_input1 ▾
	Enable AES67	<input checked="" type="checkbox"/>
	Downmixing	none ▾
	Enable	<input checked="" type="checkbox"/>
	Destination IP address	225.0.0.16
	Destination UDP port	1100
	TTL	255
	DSCP	Best effort ▾
	FEC enable	<input type="checkbox"/>
	FEC rows	4
	FEC columns	4

AUX

Source

Click this drop-down list to select the method of how commands are transmitted.

Source	Description
Not Used	Serial control is disabled
Commands	Commands are sent using CEC (over HDMI)
Serial Port 1	Commands are transmitted using Serial Port 1
Serial Port 2	Commands are transmitted using Serial Port 2

Enable

Click this toggle switch to enable or disable the AUX signals. When enabled (orange), control signals will pass from the encoder to the decoder.

Destination IP address

Enter the IP address of the decoder that will be receiving the control signals.

Destination UDP port

Enter the destination UDP port in this field.

TTL

Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

DSCP

Refer to page 111 for information on DSCP settings.

Bidirectional

Click this toggle switch to enable or disable bidirectional control. When enabled (orange), control signals will be able to pass from encoder to decoder, or from decoder to encoder.

Listen port

Enter the listening port in this field.

SAVE

Click this button to commit all changes within the **Session** window group.

AUX

Source Commands ▾

Enable

Destination IP address N/A

Destination UDP port 1200

TTL 255

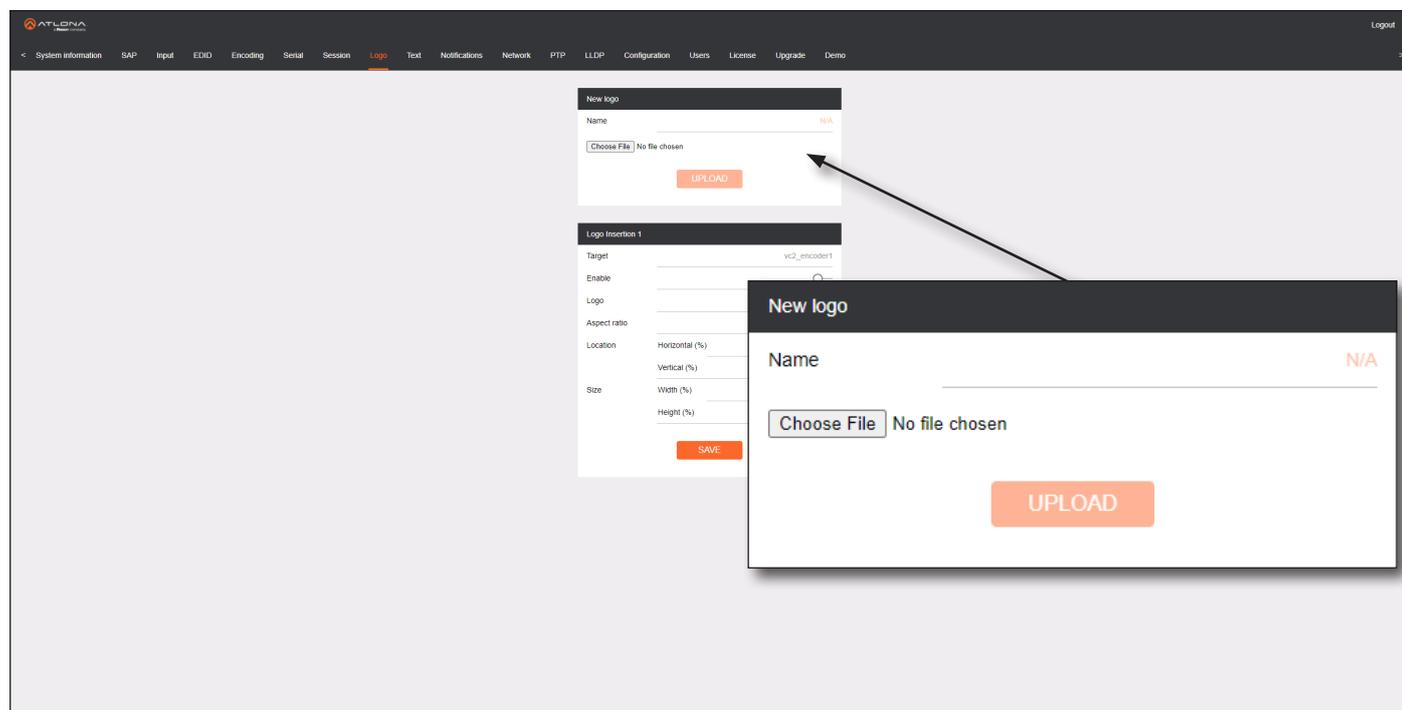
DSCP Best effort ▾

Bidirectional

Listen port 1204

SAVE

Logo page



New logo window group

Name

Enter a name for the logo in this field.

Choose File

Click this button to select the logo file to be uploaded. Files must be in .png format and must not exceed 5 MB (5120000 bytes) in size. When an image file is uploaded, it will appear in the **Logo** drop-down list.

UPLOAD

Click this button to upload the logo file to the encoder.

Logo Insertion window groups

The following fields apply to both **Logo Insertion** window groups. The single-channel encoder will only have one **Logo Insertion** window group.

Target

Displays the name of the encoder. This field cannot be changed.

Enabled

Click the toggle switch to enable or disable the logo. If the toggle switch is orange, then the logo will be enabled.

Logo

Click this drop-down list to select the desired logo. To disable the use of a logo, set to **Not Used**.

Aspect Ratio

Click this drop-down list to select the type of aspect ratio to be applied to the logo.

Logo Insertion 1	
Target	vc2_encoder1
Enable	<input type="checkbox"/>
Logo	Not used ▼

Horizontal (%)

Enter the horizontal position of the logo on the screen. This value is based on the total horizontal resolution of the screen.

Vertical (%)

Enter the vertical position of the logo on the screen. This value is based on the total vertical resolution of the screen.

Width (%)

Enter the width of the logo. This value is based on the total horizontal resolution of the screen.

Height (%)

Enter the height of the logo. This value is based on the total vertical resolution of the screen.

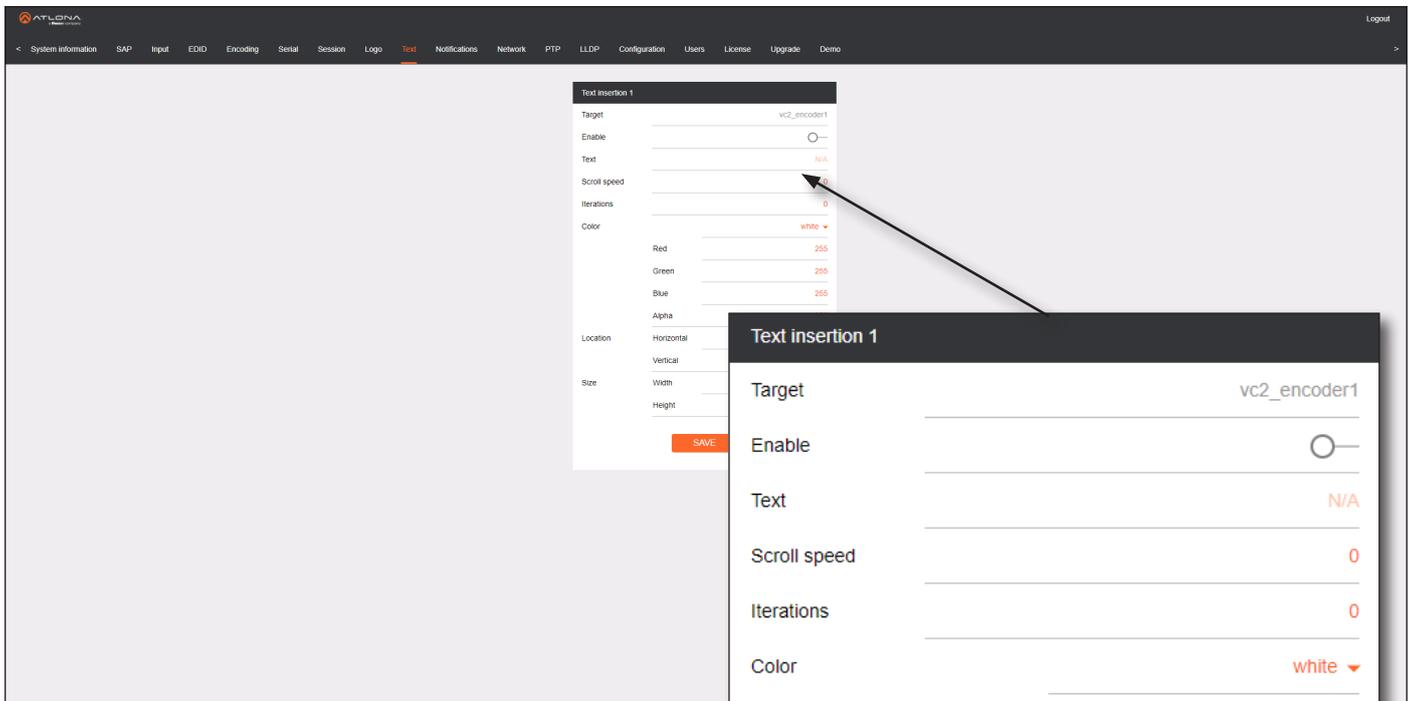
SAVE

Click this button to commit all changes within the **Logo Insertion** window group.

Aspect ratio		stretch ▼
Location	Horizontal (%)	0
	Vertical (%)	0
Size	Width (%)	10
	Height (%)	10

SAVE

Text page



Text insertion window groups

Enabled

Click this toggle switch to enable or disable the text. When the toggle switch is orange, the text will be enabled.

Text

Enter the desired text in this field.

Scroll Speed

Enter the scrolling speed in this field. Values from -255 to 255 are valid. Negative numbers will scroll the text from left to right. Positive numbers will scroll text from right to left.

Iterations

Enter the number of iterations in the **Iteration** field. Set this field to 0 (zero) to set the number of iterations to infinity.

Color

Click this drop-down list to select a solid color preset: **red, green, black, white, yellow, or blue.**

Red, Green, Blue, Alpha

Click these fields to fine tune the color of the text. Adjust the **Alpha** field to control the transparency of the text. An alpha value of 255 is opaque and a value of 0 is transparent. Numbers from 0 to 255 are valid for all fields.

Horizontal

Enter the horizontal position of the text in this field.

Vertical

Enter the vertical position of the text in this field.

Width

Enter the width of the text in this field. This value is based on the horizontal resolution of the screen.

Height

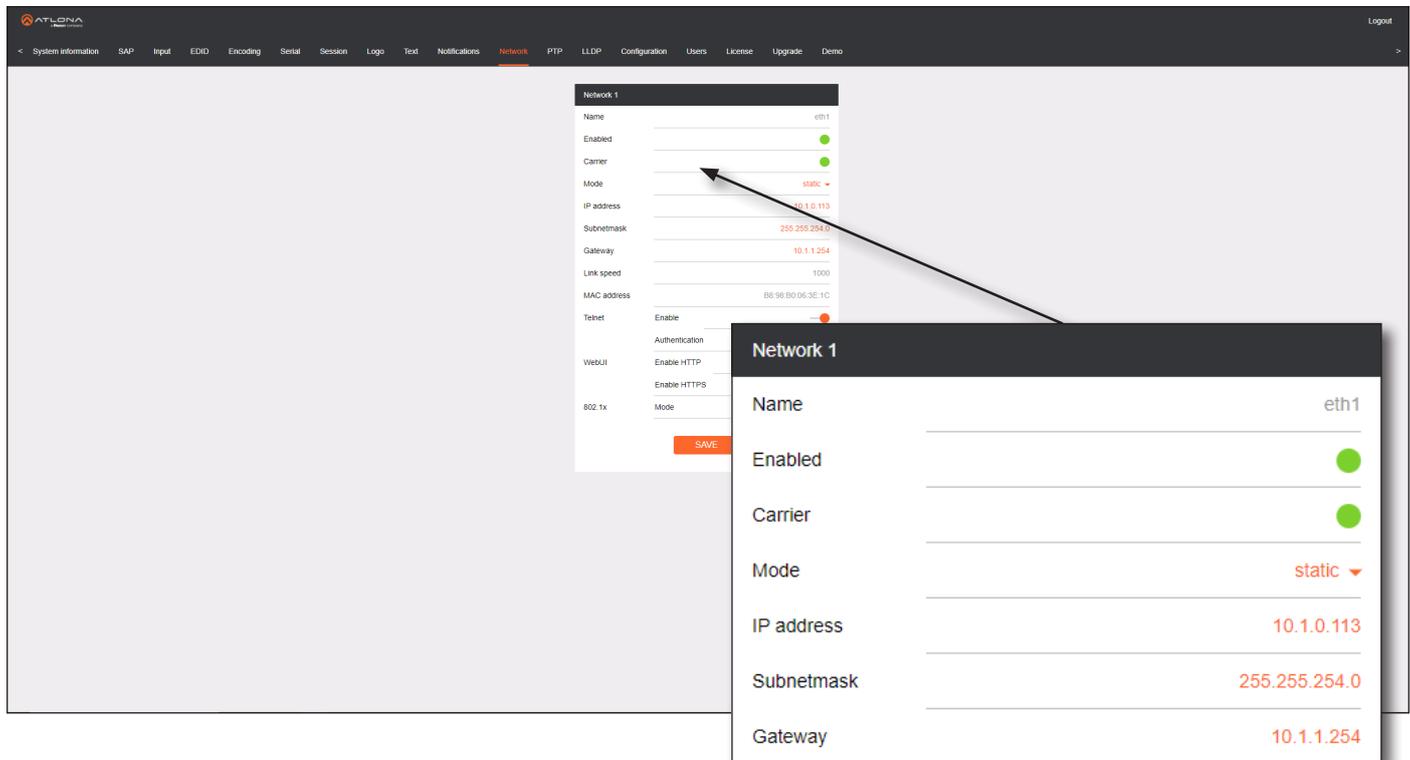
Enter the height of the text in this field. This value is based on the vertical resolution of the screen.

Location	Horizontal	<input type="text" value="0"/>
	Vertical	<input type="text" value="0"/>
Size	Width	<input type="text" value="10"/>
	Height	<input type="text" value="10"/>

SAVE

Click this button to commit all changes within the **Text insertion** window group.

Network page



Network window group

Name

Displays the name of the Ethernet interface. This field cannot be changed.

Enabled

This indicator displays whether or not the video stream for this channel is active. If the indicator is green, then the video stream is active.

Carrier

If this indicator is green, then an active link exists. Otherwise, if no link exists, this indicator will be red.

Mode

Click this drop-down list to select the desired IP mode. Select DHCP to let the DHCP server (if present) assign the encoder the IP settings; **Subnet** and **Gateway** fields will automatically be populated. When **Static** mode is selected, the information for the **IP Address**, **Subnet**, and **Gateway** fields must be entered.

IP Address

Displays the IP address used by the channel. This field can only be changed if **Static** mode is selected.

Subnetmask

Displays the subnet mask for the channel. This field can only be changed if **Static** mode is selected.

Gateway

Displays the gateway (router) address for the channel. This field can only be changed if **Static** mode is selected.

Link speed

Displays the Ethernet interface link speed in Mbps. This field cannot be modified.

MAC address

Displays the MAC address of the Ethernet interface.

Telnet Enable

Click this toggle switch to enable or disable Telnet. If disabled, then Telnet sessions to the encoder cannot be established.

Telnet Authenticator

Click this toggle switch to enable or disable Telnet authentication. If enabled, then the toggle switch will be orange. Once enabled, connecting to the encoder using Telnet will require login credentials. The default credentials are:

Username: admin
 Password: Atlona

WebUI Enable HTTP

Click this toggle switch to enable or disable HTTP. If disabled, traffic on port 80 is forbidden.

WebUI Enable HTTPS

Click this toggle switch to enable or disable HTTPS. If disabled, traffic on port 443 is forbidden.

802.1x Mode

Click this drop-down list to select the desired authentication mode.

SAVE

Click this button to commit all changes within the **Network** window group.

Link speed	1000
MAC address	B8:98:B0:06:3E:1C
Telnet	Enable <input checked="" type="checkbox"/>
	Authentication <input checked="" type="checkbox"/>
WebUI	Enable HTTP <input checked="" type="checkbox"/>
	Enable HTTPS <input checked="" type="checkbox"/>
802.1x	Mode none ▼

SAVE

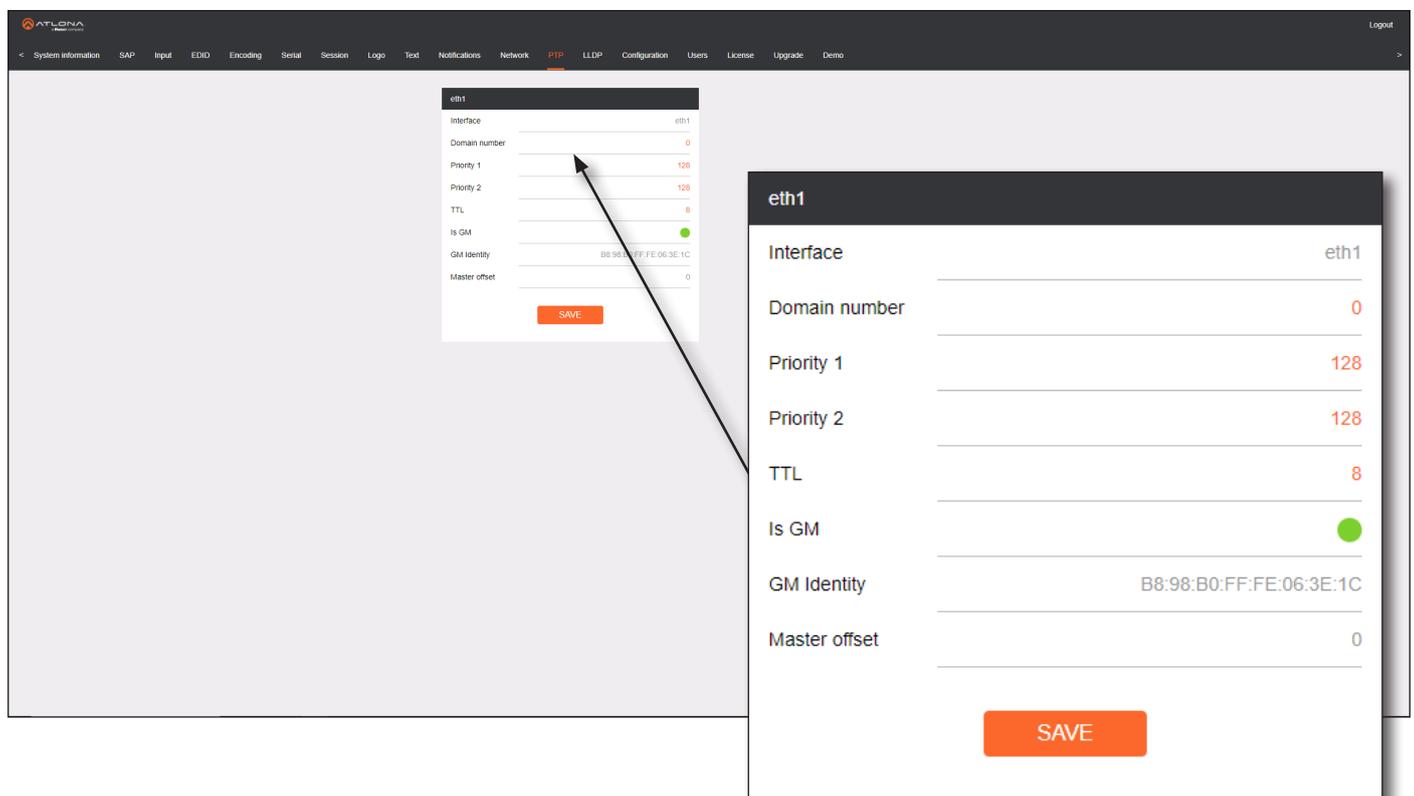
PTP page

The **PTP** page provides options for adjust Precision Time Protocol (PTP) for AES67 audio streams. PTP is used by AES67 to keep all audio streams synchronized.

For a system utilizing PTP, all devices undergo an automatic self-election process to choose the interface to be used as the PTP grandmaster (GM) clock, based on the accuracy of the device's clock and the device's configured priority. A lower priority number means the unit is more likely to get selected as GM.



IMPORTANT: If a new device is added to the network and the GM changes, a brief outage will be experienced while all connected devices synchronize with the new clock. Because of this, Atlona recommends that one unit gets manually defined as the GM and have both **Priority 1** and **Priority 2** fields be set to 1.



eth window group

Interface

Displays the Ethernet interface associated with the PTP settings.

Domain Number

Enter the domain number in this field. Valid entries are 0 through 127.

Priority 1

Enter the priority number in this field.

Priority 2

Enter the priority number in this field.

TTL

Displays the TTL value. PTP uses a default IPv4 TTL value of 1 for multicast. This value may be changed, if necessary, in order for the replies to reach the PTP monitor.

Is GM

This indicator displays the existence of a grandmaster clock for the specified PTP domain number. If the indicator is green, then the grandmaster clock exists on this interface.

GM Identity

The grandmaster clock identity. If this field is blank, then it means that this interface is the grandmaster clock.

Master Offset

Displays the grandmaster clock offset.

eth1	
Interface	eth1
Domain number	0
Priority 1	128
Priority 2	128
TTL	8
Is GM	●
GM Identity	B8:98:B0:FF:FE:06:3E:1C
Master offset	0

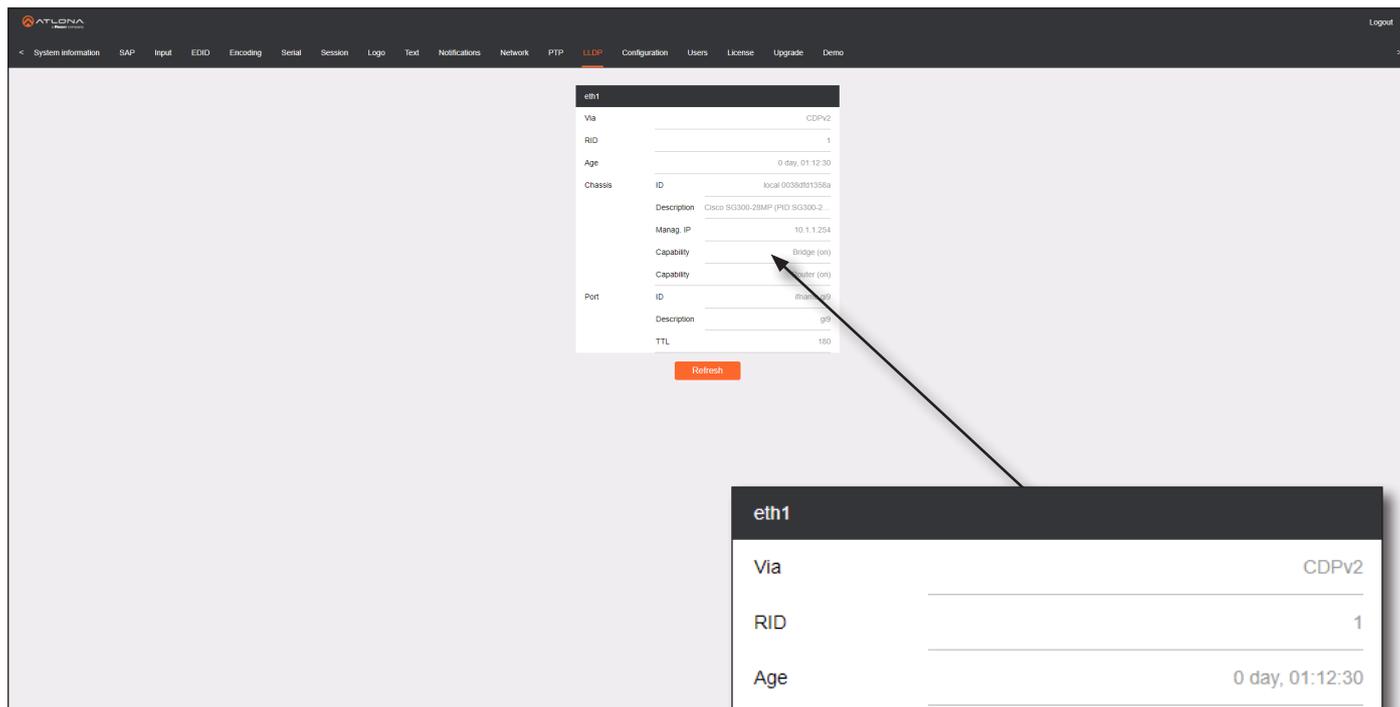
SAVE

LLDP page

The Link Layer Discovery Protocol (LLDP) page returns information about the switch that the encoder is connected to. If both interfaces from a dual-channel encoder are connected to the switch, then two **eth** window groups will be displayed.



NOTE: LLDP must be enabled on the switch that the encoders are connected to, in order for the switch information to be displayed.



Via

The discovery protocol being used. LLDP, CDP, etc.

RID

The router ID.

Age

Up-time of the interface.

Chassis ID

The MAC address of the interface.

Chassis Capability

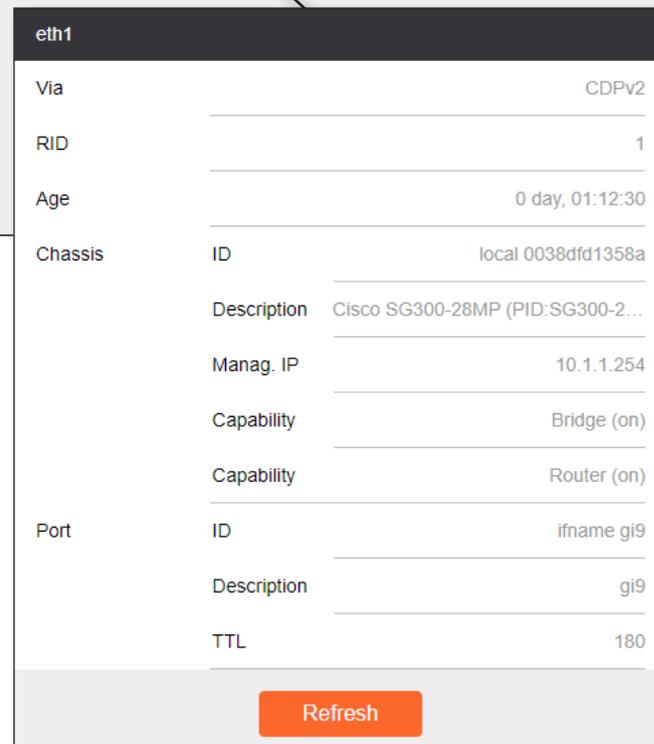
Indicates the switch function, such as root bridge, router, etc.

Port ID

The port ID.

Port Description

The type of port, such as gigabit Ethernet, fast Ethernet, etc.



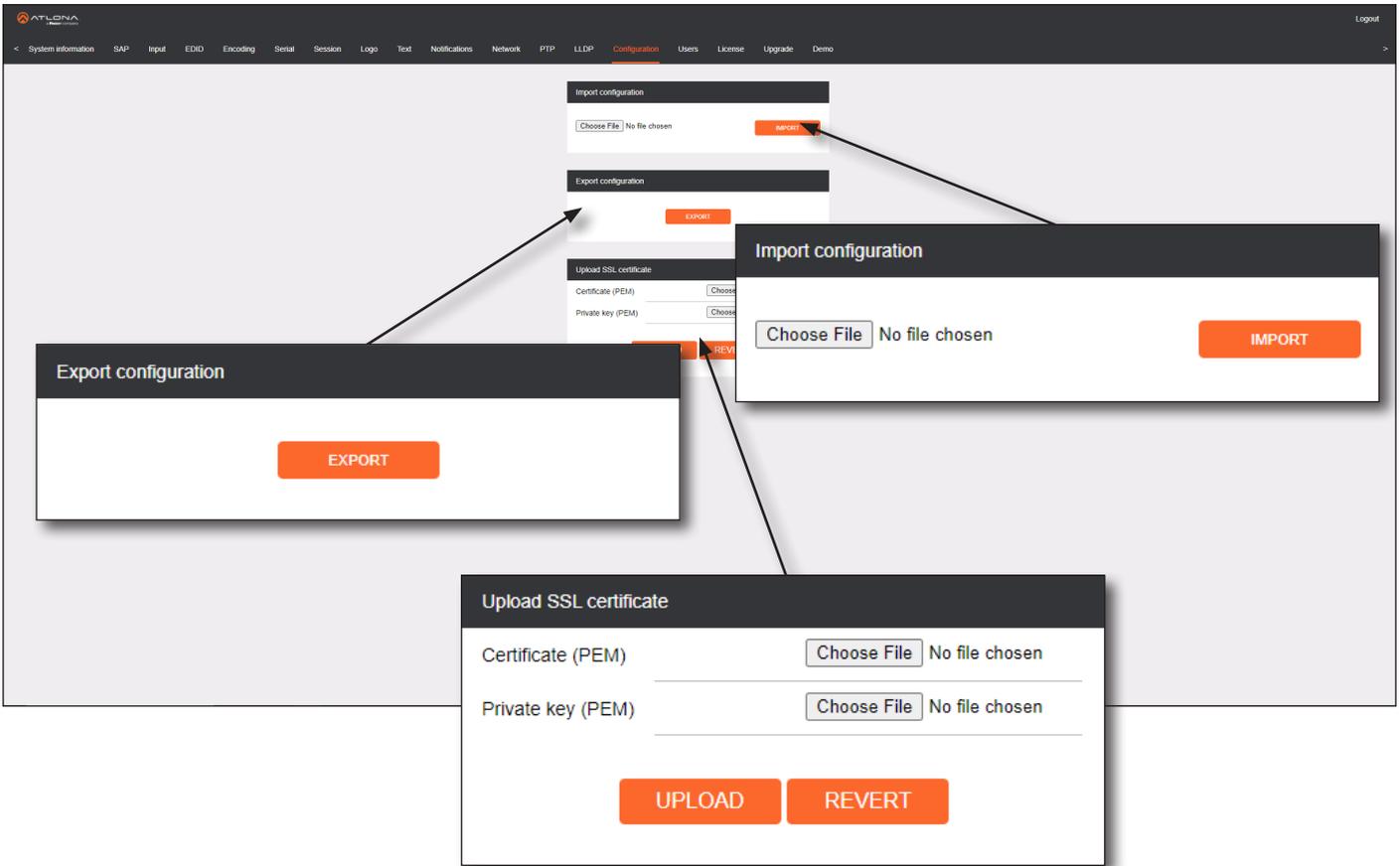
TTL

The Time-To-Live value.

Refresh

Click this button to refresh the page after a port change.

Configuration page



Import configuration

Choose File

Click this button to select the desired configuration file to be uploaded.

IMPORT

Click this button to upload the selected configuration file to the encoder.

Export configuration

EXPORT

Click this button to export the current encoder system configuration to a .json file.

Upload SSL certificate

Choose File

Click these buttons to select the desired certificate or private key.

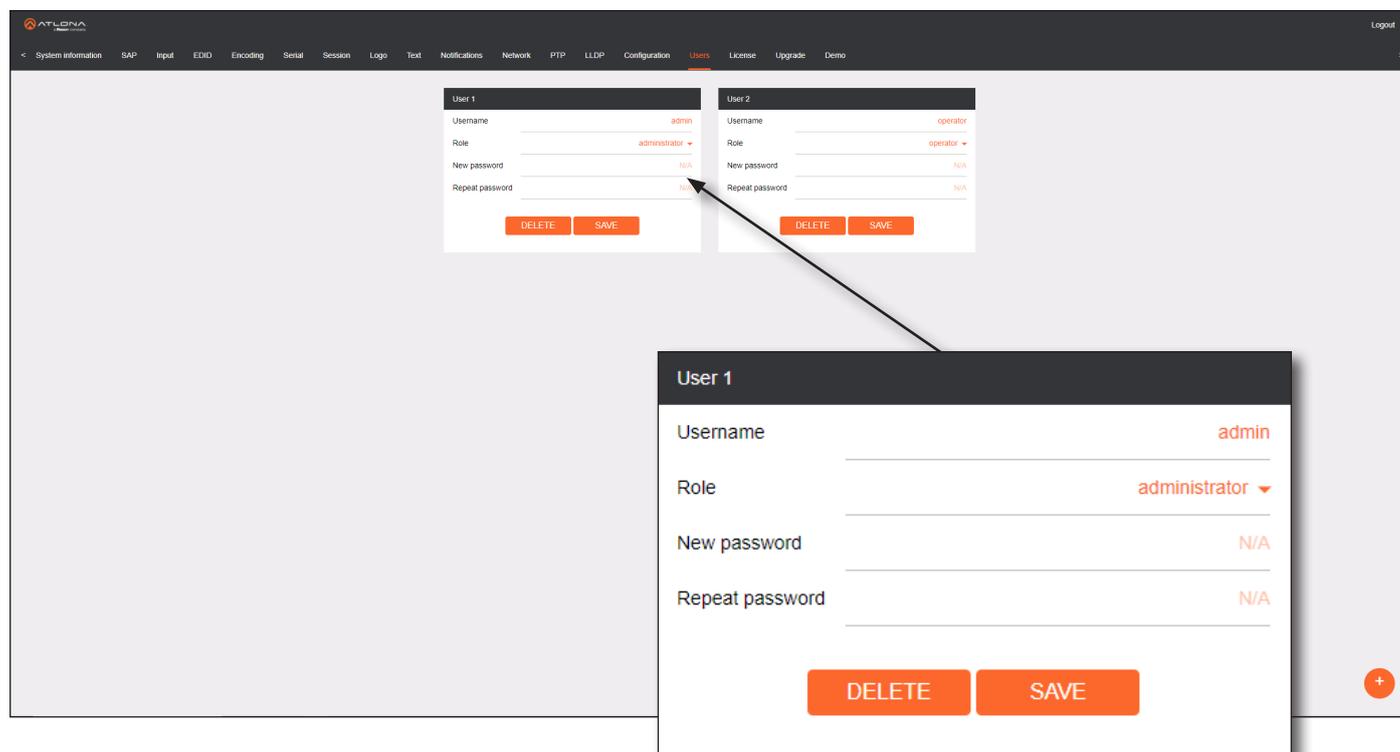
UPLOAD

Click this button to upload the certificate/private key to the encoder.

REVERT

Click this button to restore the previous configuration.

Users page



User window groups

The following fields apply to all **User** window groups. Encoders have two usernames, by default: **admin** and **operator**.

Username

Enter the desired username in this field.

Role

Click this drop-down list to select the desired role of the user.

New password

Enter the desired password for the username in this field.

Repeat password

Confirm the new password by entering it in this field.

DELETE

Click this button to delete the user in the current window group. Note that there must be at least one admin role at all times. Therefore, if one **admin** role and one **operator** role exist, then the **admin** user cannot be deleted.

SAVE

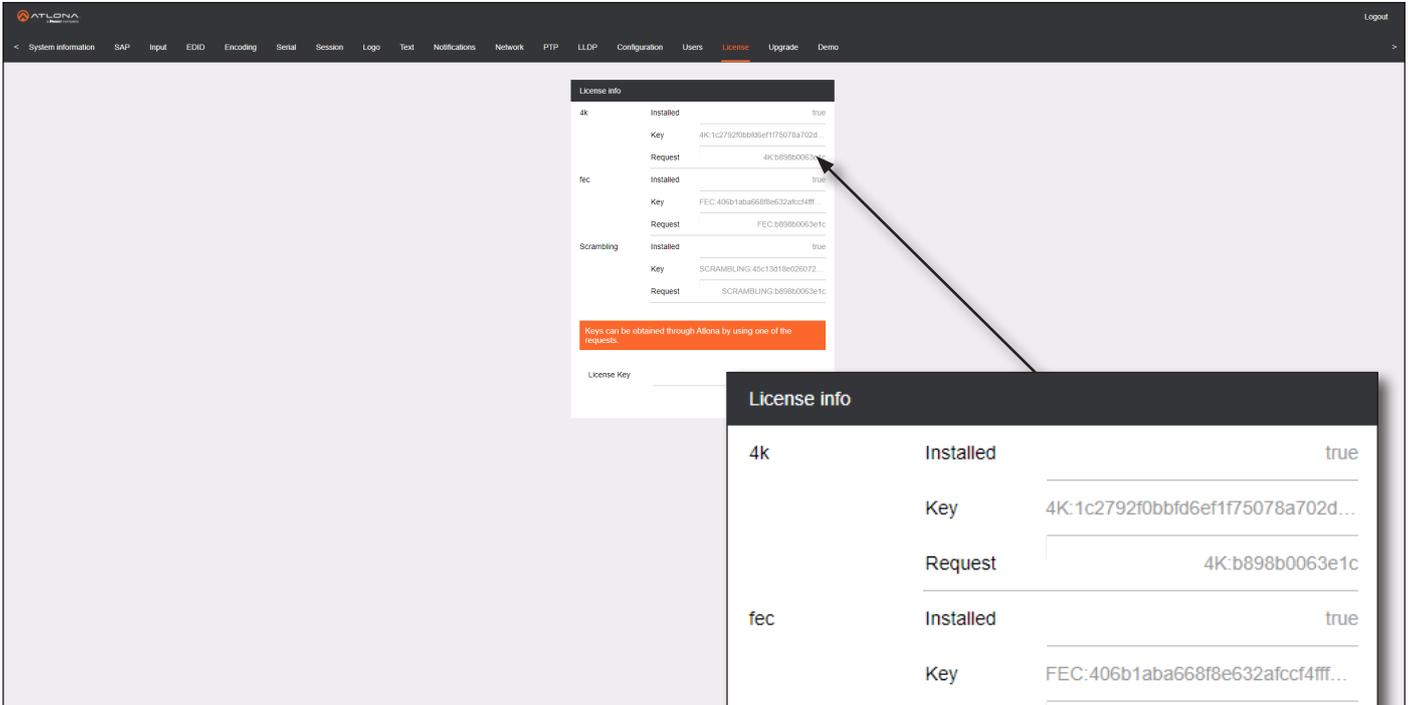
Click this button to commit all changes within the current user window group.


New user

Click this button to create a new user. Provide the role and password, as described in the fields above.

License page

This page displays all installed licenses and allows additional licenses to be installed.



License Key

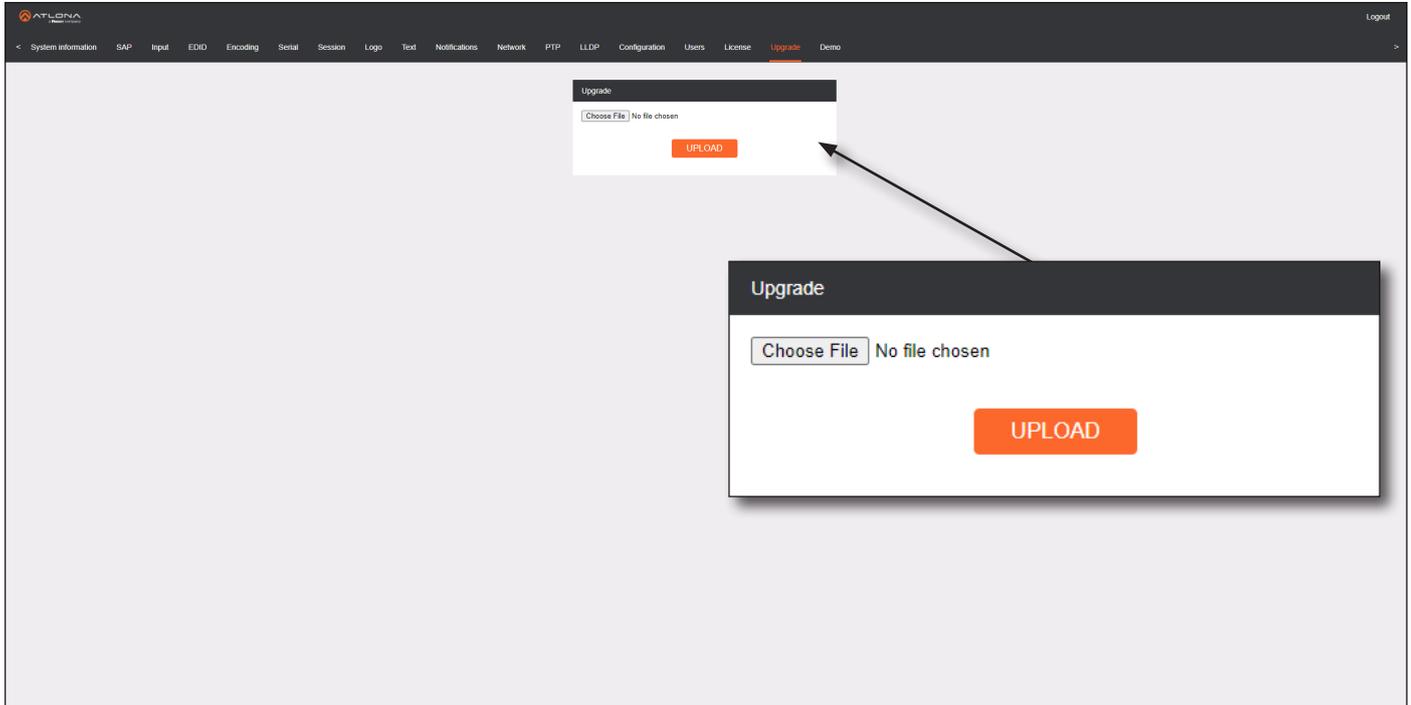
Enter the license key in this field.

INSTALL LICENSE

Click this button to validate and install the license.

Upgrade page

This page is used to update the firmware on the encoder.



Choose File

Click this button to select the firmware file to be uploaded.

UPLOAD

Click this button to upload the selected firmware file.

Appendix

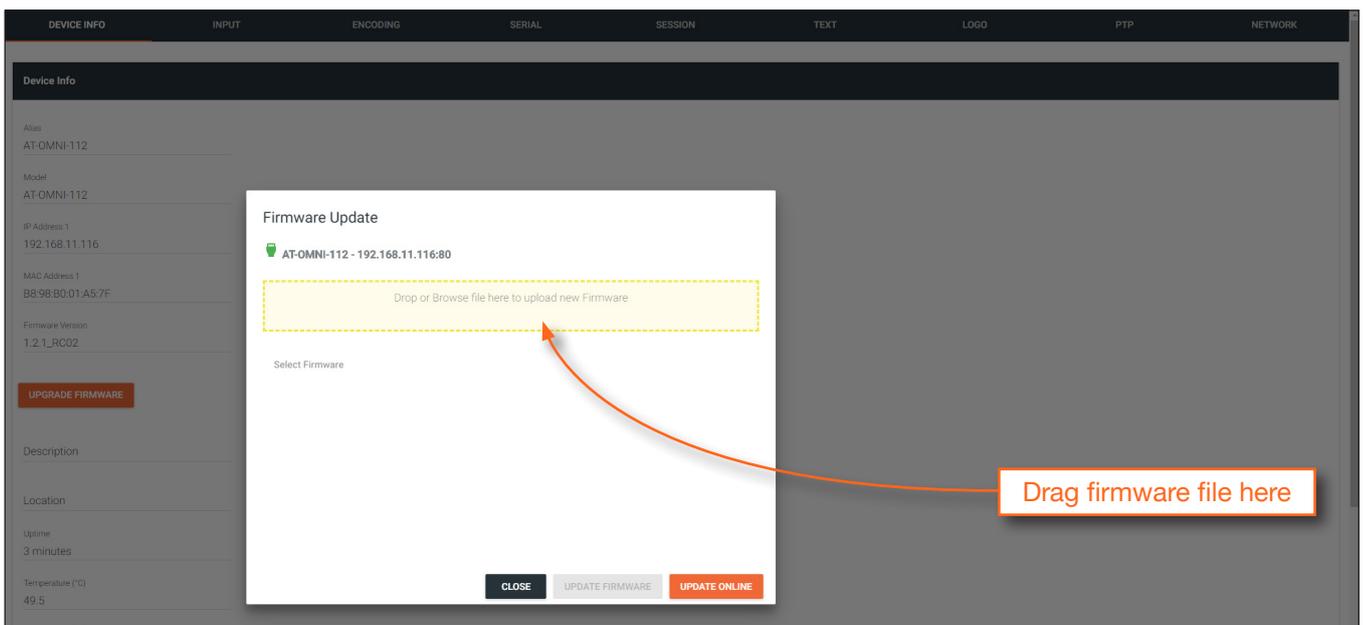
Updating the Firmware

IMPORTANT:

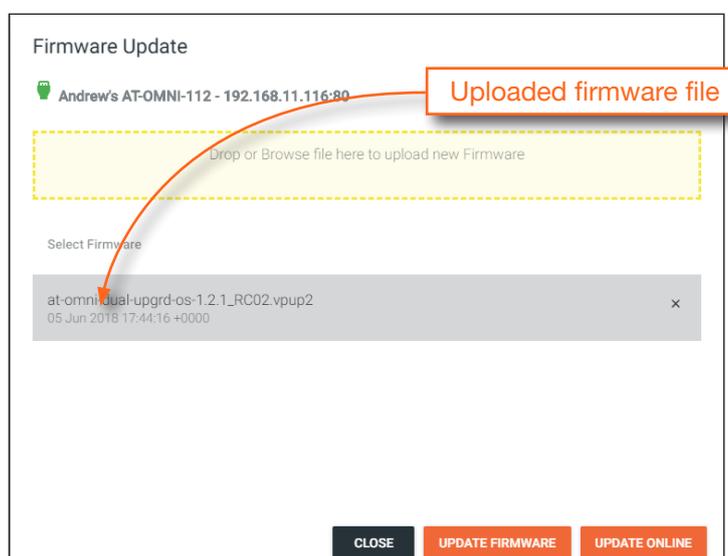


- If updating from version 1.0.x, OmniStream units must first be updated to version 1.1. Note that this does *not* apply to OmniStream R-Type units. If running version 1.0.x, contact an Atlona Technical Support Engineer before updating the firmware.
- When updating the firmware, make sure that the unit does not lose power. The firmware update process should take approximately 1 to 2 minutes.
- For full functionality of OMNI 1.2.1 (or later), Velocity must be running at least 1.4.5 and AMS must be on firmware version 2.0.12 and above.

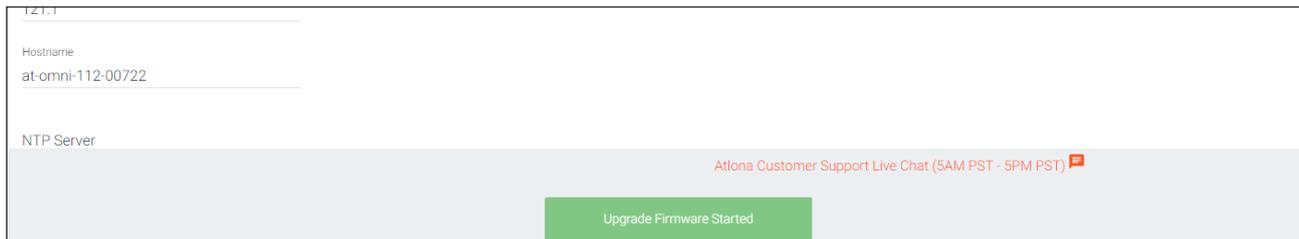
1. Click **DEVICE INFO** in the menu bar.
2. Click the **UPDATE FIRMWARE** button to display the **Firmware Update** dialog.



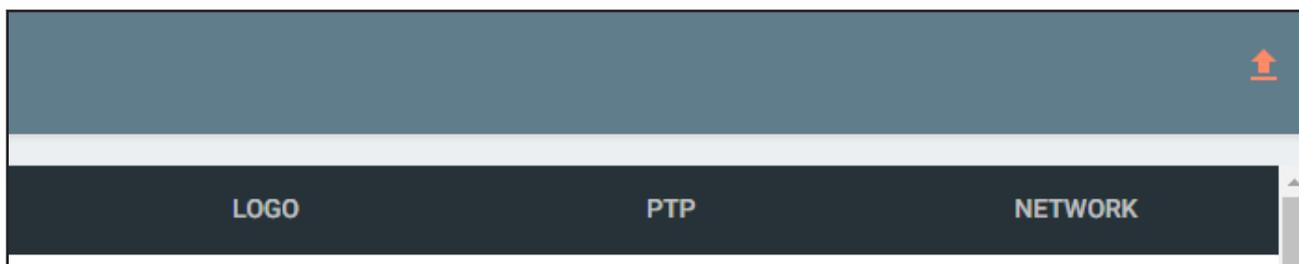
3. Click and drag the firmware file to the yellow box, to upload the firmware to the device. OmniStream firmware files use the .v2pup file extension. Once the firmware file has been uploaded, it will appear under the **Select Firmware** section of the dialog box.
4. Click the **UPDATE FIRMWARE** button to begin the update process.



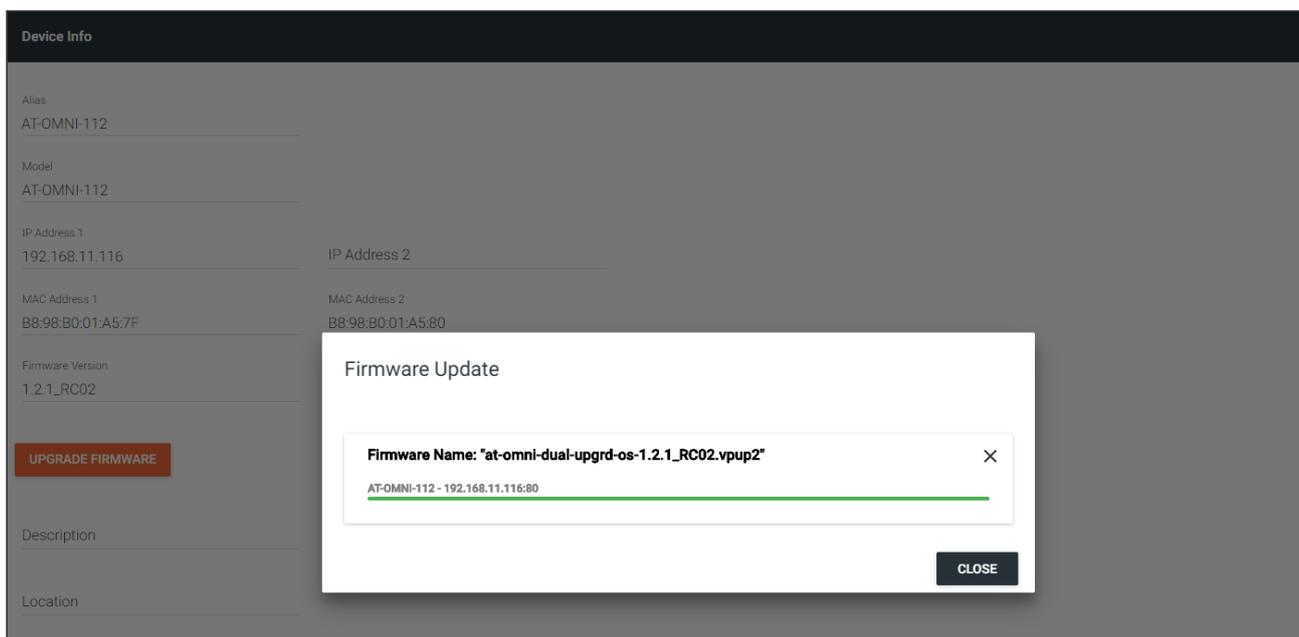
- After the **UPDATE FIRMWARE** button is clicked, the Upgrade Firmware Started message box will be displayed.



- Click the orange up-arrow icon, in the upper-right corner of the screen, as shown below. If this icon is orange, it indicates that a firmware update is in progress.



The progress bar for the update process will be displayed. The update process should take a few seconds.



- Click the "X" to close out the progress bar window, then click the **CLOSE** button to dismiss the **Firmware Update** message box.
- The firmware update process is complete.
- Clear the web browser cache and refresh the web page. The new firmware version will appear in the **Firmware Version** field, in the **DEVICE INFO** page.

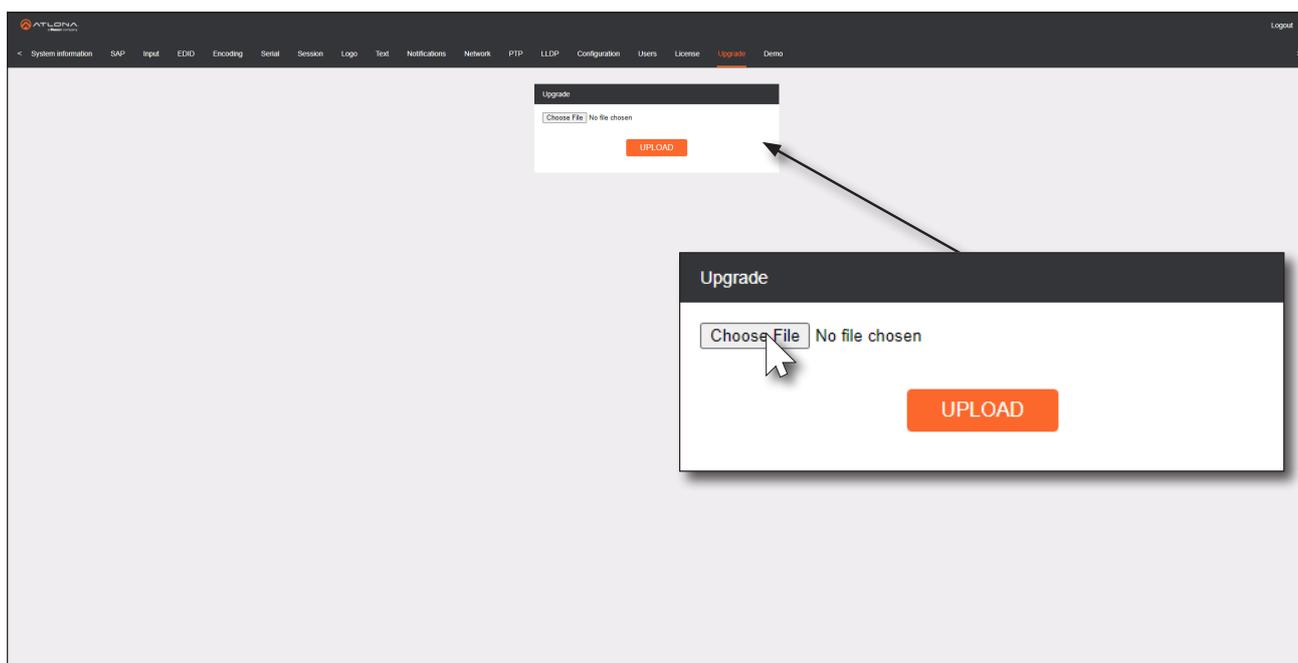
Updating the Firmware using the Web Server

Follow the procedure below to update OmniStream units using the built-in web server.

1. Launch the desired web browser and enter the IP address of the encoder/decoder in the address bar.
2. Enter the username and password. Note that the password field will always be masked. The default credentials are:

Username: admin
 Password: Atlona

3. The **System Information** page will be displayed.
4. Click **Upgrade** in the menu bar to display the **Upgrade** page.
5. Click the **Choose File** button.



6. In the **Open** dialog box, select the correct firmware file. Refer to the table below.

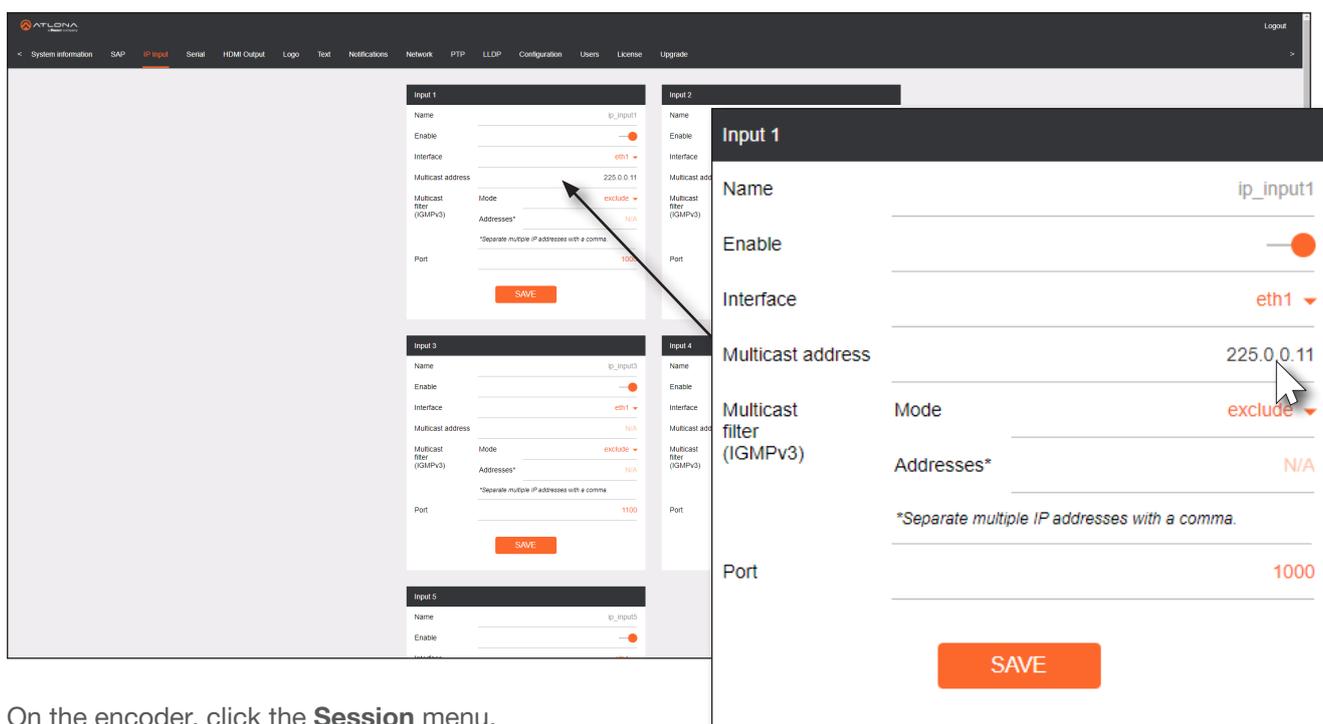
Firmware file	OmniStream SKU
at-omni-single-upgrd-os-[version].vpup2	AT-OMNI-111, AT-OMNI-121, AT-OMNI-111-WP
at-omni-dual-upgrd-os-[version].vpup2	AT-OMNI-112, AT-OMNI-122
at-omni-residential-upgrd-os-[version].vpup2	AT-OMNI-512, AT-OMNI-521

7. Click the **UPLOAD** button.
8. A progress bar will be displayed, indicating the current upgrade status of the unit. When firmware update process has completed, the **Upgrade** page will be displayed.
9. The upgrade process is complete.

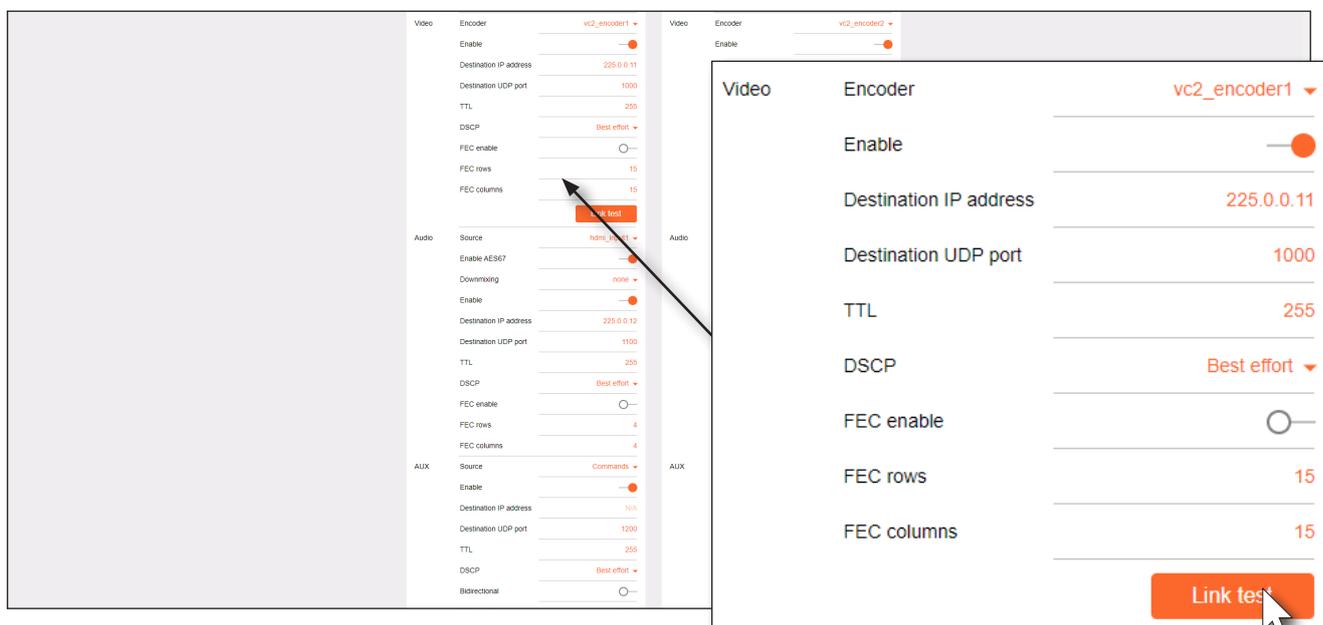
Performing a Link Test

Follow the procedure below to perform a link integrity test between an encoder and decoder(s).

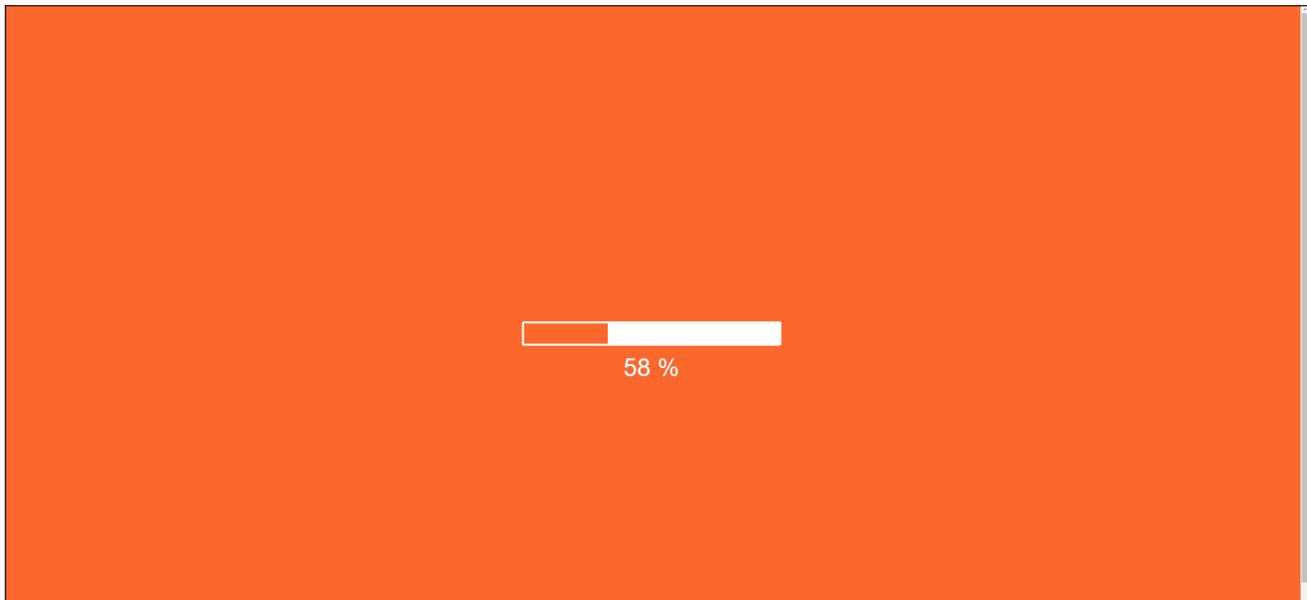
1. Launch a web browser and enter the IP address of the encoder in the address bar.
2. Open another tab in the browser and enter the IP address of the subscribing decoder in the address bar.
3. Verify that all desired decoders are subscribed to the encoder's multicast address and port number. In the decoder example below, the **IP Input > Input 1 > Multicast address** field is set to 225.0.0.11. This is the same IP address that is assigned to the **Session > Session 1 > Destination IP address** field on the encoder.



4. On the encoder, click the **Session** menu.
5. Under the **Video** section, click the **Link test** button.

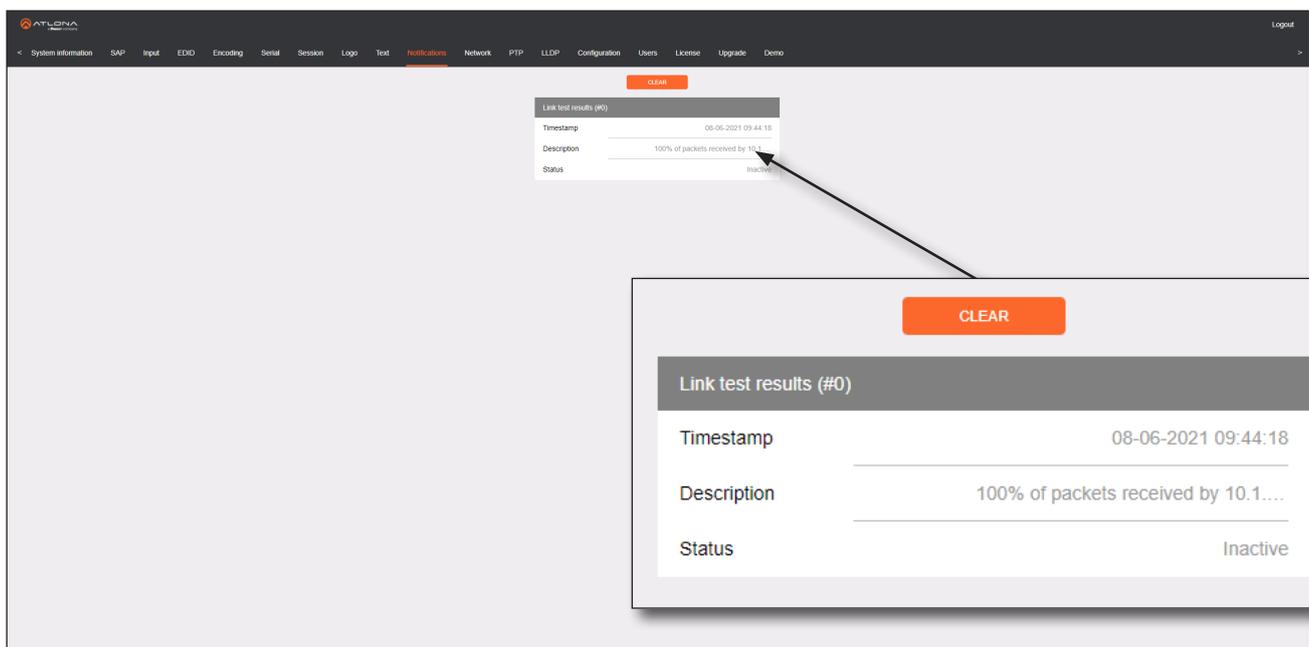


6. An orange screen with a progress bar will be displayed during the testing procedure.



After the test, the encoder web page will automatically redirect to the **Notifications** tab where the user can see the results.

If the test passed, information similar to the following will be displayed. Note the information in the **Description** field: "100% of packets received by ..." indicates no packets were dropped / zero loss.

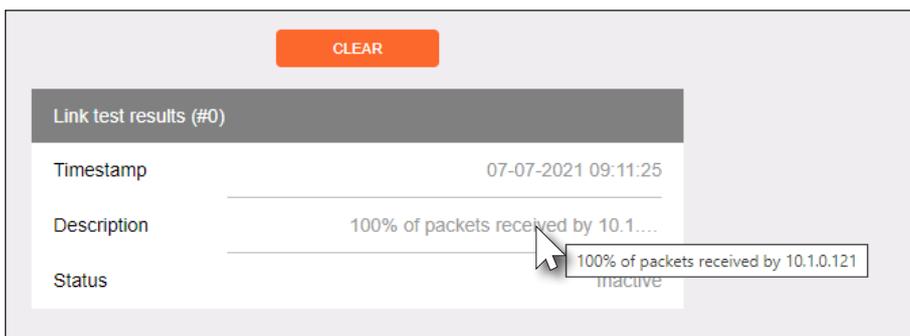


Link test results (#0)	
Timestamp	08-06-2021 09:44:18
Description	100% of packets received by 10.1...
Status	Inactive

If the test fails, it could be that less than 100% of packets are received, indicating connectivity, but with some amount of packet loss. If it shows “No one replied!” or if the target decoder is not shown in results, it could indicate that there is a connectivity issue or that the decoder is not subscribed to the correct multicast.



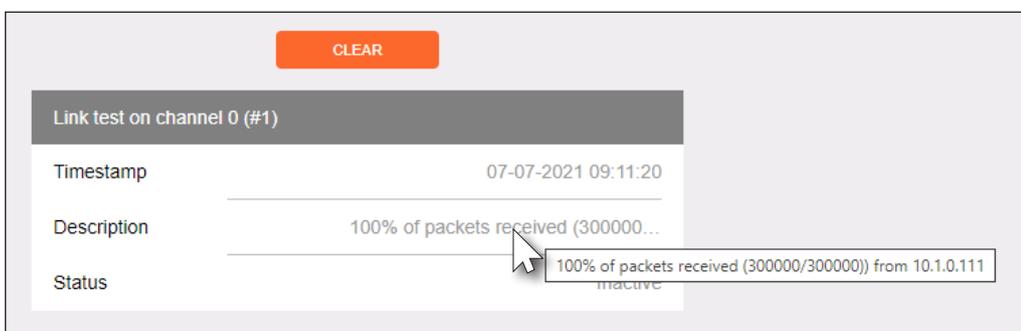
Hovering the mouse over the **Description** field will provide the full IP address of each decoder which received the test, as shown below. If multiple decoders were tested, additional IP addresses will be displayed.



7. Go to the **Notifications** menu on the decoder.

If the test passed, information similar to the following will be displayed. Note the information in the **Description** field: “100% of packets received ...” indicates no packets were dropped / zero loss.

Hovering the mouse over the **Description** field will display the full IP address of the encoder from where the packets originated.



8. Click the **CLEAR** button to remove the test results from the **Notification** page.

FEC Details

Matrix Size, Overhead, and Latency

- FEC can only work if a single packet from each row/column is missing. Multiple packets missing from each row/column will cause FEC to fail.
- Due to the above, a smaller matrix is more robust, as there is a better chance of errors not occurring in the same row/column.
- FEC has a bitrate overhead that is inversely proportional to the matrix size: the bigger the matrix, the less bitrate overhead is generated.
- FEC has a latency overhead that is directly proportional to the matrix size: the bigger the matrix, the more latency is introduced.
 - » As of v1.0.0, OmniStream does not explicitly synchronize audio and video. Therefore, FEC configuration can have a noticeable impact on lip sync. The tables below should be used to keep the audio/video lip sync as tight as possible.
- FEC latency overhead is also inversely proportional to bitrate: the higher the bitrate, the less FEC latency is introduced.
 - » For applications where lip sync is very critical, using a higher audio sampling rate, and thus a higher audio bitrate, can result in more accurate lip sync.

FEC and Video Bitrate

- The bitrate configured on the video encoder includes FEC overhead and will automatically adjust itself depending on the bitrate needed for FEC.
- FEC overhead can be calculated using the following formulas:

$$\text{Video rate} = \frac{\text{Configured bit rate}}{1 + \left(\frac{\text{Rows} + \text{Columns}}{\text{Rows} \times \text{Columns}} \right)} \qquad \text{FEC rate} = \text{Configured bit rate} - \text{Video rate}$$

- The following table provides a few examples of how this works.

FEC / matrix usage	Configured bit rate	Used for video	Used for FEC
FEC disabled	900 Mbps	900 Mbps	0 Mbps
FEC enabled, 4x4	900 Mbps	600 Mbps	300 Mbps
FEC enabled, 10x10	900 Mbps	750 Mbps	150 Mbps
FEC enabled, 20x20	900 Mbps	818 Mbps	82 Mbps
FEC enabled, 4x4	450 Mbps	300 Mbps	150 Mbps
FEC enabled, 10x10	450 Mbps	375 Mbps	75 Mbps
FEC enabled, 20x20	450 Mbps	409 Mbps	41 Mbps

FEC, Latency, and Lip Sync

- In order for FEC to work, the matrix must be filled in order to calculate the FEC packets. This introduces some additional latency. Due to high bitrates, this is not noticeable for video, but can be very significant for audio. Therefore, Atlona recommends either leaving FEC disabled for audio or using a very small matrix.
- Latency calculations are complex. The tables below provide some common working benchmarks. In order to minimize lip sync issues, try to match the additional latencies for video and audio as closely as possible.
 - » Video - additional video latency for enabling FEC using various matrix sizes.

Configured bit rate	4x4	10x10	20x20
900 Mbps	0.64 ms	3.20 ms	11.74 ms
450 Mbps	1.28 ms	6.40 ms	23.47 ms

- » Audio - additional audio latency for enabling FEC using various matrix sizes.

Format	1x4	2x4	4x4	10x10
2 channel PCM, 44.1 kHz	34.01 ms	68.03 ms	136.10 ms	850.30 ms
2 channel PCM, 48 kHz	31.25 ms	62.50 ms	125.00 ms	781.30 ms
2 channel PCM, 96 kHz	15.63 ms	31.25 ms	62.50 ms	390.60 ms
2 channel PCM, 192 kHz	7.81 ms	15.63 ms	31.25 ms	195.30 ms

- It is recommended to keep lip sync within ± 1 frame of video to prevent any noticeable syncing issues.
- Examples of good choices to minimize lip sync issues are:
 - » Video configured for 450 Mbps, FEC 10x10; Audio is 2 channel PCM, 192 kHz, FEC 1x4: 6.40 ms – 7.81 ms = -1.41 ms
 - » Video configured for 900 Mbps, FEC 10x10; Audio is 2 channel PCM, 48 kHz, FEC disabled: 6.40 ms – 0 ms = 6.40 ms

Specifications

Video		
HDMI Specification	HDMI 2.0b, HDCP 2.2	
UHD/HD/SD	4096x2160 (DCI) @ 60 ⁽¹⁾ /30/24 Hz 3840x2160 (UHD) @ 60 ⁽¹⁾ /50/24/25/30 Hz 1920x1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz 1920x1080i ⁽²⁾ @ 25/29.97/30 Hz 1280x720p @ 30/50/59.94/60 Hz	720x576p @ 50 Hz 720x576i @ 25 Hz 720x480p @ 59.94/60 Hz 720x480i @ 29.97/30 Hz
VESA ⁽³⁾	2560x1600 1920x1200 1680x1050 1600x1200 1600x900 1440x900 1400x1050	1366x768 1360x768 1280x1024 1280x800 1280x768 1152x768 1024x768
Virtual Reality	2160x1200 @ 90 ⁽¹⁾ Hz (HTC [®] Vive)	
Color Space	YUV, RGB	

Encoding			
Density	Single encoding engine		
Compression Format	VC-2 (SMPTE-2042)		
Video Quality Optimization	User-selectable: PC Application or Video mode		
Chroma Subsampling	Chroma	PC Application	Video Mode
	4:4:4	Yes	No
	4:2:2	Yes	No
	4:2:0	No	Yes
Color Depth	8-bit, 10-bit, 12-bit		
HDR	HDR10, HLG, Dolby [®] Vision™		
Bit Rate	Configurable up to 900 Mbps		
Latency	0.5 frame (e.g. 1080p @ 60 Hz latency is < 8 ms between encoder and decoder) 1.5 frames in Fast Switching mode (e.g. 1080p @ 60 Hz latency is < 24 ms between encoder and decoder) Note: Unusual network configurations may increase overall latency		

Audio			
Pass-through	LPCM 2.0 LPCM 5.1 LPCM 7.1	Dolby [®] Digital Dolby Digital Plus Dolby TrueHD Dolby Atmos [®]	DTS [®] DTS-HD Master Audio™
Down-mixing	Multichannel LPCM to two-channel LPCM		
Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz		
Bit Depth	Up to 24-bit		

Protocols	
Video Streaming	RTP
Audio Streaming	RTP, up to 7.1 channels AES67, up to LPCM 7.1 channels
Addressing	DHCP, static
Encryption	AES-128
QoS Tagging	RFC 2475
Discovery	Multicast DNS, LLDP, SAP
Management	HTTPS, SSH, Telnet, and WebSockets with TLS
Authentication	IEEE 802.1x: PEAP/MSCHAPv2 or EAP-TLS
IP Multicast	IGMPv2 and IGMPv3 support

Graphics Features	
Text Insertion	Adjustable height/width, scrolling (speed, direction, or static), iterations (up to infinite), positioning, and adjustable color and alpha (transparency) channels.
Slate / Logo Insertion	PNG file format, adjustable aspect ratio (keep or stretch), horizontal/vertical size, screen position; slate mode can be set to off, manual (image always displayed, superimposed on the source signal, and will remain if source signal is lost), auto (image will only be displayed when source signal is lost).

Connectors	
HDMI IN	1 - Type A, 19-pin, female, locking
ETHERNET ⁽⁴⁾	1 - RJ45, 10/100/1000 Mbps

Indicators and Controls	
PWR	1 - LED, tricolor (red, amber, green)
HDMI	1 - LED, bicolor (red, green)
LINK	1 - LED, bicolor (red, green)
RESET	1 - Momentary, tact-type

Power	
PoE	IEEE 802.3af
Consumption	Up to 12.5 W

Environmental	
Cooling System	Front-to-rear airflow, temperature-controlled fans
Operating Temperature	+14 to +122 °F -10 to +50 °C
Storage Temperature	+14 to +140 °F -10 to +60 °C
Operating Humidity (RH)	20% to 95%, non-condensing

Chassis	
Dimensions (H x W x D)	4.19 in x 3.46 in x 1.72 in 106.50 mm x 88 mm x 43.65 mm
Weight	0.46 lbs 0.21 kg

Certification	
Device	CE, FCC, CB, RoHS

- (1) Only supported when Video Quality Optimization is set to Video mode.
- (2) Scaling and deinterlacing is not supported at 1080i.
- (3) All VESA resolutions are 60 Hz.
- (4) Maximum distance per hop is 330 ft (100 m), depending upon network configuration.

