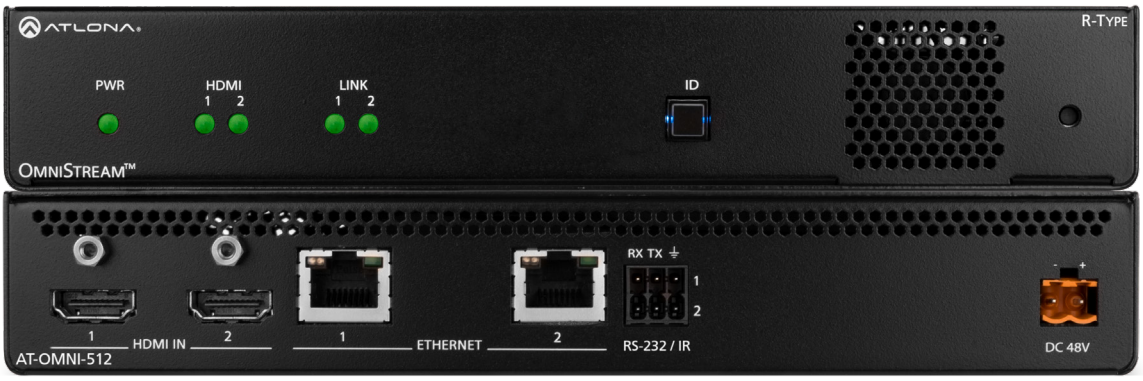
OmniStream™ R-Type
Dual-Channel Networked AV Encoder



AT-OMNI-512 | Atlona Manuals
Networked AV

Version Information

Version	Release Date	Notes
11	Jan 2024	Updated warranty information

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Operating Notes

IMPORTANT: Visit http://www.atlona.com/product/AT-OMNI-512 for the latest firmware updates and User Manual.

Warranty

To view the product warranty, use the following link or QR code:

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CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCT THE RISK OF ELECTRIC SHOCK
DO NOT OPEN ENCLOSURE OR EXPOSE TO RAIN OR MOISTURE.
NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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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.

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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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Introduction

The Atlona **AT-OMNI-512** is a networked AV encoder with two independent channels of encoding for two HDMI sources up to 4K/60 4:4:4 and HDR (High Dynamic Range), plus embedded audio and RS-232 or IR control pass-through. **OmniStream** is designed for high performance, flexible distribution of AV over standard, off-the-shelf Gigabit Ethernet switches in commercial audiovisual applications. The OMNI-512 features the advanced VCx™ codec which delivers 4K/60 4:4:4 video from encode to decode, with artifact-free presentation of computer-generated content and fast-motion video, and ultra-low latency less than one frame. This dual-channel encoder is housed in a half-width rack enclosure with front-to-back air flow, and is ideal for high-density, compact installation in a centralized equipment location.

Features

- Best-in-class AV over IP performance and reliability over Gigabit Ethernet.
- AV encoder for HDMI up to 4K/UHD, plus embedded audio and RS-232 or IR control pass-through.
- Dual-channel AV encoding.
- Supports 4K/60 4:4:4 plus HDR formats.
- Advanced VCx codec.
- High-efficiency coding.
- HDCP compliance.
- Ultra-fast switching between 4K/60 video streams.*
- Integrated Ethernet link testing.
- Thumbnail preview of encoded video streams.
- Simplify integration with plug-and-play network switch compatibility.
- Local or PoE (Power over Ethernet) powering.
- Secure content distribution with AES-128 encryption.
- Supports industry-standard, network security features and protocols.
- AES67-compatible.
- Simultaneous OmniStream and AES67 audio streaming.
- Enhance AV presentations with visual enhancements.
- EDID management.
- Audio processing and pass-through.
- System management.
- Compact enclosure.

** Logo / image display features and 1080i video are not supported.*

Package Contents

1 x AT-OMNI-512
1 x 6-pin push-spring connector
2 x Wall/table mounting brackets
4 x Rubber feet

Introduction to OmniStream

OmniStream 101

OmniStream products are similar in principle to matrix switch endpoints: A/V signals are sent from one point (transmitter) to another point (receiver) over category cable. However, OmniStream stands apart from matrix switchers, in that it is an *IP-based solution*, allowing this data to be sent over a standard IP network. In addition, these endpoints are referred to as *encoders* and *decoders*. Encoders act as "transmitters" and decoders act as "receivers".

DEFINITIONS

Encoder – Compresses source signals before sending them out over a network environment.

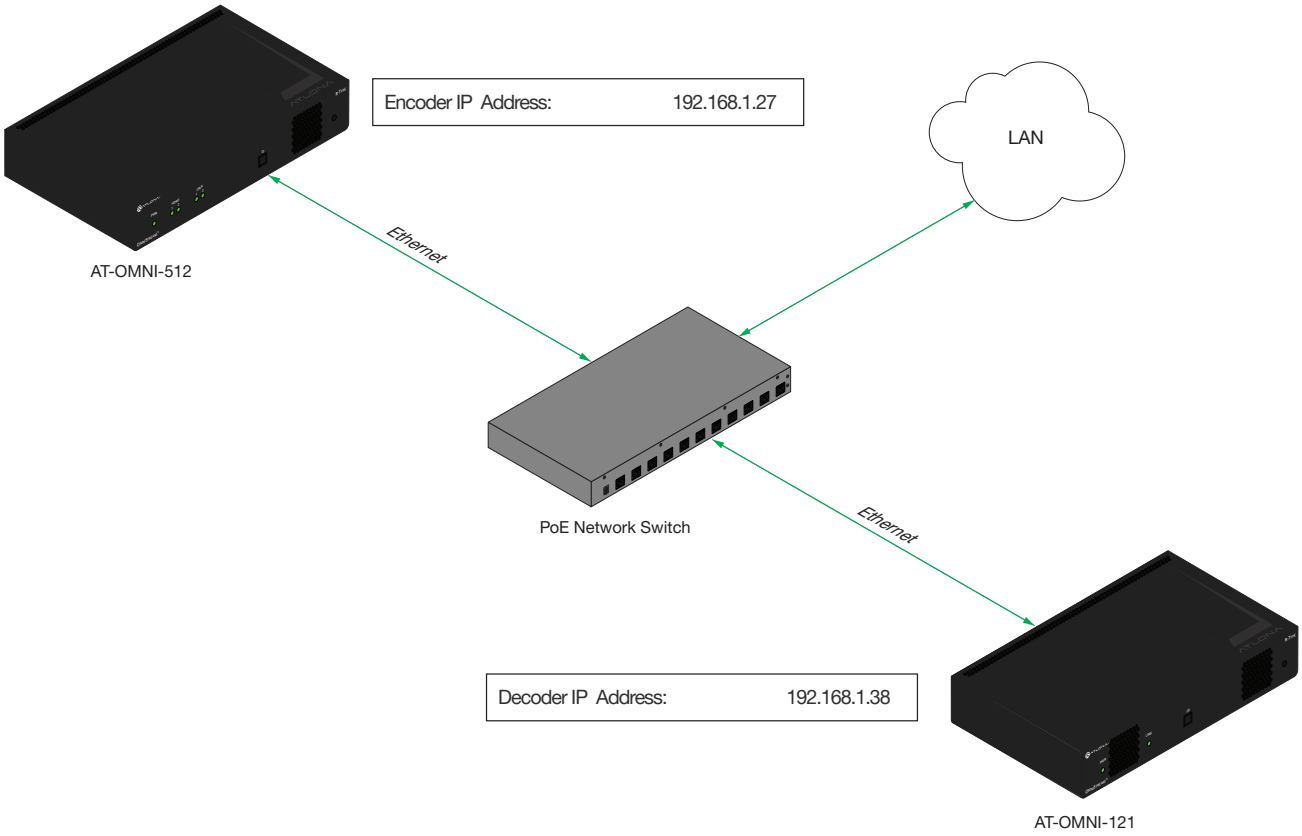
Decoder – Receives and decompresses signals from an encoder and sends them to an output device, such as a display or other sink device.

IP Address – A unique numerical label that is assigned to each device connected to a network.

IP Address Assignment

Figure 1.1 below, shows an encoder and a decoder, connected through a network switch. As with all network devices, both the encoder and decoder must have unique IP addresses. OmniStream encoders and decoders are DHCP-enabled, by default. This means that when the encoder/decoder is connected to the network, and a DHCP server is available, the encoder/decoder will automatically be assigned an IP address. If no DHCP server is available, then the unit will use a self-assigned IP address within the range of `169.254.xxx.xxx/16`. OmniStream devices can also be assigned a static IP address, if necessary. Static IP addressing will be covered in a later section.

Figure 1.1 - An encoder and decoder on a network, with assigned IP addresses.



Network Bandwidth and OmniStream Compression

When sending video and audio over a network, the available bandwidth needs to be managed. Gigabit Ethernet switches are very common and can take advantage of installed Category 5e cable. 10-Gigabit Ethernet switches are available, but are more expensive per port and require Category 6A cable or better. The chart below shows uncompressed data rates for common resolutions. These data rates exceed the available bandwidth of Gigabit Ethernet, but using the compression technology in OmniStream, this video can be streamed over cost-effective Gigabit networks.

Resolution	Data Rate*
1920 x 1080p 30 Hz	2.2 Gbps
1920 x 1080p 60 Hz	4.5 Gbps
3840 x 2160p 30 Hz	8.9 Gbps
3840 x 2160p 60 Hz	17.8 Gbps

* Data rate is shown without compression.

OmniStream compresses the source data at the encoder, before it is sent out over the network. This process is known as *encoding*. OmniStream uses VCx and VC-2 compression, which are intermediate compression schemes and offer lower latency and higher video fidelity than an interframe compression scheme, such as H.264 or H.265. Interframe codecs are typically used by cable or internet providers and use very aggressive bit rates (low bandwidth) with high latency (delay), which results in lag. VCx and VC-2 provide both high quality (high bit rates) and very low-latency for a much more desirable viewing experience.

Streams

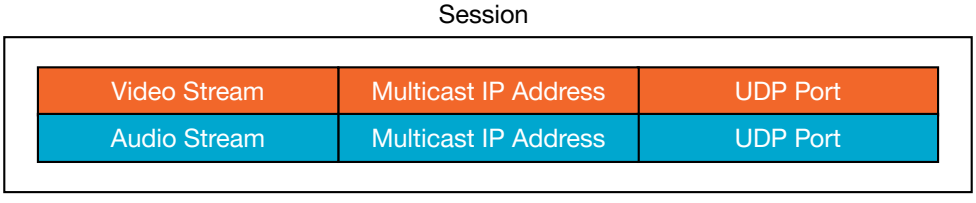
The term *stream* is used throughout this manual, to describe the different types of signals that are transmitted over a network. For example, if a blu-ray player is connected to an encoder, both video and audio are sent to the encoder over an HDMI cable. The term *video stream* is used to identify the video portion of a signal and *audio stream* identifies the audio portion of the signal.

Sessions

A *session* is a way of organizing audio and video streams. The session identifies each stream with a unique *multicast IP address* and *UDP port* assignment. This provides an address to determine where the package of audio and video should be sent. *Table 1.1* illustrates how a session encapsulates a video and audio stream.

NOTE: Sessions are not limited to only video and audio streams. Control data, such as IR and RS-232, as well as AES67 audio, can also be contained within a session. These topics will be covered in a later chapter.

Figure 1.2 - Video and audio streams contained within a session.



Subscribing to a Stream

To receive information from an encoder, the decoder must *subscribe* to the multicast IP address and UDP port of the stream(s). Note that the decoder does not subscribe to the session, but to the stream(s) within the session. The process of subscribing is similar to changing the channel on a Set-Top Box. For example, in order to view the content on channel 213, the Set-Top Box must be set to channel 213. Similarly, for a decoder to subscribe to an encoder stream, *the multicast IP address and UDP port settings on the decoder must be set to the same values as the encoder to which it is subscribed.* Note that the management IP address of a unit is different than its multicast IP address.

Figure 1.2 - Diagram of a video and audio stream, transmitted over an Ethernet cable, to the subscribing decoder.

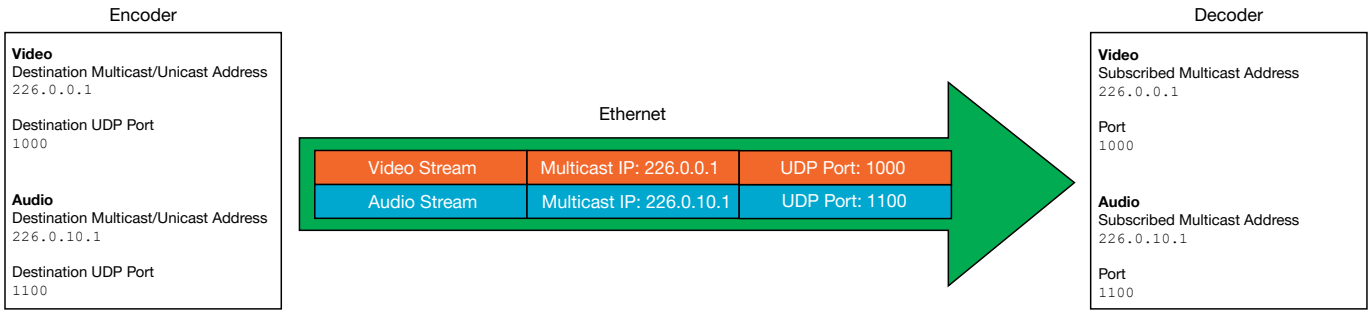
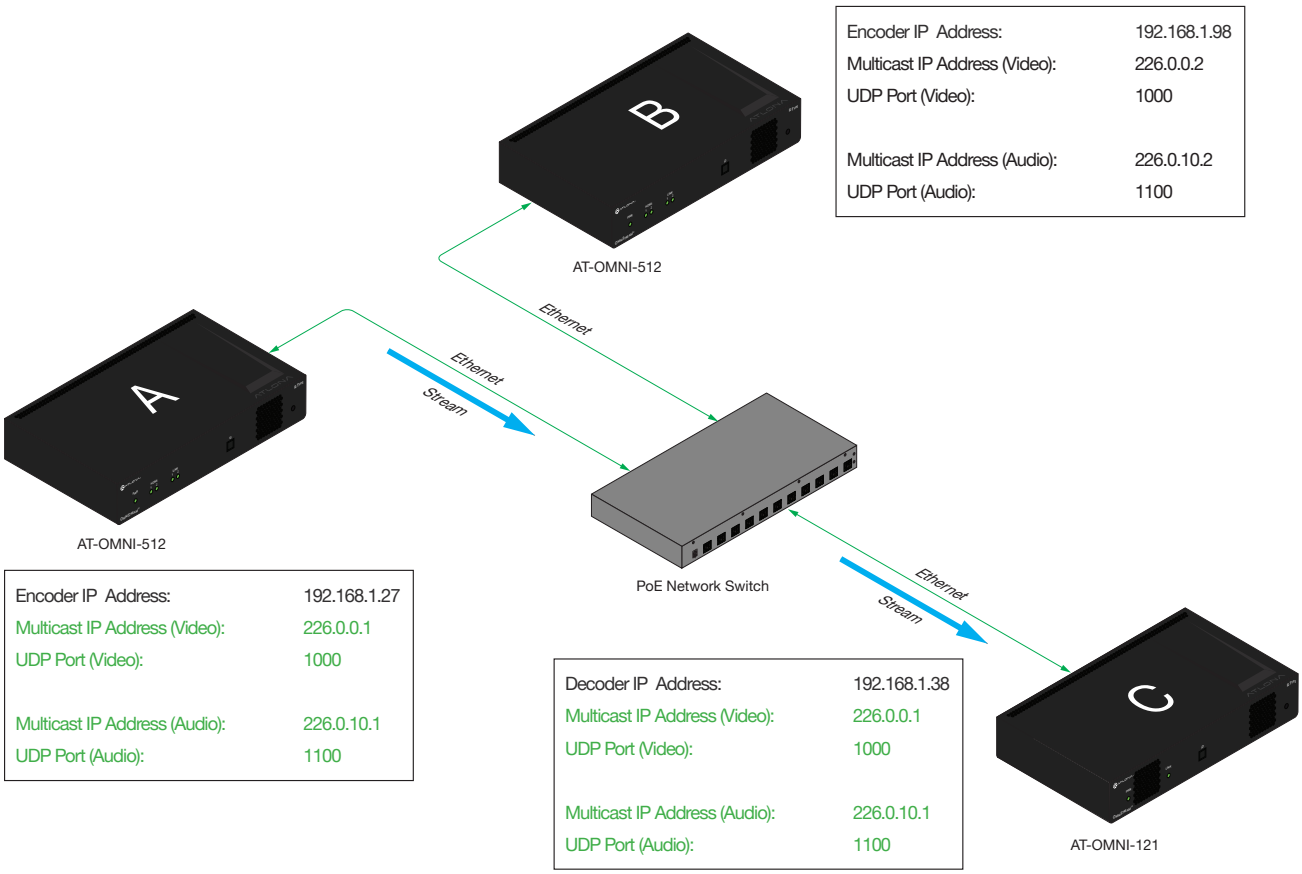


Figure 1.3 shows two encoders and a single decoder connected to a network switch. Decoder “C” is subscribed to encoder “A”, since the multicast IP addresses and UDP port numbers for both video and audio are set to the same values as encoder “A”.

Figure 1.3 - Decoder “C” subscribed to encoder “A”.



DEFINITIONS

Stream – Describes the video, audio, or any data that is transmitted from an encoder over the network.

Multicast IP Address – A class-D IP address assigned to a stream.

UDP Port – User Datagram Protocol (UDP) port. Part of the network addressing scheme to send and receive data to the proper destination on a network.

Subscribing – The process of selecting the multicast IP address to "listen to", in order to receive one or more encoder streams at the decoder endpoint.

OmniStream Naming Schema

Each OmniStream model has a different set of inputs and outputs and, depending upon the number of inputs and outputs. The number of supported session will depend upon the encoder model.

Encoders	Description
AT-OMNI-111 AT-OMNI-111-WP	• One HDMI input • One Ethernet output • Supports up to six sessions
AT-OMNI-112	• Two HDMI inputs • Two Ethernet outputs • Supports up to six sessions
AT-OMNI-512	• Two HDMI inputs • Two Ethernet outputs • Supports up to four sessions

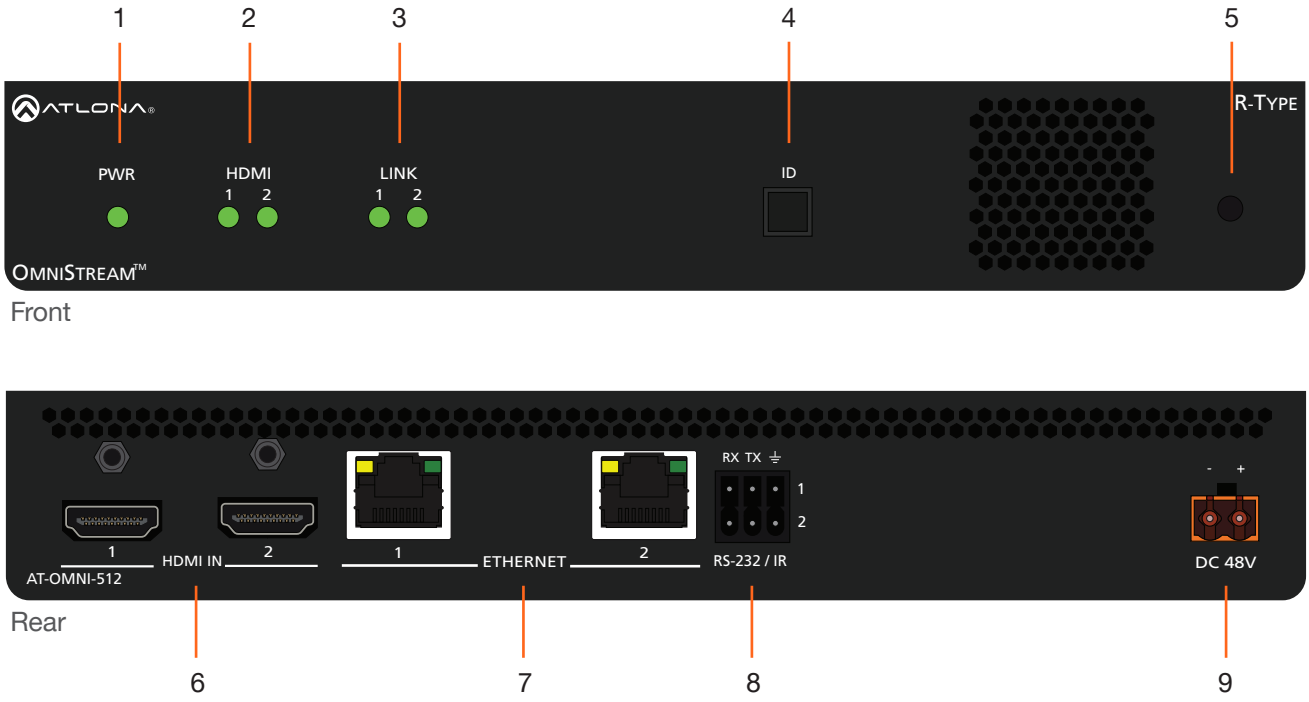
Decoders	Description
AT-OMNI-121	• One HDMI output • One Ethernet input
AT-OMNI-122	• Two HDMI outputs • Two Ethernet inputs

The last three numbers of the OmniStream SKU, describe the model version, model type, and number of inputs/outputs. The number of Ethernet ports and HDMI ports will be the same.

For example, the numbering scheme on the AT-OMNI-112 is read as follows:

- AT-OMNI-**112**
  1= OmniStream Pro ("R-Type" models begin with the number "5").
  1 = Indicates that the device is an *encoder* (*decoders* are identified with the number "2").
  2 = The number of sources (encoder)/sinks (decoder).

Panel Description



1 PWR
This LED indicator is green when the unit is powered and booted.

2 HDMI 1 / HDMI 2
These LED indicators are green when the link between source and encoder is good.

3 LINK 1 / LINK 2
These LED indicators will be green when the link integrity between the between the encoder and the network switch is good.

4 ID
Press this button to send a broadcast message to any network devices that are listening. This button is also used to set the encoder to factory-default settings. Refer to ID Button (page 17) for more information.

NOTE: Some older hardware revisions do not have an **ID** button.

5 Reboot button
Press this button, using a small, pointed object to reboot the unit.

6 HDMI IN 1 / HDMI IN 2
Connect HDMI cables from these ports to a UHD/HD source.

7 ETHERNET 1 / ETHERNET 2
Connect Ethernet cables from these ports to the Local Area Network (LAN).

8 RS-232 / IR
Connect the included 6-pin push-spring block to connect an automation system and an IR emitter or extender. RS-232 Connections (page 13) and IR Connections (page 14) for more information.

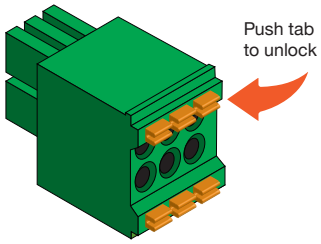
9 DC 48V
Connect the optional 48V DC power supply to this receptacle. This power supply is available, separately, and can be purchased through Atlona.

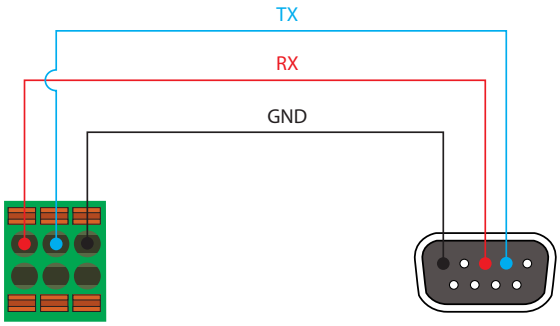
Installation

RS-232 Connections

The AT-OMNI-512 provides RS-232 over IP which allows communication between an automation system and an RS-232 device. This step is optional. Either the top three or bottom three set of terminals can be used for RS-232.

1. Use wire strippers to remove a portion of the cable jacket.
2. Remove at least 3/16” (5 mm) from the insulation of the RX, TX, and GND wires.
3. Insert the TX, RX, and GND wires into correct terminal on the included push-spring connector. If using non-tinned stranded wire, press the orange tab, above the terminal, while inserting the exposed wire. Repeat this step for the TX, RX, and GND connections.

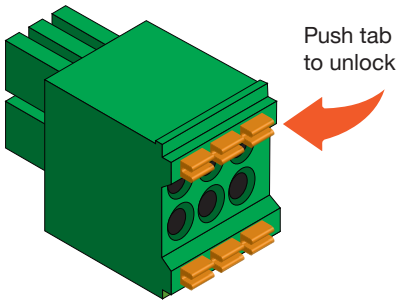




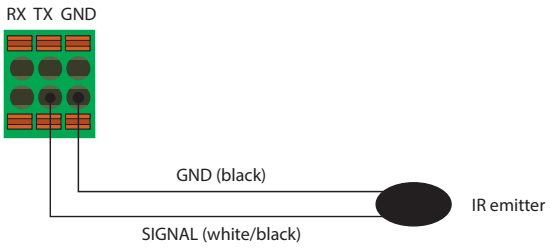
NOTE: Typical DB9 connectors use pin 2 for TX, pin 3 for RX, and pin 5 for ground. On some devices, pins 2 and 3 are reversed.

IR Connections

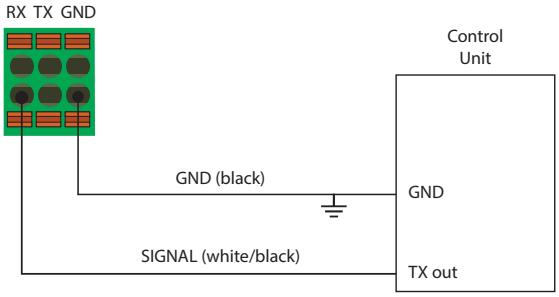
The same port that provides RS-232 connections also supports bidirectional IR pass-through, allowing a device to be controlled from either the headend or the decoder endpoint. This step is optional. Either the top three or bottom three set of terminals can be used for IR. Only the **RS-232 2** port (bottom set of connectors) supports both RS-232 and IR. Therefore, this port must be used for IR connections.



IR emitter configuration



IR extender configuration



Connection Instructions

1. Connect an Ethernet cable from the **ETHERNET 1** and **ETHERNET 2** ports on the encoder to a PoE-capable switch on the Local Area Network (LAN). Note that if a PoE-capable switch is not available, the 48V DC power supply (sold separately) must be connected to the encoder.

   IMPORTANT: If a PoE-capable switch is not available, then the 48V DC power supply (sold separately) must be connected to the encoder.

2. Connect an HDMI cable from each source to the **HDMI** ports on the encoder.

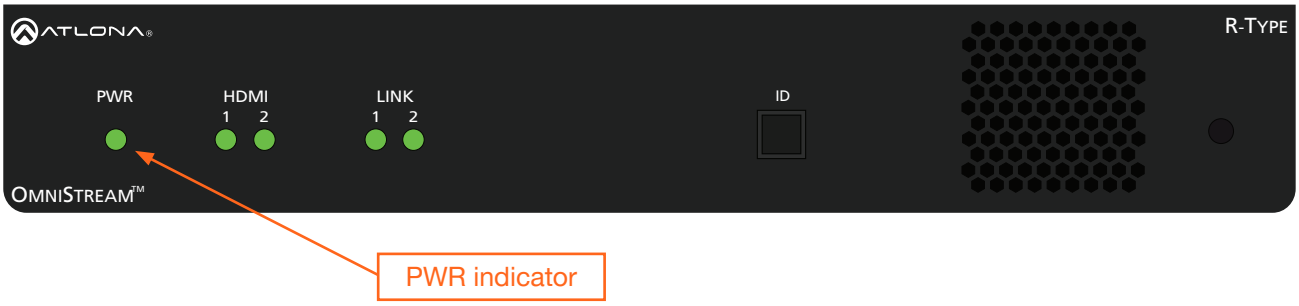
3. RS-232 (optional)
   Refer to RS-232 Connections (page 13) for wiring information.

   - Connect the RS-232 controller/automation system to the **RS-232** port on the encoder.
   - Connect the RS-232 device to the **RS-232** port on the decoder.

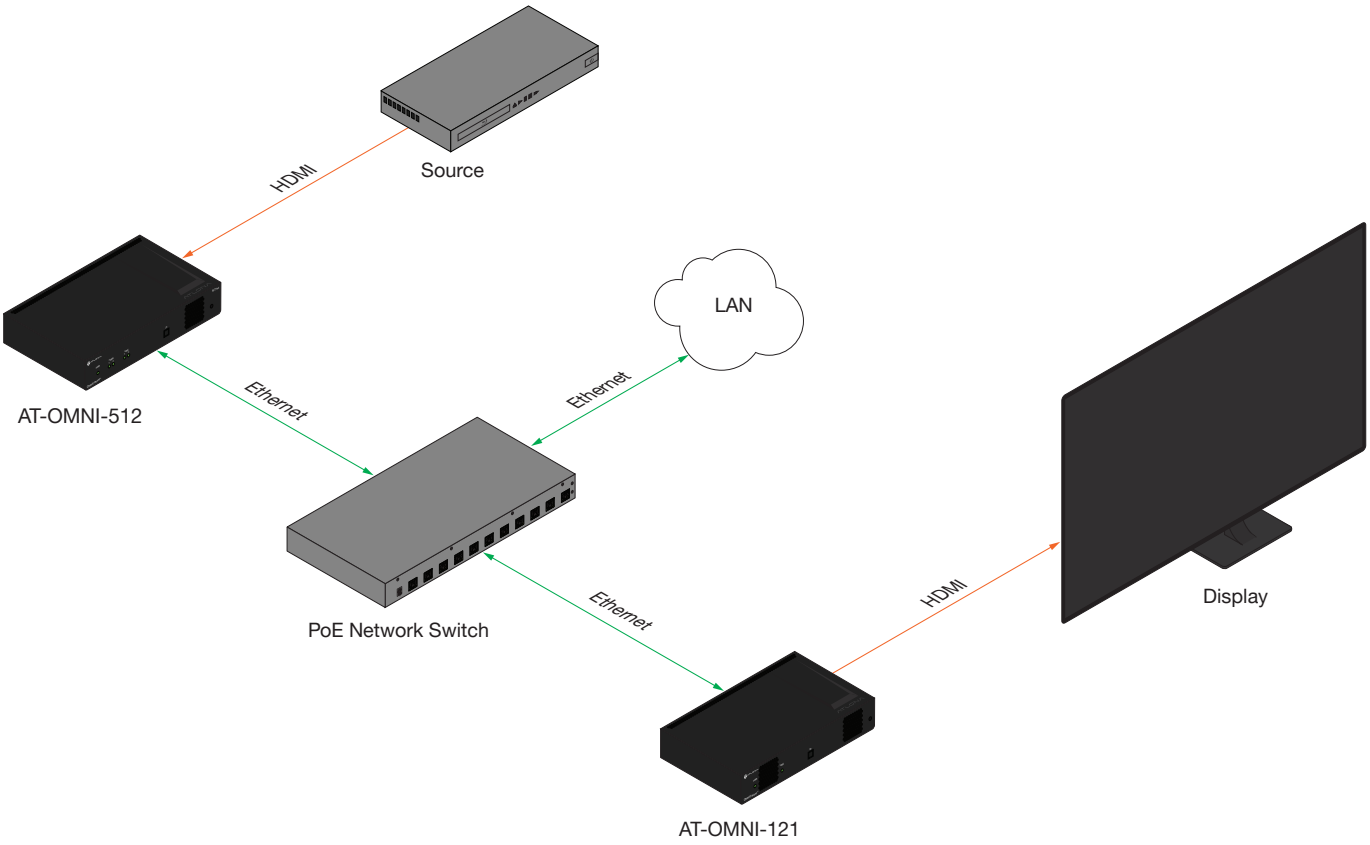
4. IR (optional)
   Refer to IR Connections (page 14) for wiring information.

   - **IR emitter**
     Connect the IR emitter to the **TX** and **GND** pins of the **RS-232 2** port. The IR emitter must be placed no more than one inch from the IR sensor on the device, in order to function properly.
   - **IR extender**
     Connect the IR extender from the **RX** and **GND** pins of the **RS-232 2** port to the associated pins on the control system.

5. Once power is applied, the **PWR** indicator, on the front panel, will turn red, then amber, then green.



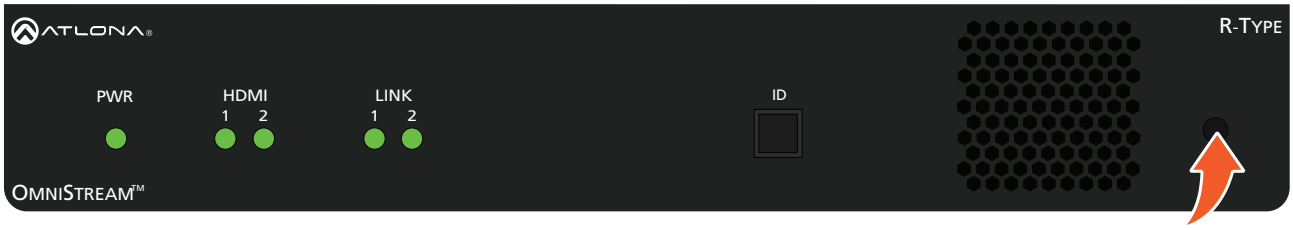
Connection Diagram



Getting Started

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.



ID Button

The **ID** button serves two functions:

1. Sends a broadcast message over the network to any devices that may be listening.
2. Resets the encoder to factory-default settings.

NOTE: Some older hardware revisions do not have an **ID** button.

Broadcast Messaging

Press and release the **ID** button to send a broadcast notification over the network to any devices that may be listening.

Resetting to Factory-Defaults

WARNING: Performing a factory-default reset will erase all user-programmed settings from the encoder. IP settings are not preserved.

Using the ID button

1. Press and hold the **ID** button for approximately 30 seconds.
2. The LED indicators on the front panel will flash, then turn “off.”
3. The encoder is now reset and will need to be reconfigured.

Using the Mclear command

1. Connect a PC to serial port 1 using a USB to serial cable.
2. Set the PC console port to the following settings: 9600 baud, 8 data bits, 1 stop bit, no parity.
3. Once connected to the CLI, execute the `Mclear` command.

Using the Web Server

1. Log in to the encoder using the built-in web server. Refer to ##accessingwebserver for more information. Note that OmniStream devices communicate using both LLDP and CDP protocols. Consult the switch documentation for information on returning neighbor details from the CLI. Neighbor details will include the IP address of the encoder.
2. Click the **FACTORY RESET** button.
3. The encoder is now reset and will need to be reconfigured.

LED Indicators

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

LED		Description
PWR	Off ○	• 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. • Connect the optional 48V DC power supply (available from atlona.com) to the encoder. When using an external power supply, the **PWR** indicator will be green.
	Red ●	• The encoder is booting.
	Amber ●	• The encoder is booting and/or attempting to locate a DHCP server.
	Green ●	• The encoder is ready.
HDMI 1 / 2	Red ●	• No source is connected to the input. • Check the HDMI cable for possible damage or loose connections.
	Green ●	• The link integrity between the source and the encoder is good.
LINK 1 / 2	Red ●	• The optional 48V DC power supply is connected, but no Ethernet cables are connected between the switch and the **ETHERNET** port(s). • Check the Ethernet cable for possible damage or loose connections.
	Amber ●	• The encoder is booting.
	Green ●	• Link integrity is good between the encoder and the network.

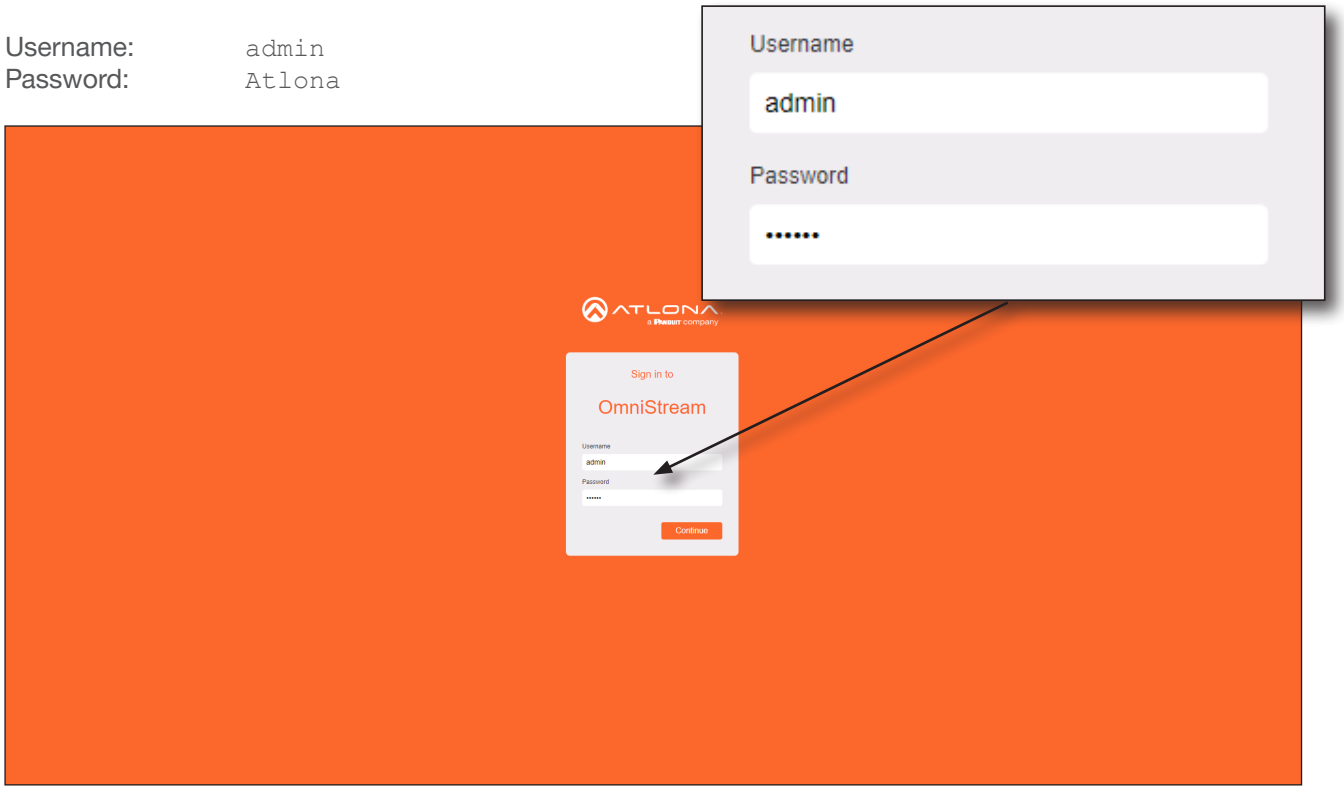
Accessing the Web Server

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 using any of the following methods: 1) Running IP scanner software or 2) accessing the encoder using the domain name. When running an IP scanner, 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.

1. Launch the desired web browser and enter the IP address or domain name 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`

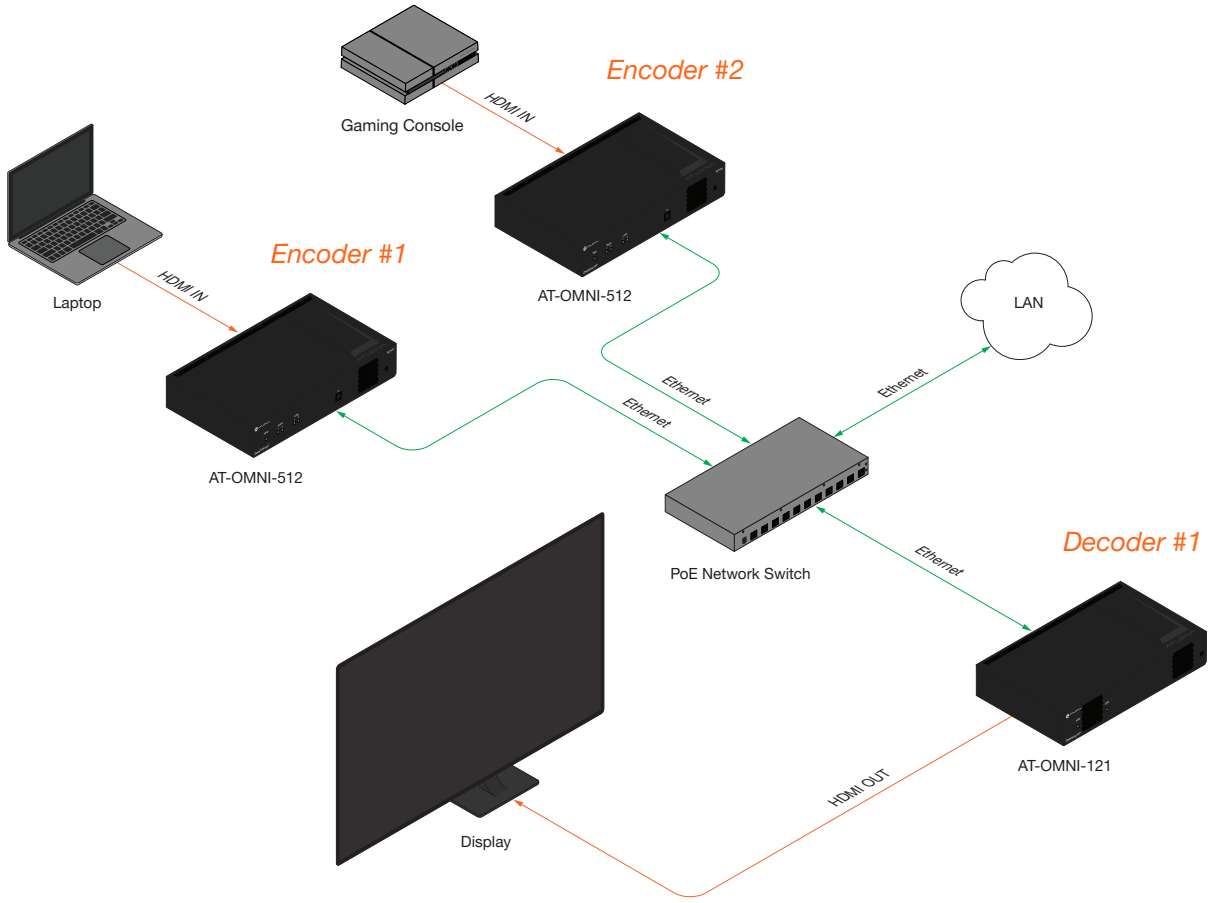


3. The **System Information** page will be displayed.

Basic Configuration Tutorial

This section provides a tutorial on configuring two AT-OMNI-512 dual-channel encoders and one AT-OMNI-121 single-channel decoder. Make sure the encoder is connected to a source device and that the decoder is connected to a display. Both the encoder and decoder should be connected to the same local network. Refer to Connection Instructions (page 15) for more information.

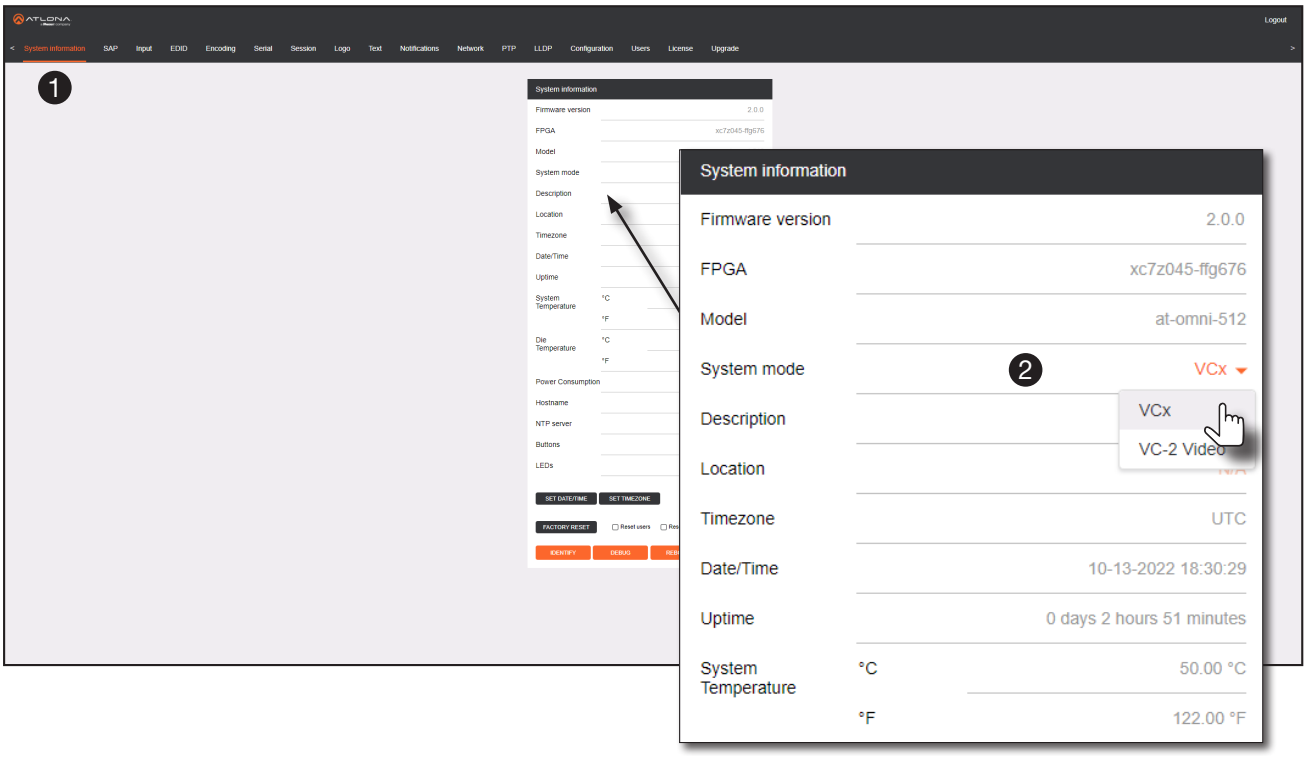
Physical Connections



Setting the System Mode

The AT-OMNI-512 offers two system modes. These modes will optimize the video, based on the type of information that is being displayed and/or the desired features.

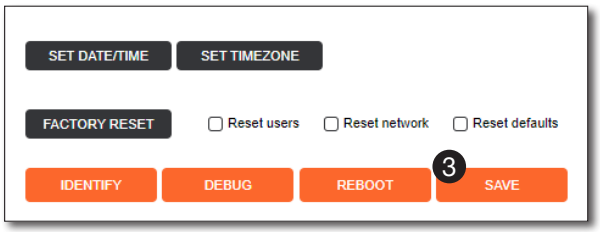
1. Login to each encoder and click **System Information** in the menu bar.
2. Click the **System mode** drop-down list and select VCx. This mode will provide access to all of OmniStream 2.0 features.



Mode	Description
VCx	This is the default mode and represents the latest codec technology from Atlona, with outstanding support for computer graphics and motion video. VCx includes support for 4K60 4:4:4 fast switching, dual streaming from AT-OMNI-111 encoders, and multiview on the decoders.
VC-2 Video	Legacy OmniStream codec that provides the best viewing experience when streaming motion graphics and/or video.

Click **SAVE** at the bottom of the page to commit changes.

Login to the decoder interface and repeat this process.



Configuring Inputs

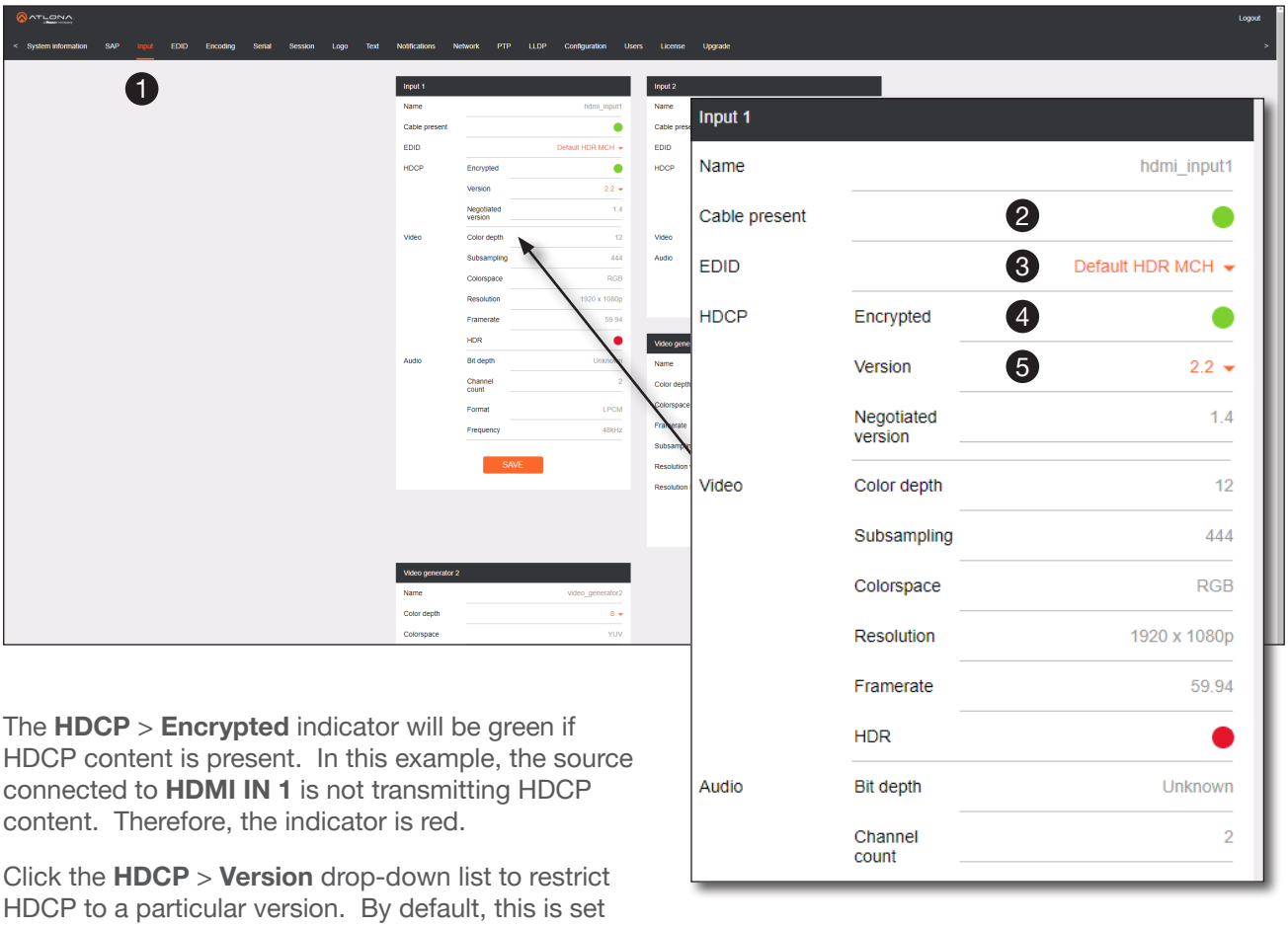
The **Input** page is used to verify that the encoder recognizes the source device. This page is also used to set the EDID, HDCP version, and provides detailed information about the source signal. The following procedure should be performed on *both* AT-OMNI-512 encoders.

1. Click **Input** in the menu bar.
2. Since a source has been connected to the **HDMI IN** port, the **Cable present** indicator within the **Input 1** window group is green, as shown below. This indicates that an active source is connected to the HDMI port.

   If these indicators are red, check that each source is connected to an **HDMI IN** port. A red indicator may also describe faulty HDMI cables. If the sources are connected, then try different HDMI cables. If the HDMI cable integrity has been verified, then make sure that the output resolution of the source is at least 720p.

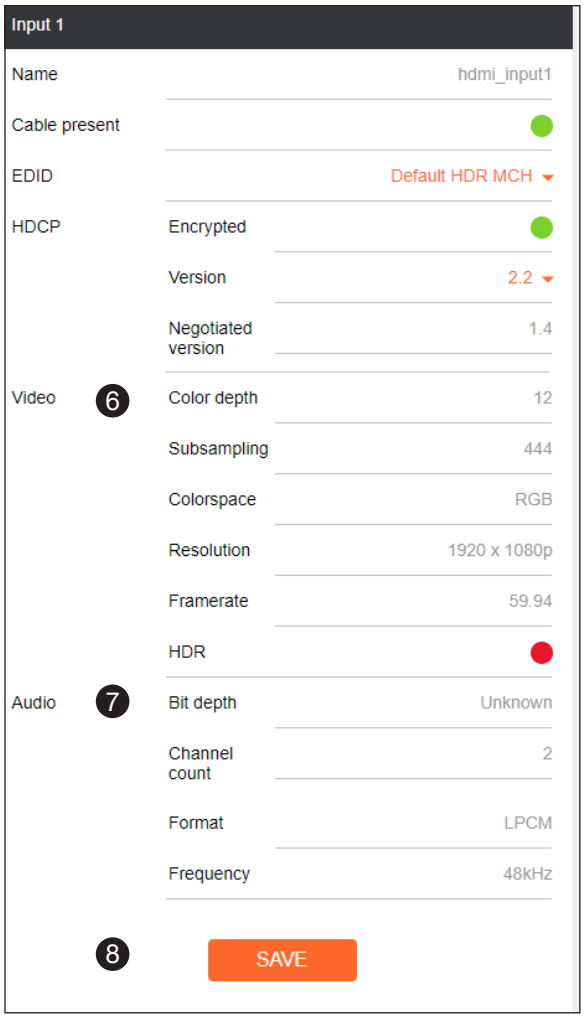
> **TIP:** If no signal is being received on the encoder, then it's always a good practice to check the **Input** screen on the encoder when performing additional troubleshooting.

3. Click the **EDID** drop-down list to select an EDID. For now, leave this setting at `Default HDR MCH`. This EDID provides general compatibility with most displays.



4. The **HDCP** > **Encrypted** indicator will be green if HDCP content is present. In this example, the source connected to **HDMI IN 1** is not transmitting HDCP content. Therefore, the indicator is red.
5. Click the **HDCP** > **Version** drop-down list to restrict HDCP to a particular version. By default, this is set to `2.2` and this setting should be used for most applications.

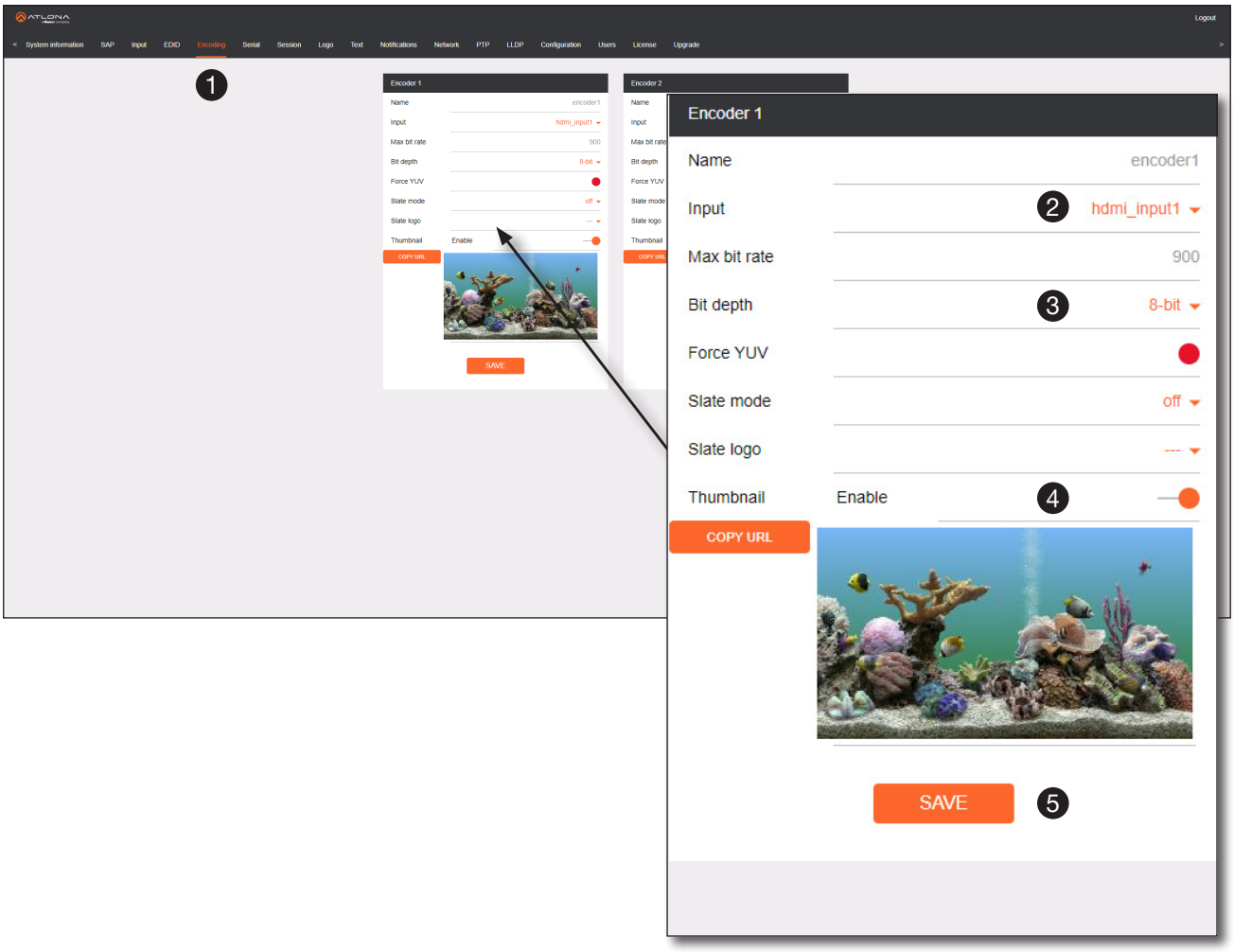
6. The **Video** section provides information about the input signal: color depth, subsampling, color space, resolution, frame rate, and HDR (High Dynamic Range). If the HDR indicator is green, this will indicate that HDR content is being transmitted from the source device. Refer to the Input page (page 62) for more information.
7. The **Audio** section displays audio information (if present) from the source device: bit depth, the number of audio channels, the audio format, and the frequency. Refer to the Input page (page 62) for more information.
8. Click **SAVE** to commit all changes.



Encoder Settings

The **Encoding** page is used to assign an input to an encoder. In addition, this page allows video settings, such as the maximum bit rate, bit depth, and chroma subsampling to be set. Video thumbnails of the source device can also be displayed on this page. *The following procedure should be performed on both AT-OMNI-512 encoders*.

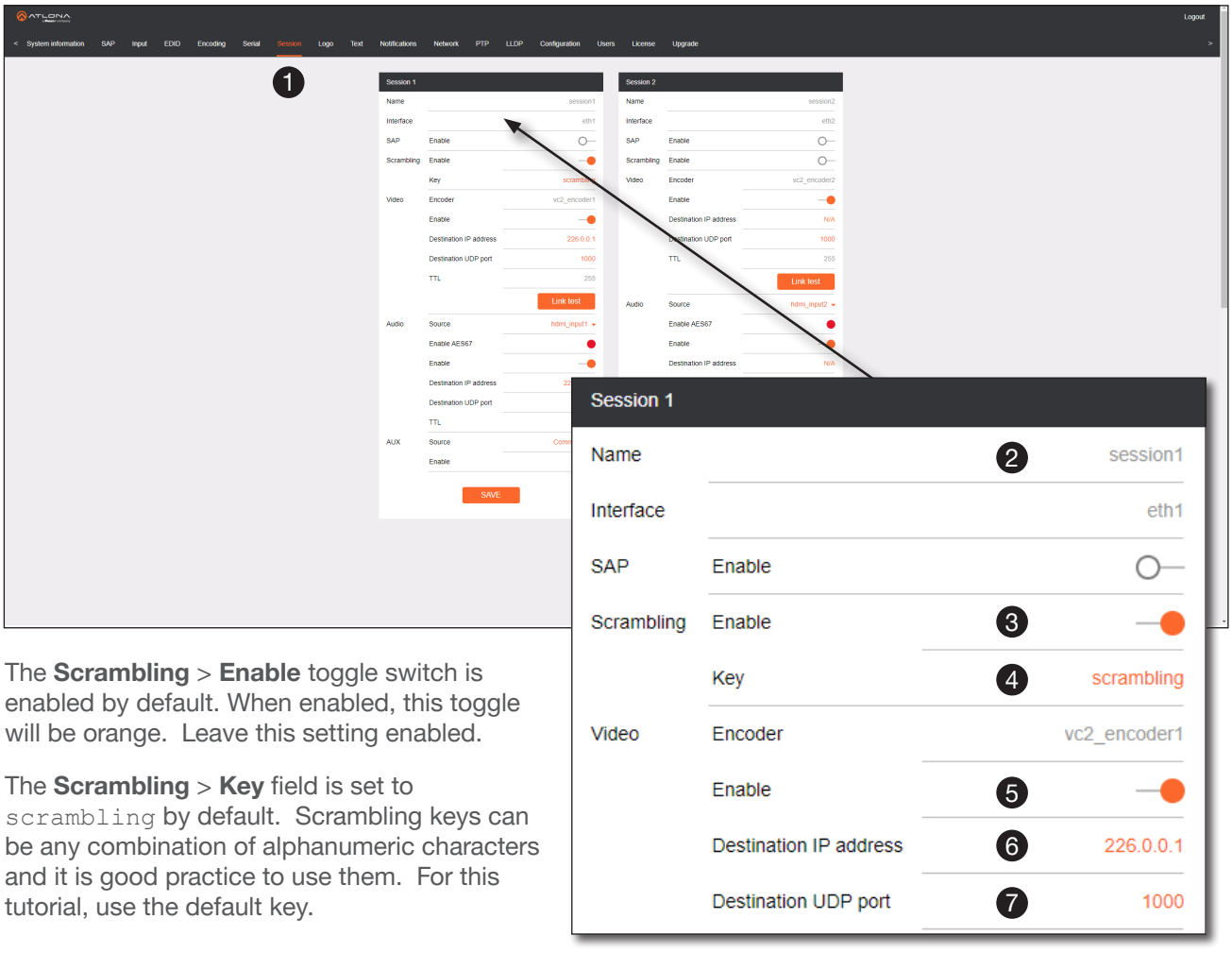
1. Click **Encoding** in the menu bar.
2. Under the **Encoder 1** window group, click the **Input** drop-down list and select `hdmi_input1`.
3. Click the **Bit depth** drop-down list to change the bit depth. In this example, it will be set to `8-bit`.
4. Click the **Thumbnail** > **Enable** toggle switch to enable it and display a thumbnail of the source. When enabled, the toggle switch is orange and a thumbnail of the source will be displayed. If no thumbnail is displayed when this feature is enabled, verify that the source is connected, powered, and is configured correctly under the **Input** menu.
5. Click **SAVE** to commit all changes.



Creating a Session

Before the video and audio (if any) can be sent out over the network, a session must be created on the encoder. The session assigns each stream to a unique multicast IP address and UDP port assignment. Sessions are always created on encoders. Refer to Session page (page 70) for a detailed description of all settings. *The following procedure should be performed on both AT-OMNI-512 encoders, except where noted*.

1. Click **Session** in the menu bar.
2. Under **Session 1**, the **Name** field indicates the session name. This value is set to `session1` and cannot be changed.



3. The **Scrambling** > **Enable** toggle switch is enabled by default. When enabled, this toggle will be orange. Leave this setting enabled.
4. The **Scrambling** > **Key** field is set to `scrambling` by default. Scrambling keys can be any combination of alphanumeric characters and it is good practice to use them. For this tutorial, use the default key.
5. Click the **Video** > **Enable** toggle switch and make sure it is enabled for both **Session 1**. When enabled, the toggle switch will be orange. If set to disabled, then the encoder video stream will be disabled.
6. Enter the multicast IP address for the video stream in the **Destination IP address** field. Atlona recommends using multicast IP addresses as shown in *Table 2.1*, on the next page. Enter `226.0.0.1` in the **Destination IP address** field for **Session 1** on *Encoder #1*. For *Encoder #2*, enter `226.0.0.2` in the **Destination IP address** field for **Session 1**.
7. Enter the UDP port in the **Destination UDP port** field. Although any valid UDP port can be used, Atlona suggests using the UDP port numbers, as shown in *Table 2.1* on the next page. Since this is a video stream, enter `1000` in the **Destination UDP port** field for **Session 1**.

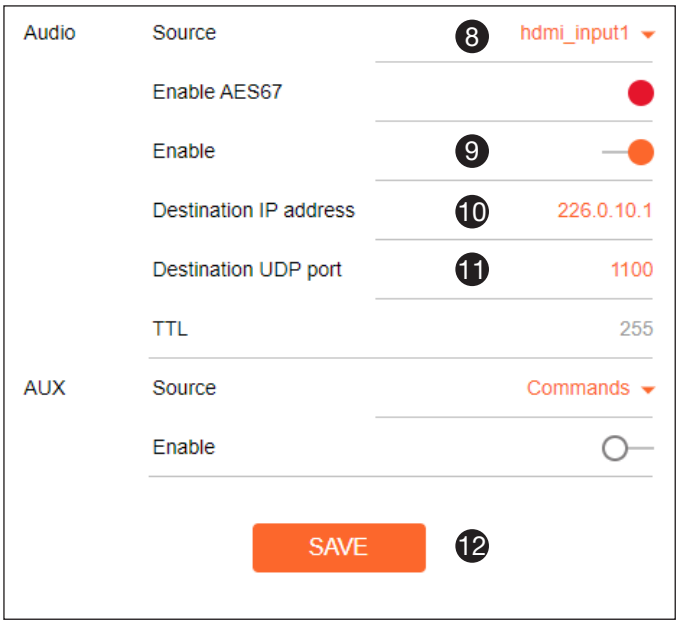
Table 2.1 - Recommended multicast IP address for video, audio, and data streams.

Stream	Video	Audio	Data (Control)
First source	226.0.0.1	226.0.10.1	226.0.20.1
Second source	226.0.0.2	226.0.10.2	226.0.20.2
nth source	226.0.0.n	226.0.10.n	226.0.20.n

Table 2.2 - Recommended UDP ports for video, audio, and data streams.

Stream	Video	Audio	Data (Control)
UDP Port	1000	1100	1200

8. Click the **Audio** > **Source** drop-down list and select the HDMI audio input for the session. The source is connected to **HDMI IN**. Therefore, set this to `hdmi_input1` for **Session 1**.
9. Click the **Audio** > **Enable** toggle switch and make sure it is enabled. When enabled, it will be orange. If disabled, no audio will be streamed from the encoder.
10. Enter the multicast IP address for the audio stream in the **Destination IP address** field. Refer to *Table 2.1*, above. In this example, enter `226.0.10.1` for **Session 1** on *Encoder #1* and `226.0.10.2` for **Session 1** on *Encoder #2*.
11. Enter the audio stream UDP port in the **Destination UDP port** field for **Session 1**. Refer to *Table 2.2*, above. Since this is an audio stream, use UDP port `1100`.
12. Click the **SAVE** button to commit all changes to **Session 1**.

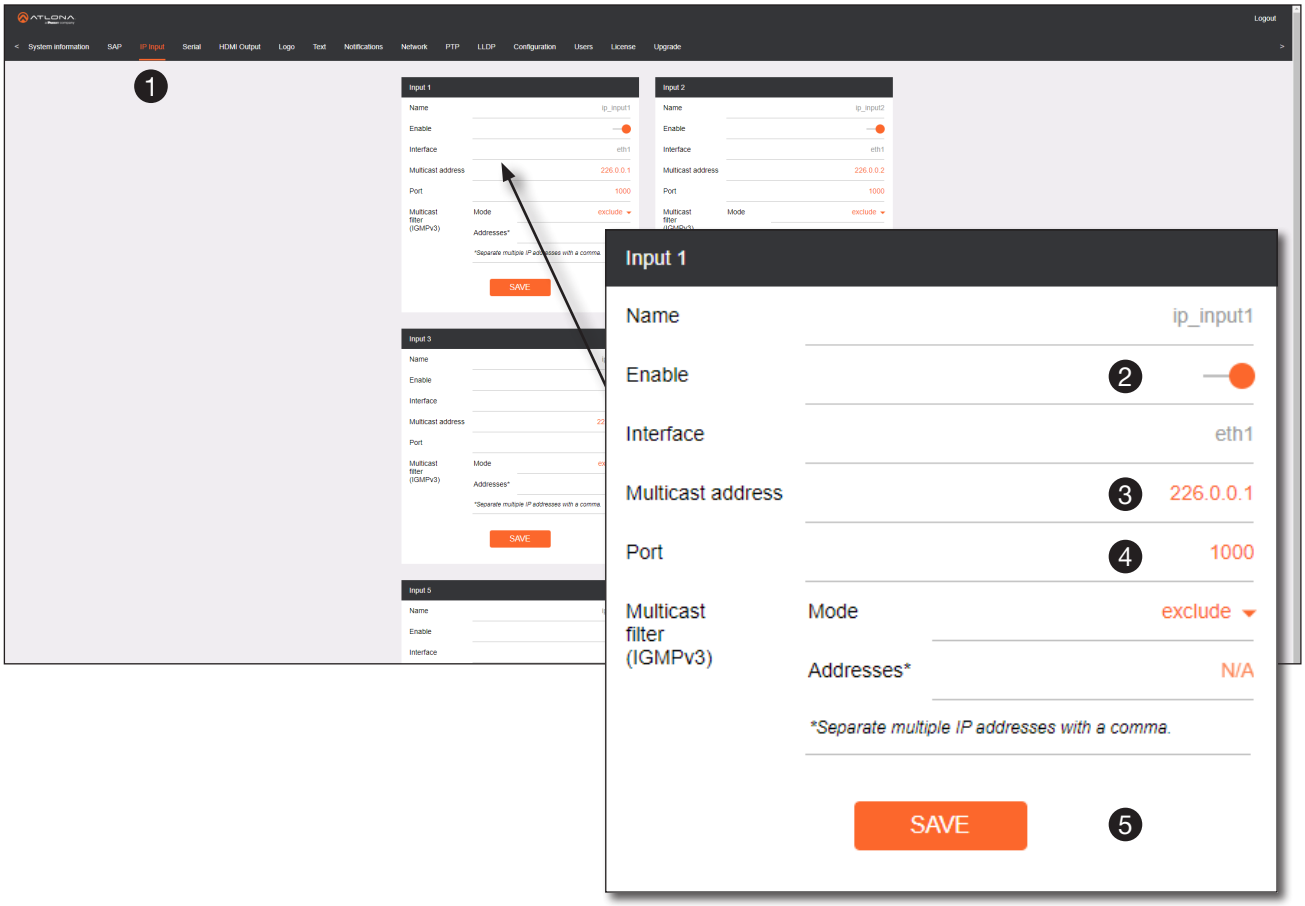


Subscribing to an Encoder

The next step is to configure the decoder so that it is able to receive video, audio, and/or data (control) streams from the encoder. This process is referred to as “subscribing to the encoder”.

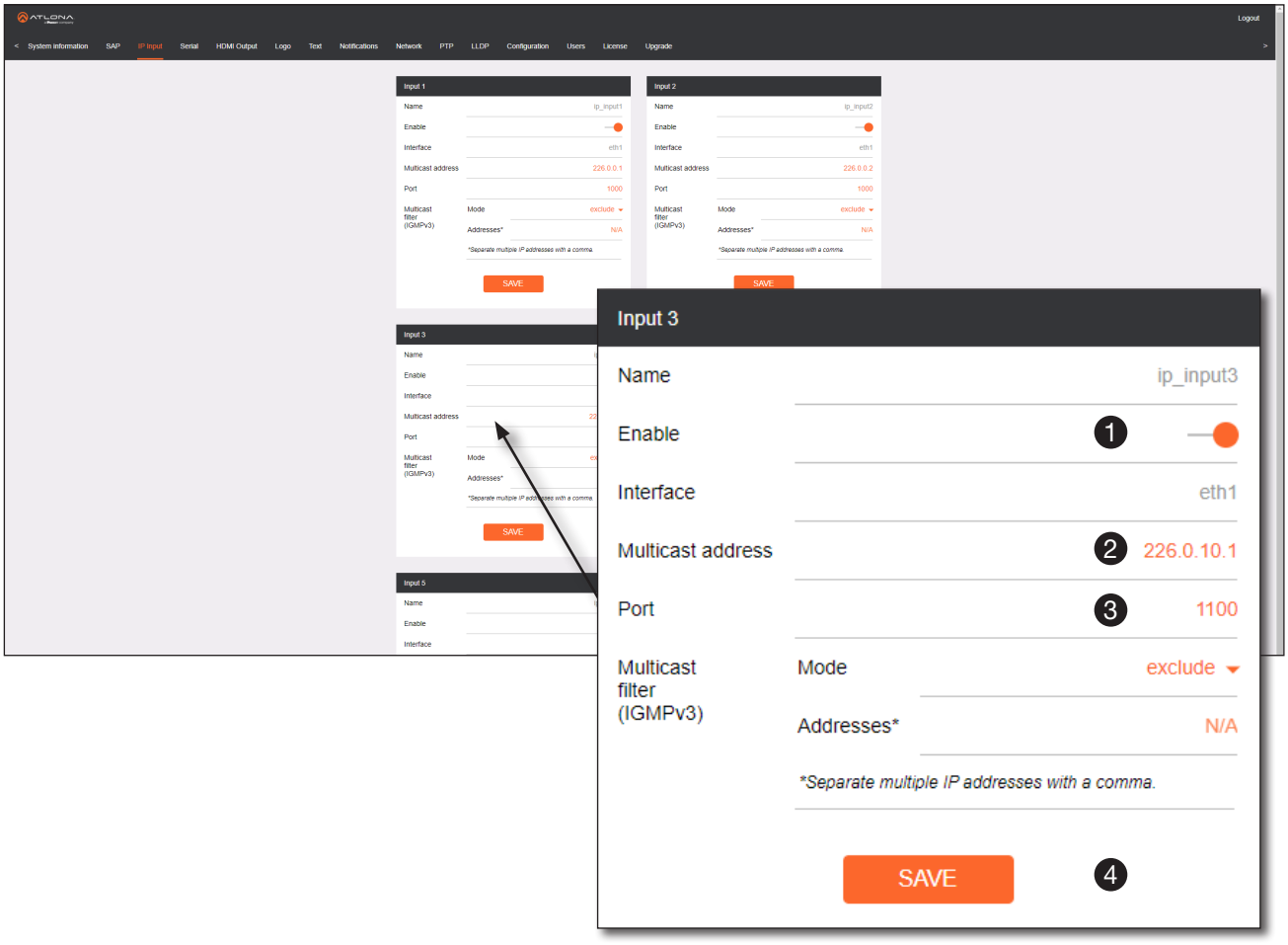
Video Configuration

1. Go to the decoder and click **IP Input** in the menu bar.
2. Locate the **Input 1** window group and verify that the **Enable** toggle switch is enabled. When enabled, the toggle switch will be orange. Perform the same procedure for the **Input 2** window group.
3. Under the **Input 1** window group, enter `226.0.0.1` in the **Multicast address** field. Under the **Input 2** window group, enter `226.0.0.2` in this field. These multicast IP address are the same addresses that were specified under the **Video** > **Destination IP address** field for the encoders.
4. In the **Port** field, enter `1000` under both **Input 1** and **Input 2** window groups. These are the same port settings that were entered under the **Video** > **UDP Port** section of the encoder.
5. Click the **SAVE** button, under the **Input 1** and **Input 2** window groups, to commit changes.



Audio Configuration

1. Locate the **Input 3** window group and verify that the **Enable** toggle switch is enabled. When enabled, the toggle switch will be orange. Perform the same procedure for the **Input 4** window group.
2. Under the **Input 3** window group, enter `226.0.10.1` in the **Multicast address** field. Under the **Input 4** window group, enter `226.0.10.2` in this field. These multicast IP address are the same addresses that were specified under the **Audio** > **Destination IP address** field for the encoders.
3. In the **Port** field, enter `1100` under both **Input 3** and **Input 4** window groups. These are the same port settings that were entered under the **Audio** > **UDP Port** section of the encoder.
4. Click the **SAVE** button, under the **Input 3** and **Input 4** window groups to commit changes.



Input Configuration Notes

Although there is no hard and fast rule for which **Input** window groups should be used for video, audio, and/or control, it can be helpful to visualize the **Input** window groups as columns and rows to better organize the IP data. Here, each column of **Input** window groups represents an encoder.

Table 2.3 - Video and Audio information from each encoder.

Encoder #1

Input	Multicast Address
Input 1	Video (226.0.0.1:1000)
Input 3	Audio (226.0.10.1:1100)

Encoder #2

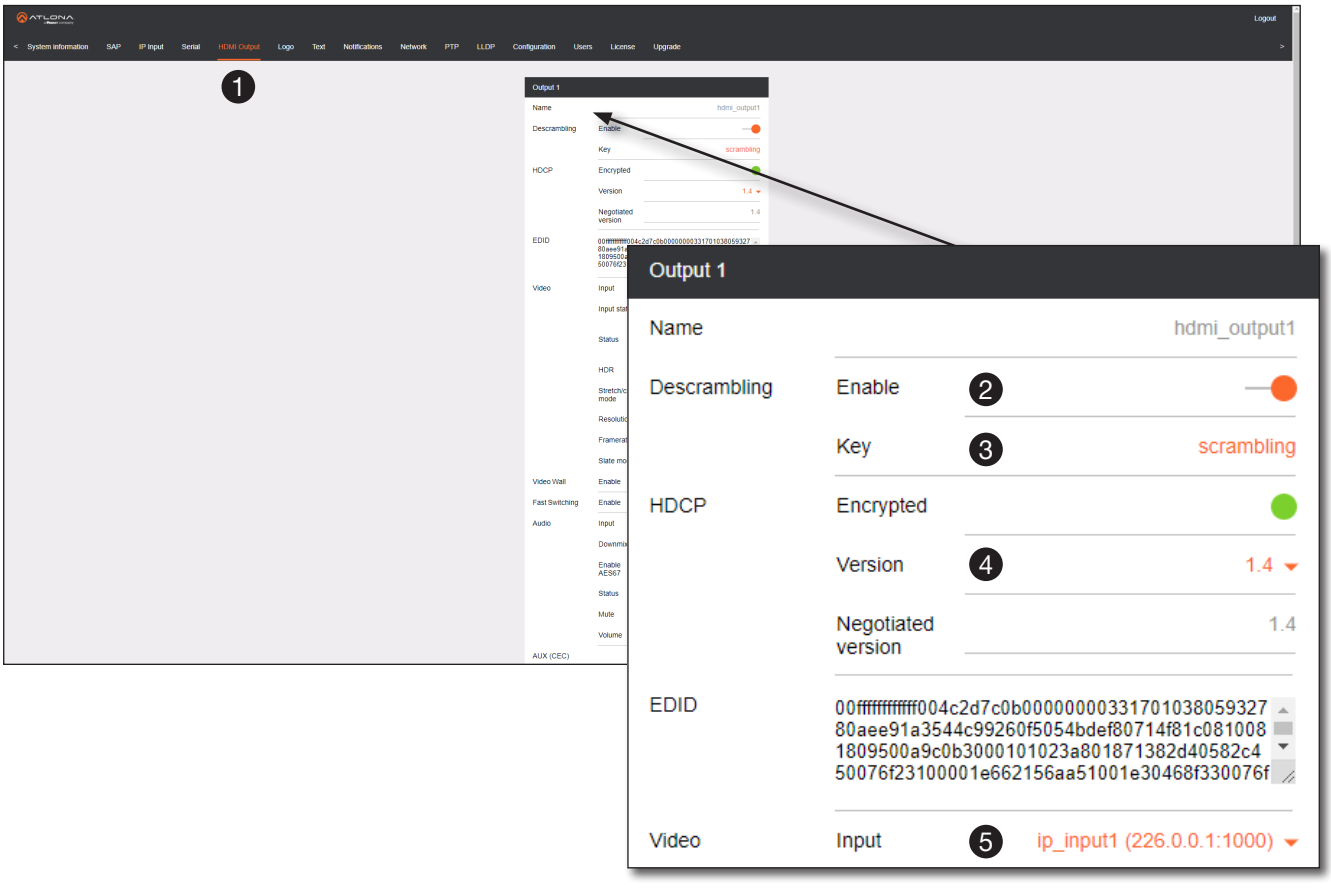
Input	Multicast Address
Input 2	Video (226.0.0.2:1000)
Input 4	Audio (226.0.10.2:1100)

Configuring the HDMI Output Stream

1. Click **HDMI Output** in the menu bar.
2. The **Descrambling** > **Enable** toggle switch is enabled by default. When enabled, this toggle will be orange. For this example, leave the setting enabled.
3. The **Descrambling** > **Key** field is set to `scrambling` by default. This is the same key that is being used under the **Scrambling** > **Key** field on the encoder, and will allow the decoder to descramble the signal and send it out over the HDMI output to the display. Leave this key at it's default setting.
4. Click the **HDCP** > **Version** drop-down list and select the HDCP version. `2.2` will work with most sources. However, in this case, an older sink/monitor which doesn't support HDCP 2.2, is being used. Therefore, the value is set to `1.4`.
5. Click the **Video** > **Input** drop-down list and select the video source. Based on what has been configured, the following options are available:

Video > Input
ip_input1 (226.0.0.1:1000)
ip_input2 (226.0.0.2:1000)
ip_input3 (226.0.10.1:1100)
ip_input4 (226.0.10.2:1100)

Since this is the **Video** field, a video source should be selected. Referring to *Table 2.3*, on the previous page, `ip_input1 (226.0.0.1:1000)` and `ip_input2 (226.0.0.2:1000)` are video data, from two different encoders. For this example, this field will be set to `ip_input1 (226.0.0.1:1000)`.



6. Scroll down to the **Audio** > **Input** field and select the desired audio stream. Referring to *Table 2.3* (shown below), the audio stream that is associated with encoder 1 is Input 3. Therefore, `ip_input3 (226.0.10.1:1100)` is selected.

Table 2.3 - Video and Audio information from each encoder.

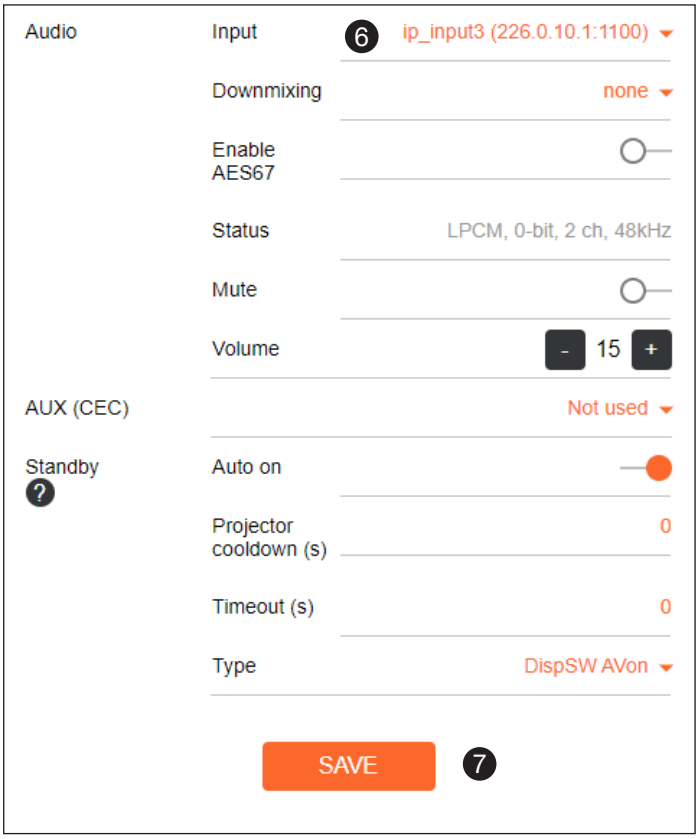
Encoder #1

Input	Multicast Address / Port
Input 1	Video (226.0.0.1:1000)
Input 3	Audio (226.0.10.1:1100)

Encoder #2

Input	Multicast Address / Port
Input 2	Video (226.0.0.2:1000)
Input 4	Audio (226.0.10.2:1100)

7. Click the SAVE button to commit changes.

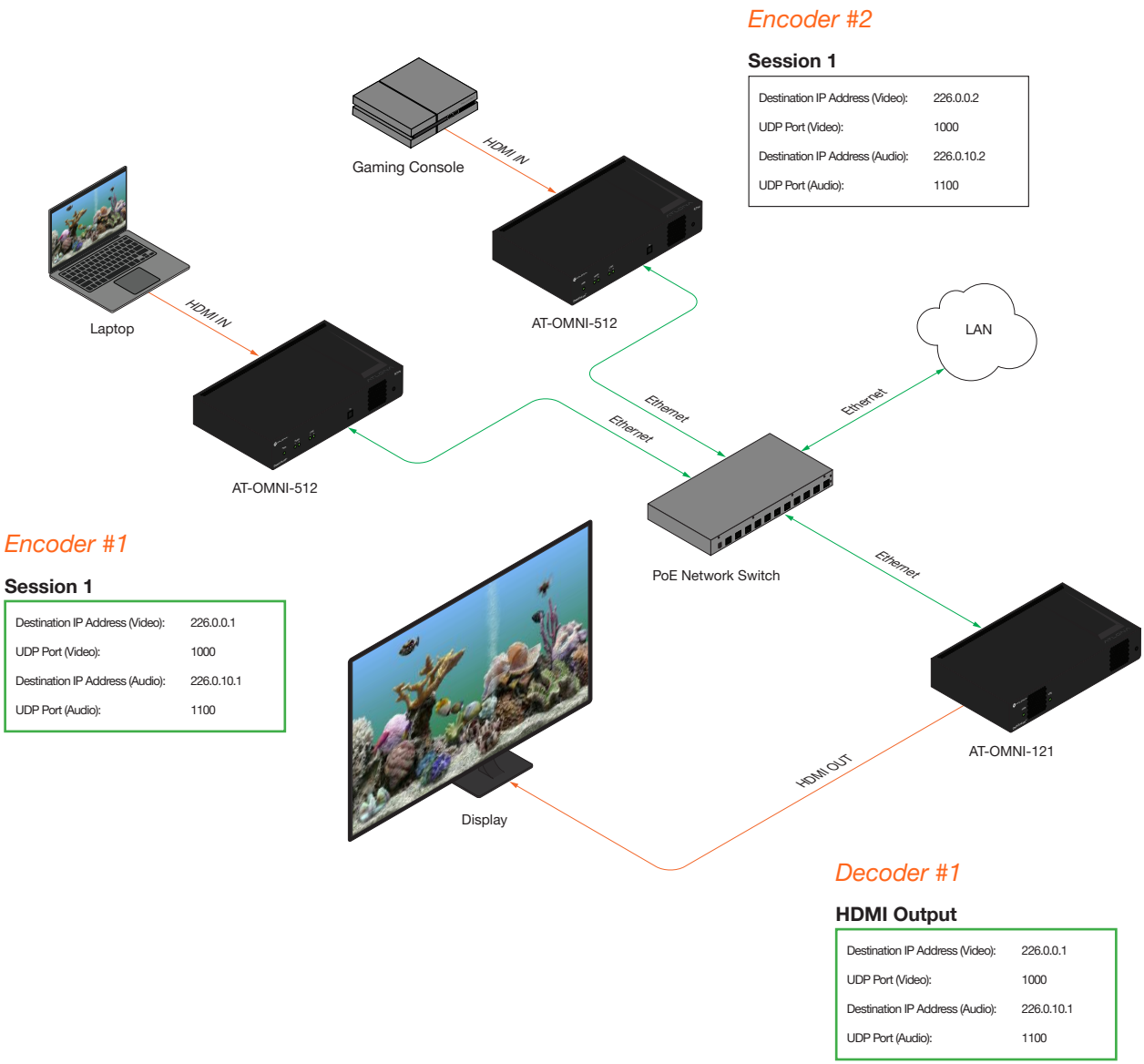


The decoder should now display the content of the source device connected to **HDMI IN** on the encoder. *Figure 3.1*, on the next page, shows the completed configuration.

To switch between video sources, click the **Video** > **Input** drop-down list and select the desired stream.
To switch between audio streams, click the **Audio** > **Input** drop-down list to select the desired stream.

Note that separating video and audio data into different streams, allows the flexibility of combining different video and audio sources together.

Figure 3.1 - Basic OmniStream setup with Decoder #1 subscribed to Encoder #1.



Troubleshooting

If no video and/or audio is present on the display, check the following for both *Encoder #1* and *Encoder #2*, unless otherwise noted.

Encoder Checklist

- Verfiy that all encoders and decoders are set to the same system mode. In this tutorial, both encoders and the decoder should be set to `VCx`. Refer to Setting the System Mode (page 22).
- Go to the **Input** menu and make sure that the **Cable present** indicator, under the **Input 1** window group, is green. Refer to Configuring Inputs (page 23) for more information.
- Go to the **Encoding** menu and verify the following under the **Encoder 1** window group. Refer to Encoder Settings (page 25) for more information.
  - » Make sure the **Input** drop-down list is assigned to an input. In this tutorial, the **Input** field, under the **Encoder 1** window group, is set to `hdmi_input1`.
  - » Verify that a **Thumbnail** > **Enable** toggle switch is enabled and a thumbnail of the source is displayed.
- Go to the **Session** menu and verify the following under the **Session** window groups. Refer to Creating a Session (page 26) for more information.
  - » Check that the **Scrambling** > **Enable** toggle switch is enabled. Also check that the **Scrambling** > **Key** field, for this example, is set to `scrambling`.
  - » Verify that the **Video** > **Enable** toggle switch is set to enabled.
  - » Check the **Video** > **Destination IP address** field is set to the correct multicast IP address. In the example, `226.0.0.1`. is used on *Encoder #1* and `226.0.0.2` is used on *Encoder #2*.
  - » Check that the **Video** > **Destination UDP port** field is set to `1000`.
  - » Make sure the **Audio** > **Source** is set to `hdmi_input1`.
  - » Verify that the **Audio** > **Enable** toggle switch is enabled.
  - » Check the **Audio** > **Destination IP address** field is set to the correct multicast IP address. In this example, `226.0.10.1` is used on *Encoder #1* and `226.0.10.2` is used on *Encoder #2*.
  - » Check that the **Audio** > **Destination UDP port** field is set to `1100`.

Decoder Checklist

- Verfiy that all encoders and decoders are set to the same system mode. In this tutorial, both encoders and the decoder should be set to `VCx`. Refer to Setting the System Mode (page 22).
- Go to the **IP Input** menu and verify the following. Refer to Subscribing to an Encoder (page 28) for more information.
  - » Under both the **Input 1** and **Input 2** window groups, verify that the **Enable** toggle switch is enabled.
  - » Check that the **Multicast address** field is set to the correct multicast IP address. In this example, `226.0.0.1` for **Input 1** and `226.0.0.2` for **Input 2**.
  - » Check that the **Port** field is set to the proper port. In this example, `1000` for both **Input 1** and **Input 2**.
  - » Under both the **Input 3** and **Input 4** windows groups, verify that the **Enable** toggle switch is enabled.
  - » Check that the **Multicast address** field is set to the correct multicast IP address. In this example, `226.0.10.1` for **Input 3** and `226.0.10.2` for **Input 4**.
  - » Check that the **Port** field is set to `1100` for both **Input 3** and **Input 4**.

- Go to the **HDMI Output** menu and verify the following. Refer to Subscribing to an Encoder (page 28) for more information.
  - » Make sure that the **Descrambling** > **Enable** toggle switch is enabled.
  - » Check the **HDCP** > **Version** field to make sure the correct version is selected. Also note the color of the **HDCP** > **Encrypted** indicator. if it is red, then a picture may not be displayed and result in a “blue screen” on the display. Change the **HDCP** > **Version** field, if necessary.

    IMPORTANT: The scrambling key on a decoder must be *identical* to the scrambling key on the encoder which is being subscribed. Scrambling keys are case-sensitive.

  - » Verify that the **Descrambling** > **Key** field is set to `scrambling`.
  - » Make sure that the **Video** > **Input** drop-down list is set to one of the configured inputs: either `ip_input1` or `ip_input2`.
  - » Make sure that the **Audio** > **Input** drop-down list is set to one of the configured inputs: either `ip_input3` or `ip_input4`.

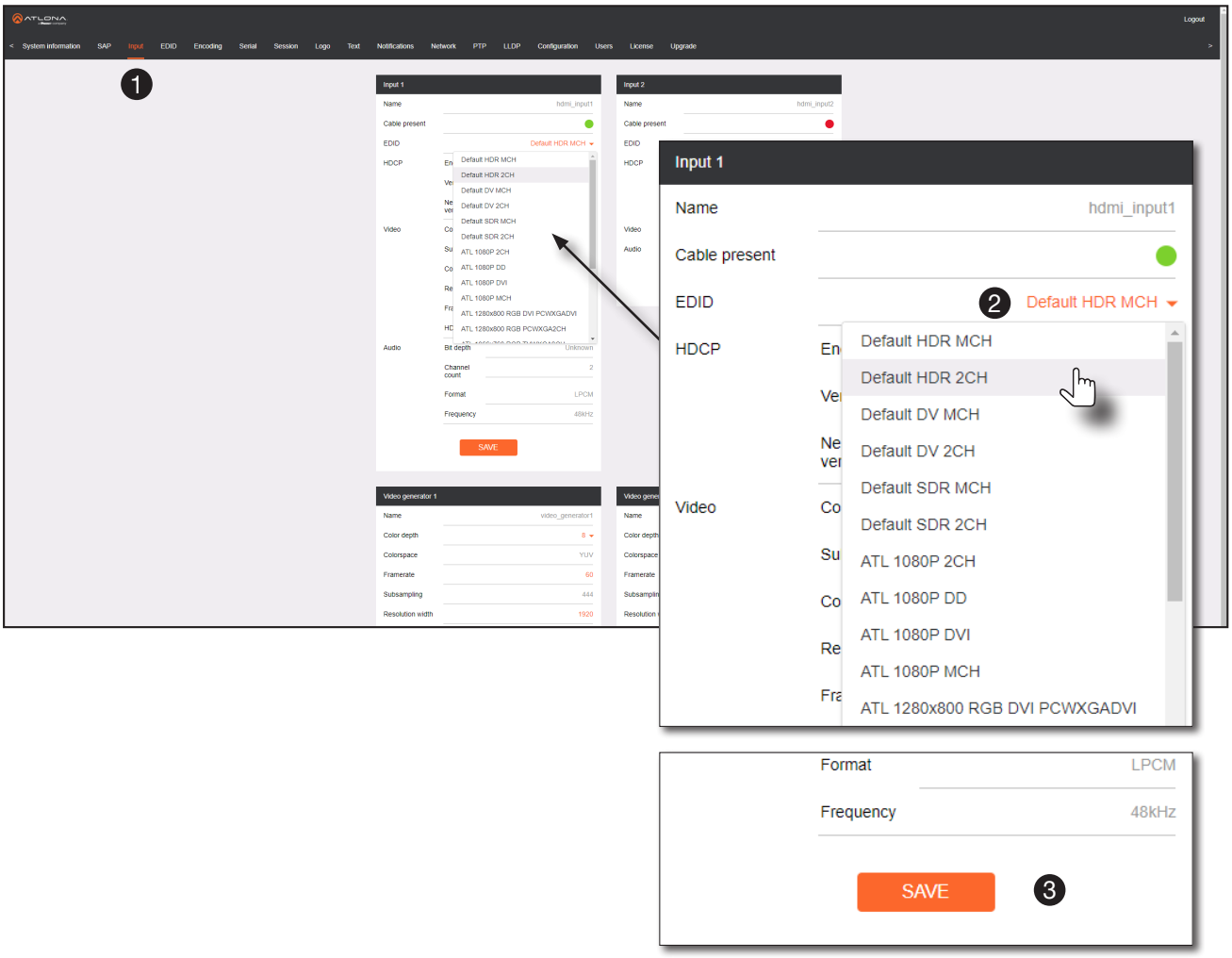
Device Operation

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

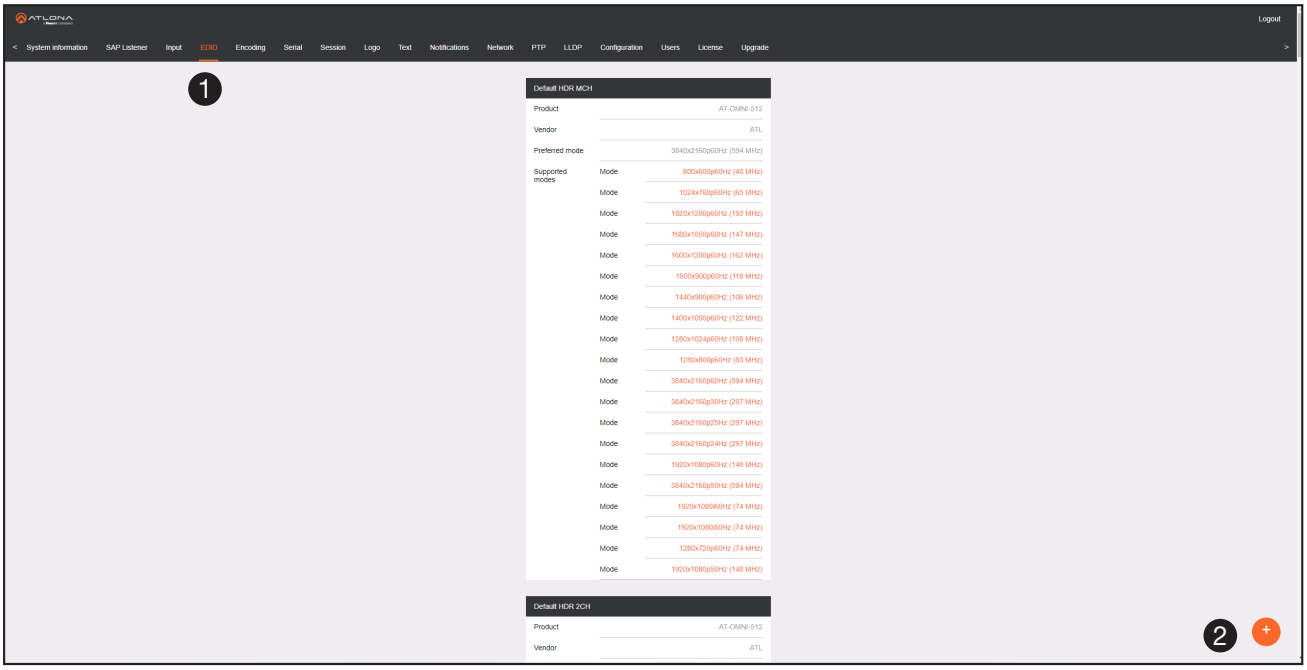
1. Login to the encoder and click **Input** in the menu bar.
2. Click the **EDID** drop-down list, within the desired **Input** window group, and select the EDID.
3. Click the **SAVE** button within the Input window group to commit changes.



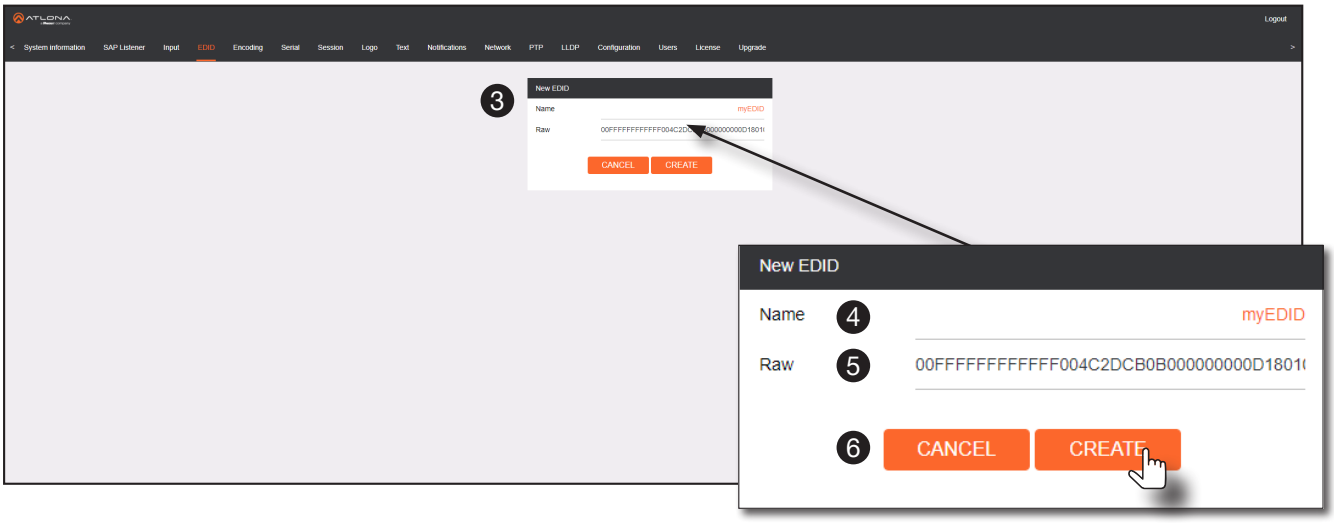
Adding a Custom EDID

Encoders can be loaded with a custom EDID. The raw EDID data must be in hexadecimal format. Commas or spaces are *not* permitted.

1. Login to the encoder and click the **EDID** menu.
2. Click the + icon in the lower-right corner of the screen.



3. The **New EDID** window group will be displayed.
4. Enter the name of the EDID in the **Name** field.
5. 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 must *not* be included.
6. Click the **CREATE** button to commit changes or click **CANCEL** to abort the addition of a custom EDID. Once a custom EDID is loaded, it will be added to the drop-down list and can be selected without re-entering the information.

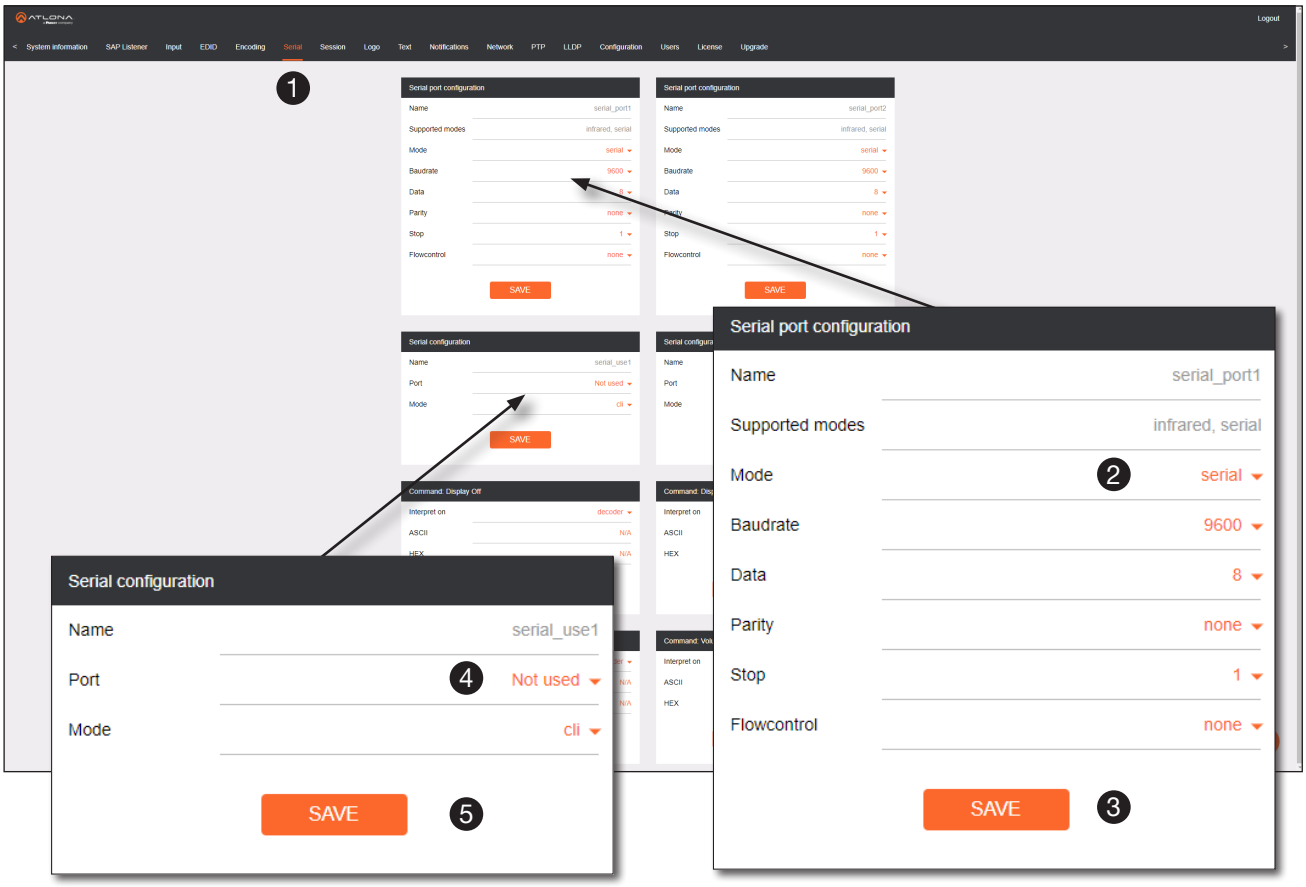


Device Control

Downstream Control using RS-232

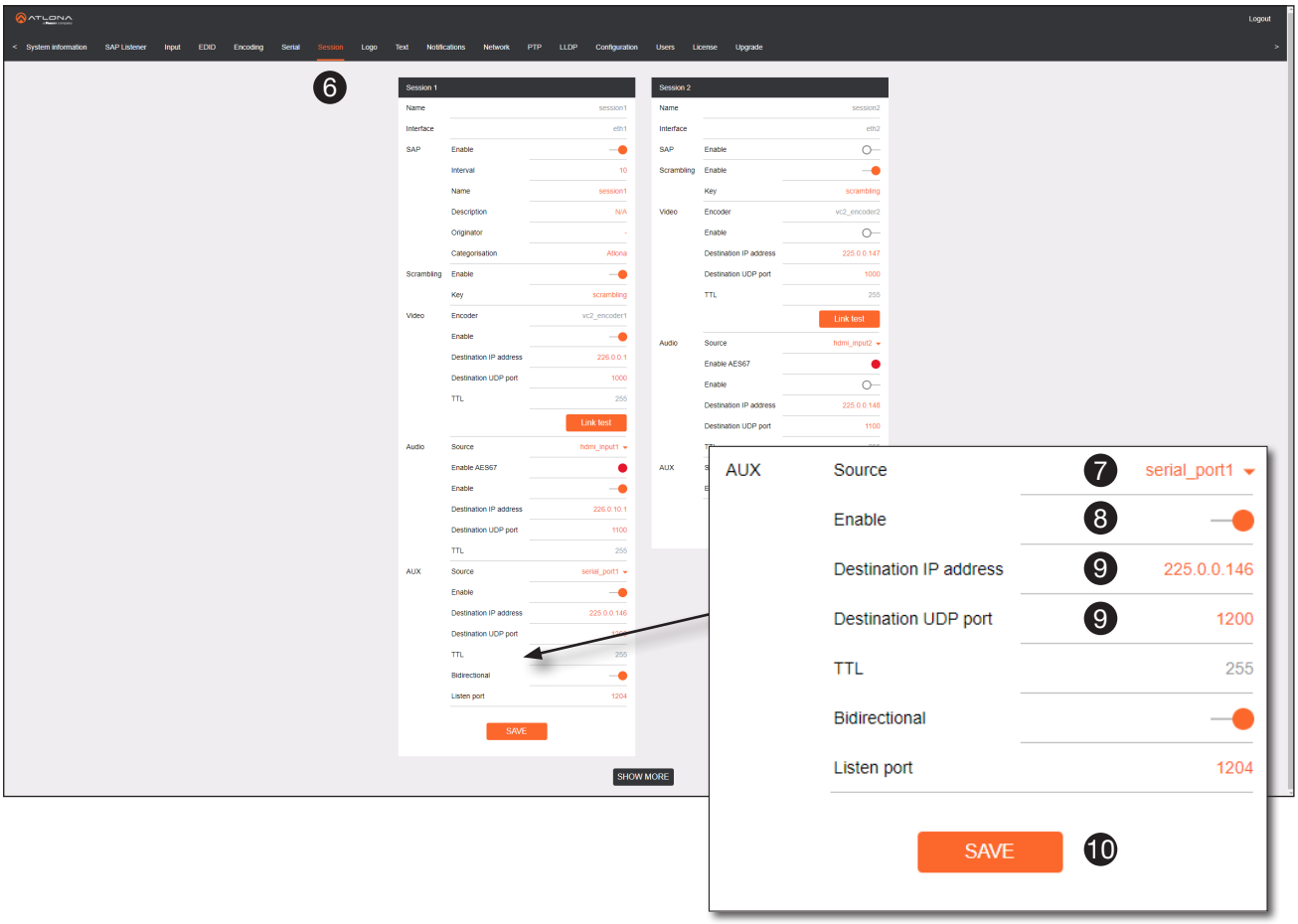
Control using RS-232 is converted and transmitted over IP by the encoder. Destination devices can either be the IP address of a display or a decoder.

1. Login to the encoder and click the **Serial** menu.
2. Under the **Serial Port Configuration** window group, click the **Mode** drop-down list and select `Serial`.
3. Click the **SAVE** button.



4. Under the **Serial configuration** window group, click the **Port** drop-down list and select `Not Used`.
5. Click the **SAVE** button.

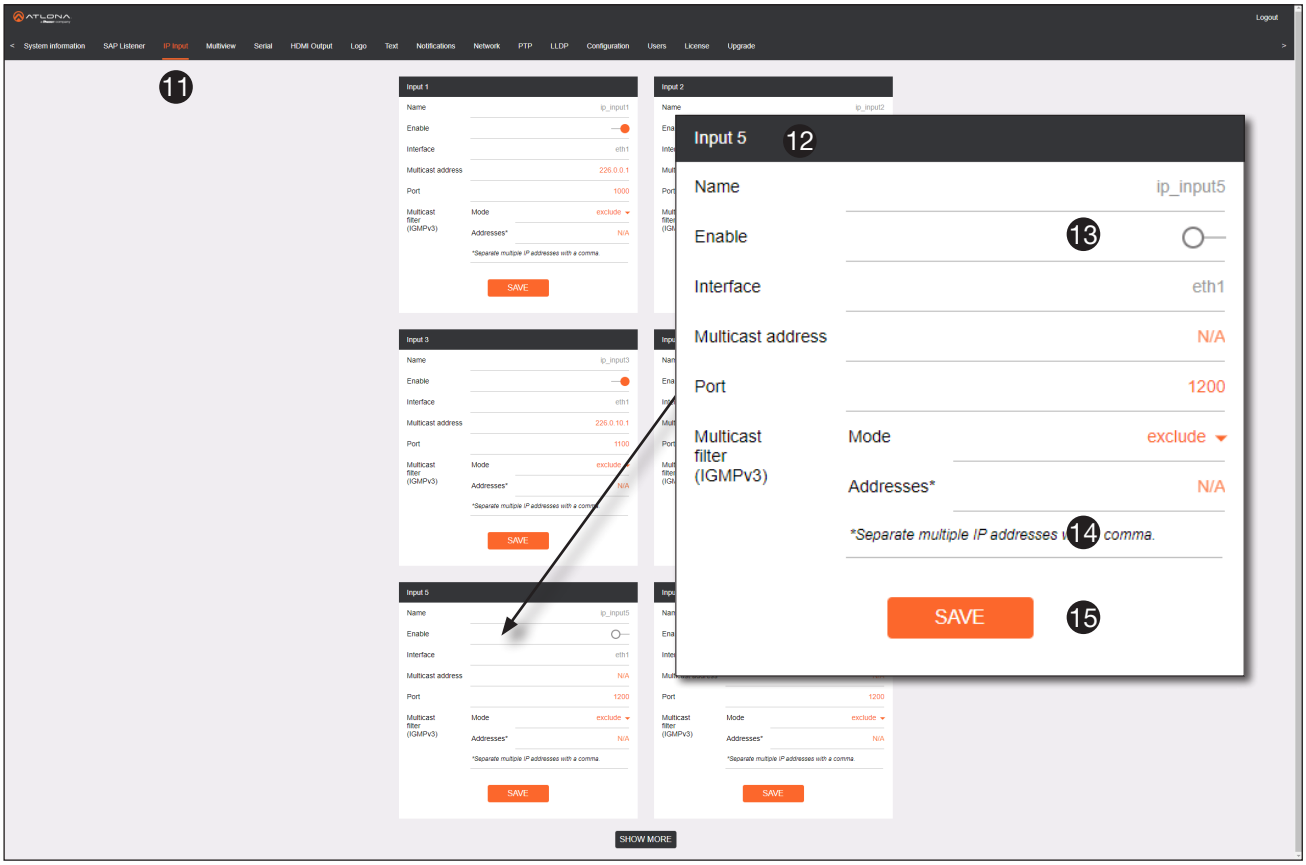
6. Click the **Session** menu.
7. Under the desired Session, locate the **AUX** section and click the **Source** drop-down list to select the desired serial port.
8. Click the **Enable** toggle switch to display the additional fields.
9. Enter the destination IP address and UDP port in the **Destination IP address** and **Destination UDP port** fields, respectively.



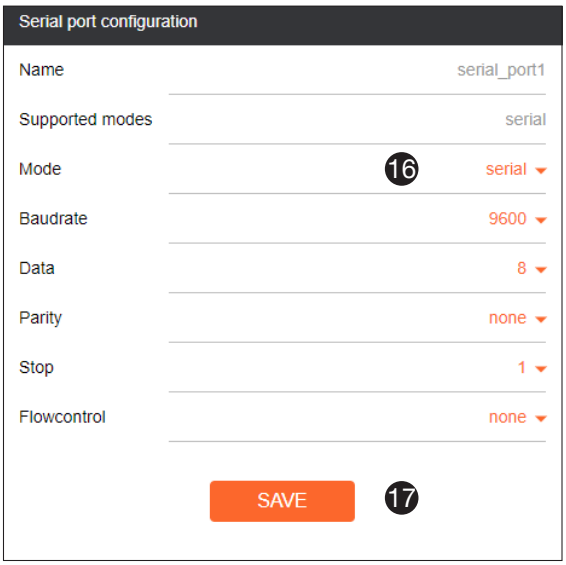
10. Click the **SAVE** button.

If the destination IP address and UDP port is for a decoder, follow Steps 11 through 20, beginning on the next page:

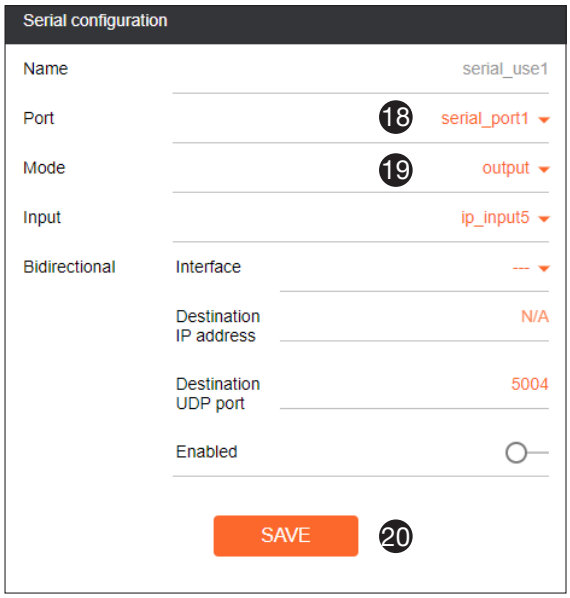
11. Login to the decoder and click the **IP Input** menu.
12. Locate an Input that does *not* contain a defined Multicast address field. In this example, **Input 5** will be used. Note that if a multicast address was used in Step 9, then that multicast address must be entered in the **Multicast address** field under **Input 5**.
13. Click the **Enable** toggle switch to enable the Input. When an Input is enabled, the toggle switch will be orange.
14. Enter the UDP port, from Step 9, in the **Port** field.



15. Click the **SAVE** button.
16. On the decoder, click the **Serial** menu, and under **Serial port configuration**, click the **Mode** drop-down list and select `serial`.
17. Click the **SAVE** button.



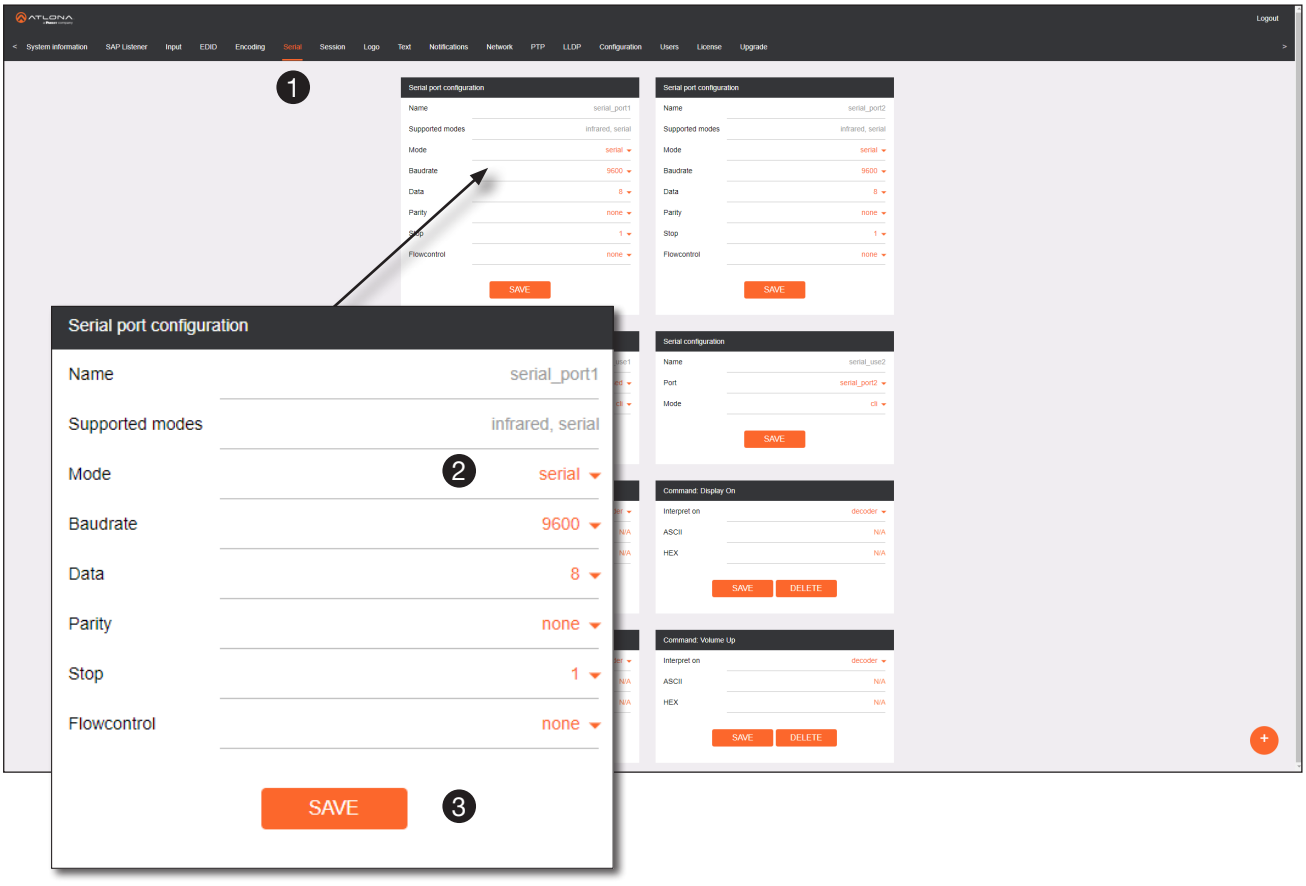
18. Under the **Serial configuration** window group, click the **Port** drop-down list and select the desired port.
19. Click the **Mode** drop-down list and select `output`.
20. Click **SAVE**.



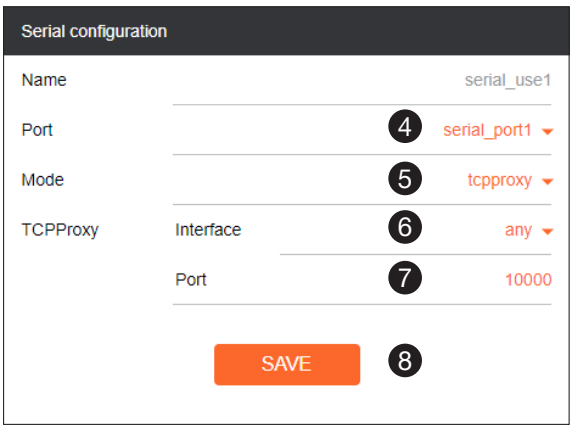
Control using TCP Proxy

TCP/IP traffic received by an encoder or decoder, on the defined IP:Port socket, are translated to RS-232, allowing both control of source or display. Control is achieved using a control system, where all control commands are stored.

1. Login to the encoder or decoder and click the **Serial** menu.
2. Under the **Serial Port Configuration** window group, for the desired serial port, click the **Mode** drop-down list and select `Serial`.
3. Click the **SAVE** button.



4. Under the **Serial Configuration** window group, click the **Port** drop-down list and select the desired serial port.
5. Click the **Mode** drop-down list and select `tcpproxy`.
6. Click the **TCPProxy** > **Interface** drop-down list and select the desired Ethernet interface.
7. Enter the listening port in the **TCPProxy** > **Port** field.
8. Click the **SAVE** button.

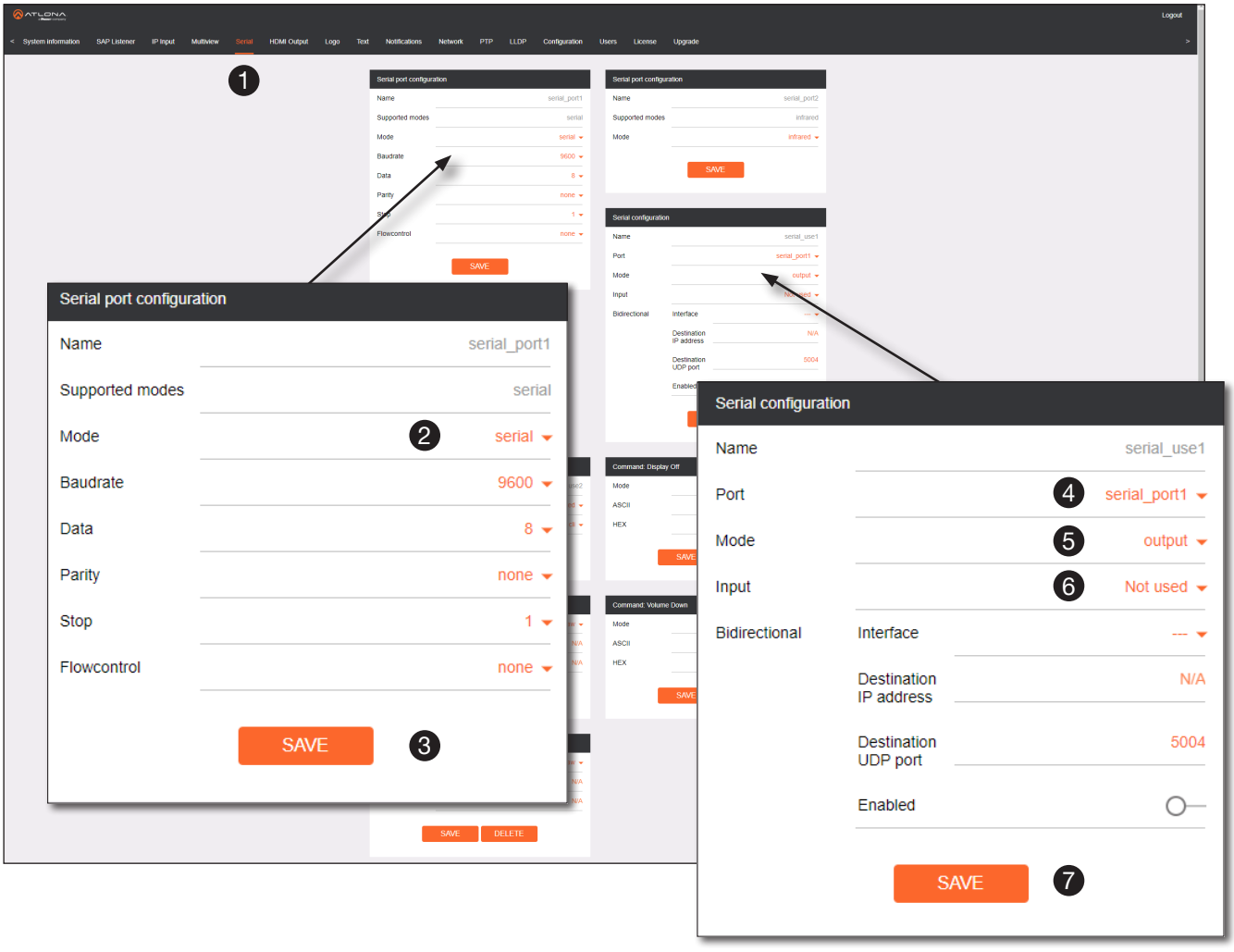


Downstream Control using Triggering

TCP/IP traffic received by an encoder or decoder, on the defined IP:Port socket, are translated to RS-232, allowing both control of source or display. Control is achieved using a control system, where all control commands are stored.

Option 1: Defining Commands on the Decoder

1. Login to the decoder and click the **Serial** menu.
2. Under the **Serial Port Configuration** window group, for the desired serial port, click the **Mode** drop-down list and select `Serial`.
3. Click the **SAVE** button.

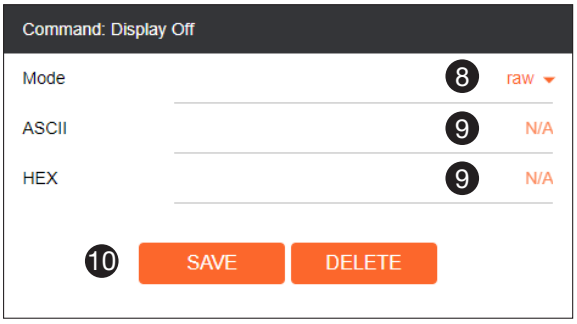


4. Under the **Serial Configuration** window group, click the **Port** drop-down list and select the desired serial port.
5. Click the **Mode** drop-down list and select `output`.
6. Click the **Input** drop-down list and select `not used`.
7. Click the **SAVE** button.

8. For each of the available commands, click the **Mode** drop-down list and select `raw`.

   The available commands are: **Display On**, **Display Off**, **Volume Up**, and **Volume Down**.

9. Enter the command data in either ASCII or hexadecimal format using the **ASCII** or **HEX** fields.
10. Click the **SAVE** button.



11. Open a Telnet/SSH session with the decoder and trigger display control using the following command:

    `TrigRS232X Y`

    where `X` is the number of the serial port: `1`, `2`
    where `Y` is the command: `on`, `off`, `vol+`, or `vol-`.

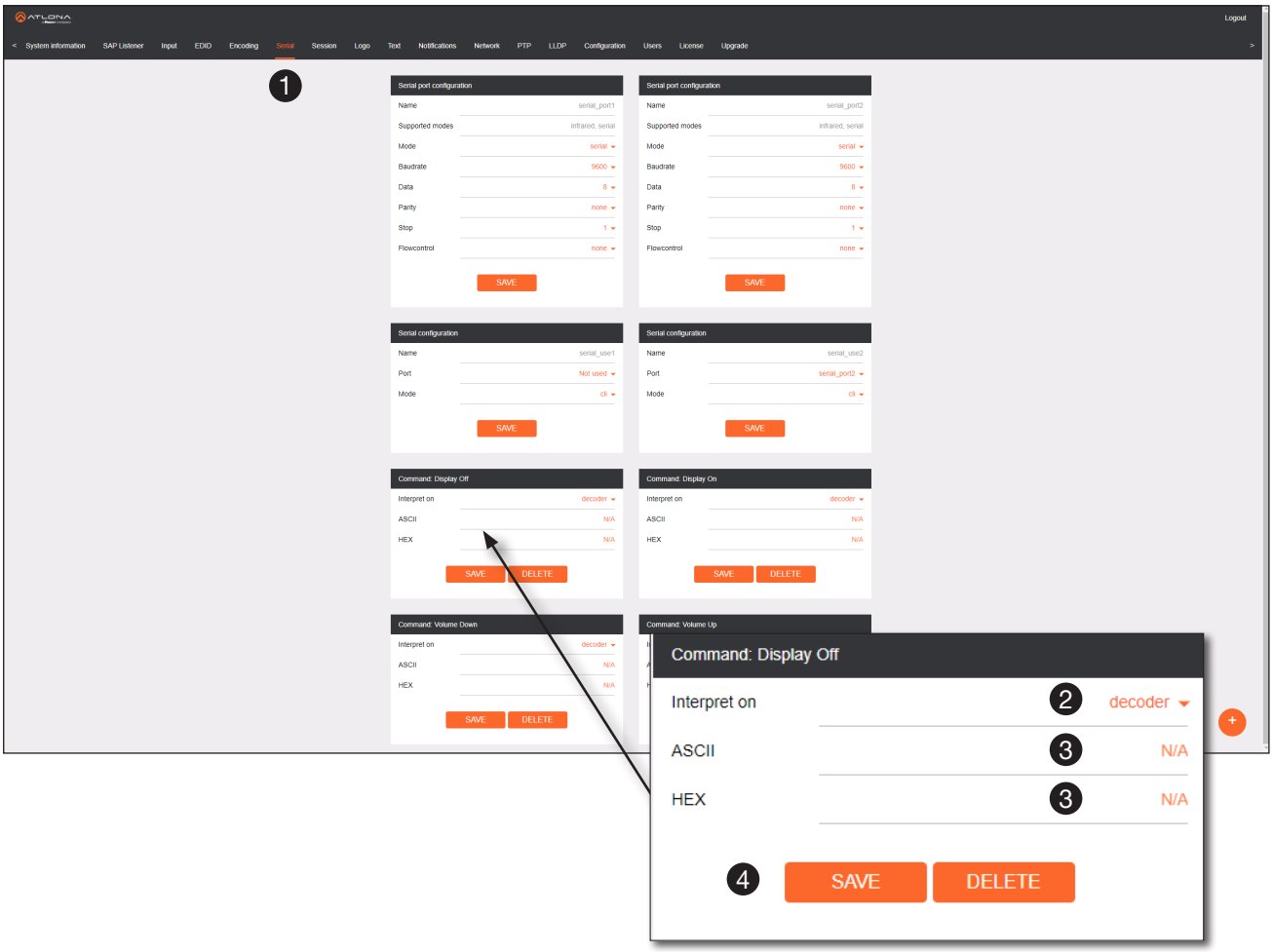
Option 2: Defining Commands on the Encoder

1. Login to the encoder and click the **Serial** menu.
2. For each of the available commands, click the **Interpret on** drop-down list and select `decoder`.

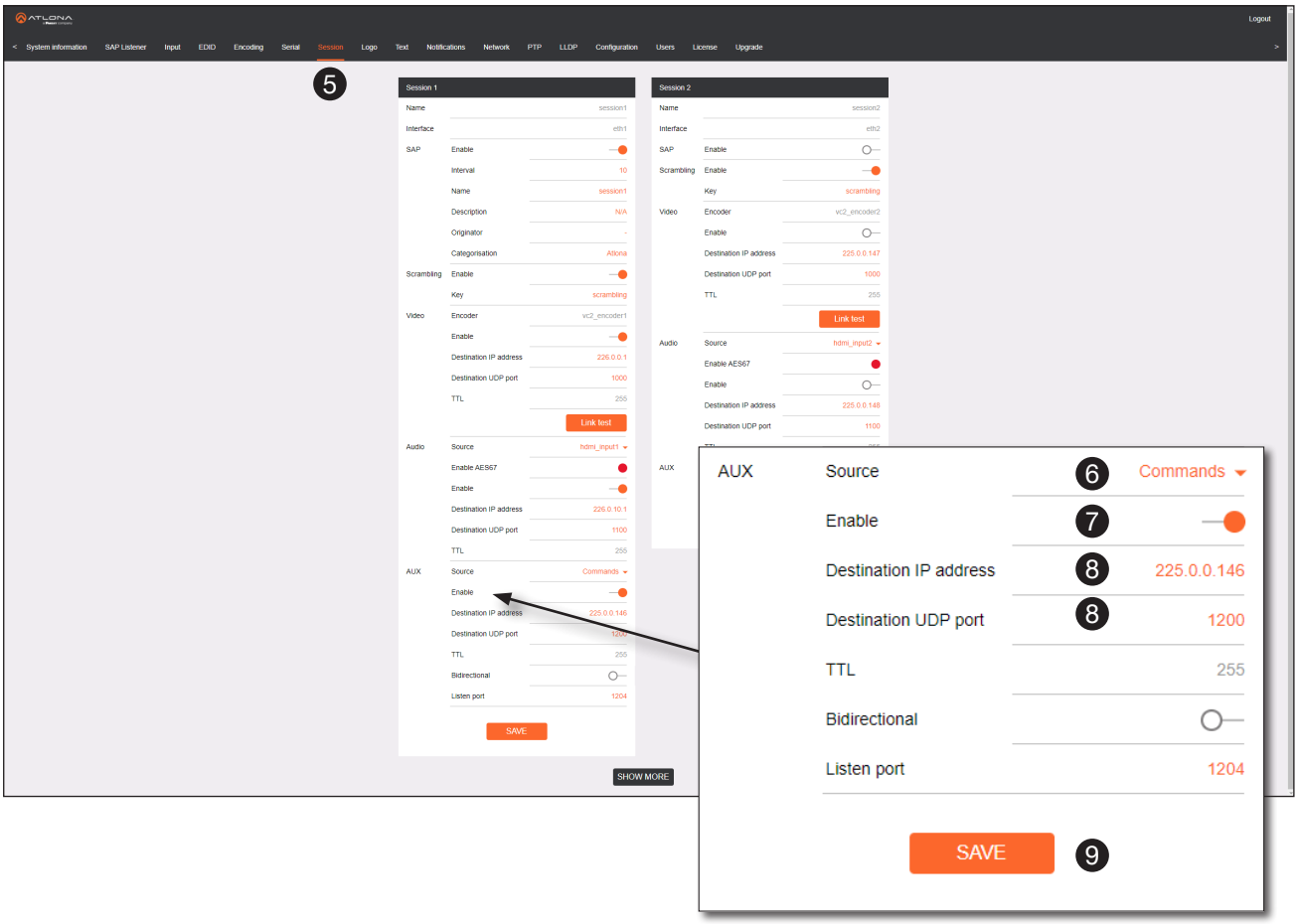
   The available commands are: **Display On**, **Display Off**, **Volume Up**, and **Volume Down**.

> **NOTE:** Setting the **Interpret on** drop-down list to `encoder` implies that commands are defined/stored on the encoder. If set to `decoder`, commands are defined/stored on the decoder.

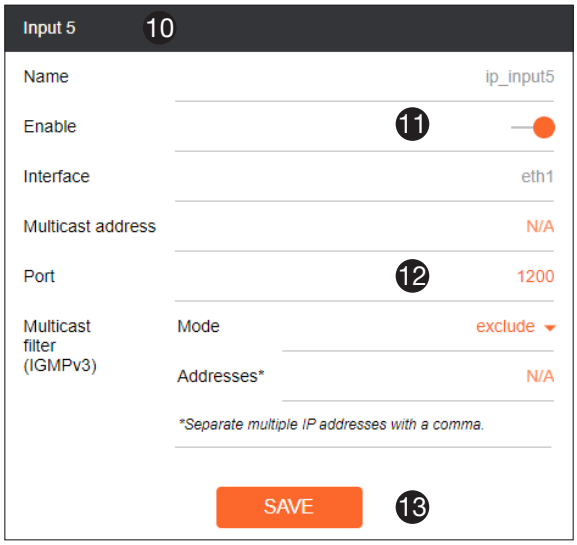
3. Enter the command data in either ASCII or hexadecimal format using the **ASCII** or **HEX** fields.
4. Click the **SAVE** button.



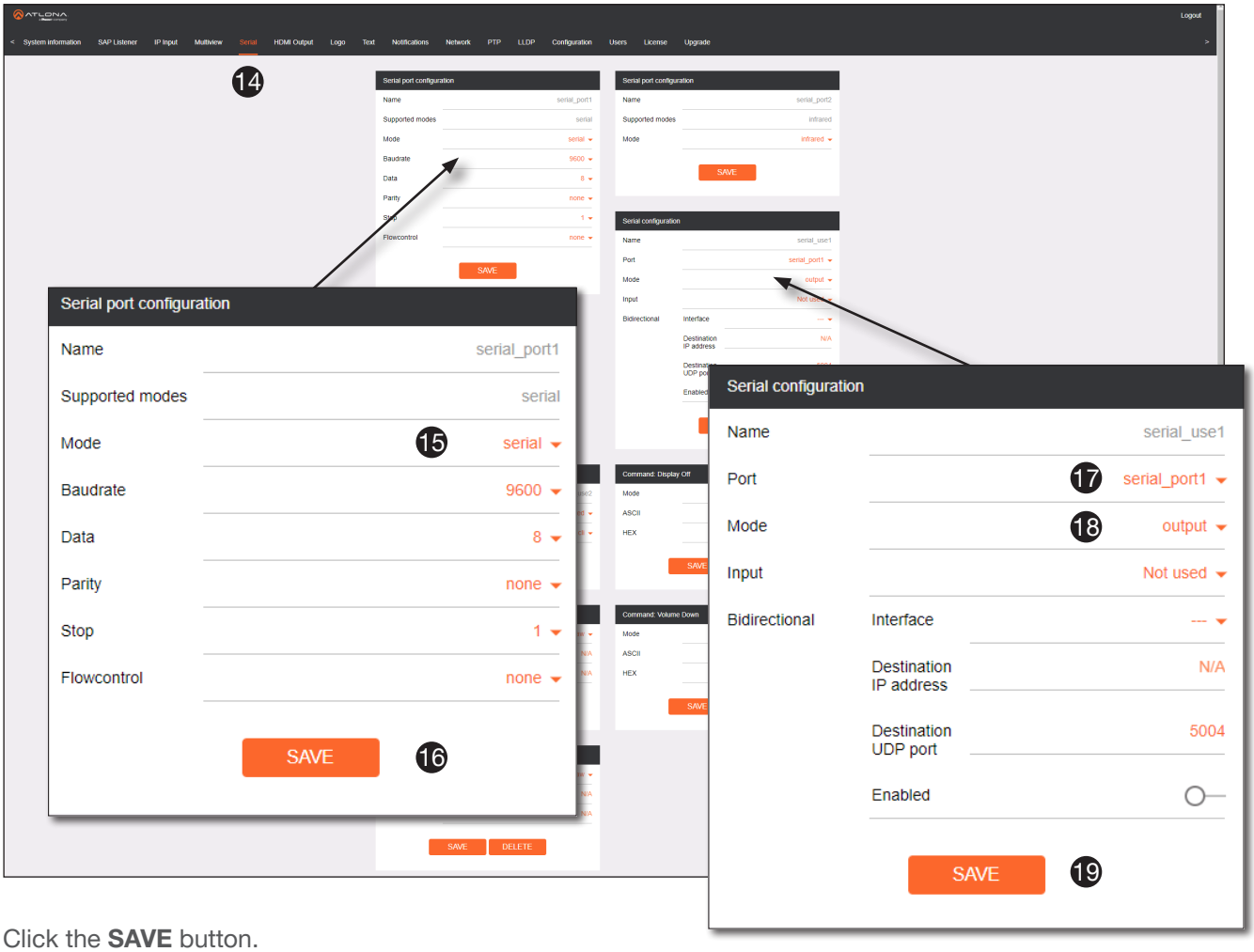
5. Click the **Session** menu.
6. Under the desired Session, locate the **AUX** section, click the **Source** drop-down list, and select `Commands`.
7. Click the **Enable** toggle switch to display the additional fields.
8. Enter the destination IP address and UDP port, of the decoder, in the **Destination IP address** and **Destination UDP port** fields, respectively. A multicast address can also be entered in the **Destination IP address** field.
9. Click the **SAVE** button.



10. Login to the decoder, click the **IP Input** menu, then locate an Input that does *not* contain a defined Multicast address field. In this example, **Input 5** will be used. Note that if a multicast address was used in Step 8, then that multicast address must be entered in the **Multicast address** field under **Input 5**.
11. Click the **Enable** toggle switch to enable the Input. When an Input is enabled, the toggle switch will be orange.
12. Enter the UDP port, from Step 8, in the **Port** field.
13. Click the **SAVE** button.



14. Click the **Serial** menu.
15. Under **Serial port configuration**, set the **Mode** drop-down list to `serial`.
16. Click the **SAVE** button.
17. Under **Serial configuration**, select the desired port.
18. Click the **Mode** drop-down list and select `output`.



19. Click the **SAVE** button.
20. Open a Telnet/SSH session with the encoder and trigger display control using any of the following commands:
    `InputBtn X`

    where `X` is the number of the input: `1`, `2`, or `tog`.

    `DisplayBtnX Y`

    where `X` is the number of the HDMI input: `1`, `2`.
    where `Y` is the command: `on`, `off`, or `toggle`.

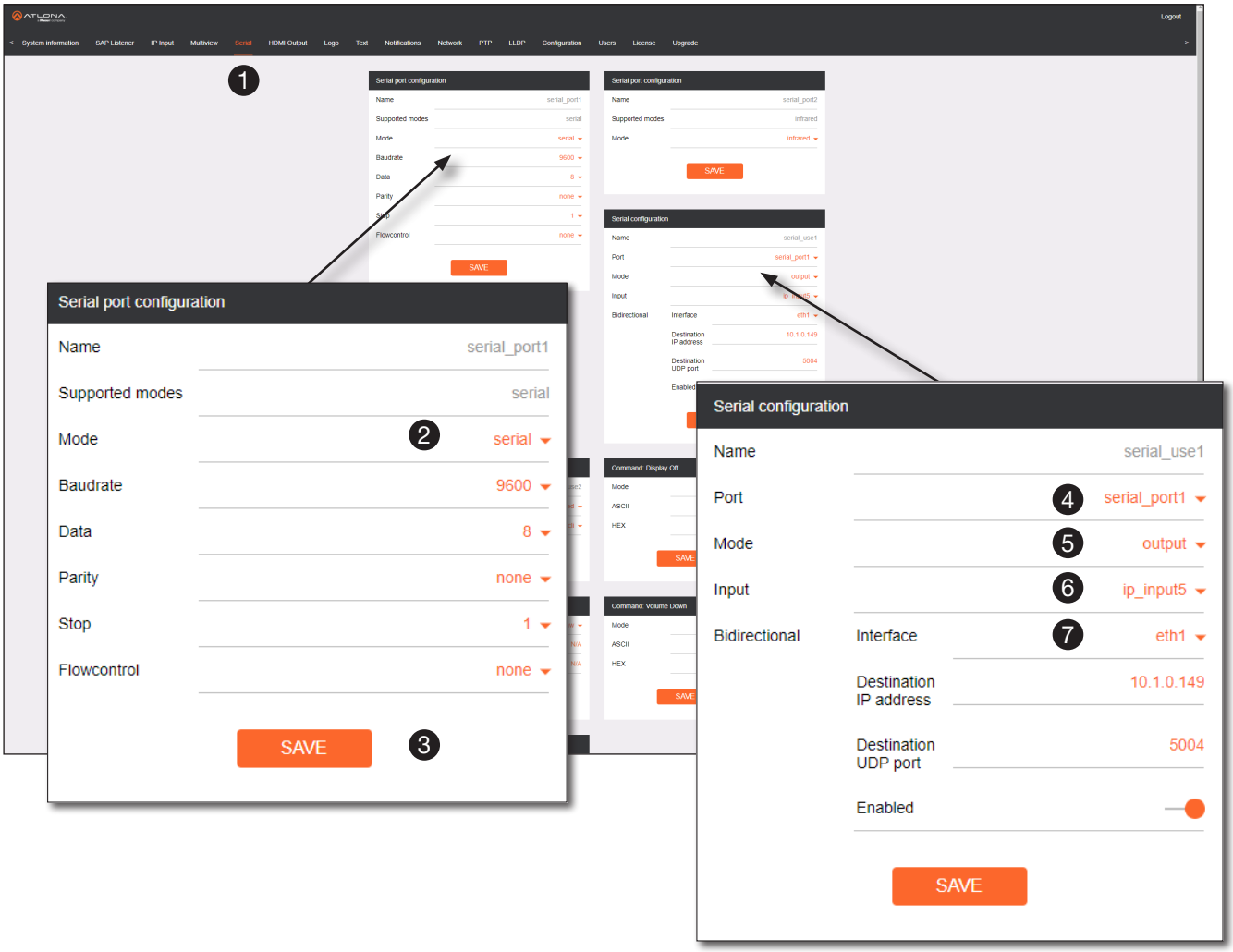
    `VolumeBtn X`

    where `X` is the volume-up or volume-down command.

Upstream Control using RS-232

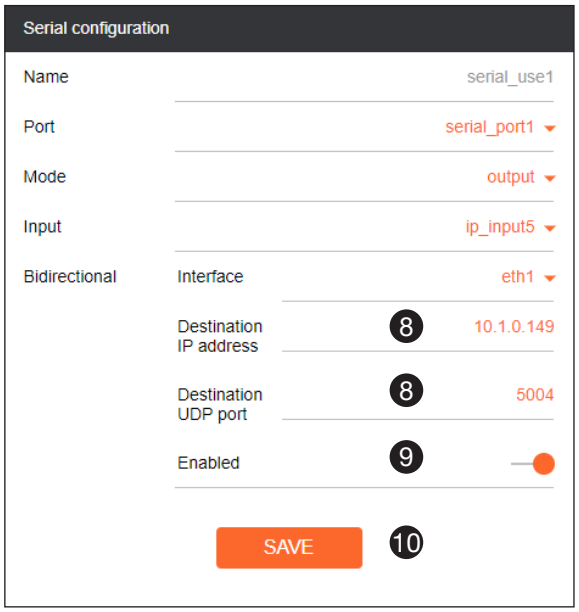
The serial interface provides RS-232 control of both downstream and upstream devices. Source control is provided by enabling bidirectional communication.

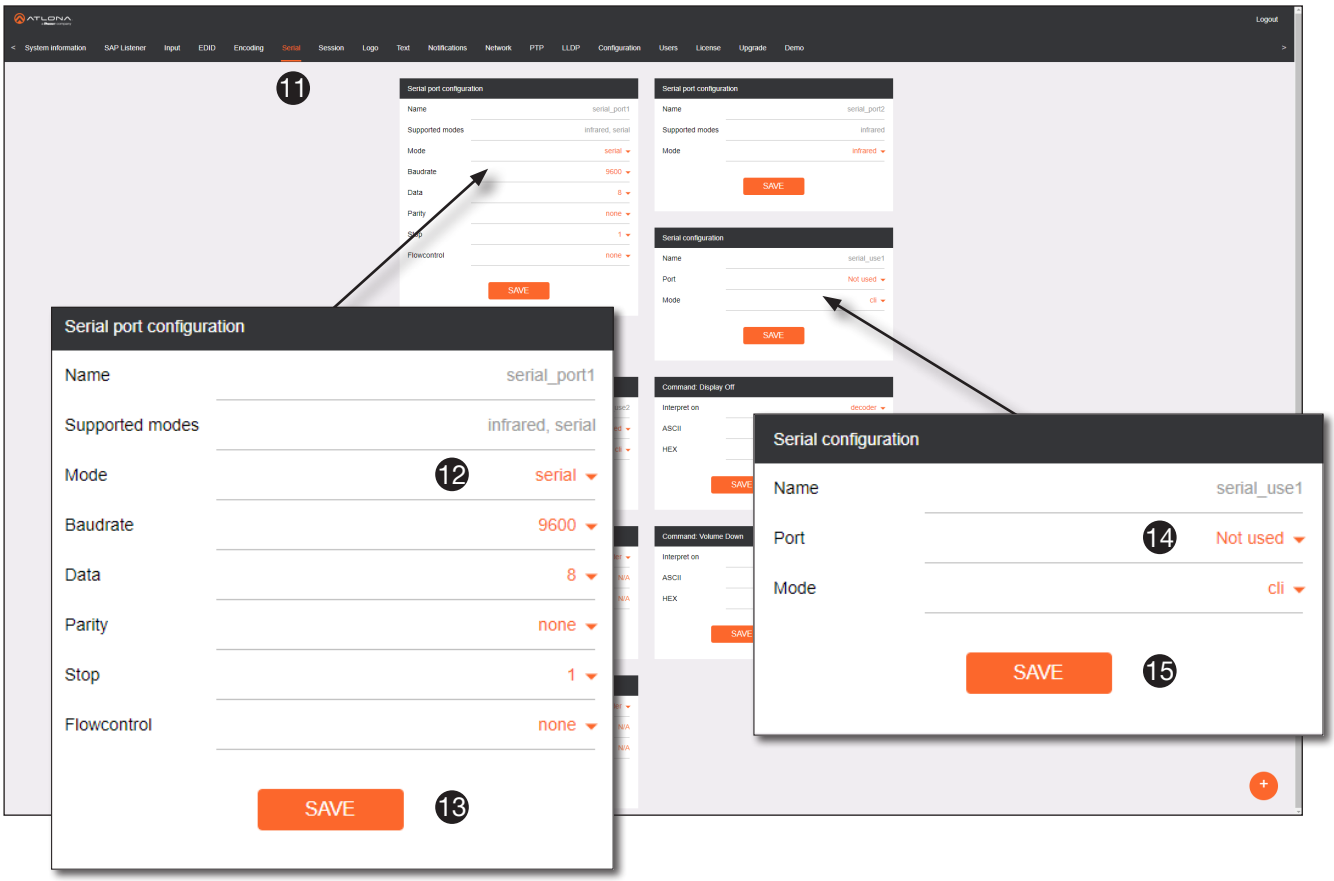
1. Login to the decoder and click the **Serial** menu.
2. Under the **Serial Port Configuration** window group, click the **Mode** drop-down list and select `Serial`.
3. Click the **SAVE** button.



4. Under the **Serial configuration** window group, click the **Port** drop-down list and select the desired serial port.
5. Click the **Mode** drop-down list and select `output`.
6. Click the **Input** drop-down list and select the input.
7. Click the **Bidirectional** > **Interface** drop-down list and select the interface.

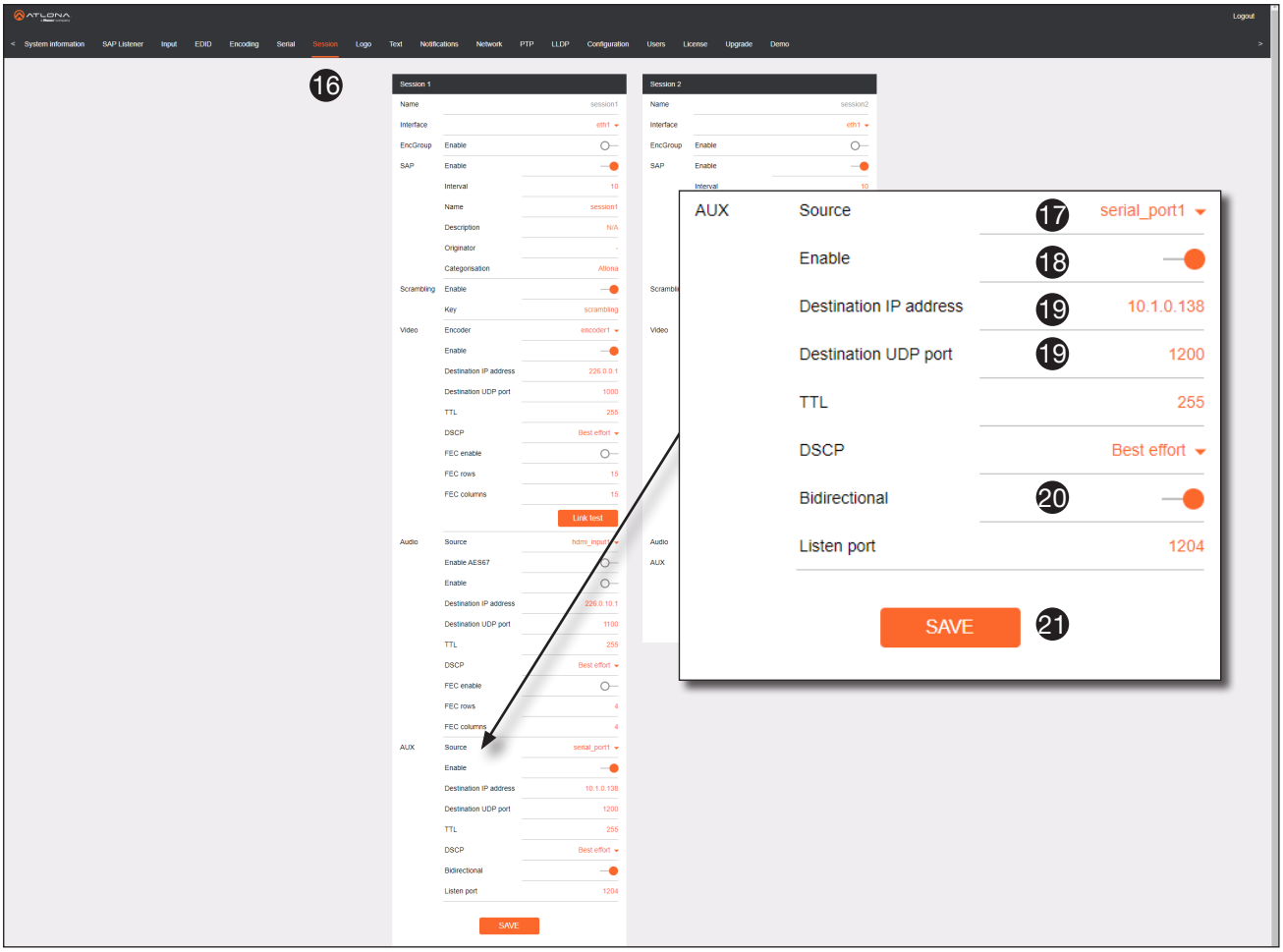
8. Enter the destination IP address (the IP address of the encoder) and UDP port in the **Bidirectional** > **Destination IP address** and **Bidirectional** > **Destination UDP port** field, respectively.
9. Click the **Bidirectional** > **Enabled** toggle switch to the enabled position. When enabled, the toggle switch will be orange.
10. Click the **SAVE** button.
11. Login to the encoder and click the **Serial** menu.
12. Under the **Serial Port Configuration** window group, click the **Mode** drop-down list and select `Serial`.
13. Click the **SAVE** button.
14. Under the **Serial configuration** window group, click the **Port** drop-down list and select `not used`.
15. Click the **SAVE** button.





16. Click the **Session** menu.
17. Under the desired Session, locate the **AUX** section and click the **Source** drop-down list to select the desired serial port.
18. Click the **Enable** toggle switch to display the additional fields.
19. Enter the destination IP address and UDP port in the **Destination IP address** and **Destination UDP port** fields, respectively.

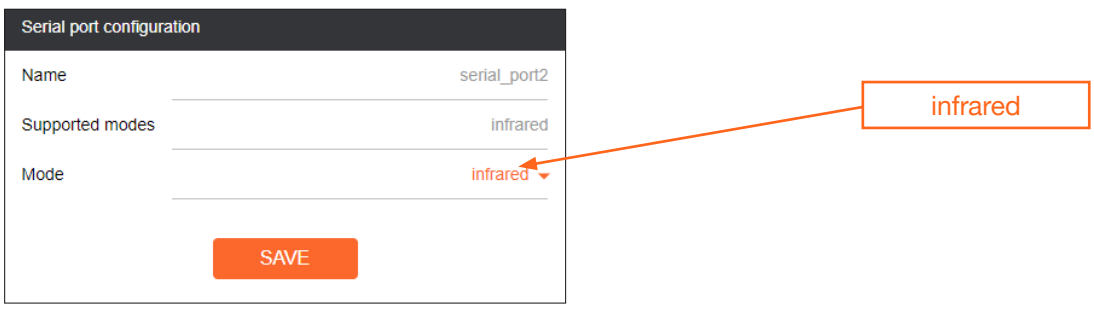
20. Click the **AUX** > **Bidirectional toggle** switch to enable it. When enabled, the toggle switch will be orange.
21. Click the **SAVE** button.



Upstream Control using IR

To control of headend source from downstream, refer to the Upstream Control using RS-232 (page 47) instructions. Once configured, make sure that the serial port is configured for infrared, as shown.

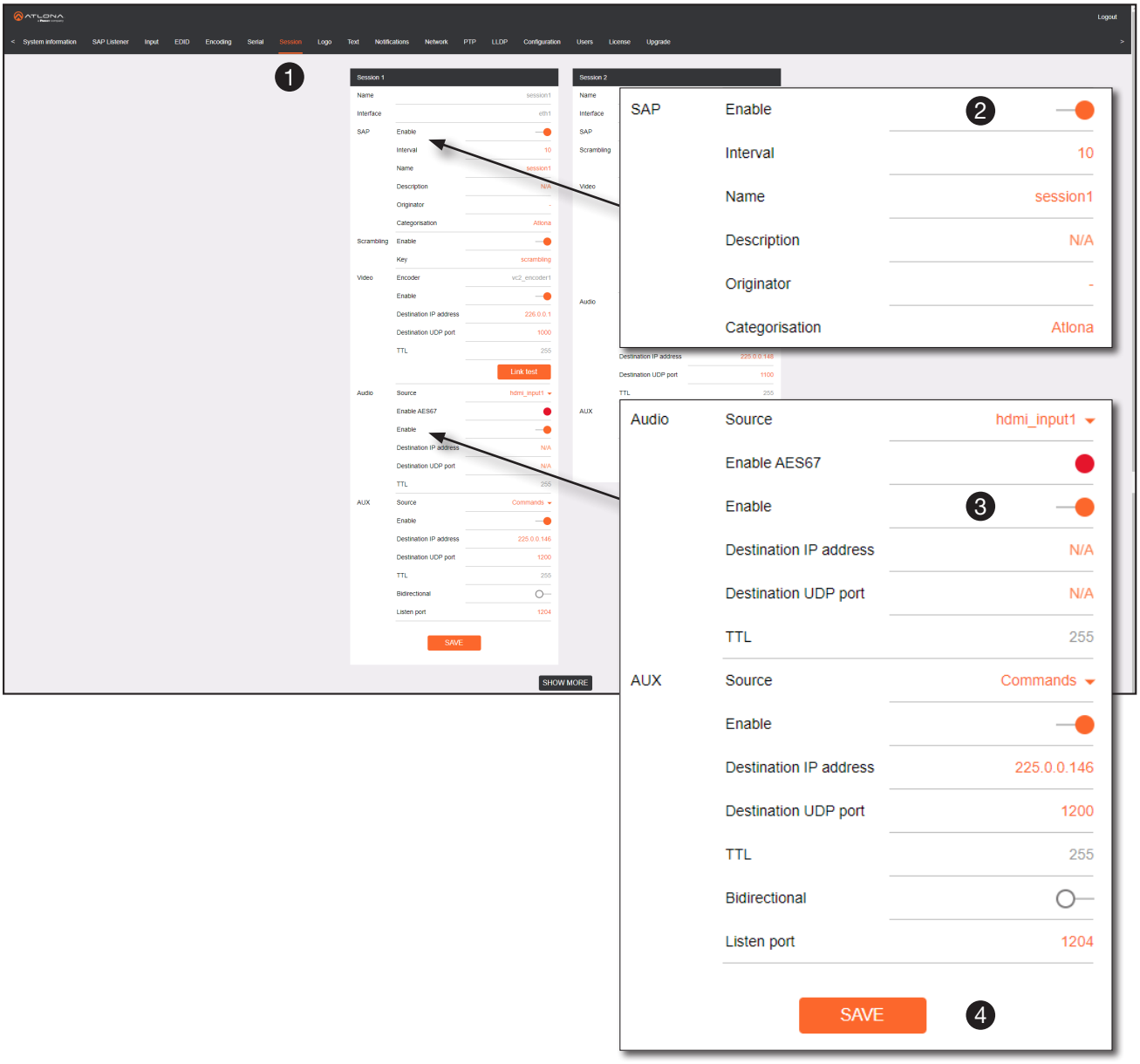
IMPORTANT: Depending on the hardware, IR *may* also be supported on **RS-232** port 1. Verify the OmniStream hardware version to determine its capabilities. For decoders, IR is *only* suppored on **RS-232** port 2.



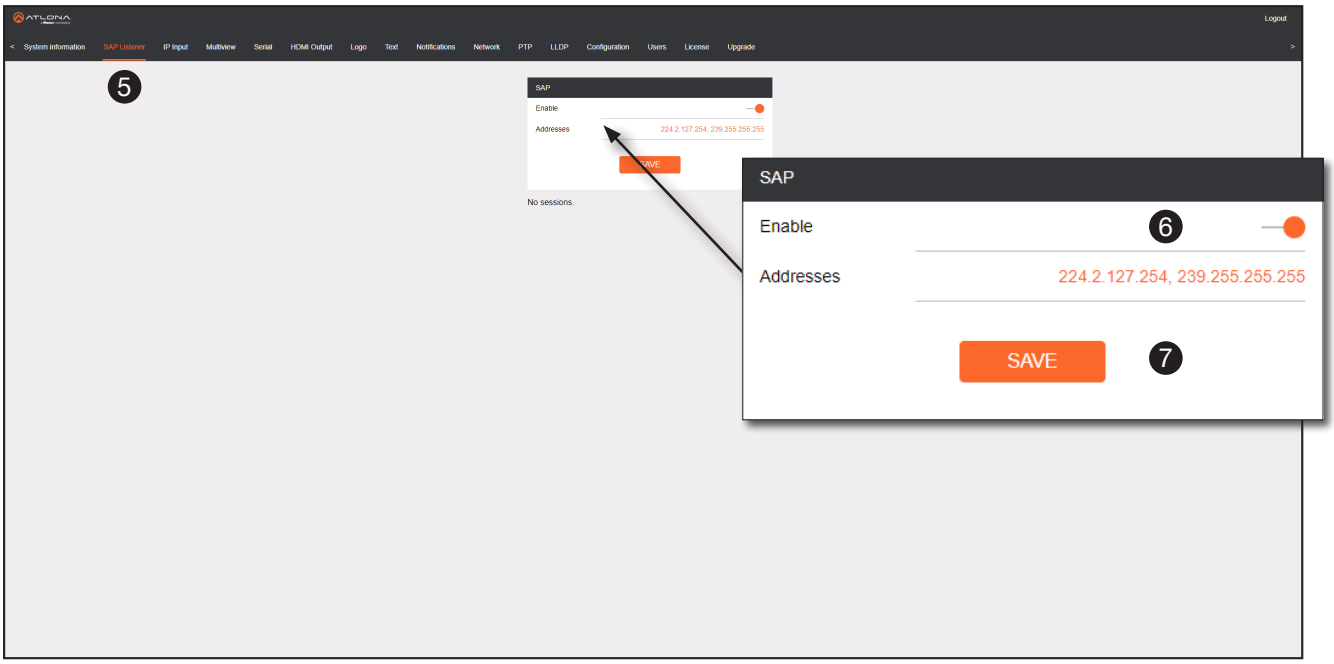
AES67 Audio

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 bitstream/ compressed audio formats, such as Dolby® Digital, and others. Source audio must be transmitted as LPCM up to eight channels at 192 kHz / 24-bit.

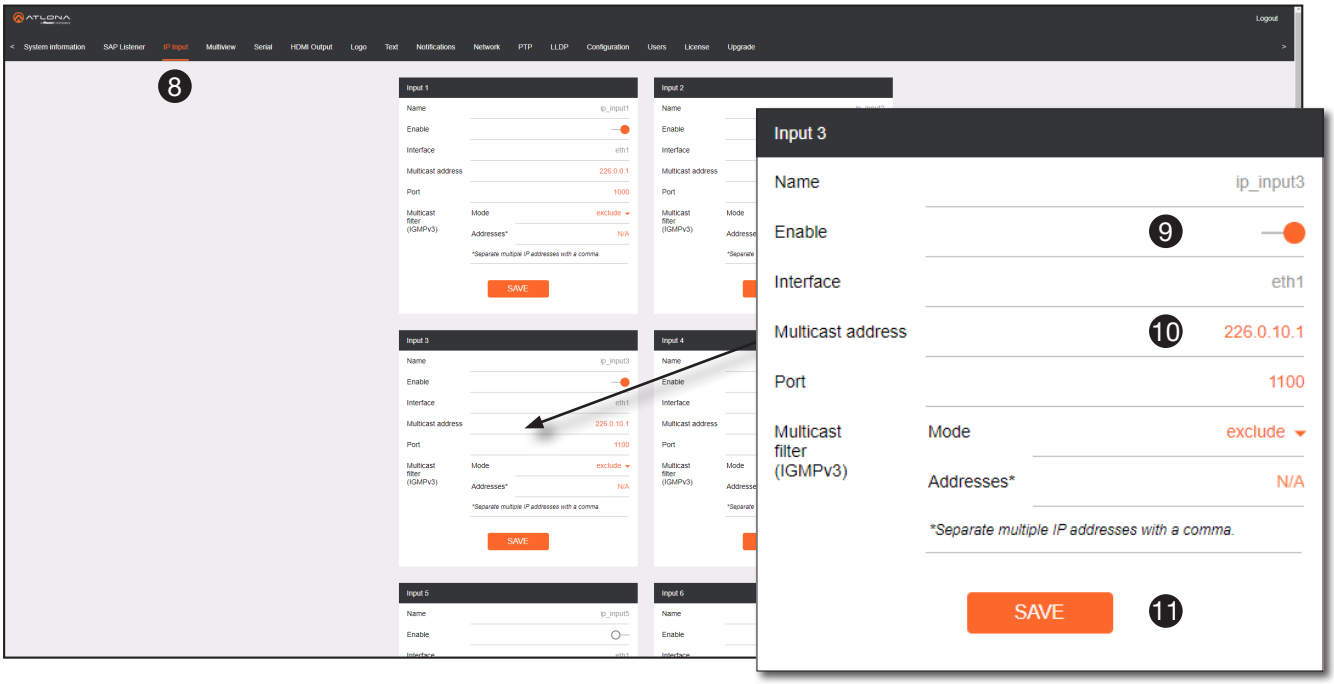
1. Login to the encoder and click **Session** in the menu bar.
2. Click the **SAP** > **Enable** toggle switch to enable SAP. When enabled, the toggle switch will be orange.
3. Locate the **Audio** section and click the **Enable AES67** toggle switch to enable this feature. When enabled, the toggle switch will be orange.
4. Click the **SAVE** button to commit changes.



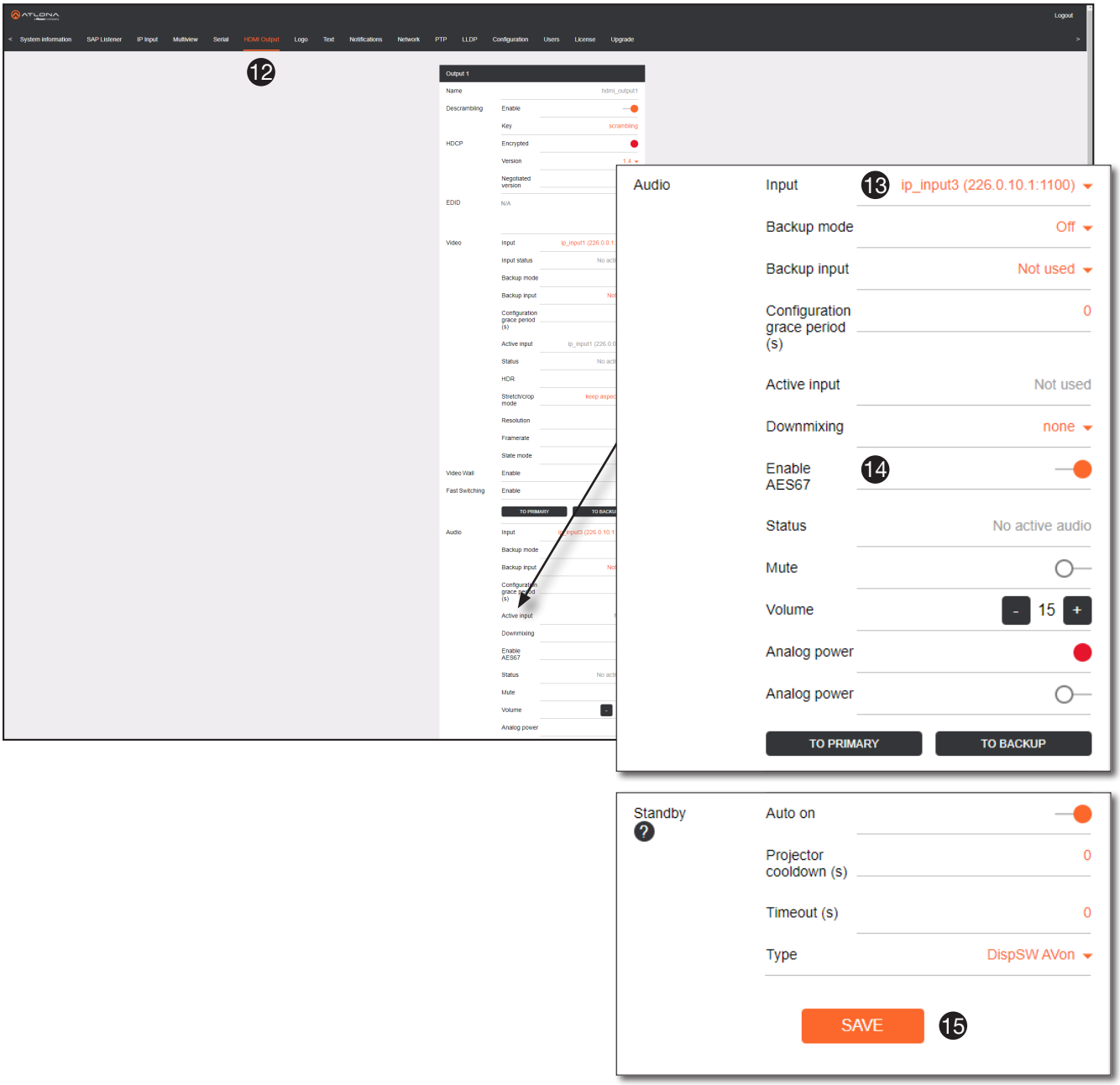
5. Go to the decoder and click the **SAP Listener** menu.
6. Click the **Enable** toggle switch to enable the SAP listener. When enabled, the toggle switch will be orange.
7. Click the **SAP** button.



8. Click the **IP Input** menu.
9. Select the desired IP input for AES67 audio and click the **Enable** toggle switch. When enabled, the toggle switch will be orange. In the example below, **Input 3** is used.
10. Enter the address in the **Multicast address** field.
11. Click the **SAP** button.



12. Click the **HDMI Output** menu.
13. Locate the **Audio** section, click the **Audio** > **Input** drop-down list, and select the input that was configured in Steps 10 and 11.
14. Click the **Enable AES67** toggle switch to enable it. When enabled, the toggle switch will be orange.
15. Click the **SAVE** button.



Scrambling

OmniStream supports 128-bit Advanced Encryption Standard (AES) scrambling and is required for HDCP-encrypted streams. Scrambling can be enabled or disabled through the web server, and can be applied to individual sessions. In order for scrambling to function properly, it must be enabled on both the encoder session and all decoders subscribed to a stream that is a part of a scrambled session. The scrambling key on both encoder and subscribed decoder(s) must be identical. When enabled, the default scrambling key is “scrambling”.

1. Login to the encoder.
2. Click **Session** in the menu bar.
3. Locate the **Scrambling** section under the desired **Session** window group.
4. Click the **Enable** toggle switch to enable scrambling. Once enabled, the toggle switch will be orange.
5. Enter the desired scrambling key in the **Key** field.
6. Click the **SAVE** button at the bottom of the **Session** window group to commit the changes.

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.

Slate / Logo Insertion

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 the encoder.
2. Click **Logo** in the menu bar.
3. Under the **New logo** window group, enter the name of the logo in the **Name** field.
4. Click the **Choose File** button and select the desired image. Only `.png` or `.svg` files are valid selections.
5. Click the **UPLOAD** button to upload the file.
6. A new window group will be created with the name of the logo that was provided in Step 3.
7. Perform one of the following:
   - If the selected image will be used as a *logo*, then proceed with Steps 8 through 13.
   - If the image will be used as a *slate*, skip to Step 14 on the next page.
8. Under the **Logo Insertion** 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.
9. 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 the defined size.
10. Enter the horizontal and vertical position of the logo, based on the resolution of the video stream, in the **Horizontal** and **Vertical** fields, respectively.
11. Enter the width and height of the logo, based on the resolution of the video stream, in the **Width** and **Height** fields, respectively.
12. Click the **Enable** toggle switch to activate the logo/slate feature. When enabled, this toggle switch will be orange.
13. Click the **SAVE** button to commit changes.

14. Click **Encoding** in the menu bar.
15. Click the **Slate mode** drop-down list, and select `Off`, `Manual`, or `Auto`.

Slate 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. 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

1. Click **Encoding** in the menu bar.
2. Under the **Encoder** window group(s), click the Slate mode drop-down list and select `Off`.
3. Click the **SAVE** button at the bottom of the window group to commit changes.
4. Click **Logo** in the menu bar.
5. Click the **DELETE** button for the logo to be removed.

Deleting Logos

1. Click **Logo** in the menu bar.
2. Under the **Logo Insertion** window group(s), click Enable button (if enabled) to disable the feature.
3. Click the **SAVE** button at the bottom of the window group to commit changes.
4. Click the **DELETE** button for the logo to be removed.

Text Insertion

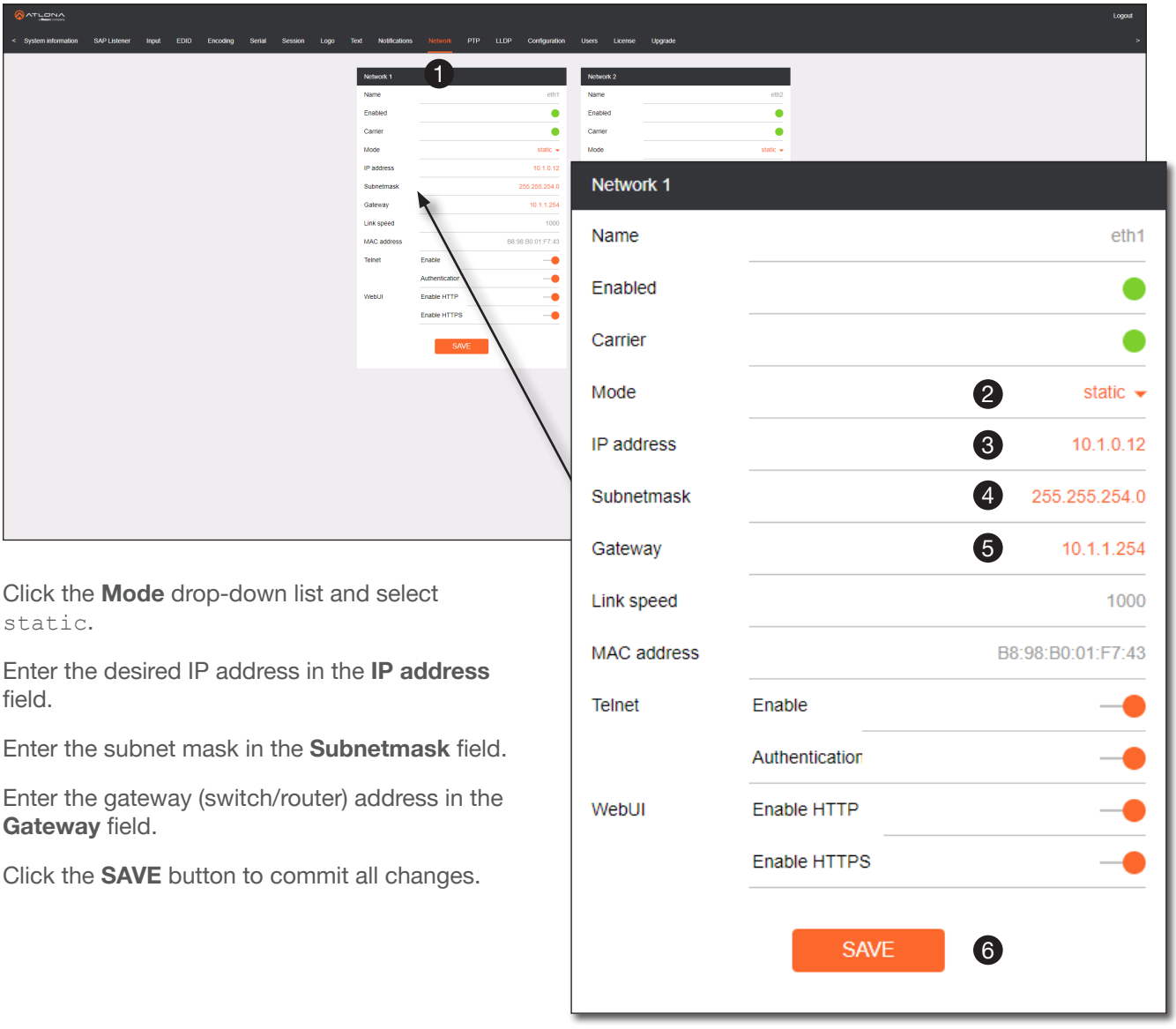
Text can be inserted and scrolled across the screen, making it useful for messages and notifications. Several options are available when using text: Scroll speed adjustment (forward, reverse, or static), number of iterations, text color, vertical / horizontal position, as well as transparency.

1. Login to the encoder.
2. Click **Text** in the menu bar.
3. Under the **Text Insertion** window group, click the **Enable** toggle switch. When enabled, this toggle switch will be orange.
4. In the **Text** field, enter the desired text.
5. Specify the speed of the scrolling text in the **Scroll Speed** field. Integer 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. A value of `0` will not scroll.
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 video stream.
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 video stream.
10. Click the **SAVE** button to commit all changes.

Configuring a Static IP Address

There will be situations where it is desirable for the encoder to be assigned a static IP address. Some IT environments prefer this method, as opposed to having a DHCP server dynamically assign IP addresses. If the encoder is unable to detect a DHCP server within 15 seconds, then Automatic Private IP Addressing (APIPA) will be used to assign the encoder an address within the IPv4 address block `169.254.xxx.xxx/16`. If this occurs, connect an Ethernet cable directly from the **ETHERNET** port of the encoder to the LAN port of a computer, then follow the instructions below.

1. Login to the web server and click **Network** in the menu bar.



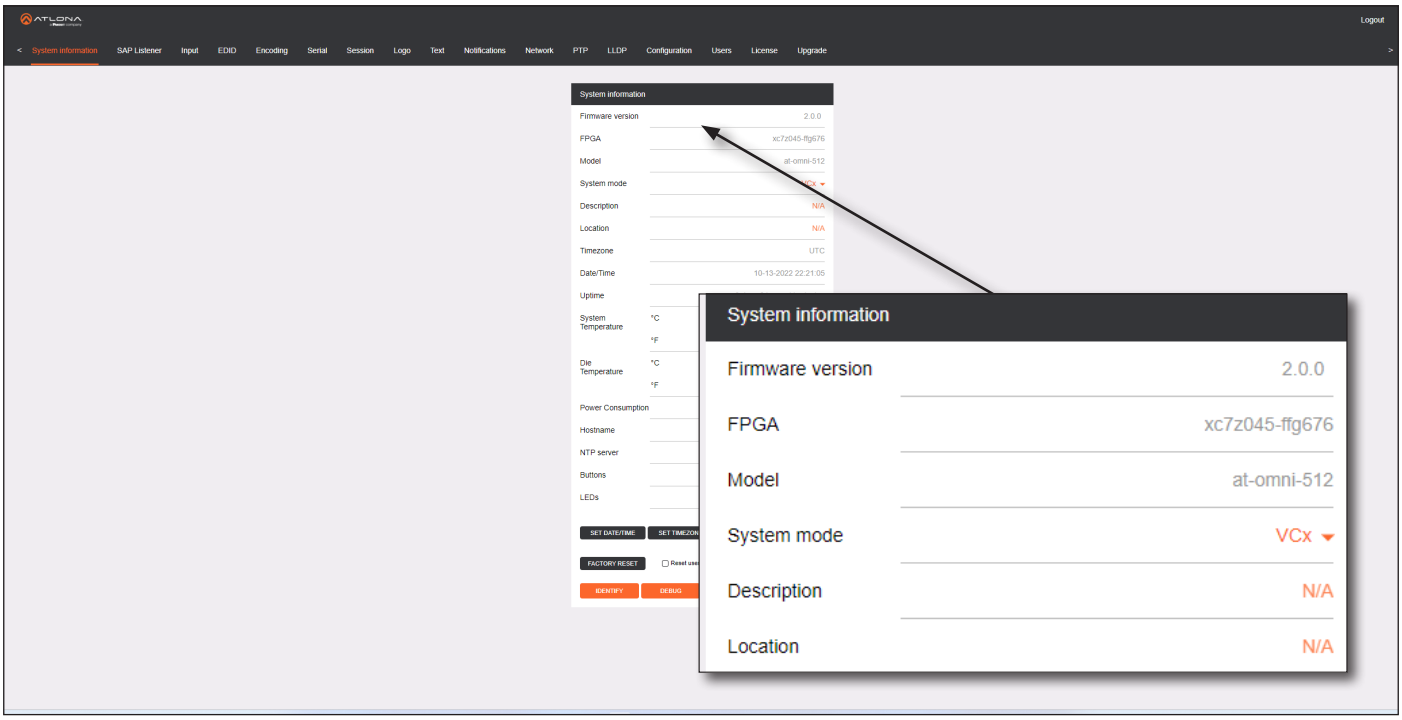
2. Click the **Mode** drop-down list and select `static`.
3. Enter the desired IP address in the **IP address** field.
4. Enter the subnet mask in the **Subnetmask** field.
5. Enter the gateway (switch/router) address in the **Gateway** field.
6. Click the **SAVE** button to commit all changes.

Configuration and Management Interfaces

Web Server

> **NOTE:** This section assumes that the **System mode** is set to `VCx`. If `VC-2 Video` or `VC-2 PC Application` is used, some features on these pages will not be available.

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.

System mode
Click this drop-down list to select the system mode. The default setting is `VCx`.

Mode	Description
`VCx`	This is the default mode and represents the latest codec technology from Atlona, with outstanding support for computer graphics and motion video. VCx includes support for 4K60 4:4:4 fast switching, dual streaming from AT-OMNI-111 encoders, and multiview on the decoders.
`VC-2 Video`	Legacy OmniStream codec that provides the best viewing experience when streaming motion graphics and/or video.

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.

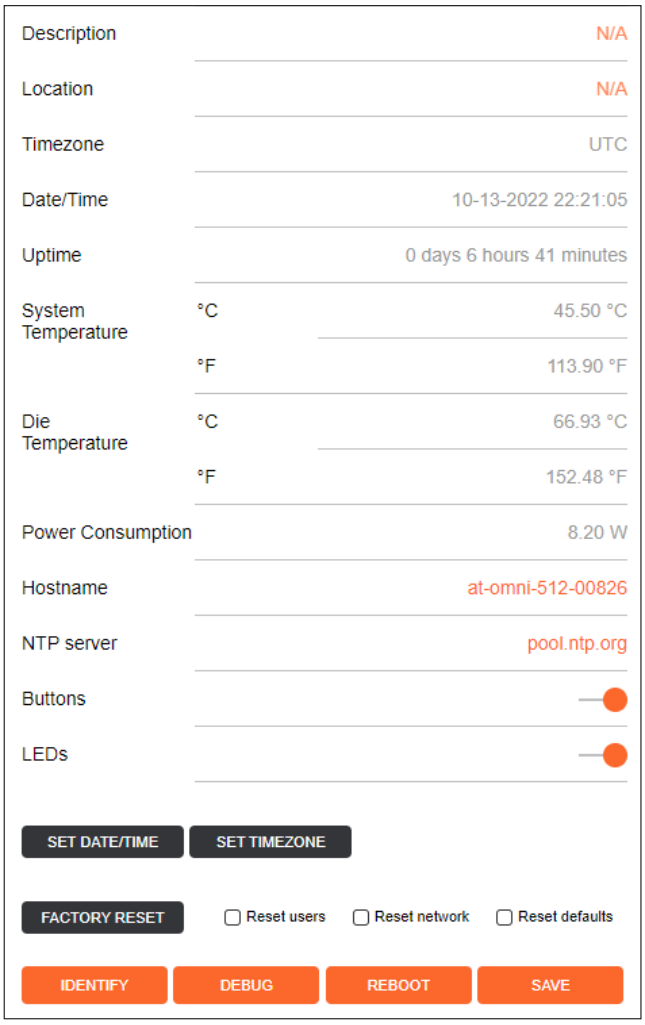
Uptime
Displays the elapsed time since the unit was powered-on or rebooted.

System Temperature
Displays the ambient enlosure 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-[SKU]-[last five digits of serial number]. 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.

Buttons
Click this toggle switch to enable or disable the front-panel buttons. If the buttons are disabled, their backlight turns off. When enabled, the toggle switch will be orange.

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.

IMPORTANT: The **Reset Defaults** option will not work for multiple encoders on the same network.

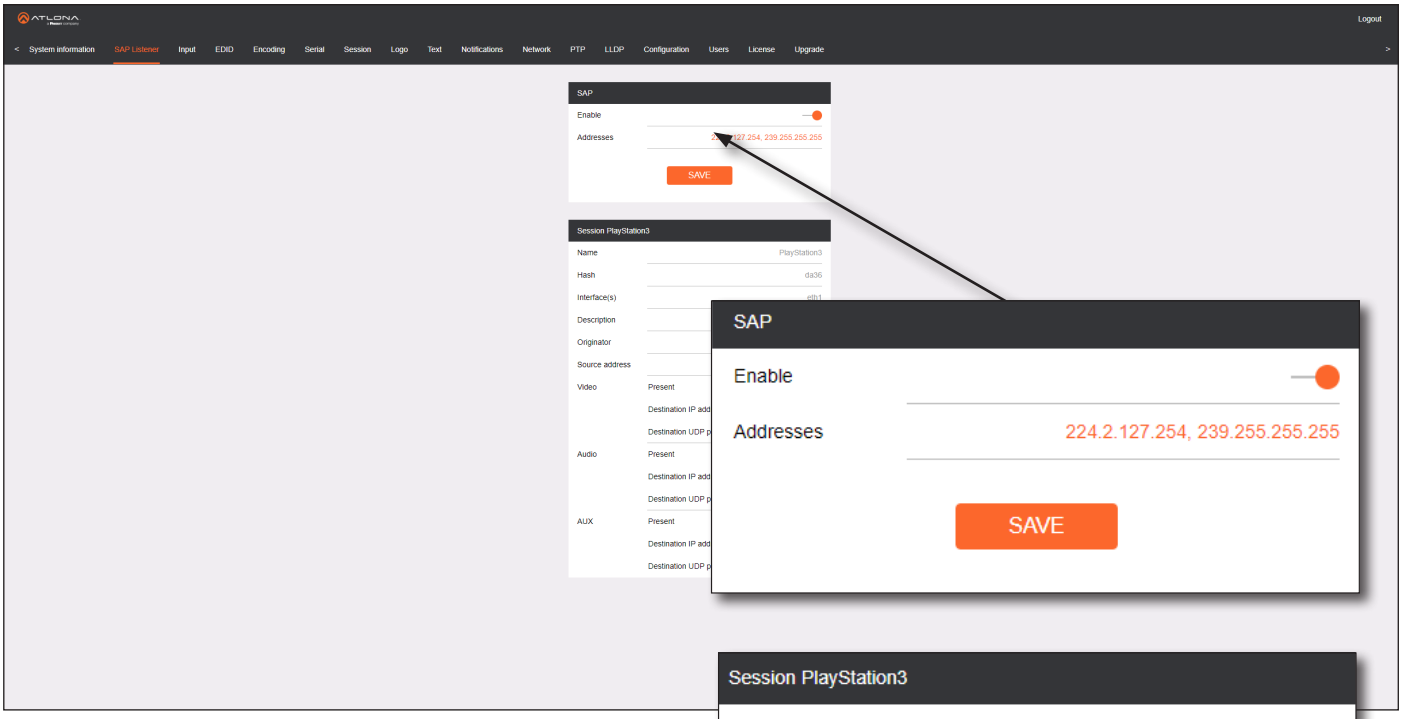
IDENTIFY
Click this button to physically identify a unit on the network. Clicking this button will cause all front-panel LED indicators to flash for 10 seconds.

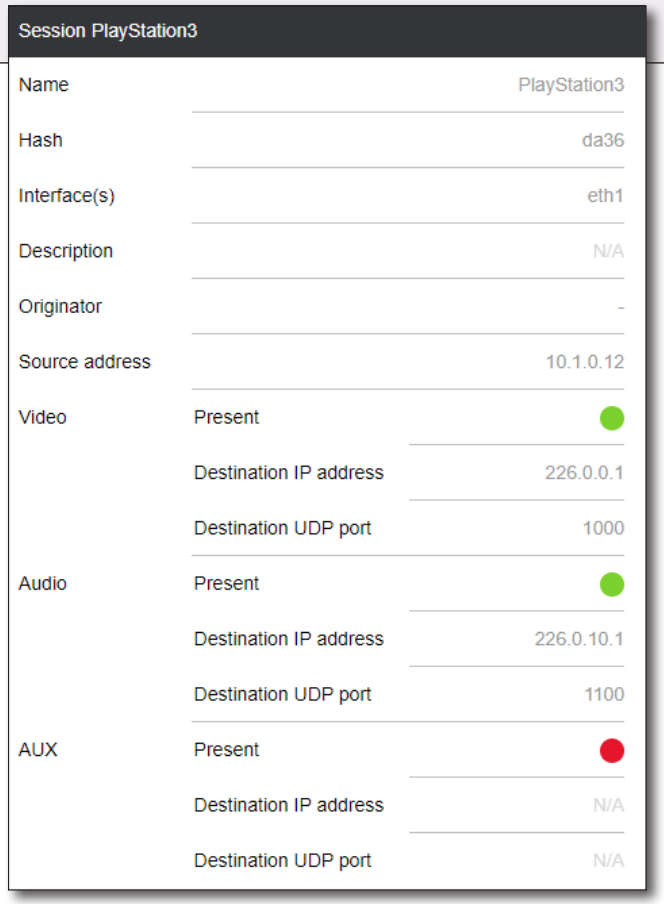
DEBUG
Click this button to instruct the unit to create a debug file. This file is used by Atlona Technical Support Engineers to diagnose internal issues with the unit.

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 Listener page





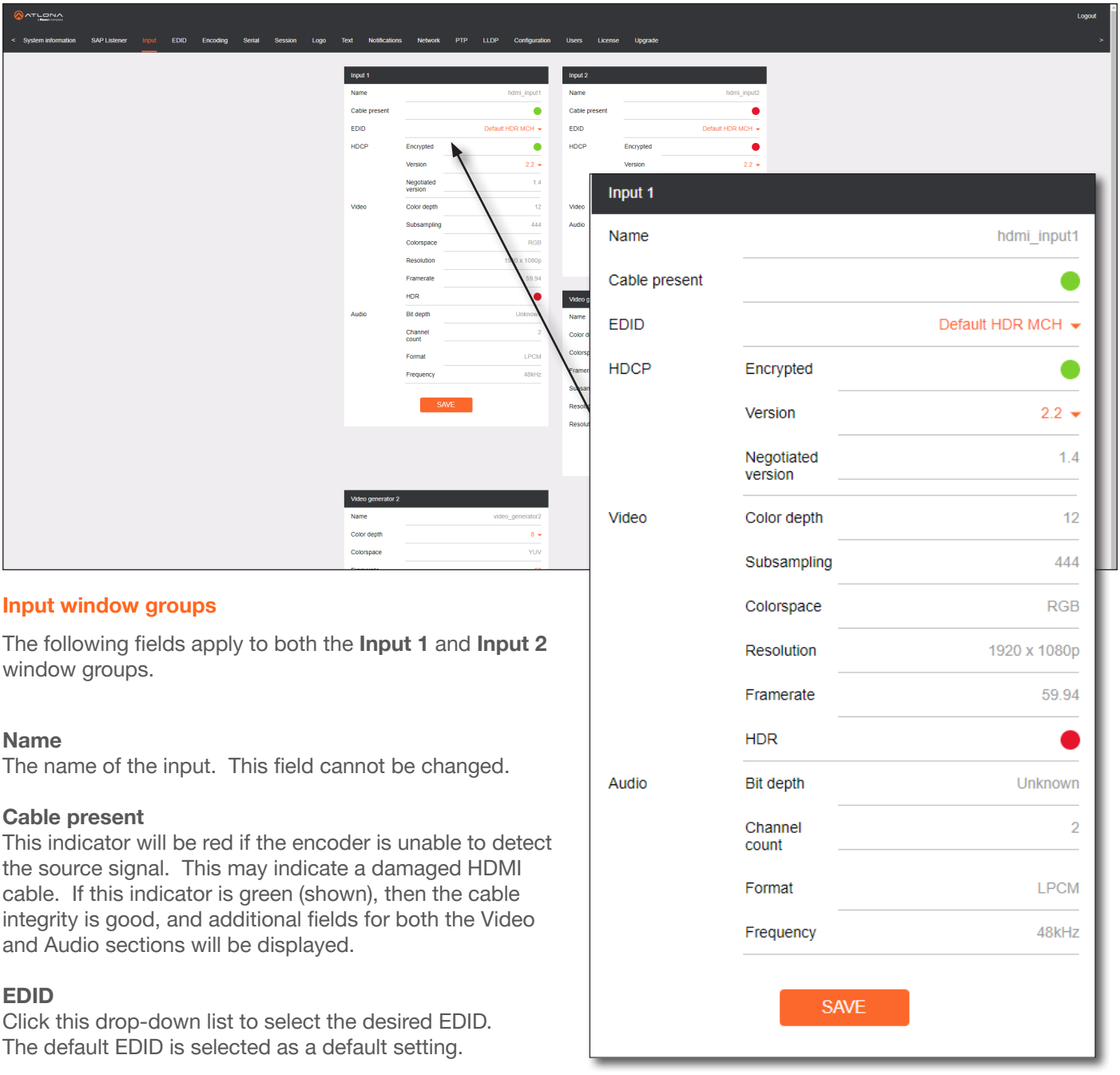
Enable
Click this toggle to enable or disable SAP. This feature is enabled when the toggle switch is orange. This is the default setting. If an SAP announcement is picked up, it will be displayed below the **SAP** window group (as shown here).

Addresses
Encoders currently send SAP announcements on two multicast addresses: `224.2.127.254` and `239.255.255.255`. These IP addresses are added by default.

SAVE
Click this button to save all changes

IMPORTANT: 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

The following fields apply to both the **Input 1** and **Input 2** 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 HDR MCH	Default EDID with HDR (3840x2160p30) and multichannel audio
Default HDR 2CH	Default EDID with HDR (3840x2160p30) and two-channel audio
Default DV MCH	Default EDID with Dolby Vision (3840x2160p30) and multichannel audio
Default DV 2CH	Default EDID with Dolby Vision (3840x2160p30) and two-channel audio
Default SDR MCH	Default EDID with SDR (3840x2160p30) and multichannel audio
Default SDR 2CH	Default EDID with SDR (3840x2160p30) and two-channel audio
ATL 1080P 2CH	1920x1080p60 with two-channel PCM audio
ATL 1080P DD	1920x1080p60 with Dolby Digital
ATL 1080P DVI	1920x1080p60 formatted as DVI

EDID	Description
ATL 1280x800 RGB DVI PCWXGADVI	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
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-enctrypted 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`.

Negotiated Version
This field displays the HDCP version that has been negotiated with the source.

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 subampling 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.

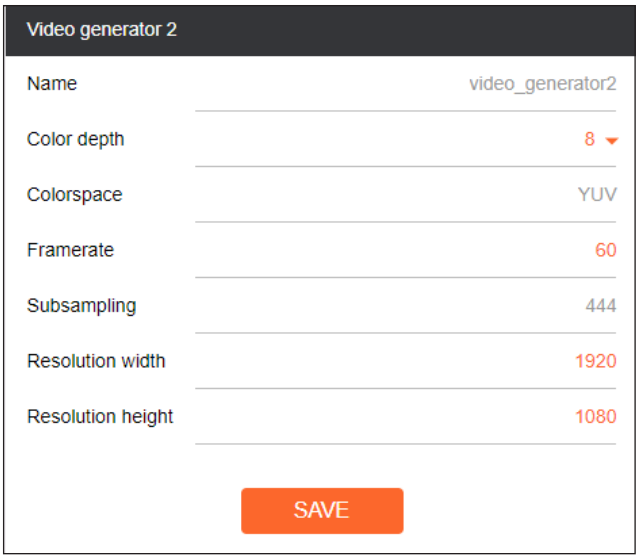
Bit Depth
Displays the bit depth of the source audio.

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.

SAVE
Click this button to save all changes under the **Input** window group.



Video generator window groups

The following fields apply to both the **Video generator 1** and **Video generator 2** window groups. 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
Displays the color depth.

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

Subsampling
Displays the chroma subsampling value.

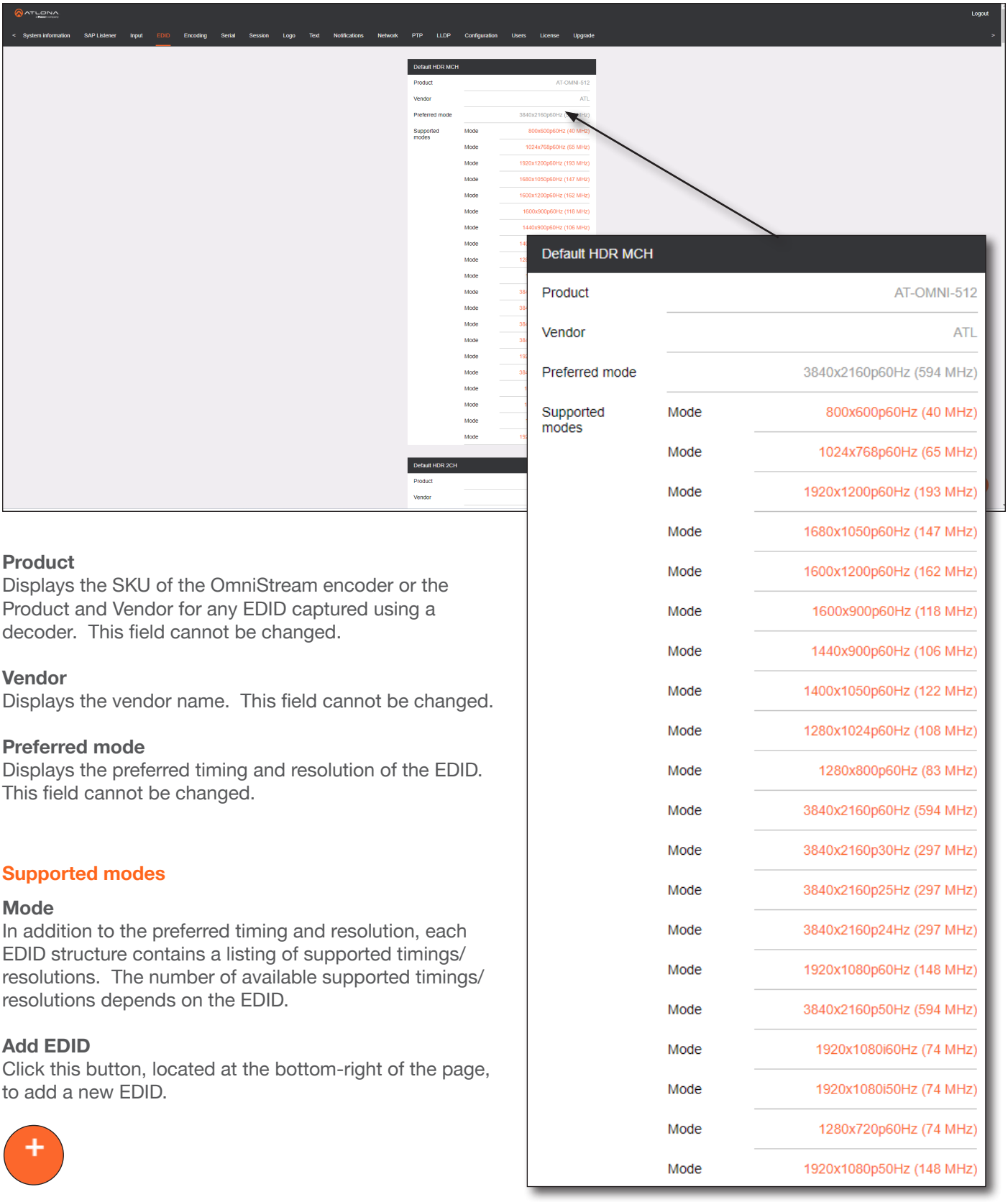
Resolution width
Click in this field to change the horizontal resolution of the signal.

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

SAVE
Click this button to save all changes under the **Video generator** window group.

EDID page

This page is used to show details about each EDID that is loaded on the unit.



Product
Displays the SKU of the OmniStream encoder or the Product and Vendor for any EDID captured using a decoder. This field cannot be changed.

Vendor
Displays the vendor name. This field cannot be changed.

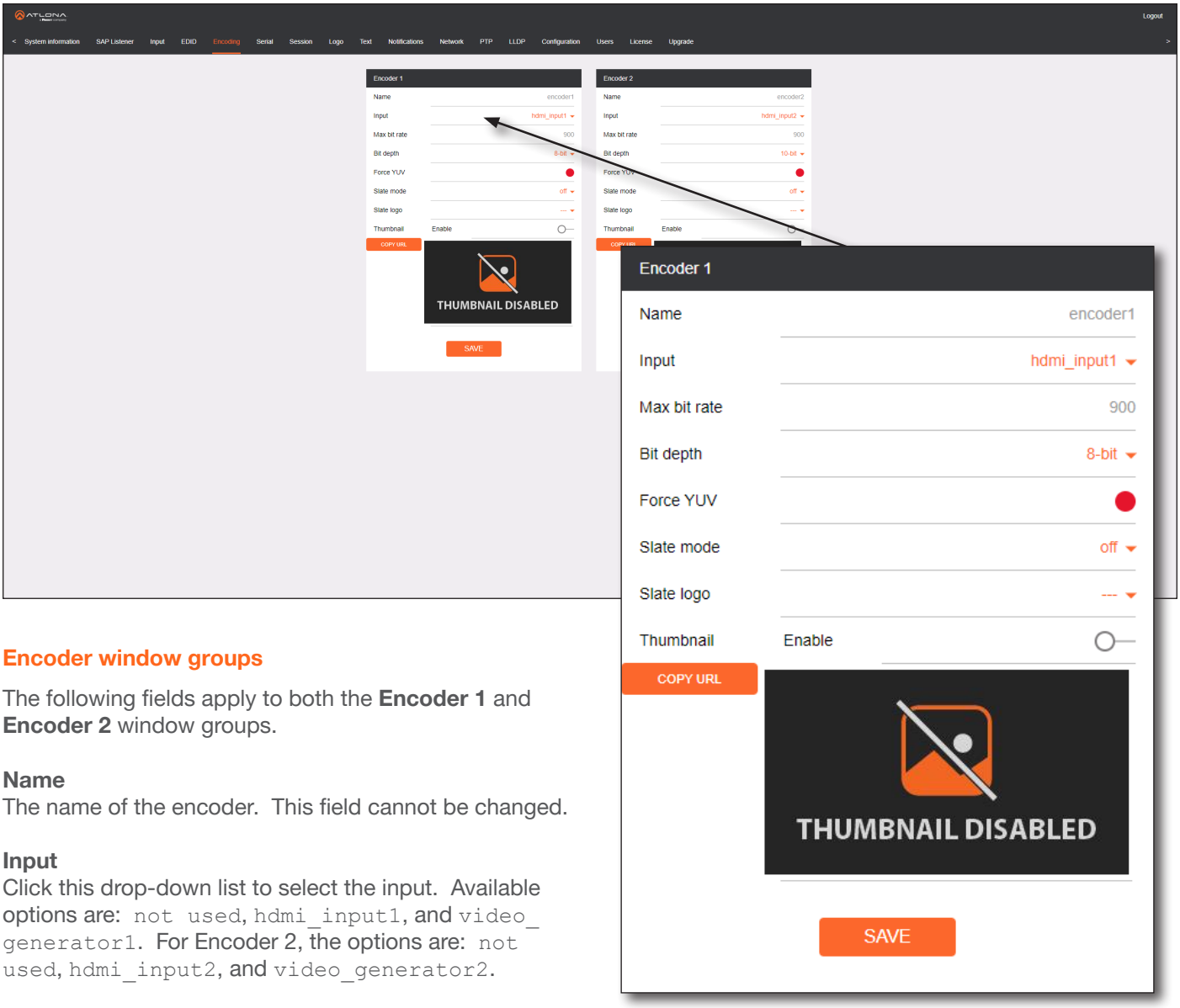
Preferred mode
Displays the preferred timing and resolution of the EDID. This field cannot be changed.

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 add a new EDID.

Encoding page



Encoder window groups

The following fields apply to both the **Encoder 1** and **Encoder 2** 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`, and `video_generator1`. For Encoder 2, the options are: `not used`, `hdmi_input2`, and `video_generator2`.

Max bit rate
This field is set to `900` and cannot be changed.

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

Force YUV
This LED indicator will be green if YUV color space is being used.

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

Slate 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.

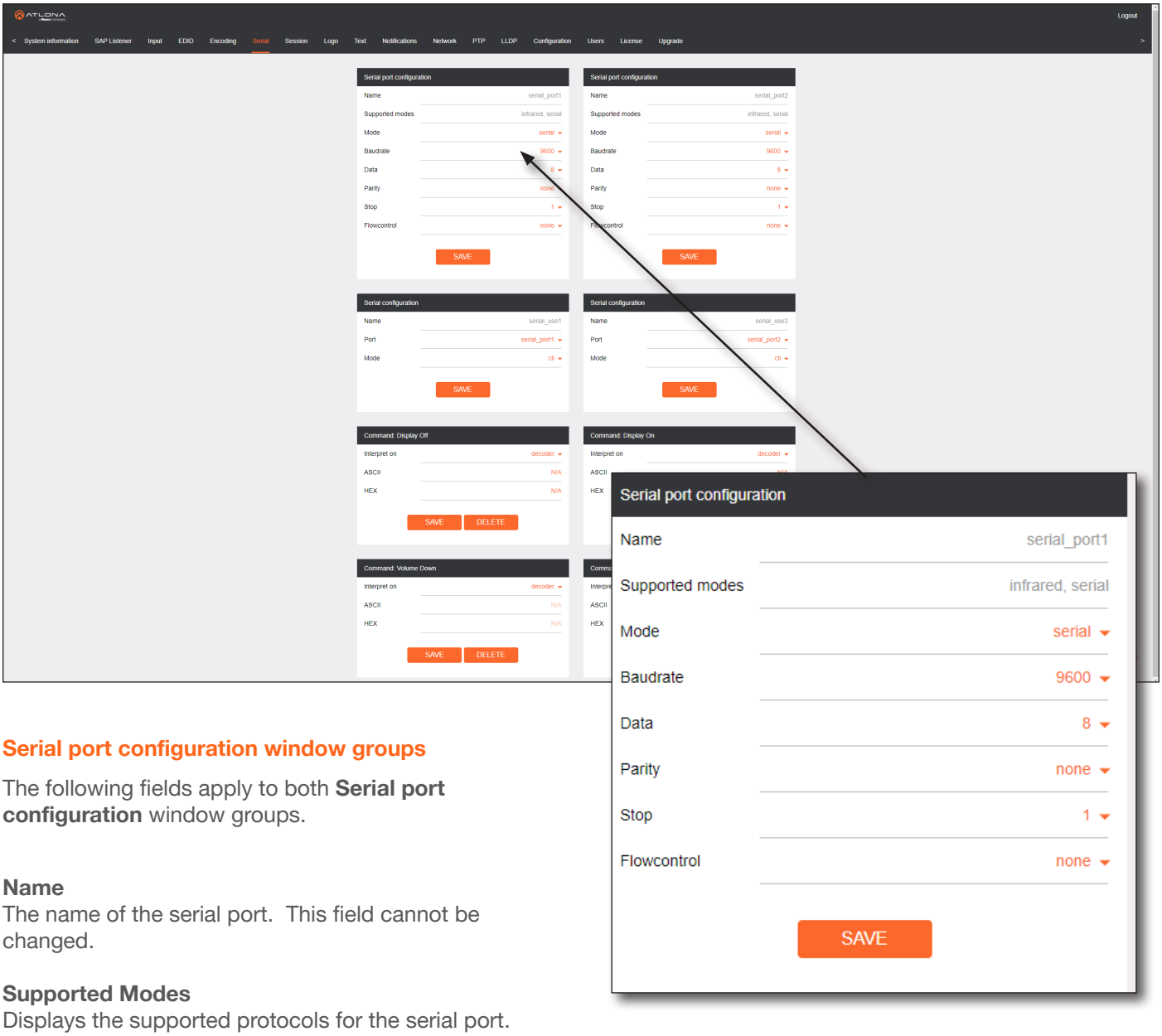
Thumbnail Enable
Click this toggle switch to enable to disable a thumbnail of the input stream. When enabled, this toggle switch will be orange and an image of the input stream will be displayed. Thumbnails are updated every 2 seconds.

NOTE: Thumnails can also be accessed at: `http://<encoder-ip-address>/thumbnail/thumbnail1.jpg`. For dual-channel encoders, the secondary thumbail can be accessed at: `http://<encoder-ip-address>/thumbnail/thumbnail2.jpg`.

COPY URL
Click this button to copy the URL of the thumbnail to the clipboard.

SAVE
Click this button to save all changes.

Serial page



Serial port configuration window groups

The following fields apply to both **Serial port configuration** window groups.

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`.

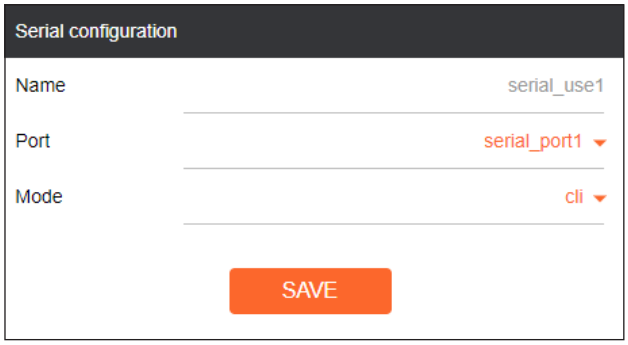
Stop
Click this drop-down list to select the stop bit: `1`, `1.5`, or `2`.

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.



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

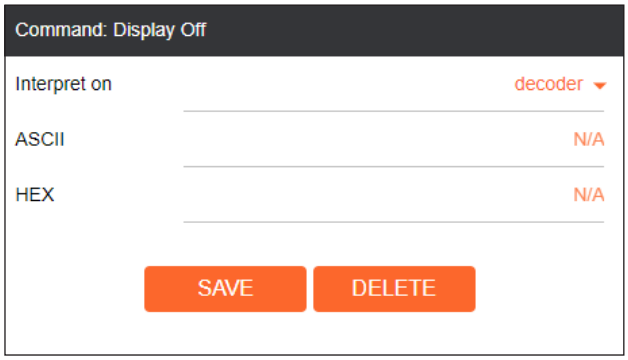
Port
Click this drop-down list to select the desired serial port.

Mode
Click this drop-down list to select the desired control mode. Available values are: `cli` and `tcpproxy`. Select `tcpproxy` to translate received IP control traffic to RS-232 output. Selecting the `cli` option will force the serial port to function as a Command-Line Interface (CLI) for control of the encoder. Refer to Device Control (page 37) for more information.

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.

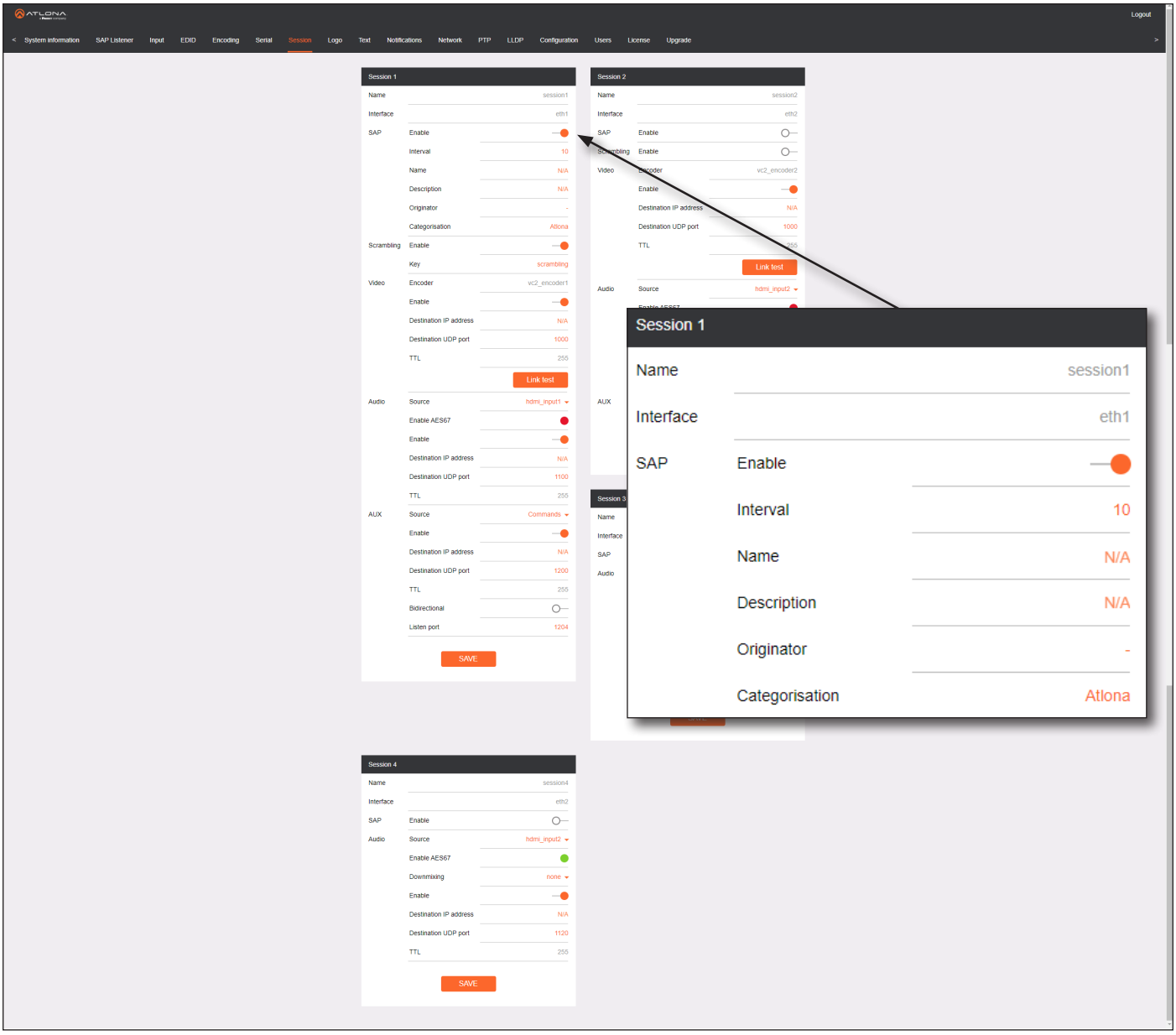
SAVE
Click this button to commit all changes within the **Command** window group.

DELETE
Click this button to delete the command window group and all parameters.

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



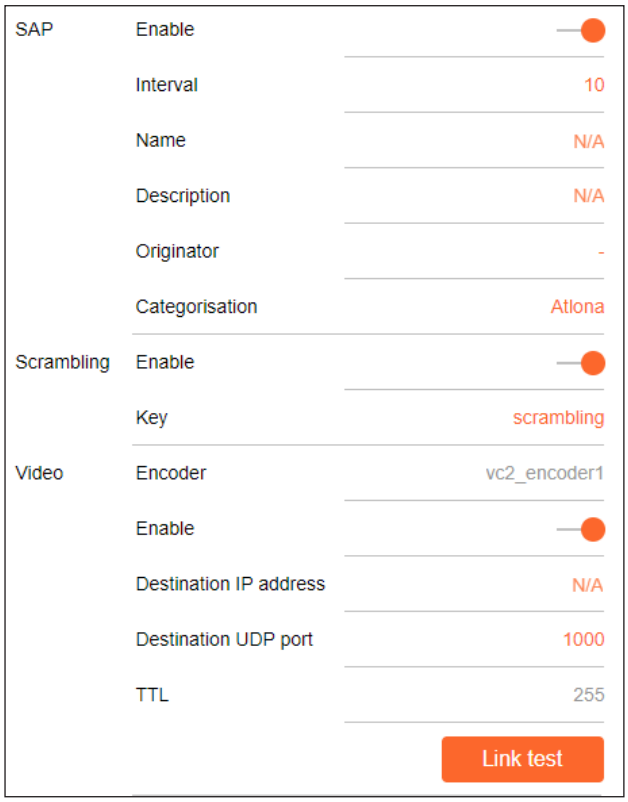
Session window groups

The following fields apply to all **Session** window groups. The AT-OMNI-512 supports up to four sessions.

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

Interface
The name of the interface being used. This field cannot be changed.

SAP



Enable
Click this switch to enable or disable the Session Announcement Protocol (SAP) announcements. 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. When enabled, the toggle switch will be orange.

Key
This field is only displayed if the **Scrambling** toggle switch is enabled (orange). 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.

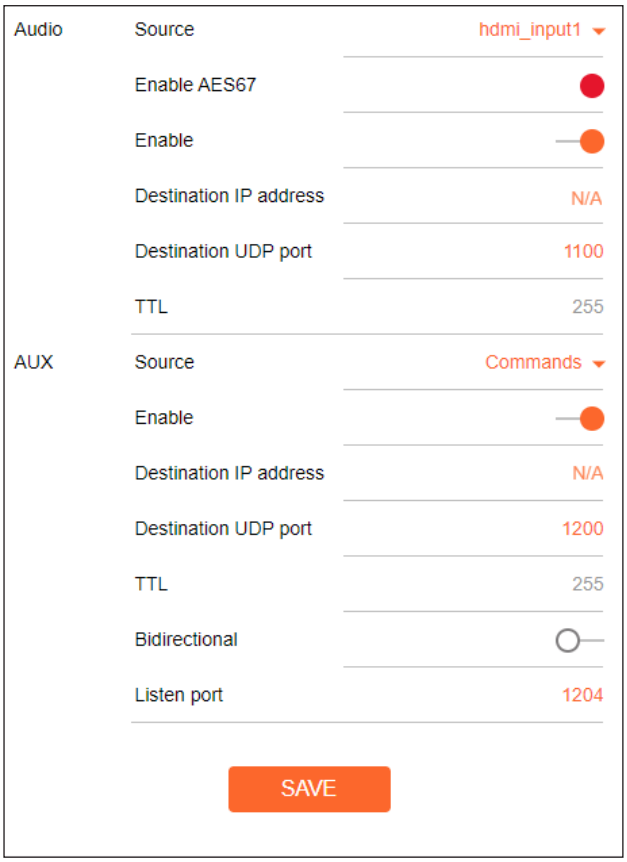
Destination IP address
Enter the multicast IP address that will be used to stream the content.

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.

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 88) for more information.

Audio



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

Enable AES67
If AES67 audio is used, this indicator will be green.

Enable
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 multicast IP address that will be used to stream the content.

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.

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	Stored commands in the encoder are sent to the decoder serial port. Refer to Downstream Control using Triggering (page 42) for more information.
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.

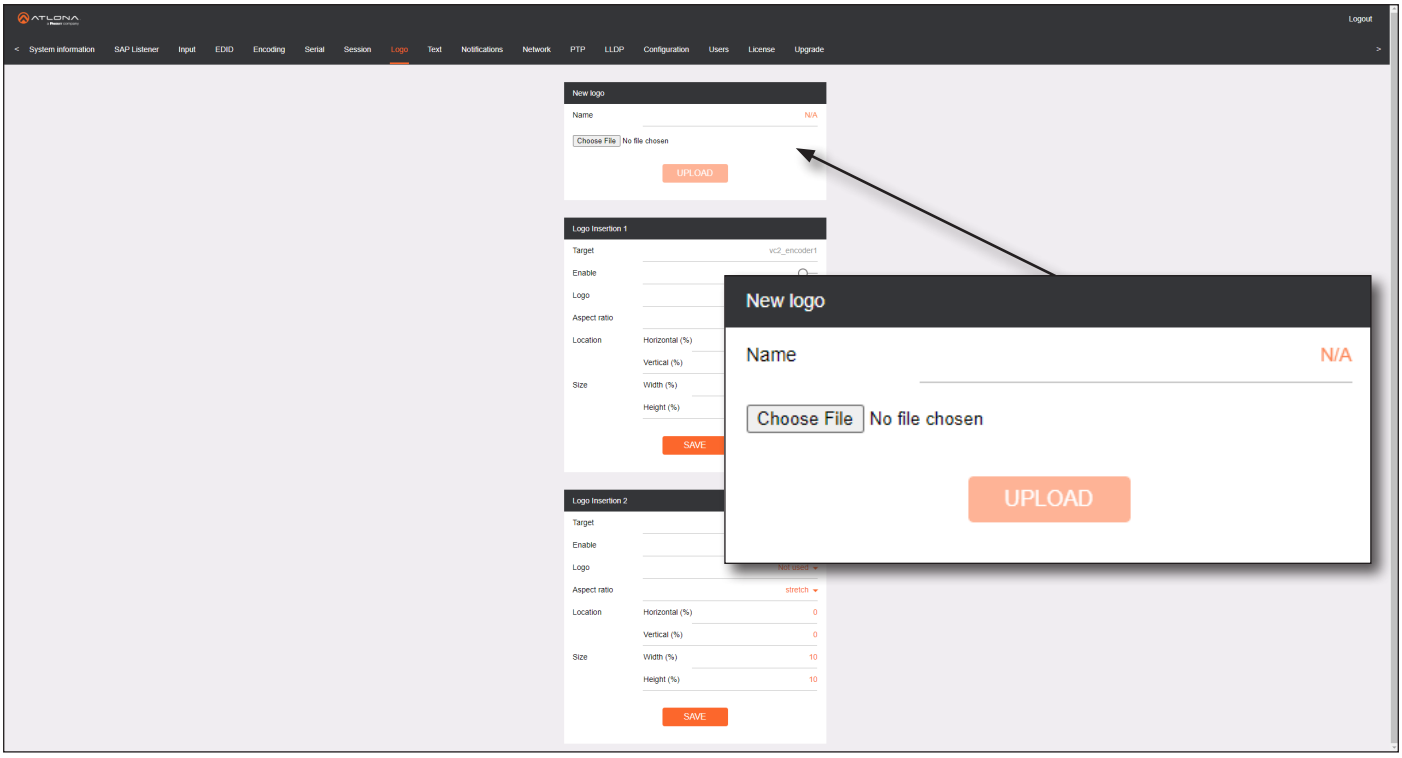
TTL
Set the TTL (Time-To-Live) duration, from 1 to 255 seconds, in this field. The default value is 255 seconds.

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.

Logo page



New logo window group

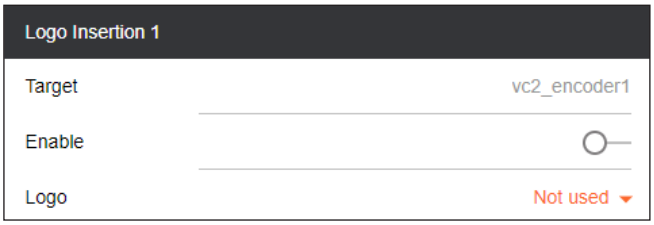
Name
Enter a name for the logo in this field.

Choose File
Click this button to select the logo file to be uploaded. Files must be in `.png` or `.svg` 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

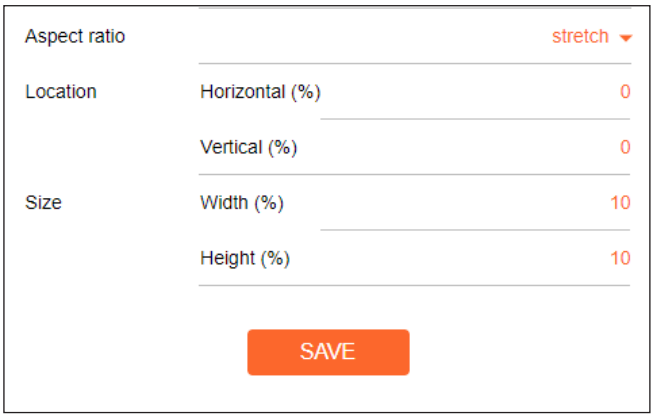
The following fields apply to both **Logo Insertion** window groups.



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

Enable
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.

Horizontal (%)
Enter the horizontal position of the logo based on the resolution of the video stream.

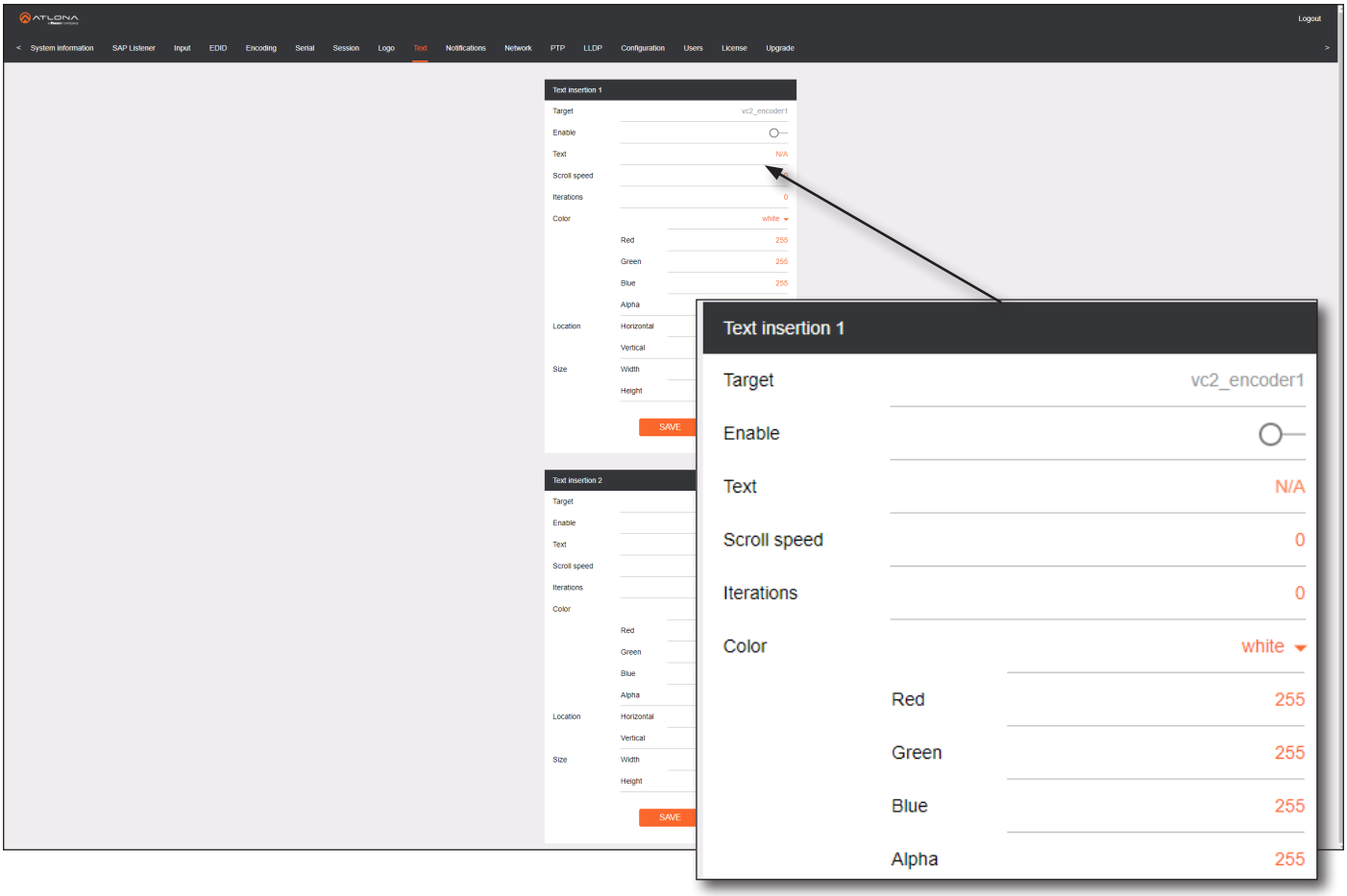
Vertical (%)
Enter the vertical position of the logo based on the resolution of the video stream.

Width (%)
Enter the width of the logo. This value is based on the horizontal resolution of the video stream.

Height (%)
Enter the height of the logo. This value is based on the vertical resolution of the video stream.

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

Text page



Text insertion window groups

The following fields apply to both **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. Integer 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.

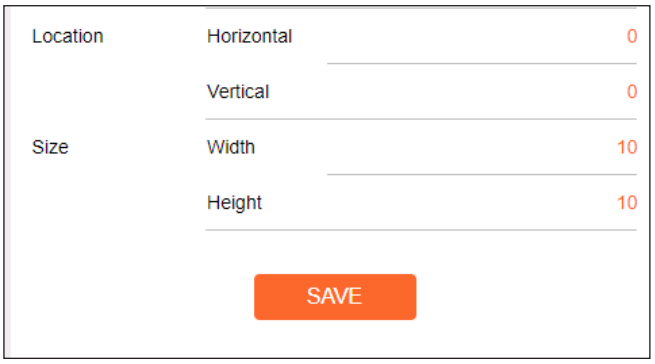
Color
Click this drop-down list to select a solid color preset: `red`, `green`, `black`, `white`, `yellow`, or `blue`.

Red, Green, Blue, Alpha
Click these fields to fine tune the color of the text. Integer values from `0` to `255` are valid for all fields. 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.

Horizontal
Enter the horizontal position of the text, based on the resolution of the video stream.

Vertical
Enter the vertical position of the text, based on the resolution of the video stream.

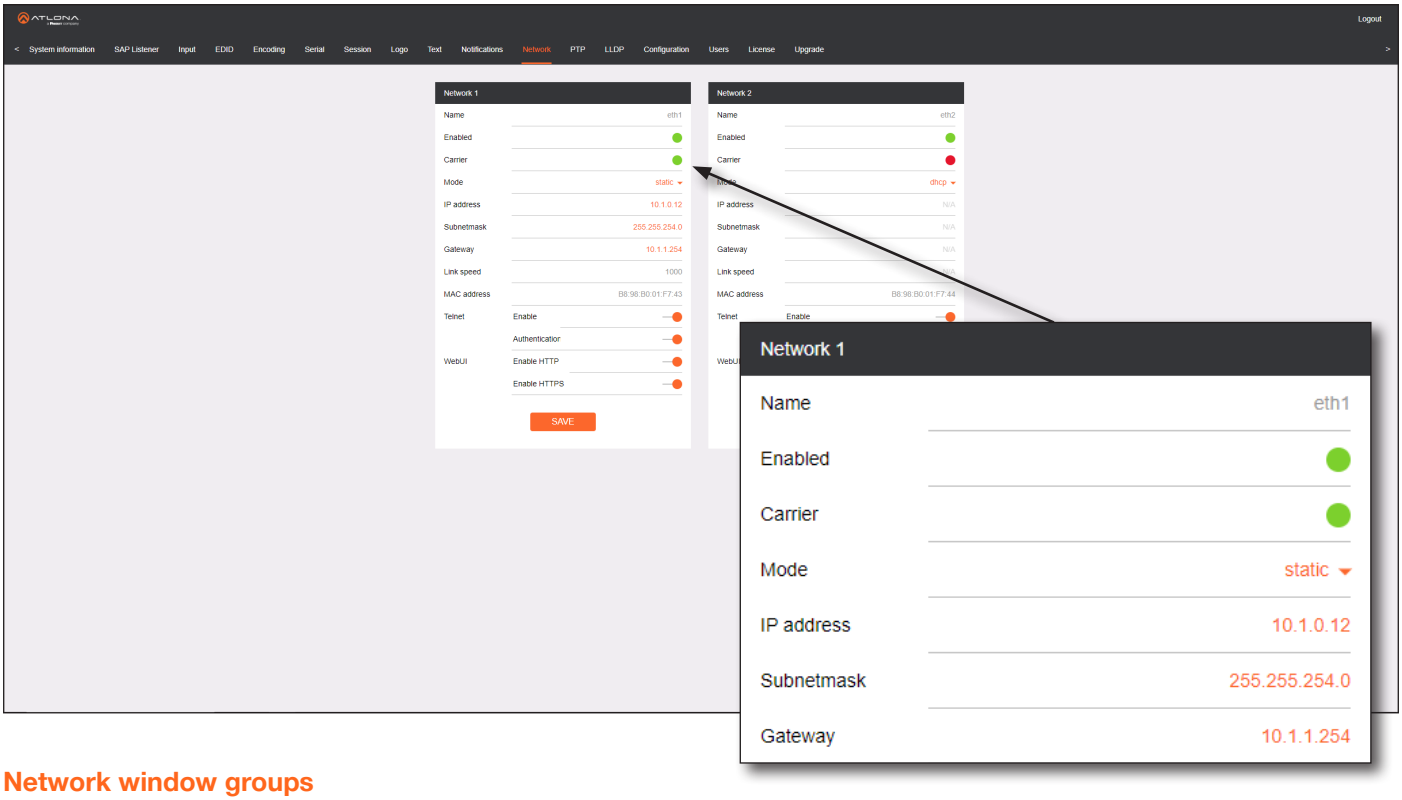
Width
Enter the width of the text. This value is based on the horizontal resolution of the video stream.



Height
Enter the height of the text. This value is based on the vertical resolution of the video stream.

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

Network page



Network window groups

The following fields apply to both **Network** window groups.

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

Enabled
This indicator displays the state of the Network Interface Card (NIC). If the indicator is green, then the NIC is in the up/up state.

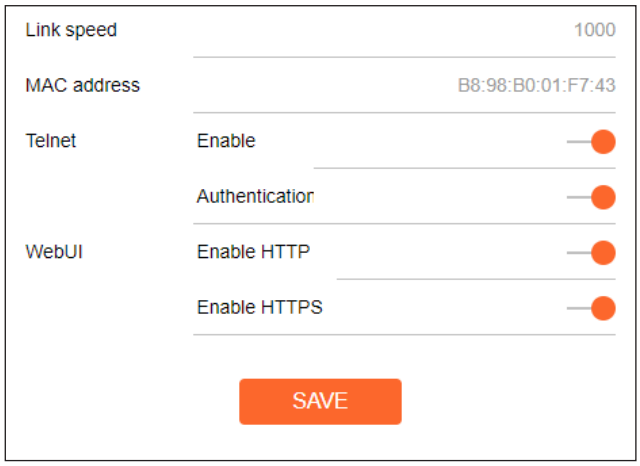
Carrier
If this indicator is green, then an active link exists. Otherwise, if no link exists, this indicator will be red.

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. When `static` is selected, the information for the **IP Address**, **Subnetmask**, and **Gateway** fields must be entered.

IP Address
Displays the IP address used by the channel. This field can only be changed if the **Mode** field is set to `static`.

Subnetmask
Displays the subnet mask for the channel. This field can only be changed if the **Mode** field is set to `static`.

Gateway
Displays the gateway (router) address for the channel. This field can only be changed if the **Mode** field is set to `static`.



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.

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

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

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

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

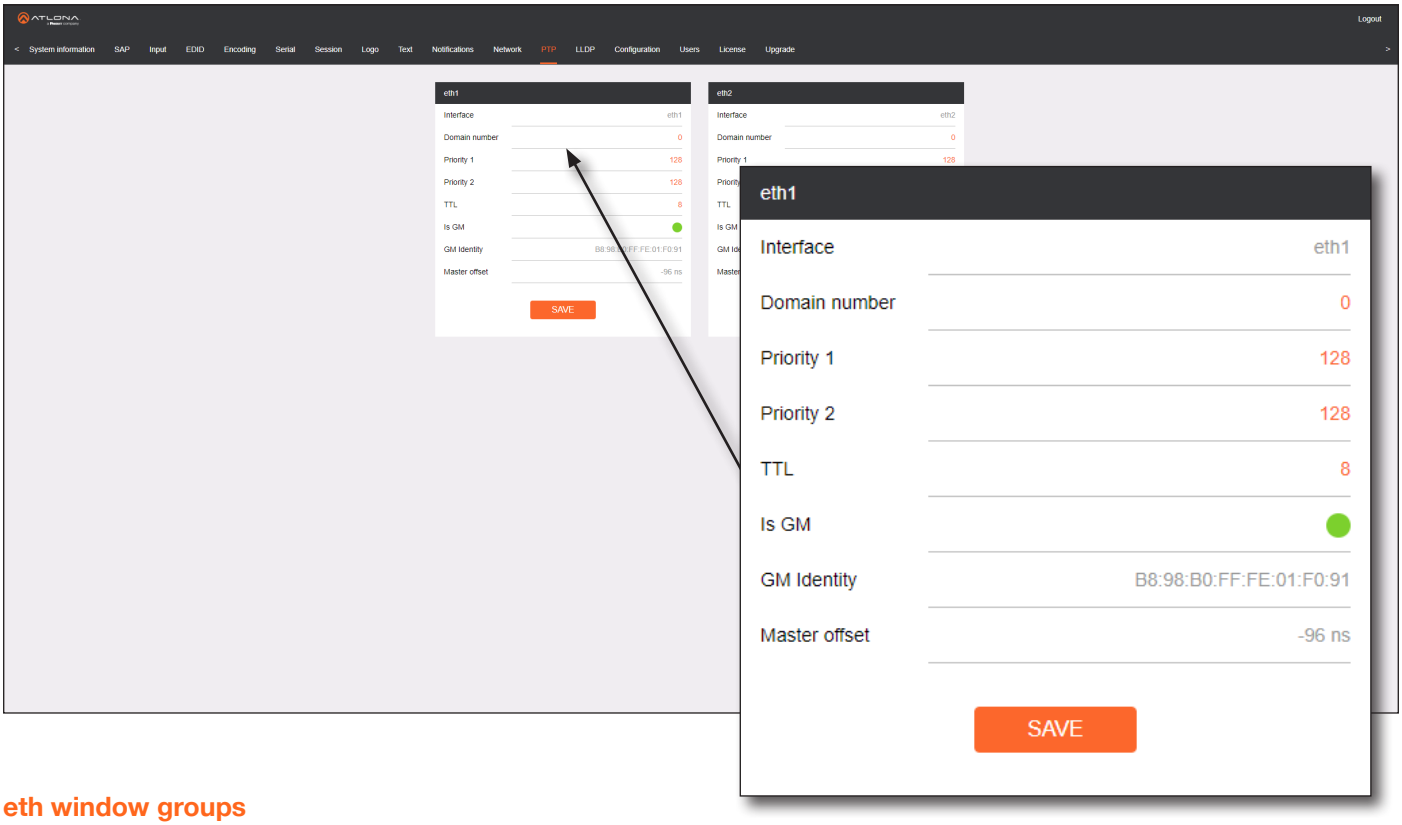
SAVE
Click this button to commit all changes within the **Network** window group.

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 device 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 device is more likely to get selected as the GM. OmniStream runs 1 PTP daemon per Ethernet interface.

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 groups

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

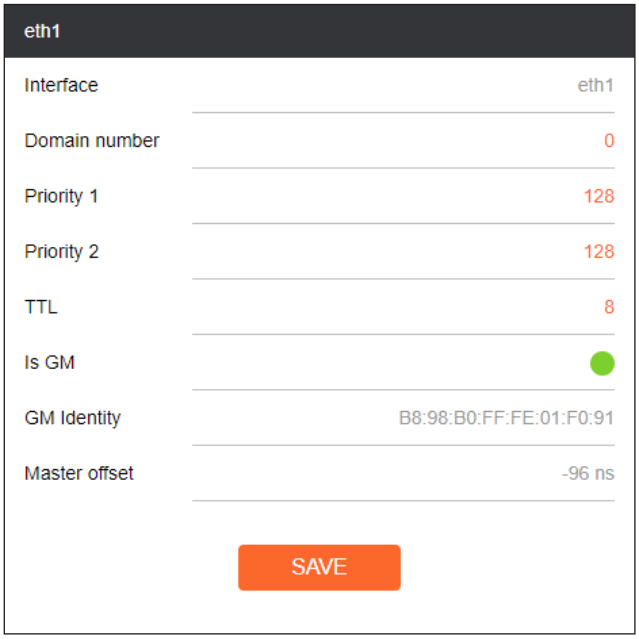
TTL
Displays the TTL value. The default IPV4 TTL value used for PTP is 8.

Is GM
If the indicator is green, then this interface is the PTP GM.

GM Identity
The grandmaster clock identity.

Master Offset
Displays the grandmaster clock offset.

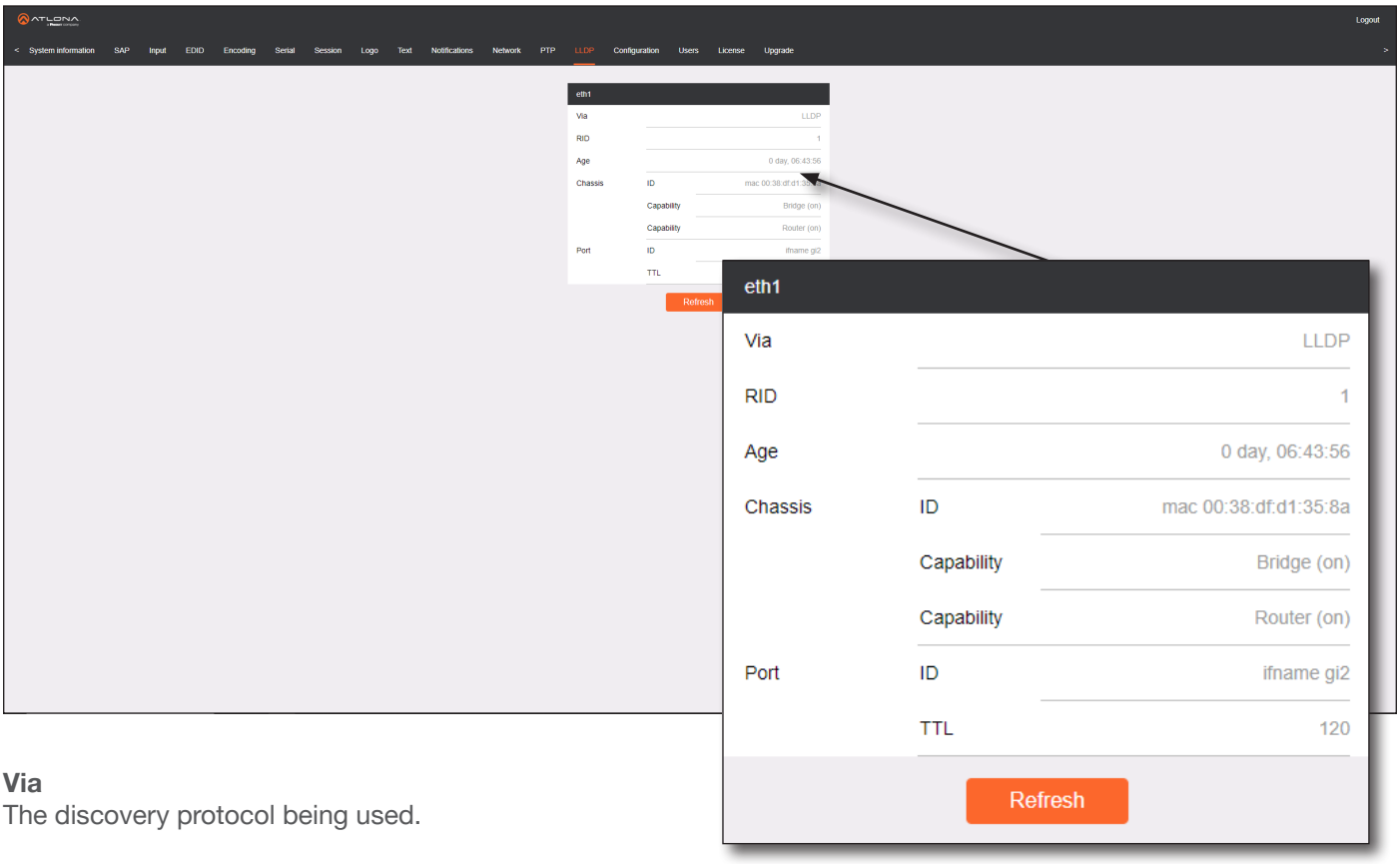
SAVE
Click this button to commit all changes.



LLDP page

The Link Layer Discovery Protocol (LLDP) page returns information about the switch that the encoder is connected to. If both interfaces 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.

RID
The router ID.

Age
Up-time of the interface.

Chassis ID
The MAC address of the interface.

Chassis Capability
Indicates the device function, such as bridge (switch), router, etc.

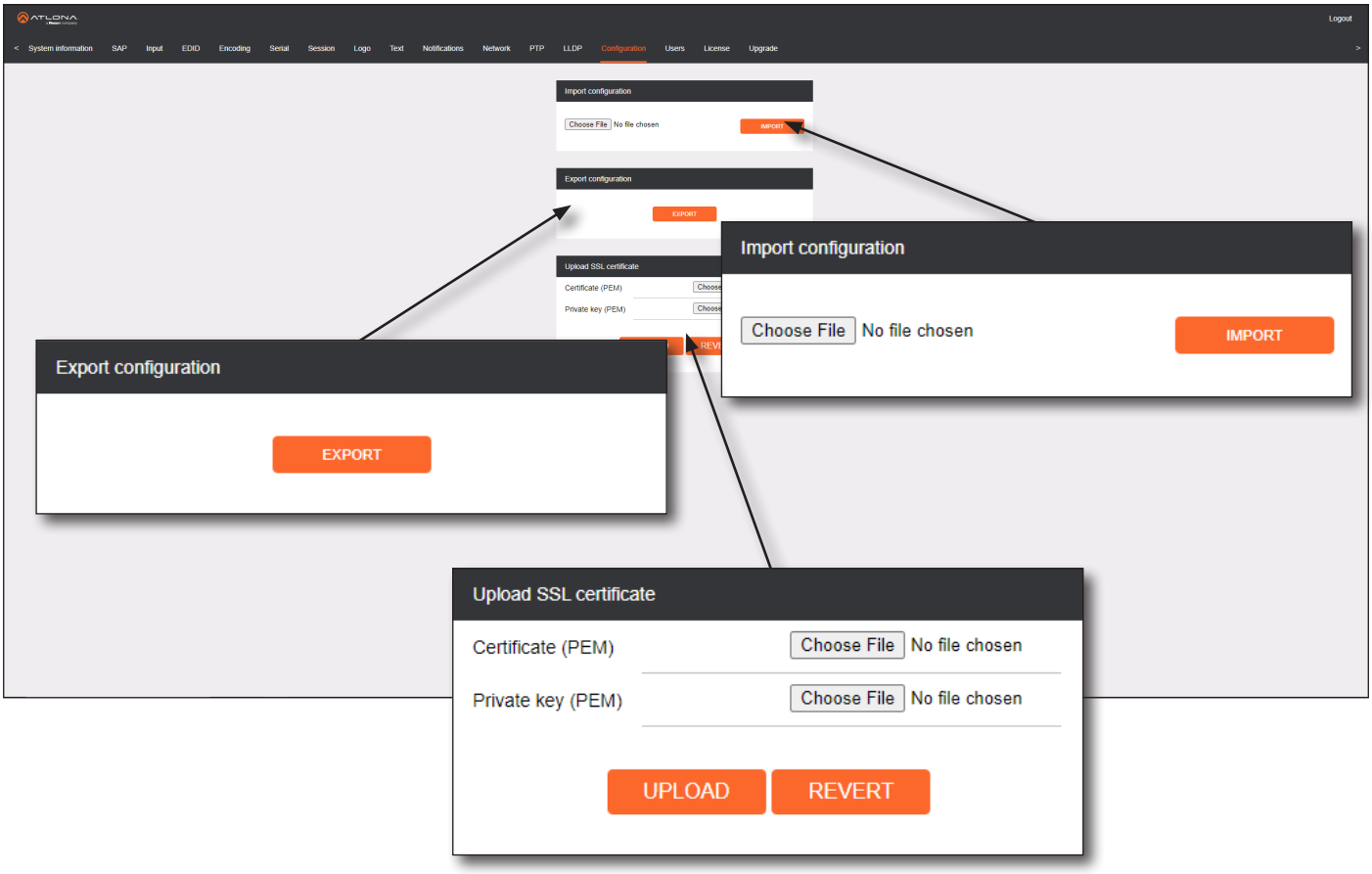
Port ID
The port ID.

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. The hostname, specific to the configuration filename, will be ignored.

Export configuration

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

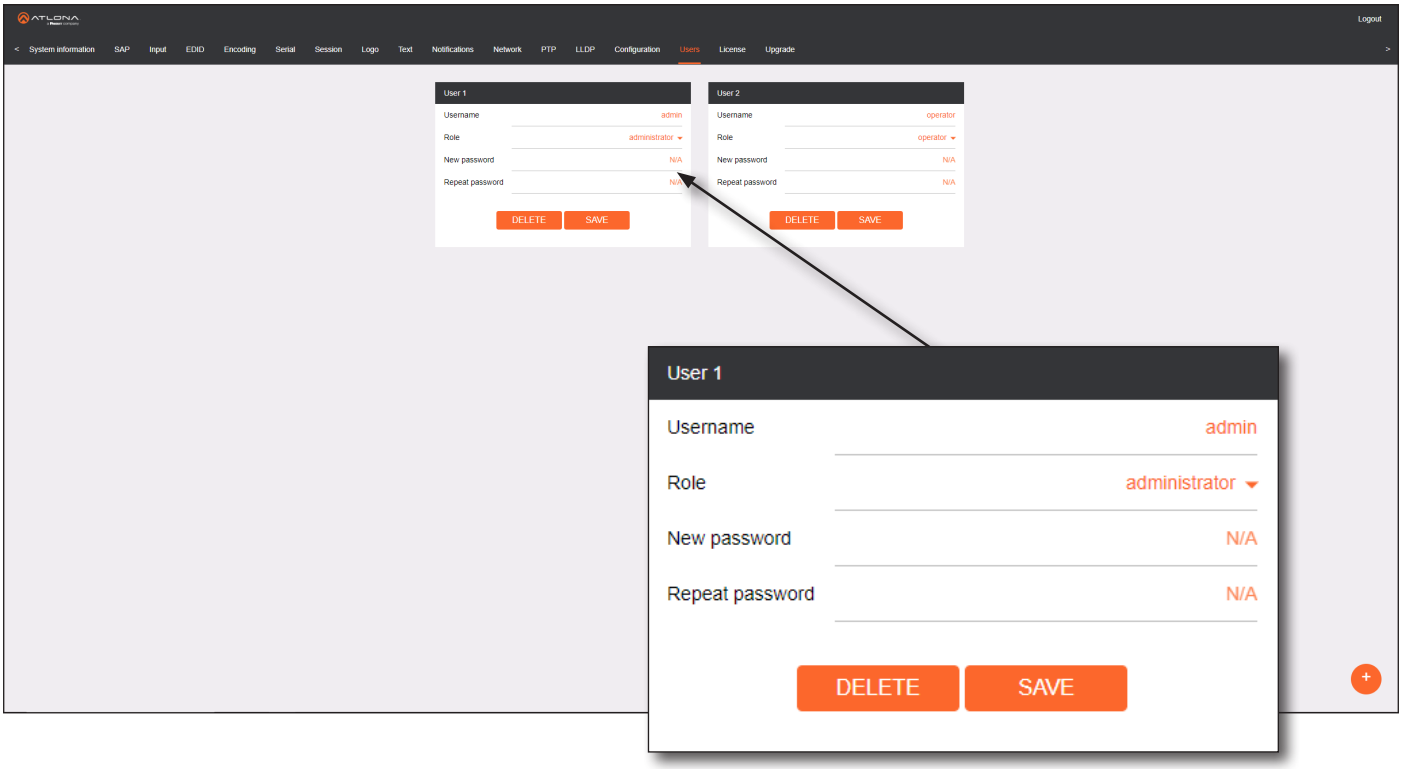
Upload SSL certificate

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.

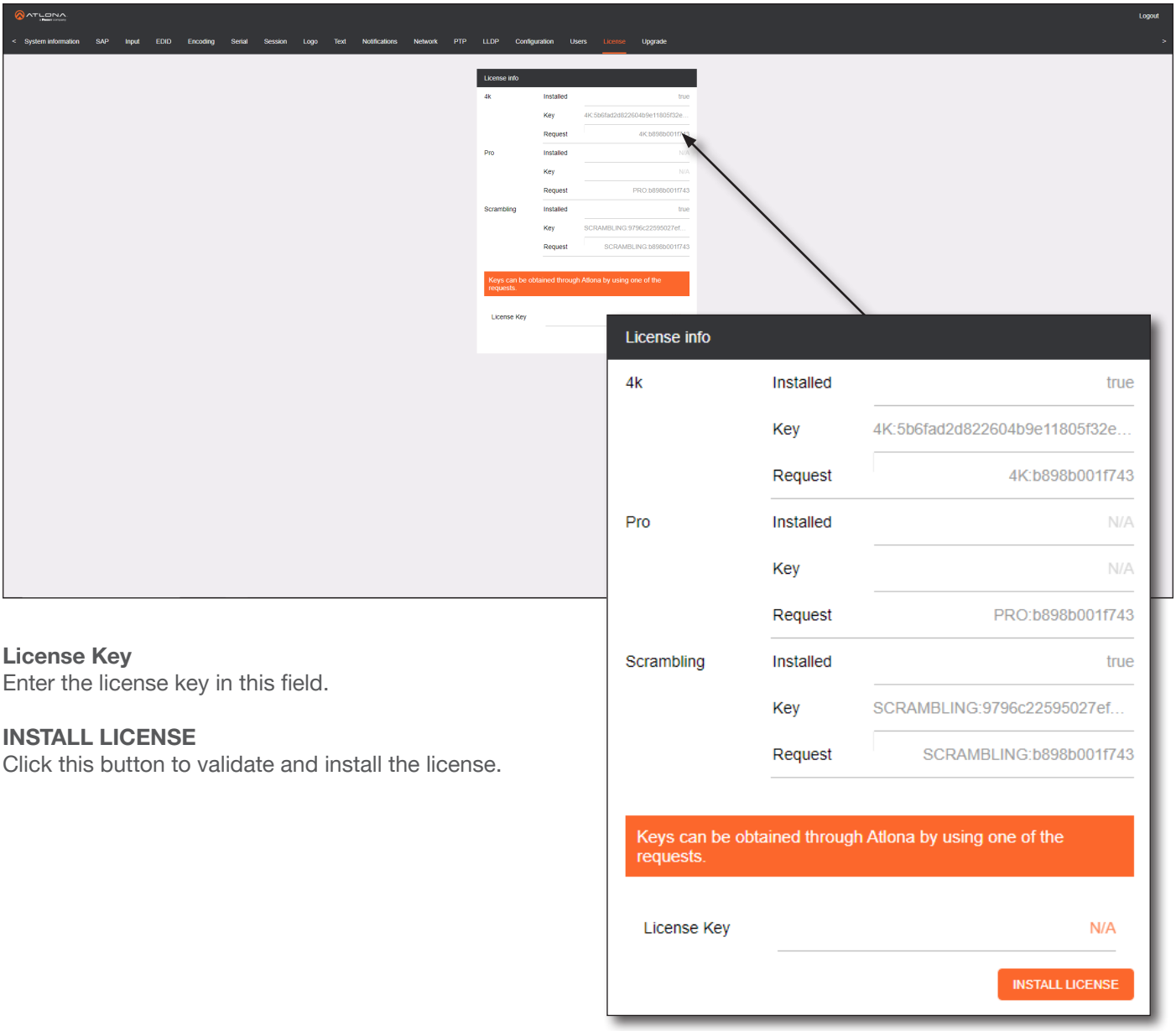
DELETE
Click this button to delete the user in the current window group. Note that the at least one admin role must exist at all times. Therefore, if one **admin** role and one **operator** role exist, then the **admin** user cannot be deleted.

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.

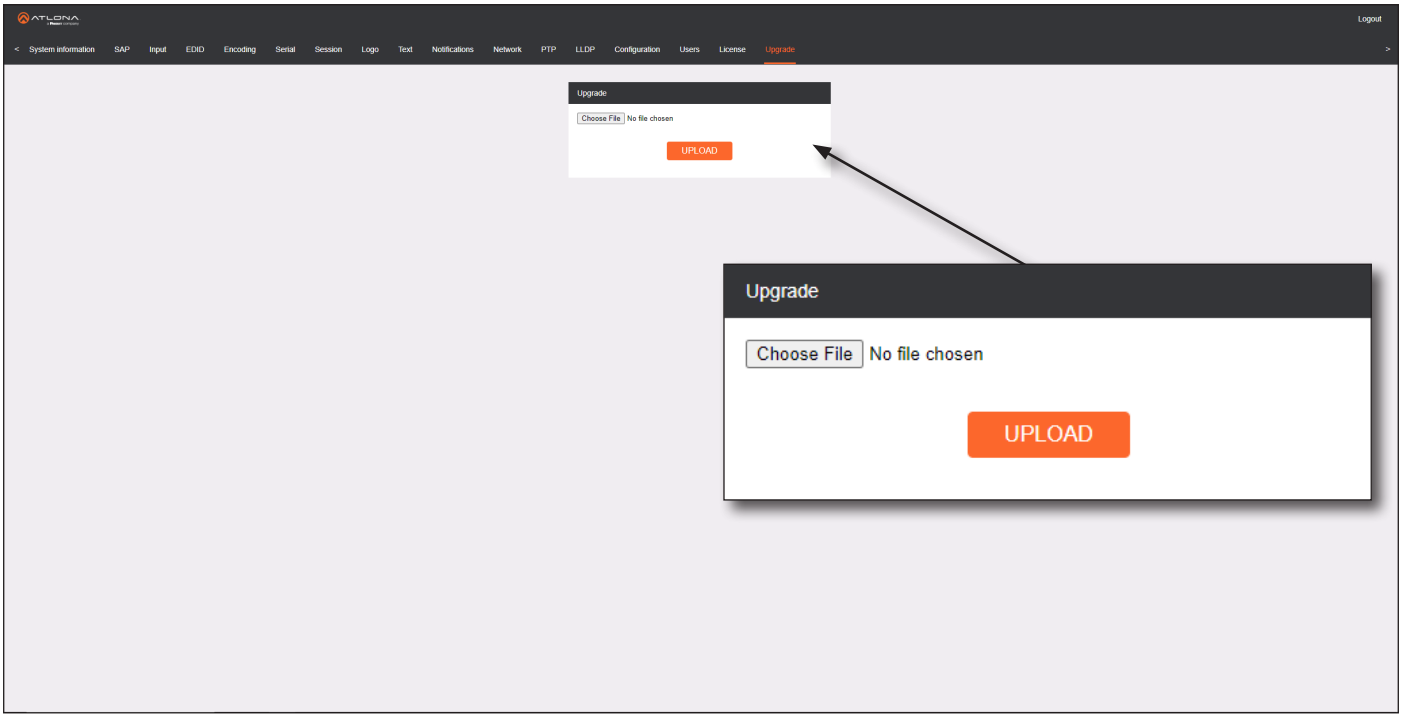


License Key
Enter the license key in this field.

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

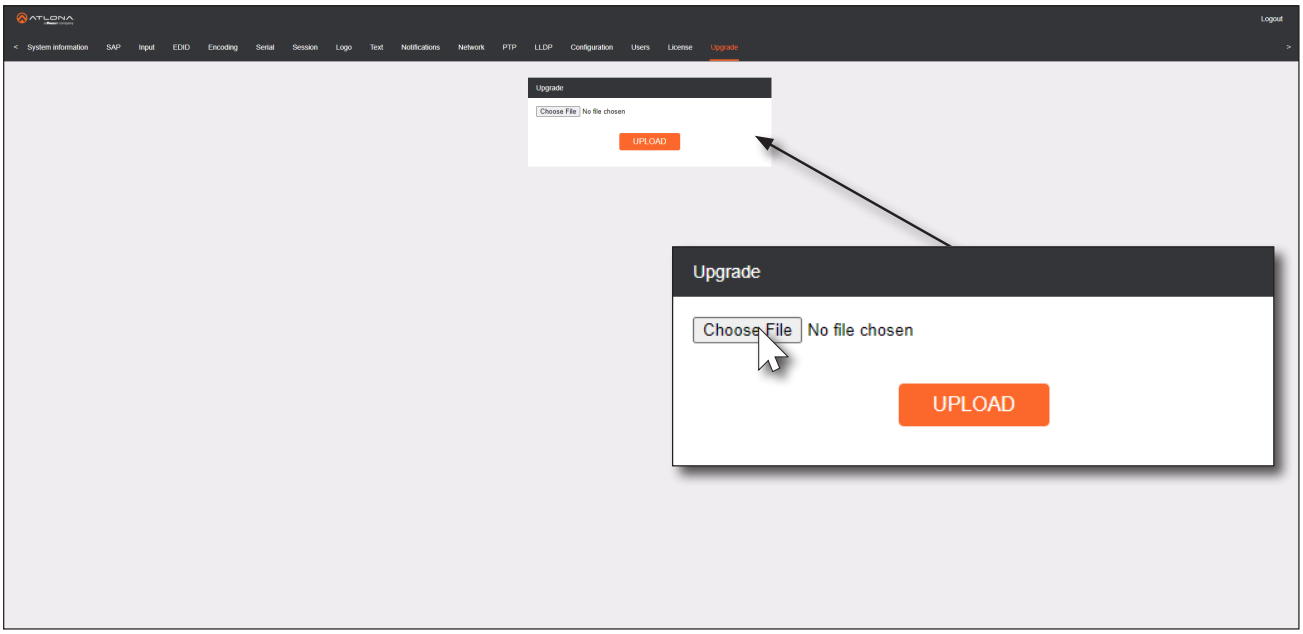
Updating the Firmware

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.

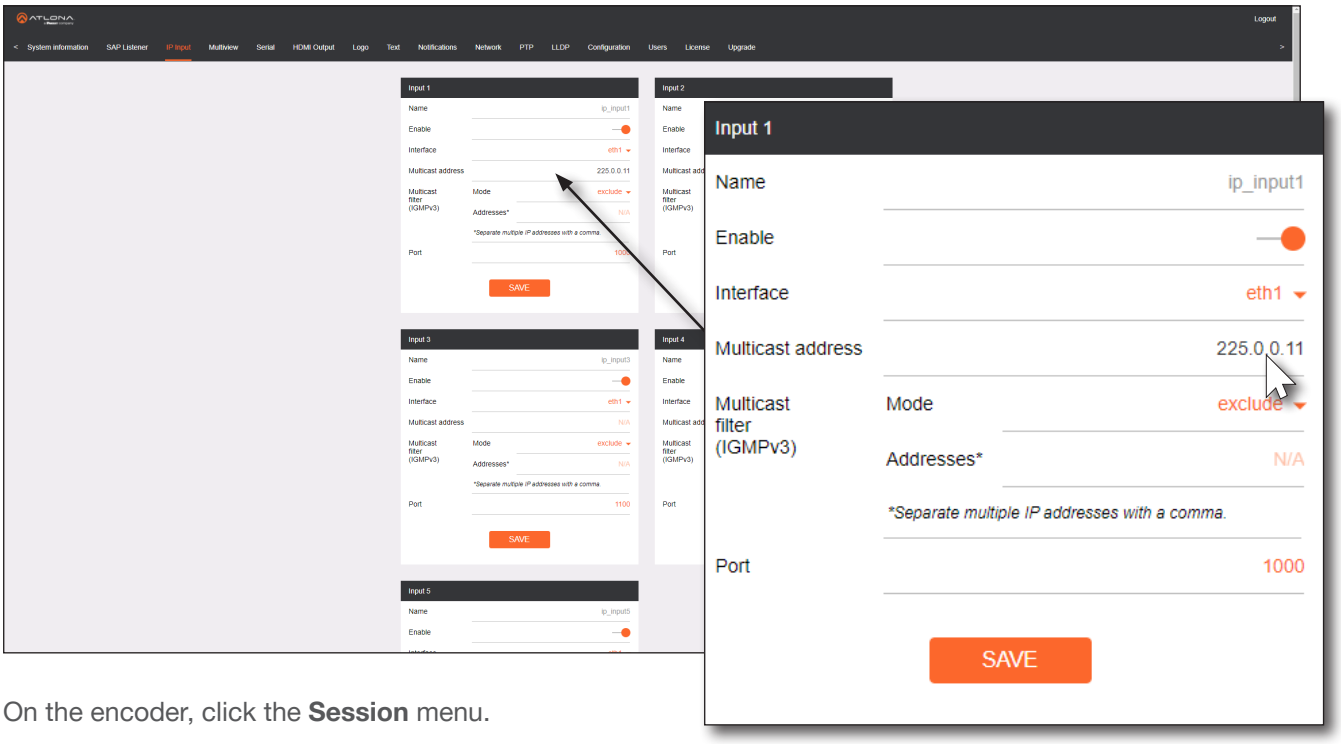
Firmware file	OmniStream SKU
`at-omni-single-upgrd-os-[version].vpup2`	AT-OMNI-111 AT-OMNI-121 AT-OMNI-111-WP
`at-omni-dual-upgrd-os-[version].vpup2`	AT-OMNI-112 AT-OMNI-122
`at-omni-residential-upgrd-os-[version].vpup2`	AT-OMNI-512 AT-OMNI-521

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.

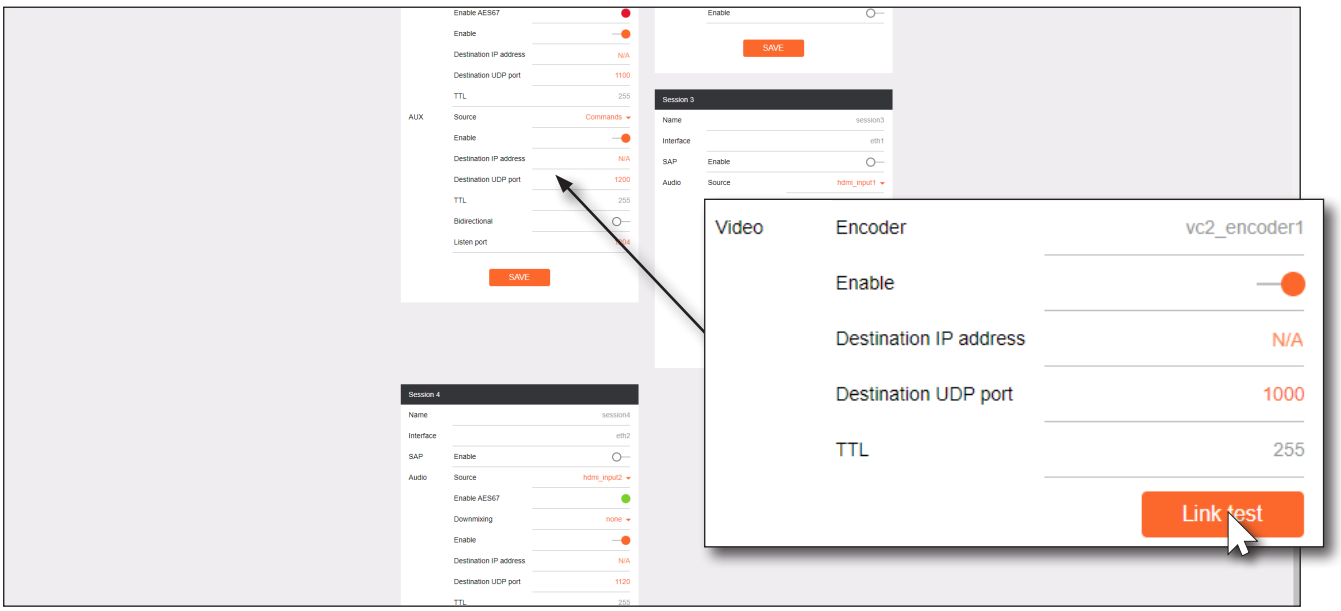
Performing a Link Test

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

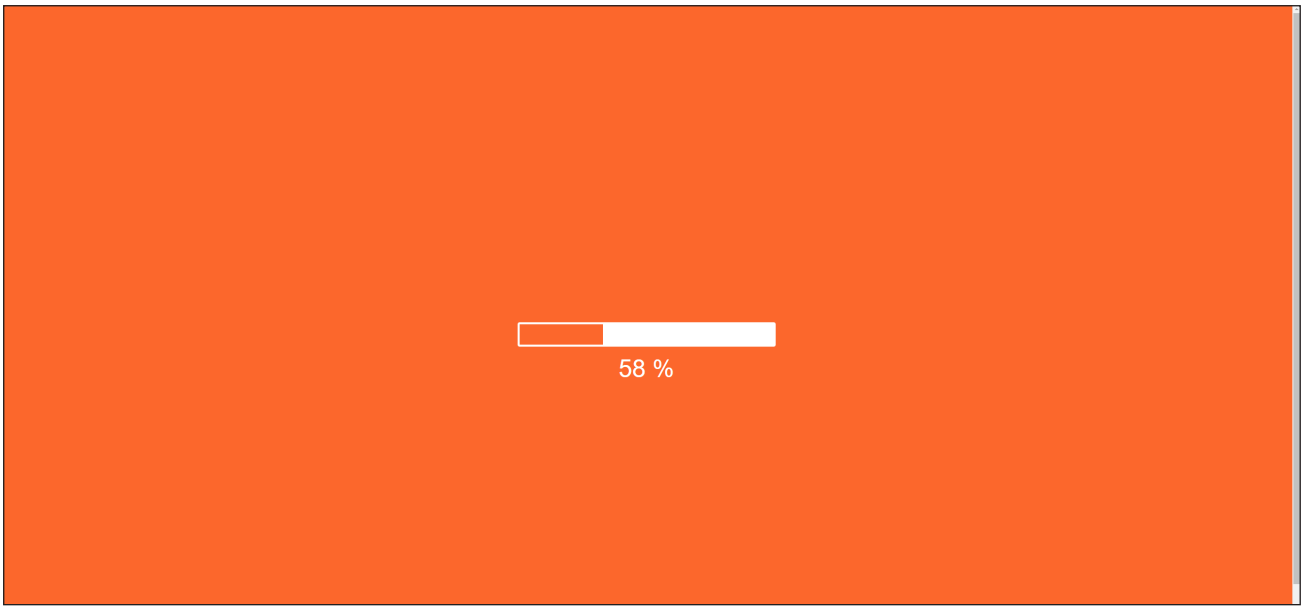
1. Launch a web browser and enter the IP address of the encoder in the address bar.
2. Open another tab in the browser and enter the IP address of the subscribing decoder in the address bar.
3. Verify that all desired decoders are subscribed to the encoder's multicast address and port number. In the 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.

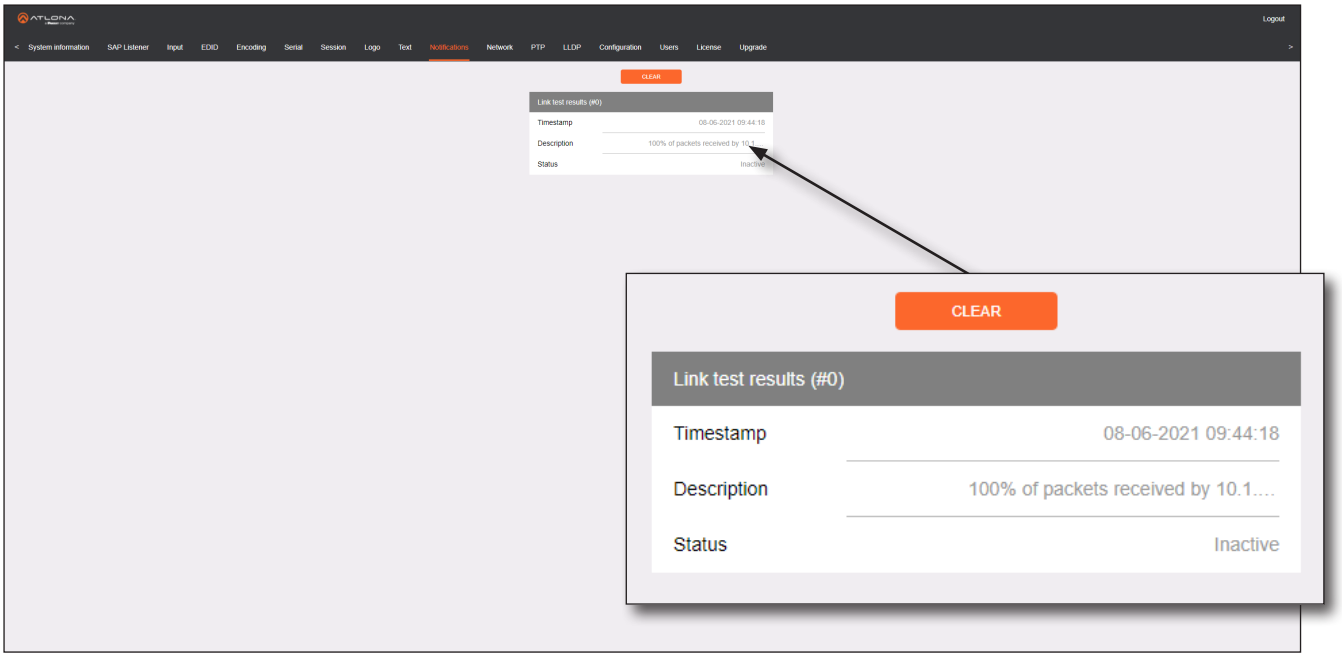


6. An orange screen with a progress bar will be displayed during the testing procedure.



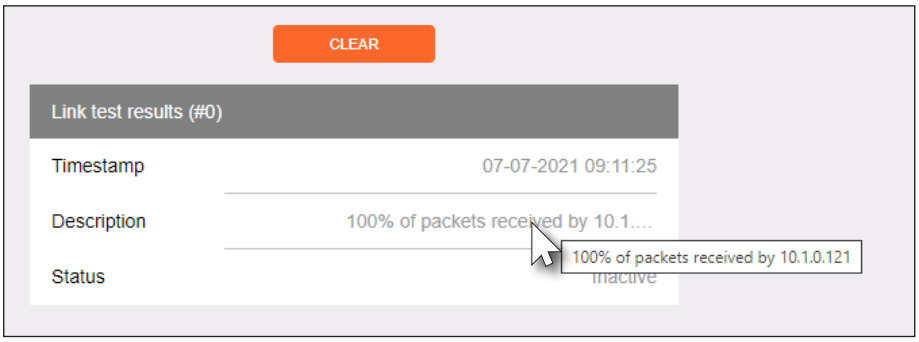
7. After the test, the encoder web page will automatically redirect to the **Notifications** tab where the user can see the results.

   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.



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 video multicast address.

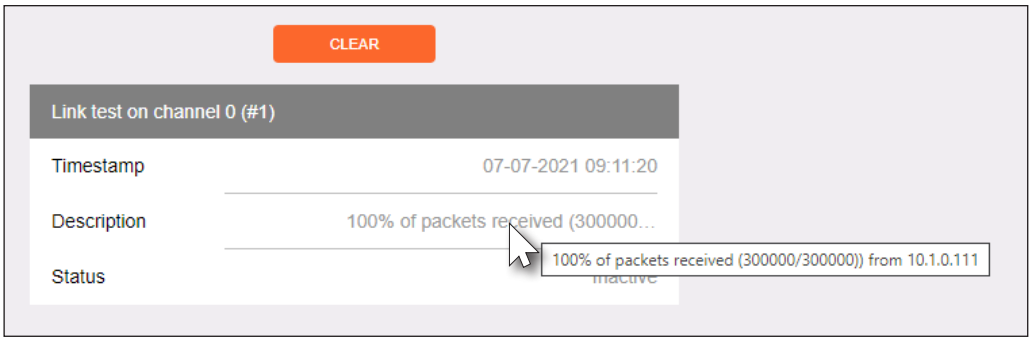
Hovering the mouse over the **Description** field will provide the full IP address of each decoder which received the test, as shown below. If multiple decoders were tested, additional IP addresses will be displayed.



8. 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.

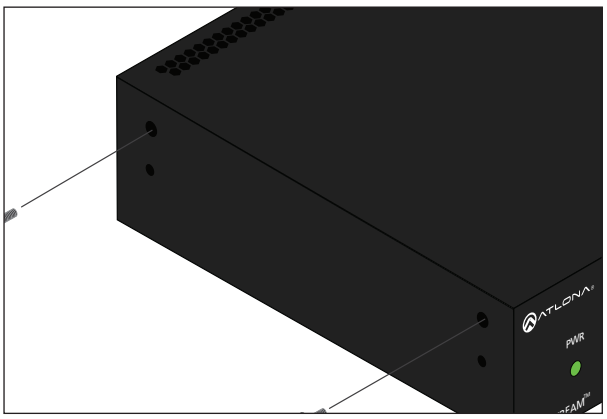


9. Click the **CLEAR** button to remove the test results from the **Notification** page.

Mounting Instructions

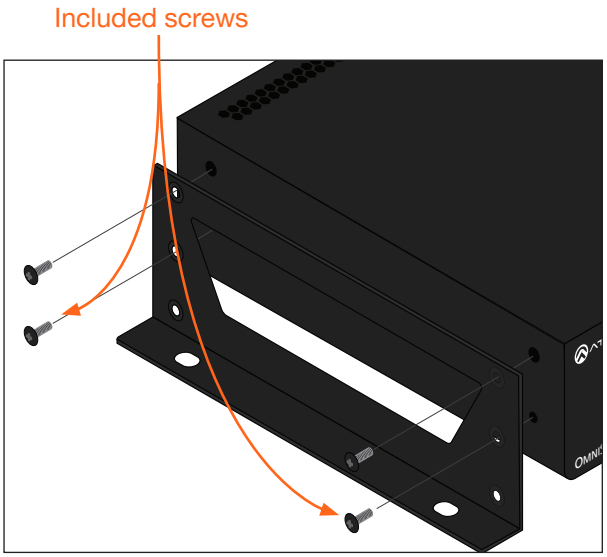
The AT-OMNI-512 encoder includes two mounting brackets and four mounting screws, which can be used to attach the unit to any flat surface.

1. Using a small Phillips screwdriver, remove the two screws from the left side of the enclosure.



2. Position one of the rack ears, as shown below, aligning the holes on the side of the enclosure with one set of holes on the rack ear.

3. Use the enclosure screws to secure the rack ear to the enclosure.



4. To provide added stability to the rack ear, use two of the included screws and attach them to the two holes, directly below the enclosure screws, as shown above.

5. Repeat steps 1 through 4 to attach the second rack ear to the opposite side of the unit.

6. Mount the unit using the oval-shaped holes, on each rack ear. If using a drywall surface, a #6 drywall screw is recommended.

NOTE: Rack ears can also be inverted to mount the unit under a table or other flat surface.

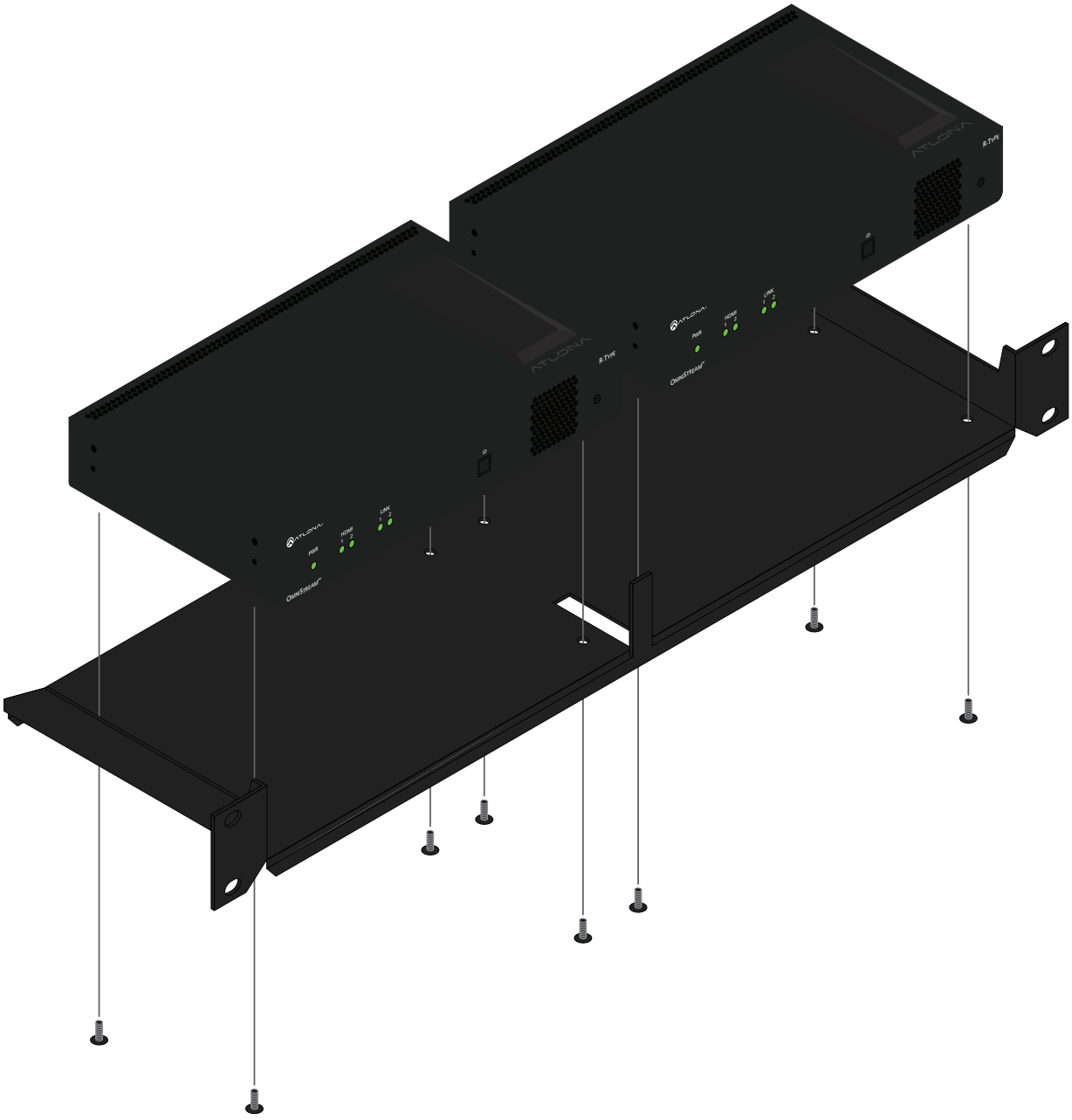
Rack Tray for OmniStream

OmniStream encoders can also be mounted in the OmniStream rack tray (AT-OMNI-1XX-RACK-1RU). The rack tray is sold separately and provides easy mounting and organization of up to two OmniStream encoders/decoders in a convenient 1U rack tray. The OmniStream rack tray can be purchased directly from Atlona.

1. Position the OmniStream products, as shown in the illustration below.
2. Using the included screws, secure each unit to the rack with a Philips screwdriver.

> **NOTE:** OmniStream units can be mounted forward-facing or back-facing, depending upon your requirements.

3. Install the entire assembly into an empty 1U slot in the rack.



Specifications

Video		
Signal	HDMI	
Copy Protection	HDCP 2.2	
UHD/HD/SD	4096×2160 (DCI) @ 30/24 Hz 3840×2160 (UHD)[2] @ 60/50/24/25/30 Hz 1920x1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz	1920x1080i[1] @ 25/29.97/30 Hz 1280x720p @ 30/50/59.94/60 Hz
VESA[3]	2560x1600 1920x1200 1680x1050 1600x1200 1600x900 1440x900 1400x1050	1366x768 1360x768 1280x1024 1280x800 1280x768 1152x768 1024x768
Color Space	YUV, RGB	

Encoding			
Density	Dual encoding engine		
Compression Format	VCx and VC-2 (SMPTE-2042)		
Video Quality Optimization	User-selectable: PC Application or Video mode (VC-2 codec only)		
Chroma Subsampling	Chroma	VCx	VC-2 Video
	4:4:4	Yes	No
	4:2:2	Yes	No
	4:2:0	Yes	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.		
Thumbnails	Number of thumbnails: 1 per HDMI input Resolution: 320x180px File format: JPG Update frequency: 2 seconds		

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		

Appendix

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
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).

Control		
RS-232	Device control and configuration; supports baud rates from 2400 to 115200 Bidirectional pass-through from control system to network	
IR	Pass-through from control system to network Pass-through from network to control system	

Connectors	
HDMI	2 - Type A, 19-pin, female, locking
ETHERNET[4]	2 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Euroblock, 6-pin (2 ports); RS-232 or IR on ports 1 and 2
Power	1 - Euroblock, 2-pin

Indicators and controls	
PWR	1 - LED, tricolor (red, amber, green)
HDMI	2 - LED, bicolor (red, green)
LINK	2 - LED, bicolor (red, green)
ID	1 - Momentary, tact-type, backlit (blue); sends an identification broadcast message over the network to any listening devices.
Reboot	1 - Momentary, tact-type

Power		
PoE	IEEE 802.3af	
Consumption	Up to 12 W	
External Power Supply (optional)	Input: 110 - 220 V AC, 50/60 Hz Output: 48 V DC, 0.83 A	

Environmental	Fahrenheit	Celsius
Operating Temperature	+14 to +122	-10 to +50
Storage Temperature	-14 to +140 °F	-10 to +60 °C
Operating Humidity (RH)	20% to 95%, non-condensing	
Maximum Operating Altitude	2000 meters	
Cooling System	Front-to-rear airflow, temperature-controlled fans	

Chassis		
Dimensions (H x W x D)	1.34 in x 8.19 in x 4.41 in 34 mm x 208 mm x 112 mm	
Weight	1.5 lbs 0.7 kg	

Certification		
Device	CE, FCC, CB, RoHS	
Supply	CE, FCC, cULus, CB, RCM, RoHS	

Compliance		
NDAA-899	Yes	
TAA	Yes	

Warranty	
Device	To view the product warranty, use the following link: https://atlona.com/warranty

Footnotes

(1) Interlaced sources are passed-through without modification, and do not support scaling, video wall, logo insertion, text insertion, or fast switching.

(2) Using VCx, streaming is supported up to 4K60 4:4:4. Using VC-2 Video Mode, 4K60 and 4K50 resolutions will be chroma subsampled to 4:2:0 before streaming.

(3) All VESA resolutions are 60 Hz.

(4) Maximum distance per hop is 330 feet (100 meters), depending upon network configuration.