ATLONA
a PANDUIT company

OmniStream™ R-Type
Dual-Channel Networked AV Encoder

AT-OMNI-512

Atlona Manuals
Networked AV

Version Information

Version	Release Date	Notes
1	Mar 2017	Initial release
2	Jul 2018	Includes updates to 1.2.1 firmware
3	Aug 2019	Documentation updated to support AMS 2.4.0
4	Sep 2019	Documentation updated to support OmniStream 1.2.5; various bug fixes.

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Registration only takes a few minutes and protects this product against theft or loss. In addition, you will receive notifications of product updates and firmware. Atlona product registration is voluntary and failure to register will not affect the product warranty.

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Operating Notes

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

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

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

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OR

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OR

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Atlona Limited Product Warranty Period begins on the date of purchase by the end-purchaser. The date contained on the end-purchaser ‘s sales or delivery receipt is the proof purchase date.

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- 10 years from proof of purchase date for hardware/electronics products purchased on or after June 1, 2013.
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Atlona requires that products returned are properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization or case number will be refused. Atlona, at its sole discretion, reserves the right to reject any products received without advanced authorization. Authorizations can be requested by calling 1-877-536-3976 (US toll free) or 1-408- 962-0515 (US/international) or via Atlona’s website at www.atlona.com.

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This Limited Product Warranty excludes:

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- Damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Atlona to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product.
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- Products purchased from unauthorized distributors, dealers, resellers, auction websites and similar unauthorized channels of distribution.

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Important Safety Information

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.

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

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

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

FCC Statement

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 OmniStream™ R-Type (AT-OMNI-512) is a networked AV encoder with two independent channels of encoding for two HDMI sources up to UHD @ 60 Hz and HDR, plus embedded audio and RS-232 or IR control pass-through. It is part of the OmniStream R-Type Series, designed for high performance, flexible distribution of AV over Gigabit Ethernet in residential and light commercial applications. The OmniStream 512 is HDCP 2.2 compliant and ideal for the latest as well as emerging UHD and HDR sources. It features visually lossless compression with pristine-quality video and graphics performance, plus extremely low, subframe latency from encode to decode – critical for demanding applications such as gaming. This dual-channel encoder is housed in a half-width rack enclosure and is ideal for high-density, compact installation in a centralized equipment location.

Features

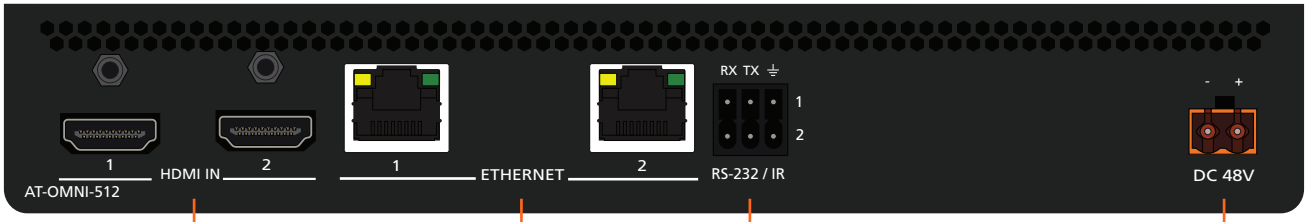
- AV encoder for HDMI up to 4K/UHD, plus embedded audio and RS-232 or IR control pass-through
- Dual-channel AV encoding
- Supports UHD @ 60 Hz plus HDR formats
- HDCP 2.2
- Simplify integration with plug-and-play network switch compatibility
- Local or PoE (Power over Ethernet) powering
- AES67-compatible audio over IP streaming

Package Contents

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

Panel Description

Front



Rear

6 7 8 9

1 **PWR**
This LED indicator glows bright green when the unit is powered.

2 **HDMI 1 / HDMI 2**
These LED indicators show the active input status.

3 **LINK 1 / LINK 2**
These LED indicators show the link status of the encoder.

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 23) for more information.

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 an 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 10) and IR Connections (page 11) for more information.

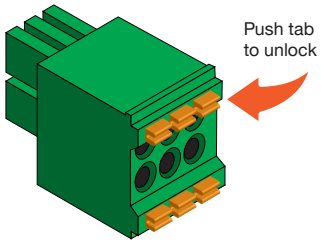
9 **DC 48V**
Connect the optional 48V DC power supply to this receptacle. This power supply is available, separately, and can be purchased through Atlona.

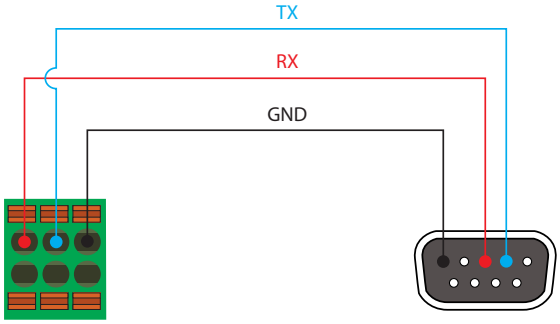
Installation

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 Phoenix block. 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.

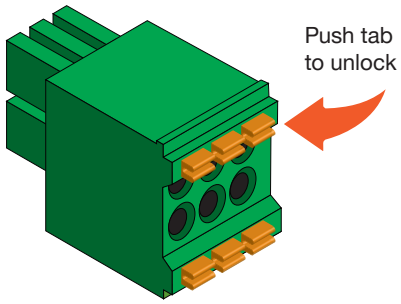




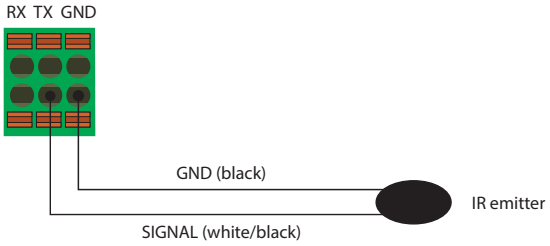
NOTE: Typical DB9 connectors use pin 2 for TX, pin 3 for RX, and pin 5 for ground. On some devices, pins 2 and 3 are reversed.

IR Connections

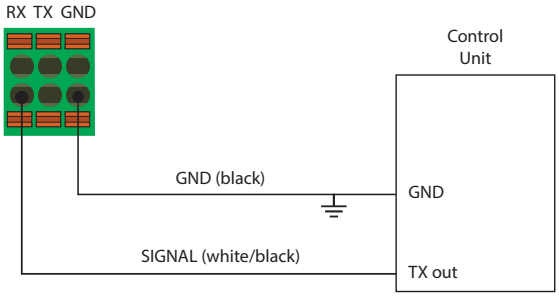
The same port that provides RS-232 connections also supports bidirectional IR pass-through, allowing a device to be controlled from either the headend or the decoder endpoint. This step is optional. Either the top three or bottom three set of terminals can be used for IR. Only the **RS-232 2** port (bottom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



IR emitter configuration



IR extender configuration



The following components are required. Note that other components may also be used. However, Atlona has tested and verified the following components for this application:

- Xantech CB12 1 Zone Connecting Block
- Xantech 12 V PSU
- Atlona AT-IR-CS-RX
- Atlona AT-OMNI-IR-TX

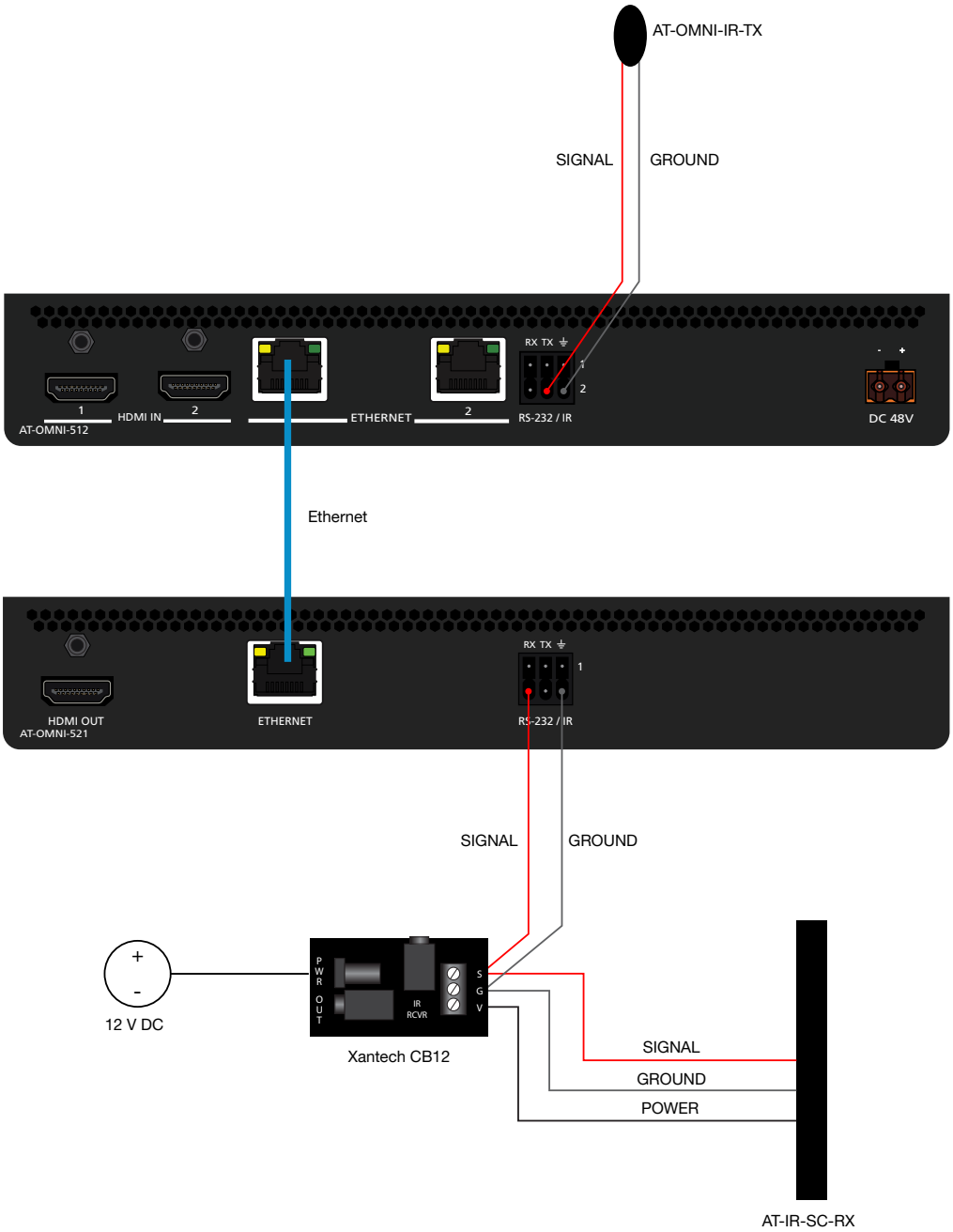
Decoder

1. Connect the SIGNAL, GROUND, and POWER leads from the Xantech CB12 to the AT-IR-SC-RX.
2. On the Xantech CB12, connect the SIGNAL and GROUND leads to the **RX** and ⏚ pins, respectively, of the **RS-232 2** port.
3. Connect the Xantech 12 V power supply (or other compatible 12 V DC power supply) to the Xantech CB12.

Encoder

4. Connect the SIGNAL and GROUND pins, from the AT-OMNI-IR-TX, to the **TX** and ⏚ pins, respectively, of the RS-232 2 port.
5. Refer to the illustration on the next page to verify that the correct connections have been made.

For downstream IR control, either multicast or unicast mode can be used. However, when controlling a source from the decoder (viewing location), unicast mode should be used. Refer to Unicast Mode (page 24) and Multicast Mode (page 26) for more information.



IMPORTANT: The IR emitter must be placed no more than 1” from the IR sensor on the device, in order to function properly.

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.

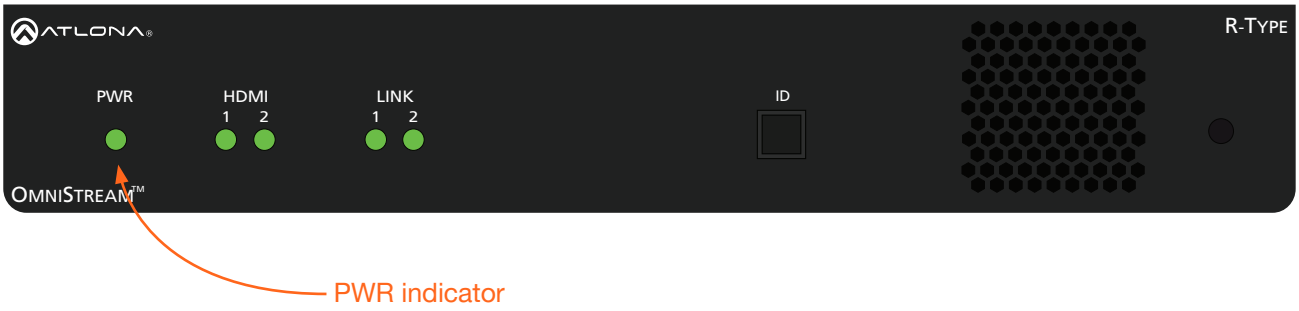
3. RS-232 (optional)
   Refer to RS-232 Connections (page 10) for wiring information.

   - 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.

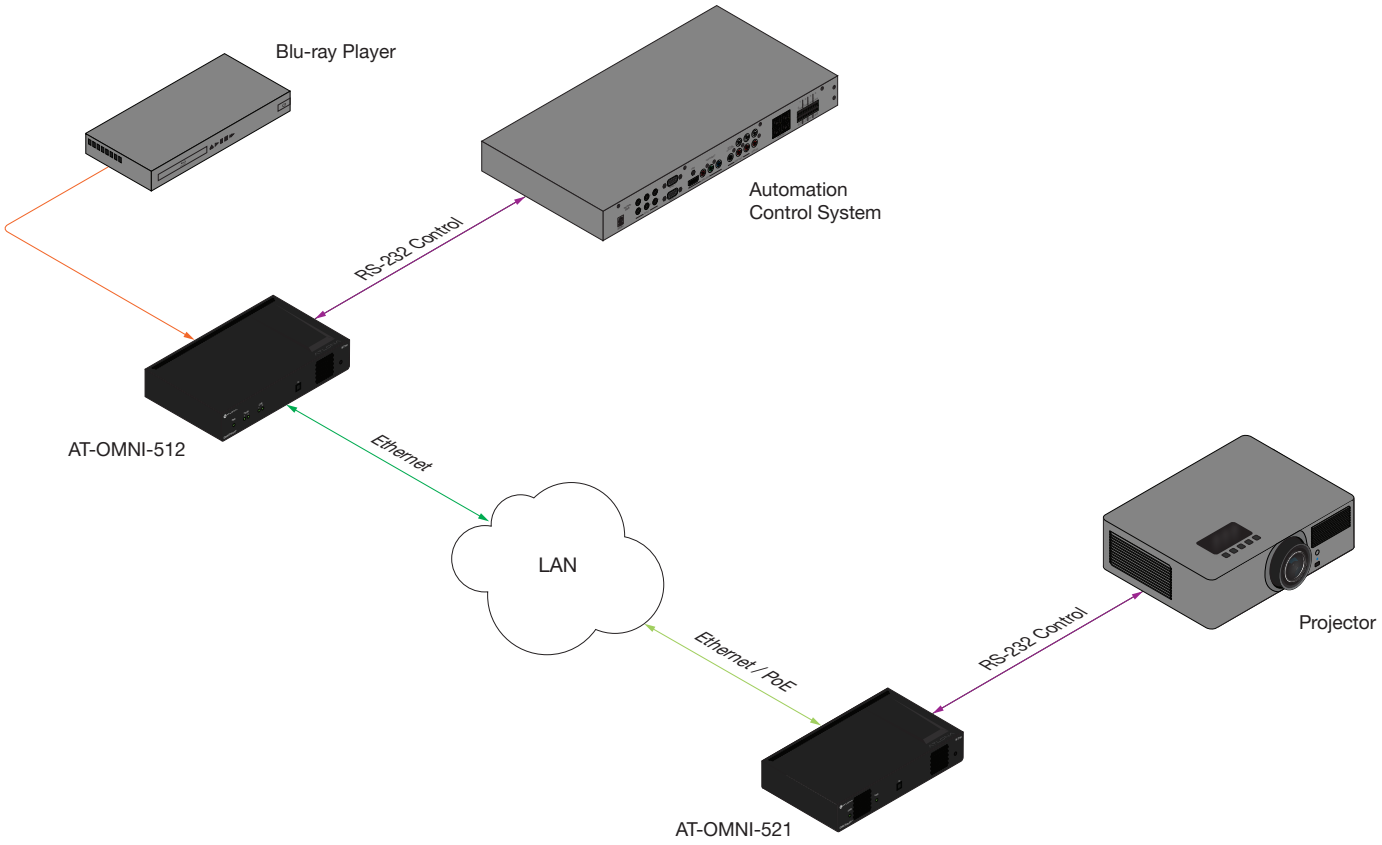
4. IR (optional)
   Refer to IR Connections (page 11) for wiring information.

   - **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 1” 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



Configuration

Accessing Encoders in AMS

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

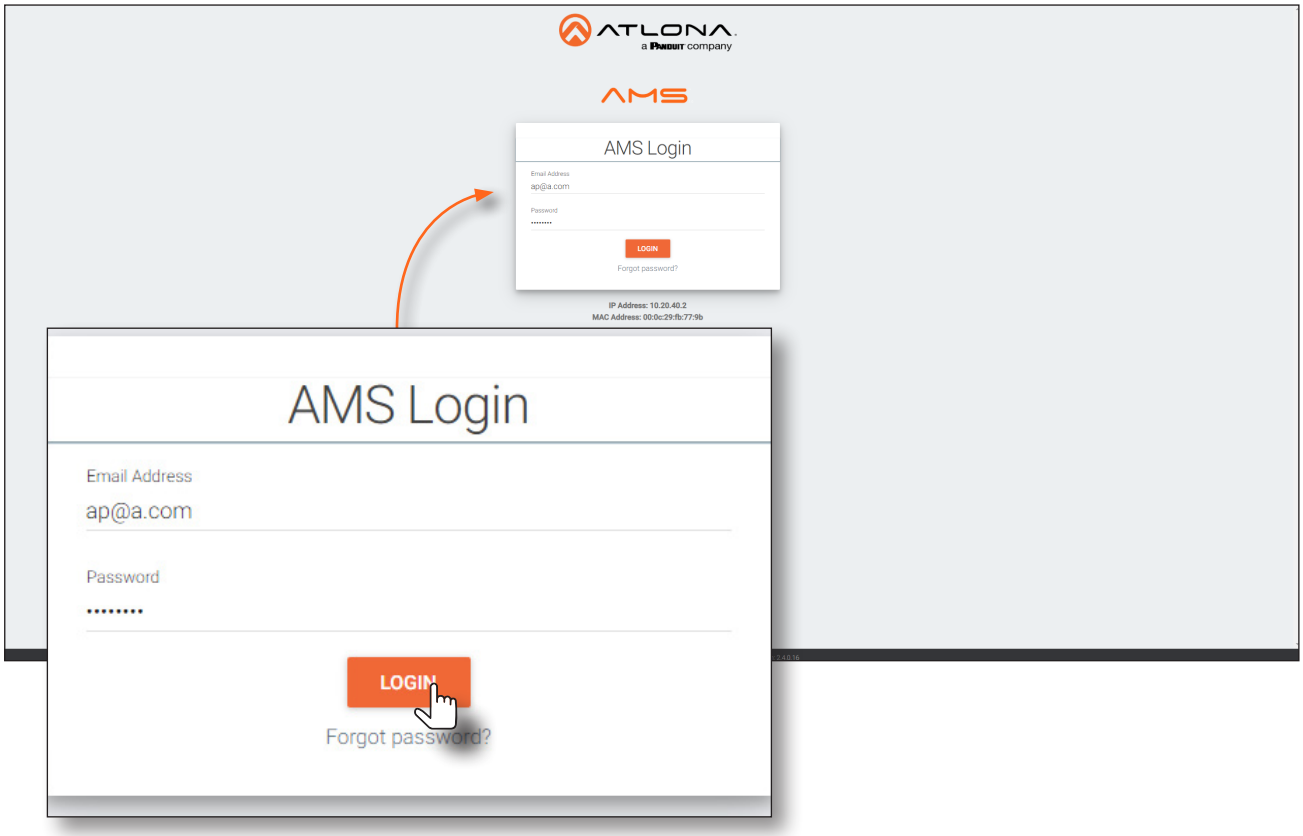
By default, the AT-OMNI-512 is set to DHCP mode, allowing a DHCP server (if present) to assign the encoder an IP address. Once an IP address has been assigned, the Atlona Management System (AMS) can be used to manage the product on the network. Note that AMS will only be able to discover encoders if they are on the same VLAN.

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

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

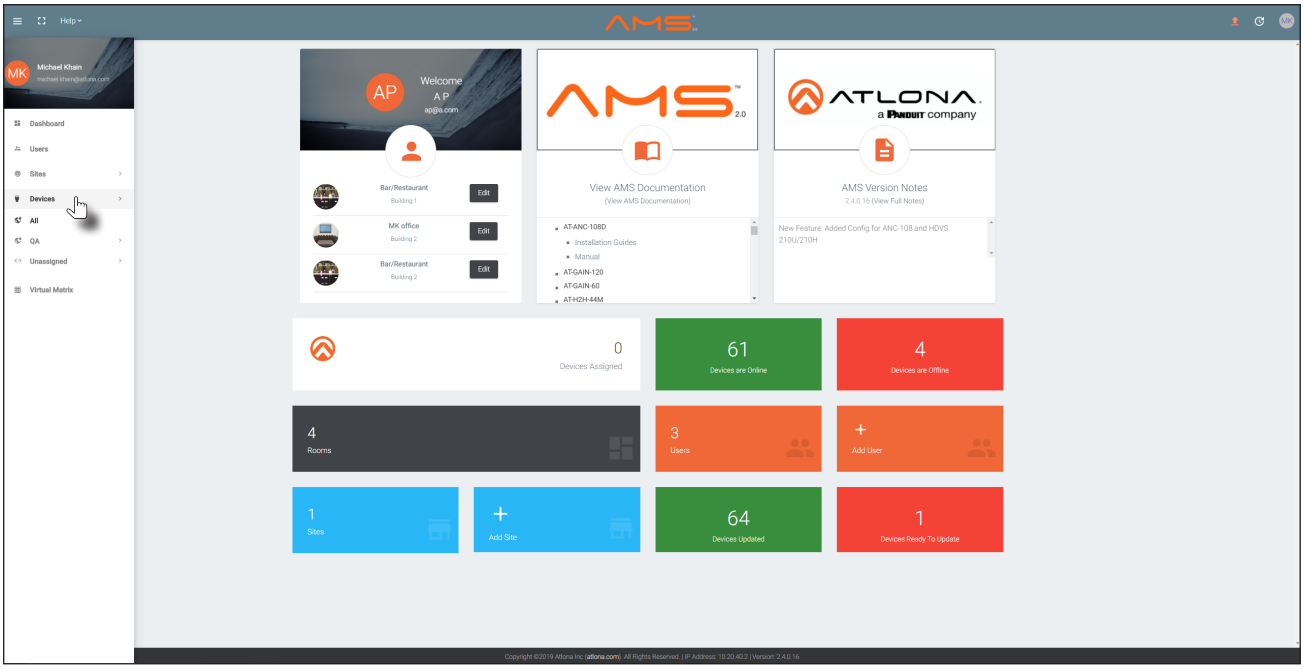
1. Launch a web browser and enter the IP address of AMS, in the address bar.
2. Enter the required login credentials. The default login is:

   Username: admin
   Password: Atlona



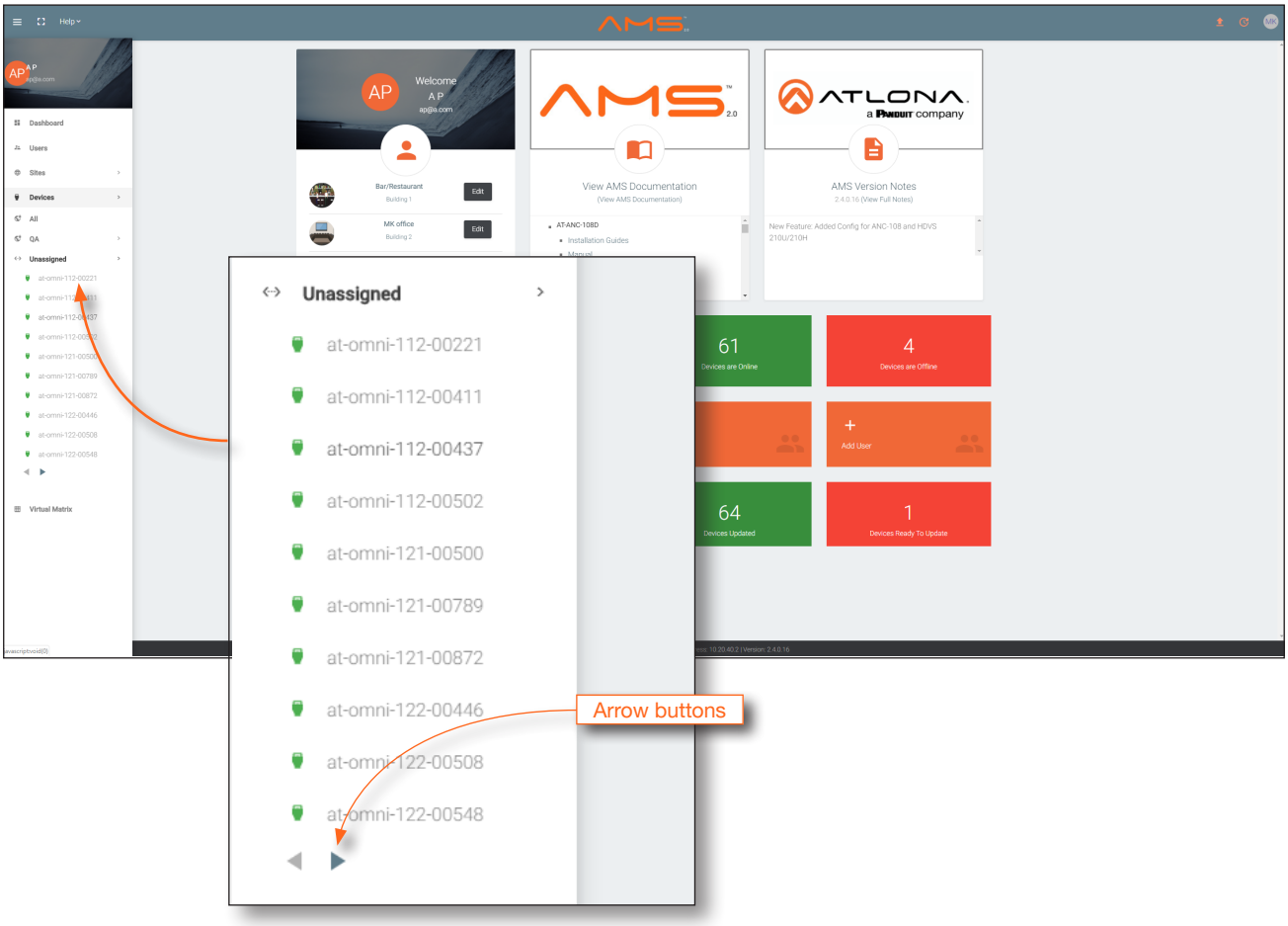
3. Click the **Login** button.
4. The AMS Dashboard will be displayed.
5. Click the ≡ icon, in the upper-left corner of the AMS Dashboard.

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



7. Click the **Unassigned** option.

8. Click the left and right arrows, at the bottom of the **Unassigned** list, to scroll through all available devices.



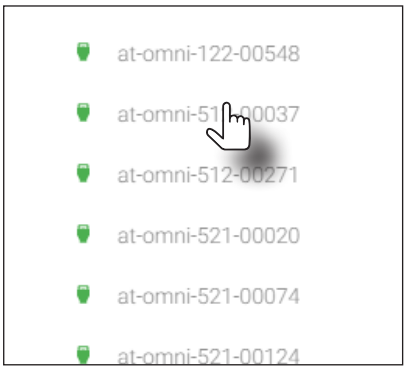
All available encoders will be displayed under the **Unassigned** category. When an encoder is unassigned, it means that it has not been assigned to a site, building, and/or room. Refer to the AMS User Manual for more information on these topics.

If a DHCP server is not found within 60 seconds, the encoder will be placed in Auto IP mode and assigned an IP address within the range of 169.254.xxx.xxx. If this occurs, configure the network interface of the computer that is running AMS, located on the same subnet (169.254.xxx.xxx, subnet mask 255.255.0.0). Refer to Configuring a Static IP Address (page 19) for more information on configuring the AT-OMNI-512 in Auto IP mode.

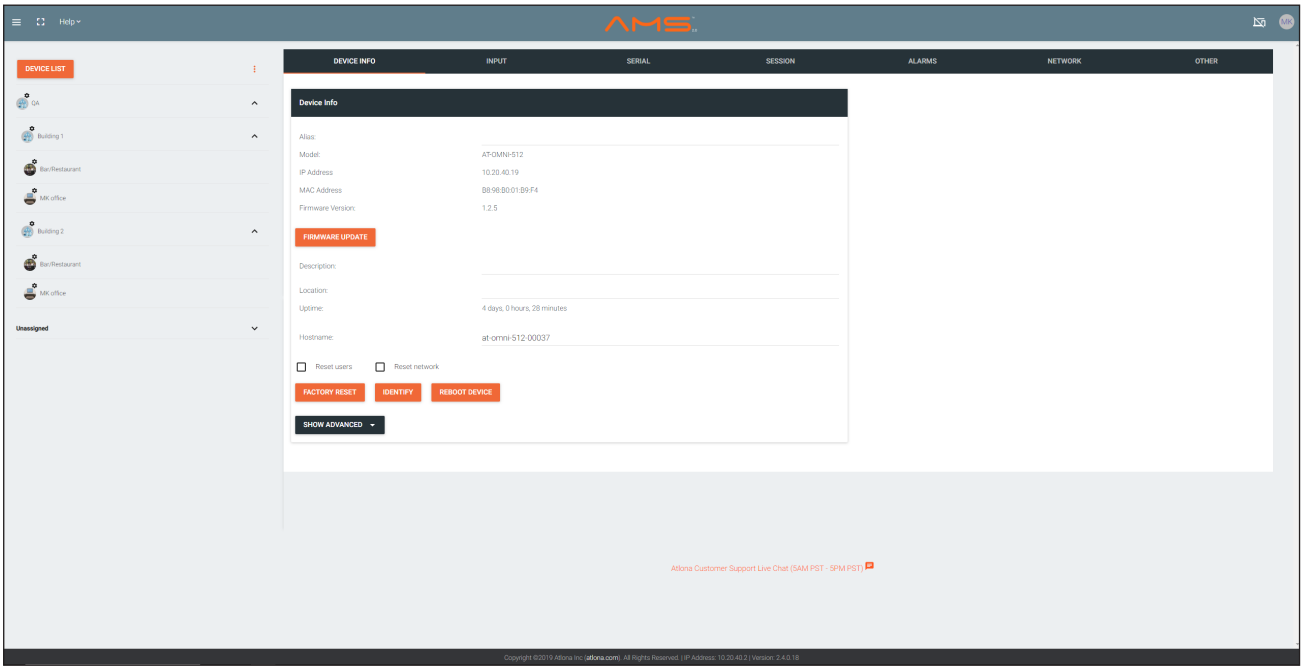
If no AT-OMNI-512 is found, then verify the following:

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

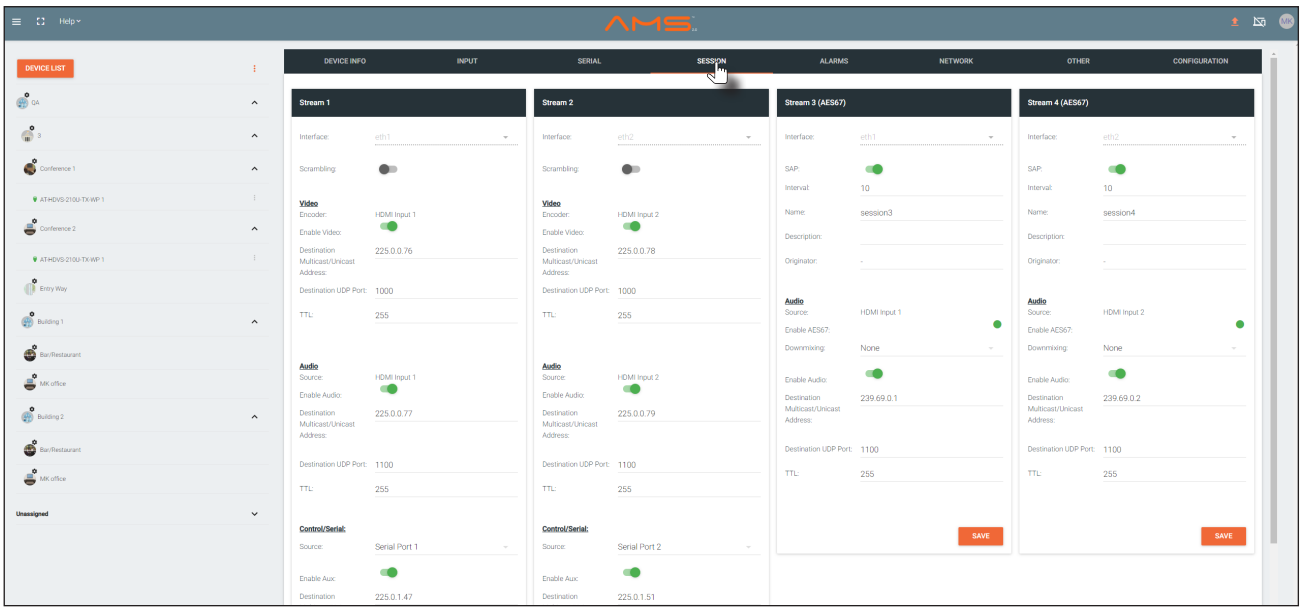
9. Click the desired encoder within the **Unassigned** list.



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

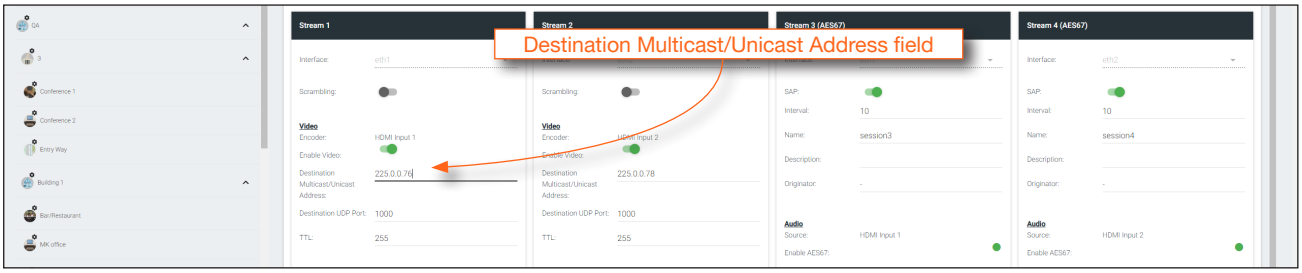


11. Click **SESSION** in the top menu bar.

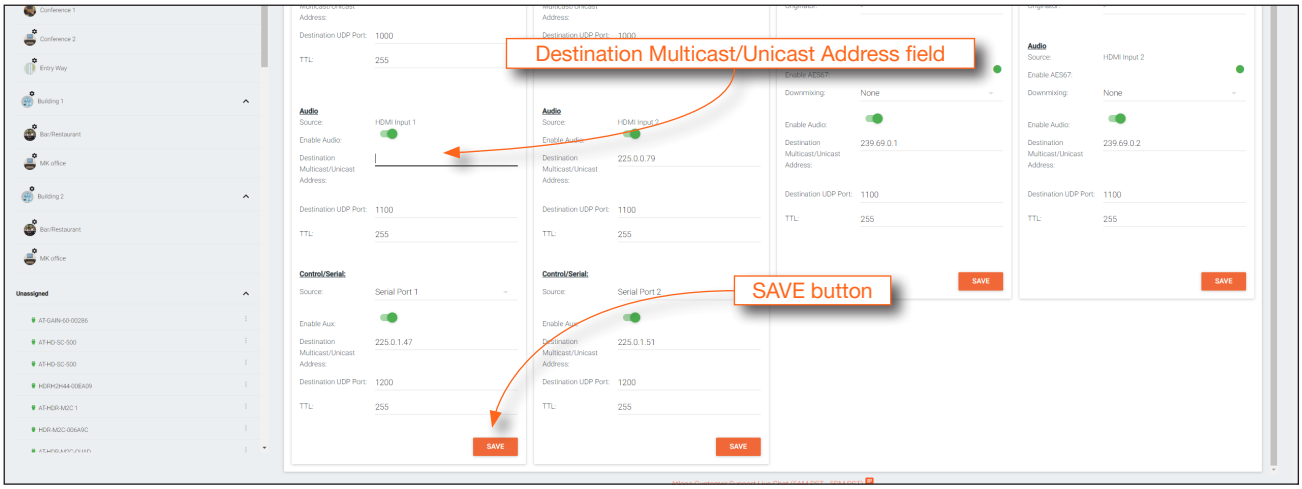


12. Locate the **Video** section.

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



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



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

16. Repeat steps 12 through 15 under for **Stream 2**, if required. If there are multiple encoders on the system, then these steps will need to be completed for each encoder.

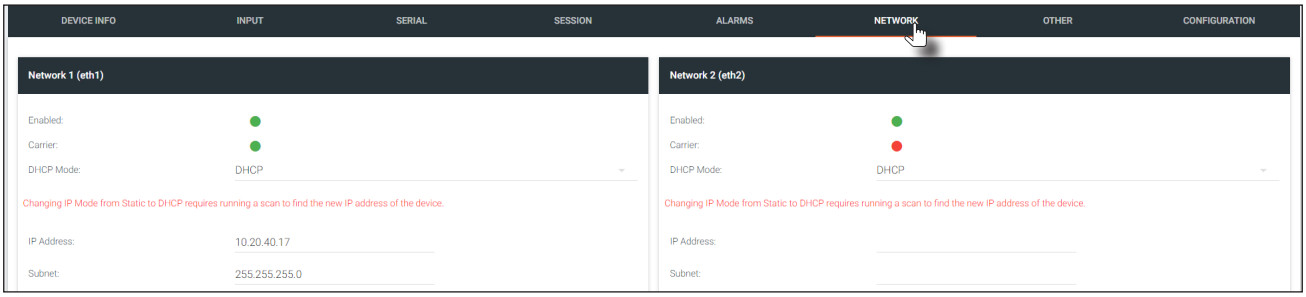
Configuring a Static IP Address

The following section is only required to set the AT-OMNI-512 encoder, currently in Auto IP mode, to a static IP address. If a DHCP server is not found within 60 seconds, encoders are automatically placed in Auto IP mode and will be assigned an IP address within the range 169.254.xxx.xxx. If this occurs, a static IP address can be assigned to the encoder in order for AMS to locate it on the network.

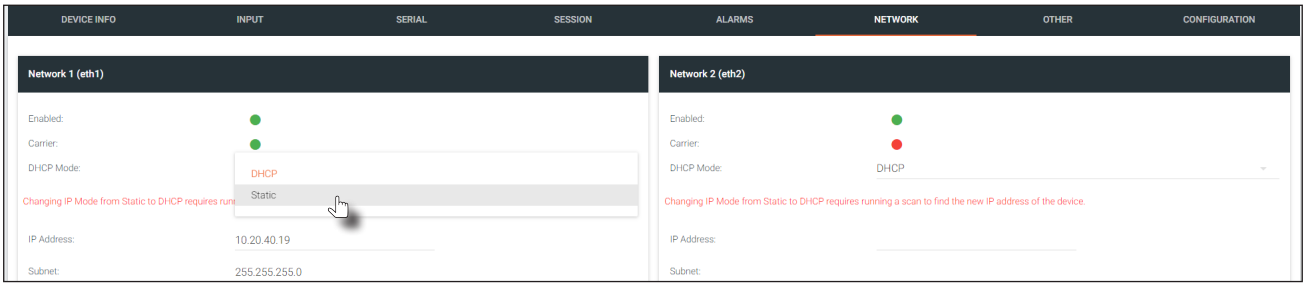
1. Make sure that the AT-OMNI-512 is powered. Power will need to be supplied either by the included external 48 V DC power supply or by connecting an Ethernet cable from the encoder to a PoE-capable switch. The Ethernet cable can be connected to either **ETHERNET 1** or **ETHERNET 2**.
2. Connect an Ethernet cable from the PC, directly to one of the Ethernet ports on the encoder. Make sure that the computer being used has AMS installed.
3. Configure the PC to a static IP address that is on the same subnet as the encoder.

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

4. Login to AMS. Refer to Accessing Encoders in AMS (page 15) for information on the login process.
5. Locate the AT-OMNI-512 encoder under the **Unassigned** section within AMS.
6. Click on the device.
7. Under AMS, click the **NETWORK** tab.



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



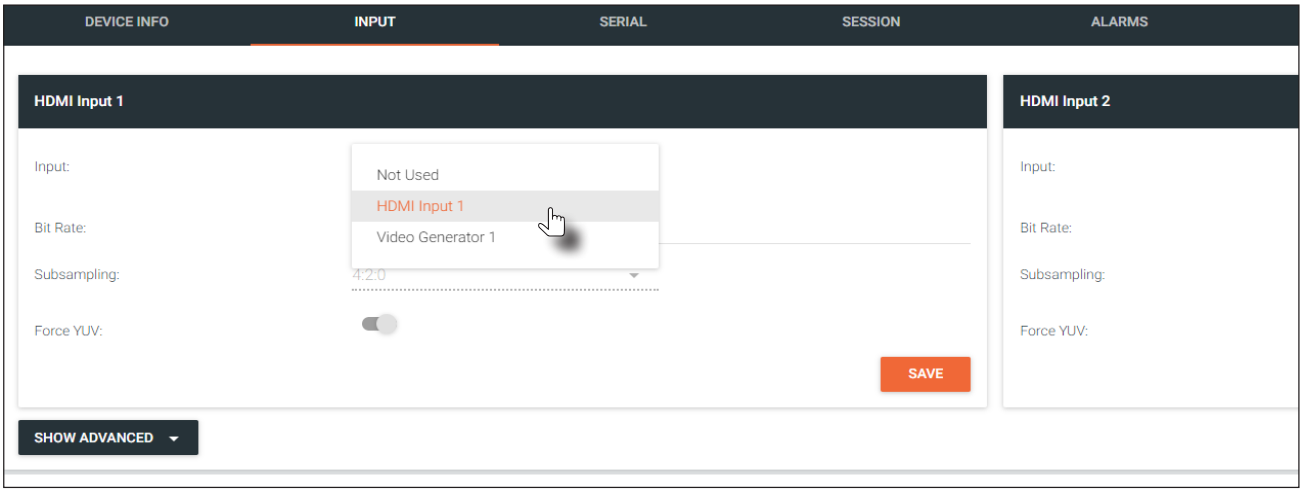
9. Enter the required network information for the encoder in the **IP Address**, **Subnet**, and **Gateway** fields.
10. Click the **Save** button in the bottom-right corner, to apply the changes.
11. Disconnect the encoder from the PC and connect it to the network.
12. The encoder is now ready for use.

Input Selection

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

Input Selection

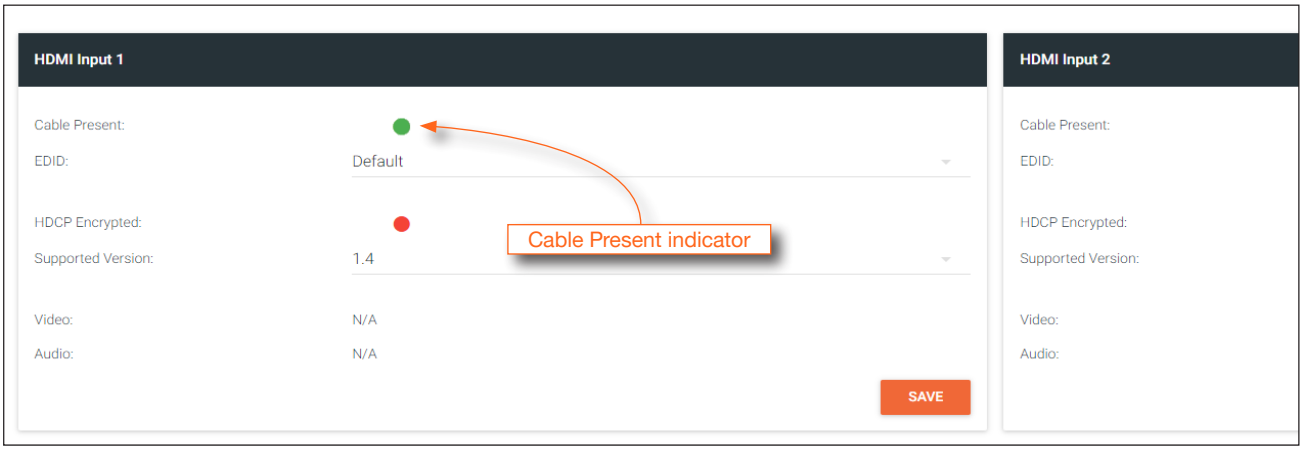
1. Under AMS, click **INPUT** in the menu bar.
2. Click the **Input** drop-down list for **HDMI Input 1** and select the input.



3. Repeat the above steps for the HDMI Input 2 section. If a secondary HDMI source is not connected to the encoder, then these fields may be left at their current settings.
4. Click the **SAVE** button in to commit changes.

Verifying the Input

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



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

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

Session Configuration

Once the inputs have been assigned to the desired source, the next step is to configure each *session*. A *session* is a class-D multicast IP address that is assigned to an AV stream. If each stream is configured for bit rates less than 450 Mbps (only recommended for 1080p and lower resolutions), a single Ethernet cable can transport two sessions. The AT-OMNI-512 supports up to four sessions, which allows for redundancy in dual 1080p-use cases.

Video

1. Under AMS, click **Session** in the menu bar.
2. Click the desired physical interface from the **Interface** drop-down list: **eth1** or **eth2**.
3. Select the desired encoder session from the **Encoder** drop-down list: **HDMI Input 1** or **HDMI Input 2**.
4. Under the **Video** section, make sure that the **Enable Video** toggle switch is enabled (green). To disable video at any time, click the toggle switch so that it appears gray.
5. Enter the destination multicast IP address in the **Destination Multicast/Unicast IP Address** field, within the range 224.0.0.0 through 239.255.255.255.
6. Enter the port number in the **Destination UDP Port** field.

Audio

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

NOTE: If AES67 audio will be used, refer to AES67 Audio (page 57) for more information.

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

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

Basic Operation

LED Indicators

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

LED		Description
PWR	Off ○	• 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 red.
	Red ●	• The encoder is booting.
	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.
	Green ●	• Link integrity is good between the encoder and the network.

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.

Broadcast Messaging

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

Reset to Factory-Default Settings.

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.

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

Rebooting OmniStream

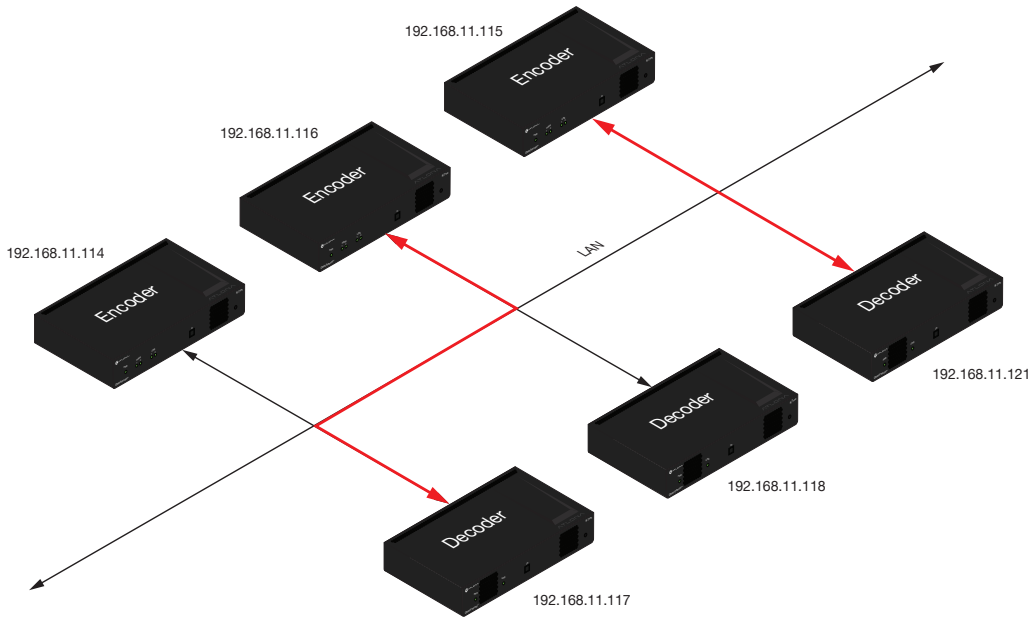
To reboot the OmniStream encoder, press and release the recessed button, on the far-right side of the unit, using a small, pointed object. Rebooting the encoder does not reset the encoder to factory-default settings.

Unicast Mode

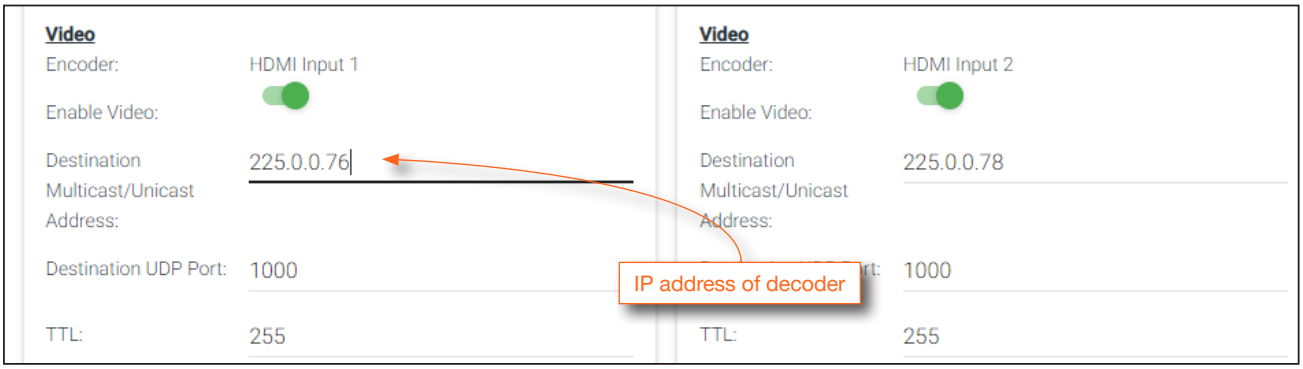
The term *unicast* is used to describe a configuration where information is sent from an encoder to a single decoder. Although it is common to have multiple encoder and decoder units within a system, it may also be desirable to restrict a single encoder to communicate with one decoder. In *unicast* mode,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

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

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

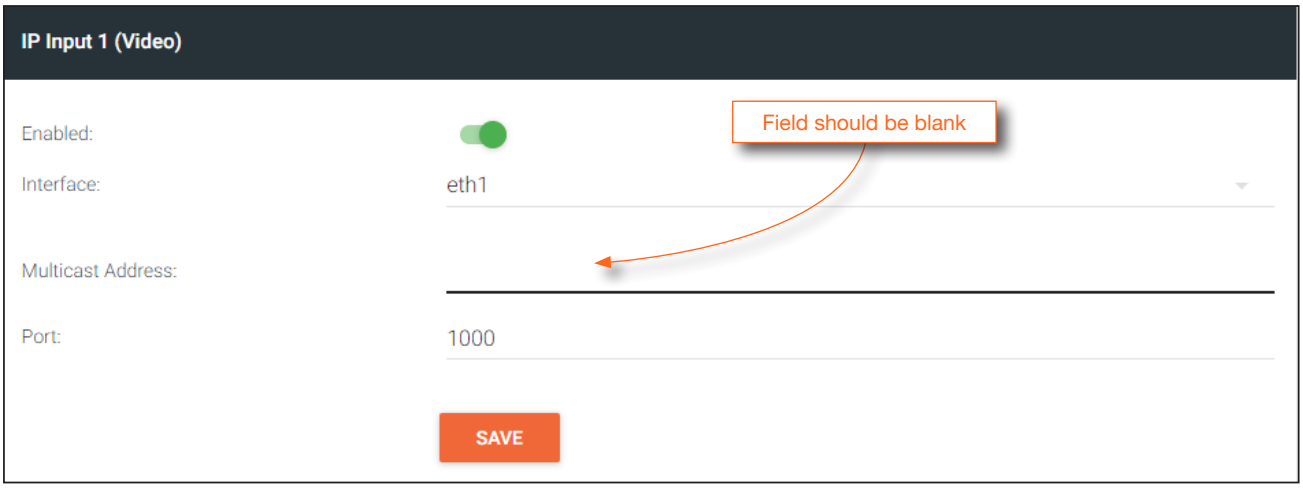


1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **SESSION** in the menu bar and scroll down to the **Video** section.
3. Enter the IP address of the decoder in the **Destination IP Address** field. Repeat this process for each session.



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

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



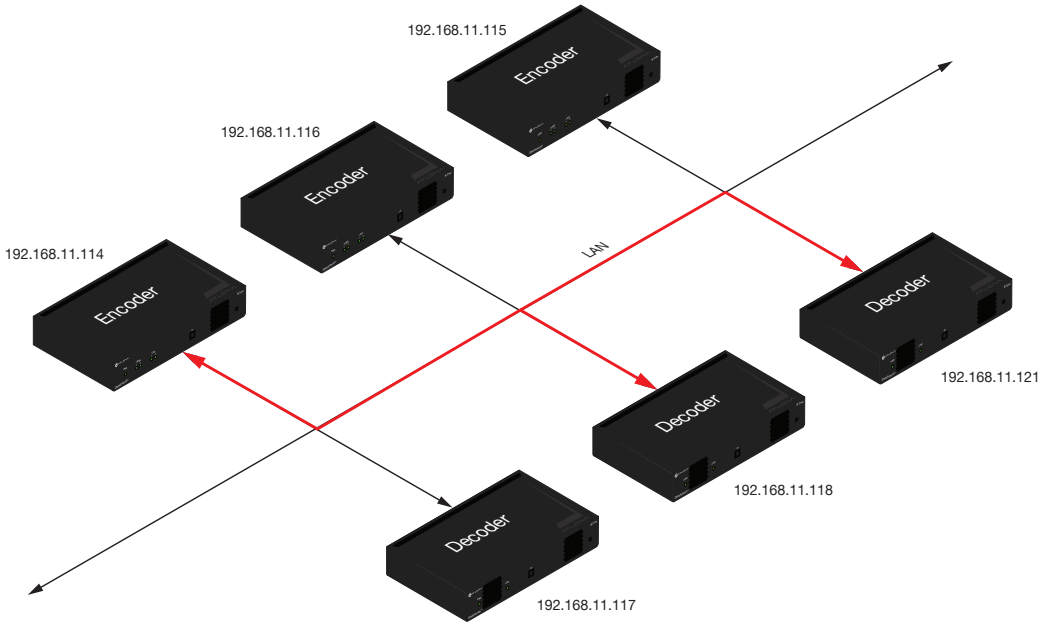
9. Unicast setup is complete. The decoder unit will now receive streams exclusively from the encoder containing the IP address of this decoder.

Multicast Mode

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

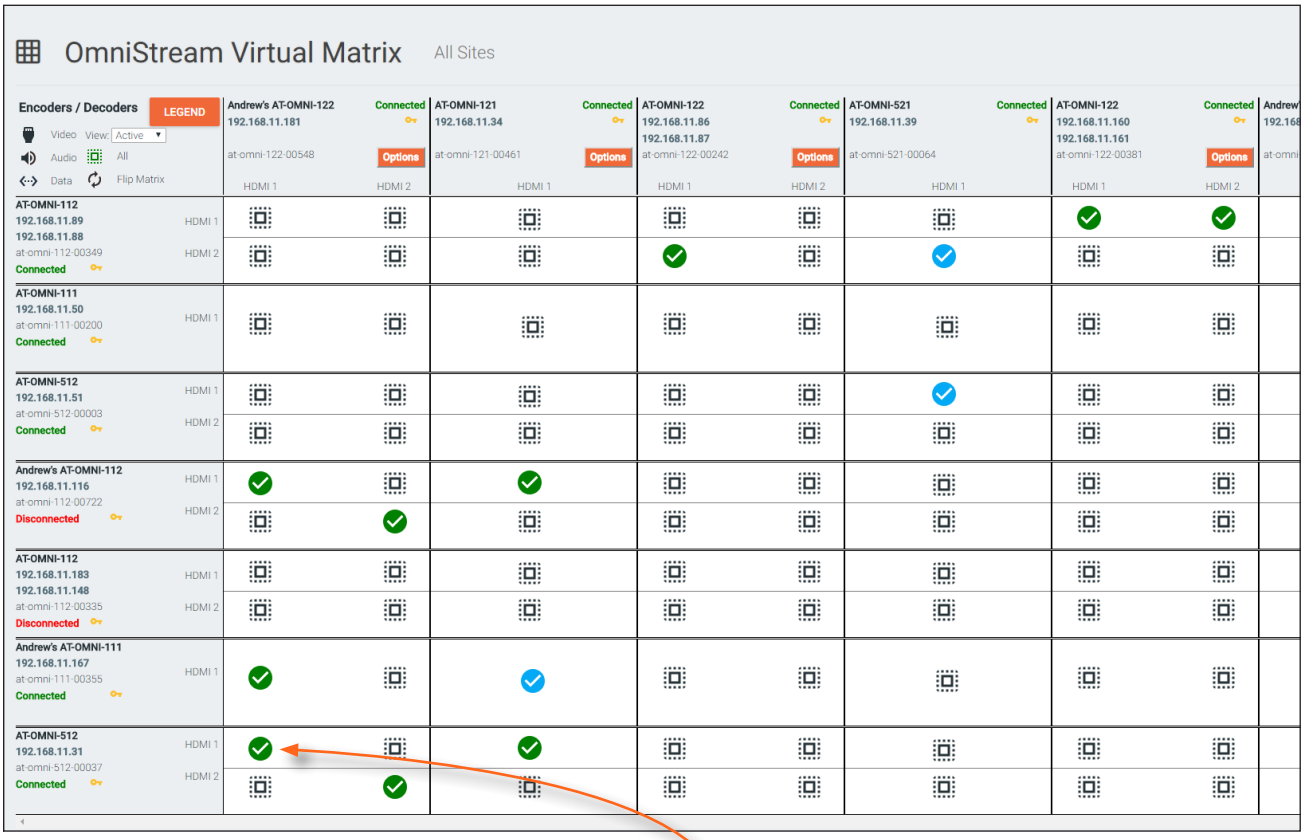
The illustration below shows three encoders and three decoders on a network, operating in *multicast* mode, where multiple decoders are subscribed to a single encoder. The red lines indicate the data paths from an encoder (192.168.11.117) to multiple decoders.

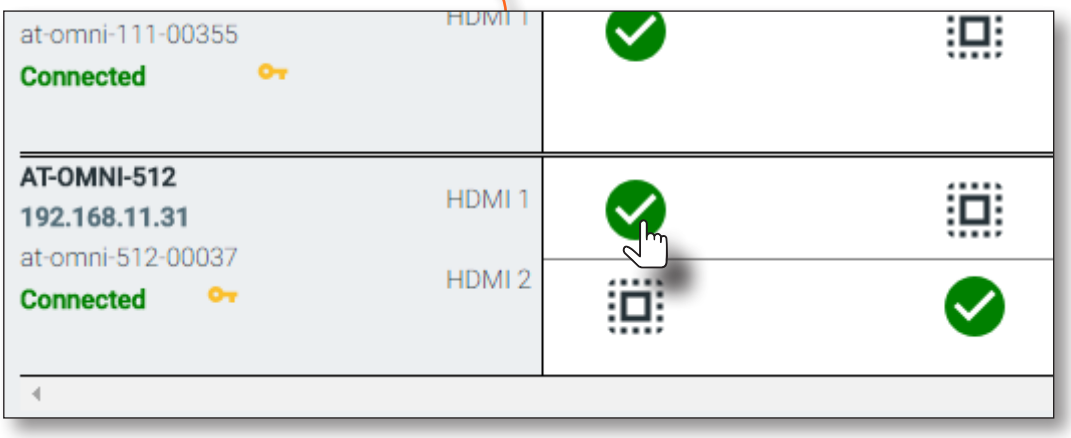
NOTE: By default, both encoders and decoders are shipped in multicast mode.



1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. The AMS Dashboard will be displayed.
3. Click the ≡ icon, in the upper-left corner of the AMS Dashboard.
4. Click **Virtual Matrix** from the fly-out menu. Refer to The Virtual Matrix (page 56), if necessary.
5. Locate the desired encoder in the Virtual Matrix, as shown on the next page.
6. Create a cross-connection to the desired decoder. When a cross-connection is created, AMS will automatically assign a multicast IP address to both the encoder and decoder. By default, AMS automatically assigns a multicast IP address to each OmniStream encoder and decoder.

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

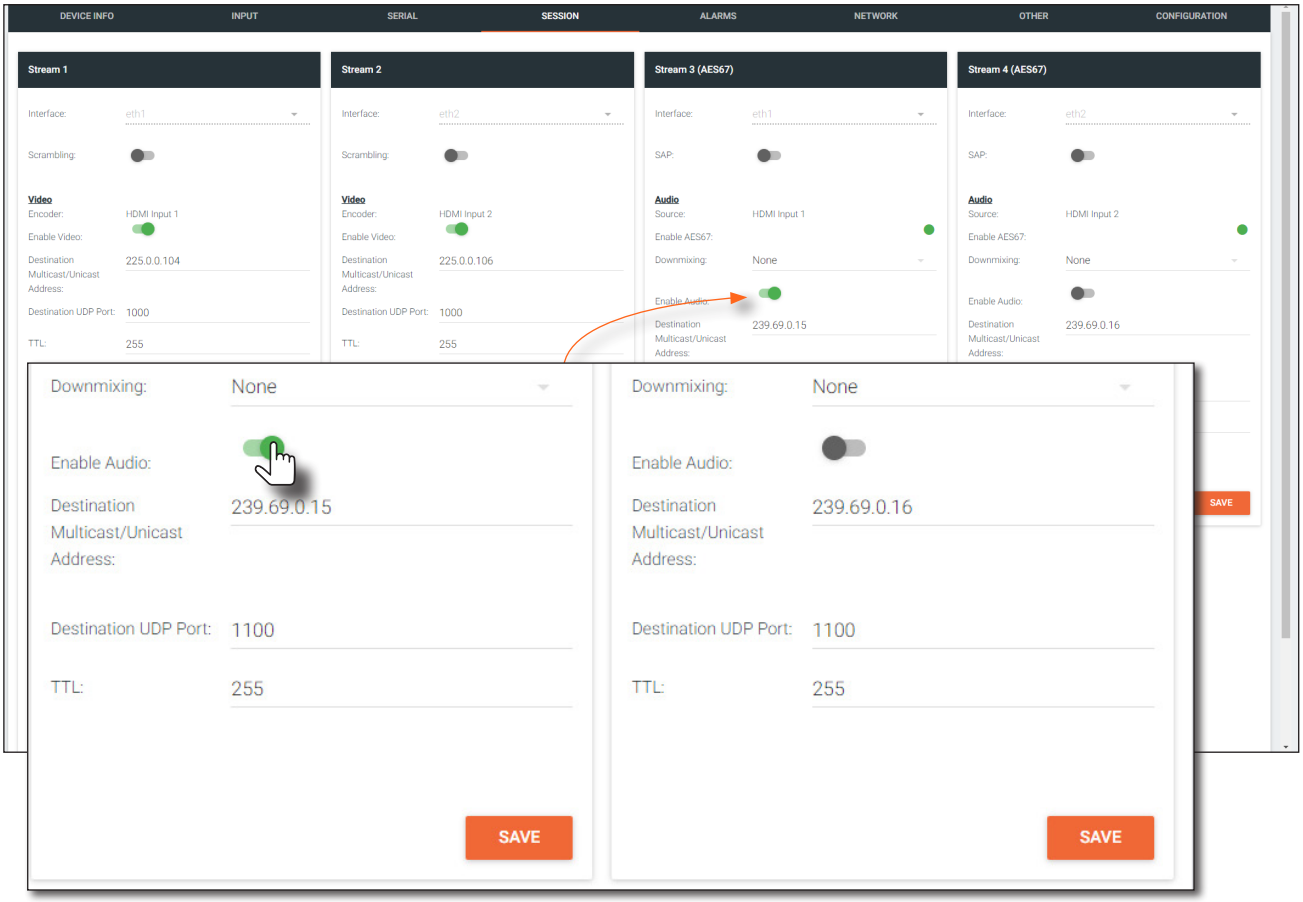

OmniStream Virtual Matrix
All Sites
Encoders / Decoders
LEGEND
Video
View: Active
Audio
All
Data
Flip Matrix
Andrew's AT-OMNI-122
192.168.11.181
at-omni-122-00548
Connected
Options
AT-OMNI-121
192.168.11.34
at-omni-121-00461
AT-OMNI-122
192.168.11.86
192.168.11.87
at-omni-122-00242
AT-OMNI-521
192.168.11.39
at-omni-521-00064
AT-OMNI-122
192.168.11.160
192.168.11.161
at-omni-122-00381
HDMI 1
HDMI 2
AT-OMNI-112
192.168.11.89
192.168.11.88
at-omni-112-00349
AT-OMNI-111
192.168.11.50
at-omni-111-00200
AT-OMNI-512
192.168.11.51
at-omni-512-00003
Andrew's AT-OMNI-112
192.168.11.116
at-omni-112-00722
Disconnected
AT-OMNI-112
192.168.11.183
192.168.11.148
at-omni-112-00335
Andrew's AT-OMNI-111
192.168.11.167
at-omni-111-00355
AT-OMNI-512
192.168.11.31
at-omni-512-00037


at-omni-111-00355
Connected
AT-OMNI-512
192.168.11.31
at-omni-512-00037
Connected
HDMI 1
HDMI 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 AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **Devices** > **All** and select the desired encoder from the **Device List**.
3. Click **SESSION** in the menu bar.
4. Locate the **Audio** section, under **Stream 3**, and click the **Enable Audio** toggle switch to enable this feature. When enabled, the toggle switch will be green. Note that **Stream 3** and **Stream 4** must be used for AES67 audio.



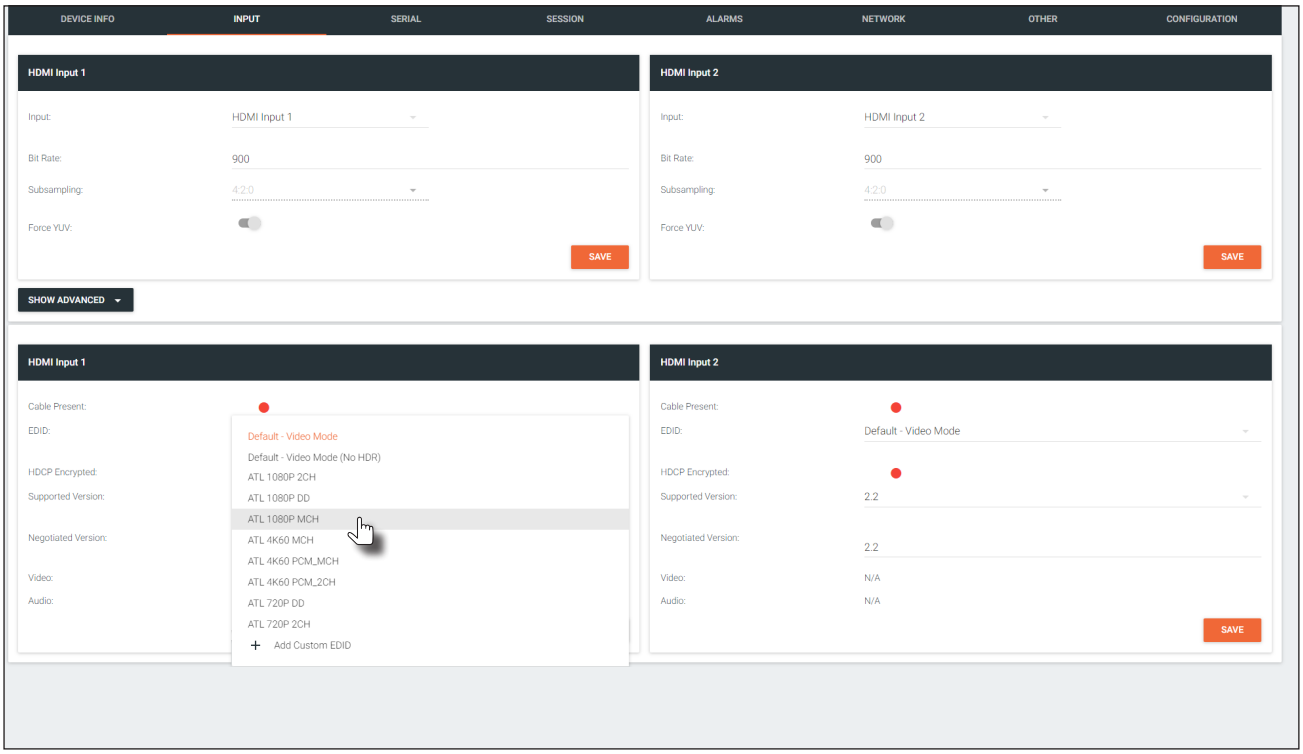
5. Select the type of downmixing from the **Downmixing** drop-down list, if desired. Available options are: **None**, **Mono**, or **Stereo**.
6. Click the **SAVE** button within the **Stream** window group.
7. Go to the decoder interface and click **OTHER** in the menu bar and click **SAP** in near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

EDID Management

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

Selecting an EDID Preset

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **INPUT** in the menu bar.
3. Click the **EDID** drop-down list, within the desired **HDMI Input** window group, and select the EDID.



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

Using a Custom EDID

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

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **INPUT** in the menu bar.
3. Click the **EDID** drop-down list.
4. Scroll down to the bottom of the list and select **+ Add Custom EDID**.
5. Enter the name of the EDID in the **EDID Name field**. Spaces and special character are valid entries. Use a descriptive name for this field.

6. Enter the EDID data in the **Raw EDID** field. EDID data can be copy and pasted from an EDID editor and must be in hexadecimal format. Commas or spaces can be included as delimiters to separate each hexadecimal value.

7. Click the **SUBMIT** button to commit changes or click **CANCEL** to abort the addition of a custom EDID. Once a custom EDID is created, it will be added to the drop-down list and can be selected without re-entering the information.

The following tables provide a list of available EDID selections.

EDID	2CH LPCM	MCH LPCM	DTS	Dolby	Dolby Digital*	DTS-HD MA †	Dolby True HD*
Default -Video Mode	No	Yes	Yes	Yes	Yes	Yes	Yes
Default - Video Mode (No HDR)	No	Yes	Yes	Yes	Yes	Yes	Yes
1080P 2CH	Yes	No	No	No	No	No	No
1080P DD	No	No	Yes	Yes	No	No	No
1080P MCH	No	Yes	Yes	Yes	Yes	Yes	Yes
4K60 MCH	No	Yes	Yes	Yes	Yes	Yes	Yes
4K60 PCM MCH	No	Yes	No	No	No	No	No
460 LPCM 2CH	Yes	No	Yes	Yes	Yes	Yes	Yes
720P DD	No	No	Yes	Yes	No	No	No
720P 2CH	Yes	No	No	No	No	No	No

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

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

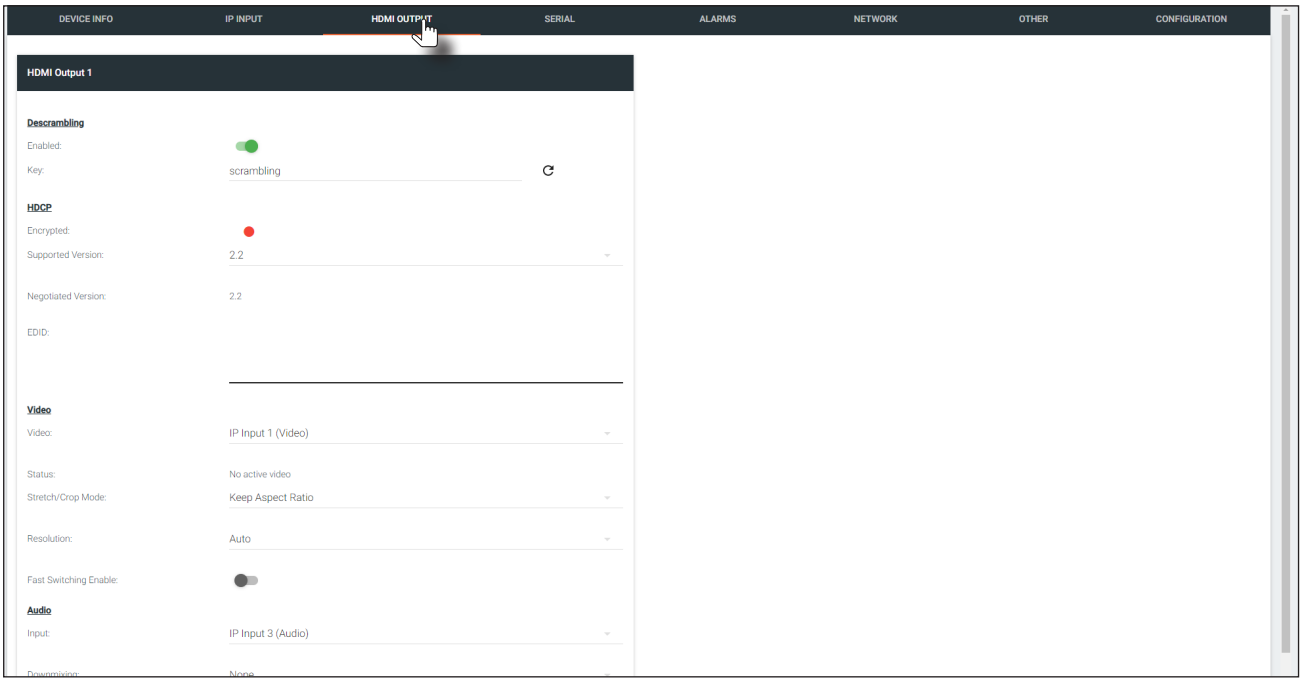
Copying an EDID from the Display

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

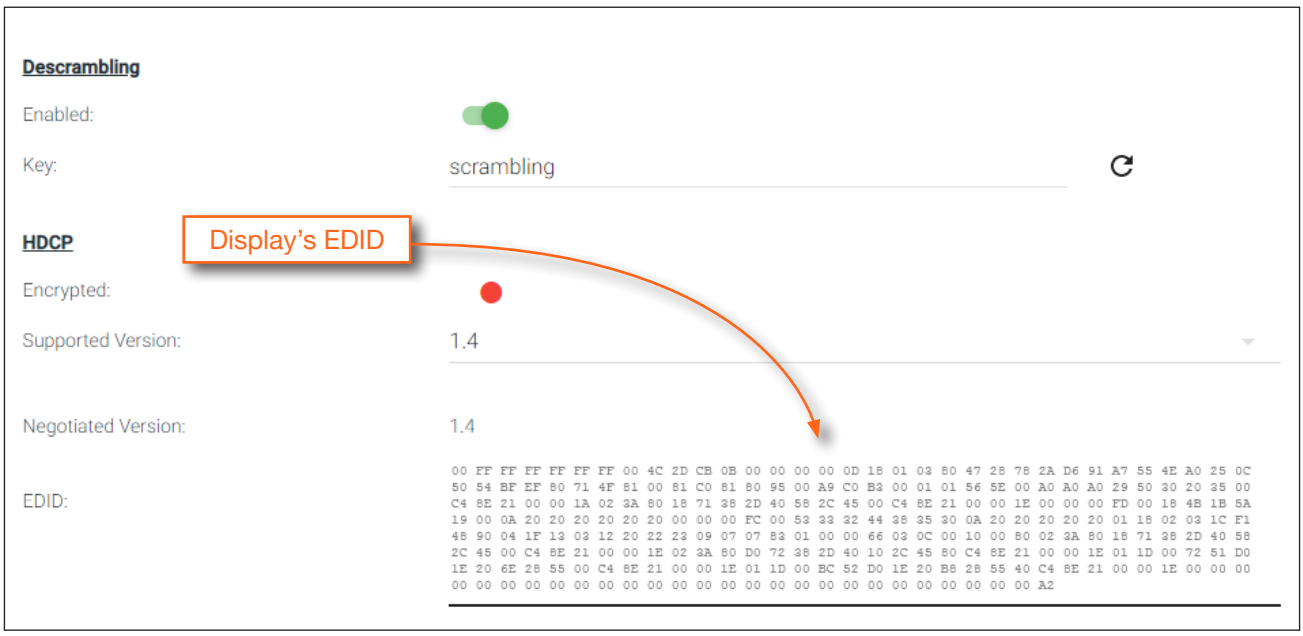
1. Login to AMS and access the desired decoder. Refer to Accessing Encoders in AMS (page 15) except instead of clicking on an encoder, click on a decoder (AT-OMNI-521).

2. Make sure the display, where the EDID will be fetched, is connected to the decoder. Select the desired decoder from within AMS.

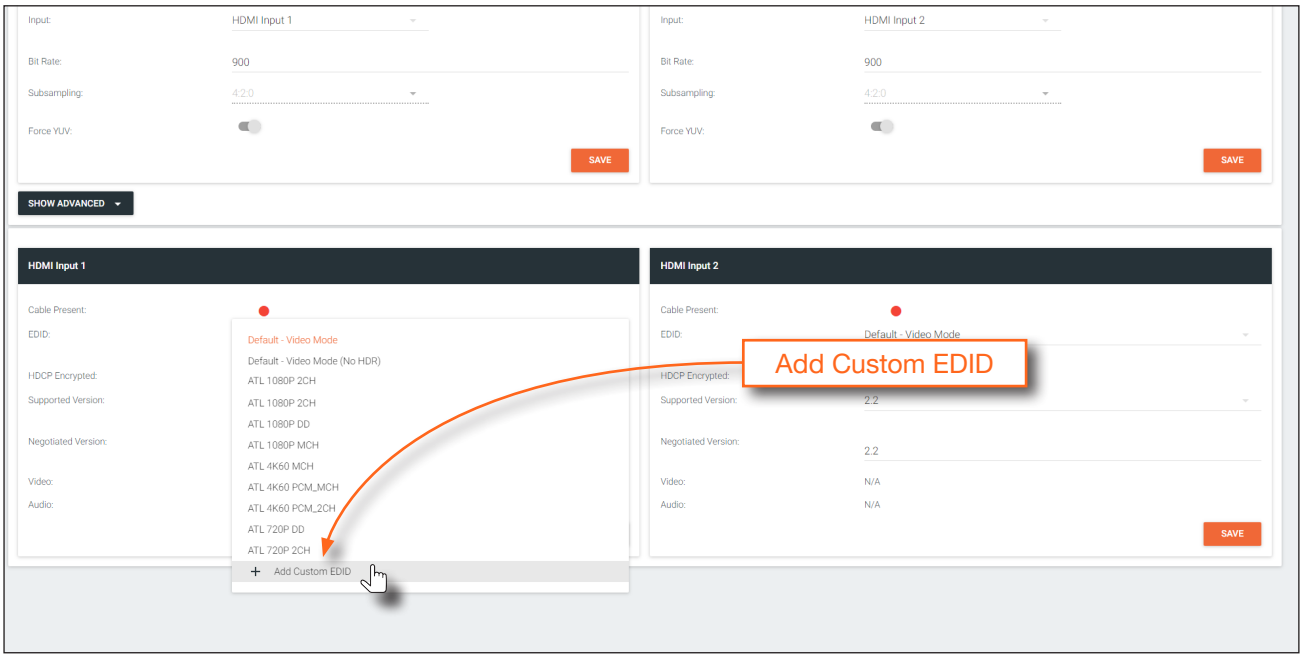
3. Click **HDMI OUTPUT** in the menu bar.



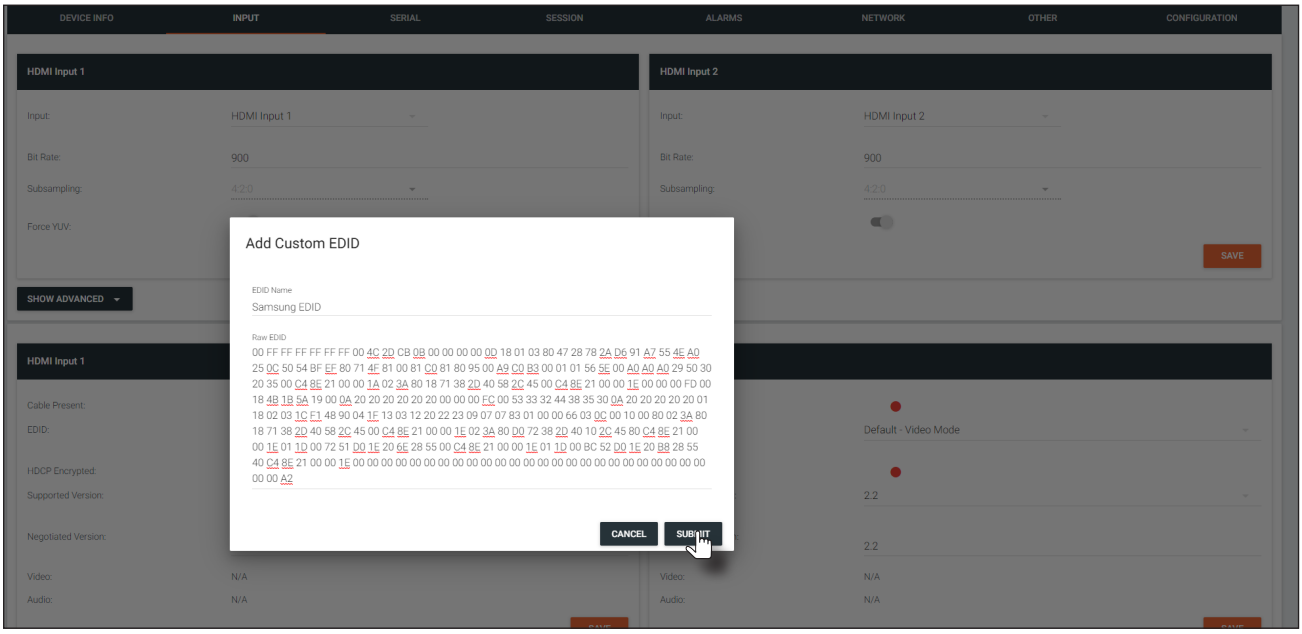
4. Locate the **EDID** section. This is the EDID of the display which is connected to the decoder. Click and select the data in this field, then press [CTRL]+[C] to copy the data.



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



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



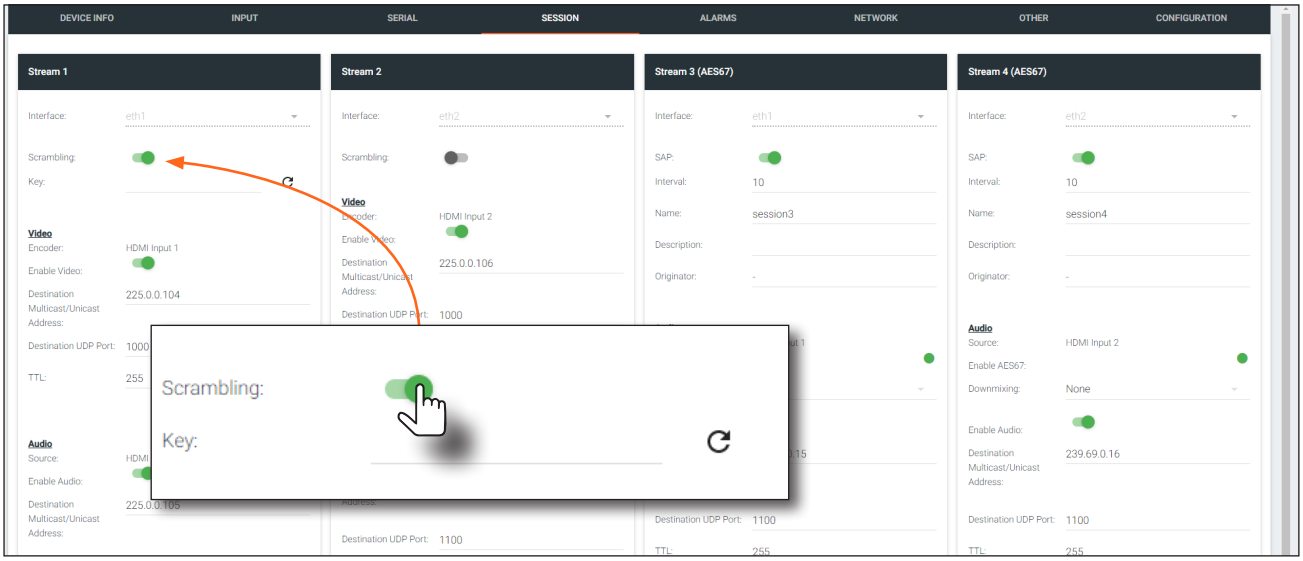
Advanced Operation

Scrambling

OmniStream supports 128-bit Advanced Encryption Standard (AES) scrambling and is required for HDCP-encrypted streams. Scrambling can be enabled or disabled through AMS, 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”.

Standard Method

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **SESSION** in the menu bar.
3. Under the desired **Stream**, click the **Scrambling** toggle switch to enable it. Once enabled, the toggle switch will be green and the **Key** field will be displayed.



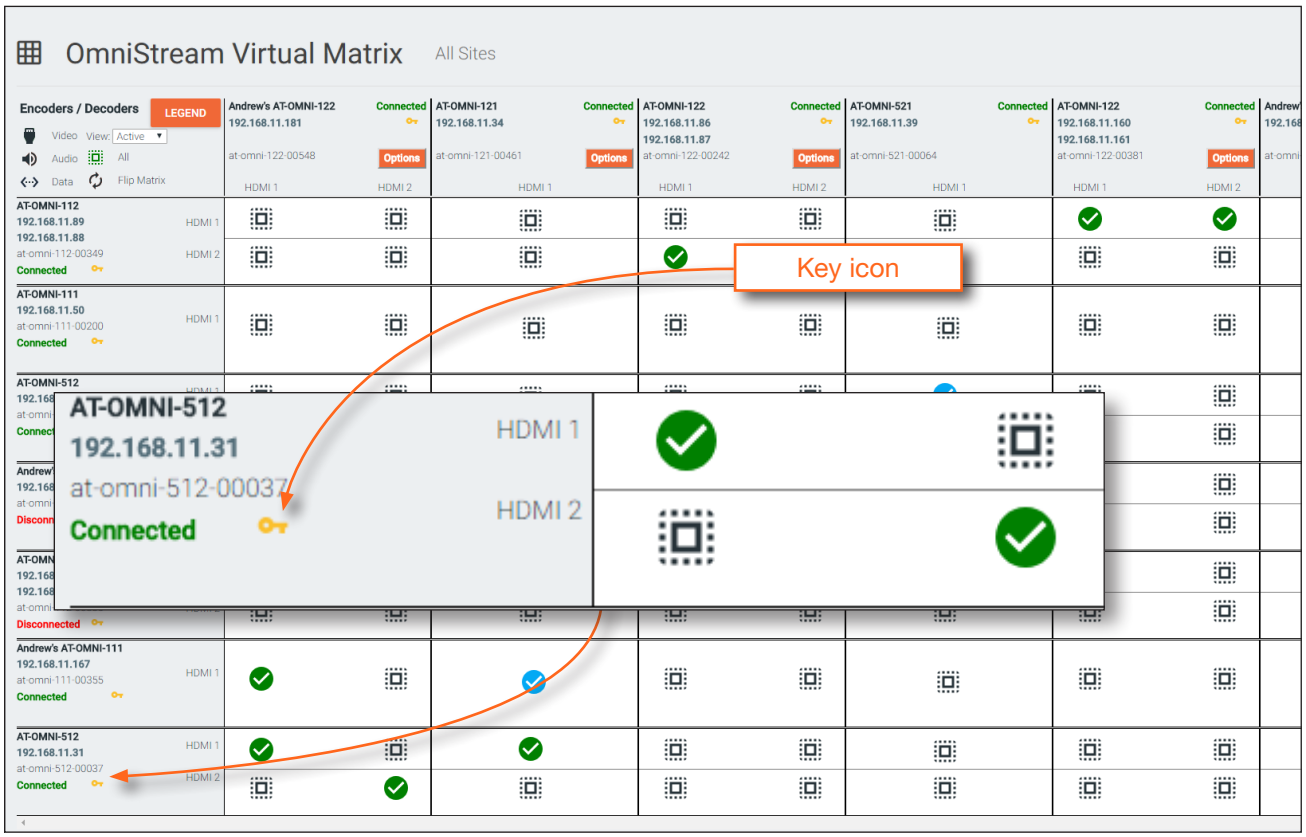
4. Enter the desired scrambling key in the **Key** field. If a random key is desired, click the icon to generate a key. Each time this icon is clicked, a new scrambling key will be generated.

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

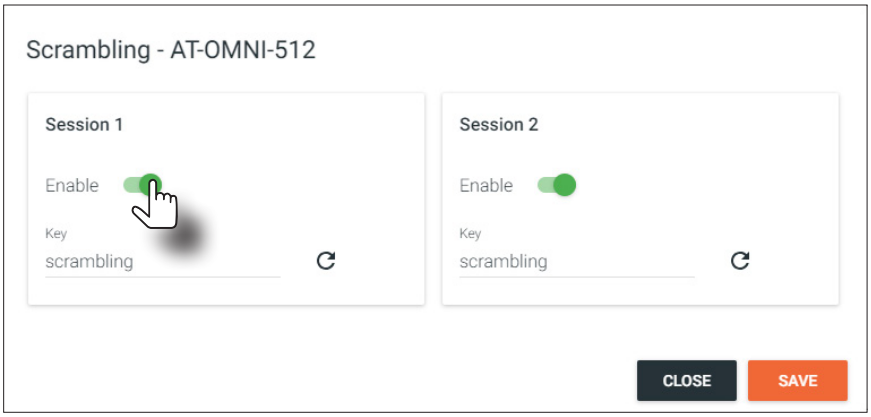
5. Click the **Save** button at the bottom of the page to commit the changes.

Using the Virtual Matrix

1. Access the Virtual Matrix. Refer to The Virtual Matrix (page 56) for more information.
2. Locate the desired encoder or decoder. Scrambling is handled on the encoder; descrambling is handled on the decoder.
3. Click the yellow key icon. The Scrambling dialog box will be displayed. If the key icon for a decoder is clicked, then the Descrambling dialog box will be displayed.



4. Click the **Enable** toggle switch to enable scrambling for the desired session.
5. Enter the desired scrambling key using one of the following methods:
   - Manual enter a user-defined key in the **Key** field.
   - Click the icon to generate a random key using AMS. Each time this icon is clicked, a new scrambling key will be generated.



6. Repeat the above process for each session.
7. Click the **Save** button to commit the changes.

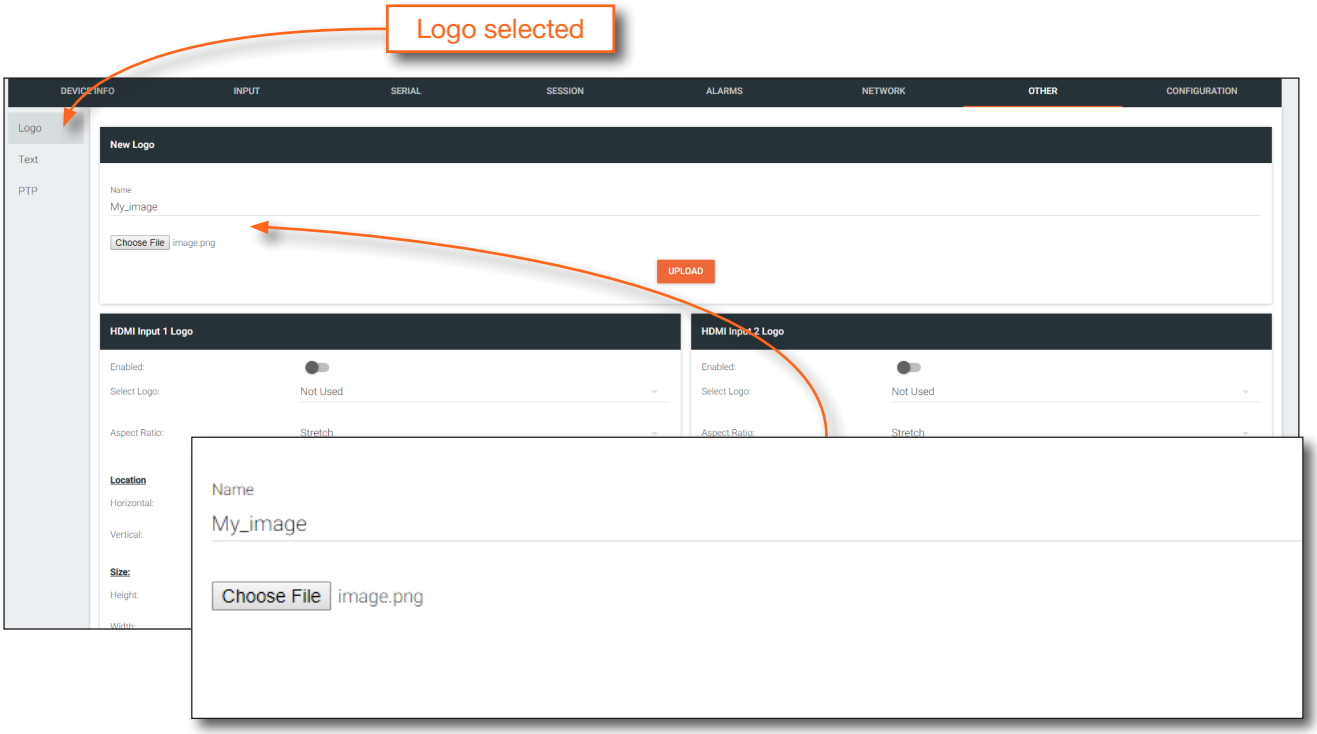
Slate / Logo Insertion

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

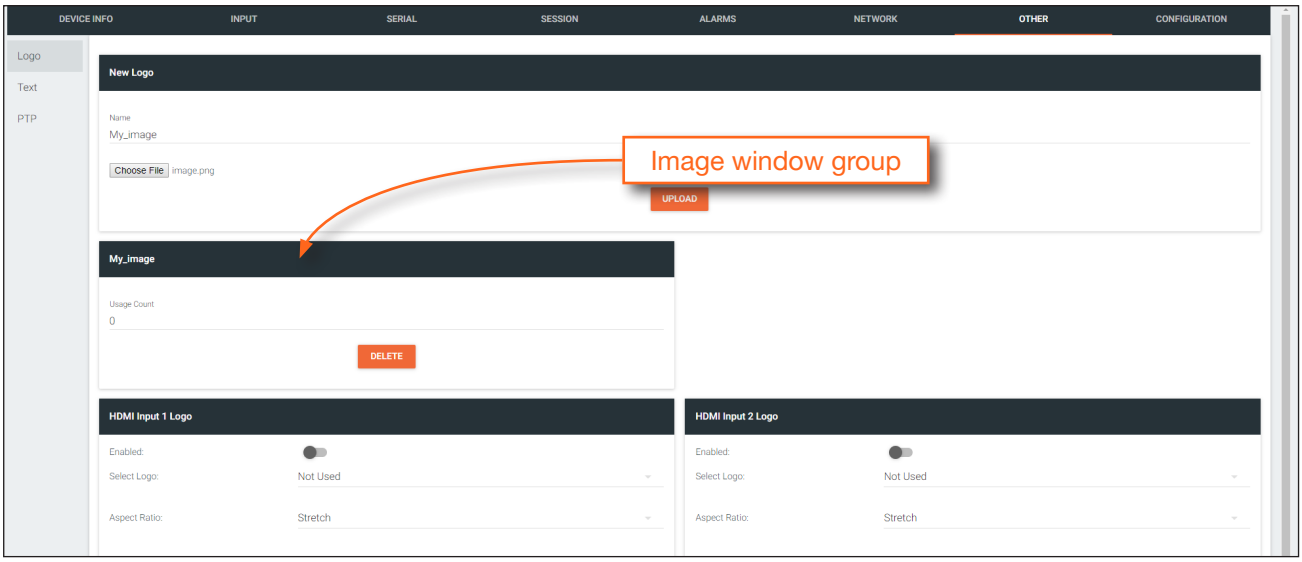
Slate / logo insertion can be performed on both the encoder and decoder. When configured on the encoder, the image that is displayed on the output (decoder) will be from the encoder IP address(es) to which each decoder is subscribed. When configured on the decoder, the image is unique to the specified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

Adding Slates / Logos

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **OTHER** in the menu bar.
3. Verify that **Logo** is selected, near the upper-left corner of the screen. **Logo** is the default selection and applies to both logo and slate images.
4. Enter the name of the image in the **Name** field. If a name is not specified, then the **UPLOAD** button will be disabled.
5. Under the **New logo** window group, click the **Choose File** button and select the image to be used. Only .png files are valid selections.
6. Click the **UPLOAD** button to upload the file.

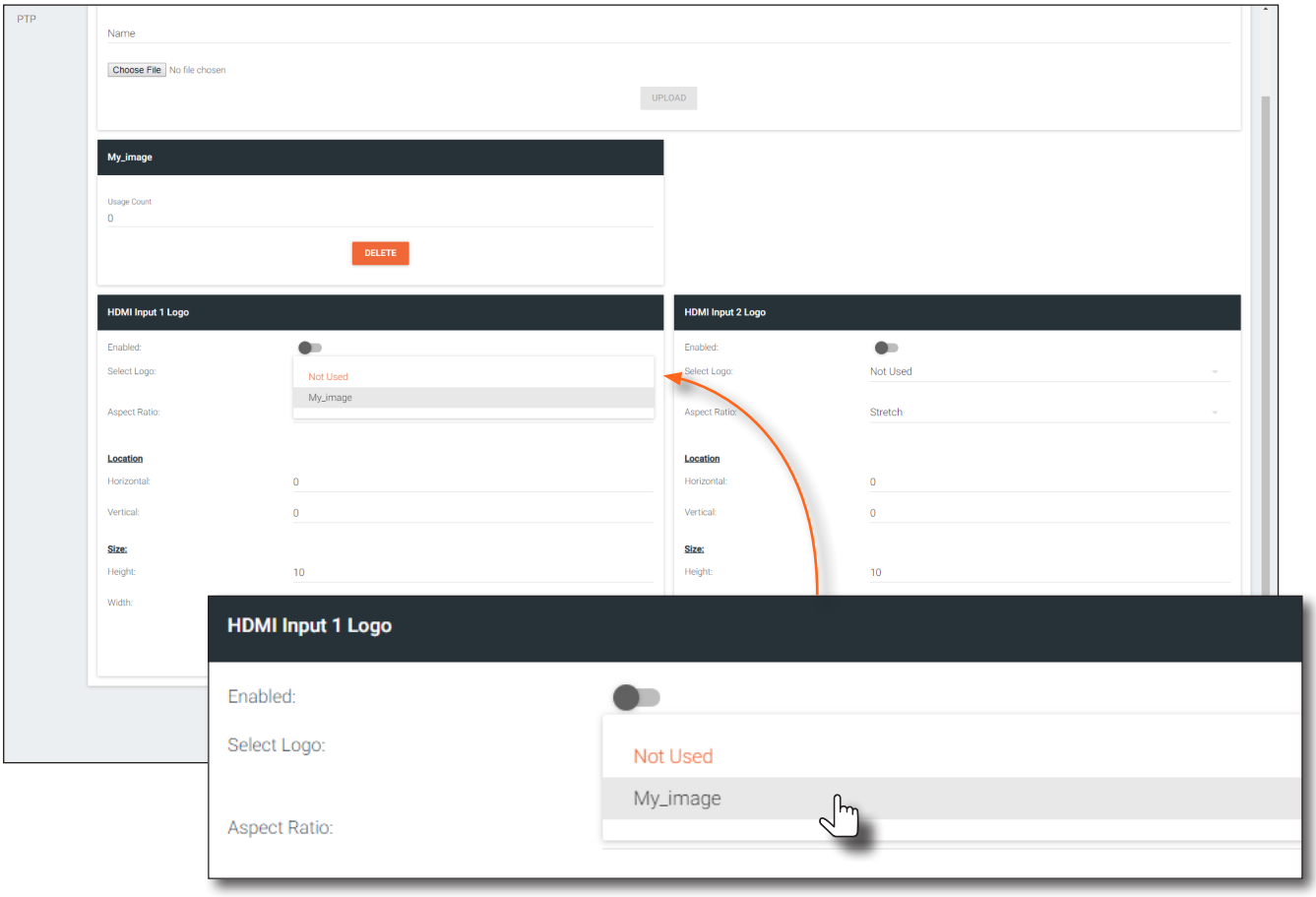


7. A new window group will be created with the name of the logo that was provided in Step 4.



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

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



7. Click the **Aspect Ratio** drop-down list to set the aspect ratio of the image. Selecting **Keep** will maintain the aspect ratio. Select **Stretch** to scale the image to fill the screen.

8. Enter the location of the on-screen image, in pixel values, by entering the desired values in the **Horizontal** and **Vertical** fields.

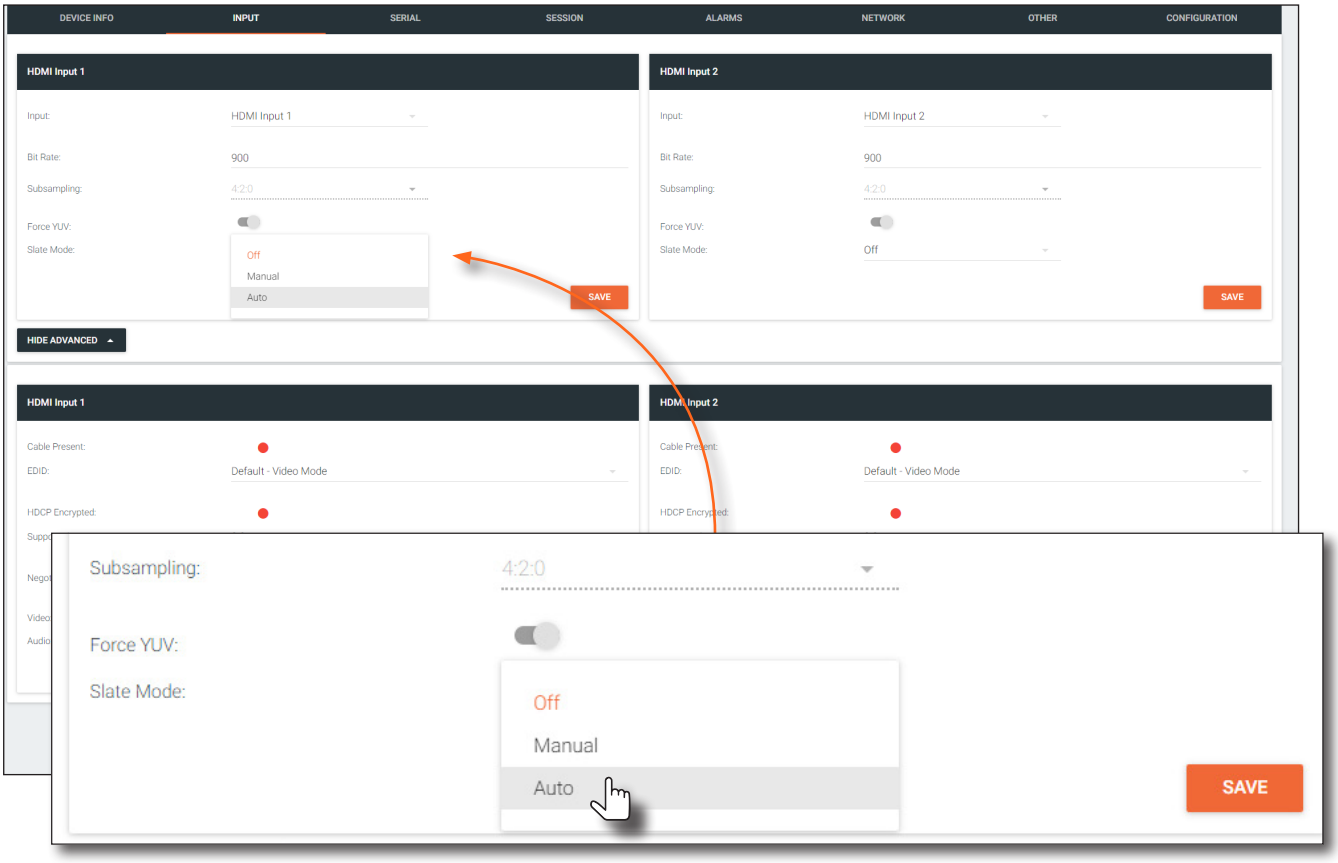
9. Click the **Enabled** toggle switch to activate the logo/slate feature. When enabled, this toggle switch will be green.

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

11. Click **INPUT** in the menu bar, then click the **SHOW ADVANCED** button.

12. Click the **Slate mode** drop-down list, and select **Off**, **Manual**, or **Auto**.

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



13. Click the **Slate Logo** drop-down list and select the desired image. Note that if **Slate Mode** is set to **Off**, then this field will not be visible.

14. Click the **SAVE** button to apply all changes.

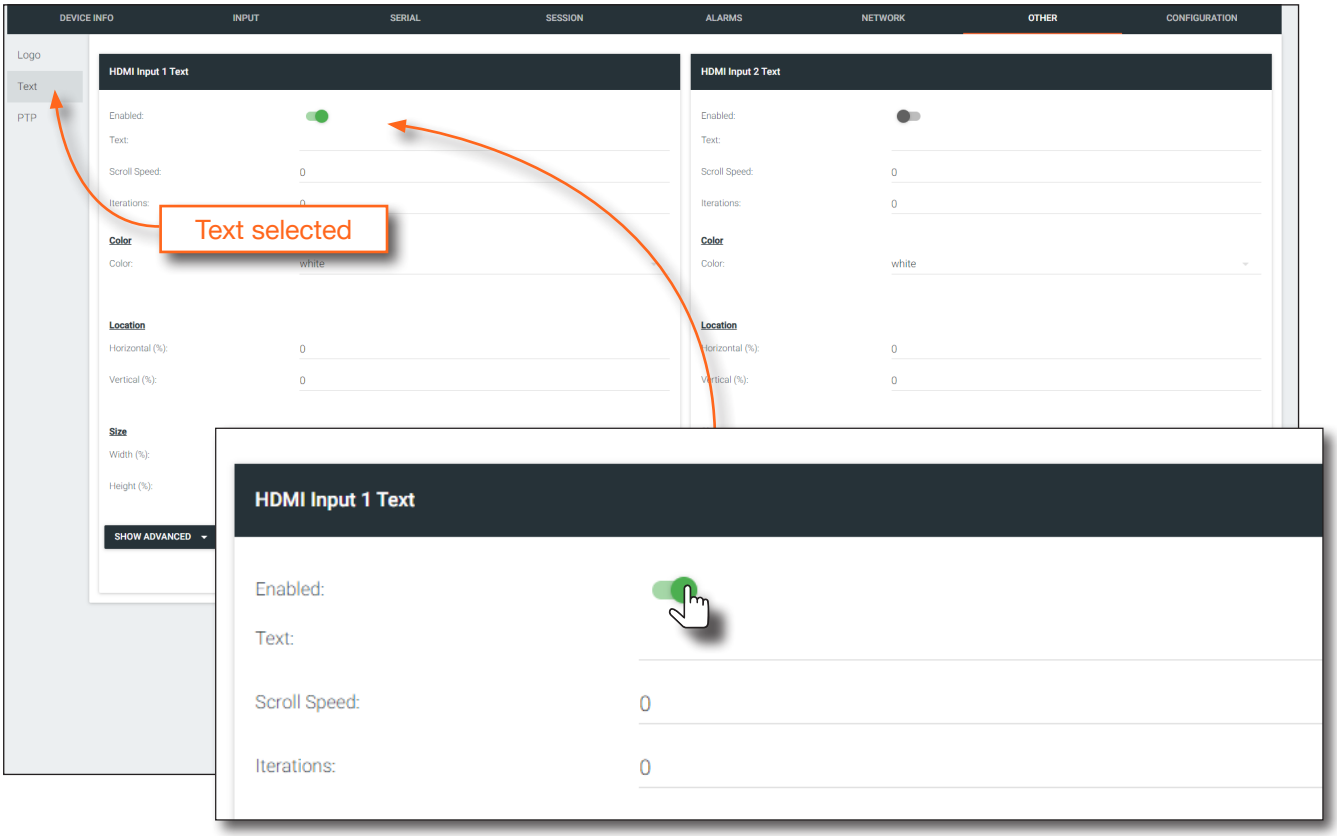
Deleting Slates / Logos

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

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

Text Insertion

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click **OTHER** in the menu bar.
3. Click **Text** in the side menu bar, in the upper-left corner of the AMS screen.
4. Click the **Enabled** toggle switch, to allow the text to be displayed. When enabled, this toggle switch will be green.

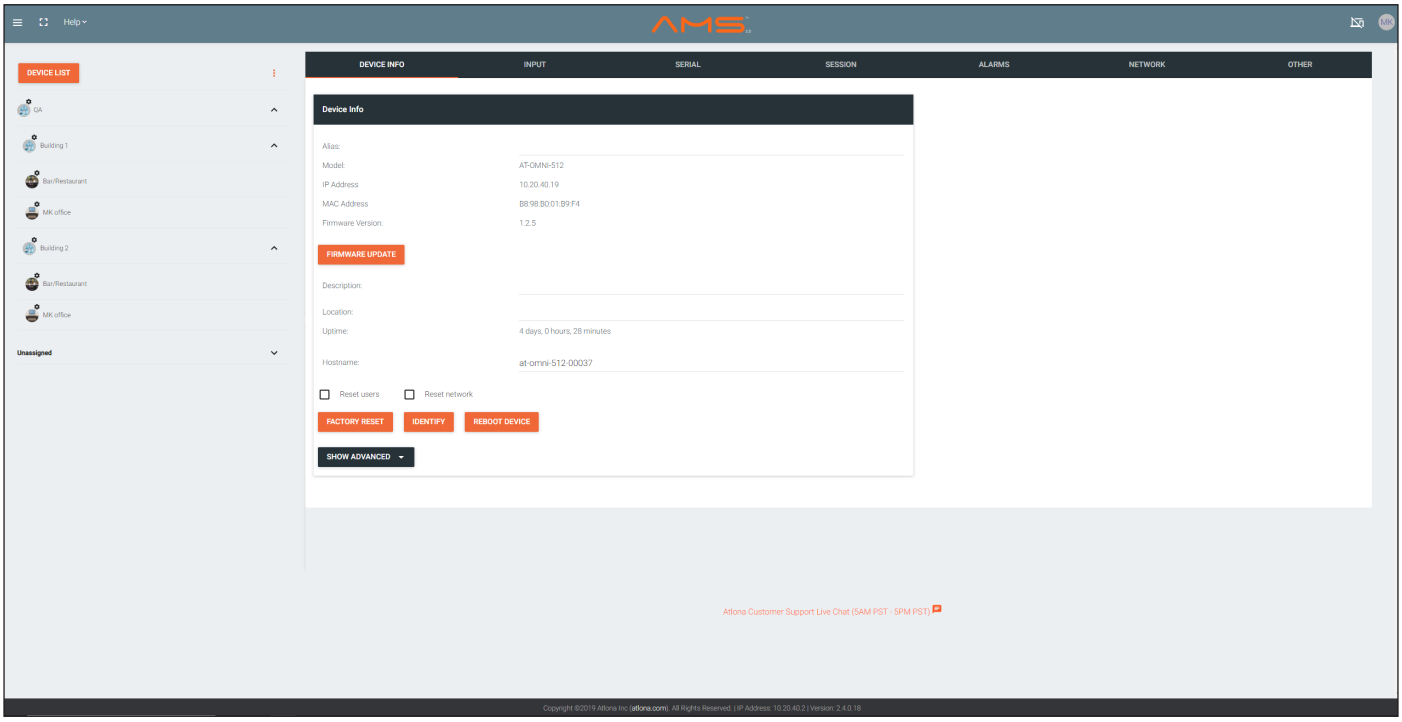


4. In the **Text** field, enter the desired text.
5. Specify the speed of the scrolling text in the **Scroll Speed** field. Values from -255 to 255 are valid. Negative numbers will scroll the text from left to right. Positive numbers will scroll text from right to left.
6. Enter the number of iterations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

The AMS Interface

Device Info page

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



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

Model
The model number of the unit.

Model	Description
AT-OMNI-512	Dual-channel encoder
AT-OMNI-521	Single-channel decoder

IP Address
Displays the IP address of the encoder.

MAC Address
Displays the MAC address of the encoder.

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

FIRMWARE UPDATE
Click this button to update the firmware.

Description
Provides the option of assigning descriptive name to the unit.

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

Uptime
Time elapsed since the last reboot operation.

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

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

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

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

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

Advanced Settings

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

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

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

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

Power Consumption
The current power consumption value.

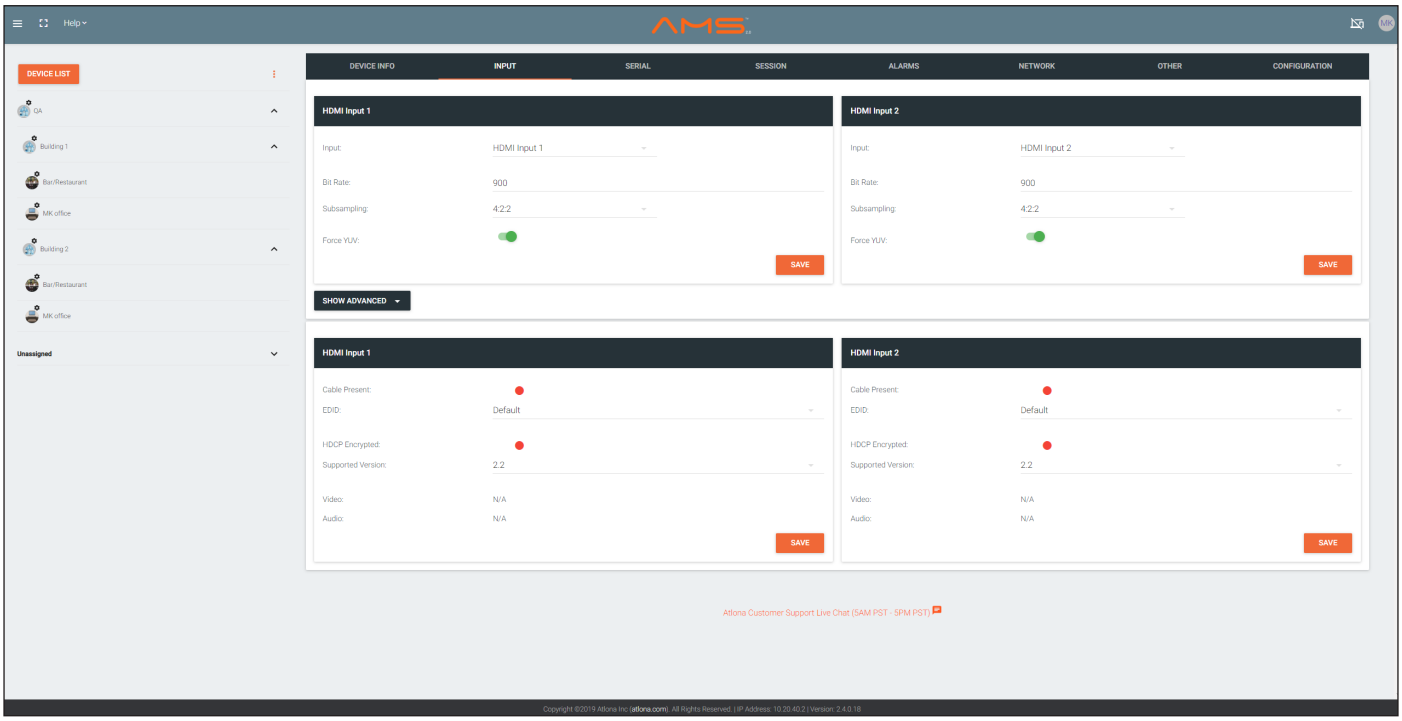
NTP Server
Specify the desired NTP server in this field. This provides timestamps for any logs and alarms.

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

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

Input page

The **Input** page provides signal information for each channel (input).



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

Bit Rate
The video bit rate. This value is set to 900 Mbps and cannot be changed.

Subsampling
The chroma subsampling value. This value is set to 4:2:0 and cannot be changed.

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

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

EDID
Click the drop-down list to select the desired EDID. Refer to the table on the next page for a list of available EDID selections. Refer to EDID Management (page 29) for more information.

EDID	Description
Default - Video Mode	Default OmniStream EDID
Default - Video Mode (no HDR)	Default without HDR support
ATL 1080P 2CH	1920x1080p60 with two-channel PCM audio
ATL 1080P DD	1920x1080p60 with Dolby Digital audio
ATL 1080P MCH	1920x1080p60 with multichannel PCM audio
ATL 4K60 MCH	4096x2160p60 with multichannel audio
ATL 4K60 PCM_MCH	4096x2160p60 with multichannel audio (PCM only)
ATL 4K60 PCM_2CH	4096x2160p60 with two-channel audio (PCM only)
ATL 720P DD	1280x720p60 with Dolby Digital audio
ATL 720P 2CH	1280x720p60 with two-channel audio
+ Add Custom EDID	Adds a custom EDID

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.

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

Negotiated Version
The version of HDCP that the encoder is passing.

Video
The current sampling rate for the input video signal.

Audio
The sampling frequency for the input audio signal.

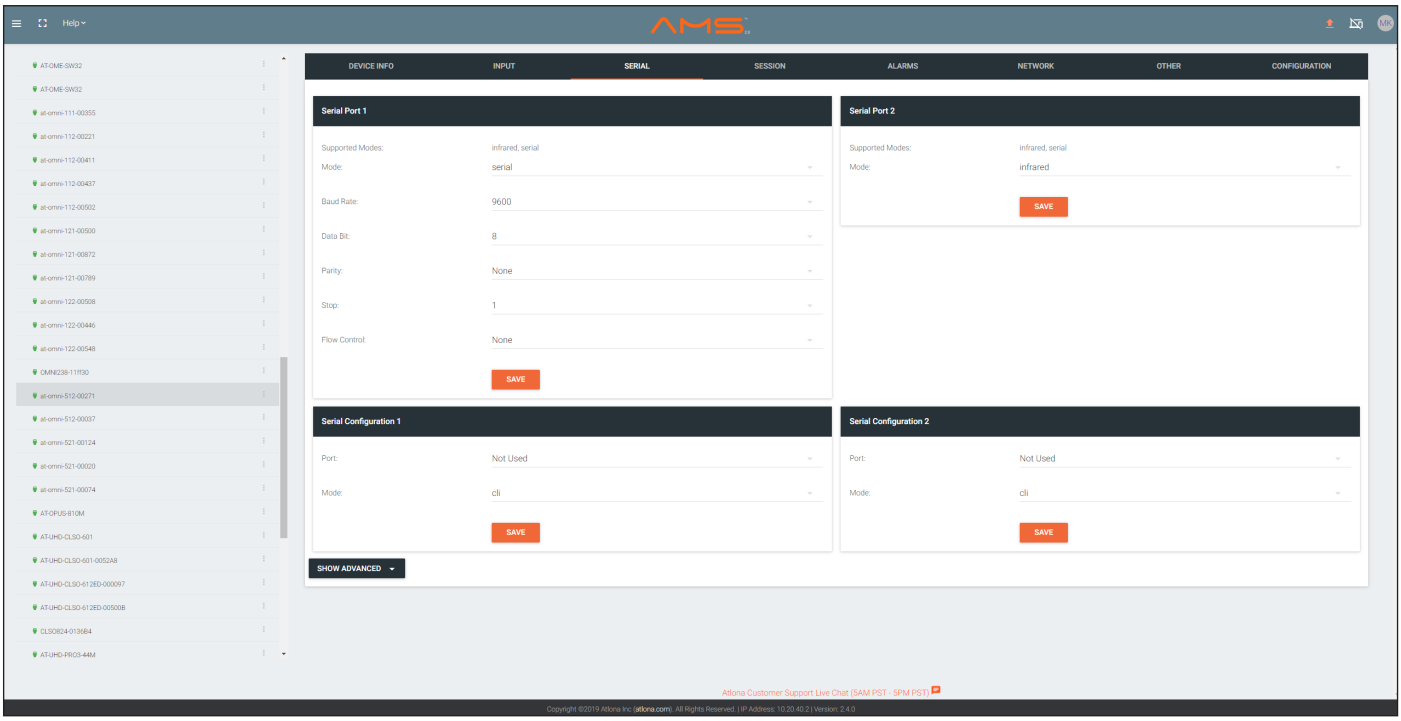
Advanced Settings

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

Slate Mode
Click this drop-down list to enable slate mode or select the desired slate to be used. Refer to Slate / Logo Insertion (page 35) for more information.

Serial page

The **Serial** page provides serial port configuration when using control signals.



Supported Modes
Lists the supported protocols for the serial port.

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

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

Data Bit
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**.

Port
Click this drop-down list to select the desired serial port: **Serial Port 1** or **Serial Port 2**.

Mode
Click this drop-down list to select the desired control mode: **cli** or **tcpproxy**.

Advanced Settings

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

Command
Each of these **Command** window groups are used to enter the command string for the desired operation: **Display Off**, **Display On**, **Volume Down**, and **Volume Up**.

Interpret on
Click this drop-down list to select where the command will be interpreted.

Interpret on	Description
decoder	Commands are interpreted at the decoder.
encoder	Commands are interpreted at the encoder.

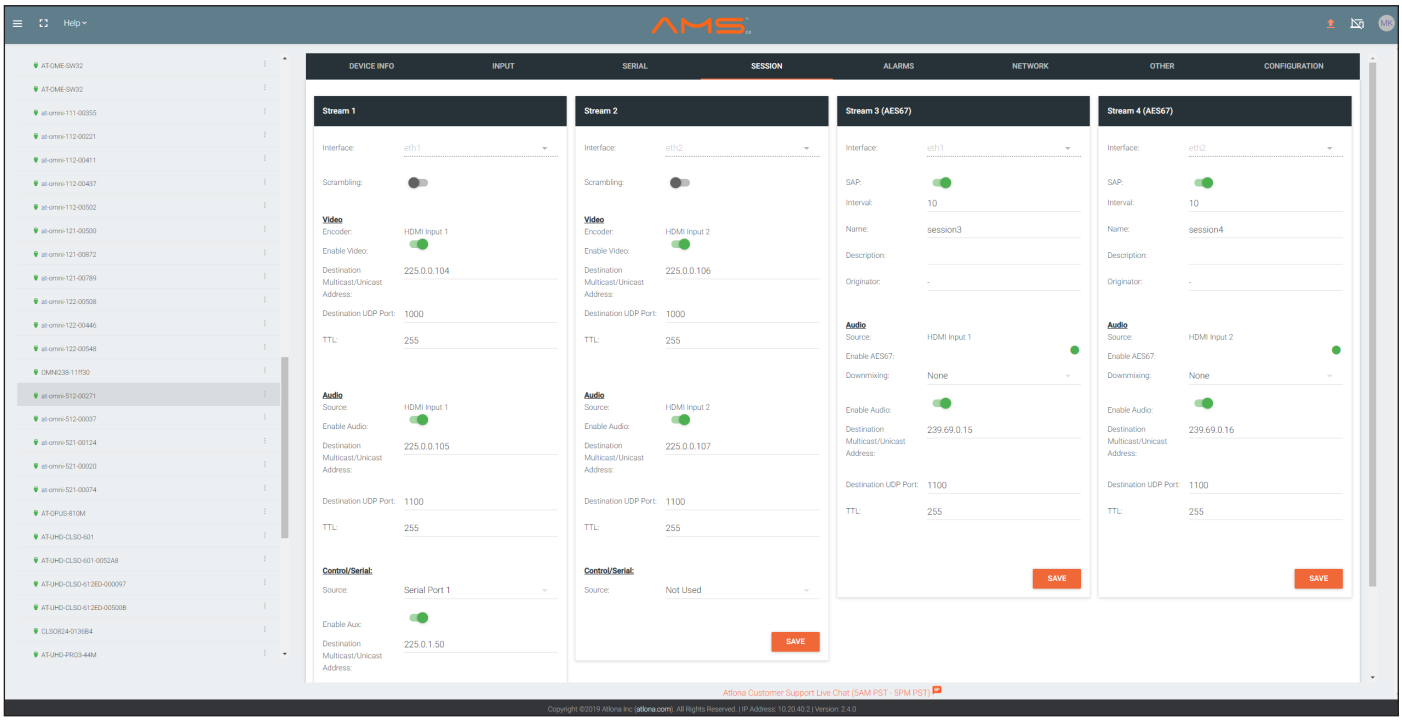
ASCII
Enter the ASCII representation of the command string in this field.

HEX
Enter the hexadecimal representation of the command in this field.

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.

Session page

The **Session** page provides the ability to configure all session parameters. The AT-OMNI-512 supports up to two video sessions and two audio sessions.



Interface

This option is locked and cannot be changed.

Interface	Description
eth1	ETHERNET 1 port
eth2	ETHERNET 2 port

SAP (Stream 3 / Stream 4 only)

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

Scrambling

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

Key

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

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

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

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

Destination UDP Port
Enter the destination UDP port in this field.

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

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

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

Downmixing
This field will only be available when AES67 is enabled.

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

Destination Multicast/Unicast Address
Enter the IP address of the decoder that will be receiving the audio stream.

Destination UDP Port
Enter the destination UDP port in this field.

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

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

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

Enable Aux
Click the toggle switch to enable (green) or disable enable the auxiliary stream. By default, this feature is disabled.

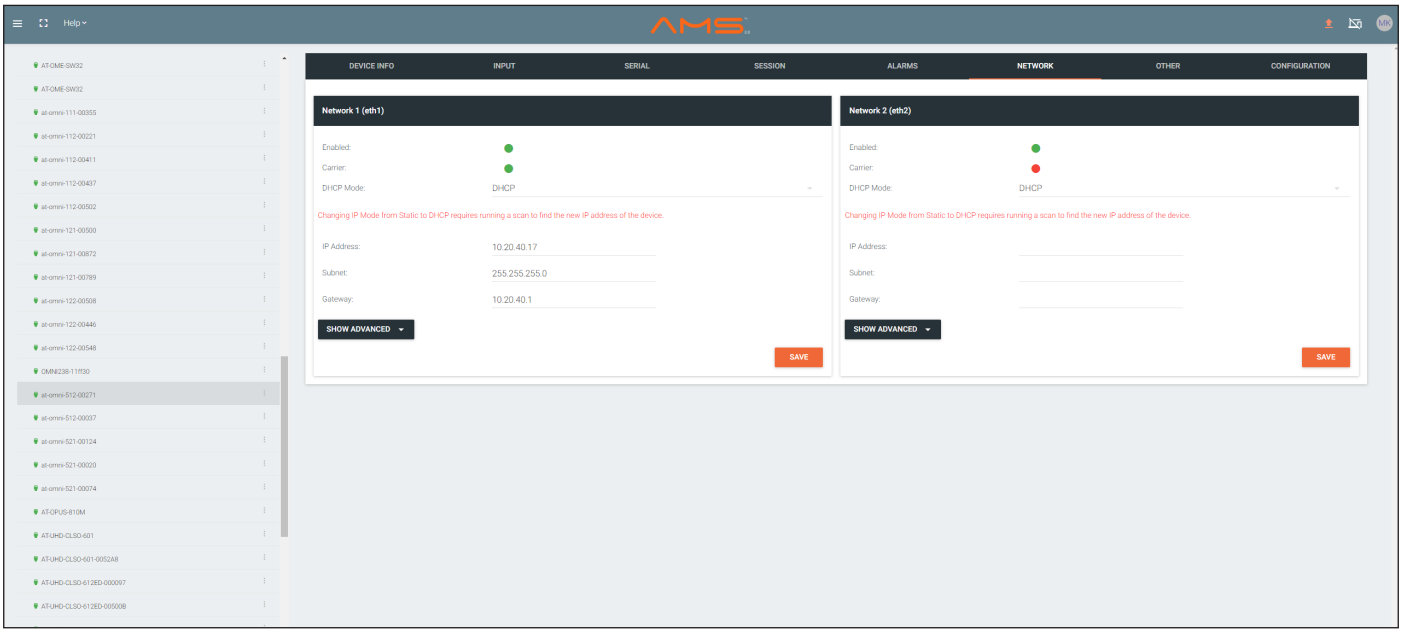
Destination Multicast/Unicast Address
Enter the decoder IP address in the this field.

Destination UDP Port
Enter the 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.

Network page

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



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

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

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

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

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

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

Advanced Settings

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

Link Speed
Displays the port speed in Mbps.

MAC Address
The MAC address of the Ethernet channel.

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

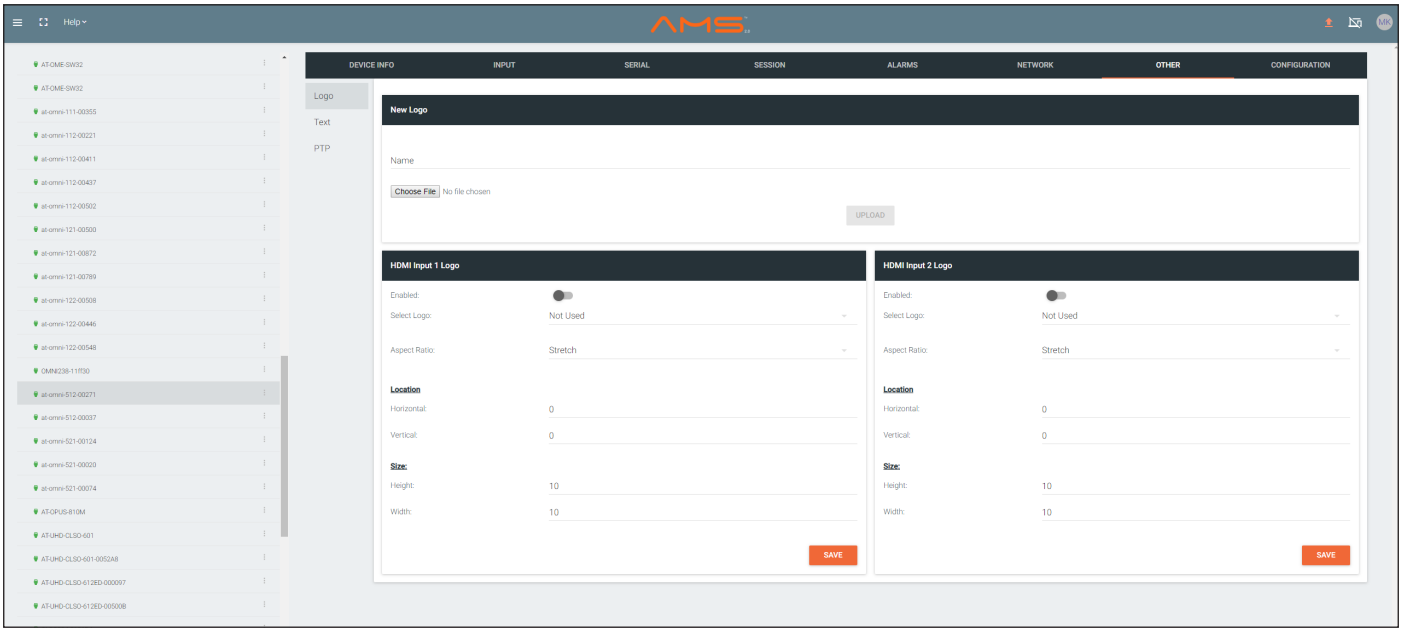
Username: admin
Password: Atlona

Other page

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

Logo

The **Logo** page provides the ability to upload a custom logo. This logo will be displayed when no video signal is detected. Separate logos can be uploaded: one for each channel. Refer to Slate / Logo Insertion (page 35) for more information on these settings.



Name
Enter a name for the logo in this field.

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

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

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

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

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

Horizontal
Enter the horizontal position of the logo on the screen.

Vertical
Enter the vertical position of the logo on the screen.

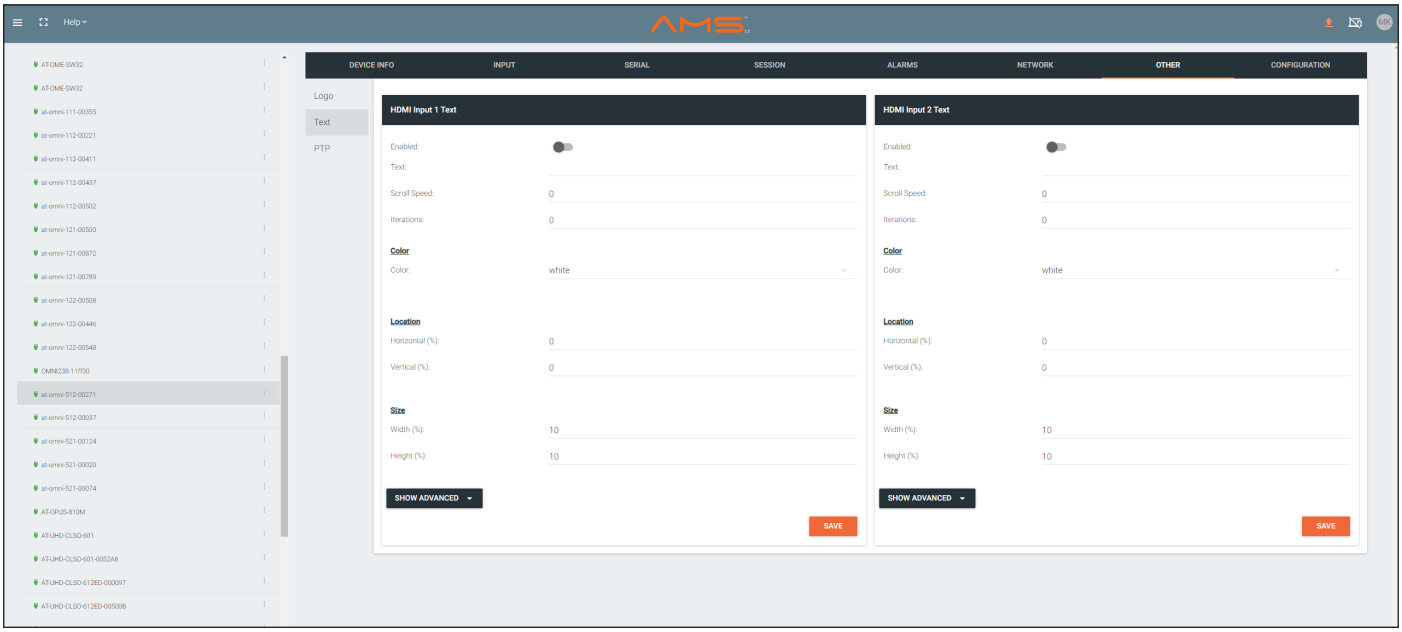
Height
Enter the horizontal resolution of the logo, in pixels.

Width
Enter the vertical resolution of the logo, in pixels.

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

Text

The **Text** page provides the ability to display scrolling or stationary text superimposed on the source image. Refer to Text Insertion (page 39) for more information.



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

Text
Enter the desired text in this field.

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

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

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

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

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

Advanced Settings

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

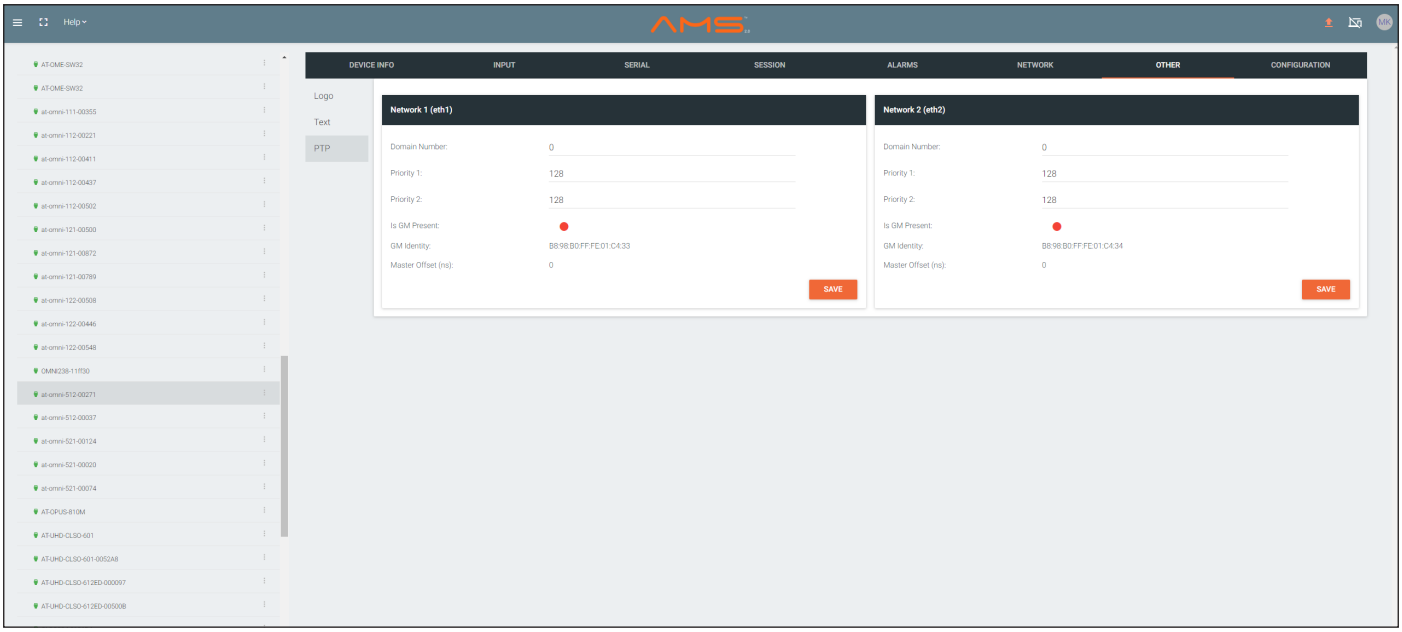
Red, Green, Blue, Alpha
Enter the RGBA values for each of the respective fields, to specify a custom color and transparency of the text. Enter the desired value in the Alpha field to control the transparency of the text. A value of 255 is opaque and a value of 0 is transparent. Numbers from 0 to 255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

PTP

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

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

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



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

Priority 1
Enter the priority number in this field.

Priority 2
Enter the priority number in this field.

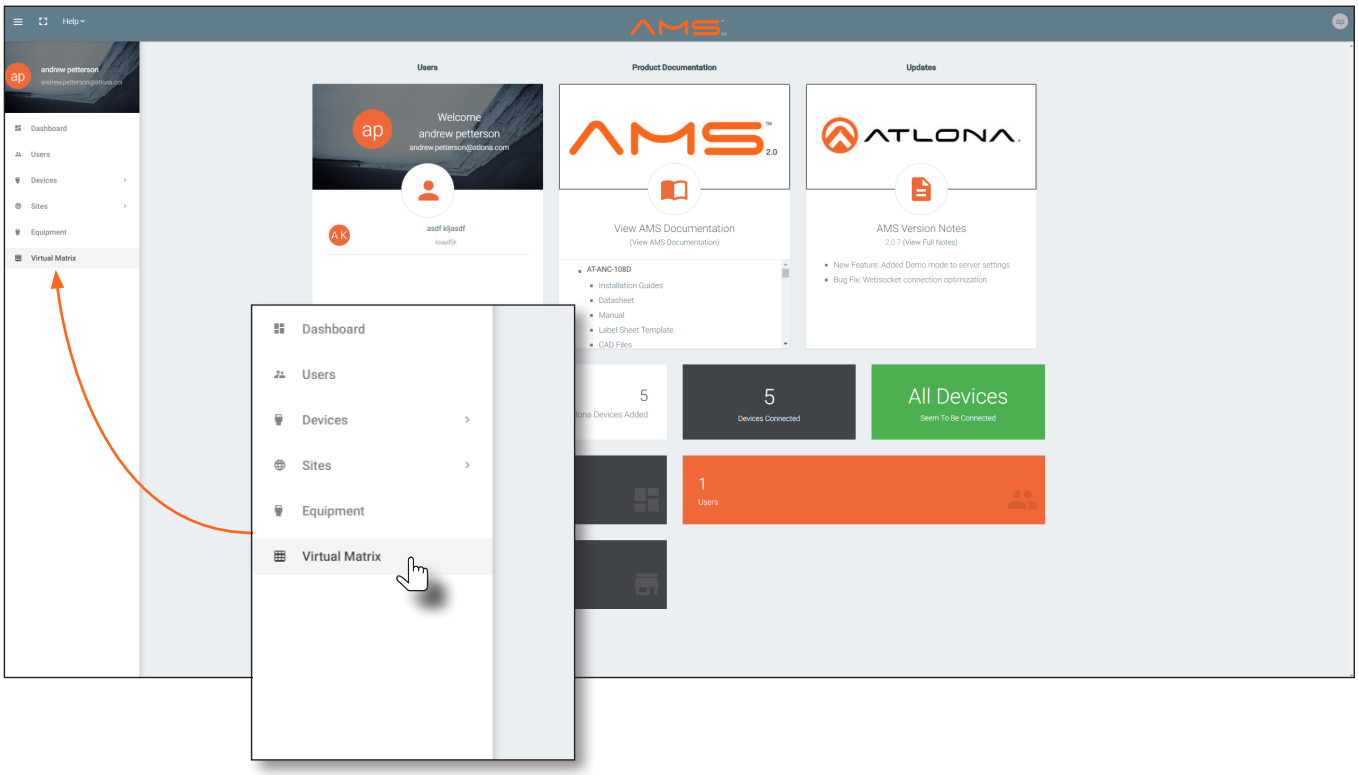
Is GM Present
This indicator displays the existence of a grandmaster clock for the specified PTP domain number. If the indicator is green, then the grandmaster clock exists on this interface.

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

Master Offset
Displays the grandmaster clock offset.

The Virtual Matrix

1. Login to AMS. Refer to Accessing Encoders in AMS (page 15), if necessary.
2. Click the ≡ icon, in the upper-left corner of the AMS Dashboard.
3. Click **Virtual Matrix**.



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

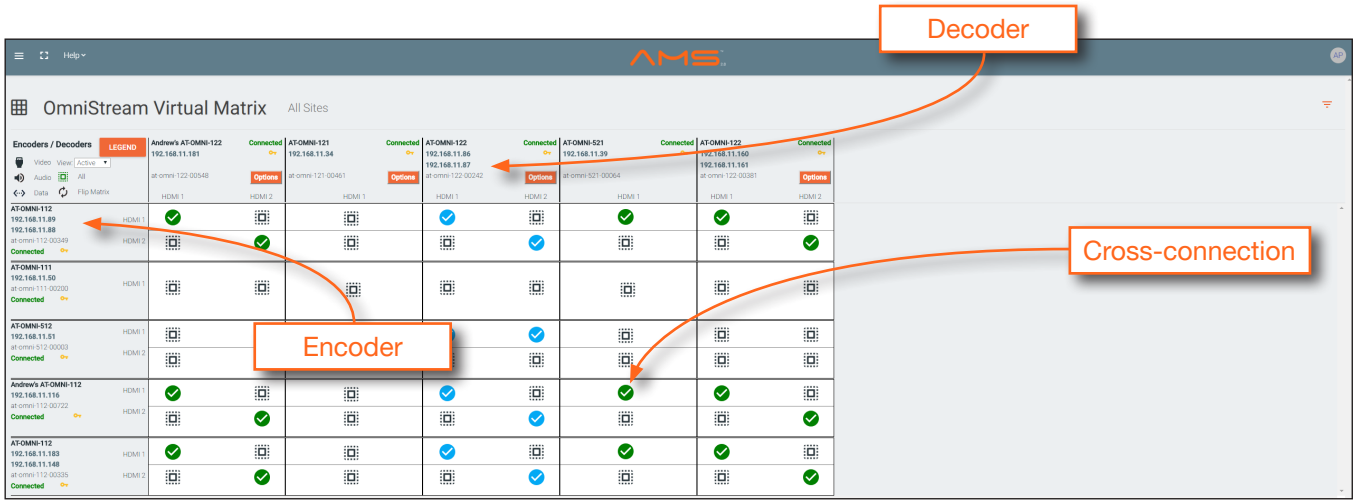
Layout and Operation

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

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

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

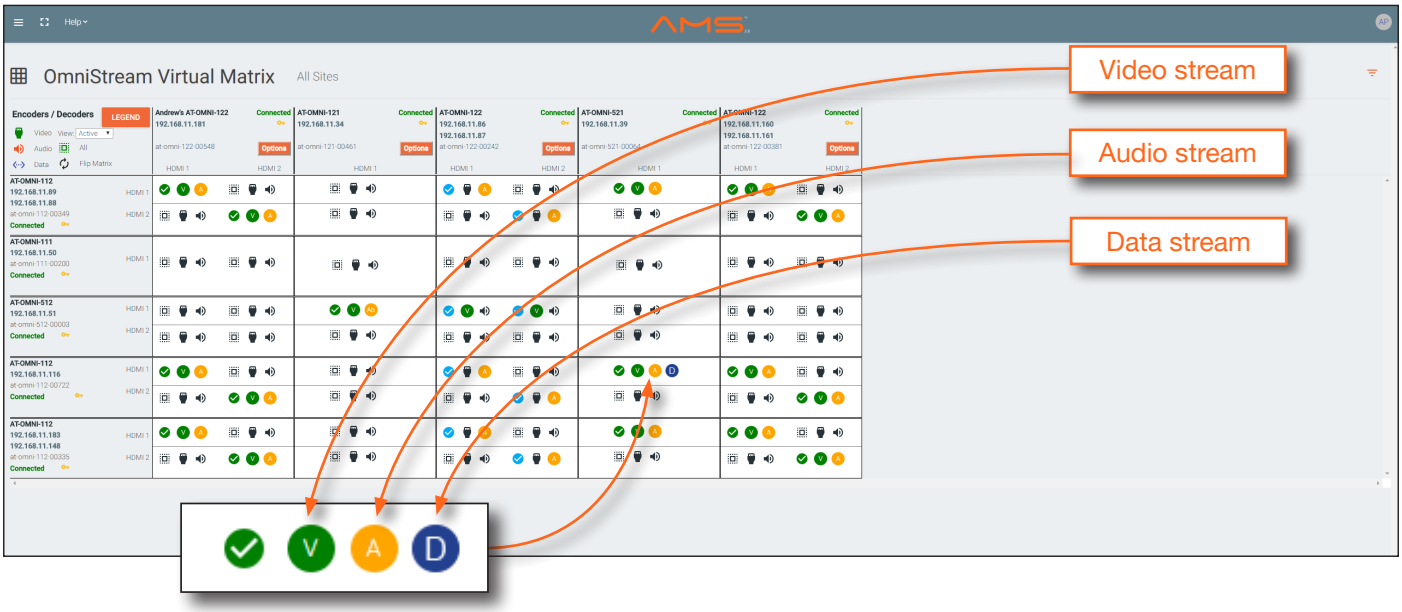
- **Removing a cross-connection**
  To remove a *cross-connection*, click on the desired circle icon with the check mark symbol. The square with the dots around it will be displayed indicating that the *cross-connection* has been removed.



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

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

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



IMPORTANT: R-Type and Pro compatibility: R-Type encoders (AT-OMNI-512) and decoders (AT-OMNI-521) operate in Video Mode, only. Pro encoders can be set to either Video Mode or PC Mode. Video Mode is incompatible with PC Mode. Therefore, in order for both R-Type and Pro encoders/decoders to work within a system, Pro encoders/decoders must be set to Video Mode.

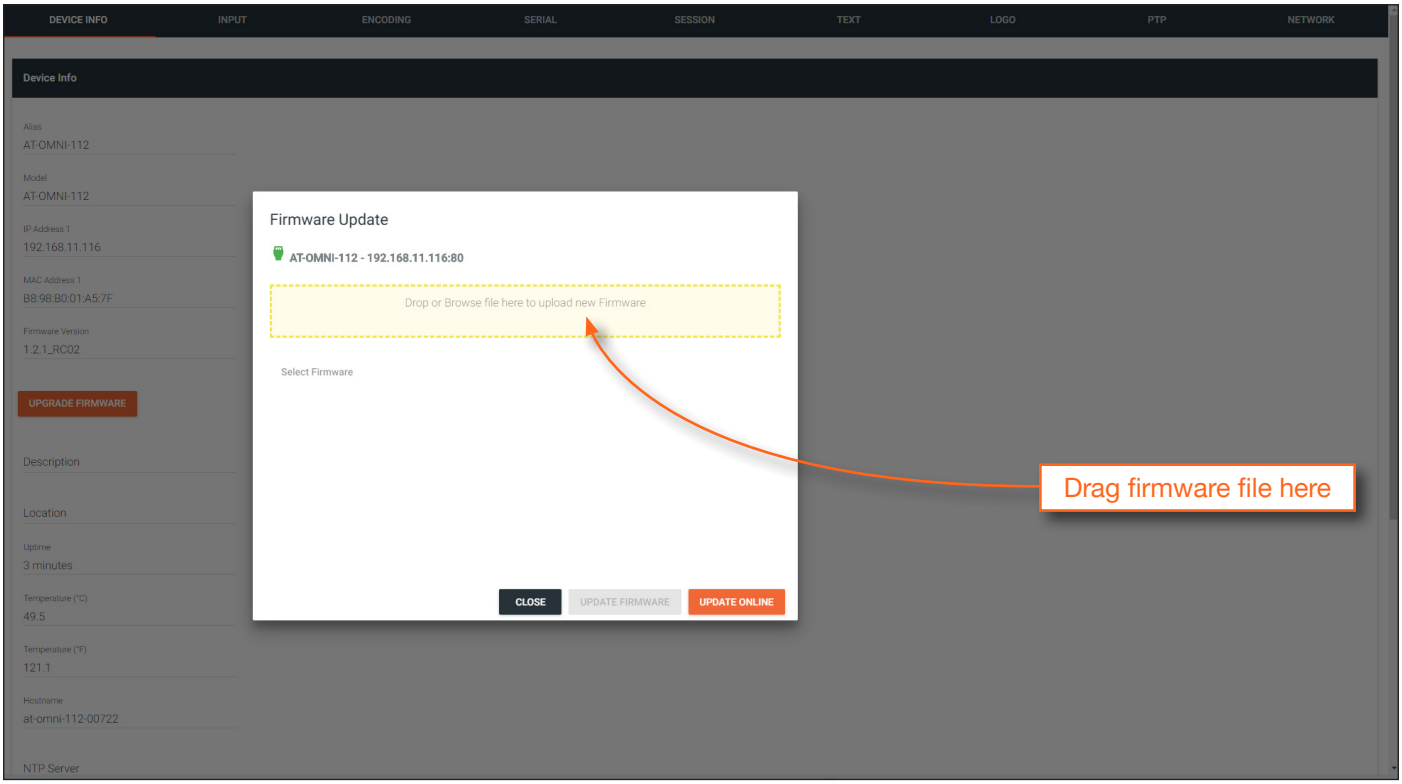
- Click the **Video**, **Audio**, and **Data** icons to return to the normal view.
- Since only HDMI (both audio and video) is being used, the V (video) and A (audio) icons are displayed. The blue circle with the checkmark indicates that the cross-section has been created. However, not all streams are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

Appendix

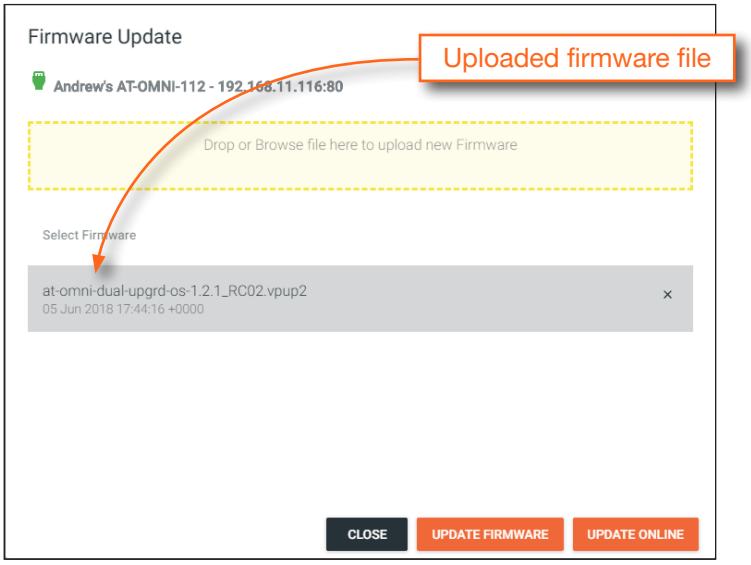
Updating the Firmware

Firmware updates are managed through the Atlona Management System (AMS) software.

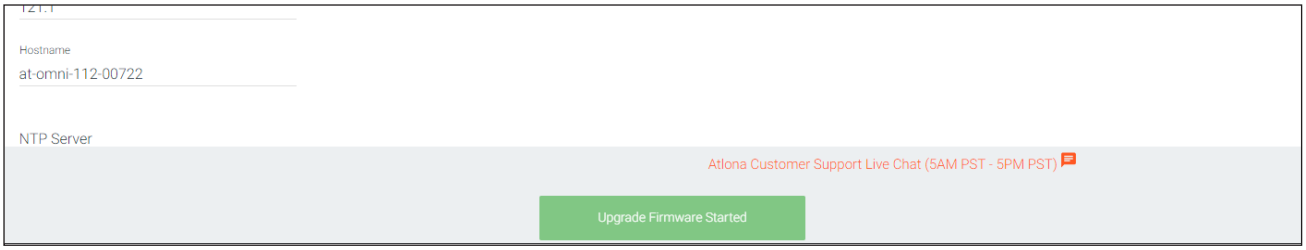
1. Click **DEVICE INFO** in the menu bar.
2. Click the **UPDATE FIRMWARE** button to display the **Firmware Update** dialog.



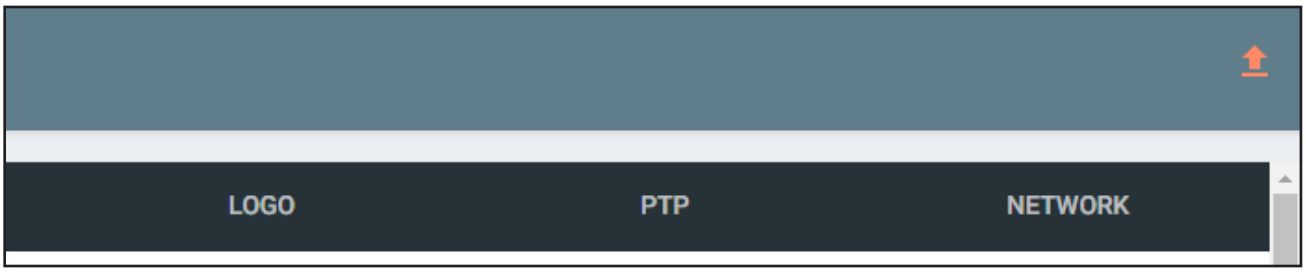
3. Click and drag the firmware file to yellow box, to upload the firmware to the device. OmniStream firmware files use the .v2pup file extension. Once the firmware file has been uploaded, it will appear under the **Select Firmware** section of the dialog box.
4. Click the **UPDATE FIRMWARE** button to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



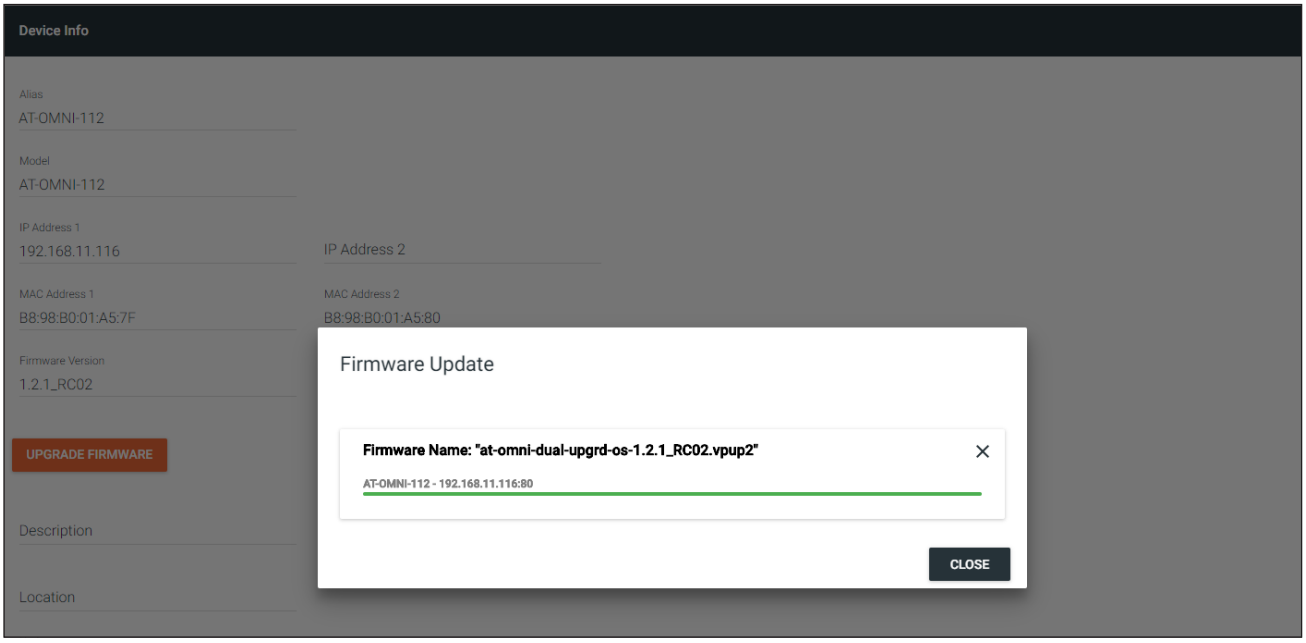
After the **UPDATE FIRMWARE** button is clicked, the Upgrade Firmware Started message box will be displayed.



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



The progress bar for the update process will be displayed. Once the file is uploaded to the encoder, the update procedure is a rapid process.



9. Click the “X” to close out the progress bar window, then click the **CLOSE** button to dismiss the **Firmware Update** message box.

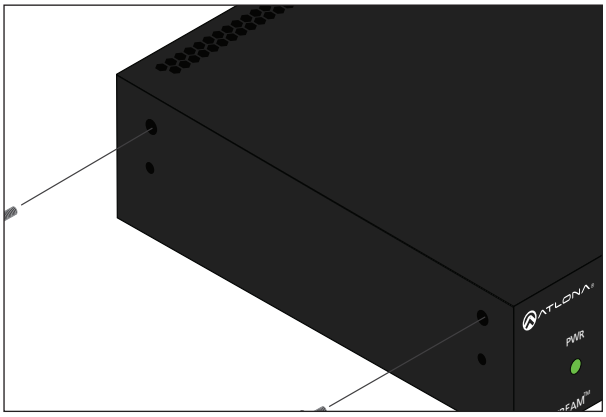
10. The firmware update process is complete.

11. Clear the web browser cache and refresh the web page. The new firmware version will appear in the **Firmware Version** field, in the **DEVICE INFO** page.

Mounting Instructions

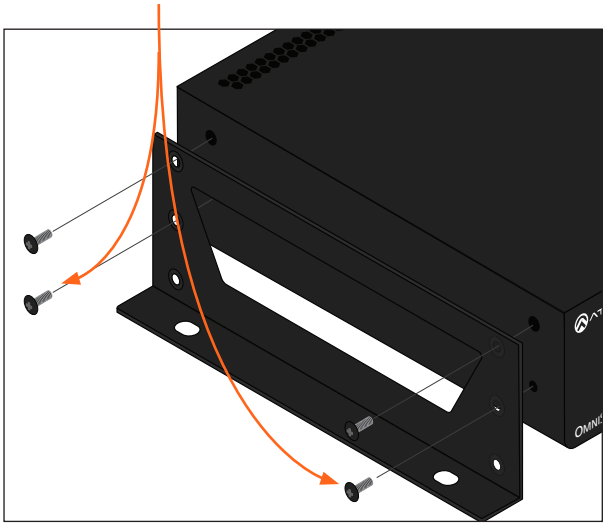
The AT-OMNI-512 encoder includes two mounting brackets and four mounting screws, which can be used to attach the unit to any flat surface.

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.

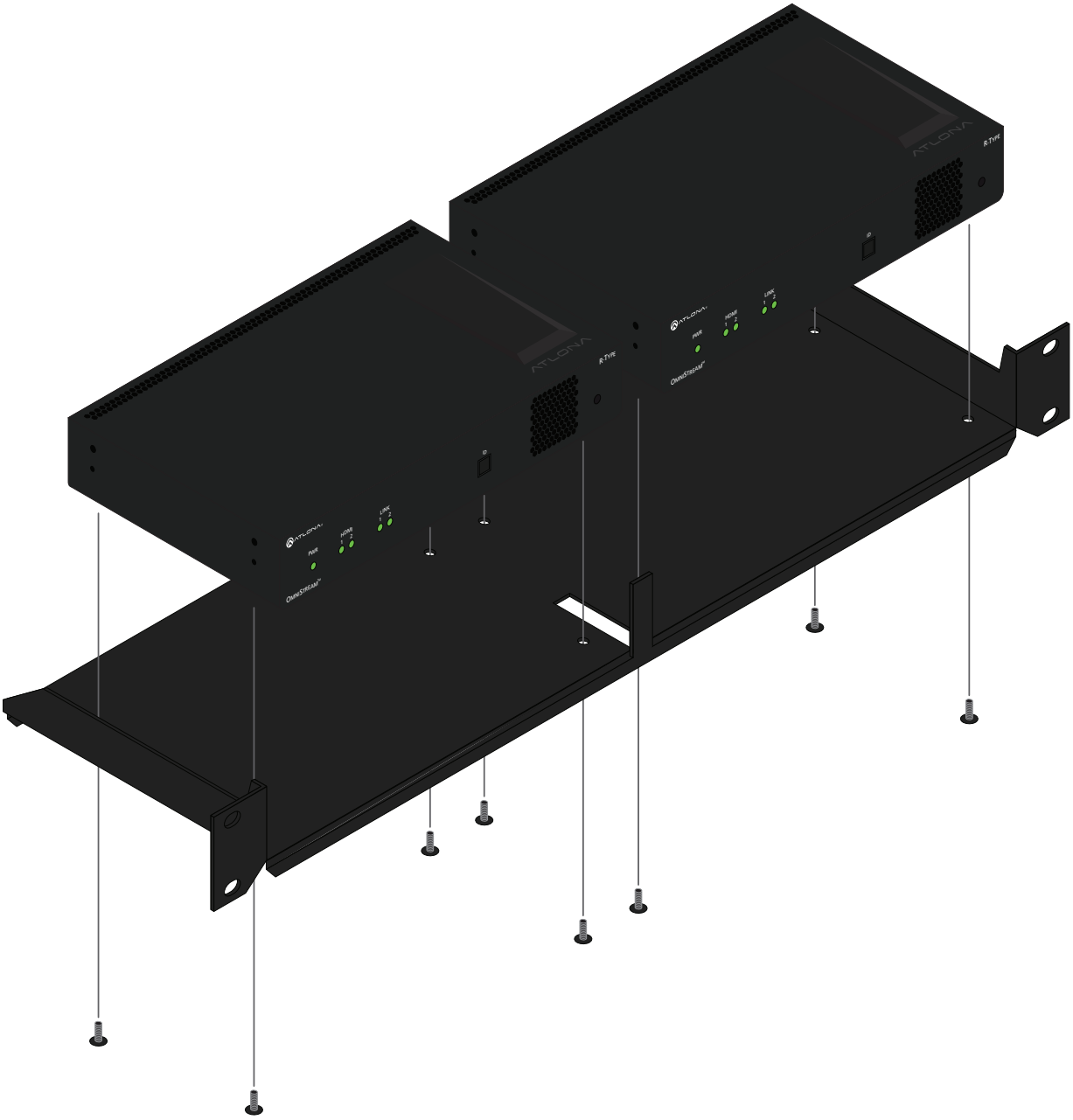
Rack Tray for OmniStream

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	
HDMI Specification	HDMI 2.0, HDCP 2.2
UHD/HD	4096×2160 (DCI) @ 60/30/24 Hz 3840×2160 (UHD) @ 60/50/24/25/30 Hz 1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz 1080i[1] @ 25/29.97/30 Hz 720p @ 30/50/59.94/60 Hz
Color Space	YUV, RGB

Encoding	
Density	Dual encoding engines
Compression Format	VC-2 (SMPTE-2042)
Chroma Subsampling	4:2:0
Video Quality Optimization	Video mode
Color Depth	8-bit, 10-bit, 12-bit
HDR	HDR10, HLG, Dolby® Vision™
Bit Rate	900 Mbps
Latency	0.5 frame (e.g. 1080p @ 60 Hz latency is < 8 ms between encoder and decoder) 1.5 frames in Fast Switching mode (e.g. 1080p @ 60 Hz latency is < 24 ms between encoder and decoder) Note: Unusual network configurations may increase overall latency

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

Protocols	
Video Streaming	RTP
Audio Streaming	RTP, up to 7.1 channels AES67, up to LPCM 7.1 channels
Addressing	DHCP, static
Encryption	AES-128
QoS Tagging	RFC 2475
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).

Appendix

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(2)	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
Safety	CE, FCC, cULus, RoHS, RCM

Environmental	
Operating Temperature	+14 to +122 °F -10 to +50 °C
Storage Temperature	-14 to +140 °F -10 to +60 °C
Operating Humidity (RH)	20% to 95%, non-condensing

Chassis	
Dimensions (H x W x D)	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
Safety	CE, RoHS, FCC

(1) Scaling and deinterlacing is not supported at 1080i.
(2) Maximum distance per hop is 330 ft (100 m), depending upon network configuration.

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