

OmniStream[™] Single-Channel / Dual-Channel Networked AV Decoder



AT-OMNI-121 Atlona Manuals AT-OMNI-122 Networked AV



Version Information

Version	Release Date	Notes
1	Apr 2017	Initial release
2	Jun 2017	New enclosure, documentation updates: AMS interface; front-panel buttons, decoder set tab
3	Dec 2017	Video wall configuration plus bezel compensation, slate / logo insertion, text insertion, redundancy grace period for IP input changes
4	May 2018	Updated to reflect AMS 2.0
5	Jul 2018	Includes updates to 1.2.1 firmware; AMS updates
6	Oct 2018	1.2.2 firmware; Dolby Vision decoding/licensing, fast switching
7	Aug 2019	Documentation updated to support AMS 2.4.0
8	Sep 2019	Documentation updated to support OmniStream 1.2.5; various bug fixes and added Portrait Mode (page 78) for Video Walls.



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To register your product, go to http://www.atlona.com/registration

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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-121 and http://www.atlona.com/ product/AT-OMNI-122 for the latest firmware updates and User Manual.



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

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Important Safety Information



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[™] 121 (AT-OMNI-121) is a networked AV decoder for one HDMI source up to 4K/UHD, plus embedded audio and RS-232 control. The Atlona OmniStream[™] 122 (AT-OMNI-122) adds a second channel of encoding for two HDMI sources up to 4K/UHD and RS-232 control and can deliver duplicate AV streams to two networks for full system redundancy in mission-critical applications. OmniStream features SMPTE VC-2 compression for critical-quality video applications, with extremely low, sub-frame latency from encode to decode. It also includes selectable AES-128 encryption and SMPTE 2022-5 Forward Error Correction (FEC) for robust AV distribution spanning multiple networks. Both OmniStream decoders are housed in compact enclosures that easily fit into a half RU space. They can be powered over the network through Power over Ethernet (PoE) or optionally from local AC power.

OmniStream was engineered from the ground up at Atlona to deliver the performance and dependability of traditional AV distribution, with the virtually unlimited scalability and cost efficiency of integrating over data networks. It addresses the many challenges AV and IT integrators encounter with implementing networked AV systems, while delivering immediate and long-term ROI to end users in enterprises and other organizations.

Features

OmniStream Single-Channel Decoder

- Single-channel AV decoder for HDMI up to 4K/UHD
- Redundancy capabilities for mission critical applications
- SMPTE VC-2 compression
- RS-232 control
- Selectable AES-128 encryption
- SMPTE 2022-5 FEC
- Powered using PoE or optional external 48V DC power supply

OmniStream Dual-Channel Decoder

- Dual-channel AV decoder for HDMI up to 4K/UHD
- Redundancy capabilities for mission critical applications
- SMPTE VC-2 compression
- RS-232 control
- Audio embedding / de-embedding
- Selectable AES-128 encryption
- SMPTE 2022-5 FEC
- Powered using PoE or optional external 48V DC power supply

Package Contents

OmniStream Single-Channel Decoder

- 1 x AT-OMNI-121
- 1 x Phoenix terminal block, 6-pin (push spring)
- 1 x Wall/table mounting brackets
- 4 x Rubber feet
- 1 x Installation Guide

OmniStream Dual-Channel Decoder

- 1 x AT-OMNI-122
- 1 x Phoenix terminal block, 6-pin (push spring)
- 1 x Wall/table mounting brackets
- 4 x Rubber feet
- 1 x Installation Guide



Panel Description

AT-OMNI-121



1 PWR

This LED indicator is green when the unit is powered.

2 LINK

These LED indicators show the active input status.

3 REBOOT

Use a pointed object to press this recessed button and reboot the unit.

4 HDMI OUT

Connect an HDMI cable from this port to an HD display.

5 ETHERNET

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

6 RS-232

Use the included Phoenix terminal block to connect an RS-232 device to this port. The bottom three pins support IR pass-through. Refer to IR Connections (page 14) for more information.

7 AUDIO

Connect the included Phoenix terminal blocks to embed audio on the output stream and/or connect to an audio output device.

8 DC 48V

Connect the optional 48V DC power supply to this power receptacle. This power supply is available, separately.



Panel Description



1 PWR

This LED indicator is green when the unit is powered.

2 LINK 1 / LINK 2

These LED indicators will be green when the link integrity between the between the encoder and the switch is good.

3 ID

This button provides two functions: (1) Press and release this button to send a broadcast network notification to any devices that may be listening (AMS).

(2) Press and hold this button for 30 seconds to perform a factory-reset of the unit. Refer to ID Button (page 24) for more information.

4 REBOOT

Use a pointed object to press this recessed button and reboot the unit.

5 HDMI OUT 1 / HDMI OUT 2

Connect HDMI cables from these ports to an HD display.

6 ETHERNET 1 / ETHERNET 2

Connect Ethernet cables from these ports to the Local Area Network (LAN).

7 RS-232

Use the included Phoenix terminal block to connect up to two RS-232 devices to this port. The RS-232 2 port also supports IR pass-through. Refer to IR Connections (page 14) for more information.

8 AUDIO 1 / AUDIO 2

Connect the included Phoenix terminal blocks to embed audio on the output stream and/or connect to an audio output device.

9 DC 48V

Connect the optional 48V DC power supply to this power receptacle. This power supply is available, separately, and is required when connecting the encoder to non-PoE compatible switch or when embedding and de-embedding of analog audio.



Installation

External Power (Optional)

OmniStream decoders are powered by PoE (Power over Ethernet), when connected to a PoE-capable switch. If a PoE-switch is not used, then the optional 48 V power supply (Atlona part no. AT-PS-48083-C) can be purchased, separately. Insert the positive and negative leads, from the power supply, into the terminals of the 2-pin captive screw connector block, as shown. The orange 2-pin captive screw connector block is included with the OmniStream power supply package.



IMPORTANT: The external power supply must be connected to the decoder when embedding and de-embedding audio using the **AUDIO IN** and/or **AUDIO OUT** ports.





RS-232 Connections

Both the AT-OMNI-121 and AT-OMNI-122 provide RS-232 over IP, allowing communication between an automation system and an RS-232 device. This step is optional. Note that different Phoenix connectors are provided with each product.

- 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.
- 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.



AT-OMNI-121

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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. Refer to IR Control (page 38) for more information.



IR extender configuration





Audio Connectors

In addition to passing audio directly from the encoder to the decoder, both the AT-OMNI-121 and AT-OMNI-122 provide two additional audio options. Either option can be used or they can be used simultaneously.

- HDMI audio can be de-embedded and output to two-channel analog audio.
- Two-channel analog audio can be embedded and output over HDMI.

Use the included dual five-pin Phoenix blocks. Note that each product comes with different connector blocks. This step is optional. Refer to Configuring Audio Output (page 53) for more information.

AT-OMNI-121

If either the AUDIO IN or AUDIO OUT port will be used, then connect the included 5-pin "captive screw" Phoenix blocks, as shown below.





2-channel analog audio input (top)

2-channel analog audio output (bottom)

• If *both* **AUDIO IN** and **AUDIO OUT** terminals will be used, then connect the included 5-pin "push spring" Phoenix blocks, as shown below.





Balanced XLR audio



Unbalanced XLR audio



Unbalanced RCA audio

NOTE: Unblanaced XLR audio pins require Pin 1 and Pin 3 to be connected.



AT-OMNI-122

Use the top 5 pins to connect audio input sources. Use the bottom five pins to connect to audio output devices.

- 1. Use wire strippers to remove a portion of the cable jacket.
- 2. Locate the included Phoenix block connectors. Press the orange tab, above the terminal, while inserting the exposed wire. Release the orange tab to lock the wire in place. Balanced or unbalanced audio can be used.





Balanced XLR audio



Unbalanced XLR audio



Unbalanced RCA audio

NOTE: Unblanaced XLR audio pins require Pin 1 and Pin 3 to be connected.



IMPORTANT: When using analog audio inputs on the OmniStream decoder, the decoder must be powered using the 48V power supply (AT-PS-48083-C). This power supply is sold separately and can be purchased from Atlona.



Connection Instructions

 Connect an Ethernet cable from the ETHERNET port on the decoder to a PoE-capable switch on the Local Area Network (LAN). If using the dual-channel decoder, connect a separate Ethernet cables to ETHERNET 1 and ETHERNET 2 ports.



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

- 2. Connect an HDMI cable from the **HDMI OUT** port on the decoder to a display. If using the dual-channel decoder, connect an HDMI cable from each **HDMI OUT** port to a display.
- 3. RS-232 (optional)
 - Connect the RS-232 controller/automation system to the RS-232 port on the decoder.
 - Connect the RS-232 device to the RS-232 port on the decoder.
- 4. External Audio (optional)
 - Connect the audio inputs to the decoder, as required.
 - Connect the audio outputs to the decoder, as required.



IMPORTANT: When using analog audio inputs on the OmniStream decoder, the decoder must be powered using the 48V power supply (AT-PS-48083-C). This power supply is sold separately and can be purchased from Atlona.

5. IR (optional)



NOTE: For dual-channel decoders, only the **RS-232 2** port supports both serial and IR. Singlechannel decoders only support IR on the **RS-232 2** port. The IR emitter or IR receiver must always be connected to this port. Refer to IR Control (page 38) for more 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.

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



Installation

Connection Diagram





Configuration

Accessing Decoders 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 configure each decoder on the network. AMS is free and can be downloaded from https://www.atlona.com/ams.

By default, the decoders are set to DHCP mode, allowing a DHCP server (if present) to assign the decoder 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 decoders if they are on the same VLAN.

- 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

	AMS Login AMS Login Belleton Belleton Forget passent? Address: 10.20.42 fb.07:00	
	AMS Login	
Email Address ap@a.com		
Password		
	Forgot password?	2434

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



Configuration

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

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- 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.

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E Dashboard A Users Bits >	AP Welcome AP age on Appendix		ANS Version Notes	
₩ Devices >	Building 1	(View AMS Documentation)	2.4.0.16 (View Full Notes)	
€ ⁴ QA →	Building 2	Installation Guides Manual	New Feature Added Config for ANC-TUS and HUVS 210U/210H	
Unssigned acomn-112-00221 acomn-112-00221 acomn-112-0111 acomn-112-01437	↔ Unassigned	>		
at-omni-112-005-12 at-omni-121-00501 at-omni-121-00789	at-omni-112-00221	61 Devices are Online	4 Devices are Offline	
at-omni-121-00872 at-omni-122-00446 topological 120 00578	at-omni-112-00411		+	
actimin122-00058 actomni122-00548	at-omni-112-00437		Add Uber	
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	at-omni 122-00508			
	atromni-122-00548			
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Configuration

All available decoders will be displayed under the **Unassigned** category. When a decoder 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 decoder 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 the User Manual for more information on configuring a decoder in Auto IP mode.

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

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



10. Once the unit is selected, the control interface for the decoder will be displayed. The illustration below shows the **DEVICE INFO** screen for an AT-OMNI-122 decoder.

≡ C Help~				IS:				1 6 🖾 🚳
DEVICE LIST	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
💣 QA 🔨	Device Info							
Building 1	Alias:	17.01 0 5 600						
Bar/Restaurant	IP Address	AI-0MNI-122 10.20.40.27						
MK office	MAC Address Firmware Version:	B8:98:B0:01:92:52						
Building 2	FIRMWARE UPDATE							
SavRestaurant	Description							
Mik once	Uptime:	6 days, 1 hours, 31 min	ites					
unassigned	Hostname:	at-omni-122-00446						
	Reset users Reset net FACTORY RESET IDENTIFY	REBOOT DEVICE						
	SHOW ADVANCED +							
								SAVE
				Atlana Customer Support Live C	that (SAM PST - SPM PST) 🗖			





Configuring a Static IP Address

The following section is only required to set the decoder, currently in Auto IP mode, to a static IP address. If a DHCP server is not found within 60 seconds, decoders 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 decoder in order for AMS to locate it on the network.

- 1. Make sure that the decoder is powered. Power will need to be supplied either by the external 48V power supply (not included) or by connecting an Ethernet cable from the decoder to a PoE-capable switch. If using the AT-OMNI-122, the Ethernet cable can be connected to either **ETHERNET 1** or **ETHERNET 2** (dual-channel only).
- 2. Connect an Ethernet cable from the PC, directly to one of the Ethernet ports on the decoder. 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 decoder.



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 Decoders in AMS (page 19) if necessary.
- 5. Locate the decoder under the Unassigned section within AMS.
- 6. Click on the device.
- 7. Under AMS, click the NETWORK tab.

DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Network 1 (eth 1)				Network 2 (etn2)			
Enabled:	•			Enabled:	•		
Carrier:	•			Carrier:	•		
DHCP Mode:	DHCP			DHCP Mode:	DHCP		
Changing IP Mode from Static to DHC	P requires running a scan to find the r	new IP address of the device.		Changing IP Mode from Static to D	HCP requires running a scan to find the new	IP address of the device.	
IP Address:	192.168.0.184			IP Address:			
Subnet:	255.255.255.0			Subnet:			

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

DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Network 1 (eth1)				Network 2 (eth2)			
Enabled:	•			Enabled:	•		
Carrier:	•			Carrier:	•		
DHCP Mode:	DHCP			DHCP Mode:	DHCP		
Changing IP Mode from Static to DHCP requires	run Static Zero Conf			Changing IP Mode from Static to DHCP requires i	running a scan to find the new IP addres	s of the device.	
IP Address:	10.20.40.27			IP Address:			
Subnet:	255.255.255.0			Subnet:			
Gateway:	10.20.40.1			Gateway:			

- 9. Enter the required network information for the decoder 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 decoder from the PC and connect it to the network.
- 12. The decoder is now ready for use.



Basic Operation

LED Indicators

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

LED		Description
PWR	Off O	• If using a PoE switch, make sure that the port on the switch that is connected to the decoder, has PoE enabled. When the decoder 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 decoder. When using an external power supply, the PWR indicator will be red.
	Red	The decoder is booting.
	Green	The decoder is ready.
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 decoder and the network.



Basic Operation

Rebooting OmniStream

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



ID Button

This feature is not available on the single-channel OmniStream decoder (AT-OMNI-121).

The **ID** button serves two functions:

- 1. Sends a broadcast message, over the network, to any devices that may be listening.
- 2. Resets the decoder 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.

Factory-Reset using the Front Panel



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

NOTE: If using AT-OMNI-121 decoders, the factory-reset procedure must be performed using RS-232 or IP. Refer to Connecting RS-232 to OmniStream (page 55) for more information.

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



Factory-Reset using RS-232

- 1. Connect a USB to RS-232 cable from the computer to the OmniStream decoder. Refer to Connecting RS-232 to OmniStream (page 55) for information on preparing a cable and connecting to OmniStream units.
- 2. Launch a terminal program that supports RS-232, such as PuTTY. PuTTY is a free and open-source terminal emulator and can be downloaded from https://www.putty.org. The following example uses PuTTY.

🕵 PuTTY Configuration		? ×	
Category: 	Options controlling I Select a serial line Serial line to connect to	ocal serial lines	
	Configure the serial line Speed (baud) Data bits Stop bits Parity Flow control	9600 8 1 None ~ None ~	
About Help	Or	ben Cancel	

- 3. Click Serial, near the bottom on the left-hand side pane.
- 4. Enter the COM port in the **Serial line to connect to** field. This is the COM port used by the computer, to communicate with the OmniStream decoder. Refer to Connecting RS-232 to OmniStream (page 55) for more information on obtaining the proper COM port.
- 5. Enter the baud rate, data bits, and stop bits as follows: 9600, 8, 1.
- 6. Click the Parity drop-down list and select **None**. Click the Flow control drop-down list and select **None**.
- 7. Click **Open** to establish the RS-232 connection.
- 8. Enter the login credentials. The default login credentials are listed below. Note that login information is casesensitive.

username: admin password: Atlona

9. Once connected, the CLI (Command Line Interface) will be displayed. Execute the following command and press [ENTER]:

Mreset



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.



- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Go to the encoder AMS interface. Refer to the OmniStream Single-Channel / Dual Channel A/V Encoder User Manual, if necessary.
- 3. Click **SESSION** in the menu bar and locate the **Video** section.
- 4. Enter the IP address of the decoder in the **Destination Multicast/Unicast Address** field. If using dual-channel encoders, repeat this process for each stream.

Video		
Encoder:	HDMI Input 1	IP address of decoder
Enable Video:		
Destination Multicast/Unicast Address:	225.0.0.4	
Destination LIDP Port-	1000	
Destination ODP Fort.	1000	

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



- 6. Go to the decoder AMS interface.
- 7. Click **IP INPUT** from the menu.
- 8. Remove the IP address from the Multicast Address field.
- 9. Click the **SAVE** button to commit changes.

DEVICE INFO	IP INPUT	НДМІ ОЦТРИТ	SERIAL
IP Input 1 (Video 1)			
Enabled:		Field should be blank)
Interface:	eth1		v
Multicast Address:	•		
Port:	4		
	SAVE		

10. 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, 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.



- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. The AMS Dashboard will be displayed.
- 3. Click the \equiv 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 121), 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.



Basic Operation

▦	OmniStream Virtual Matrix									
Encod	ers / Decoders /ideo View: Active Audio 🔲 All Data 🗘 Flip Ma	LEGEND •	AT-OMNI-121 192.168.11.34 at-omni-121-00461	Connected ov Options	Andrew's AT-OMNI-122 192.168.11.117 at-omni-122-00548	Connected	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omni-122-00242	Connected	AT-OMNI-521 192.168.11.39 at-omni-521-00064	Connected
AT-OMN 192.168 at-omni- Connect	I-111 .11.50 1111-00200 ed or	HDMI 1								
AT-OMN 192.168	I-112 .11.178	HDMI 1					I			
Connect	ed 07	HDMI 2	S				(n)		S	
Andrew/ 192.168	AT-OMNI-112 .11.116	HDMI 1								
at-omni- Connect	ed 😽	HDMI 2								
AT-OMN 192.168			1						S	
192.168 at-omni Connec		Im								
•						F		I		



Setting the Video Mode

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

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19), if necessary.
- 2. Click HDMI OUTPUT in the menu bar.
- 3. Click the **SHOW ADVANCED** button.
- 4. Scroll down to the **Video Optimization** section and click the **Video Optimization** drop-down list to select the desired mode.

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

HIDE ADVANCED 🔺				SAVE
Video Optimization				
Video Optimization:	Motion Video	L.	L	
	Computer Graphics	-		SAVE

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





Slate / Logo Insertion



IMPORTANT: Slate / logo insertion is not supported when fast switching is enabled. Refer to Fast Switching (page 37) for more information on enabling and disabling fast switching.

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 will be from the encoder IP address(es) to which each decoder is subscribed. When configured on the decoder, the presence of the image is specified on the (individual) HDMI output. Refer to the *OmniStream Single-Channel / Dual Channel A/V Encoder User Manual*, for information on managing slate / logo insertion on encoder units.



IMPORTANT: When using 4K images, the image width must not exceed 30% of the horizontal resolution.

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) 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.

			Logo s	selected				
DEVICE	INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Logo Text	New Logo							
PTP	Name My_image							
SAP	Choose File image	ge.png						
					UPLOAD			
	HDMI Output 1 Lo	go			HDMI Output 2 Logo			
	Enabled:				Enabled:			
	Select Logo:	Not Used			- Select Logo:	Not Used		
	Aspect Ratio:	Stretch			- Aspect Ratio:	Stretch		
	Location Horizontal:	Name						
	Vertical:	wy_image						
	<u>Size:</u> Height:	Choose File ima	age.png					
	Width							



Basic Operation

DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
New Logo							
Name My image			_				
				Image windo	w aroup		
Choose File	image.png				<u>g.e.p</u>		
				OPLOAD			
My image							
wy_inage							
Usage Count							
<u> </u>		_					
		DELETE					
HDMI Output	1 Logo			HDMI Output 2 Logo			
Enabled:	•	•		Enabled:	•		
Select Logo:	Not L	Jsed		- Select Logo:	Not Used		
Assess Dation	Stretz	ch		- Aspect Ratio	Stretch		
Aspect Ratio.	Oucu			riopcor riono.			

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 Output 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.

My_image				
Usage Count 0				
	DELETE			
HDMI Output 1 Logo		HDMI Output 2 Logo		
Enabled:		Enabled:	e =	
Select Logo:	Not Used	Select Logo:	Not Used	
Aspect Ratio:	My_image	Aspect Ratio:	Stretch	
Location Horizontal:	0	Location Horizontal:	0	
Vertical:	0	Vertical	0	
Cive-		Size-		
Height:	0	Height:	0	
Width:				
	IDMI Input 1 Logo			
E	Enabled:			
5	Select Logo:			
		Not Used		
		My_image	ſm	
	Aspect Ratio:		0	



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

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

Video				Video			^
Video:		IP Input 1 (Video 1)		Video:	IP Input 2 (Video 2)		
Backup Mode:		Off		Backup Mode:	Off		
Backup Input:		IP Input 7 (Backup Video 1)		Backup Input:	IP Input 8 (Backup Video 2)		
Configuration Grace Peri	od:	0		Configuration Grace Period:	0		
Active Input:		Video 1		Active Input:	Video 2		
Status:		No active video		Status:	No active video		
Stretch/Crop Mode:		Keep Aspect Ratio		Stretch/Crop Mode:	Keep Aspect Ratio		
Resolution:		1280x720		Resolution:	1280x720		
Slate Mode:		Off		Slate Mode:	Off		
		Manual	-				
Video Wall		Auto		Video Wall			
Enable:		-		Enable:	•••		
Unit:		Pixels		Fast Switching Enable:	•		
Display Width:		3840			TO PRIMARY TO BACKUP		
Display Height:		720		Audio			
Horizontal:		0		Input:	IP Input 4 (Audio 2)	· · · ·	
Vertic Reso	olution:		1280x720				r
Edge							
Fast S	e Mode:		Off				
			Manual				
Vide	o Wall		Auto	ſm			
Engl	lo:						
Enat	ne.			-			
						_	_

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



Deleting Slates / Logos

Follow the instructions below to remove a logo from the Logo tab.

- 1. Click **OTHER** tab in the menu bar.
- 2. Click the **DELETE** button for the desired logo box. If the **DELETE** button is disabled, do the following:
 - a. Locate the HDMI Output 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

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 AMS. Refer to Refer to Accessing Decoders in AMS (page 19) 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, the toggle switch will be green.

DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Logo							
Text	utput 1 Text			HDMI Output 2 Text			
PTP Enabled:				Enabled:	•		
SAP Text:				Text:			
Scroll Sp	veed: 0			Scroll Speed:	0		
Iteration	Text selecte	'nd		iterations:	0		
Color Color:	white			Color:	white		
Location	1			Location			
Horizont	ai (%): 0			Horizontal (%):	0		
Vertical ((%):			Virtical (%):	0		
Size							
Width (%	.):						
Height (?		tout 1 Text					
SHOW							
Show							
	Enabled:			I m			
	Toxt		c				
	Text.			-			
	Scroll Spe	ed-	0				
	Ocroin ope		0				
	Iterations	:	0				
		-					

- 5. In the **Text** field, enter the desired text.
- 6. 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.
- 7. Enter the number of iterations in the **Iteration** field. Set this field to 0 (zero) to set the number of iterations to infinity.
- 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.
- 9. 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.



- 10. 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.
- 11. Click the **SAVE** button to apply all changes.


Fast Switching

IMPORTANT: If Fast Switching is enabled, latency increases from 0.5 frames to 1.5 frames. When using Fast Switching mode, the output resolution will be 1920x1080p, regardless of the source resolution. Also note that 1080i is not supported in Fast Switching mode. Also note that Slate / Logo Insertion and Text Insertion will be automatically disabled when Fast Switching is enabled.

This feature is a software implementation which vastly improves the HDMI authentication process, resulting in ultrafast switching between video streams.

- 1. Login to AMS. Refer to Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Click **HDMI OUTPUT** in the menu bar.
- 3. Click the **Fast Switching Enable** toggle switch. By default, this feature is disabled and the toggle switch will be gray. Click the toggle switch to enable fast switching. When enabled, the toggle switch will be green.

Video		
Video:	IP Input 1 (Video 1)	~
Active Input:	Video 1	
Status:	No active video	
Stretch/Crop Mode:	Keep Aspect Ratio	~
Resolution:	1280x720	v
Fast Switching Enable: * When fast switching is enabled, Logo insertion,	Slate mode, and Text overlay will be automatically disabled. *	

The following table provides maximum timing, color space, and bit-depth specifications when fast switching is enabled.

Number of Channels	Resolution	Refresh Rate	Color Space	Bit Depth
1	1920 x 1080p	60 Hz	4:4:4	12-bit
2	1920 x 1080p	30 Hz	4:4:4	12-bit



NOTE: When fast-switching is enabled, the output resolution at the decoder endpoint is dependent on both the number of channels on the decoder and the input resolution received from the encoder. Refer to the table below for details.

Input Resolution (from Encoder)	Output Resolution (AT-OMNI-121)	Output Resolution (AT-OMNI-122)
1280 x 720p	1280 x 720p	1280 x 720p
1920 x 1080p @ 60 Hz	1920 x 1080p @ 60 Hz	1920 x 1080p @ 30 Hz
> 1920 x 1080p (up to UHD)	1920 x 1080p @ 60 Hz	1920 x 1080p @ 30 Hz



IR Control

Controlling the Display using the Display's IR Remote

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. IR control is only supported on **RS-232 2** port (bottom set of connectors).

The following sections provide step-by-step instructions for the following topics:

- Controlling the Display using the Display's IR Remote
- Controlling the Display using a Control System

The illustration below shows a display device being controlled from the encoder. Refer to the next page for details on how to connect the IR emitter and IR receiver.





Required Equipment

Atlona has tested and verified the following components for this application. However, other components may also be used. Note that IR control is only supported on **RS-232 2** port (bottom set of connectors) of the OmniStream encoder and decoder.

- Xantech 789-44 4-Source Connecting Block
- Xantech 12 V PSU
- IR Receiver (Atlona AT-IR-CS-RX)
- IR Emitter (Atlona AT-OMNI-IR-TX)

Connecting the IR Receiver to the Encoder

- Unscrew the captive screw connectors on the Xantech 789-44 4-Source Connecting Block, using a regular screwdriver, and connect the SIGNAL, GROUND, and POWER leads of the AT-IR-CS-RX to the Xantech 789-44 4-Source Connecting Block, as shown below. The presence or absence of white markings on each wire of the AT-IR-CS-RX will denote the signal type:
 - IR IN = Dashed dark gray line
 - GND = Solid (no marking) black wire

+12 VDC = solid dark gray line

IMPORTANT: When connecting the IR emitter to the encoder, the IR lens of the emitter must be within 1" of the IR window on the source device.



AT-IR-CS-RX



Connect the IR IN and GND leads, from the 789-44 4-Source Connecting Block, to the to the RX and \perp pins, 2. respectively, of the RS-232 2 port (bottom port) of the encoder, as shown.

NOTE: The IR IN, GND, and +12 VDC wires, from Step 1, have been removed from the illustration





OmniStream Encoder

3. Connect the Xantech 12 V power supply (or other compatible 12 V DC power supply) to the 12VDC connector on the Xantech 789-44 4-Source Connecting Block.

Connecting the IR Emitter to the Decoder

- Connect the included 6-pin Phoenix connector to the RS-232 2 port on the encoder. 1.
- Connect the SIGNAL wire of the AT-OMNI-IR-TX, to the TX (middle) terminal on the RS-232 2 port. 2.
- Connect the GROUND wire of the AT-OMNI-IR-TX to the 🛓 terminal on the RS-232 2 port. 3.



OmniStream Decoder



Identifying the Encoder using AMS

- 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 \equiv icon, in the upper-left corner of the AMS Dashboard.

AP retain com II Deshboard 2 Users		
Sites	Bar/Restaurant Ext View AMS Documentation AMS Version Notes	
Devices	Bulling 1 (View AMS Documentation) 2.4.0.16 (View Full Notes)	
S QA	MK office E61 • AT-ANC 1080 • New Feature: Added Config for ANC-108 and HDVS Building 2 • Installation Guides 210U/210H	A
↔ Unassigned →	Bar/Restaurant en	Y
♥ at-omni-112-00221	buting 2 too ATGAN 120 buting 2 too ATGAN 40	
at-omni-112-00411	. ATH/2H44M •	
at-omni-112-00437		
at-omni-112-00502		
at-omni-121-00300	Devices Assigned Devices are Online Devices are Online Devices are Online	
at-omni-121-00872		-
at-omni-122-00446		
at-omni-122-00508		
at-omni-122-00548		
• •		
III Virtual Matrix	1 64 1 Devices located to update	
www.righnodflij	Orgingle 02219 Allows in c ylonacom y. All lights Messered. (JP Achers: 11.23.16.21, Venson 5.4.5.16.	

- 6. Click **Devices** from the fly-out menu.
- 7. Click the All option.
- 8. Click the desired encoder within the **AMS Device List** window. The AMS interface for the encoder will be displayed.
- 9. Locate and make note of the IP address of the encoder, which can be found in the IP Address field.

		IP Address field	1
Device Info			
Alias:			
Model:	AT-OMNE 12		
IP Address	192.168.0.122		
MAC Address	B8:98:B0:01:87:17		
Firmware Version:	1.2.5		
FIRMWARE UPDATE			
Description:			
ocation:			



Configuring the Encoder Serial Port

The first step will be to configure the RS-232 port on the encoder to use IR. Only the **RS-232 2** port supports both RS-232 and IR. Therefore, this port must be used for IR. RS-232 port configuration is managed under the Serial page of the encoder web interface.

- 1. Enter the IP address of the encoder in the address bar of the web browser.
- 2. Enter the required login credentials. The default login is:

Username: admin Password: Atlona

- 3. Click the **Login** button.
- 4. Click Serial in the top menu bar.

é									
<	System information	Input	EDID	Encoding	Serial	Session	Logo	Text	Alarms 2

- 5. Locate the **Serial port configuration** window group. The **Name** field, within this window group, should read **serial_port2**. Click the **Mode** drop-down list and select **Infrared**.
- 6. Click the **SAVE** button to commit changes.

1	Serial port configuration	
serial_port1	Name	serial_port2
serial	Supported modes	infrared, serial
serial 👻	Mode	infrared 👻
9600 🗸		infrared
8 🗸	SAVE	serial
none 👻		
1 🗸	Serial configuration	
none 👻	Name	serial_use1
SAVE button	Port	serial_port1 👻
SAVE	Mode	Cli 👻
	SAVE	



Configuring the Encoder Session

The next step is to assign the IR control for Serial Port 2 to the desired Session.

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

< System information	Input	EDID	Encoding	Serial	Session	Logo	Text	Alarms 2

2. Locate the **Session 1** window group.

NOTE: Session 2 can also be used with IR. However, in this example, Session 1 will be configured.

Network	PTP Configural	tion Users	License	Upgra	ade Demo		
				_			
Session 1	[m				Session 2		
Name			session1		Name		
Interface			eth1 👻		Interface		
EncGroup	Enable		0—		EncGroup	Enable	
SAP	Enable				SAP	Enable	
	Interval		10			Interval	
	Name		session1			Name	
	Description		N/A			Description	
	Originator		_			Originator	
Scrambling	Enable				Scrambling	Enable	
	Кеу		scrambling			Кеу	
Video	Encoder	VC	2_encoder1 👻		Video	Encoder	
	Enable		_			Enable	
	Destination IP address		225.0.0.1			Destination IP address	
	Destination UDP port		1000			Destination UDP port	



- 3. Scroll down and locate the **AUX** section.
- 4. Click the Source drop-down list and select serial_port2.

AUX	Source		Not used 👻	AUX	Source	
			Not used			
		SAVE	Commands			SAVE
	_		serial_port1			
			serial_port2			

- 5. Enable the auxiliary (AUX) channel by clicking the **Enable** toggle switch. When the auxiliary channel is enabled, this toggle switch will be orange.
- 6. Enter the IP address of the *decoder* in the **Destination IP Address** field. This is the decoder to which the IR emitter is connected. In this example, the decoder IP address is 10.20.200.141.
- 7. Enter the port number in the **Destination UDP Port** field.
- 8. Click the **SAVE** button to commit changes.





Configuring the Decoder Serial Port

- 1. Select the desired decoder within the AMS Device List window and make note of the decoder IP address.
- 2. Enter the required login credentials. The default login is:

Username: admin Password: Atlona

3. Click the Login button, then click IP Input in the top menu bar.

Ø									
<	System information	SAP	IP Input	Serial	HDMI Output	Logo	Text	Alarms	Network

- 4. Scroll down to the **Input 5** window group.
- 5. Enable Input 5 by clicking the Enable toggle switch. When enabled, this toggle switch will be orange.



NOTE: Input 5 is dedicated to IR. Therefore, this input *must* be used in order for end-to-end IR to function properly.

6. Enter the port in the **Port** field. This port number must be the same port used by the encoder, and is the input of the decoder that will receive IR data.



IMPORTANT: Do not change the contents of the **Multicast Address** field. Unicast mode uses the IP address of the decoder for communication. Therefore, only the port number is required.

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

Input 5		Enable
Name	ip_input5	
Enable		
Interface	eth1 👻	
Multicast address		
Multicast filter	Mode exclude 🗸	SAVE button
	Addresses* N/A	ONE Batton
	*Separate multiple IP addresses with a comma.	
Port	1200 	
	SAVE	



IR Control

8. Click **Serial** in the top menu bar.

< System information	SAP	IP Input	Serial	HDMI Output	Logo	Text	Alarms	Network
			2					

- 9. Locate the **Serial port configuration** window group. The **Name** field, within this group, should read **serial**_**port2**. Click the **Modes** drop-down list and select **Infrared**.
- 10. Click the **SAVE** button to commit changes.

1	Serial port configuration	
SAVE button	Name	serial_port2
serial	Supported modes	infrared
serial 👻	Mode	infrared 👻
9600 👻		infrared
8 🗸	SAVE	

- 11. Scroll down the page and locate the **Serial Configuration** window group. The **Name** field, within this group, should read **serial_use2**.
- 12. Click the Port drop-down list and select serial_port2.
- 13. Click the **Mode** drop-down list and select **output**.
- 14. Click the Input drop-down list and select ip_input5.

Serial configurat	ion		Command: D	isplay Off	
Name		serial_use2	Mode		
Port		serial_port2 👻	ASCII		
Mode		output 👻	HEX		
Input		ip_input5 👻			
Bidirectional	Interface	Not used		SAVE	DELE
	Destination	ip_input1			
	Destination	ip_input3	Command: D	isplay On	
	UDP port	ip_input4	Mode		
	Enabled	ip_input5h	ASCII		



IR Control

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

Serial configuration	n		Command: Display	Off
Name		serial_use2	Mode	
Port		serial_port2 🗸	ASCII	
Mode		output 👻	HEX	
Input		ip_input5 👻	_	
Bidirectional	Interface	🔻		SAVE DELE
	Destination IP address	N/A		
	Destination UDP port	5004	Command: Display	On
	Enabled	0—	Mode	
			ASCII	
	SAVE		HEX	



Testing IR Functionality

- 1. Point IR remote to at the IR Receiver, as shown in the diagram below.
- 2. The IR remote will now sent IR data to the decoder where it will be relayed to the display device.



IMPORTANT: The IR lens of the emitter must be within 1 inch (2.54 centimeters) of the IR window on the display device. If this distance is exceeded, then IR functionality may fail.





IR Control

Controlling the Display using a Control System

The following steps are similar to Controlling the Display using the Display's IR Remote (page 38), except that the control system wiring should be used, instead of an IR receiver, as shown below.





Using the Virtual Matrix

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Click the \equiv icon, in the upper-left corner of the AMS Dashboard.
- 3. Click on Virtual Matrix.



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

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🖩 OmniS	tream	Virtual M	latrix	All Sites									
Encoders / Decoders	LEGEND	AT-OMNI-122 192.168.11.181 at omni-122-00548	Connected ov Options	AT-OMNI-121 192.168.11.34 at-omni-121-00461	Connected ov	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omni-122-00242	Connected ov	AT-OMNI-521 192.168.11.39 at-omni-521-00064	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381	Connected ov	AT-OMNI-121 192.168.11.165 at-omri-121-00688	Connected ov Options
↔ Data	itrix	HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1	
AT-OMNI-112 192.168.11.89	HDMI 1					0				S			
192.168.11.88 at omni-112-00349 Connected	HDMI 2							0					
AT-OMNI-111 192.168.11.50 at omni-111-00200 Connected	HDMI 1												
AT-OMNI-512 192.168.11.51	HDMI 1					0	0			0		:0:	
at omni-512-00003 Connected	HDMI 2			8								101	
AT-OMNI-112 192.168.11.116 at orgai:112-00722	HDMI 1	Ø											
Connected ••	HDMI 2		0										
AT-OMNI-112 192.168.11.183	HDMI 1			\bigcirc									
192.168.11.148 at omni-112-00335 Connected	HDMI 2												
AT-OMNI-111 192.168.11.167 at omni-111-00355 Connected Or	HDMI 1	•										ID	
4													



IR Control

5. Click on the View drop-down list and select Control.

≡ 🕄 Help×							^		5 1				æ
🖽 OmniStr	eam	Virtual M	latrix 🧳	All Sites									Ŧ
Encoders / Decoders	EGEND	AT-OMNI-122 192.168.11.181 at-omni-122-00548	Connected or or other	AT-OMNI-121 Connected 192.168.11.34 Cr at omni-121-00461 Options	AT-OMNI-122 192.168.11.86 192.168.11.87 at omni-122-00242	Connected Ov	XT-OMNI-521 192.168.11.39 at-omni-521-00064	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381	Connected Ov	AT-OMNI-121 192.168.11.165 at-omni-121-00658	Connected Ov Options	
Crimary Data		HDMI 1	HDMI 2	HDMI 1	HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1		
AT-OMNI-112 Backup 192.168.11.89	HDMI 1				S		:0:		Ø	Ø			<u>^</u>
at omni-112-00349	HDMI 2			0			0						
AT-OMNI-111 192.168.11.50 at-omni-111-00200 Connected ••	HDMI 1												
AT-OMNI-512 192.168.11.51	HOMI 1			Active •									
at omni-512-00003 Connected	HDMI 2			A attive									
AT-OMNI-112 192.168.11.116	HDMI 1	S		Active						101			
Connected ••	HDN 2	101	0										
AT-OMNI-112 192.168.11.183	HDMI 1			Primary									
at omni-112-00335 Connected	HDMI 2												
AT-OMNI-111 192.168.11.167 at omni-111-00355 Connected	HDMI 1	0		Backup									
-4		-		Control									÷

 The Control screen will be displayed. In the Control screen, HDMI ports are replaced with control ports: Port 1 In / Port 1 In for encoders and Port 1 Out / Port 2 Out for decoders.

E C Help~	AMS:		ø	
OmniStream Virtual Matrix All Sites			Ŧ	
Encoders / Decoders (100Hb) 122 Connected AT-OMN-121 Connected AT-OMN-122 U2:164.1124 Connected AT-OMN-124 Connected AT-OMN-12	Connected AT-OMNI-521 Connected AT-OMNI-122 • 192.168.11.39 • 192.168.11.160 192.168.11.161	Connected AT-OMNI-121 Connected ••• 192.168.11.165 •••		
Audio IDE All Brommi-122-00368 Contant Strommi-122-00461 Contant Strommi-122-00462 Audio IDE All Pert1Out Pert1Out Pert1Out Pert1Out Pert1Out Pert1Out Pert1Out Pert1Out	Option st-omm-s21-00064 st-omm-122-00381 Port 2 Out Port 1 Out Port 2 Out Port 1 Out	Options second -12-00088 Options Port 2 Out Port 1 Out Port 2 Out		
AFONNE-112 Port 1 in ←> <td>«··» «··» «··»</td> <td>«» «»</td> <td></td> <td></td>	«··» «··» «··»	«» «»		
at commit 112 00340 ▲ Port2 in ←→		\leftrightarrow \leftrightarrow \leftrightarrow		
ATOMANTI Portia atoms/11020 atoms/11020 Port2a (-)				٦
ATOANN-512 192.168.11.51 Port 1 m				
Connected Port 2 in (> Port 2 in (>	hiCtroom	Virtual	Motrix	A 1
AFONNI-112 192.163.11.116 Arcmin 12.00727	IISUeaIII	viitudi		41
Connected • Port 2 in				
ATOMN+112 192.168.11.183 Port1 in ↔				
at cmmi 112 00335 ort 2 m Connected •• (->				
	lers Leonus	AT-OMNI-122	Connected /	AT
Connected •• Peritin (+>	LEGEND	102 160 11 101	0-	10
		192.100.11.101		19
Video View:	Control V			
Audio	All	at-omni-122-00548	Options	at-
🐼 Data 🗘	Flip Matrix	Dort 1 Out	Port 2 Out	
··· +		Port i Out	Port 2 Out	
AT-OMNI-112				
102 169 11 90	Dort 1 In	()	<···>	
192.100.11.09				
192.168.11.88				-
at-omni-112-00349	Deat 2 la			
	Port 2 In	(···)	<···>	
Connected				
AT-OMNI-111				

7. Click the **Options** button next to the desired decoder.



IR Control

8. The Crosspoint Options dialog will be displayed.



9. Click the Serial Port 2 drop-down list and select IR Passthrough.



NOTE: Only Serial Port 2 supports IR pass-through. The IR emitter or IR receiver must be connected to this port. Refer to IR Connections (page 14) for wiring information.

10. Click **SAVE** to commit changes, then click **CLOSE** to dismiss the dialog and return to the Virtual Matrix page. To return to the Virtual Matrix page without saving changes, click the **CLOSE** button to dismiss the dialog.



Configuring Audio Output

IMPORTANT: When using analog audio inputs on the OmniStream decoder, the decoder must be powered using the 48V power supply (AT-PS-48083-C). This power supply is sold separately and can be purchased from Atlona.

In addition to passing audio directly from the encoder to the decoder, both the AT-OMNI-121 and AT-OMNI-122 provide two additional audio options

- HDMI audio can be de-embedded and output to two-channel analog audio.
- Two-channel analog audio can be embedded and output over HDMI.

This section covers both methods. If using a single-channel decoder, only a single **AUDIO IN** and **AUDIO OUT** port will be available.

De-embedding Audio

De-embedding audio will extract the HDMI audio and automatically downmix to two-channel analog audio, using the included captive-screw connectors.

- 1. Connect the power supply to the DC 48V connector on the decoder.
- 2. Connect the included 5-pin captive screw connectors to the **AUDIO OUT** ports. Refer to Audio Connectors (page 15) for wiring information.
- 3. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 4. Select the decoder in AMS.
- 5. Click HDMI OUTPUT in the menu bar, then click the SHOW ADVANCED button.
- 6. Scroll down to the Audio section.
- 7. Click the **Analog Power** toggle switch to enable it. When enabled, the toggle switch will be green. Also note that the **Analog Power Status** indicator, above the toggle switch, will be green. This indicates that the external power supply is connected to the decoder.



8. Audio from the source will now be heard on the **ANALOG OUT** port of the decoder. Note that when audio is deembedded, it will not longer be audible using the HDMI OUT ports on the decoder.



Embedding Audio

Embedding audio will replace the existing HDMI audio source, normally heard on the output of the decoder. The analog audio will be heard on the **HDMI OUT** port of the decoder.

- 1. Connect the power supply to the DC 48V connector on the decoder.
- 2. Connect the audio source to the **AUDIO IN** ports, using the included 5-pin captive screw connectors. Refer to Audio Connectors (page 15) for wiring information.
- 3. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 4. Select the decoder in AMS.
- 5. Click HDMI OUTPUT in the menu bar, then click the SHOW ADVANCED button.
- 6. Scroll down to the Audio section.
- 7. Click the **Analog Power** toggle switch to enable it. When enabled, the toggle switch will be green. Also note that the **Analog Power Status** indicator, above the toggle switch, will be green. This indicates that the external power supply is connected to the decoder.

Downmixing:	None	
Enable AES67:		
Status:	No active audio	
Mute:	Mute	
Volume:	↓ 15	•
Analog Power Status:		
Analog Power:	TO PRIMARY TO BACKUP	

8. Audio from the source will now be heard on the HDMI OUT ports on the decoder.





Connecting RS-232 to OmniStream

The OmniStream decoders can directly receive commands from a control system or other host device using RS-232. RS-232 data can also be sent over IP. Refer to Control Using RS-232 (page 57) for more information. This section provides instructions on how to connect and configure an RS-232 host device to work properly with OmniStream.

- 1. Purchase or obtain a USB-to-RS-232 cable with a DE-9 male connector, and install the driver that came with the cable. The driver must be installed in order to assign a COM (serial) port on the computer, which is being used to connect to the OmniStream device.
- 2. Verify that the driver is properly installed by launching Windows Device Manager: Press \blacksquare + X keys, simultaneously, then click **Device Manager** from the menu.



- 3. Locate the **Ports** section, within the **Device Manager** window, and verify that the driver has assigned a COM port for the USB cable. In the example above, COM1 was created.
- 4. Remove the DE-9 connector at the opposite end of the cable with wire cutters, and remove at least 1" of the cable insulation to expose each of the nine wires.
- 5. Locate a multimeter and set it to the "continuity" function.
- 6. Place one of the leads from the multimeter on pin 4 of the USB interface. The illustration below, shows the pin numbers for the USB connector.





- 7. Take the other lead and probe each of the wires on the opposite end of the cable. When the wire connected to that pin is detected, the multimeter will emit an audible tone. Once this occurs, identify the current wire by moving it to the side.
- 8. Repeat step 6 for pin 3 and pin 2 on the USB connector.
- 9. Group the remaining wires and pull them aside. Electrical tape can be use to secure the wires to the outside of the USB cable. The following illustration shows the TX, RX, and GND wires, and the associated pin numbers on the USB connector.



- 10. Remove at least 3/16" (5 mm) of insulation from each of these wires (TxD, RxD, and GND).
- 11. Locate the included captive screw block and connect the wires to each terminal, depending on which decoder is being connected.

AT-OMNI-121 connector

Open each of the terminals by turning the screws counter-clockwise, using a small regular screwdriver. Secure the wires by tightening the screws clockwise. Do not overtighten.



AT-OMNI-122 connector

Push the orange tabs, above the terminals, to insert each wire into the connector. Check to make sure that the proper wire is inserted into the correct terminal.





Control Using RS-232

RS-232 data can be sent over IP using one of three methods: RS-232 pass-through, RS-232 triggering, and TCP proxy.



NOTE: When configuring RS-232, always make sure to configure the correct baud rate, data bits, parity bit, stop bits, and flow control settings, as required by the connected device. These settings can be changed in the **Serial Port** section, under the **SERIAL** menu.

RS-232 Pass-Through

This method will pass-thorugh RS-232 data, directly from a control system, to the sink device that is connected to the decoder.

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Select the decoder in AMS.
- 3. Click **SERIAL** in the menu bar.
- 4. Configure the proper serial port settings under the **Serial Port** section for the connected device, then click the **SAVE** button.
- 5. Scroll down to the Serial Configuration section.
- 6. Click the **Mode** drop-down list and select the **Cli** option, then click the **SAVE** button.

Triggering Stored Commands

This method will trigger commands directly from the serial port on the decoder to the sink device. The decoder provides the following commands: **Display Off**, **Display On**, **Volume Up**, and **Volume Down**.

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Select the decoder in AMS.
- 3. Click SERIAL in the menu bar.
- 4. Configure the proper serial port settings under the **Serial Port** section for the connected device, then click the **SAVE** button.
- 5. Scroll down to the Serial Configuration section.
- 6. Click the **Port** drop-down list and select the desired serial port.
- 7. Click the Mode drop-down list and select the Output option, then click the SAVE button.
- 8. Scroll down to the **Command** sections. Each section is labeled for the command type.
- 9. Click the Mode drop-down list and select the Decoder option.
- 10. Enter the associated command in the **ASCII** or **HEX** fields, then click the **SAVE** button. Refer to the User Manual for the sink device for the list of available commands.
- 11. Repeat steps 8 10 for each command, as desired. Trigger the desired command by executing the TrigRS232 command. Refer to the *OmniStream Application Programming Interface* for more information.



Using TCP Proxy

This method is used to send IP commands directly to the decoder, which are then output over RS-232 to the display (sink) device.

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Select the decoder in AMS.
- 3. Click **SERIAL** in the menu bar.
- 4. Configure the proper serial port settings under the **Serial Port** section for the connected device, then click the **SAVE** button.
- 5. Scroll down to the Serial Configuration section.
- 6. Click the Port drop-down list and select the desired serial port.
- 7. Click the Mode drop-down list and select the tcpproxy option, then click the SAVE button.
- 8. Click the Interface drop-down list to select the interface (Ethernet port) that will be used to transmit the data.
- 9. Click the Mode drop-down list and select the Decoder option.
- 10. Enter the port number in the Port field. This number can be in the range from 0 to 65535.
- 11. Click the SAVE button to commit all changes.



Using the Virtual Matrix

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Click the \equiv icon, in the upper-left corner of the AMS Dashboard.
- 3. Click on Virtual Matrix.



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

E C Help~								^	. M !	5			
🖩 OmniS	tream	Virtual M	latrix	All Sites									
Encoders / Decoders	LEGEND	AT-OMNI-122 192.168.11.181 at omni-122-00548	Connected ov Options	AT-OMNI-121 192.168.11.34 at-omni-121-00461	Connected ov	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omni-122-00242	Connected ov	AT-OMNI-521 192.168.11.39 at-omni-521-00064	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381	Connected ov	AT-OMNI-121 192.168.11.165 at-omri-121-00688	Connected ov Options
↔ Data	itrix	HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1	
AT-OMNI-112 192.168.11.89	HDMI 1					0				S			
192.168.11.88 at omni-112-00349 Connected	HDMI 2							0					
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AT-OMNI-512 192.168.11.51	HDMI 1					0	0			0		:0:	
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AT-OMNI-112 192.168.11.116 at orgai:112-00722	HDMI 1	Ø											
Connected ••	HDMI 2		0										
AT-OMNI-112 192.168.11.183	HDMI 1			\bigcirc									
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5. Click on the View drop-down list and select Control.

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AT-OMNI-112 192.168.11.89 Backup	HDMI 1		HDMI 2	HDM1	HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1		
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AT-OMNI-112 192.168.11.116	HDMI 1	0		Active						101			
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AT-OMNI-112 192.168.11.183	HDMI 1			Primary							(D)		
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-4				Control						l			2

 The Control screen will be displayed. In the Control screen, HDMI ports are replaced with control ports: Port 1 In / Port 1 In for encoders and Port 1 Out / Port 2 Out for decoders.

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Audio Ali Ali	trix	Port 1 Out	Port 2 Out Port	1 Out Port 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Options Port 2 Out	Port 1 Out	Port 2 Out			
AT-OMNI-112 192.168.11.89 192.168.11.89	Port 1 In	<>	↔ (-> (->	⇔	«·->	⇔	<i></i>	<i></i>	$\langle \cdot \rangle$	<i>«</i> »	⇔			^
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Connected Or AT-OMNI-111	fort 2 in	<->					-								
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				100.11.0	0040										
			at-on	nni-112-0	0349			P	ort 2 In		<	·.>		<···>	L
			Conn	ected	07							-			
			AT-O	MNI-111											H
			_					_		_					_

7. Click the **Options** button next to the desired decoder.



8. The **Crosspoint Options** dialog will be displayed.



9. Click the **ADVANCED** button, near the bottom of the dialog. This will enable additional options in the Serial Port drop-down lists. In the **BASIC** mode, only **RS232 Passthrough** is available from drop-down list.

When the **ADVANCED** option is enabled, the following modes will be available. Refer to the list of modes, on the right-hand side of the dialog for a description of each.

The table below provides a summary of serial port control methods available for each encoder/decoder. Orange circles indicate that the feature is available on that port.

	AT-OM	NI-111	AT-OM	NI-112	AT-OM	NI-121	AT-OMNI-122		
Control Method	Port 1	Port 2	Port 1	Port 2	Port 1	Port 2	Port 1	Port 2	
RS-232 Pass-Through									
IR Pass-Through									
Serial over IP Proxy									
RS-232 Trigger									
RS-232 Encoder Buttons									



RS232 Passthrough

This is the most basic option: the control system (DTE device) sends RS-232 command from the encoder, downstream, to the decoder. The RS-232 commands are then received by a display (DCE device) or other sink device.

1. Select **RS232 Passthrough** from the **Serial Mode** drop-down list.

Serial Port 1:	Serial Port 2:		Modes:
			RS232 Passthrough - Control
Serial Mode - Port 1	Serial Mode - Port 2		System passes RS232 from
RS232 Passthrough	Not Used	~	Encoder input port through the
	r connected anoder has the	nomo modo	Decoder output port
Diesley Off	in connected encoder has the :	same moue.	IR Passthrough - Control System
Display Off			passes IR from Encoder input port
ASCII Command syntax			through the Decoder output port
HEX Command syntax			Serial over IP Proxy - Mode that
			sends IP commands to the Decoder
Display On			that are converted to RS232
ASCII Command syntax			commands
HEX Command syntax			RS232 Trigger - Mode that allows
			sending stored RS232 commands
Volume Down			through the Decoder output port
ASCII Command syntax			* CEC Trigger * Triggering CEC
			does not require any additional
HEX Command syntax			configuration. Control system may
Volume Up			use "TrigCECX on" command
			the Advanced Anatomy Me Office

2. Click **SAVE** to commit changes, then click **CLOSE** to dismiss the dialog and return to the Virtual Matrix page. To return to the Virtual Matrix page without saving changes, click the **CLOSE** button to dismiss the dialog.



Serial over IP Proxy (TCP Proxy)

This method is used to send IP commands directly to the decoder, which are then output over RS-232 to the display (sink) device.

- 1. Select **Serial over IP Proxy** from the **Serial Mode** drop-down list. If it is not listed, make sure that the **Advanced** button is clicked, at the bottom of the dialog.
- 2. Scroll down to the **Serial Port** settings and provide the required settings. These settings must match the port settings on the display (sink) device.
 - a. Click the **Interface** drop-down list to select the interface (Ethernet port) that will be used to transmit the data.
 - b. Enter the port number in the TCP Proxy Port field. This number can be in the range from 0 to 65535.
 - c. Specify the baud rate, data bit, parity, stop bit, and flow control is the appropriate fields.

Crosspoint Options: A	T-OMNI-121 - 192.1	68.11.34		
Serial Port 1:				*
Interface				
any	~			
TCP Proxy Port	0			
10000				
Baud Rate				
115200	~			
Data Bit				
7	~			
Parity				
None	v			
Stop				
2	Ψ.			
Flow Control				
None	~			
				*
			_	_
		BASIC	CLOSE	SAVE

3. Click **SAVE** to commit changes, then click **CLOSE** to dismiss the dialog and return to the Virtual Matrix page. To return to the Virtual Matrix page without saving changes, click the **CLOSE** button to dismiss the dialog.



RS232 Trigger

This method is used to trigger commands directly from the serial port on the decoder to the sink device. Commands are triggered using the TrigRS232 command, which can be executed by a driver or a control system. The decoder provides the following commands: **Display Off**, **Display On**, **Volume Up**, and **Volume Down**.

- 1. Select **RS232 Trigger** from the **Serial Mode** drop-down list. If it is not listed, make sure that the **Advanced** button is clicked, at the bottom of the dialog.
- 2. Enter the desired command, under the **Display Off**, **Display On**, **Volume Down**, and **Volume Up** fields. In the example below, the hex command for the "display off" command has been entered in the **HEX Command syntax** field, under **Display Off**.



NOTE: Command data can be entered in either the **ASCII Command syntax** or **HEX Command syntax** fields. When a command is entered in one of these fields, the command data will automatically be converted and added to the adjacent field.

Crosspoint Opti	ions: AT-(OMNI-121 - 192.	168.11.3	34
Serial Port 1:		Serial Port 2:		Modes:
Serial Mode - Port 1		Serial Mode - Port 2		RS232 Passthrough - Control System passes RS232 from
RS232 Trigger	~	Not Used	~	Encoder input port through the
Display Off		Hex	command	string
ASCII Command syntax				passes IR from Encoder input port
h0\xBF\x11pW\x8A	\xC2\x85\>			through the Decoder output port
HEX Command syntax				Serial over IP Proxy - Mode that
68 30 bf 11 70 57 8a	a c2 85 b0			sends IP commands to the Decoder
	<u></u>			that are converted to RS232

3. Scroll down to the **Serial Port** settings and provide the required baud rate, data bit, parity, stop bit, and flow control settings. These settings must match the port settings for the display (sink) device.

ial Port 1:		
Baud Rate		
115200	Ռո	
	2	
Data Bit		
8	~	
Parity		
None	Ψ	
Stop		
1	~	
Flow Control		
None		

4. Click **SAVE** to commit changes, then click **CLOSE** to dismiss the dialog and return to the Virtual Matrix page. To return to the Virtual Matrix page without saving changes, click the **CLOSE** button to dismiss the dialog.

Trigger the desired command by executing the TrigRS232x command, where x is the port number on the decoder.

Example: TrigRS2321 [command]



Creating a Cross Connection

Depending on the mode configured on the decoder, a cross-connection must be created to enable communication between the decoder and encoder.

1. Return to the Virtual Matrix page.

≡ 🕄 Help×											5.				
⊞ OmniSt	ream	ı Virtua	al Mati	rix	All Sites										
Video View: Control	LEGEND	AT-OMNI-122 192.168.11.18 at omni-122-00	1	Connected ov Options	AT-OMNI-121 192.168.11.34 at-omni-121-00461	Connected Ov Options	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omni-122-00242	Connected ov Options	AT-OMNI-521 192.168.11.39 at-omni-521-00064	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381	Connected Ov	AT-OMNI-121 192.168.11.165 at-omni-121-00688	Connected ov Options	
↔ Data Ø Flip Matr AT-OMNI-112	×	Port 1 Out	Pt	rt 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Port 2 Out	Port 1 Out	Port 2 Out	
192.168.11.89 192.168.11.88	Port 1 In	<··>	(m	⇔	\leftrightarrow	<··>	<>	<··>	<>	<>	<>	<>	«·· »	<>	
at omni-112-00349 Connected	Port 2 In	<->		⇔	\leftrightarrow	«··»	\leftrightarrow	«·->	<->	<->	<>	<>	<>	<->	
AT-OMNI-111 192.168.11.50 at omni-111-00200	Port 1 in	¢->		⇔	\leftrightarrow	«·· »	\leftrightarrow	<i>«</i> ··»	<->	<i>«</i> ··»	~ >	«·· >	{·· }	⇔	
Connected Or	Port 2 In	-		⇔	\leftrightarrow	«··>	\leftrightarrow	«·· >	<->	«·· »	<>	<>	«·· >	<->	
AT-OMNI-512 192.168.11.51 at ormal-512-00003	Port 1 In	<i>«</i> ->		⇔	\leftrightarrow	<i>{</i> ··}	\leftrightarrow	<i></i>	<->	<i>{</i> ··}	↔	<i>{</i> ··}	{·· >	⇔	
Connected Ov	Port 2 In	<i>(</i> ->		⇔	\leftrightarrow	<i>«</i> ··»	<i>«</i> ->	<i>«</i> ··>	↔	<i>«</i> ->	{·· >	<i>(</i> >	{·· >	⇔	
AT-OMNI-112 192.168.11.116 16 cmni-112-00722	Port 1 in	<i>«</i> ->		⇔	\leftrightarrow	<i>{</i> ··}	\leftrightarrow	<i></i>	⇔	<i>{</i> ··}	↔	<i>{</i> ··>	↔ >	⇔	
Connected 😽	Port 2 In	~ >		⇔	\Leftrightarrow	«· »	<->	* •>	\Leftrightarrow	~ >	(··)	~ >	{·· >	⇔	
AT-OMNI-112 192.168.11.183 192.168.11.148	Port 1 in	<i>«</i> ··>		⇔	\leftrightarrow	~ .>	\leftrightarrow	<··>	⇔	<:->	⇔	<i>«</i> >	~ >	⇔	
at-omni-112-00335 Connected	Port 2 In	<->		⇔	\leftrightarrow	<··>	\leftrightarrow	«··>	<->	<i>«</i> ··>	<>	<>	«·· >	<->	
AT-OMNI-111 192.168.11.167 at emoi:111-00355	Port 1 In	<i>«</i> »		⇔	\leftrightarrow	<i>{</i> ··}	\leftrightarrow	<i></i>	⇔	<i>{</i> ··}	↔	<i>{</i> ··>	{·· >	⇔	
Connected 👓	Port 2 In	<··>		⇔	\Leftrightarrow	«·· »	<>	«· »	<↔	«·· »	{·· >	<>	~ >	\leftrightarrow	
4															

- Locate the desired encoder and decoder where the cross-connection will be created. In the following example, Port 1 In and Port 1 Out on the AT-OMNI-112 and AT-OMNI-122 (in the upper left corner of the Virtual Matrix), will be selected.
- 3. Click the < ••• > icon to create the cross-connection. Once a cross-connection is created, it will be represented by a "C" in a purple circle, as shown below. To remove the connection, click the "C" icon.

OmniStream Virtual Matrix All Sites												
Encoders / Decoders	AT-OMNI-122	Connected	AT-OMNI-121 192.168.11.34									
Video View: Control 🔻												
📣 Audio 🔲 All	at-omni-122-00548	Options	at-omni-121-00461									
🐼 Data 🗘 Flip Matrix	Port 1 Out	Port 2 Out	F									
AT-OMNI-112 192 168 11 89 Port		< >	<··>									
192.168.11.88												
at-omni-112-00349 Port	t 2 In 🔥	<··>	< >									
Connected Or												



802.1X Authentication

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



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



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

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



- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19), if necessary.
- 2. Click **Devices** > **All** and select the desired encoder from the **Device List**.
- 3. Click **NETWORK** in the menu bar.



NOTE: If using dual-channel decoders, both **Network 1 (eth1)** and **Network 2 (eth2)** will need to be set up, depending upon the system requirements.

- 4. Click the SHOW ADVANCED button to expand the options under both Network window groups.
- 5. Click the **802.1x Mode** drop-down list, at the bottom of the page, and select the desired authentication method. In the example below, **PEAP/MSCHAPv2** is selected.

DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Network 1 (eth1)				Network 2 (eth2)			
Enabled:	•			Enabled:	•		
Carrier:	٠			Carrier:	•		
HCP Mode:	DHCP			DHCP Mode:	DHCP		
anging IP Mode from Static to DH	ICP requires running a scan to find the	new IP address of the device.		Changing IP Mode from Static to DH	CP requires running a scan to find the ne	w IP address of the device.	
Address:	192.168.0.184			IP Address:			
ibnet:	255.255.255.0			Subnet:			
teway:	192.168.0.1			Gateway:			
k Speed:	1000			Link Speed:	0		
C Address:	B8:98:B0:01:88:85			MAC Address:	B8:98:B0:01:88:86		
net Authentication:	•			Telnet Authentication:	-		
1x Mode:	none			802.1x Mode:	none		
	PEAP/MSCHAP	/2	-				
HIDE ADVANCED	LAPTLO			HIDE ADVANCED			
			SAVE				SAVE
	MAC Address:		B8:98:B0:0	1:88:85			
	Telpet Authenticati	an:					
	Temer Authentication	JII.					
	802.1x Mode:		none				
			PEAP	MSCHAPv2 0			
			,				
	HIDE ADVANCED		EAP-T	ls 🖵			
							SAVE

- 6. Once a method is selected, the required fields for that method will be displayed. Enter the required information in each field. For the **PEAP/MSCHAPv2** option, the fields are described as follows:
 - Identity

Enter the identity of the authentication server in this field. PEAP uses this field to identify the correct authentication server which will process the credentials. For example, if foo@authserv.com is entered, then this identifies AUTHSERV as the RADIUS (authentication) server.

CA certificate

Click the **Browse...** button to select the certification authority (CA) certificate. To remove a certificate, click the **Remove** button.

- Username
 Enter the username in this field
- Password Enter the password in this field.



MAC Address:	B8:98:B0:01:88:85	
Telnet Authentication:		
802.1x Mode:	PEAP/MSCHAPv2	T
Identity:	foo@server.com	
Password:	t0ughPa55w0rd	
CA certificate:		
		SAVE

- 7. Click **SAVE** to commit changes.
- 8. Refer to the table below for a list of available authentication methods. An orange dot indicates that this field will be displayed as part of the method.

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



AES67 Audio

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

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19), if necessary.
- 2. Click Devices > All and select the desired encoder from the Device List.
- 3. Click **SESSION** in the menu bar.
- 4. Locate the **Audio** section, under the desired **Stream**, and click the **Enable AES67** toggle switch to enable this feature. When enabled, the toggle switch will be green.

DEVICE INFO	INPUT	SERIAL	SESSION	ALARMS	NETWORK	OTHER	CONFIGURATION
01				Ohana ana O			
Stream I				Stream 2			
Interface:	eth1			Interface:	eth2		
SAP:				SAP:			
Scrambling:				Scrambling:			
Video				Video			
Encoder:	HDMI Input 1			Encoder:	HDMI Input 2		
Enable Video:				Enable Video:			
Destination Multicast/U	Inicast Address: 225.0.0.25			Destination Multicast/Unicast Address:	225.0.0.27		
Destination UDP Port:	1000			Destination UDP Port:	1000		
TTL	255			TTL:	255		
Audio				Audio			
Source:	HDMI 1			Source:	HDMI 2		
Enable AES67:	• •			Enable AES67:	•		
Downmixing:	Stereo		*	Downmixing:	None		·····
Enable Audio:				Enable Audio:			
Destination Multicast/U	Inicast Address: 225.0.0.26			Destination Multicast/Unicast Address:	225.0.0.28		
Destination UDP Port:	Audio						
TTL	Source:		HDMI 1				-
	Enable AES67:		- Pm				
			2				
	Downmixing:		Stereo				· · · · · ·
			-				
	Enable 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.
- 8. Click SAP in the upper-left corner of the screen.
- 9. Click the **Enable** toggle switch to enable SAP. When enabled, the toggle switch will be green. If the decoder is to receive AES67 audio, this step is *required*.
- 10. Click the **SAVE** button on the **SAP** page.



Descrambling

OmniStream supports 128-bit Advanced Encryption Standard (AES) scrambling for both audio and video streams. Descrambling can be enabled or disabled through AMS, and can be individually applied to video, audio, or both. Descrambling can be enabled either before or after the decoding process is started. Data streams cannot be scrambled; only video and audio can be scrambled. When scrambled information is received from an encoder, it will need to be descrambled before it can be displayed.

Standard Method

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19), if necessary.
- 2. Click **Devices** > **All** and select the desired encoder from the **Device List**.
- 3. Click HDMI OUTPUT in the menu bar.
- 4. Under the desired HDMI output, click the **Enabled** toggle switch, next to **Descrambling**, to enable it. When enabled, the toggle switch will be green and the **Key** field will be displayed.
- 5. Enter the desired scrambling key in the **Key** field.



IMPORTANT: In order for descrambling to function correctly, the same key that was specified on the encoder (scrambling) must be entered in the Key field. Also note that If a user-defined key is specified, then it must be a minimum of eight alphanumeric characters. Special characters and spaces are not permitted.

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

DEVICE INFO		INPUT	SERIAL	SESSION	ALARMS	NETWORK	OTHER	CONFIGURATION
01					01			
Stream I					Stream 2			
Interface:		eth1			Interface:	eth2		
SAP:					SAP:			
Scrambling:		•			Scrambling:	•		
Video					Video			
Encoder:		HDMI Input 1			Encoder:	HDMI Input 2		
Enable Video:		•			Enable Video:	••		
Destination Multicast/U	Inicast Address:	225.0.0.25			Destination Multicast/Unicast Address:	225.0.0.27		
Destination UDP Port:		1000			Destination UDP Port:	1000		
ΠĿ		255			TTL:	255		
Audio Source:		HDMI 1			Audio Source:	HDMI 2		
						•		
Downmixing:		Stereo		v	Downmixing:			
Enable Audio:					Enable Audio:	•		
Destination Multicast/U	Inicast Address:	225.0.0.26			Destination Multicast/Unicast Address:	225.0.0.28		
Destination LIDP Port-	Audio							
TTL	Source:			HDMI 1				
	oodioe.							
	Enable AES	67:		Jm				
	Downmixin	g:		Stereo				×
	Enable Aud	lio:						



Using the Virtual Matrix

- 1. Access the Virtual Matrix. Refer to The Virtual Matrix (page 121) 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.

≡ C Help×		AMS:	
🖽 OmniStream Virtual Matrix	x		
Encoders / Decoders Visio All All All All All All All All All Al	AT GMP6-121 TV2, 146.1, 163 at ones 122 0040 HCM0.1	Connected AT-CAUN-521 Conne V0 102.164.11.107 at ones 527 00004 HOM 72 100014 HOM 73 Lenne 11	ened AF CAUNE 521 Connected VE2.168.11.778 Connected or onre 527 0.0074 Key icon
AT-GANN-112 HCM 1 152,168,11.04 HCM 1 0xmm12_000174 HCM 2 AT-GANN-112 HCM 1 252,168,11.102 HCM 1			
at ormi11200417 → HEME 2 Connected → HEME 2 ATOMM6512 HEME 1 192.165.12.03 ct ormi512 00007 HEME 2 Connected → HEME 2	192.168.11.101	Or •	
ATCAMN-512 1922:168:11:106 1922:168:11:105 at crons/512 00003 t crons/512 00003 HE/M12 Connected ↔	at-omni-122-00380		
	HDMI 1	HDMI 2	

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

Descrambling - AT-OMNI-122		
HDMI Output 1	HDMI Output 2	
Enable	Enable	
C	Key C	
	CLOSE SAVE	

- 5. Enter the desired scrambling key using one of the following methods:
 - Manual enter a user-defined key in the **Key** field.
 - Click the C 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.



Creating Video Walls

NOTE: OmniStream video walls do not support 1080i sources.

The following table lists the maximum video wall size, based on the resolution of the source.

Resolution	Maximum Video Wall Size
4Kp60	2 x 2
4Kp30	16 x 16
1080p60	n x n (no limit)

Landscape Mode

The following diagram will be used to illustrate how to configure a 2 x 2 video wall. The details of this diagram are listed below:

- Four decoders are subscribed to a single encoder. Each decoder is connected to a display.
- The encoder is transmitting a 3840 x 2160 video signal.
- The top two displays have been accidentally mounted upside down.

Figure 1.1: Landscape-mode 2x2 video wall requiring adjustment.



This diagram presents some challenges that need to be met:

- a. Since there are four displays, the image from each decoder will need to be scaled to one-forth of the total resolution. The crop-and-scale feature will be used to provide the correct output.
- b. The top two displays have been mounted upside-down. To meet this challenge, the rotate feature will be applied to these two displays.


Note that the order in which each image is cropped, scaled, and/or rotated is arbitrary. In this example, the configuration process will begin with Display 1, in the top left.

1. Access the built-in web server for the OmniStream decoder and login using the required username and password. The default credentials are listed below:

Username:	admin
Password:	Atlona

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

							Logout
< System information SAP IP Input Serial HDMI Output Logo Text Alarms Network	PTP Cor	inguration	Users License Upgrade				*
Out	riput 1			Output 2			
Narr	ime		hdmi_output1	Name		hdmi_output2	
Des	escrambling	Enable	0-	Descrambling	Enable	0-	
HDC	CP	Encrypted	•	HDCP	Encrypted	•	
		Version	1.4 👻		Version	1.4 👻	
		Negotiated version .	1.4		Negotiated	1.4	
EDI	DID	00mmmm004c2 780aee91a354	2d7c0b000000033170103805932 ~	EDID	N/A		
		081809500a9cl 2c450076f2310	053000101023#80187138284058 20001e662156##51001#30468833			4	
Vide	deo	Input	ip_inputt 👻	Video	Input	ip_input2 👻	
		Input status	1920x1080p, 60.00 fps, YUV 422 12bpc		Input status	No active video	
		Backup mode	07 -		Backup mode	or 👻	
		Dasters insut	in include		Backup input	ip_input8 👻	
		Configuration			Configuration grace period	0	
		grace period .			Active input	ip input2	
		Active input	ip_input1		Status	No active video	
		Status	1920x1080p, 60.00 fps, YUV 422 12bpc		HDR		
		HDR	•		Stretch/crop	keep aspect ratio 👻	
		Stretch/crop	fuliscreen 👻		mode		
		mode .			Resolution	auto 👻	
		Resolution	3010 •		Slate mode	eff 👻	
		state mode	0ff +	Video Wall	Enable	0-	
Vide	seo Wall	Enable	0-	Fast Switching	Enable	0-	
Fast	ist switching	Enable			TO PRIMA	RY TO BACKUP	
		TO PRIM	ARY TO BACKUP	Audio	Input	ip_input4 👻	
Aud	idio	Input	ip_input3 👻		Backup mode	off 👻	
		Backup mode	оп 🗸		Backup input	ip_input10 👻	
		Backup input	ip_input9 👻		Configuration grace period	0	

3. Locate the **Resolution** option, in the **Video** section and select 1920x1080. This will scale the output resolution to 1920x1080.





4. Click the **Stretch/Crop Mode** drop-down list and select Full Screen. This guarantees that the image will fill the screen.

	Stretch/crop	keep aspect ratio 👻	
	mode	keep aspect ratio	
	Resolution	fullscreen	Video Wall
	Slate mode	16:9	Video Vvali
Video Wall	Enable	16:10	Fast Switching
Fast Switching	Enable	4:3	

5. Under the **Video Wall** section, click the **Enable** toggle to activate the **Video wall** option. Once enabled, the **Video wall** section will be expanded and display all available options.

Video Wall	Enable	- ¶m	Video Wall
	Unit	pixels	Fast Switching
	Width	1920	
	Height	1080	Audio
	Horizontal	0	
	Vertical	0	
	Rotation (°)	0 👻	
	Edge compensation	none 👻	

6. Click the **Unit** drop-down list to select the unit of measure. In this example, **Pixels** (the default value) will be used.



IMPORTANT: When using Millimeters or Inches, two additional fields will be available: **Video Wall Width** and **Video Wall Height**. When entering these values, the following requirement must be observed: **Video Wall Width** must be greater than or equal to the display width. **Video Wall Height** must be greater than or equal to the display height.

7. Enter the horizontal and vertical resolution of the display in the **Width** and **Height** fields. This is the size of the source to be used for this window of the video wall. The table on the next page, lists width and height examples for a 2x2 video wall, with the specified source resolution.



Source resolution	Width (pixels)	Height (pixels)
3840 x 2160 (UHD)	1920	1080
1920 x 1080 (1080p)	960	540

8. Enter the number of video wall rows in the **Horizontal** field and the number of columns in the **Vertical** field. These values are the pixel start position (upper left most pixel). The table below, lists left and right coordinates for a 2x2 video wall, with the specified source resolution.

Source resolution	Upper Left	Upper Right	Lower Left	Lower Right
3840 x 2160 (UHD)	0, 0	1920, 0	0, 1080	1920, 1080
1920 x 1080 (1080p)	0, 0	960, 0	0, 540	960, 540

 Click the Rotation drop-down list to select the rotation angle of the image. In this example, select 180 from the drop-down list. The image will be flipped, vertically. This step is only applied when configuring the two top displays.

	Rotation (°)	0 🗸
	Edge	0
	compensation	90
Fast Switching	Enable	¹⁸⁰ Ռո
	TO PRIMARY	TO BACK
Audio	Input	ip_input3 👻
	Backup mode	Off 🗸
	Backup input	ip_input9 👻
	Configuration	0
	3	
	Active input	ip_input3
	Demosiole	

NOTE: 0 and 180 used for landscape mode video walls and 90 and 270 for portrait mode. Refer to Portrait Mode (page 78) for more information.

Ĭ



The image on Display 1 in the upper-left corner, as illustrated below, has been cropped and rotated and is now displayed correctly. At this point, one-fourth of the video wall has been configured.



Figure 1.2: Landscape-mode 2x2 video wall requiring adjustment.

- 10. Click the **SAVE** button at the bottom of the screen to commit changes.
- 11. Repeat steps 3 through 9 for decoders 2, 3, and 4. Note that in the example below, decoders 3 and 4 will not require any rotation. Therefore, make sure the **Rotation** option is set to 0 for decoders 3 and 4.



IMPORTANT: When using dual-channel decoders, the **Rotation** feature can only be used when a single HDMI channel is active. Image rotation is not supported on dual-channel decoders when both HDMI channels are active. Single-channel decoders do not have this restriction.

Once all four decoders have been properly configured, the image will be correctly displayed across all four displays. Refer to the illustration on the next page.

12. Check the image, on each display, and make sure they are aligned correctly with the other images on the video wall. Use the **Edge Compensation** drop-down list to adjust bevel compensation, if necessary. Refer to Bezel Compensation (page 84) for more information.





Figure 1.3: Landscape-mode 2 x 2 video wall displayed correctly.



Portrait Mode

Images can be rotated 90° or 270° to create portrait-oriented video walls. The steps to configure portrait-oriented video walls is very similar to creating landscape video walls.

A similar scenario to the landscape video wall challenge will be used to illustrate how to configure a 1 x 4 portraitoriented video wall. The details of this diagram are listed below:

- Four decoders are subscribed to a single encoder. Each decoder is connected to a display.
- The encoder is transmitting a 3840 x 2160 video signal.
- Display 2 and 3 have been mounted upside-down.



Figure 2.1: Portait-mode video wall requiring adjustment.

As with the landscape video wall, this diagram presents some challenges that need to be met:

- a. Since there are four displays, the image from each decoder will need to be scaled to one-forth of the total resolution. The crop-and-scale feature will be used to provide the correct output.
- b. Display 2 and 3 have been mounted upside-down. To meet this challenge, the images must be flipped horizontally and rotated 90°, which gives a total rotation angle of 270°. Display 1 and 4 only need to be rotated 90°.

Note that the order in which each image is cropped, scaled, and/or rotated is arbitrary. In this example, the configuration process will begin with Display 1.



1. Access the built-in web server for the OmniStream decoder and login using the required username and password. The default credentials are listed below:

Username:	admin
Password:	Atlona

2. Click HDMI OUTPUT in the menu bar.

							Logout
< System information SAP IP Input Serial HDMI Output Logo Text Alarms Netwo	irk PTP C	onfiguration User:	s License Upgrade				>
	Output 1			Output 2			
	Name		hdmi_output1	Name		hdmi_output2	
	Descrambling	Enable	0-	Descrambling	Enable	0-	
	HDCP	Encrypted	•	HDCP	Encrypted	•	
		Version	1.4 👻		Version	1.4 💌	
		Negotiated version	1.4		Negotiated	1.4	
	EDID	00fffffffff004c2d7c0b 780aee91a3544c992 081809600a9c0b3001 2c450076f23100001e	000000033170103805932 ^ 5055554bdaf8071481c0810 0101023a801871382d4058 * 662155aa51001e30468733	EDID	N/A	4	
	Video	Input	ip_input1 👻	Video	Input	ip_input2 👻	
		Input status 1920x	1080p, 60.00 fps, YUV 422		Input status	No active video	
		Destus made			Backup mode	or 👻	
		Backup input	in insult -		Backup input	ip_input8 👻	
		Configuration	0		Configuration grace period	0	
		grace period			Active input	ip_input2	
		Active input	ip_input1		Status	No active video	
		Status 1920x 12bpc	1080p, 60.00 fps, YUV 422		HDR	•	
		HDR	•		Stretchicrop	keep aspect ratio 👻	
		Stretch/crop mode	fullscreen 👻		Resolution	auto 👻	
		Resolution	auto 👻		Slate mode	off 👻	
		Slate mode	off 👻	Video Wall	Enable	0-	
	Video Wall	Enable	0-	Fast Switching	Enable	0-	
	Fast Switching	Enable	0-		TO PRIMA	RY TO BACKUP	
		TO PRIMARY	TO BACKUP	Audio	Input	ip_input4 👻	
	Audio	Input	ip_input3 👻		Backup mode	Off +	
		Backup mode	оп 🗸		Backup input	ip_input10 👻	
		Backup input	ip_input9 👻		Configuration grace period	0	

3. Locate the **Resolution** option, in the **Video** section and select 1920x1080. This will scale the output resolution to 1920x1080.

	Resolution	auto 👻	
	Slate mode	input	Video Wall
		auto	Fast Switching
Video Wall	Enable	4096x2160	
Fast Switching	Enable	3840x2160	
		1920x1200	Audio
		1920x1000	
Audio	Input	1680x1050	
	Backup mode	1600x900	
	Backup input	1400x1050	
		1440x900	



4. Click the **Stretch/Crop Mode** drop-down list and select Full Screen. This guarantees that the image will fill the screen.

Backup mode	Off 🔻	
Backup input	ip_input9 👻	
Configuration grace period		
Active input	ip_input3	
Downmixing	none 👻	

5. Under the **Video Wall** section, click the **Enable** toggle to activate the **Video wall** option. Once enabled, the **Video wall** section will be expanded and display all available options.

Video Wall	Enable		Video Wall
	Unit	pixels	Fast Switching
	Width	1920	
	Height	1080	Audio
	Horizontal	0	, ladio
	Vertical	0	
	Rotation (°)	0 🗸	
	Edge compensation	none 👻	

6. Click the **Unit** drop-down list to select the unit of measure. In this example, **Pixels** (the default value) will be used.



IMPORTANT: When using Millimeters or Inches, two additional fields will be available: **Video Wall Width** and **Video Wall Height**. When entering these values, the following requirement must be observed: **Video Wall Width** must be greater than or equal to the display width. **Video Wall Height** must be greater than or equal to the display height.

7. Enter the horizontal and vertical resolution of the display in the **Width** and **Height** fields. This is the size of the source to be used for this window of the video wall. The table on the next page, lists width and height examples for a 2x2 video wall, with the specified source resolution.



Source resolution	Width (pixels)	Height (pixels)
3840 x 2160 (UHD)	1920	1080
1920 x 1080 (1080p)	960	540

8. Enter the number of video wall rows in the **Horizontal** field and the number of columns in the **Vertical** field. These values are the pixel start position (upper left most pixel). The table below, lists left and right coordinates for a 1x4 video wall, with the specified source resolution.

Source resolution	Upper Left	Upper Right	Lower Left	Lower Right
3840 x 2160 (UHD)	0, 0	1920, 0	0, 1080	1920, 1080
1920 x 1080 (1080p)	0, 0	960, 0	0, 540	960, 540

9. Click the **Rotation** drop-down list to select the rotation angle of the image. In this example, select **90** from the drop-down list to rotate the image as portrait.



The image on Display 1 is cropped and rotated and is now displayed correctly. At this point, one-fourth of the video wall has been configured.







- 10. Click the **SAVE** button at the bottom of the screen to commit changes.
- 11. Repeat steps 3 through 9 for decoders 2, 3, and 4. Since display 2 and 3 were mounted upside-down, they will require a rotation of 180° (to flip horizontally) + 90° (to align them as portrait), giving a total rotation of 270°.



IMPORTANT: When using dual-channel decoders, the **Rotation** feature can only be used when a single HDMI channel is active. Image rotation is not supported on dual-channel decoders when both HDMI channels are active. Single-channel decoders do not have this restriction.

Once all four decoders have been properly configured, the image will be correctly displayed across all four displays. Refer to the illustration on the next page.

12. Check the image, on each display, and make sure they are aligned correctly with the other images on the video wall. Use the **Edge Compensation** drop-down list to adjust bevel compensation, if necessary. Refer to Bezel Compensation (page 84) for more information.





Figure 2.3: Portait-mode 1 x 4 video wall displayed correctly.



Bezel Compensation

Displays have a region where video is not displayed, called the bezel. This can cause display issues when creating video walls. Bezel compensation takes this area into account when a single video source is mapped across multiple displays. Bezel compensation can be adjusted at any time.

The illustration on the left shows a simple 2x2 video wall without bezel compensation. Note how the Atlona logo appears stretched, horizontally. On the right, bezel compensation is used to correct the image.



1. Select **Bezel Compensation** from the **Edge Compensation** drop-down list.

Lhable.	
Unit:	Pixels
Display Width:	1920
Display Height:	1080
Horizontal:	0
Vertical:	0
Rotation (°):	0
Edge Compensation:	None
Fast Switching Enable:	Bezel Compensation

- 2. Enter the **Top**, **Bottom**, **Left**, and **Right** values, as desired. Values can be entered in pixels, inches, or millimeters.
- 3. Click the **SAVE** button at the bottom of the screen to commit changes.



Video Walls using Velocity

The following section provides instructions on creating and using video walls with the Atlona Velocity Control Software. Familiarity with the Velocity software is assumed. Refer to the *Atlona Velocity User Manual* for more information, if necessary.



NOTE: As of this writing, the VelocityTM software is limited to a maximum video wall size of 12×12 , for resolutions of 4Kp30 and 1080p60.

- 1. Launch a web browser and enter the IP address of Velocity, in the address bar.
- 2. Enter the required login credentials.
- 3. Click the Login button.
- 4. The Velocity Dashboard will be displayed.
- 5. Click the \equiv icon, in the upper-left corner, to display the fly-out menu.





8. The **Modify Room** screen will be displayed. Click the **Add Technology** icon in the top far-right corner of the screen. This icon is represented by the + sign.



- 9. The **Technology** fly-out menu will be displayed.
- 10. Click **Miscellaneous** > **Atlona** > to expand the Atlona technology menu.
- 11. Click the **Add** button for **Velocity Video Wall: VELOCITY-VIDEO-WALL**. The video wall technology will be added to the room.





- 12. Scroll down to the bottom of the page and locate the Velocity Video Wall driver.
- 13. Click the Edit icon. This icon is represented by a pencil.

≡ Ω Help~		velo	ocity			¢
		Ping - Into - Identity	Ping - into - identity			
						- 1
Displays and Projectors			_			
		Ţ.,				- 11
	Left Display 1	Left Display 2	Right Display 1	<u>م</u> ۲۱		- 18
	× 0 8 \min	× 0 8 🔳	× 0 8 1			_
	Ping - Info	Ping - Info	Ping - Info			
				Velo	IC IT Y	- 18
						- 18
All Other Device Categories				Velocity V	ideo Wal	11
		Velucity Ping	S I	¢	8	۰l
The Video Wall / Pixel Space Di	imensions	dialog will	be	Ping	- Info	

14. displayed. This dialog will automatically be displayed when the video wall driver is edited for the first time.

The default video wall dimensions are set to 3840 x 2160. To modify the video wall size, follow steps 14a through 14e. To continue with the default video wall dimensions, click the **CLOSE** button and go to step 15.

- a. Click the Lock Pixel Space toggle switch to disable it. When disabled, the toggle switch will turn gray.
- b. Under Pixel Space Dimensions, click the drop-down list to select the desired video wall dimensions.

VideoWall				VideoWall			
Alias		Velocity Video Wall 1		Alias		Velocity Video Wall 1	
Restrict Sources and Di	isplays to Room			Restrict Sources and Displays to F	Room		
ock Pixel Space				Lock Pixel Space			
ixed Decoder Resoluti	ion			Fixed Decoder Resolution			
llow custom drop zon	ie			Allow custom drop zone			
Pixel Space [Dimensions			Pixel Space Dimens	ions		
840x2160 16:9	v			3840x2160 16:9			
Custom				1920x1080 16:9			
				1680x1050			
Width	Height			1600x900	Height		
3840	2160			1400x1050	2160		
			SIZE TO DEVICES	1440x900 16:10		s	IZE TO DEVI
				1280×1024			
			CLOSE	1280x800 16:10			с
				1280x768			
				1280x720 16:9			
				1024x768 4:3			

Γ

CLOSE



- c. To create a custom size for the video wall, enter the desired dimensions under the Custom section. Enter the width and height directly, or use the spinner controls at the far end of each field, to adjust the values.
- d. Save the video wall dimensions by clicking the Lock Pixel Space toggle switch to enable it.
- e. Click the CLOSE button to dismiss the dialog.

Before continuing, refer to the **Pixel Space** tool bar at the top of the screen. The following identifies each icon:



a. Displays

Click to icon to show the Displays window on the left side of the screen. In this mode, displays can be edited.

b. Presets

Click this icon to display the Presets window on the left side of the screen. In this mode, presets can be edited, added, or deleted.

c. Drop Zones

Click this icon to display the Drop Zones window on the left side of the screen. Refer to Creating and Using Drop Zones (page 93) for more information.

d. Auto Arrange

Click this icon to auto-arrange the number of displays in the **Pixel Space** window into the selected number of rows and columns.

e. Lock

When locked, this icon will turn red, and prevent accidental repositioning of displays or changing presets. To unlock the displays (for adjustment purposes), click this icon again.

f. Delete All

Click this icon to delete all displays within the **Pixel Space** window. This icon will only be available if displays are present in the **Pixel Space** window. This icon is only enabled if displays have been added to the Pixel Space window.

g. Pixel Space

Click this icon to display the **VideoWall** dialog box, allowing modification of both the Video Wall and Pixel Space settings.

h. Zoom

Click this icon to display the zoom fly-out slider control. Click and drag the slider to adjust the zoom factor of the **Pixel Space** window.

i. Apply Preset

Click this icon to apply the current preset. Click the down arrow next to this icon to display the Apply Preset fly-out menu. This control defines when Velocity automatically applies a preset: 1) Auto apply preset on save; 2) Auto apply preset on source change.

j. Save

Click this icon to save the current layout/settings. Click the down-arrow, next to this icon, to display the Save fly-out menu option, allows enabling or disabling of auto-saving.

k. Undo

Click this icon to undo the last operation.

I. Redo

Click this icon to redo the last operation. Clicking this icon after an undo operation will restore the previous setting.



15. Under the **Displays** window, on the left side of the screen, drag and drop the desired displays to the to **Pixel Space** window.

Alternatively, to add all displays to the **Pixel Space** windows without manually using drag-and-drop, click **ADD REMAINING**, at the bottom of the Displays window. This will automatically populate the **Pixel Space** window with all available displays. Note that if all displays have been dragged to the **Pixel Space** window, then this option will be grayed out. In this example, four displays are being added, manually.



NOTE: The order in which the displays are placed in the **Pixel Space** window is not important and both the number of displays and how they are arranged can always be changed at a later time.

16. Click the **Auto Arrange** icon in menu bar at the top of the **Pixel Space** window. Move the mouse within the **Auto Arrange** pop-up dialog to adjust the size of the video wall. Click the lower right-most blue square of the video wall to commit the selection. In this example, a 2x2 video wall will be created.





Once **Auto Arrange** has been applied, the **Pixel Space** window will appear similar to the illustration below. It should be noted that each display can be rearranged if necessary. To reposition displays, click and drag them to the appropriate places, within the **Pixel Space** window. Note that each display is identified with a name and an IP address, in the upper-left corner. Refer to the *Atlona Velocity User Manual* for more information on naming devices.

× Video Wall Configuration ID- 5d67f09aac1a4579ce893fa6				
Displays	Pixel Space 🖵 👪 🛤		🗰 🖻 🖬 🖍 🔍 🔷 🖓 - 🔂 - 🗠	~
A COMP-921 1 * Annue * Annue	ATOMN-S212.1	The 100 cdays	ATOMN-5211:1	✓× (3) 菜 +
	ATOM9-521 4 : 1		ATOMN-521 9 : 1	× ×
ADD REMAINING IDENTIFY		A		

- 17. Click the **Lock Displays** icon in the menu bar of the **Pixel Space** window. This is optional. However, enabling this feature will prevent accidental repositioning of the displays, during the configuration procedure. When locked, this icon will turn red. Both the **Trash** and **Auto Arrange** icons will be disabled. To unlock the displays (for adjustment purposes), click the **Lock Displays** icon again.
- 18. Click the Save icon in the upper-right corner of the Pixel Space window. This will save the current layout.
- 19. Click the **Presets** icon. When clicked, this icon will turn green and the Presets window will be displayed on the left side of the screen.





20. Click the Add, under Presets.

×	Video Wall Configuration ID- 5d67f09aac1a4	579ce893fa6	6
Sources A	Pixel Space 🖵 👪 📾	0 0 1 â î 🖍 🔍 Q 1 Q - 🖬 - 🗠 🧭	
 Constant 2: 10:001 1 Constant 2: 10:001 1 Constant 2: 10:001 2: 10:001 2: 10:001 1 Constant 2: 20:000 1: 10:001 2: 10:001 2: 10:001 2:	AT-0MH-521 2.1	ATOMN 521 1:1	(a) ⊭ +
EET A20 HELFE COVY	ACOM9-521-61 ADD	AT GMA6-521 3.1	

21. Enter than name of the preset in the **Preset Edit** dialog, then click CLOSE to save the preset name and dismiss the dialog.

Preset Edit	
_{Name} My <u>2x2</u> Video Wall	
	crefm

22. Under the **Sources** window, on the left side of the screen, drag and drop the desired source(s) to each display in the **Pixel Space** window. Note that the same source can be mapped to other displays. For example, in the illustration below, both the display in the upper-left corner and lower-right corner share the same source.





Sources can also be re-sized "on the fly" to achieve the desired presentation. Refer to the illustration on the next page. To re-size a source, click and drag the source window horizontally, vertically, or diagonally. Release the mouse to commit the changes. Refer to the *Atlona Velocity User Manual* for more information on manipulating source windows.



NOTE: When source windows are resized, they will "snap" to the nearest vertical or horizontal border, depending upon the direction that the mouse cursor is being moved. Source windows cannot occupy fractions of a display window.

× Video Wall Configuration ID- 5d67f09aac1a4579ce893fa6						8	
Sources ^	Pixel Space				0 0 â î 🖊 🧠 🗘 - 🖻 - 🗠	~	1
ATCAMB 512 13 CAM 1 Money ATCAMB 512 13 CAM 2 Money ATCAMB 512 13 CAM 2 Money ATCAMB 512 23 CAM 1 Money ATCAMB 512 23 CAM 2 Money			AT-OMNI-521 2:1 AT-OMNI-512 1:HDMI 2 (50)	· ×	ATCOMPECT 11 AT-OMNE-512 13:HOMI 1 (5)	××	G0 ≇ +
Presets A	Proc. 0 x Oper Saar 1000 x 1080pe				AT-OMNI-512 1:HDMI 2 (0)	/ ×	
EFT AD DELTE OFY			AFOMM-321 41 AT-OMNI-512 2:HDMI 2 (3)	~*	ATOMA-STIX1		
	Pacity 1980yr Rain 1980 y tallgar			Par 1021 - 1089 - Jan 102 - 1080 -	Pr 100 1000 Un 100 1000		

- 23. Click **ADD**, under the **Presets** section, on the left side of the screen, to create additional presets.
- 24. Repeat steps 20 through 22 to create the preset. Once the desired presets have been created, click the preset name under the **Presets** section to recall it. The video wall will be updated with the selected preset.

Refer to the Atlona Velocity User Manual for more information on using and recalling presets.

×	Video Wall Configuration ID- 5d67f09aac1a4579ce893fa6			
Sources	Pixel Space 📮 👪 🛤	0 0 â î 🖌 🔍 🗘 - B- 🗠 🗠		
ACOMP 512 11 CM1 1 Wm ACOMP 512 11 CM1 2 Wm ACOMP 512 21 CM1 2 Wm ACOMP 512 22 CM1 1 Wm ACOMP 512 22 CM1 2 Wm ACOMP 512 2	67 COMM-51 21 AT-OMNI-512 1:HDM1 2 (0) which because which because which because	AT-OMH-5121HDM11 (5)	∞ =	
EDIT AGO DELETE COPY	ATOMNAST 41 ATOMNI-512 2HOM12 (3)	ATOMHE 23 31 ATOMHE 12 1100MI 2 (0)	×	



Creating and Using Drop Zones

Drop Zones are "containers", allowing sources to be placed ("dropped") in real-time on a video wall. Drop Zones are similar to presets except that, unlike presets, Drop Zone content can be changed on-the-fly within the Video Wall Control Screen.

- 1. Populate the **Pixel Space** window with the desired devices.
- 2. Click the **Lock Displays** icon to lock the devices in place.
- 3. Click the **Drop Zones** icon in the **Pixel Space** menu bar.
- 4. Click **ADD**, under the **Drop Zones** window, on the left side of the screen. This will create the Drop Zone *preset*.



- 5. Click **EDIT** and provide a name for the Drop Zone in the **Drop Zone Edit** dialog box.
- 6. Click the **CLOSE** button to commit the change.

×		Video Wall Configuration ID- 5d67f09aac1a457	9ce893fa6	
Drop Zones	Pixel Space 📮 👪 🚥			ê 🗉 🖍 🔍 🔍 🗘 - 🖬 - 🗠 🗠
		AT OMM-521 21		ATOMN 921 41
EDIT ADD DELETE COPY		Drop Zone Edit		
Zones		Name Mv drop zone		
	Pres 2 e 2go Bar 1922 e 1988 ye		CLOSE	AT-OMNI-521 1:1
EXT ADD DELETE				



7. Click **ADD**, under the **Zones** window.

×	Video Wall Configuration ID- 5d67f09aac1a4579ce893fa6						
Drop Zones	Pixel Space 📮 👪 🚥		ĉ	1 / Q Q - B - m ~			
My drop zone [0]	лт-омн-s21 : new1		AT-OMNI-521 4:1				
EDIT ADD DELETE COPY							
Zones ^							
new [0]							
1 new1 [1]	Pact 0 x Opx dat: 1000 x 1000px AT-OMNI-521 :	ti	Pos: 7220 + day Saar 7220 + 184aya AT-OMNI-521 1:1				
	ADD						

8. Click EDIT and provide a name for the Zone, in the Edit Zone dialog box. Click Close to save the change.

Drop Zones	Pixel Space 📮 🏗 🚥			ê T 🖍 🤍 Q - B- M -
Thy drop zone		new1		ATOMN-5214.1
EDT ADD DELFTE COPY		Edit Zone		
nent (D)		500 Nam 2520 060	CL35E	ATCMME 52111
RAT ADD DRUTH				

Note that each time the **ADD** button is clicked, a new Drop Zone *container* is created. In this first example, two Drop Zone containers are created. When adding containers, note that the position of each container is created in the same position, within the **Pixel Space** window.





9. Drag each container to the desired area on the video wall. To place a container on each device, left-click and drag, then release when a majority of the window is placed over the device.

If a container is positioned over the intersection of two windows, then it will automatically be resized to accommodate both devices, as shown below. If placed over the corner intersection of more than two windows, then the container will be resized to cover all devices occupying that space.



10. Click the Lock Preset button, one the containers have been placed in the desired positions.





- 11. Repeat the above steps to create additional Drop Zone presets. Each Drop Zone preset can have a different number of containers. However, the number of containers that are created should not exceed the number of devices within the **Pixel Space** window.
- 12. Click the Save icon to commit all changes.
- 13. Close the **Video Wall Configuration** window, by clicking the **X**, in the upper-left corner of the screen.

×				Video Wall Configura	ion ID- 5d67f09aac1a457	9ce893fa6		
Drop Zones	Pixel Space	Ģ H	-				🔒 📋 🖍 🔍	¢ • ₽ • ~
Ly dap zone				ATOMRESTI 2.1 New	<u>×</u> ×		AFONN-S2141 new1	× ×
EDT ADD DELETE COPY	Post & v Ope Date: 1/200 x 1300 per			AT GMR9 821 3-1	ℤ ×	The March March	ATOMN-5211.1	

14. Click the Launch Control icon, in the far-left corner of the Modify Room screen.

≡ C Help×		\	/elocity			æ
🛎 Modify Room	All Sites » A » Building 1 » Bar/R	lestaurant				Â
💲 生 Technology					in ±	+
	Connected (->	Connected (>		.		
	AT-OMNI-121 1	AT-OMNI-122 1	Computer Monitor 1	Computer Monitor 2		

15. Click the **VIDEO WALL** icon.

Bar			
	ROOM ON	VIDEO	VIDEO WALL



16. The **Presets** portion of the control screen will be displayed. All presets that were created, will be listed on the left-hand side of the screen, as shown below. Note in this example, only one preset was created. Click the desired preset to recall it.

Bar				Ċ	Ċ	Ø
			Video Wall	Room Off	Room On	Navigate
Presets	AT-OMNI-122:2	AT-OMNI-122:1				
Presets Zones	AT-OMNI-122:2	AT-OMNI-122:1				

17. Click **Zones**, in the lower-left corner of the screen to access the Drop Zones, which were created earlier. In the example example below, two Drop Zones were created.

Bar	•	Ċ	С	ø
	Video Wa	I Room Off	Room On	Navigate
Sources	new			
нры 1				
HDMI2				
HDMI 1				
HDMI 2				
	Created Zones			
Presets Zecture				

The first Drop Zone that was created, shows two containers on the left, and a single container on the right. The second Drop Zone, only uses two containers: one on the top and one on the bottom. The Preset which we created is a 2x2 video wall and represents the physical layout of the displays. Drop Zones are containers and act as a "map" to where the video sources will be applied. Refer to the next page for an example.



The first Drop Zone will can dynamically apply sources to the preset, which is a 2x2 video wall, to the top-left, bottom-left, and both or only one display(s) on the right-hand side. Some possible combinations are shown below. Drop Zone containers have been labeled alphabetically, for reference.



Note that although the top-right and bottom-right displays are physically separate, dragging and dropping a source from the left-hand side of the screen to Drop Zone container "C", will "map" the source to both displays.



To change to a different source, drag and drop a source from the left-hand side of the screen to the source to be replaced.



Custom Drop Zones

In addition to creating user-defined Drop Zones, the Velocity Video Wall also includes a Custom Drop Zone. This unique type of Drop Zone allows dynamic re-sizing of sources to be mapped across any of the decoders.

1. Return to the Video Wall Configuration screen and click the Pixel Space icon, in the Pixel Space menu bar.



2. Click the Allow custom drop zone toggle switch to enable it. When enabled, this toggle switch will be green.

×	Video Wall Configuration ID- 5bb6877bac1a453169c767ac											
Displays 🔨	Pixel Space				ô		1	Q	\$ -	8-	ŝ	~
	Fec314pe	AI	VideoWall VideoW	1		AT-OMNI	-122 : 1					××
AND REMAINING IDENTIFY			Custom was 3840 twige 2160 size to devices close			AT-OMNI	-122 : 1					××

- 3. Click **CLOSE** to save changes and dismiss the dialog box.
- 4. Click the Save icon in the top-right portion of the Video Wall Configuration screen to commit changes.



- 5. Close the **Video Wall Configuration** screen and then click the **Launch Control** icon on the **Modify Room** screen.
- 6. Click the VIDEO WALL icon to enter video wall control screen.
- 7. Click **Zones** at the bottom of the screen, then click the **Custom Drop Zone** icon.



8. Drag-and-drop sources from the left side of the screen, as performed with normal Drop Zones.





9. Resize or reposition windows by clicking and dragging the edges of each source, horizontally / vertically, to the desired area of a container.

To reposition the source to a different container(s), click in the middle of a source, then drag and drop to the desired container(s).





If the source is dropped at the intersection of two containers, the source will automatically be resized to fill both containers. In the example below, the source will be displayed on all four screens.







Configuring Redundant Streams

OmniStream decoders have the ability to identify missing streams, should an input be disconnected from the encoder, and will recover the image almost instantaneously. The decoder can access the same stream from two separate multicast addresses and switch between them, when necessary.

- 1. Login to AMS and access the Virtual Matrix. Refer to The Virtual Matrix (page 121) for more information.
- 2. In the Virtual Matrix, locate the decoder to be configured for redundancy.
- 3. Click the **Options** button for the desired decoder. In this example, the decoder in the upper-left corner of this matrix will be used. The **Crosspoint Options** dialog box will be displayed.

≡ 🖸 Help×						^	<u>.</u>	5.	
I OmniStrea	m Virtual Ma	itrix /	All Sites						
Encoders / Decoders LEGEN ♥ Video View: Active • ●) Audio □ All ←> Data ● Flip Matrix	Andrew's AT-OMNI-122 192.168.11.181 at omni-122:00548 HDMI 1	Connected A Cov 1 Coptions HDMI 2	T-OMNI-121 Connect 92.168.11.34 Connect 100.121.00461 Conton HDMI 1	AT-OMNI-122 192.168.11.86 192.168.11.87 at omni-122-00	242 Options 6 HDMI 2	AT-OMNI-521 192.168.11.39 at omni-521-00064 HDMI 1	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 at-omni-122-00381 HDMI 1	Connected ov Options HDMI 2
AT-OMNI-112 192.168.11.89 HDI 192.168.11.88 at-omni-112-00349 HDI Connected ••	M 1 🔮	•							
AT-OMNI-111 192.168.11.50 st.omni-111-00200 HDI Connected ••	AI 1				Ontion	s buttor			

4. Select the backup mode for **Video Redundancy** and/or **Audio Redundancy** from the **Backup Mode** drop-down lists. Refer to the table below, for a listing and description of the available modes.

Crosspoint Options: Andrew's	AT-OMNI-122 - 192.168.11.	181
HDMI 1: activate crosspoint	Video Redundancy: Au	udio Redundancy:
PRIMARY VIDEO BACKUP VIDEO	Off (Backup Mode
PRIMARY AUDIO BACKUP AUDI	Join Active Join Always	3ackup Input p_input9 -
HDMI 2: activate crosspoint	Video Redundancy: Au	udio Redundancy:
PRIMARY VIDEO BACKUP VIDEO	Backup Mode E	3ackup Mode Off -
PRIMARY AUDIO BACKUP AUDI	Backup Input E ip_input8 v i	3ackup Input p_input10

Mode	Description
Off	Redundancy off; output will never switch to the backup stream.
Join Active	The decoder sends a join request only when the primary stream is lost or if the decoder is manually switched to the backup stream. Switch time will not exceed 5 seconds.*
Join Always	The decoder joins both the Primary and Backup stream at the same time. Switch time will not exceed 0.5 seconds.

* Switching time will be dependent upon the network switch that is used, as well as the number of hops between encoders and decoders on the network.



Redundancy Grace Period

During use, the decoder can be switched to another multicast stream. However, if the decoder encounters a missing stream, during the switch and when redundancy is enabled, then this will cause the decoder to automatically failover to the multicast source configured as the backup. To prevent the decoder from automatically making the redundancy switch, when redundancy is enabled, a grace period can be entered. By default, the grace period is set to 0 seconds. If set to 0 seconds, automatic failover will occur if the stream is interrupted, for any reason. Refer to Configuring Redundant Streams (page 54) for more information on enabling or disabling redundancy.

- 1. Login to AMS. Refer to Accessing Decoders in AMS (page 19) if necessary.
- 2. Click HDMI OUTPUT in the menu bar.

						 Logout
< System information SAP IP Input Serial HDMI O	Dutput Logo Text Al	arms Network PTP Con	figuration Users	License U	pgrade	>
	Output 1		Output 2			
	Name	hdmi_output1	Name		hdmi_output2	
	Descrambling Enable		Descrambling	Enable		
	Key	AtlonaRocks		Key	AtlonaRocks	
	HDCP Encrypted	•	HDCP	Encrypted	٠	
	Enabled	_●		Enabled	-•	
	EDID 00000000000000000000000000000000000	DaccDa04c464130131a010380351e 54da326055054a54b00714f8180a9 10001010101a36600a0f7701f8030 100001a000000ff0035394a4a34363 //	EDID	00fffffffffff0010 78eae245a85 c0a940d1c0e 2035000f2821	DaccDa04c4e3930211a010380351e 54da326055054a54b00714f8180a9 10001010101a36600a0f0701f8030 100001a000000ff004733443746363 //	
	Video Input	ip_input1 👻	Video	Input	ip_input2 👻	
	Backup mod	e Off 👻		Backup mode	e Off 🗸	
	Backup input	ip_input7 👻		Backup input	ip_input8 👻	
	Change grace period	0		Change grace period	0	
	Active input	ip_input1		Active input	ip_input2	
	Status	3840x2160p, 30.00 fps, YUV 422 12bpc		Status	3840x2160p, 30.00 fps, YUV 422 12bpc	
	Stretch/crop mode	keep aspect ratio 👻		Stretch/crop mode	keep aspect ratio 👻	
	Resolution	input 👻		Resolution	input 👻	
	Slate mode	off 👻		Slate mode	off 👻	
	Frame rate conversion	sub frame latency 👻		Frame rate conversion	sub frame latency 👻	
	TO PRI	MARY TO BACKUP		TO PRIM	MARY TO BACKUP	
	Audio Input	ip_input3 👻	Audio	Input	ip_input4 👻	
	Backup mode	e Off 🗸		Backup mode	e Off 🗸	
	Backup input	Not used 👻		Backup input	ip_input10 👻	
	Change	0		Change	0	

- 3. Locate the **Change grace period** field.
- 4. Enter the desired value, in seconds. By default, this value is set to 0.

Video	Input	ip_input1 👻
	Backup mode	Off 🗸
	Backup input	ip_input7 👻
	Change grace period	0

5. Click the Save button, at the bottom of the Output section.



The AMS Interface

Device Info page

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

≡ 🕄 Help×				5.				1 C 🔤 🚳
DEVICE LIST	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
an n	Device Info							
Building 1	Alias:							
Bar/Restaurant	Model: IP Address	AT-OMNI-122 10.20.40.27						
S MK office	MAC Address Firmware Version:	B8:98:B0:01:92:52						
Building 2	FIRMWARE UPDATE							
Bar/Restaurant	Description:							
State MK office	Uptime:	6 days, 1 hours, 31 minutes						
Unassigned V	Hostname:	at-omni-122-00446						
	Reset users Reset network							
		EBOOT DEVICE						
								SAVE
					unat (akwi PST - aPM PST) 🖻			

Alias

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

Model

The model number of the unit.

Model	Description
AT-OMNI-121	Single-channel decoder
AT-OMNI-122	Dual-channel decoder

IP Address

Displays the IP address of the decoder.

MAC Address

Displays the hardware MAC address of the decoder.

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 decoder with no factory-default settings.
Reset User	Resets the decoder to factory-default settings and resets custom user information.
Reset Network	Resets the decoder to factory-default settings and resets network information.
Reset Defaults	Resets the decoder 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 decoders 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.



Dolby Vision License Enabled

This indicator will be green if the Dolby Vision license is installed.

Dolby Vision License Key

Enter the license key in this field, then press the **SAVE LICENSE** button.

SAVE LICENSE

Click this button to activate a valid Dolby License key.

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.



IP Input page

The IP Input tab provides configuration of each input, the assigned multicast address(es), and ports.

≡ 🕄 Help×									b∌ (P
DEVICE LIST	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION	l i	
Unassigned	IP Input 1 (Video 1)				IP Input 2 (Video 2)				11	
🗣 at-omni-111-00201	Enabled				Englier				111	
♥ at-omni-112-00259	Interface:	eth1			Interface:	eth2				
🗑 at omni-122-00242 :										
	Multicast Address:				Multicast Address:					
	Port:	1000			Port:	1000				
		SAVE				SAVE				
									6 H.	
	IP Input 3 (Audio 1)				IP Input 4 (Audio 2)				411	
	Enabled:				Enabled:	-				
	Interface:	eth1			Interface:	eth2				
	Multicast Address:				Multicast Address:					
	Port:	1100			Port:	1100				
		SAVE				SAVE				
	IP Input 5 (Control 1)				IP Input 6 (Control 2)				11	
	Enabled:				Enabled:					
	Interface:	eth1			Interface:	eth2				
	Multicast Address:				Multicast Address:					
	Port:	1200			Port:	1200				
		SAVE				SAVE			Ŧ	
			Atle	na Customer Support Live	Chat (SAM PST - 5PM PST) 🗖					

Enabled

Click this checkbox to enable the IP input.

Interface

Select the physical interface, that will be used to carry the multicast traffic, from this drop-down list. When using a single-channel decoder, only **eth1** will be available.

Input	Description
eth1	ETHERNET 1 port
eth2	ETHERNET 2 port

Multicast Address

Enter the multicast address of the decoder stream.

Port

Enter the multicast UDP listening port in this field.



Advanced Settings

Mode

Click this drop-down list to select the mode. Mode can be set to exclude or include and is specifically used when using Source Specific Multicast (SSM). SSM will only function if the network is properly set up to support it.

Mode	Description
exclude	Multicast content coming from the source mentioned in the Addresses section will be excluded (blocked).
include	Multicast content coming from the source mentioned in the Addresses section, on the next page, to be streamed to the decoder.

Addresses

Enter the IPv4 address of the encoder(s) in this field and is used as the SSM include/exclude list. Use the comma delimiter to separate multiple IP addresses. When using non-SSM networks, this field is ignored.


HDMI Output page

The HDMI Output tab provides options to configure the output streams.

≡ C Help×			∧m≘	- -					1 27 🔊
DEVICE LIST	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION	
Unassigned ^	HDMI Output 1				HDMI Output 2				
🛡 at-omni-111-00201									_
€ at-omni-112-00259	Descrambling				Descrambling				
🗑 at-omni-122-00242	Enabled:			C	Enabled:			C	
				Ŭ					
	HDCP	•			HDCP				
	Supported Version:	1.4			Supported Version:	1.4			
	Negotiated Version:	none			Negotiated Version:	none			
	EDID:				EDID:				
	Video				Video				
	Video:	IP Input 1 (Video 1)			Video:	IP Input 2 (Video 2)			
	Active Input:	Video 1			Active Input:	Video 2			
	Status:	No active video			Status:	No active video			
	Stretch/Crop Mode:	Keep Aspect Ratio			Stretch/Crop Mode:	Keep Aspect Ratio			
	Resolution:	Auto			Resolution:	Auto			
						-			
	Fast Switching Enable:				Fast Switching Enable:				
	Audio	(D. L			Audio	12 Jacob 4 (4 - 15 - 2)			
	input.	in input 3 (AU0IO 1)			input.	IP Input 4 (Audio 2)			
	Active Input:	Audio 1			Active Input:	Audio 2			
	Downmixing:	None			Downmbring:	None			

Enabled

Click this toggle switch to enable or disable scrambling on the decoder. When enabled, the toggle switch will be green.

Key

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.

Encrypted

Indicates if the content is HDCP-encrypted or not. If true, then HDCP content is being passed in to the decoder and this indicator will be colored green.

Supported Version

Click this drop-down list to select the desired HDCP version. If set to none, then the sink is reported as "non-compliant" and will receive non-HDCP content.

Input	Description
none	The decoder will receive non-HDCP content.
1.4	The decoder will receive HDCP version 1.4 content.
2.2	The decoder will receive HDCP version 2.2 content.

Negotiated Version

The version of HDCP being received.

EDID

This is a read-only field and cannot be modified. The data in this field is the EDID of the display to which the decoder is connected. This EDID data in this field can be copied to the encoder, allowing the source to send AV formats which are supported by the sink (display) device. Refer to the AT-OMNI-11x User Manual for more information.



Video

Click this drop-down list to select the desired primary video input. Select **generator** to use the internal signal generator. Select the **Not Used** option to leave the video input unassigned.

Active Input

Displays the active video input.

Status

Displays the input status. If no input is active or detected, then this field will display "No active video".

Stretch / Crop Mode

Click this drop-down list to select the aspect ratio.

Mode	Description
Keep Aspect Ratio	Aspect ratio is preserved; the output on the decoder will be the same as the input on the encoder.
Full Screen	Stretches the image to fill the screen. In some cases this can distort ("stretch") the image.
16:9	Sets the aspect ratio to 16:9 "widescreen" format, usually associated with HDTV formats.
16:10	Sets the aspect ratio to 16:10 "widescreen" format, usually associated with computer displays and smart devices.
4:3	Sets the aspect ratio to 4:3 "pan-and-scan" format, usually associated with SDTV.

Resolution

Click this drop-down list to select the desired output resolution. This is a scaler feature which can either upscale or downscale the output on the decoder. If **Input** is selected, then no scaling will be applied to the output. Select **Auto** to use the EDID of the sink device to determine the output resolution.

Resolutions	
Input	1440 x 1050
Auto	1440 x 900
4096 x 2160	1280 x 1024
3840 x 2160	1280 x 800
1920 x 1200	1280 x 768
1920 x 1080	1280 x 720
1680 x 1050	1024 x 768
1600 x 900	

Fast Switching Enable

Click this toggle switch to enable or disable fast-switching. Refer to Fast Switching (page 37) for more information.

Input

Click this drop-down list to select the primary audio IP input. Select the **Not Used** option to leave the audio input unassigned.

Active Input

Displays the active audio IP Input.



Downmixing

Click this drop-down list to select how LPCM audio will be down-mixed. Note that lossless audio formats cannot be down-mixed.

Туре	Description
None	Audio is not down-mixed.
Stereo	Audio is down-mixed to two-channel stereo.
Auto	Display is always on, source audio/video signal switches on/off

Status

Displays the audio input status. If no input is active or detected, then this field will display "No active audio".

Mute

Click this toggle switch to enable or disable the audio output. If enabled, the toggle switch will be green.

Volume

Click the speaker icon on the left to decrease volume. Click the speaker icon on the right to increase volume. Range: 0 to 15.

Advanced Settings

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

Backup Mode

Click this drop-down list to select the backup mode. Both Video and Audio provide the Backup Mode feature.

Mode	Description
Off	Backup source is disabled; join request not sent.
Join Active	The decoder sends a join request only when the decoder decides to switch between audio sources. Switch time will not exceed 5 seconds.
Join Always	The decoder always joins to the backup audio source. Switch time will not exceed 0.5 seconds.

Backup Input

Select the secondary video backup IP input from this drop-down list. If the primary IP input is down, then the decoder will automatically switch to this input. Refer to the **Backup Mode** option, above, for setting the conditions for switching inputs. Both Video and Audio provide the Backup Input feature.

Configuration Grace Period

To prevent the decoder from automatically making the redundancy switch, when redundancy is enabled, a grace period can be entered. By default, the grace period is set to zero seconds. If set to zero seconds, automatic failover will occur, if the stream is interrupted for any reason. Refer to Configuring Redundant Streams (page 102) for more information.

Slate Mode

Click this drop-down list to select the slate mode. Refer to Slate / Logo Insertion (page 31) for more information.

Mode	Description
Off	Disables the image from being displayed.
Manual	Stretches the image to fill the screen. In some cases this can distort ("stretch") the image.
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.



Enable

Click this toggle switch to enable or disable the video wall feature. When enabled, the toggle switch will be green. Refer to Creating Video Walls (page 72) for more information.

TO PRIMARY

Click this button to assign as the Primary IP Input. Both Video and Audio support this feature.

TO BACKUP

Click this button to force the audio stream to fall over to the Backup IP Input (if redundancy is configured). Both Video and Audio support this feature.

Enable AES67

Click this toggle switch to enable or disable AES67. When enabled, the toggle switch will be green. Refer to AES67 Audio (page 69) for more information.

Status

This field will display the audio type. If no audio is present, then this field will display **No active audio**.

Analog Power Status

This indicator will be green when the decoder is powered by the optional external 48 V DC power supply.

Analog Power

If analog output is connected to the decoder, then click this toggle switch to use the analog audio output. When enabled, this toggle switch will be green.

Auto On

Click this toggle switch to enable or disable power-on. When enabled this toggle switch will be green and the power-on command will be sent to the display when an A/V signal is detected.

Projector Cooldown (s)

Enter the time interval, in seconds, before the projector can be powered-off. This time interval prevents the decoder from sending additional commands until the projector has had time to complete its cool-down process.

Standby Timeout

Enter the time interval, in seconds, before the next command can be accepted by the display.

Туре

Click this drop-down list to select the display mode.

Туре	Description
DispSW AVon	Display switches on/off, source audio/video signal always on.
DispSW AVSW	Display switches on/off, source audio/video signal switches on/off.
AV SW	Display is always on, source audio/video signal switches on/off
Always on	Display is always on, source audio/video signal always on.

Auto On

Click this toggle switch to enable or disable power-on. When enabled this toggle switch will be green and the power-on command will be sent to the display when an A/V signal is detected.

Video Optimization

Sets the video mode to optimize the output for motion video or computer graphics. Refer to Setting the Video Mode (page 30) for more information.



Serial page

The Serial Config tab provides serial port configuration when using control signals.

≡ 🕄 Help×					5 .				® ⊠
DEVICE LIST	i.	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Unassigned	^	Serial Port 1							
♥ at-omni-111-00201		Supported Modes:	infrared, serial						
🗑 at ormi-112 00259		Mode:	serial						
♥ al-omni-122-00242		Baud Rate:	9600						
		Data Bit:	8						
		Parity	None						
		i any.	None						
		Stop:	1						
		Flow Control:	None						
			SAVE						
		Serial Configuration 1							
		Port:	Serial Port 2		~				
		Mode:	cli						
			SAVE						
		SHOW ADVANCED -							

Supported Modes

Lists the supported protocols.

Mode

Click this drop-down list to select the desired serial mode: Infrared or Serial.

Baud Rate

Click this drop-down list to select the desired baud rate.

Data

Click this drop-down list to select the number of data bits.

Parity

Click this drop-down list to select the parity bit.

Stop

Click this drop-down list to select the stop bit.

Flow

Click this drop-down list to select the type of flow control.



NOTE: The single-channel decoder will only have one Serial Port Configuration section.



Advanced Settings

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

Port

Click this drop-down list to select the port: serial_port1, serial_port2, or Not Used.

Mode

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

Interface	Description
cli	Displays the command-line interface of the decoder.
output	Serial port will send commands directly to the display device.
tcpproxy	Commands are sent over IP but triggered over the serial port.

Command

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

Mode

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

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

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 decoder requires that only one field be completed.



The AMS Interface

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. If using the dual-channel version, then the information on both Channel 1 and Channel 2 are provided. This screen is identical to the **Network** page for the encoder.

≡ C Help×									5 (
DEVICE LIST	1	DEVICE INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION
Unassigned	^	Network 1 (eth1)				Network 2 (eth2)			
🗑 at-omni-111-00201		Fachlad				Territori.			
🛡 at-omni-112-00259		Carrier:				Carrier:			
♥ at-omni-122-00242		DHCP Mode:	DHCP			DHCP Mode:	DHCP		
		Changing IP Mode from Static to DH	ICP requires running a scan to find the	new IP address of the device.		Changing IP Mode from Static to DI	ICP requires running a scan to find the ne	w IP address of the device.	
		IP Address:	192.168.0.184			IP Address:			
		Subnet:	255.255.255.0			Subnet:			
		Gateway:	192.168.0.1			Gateway:			
		SHOW ADVANCED 👻				SHOW ADVANCED 👻			
					SAVE				SAVE

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

802.1x Mode

Click this drop-down list to select the desired authentication mode. Refer to 802.1X Authentication (page 66) for more information.



The AMS Interface

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**, **PTP**, and **SAP** 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 31) for more information on these settings.

≡ 🖸 Help×											ba 🐠
DEVICE LIST		DEVICE	EINFO IP INPUT		HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION	
Unassigned .	^	Logo	New Logo								
♥ at-omni-111-00201		Text									-
🗑 at-omni-112-00259		PIP	Name								
♥ at-omni-122-00242		SAP	Choose File No file chosen								
						UP	LOAD				
											_
			HDMI Output 1 Logo				HDMI Output 2 Logo				
			Enabled:				Enabled:				
			Select Logo:	Not Used			Select Logo:	Not Used			
			Aspect Ratio	Stretch			Aspect Ratio:	Stretch			
			l				Lander				
			Horizontal:	0			Horizontal:	0			
			Vertical	0			Vertical:	0			
			Size:				Size:				
			Height:	10			Height:	10			
			Width:	10			Width:	10			
						_				_	
						SAVE				SAVE	

Name

Enter a name for the logo in this field.

Choose File

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

UPLOAD

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

Enabled

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

Target

The name used by AMS to identify the encoder.

Select Logo

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

Aspect Ratio

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

Horizontal

Enter the horizontal position of the logo on the screen.



The AMS Interface

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 35)** for more information.

≡ C Help×						5				ا ب <u>ک</u> ا	æ
DEVICE LIST	÷	DEVICE	EINFO IP INPUT	r	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION	
Unassigned	^	Logo	HDMI Output 1 Text				HDMI Output 2 Text				
₩ at-ormi-111-00201		PTP	Enabled:				Enabled:				
♥ al-omni-112-00239 ♥ al-omni-122-00242		SAP	Text:				Text:	0			
			Iterations:	0			Iterations:	0			
			Color				Color				
			Color:	white			Color:	white			
			Location	0			Location	0			
			Vertical (%):	0			Vertical (%):	0			
			Size				Size				
			Width (%):	10			Width (%):	10			
			Height (%):	10			Height (%):	10			
			SHOW ADVANCED 👻				SHOW ADVANCED 👻				
						SAVE				SAVE	

Enabled

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

Text

Enter the desired text in this field.

Scroll Speed

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

Iterations

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

Color

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



Horizontal (%), Vertical (%)

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

Width (%), Height (%)

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

Advanced Settings

Click the SHOW ADVANCED button to view the following options.

Red, Green, Blue, Alpha

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

PTP

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

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



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

≡ Cl Help~												M 🔊
DEVICE LIST		DEVICE	INFO	IP INPUT	HDMI OUTPUT	SERIAL		ALARMS	NETWORK	OTHER	CONFIGURATION	
Unassigned	^	Logo	Network 1 (eth1)					Network 2 (eth2)				
🗑 at-omni-111-00201		PTP	Domain Number:		0			Domain Number:	0			
♥ at-omni-112-00259 ♥ at-omni-122-00242		SAP	Priority 1:		128			Priority 1:	128			
			Priority 2:		128			Priority 2:	128			
			Is GM Present: GM Identity:		B8:98:B0:FF:FE:01:87:17			Is GM Present: GM Identity:	B8:98:B0:FF:FE:01:88.86			
			Master Offset (ns):		27		SAVE	Master Offset (ns):	0		SAVE	
											_	



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.

SAP

The **SAP** page enables or disables the Session Announcement Protocol protocol. Enabling SAP configures the decoder to look for SAP messages from encoders on the network that are configured to send SAP. Any messages that are discovered will be displayed here.

≡ 🕄 Help×						5.				M	AP)
DEVICE LIST		DEVICE	INFO	IP INPUT	HDMI OUTPUT	SERIAL	ALARMS	NETWORK	OTHER	CONFIGURATION	1
Unassigned	^	Logo	SAP								
♥ at-omni-111-00201		PTP				Enabled					
at-omni-112-00259 at-omni-122-00242		SAP					SAVE				

Enable

Click this toggle switch to enable or disable SAP. If enabled, the toggle switch will be green. Click the **SAVE** button to commit changes.



The Virtual Matrix

- 1. Click the \equiv icon, in the upper-left corner of the AMS Dashboard.
- 2. Click Virtual Matrix.



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

	Lielo v								^	N 40				
	Trop										—			
⊞ Or	nniStre	eam	Virtual M	latrix	All Sites									
Encoders / D	ecoders	GEND	AT-OMNI-122 192.168.11.181	Connected	AT-OMNI-121 192.168.11.34	Connected	AT-OMNI-122 192.168.11.86 192.168.11.87 at-omoi-122.00242	Connected	AT-OMNI-521 192.168.11.39	Connected	AT-OMNI-122 192.168.11.160 192.168.11.161 st.ormel.122.00381	Connected	AT-OMNI-121 192.168.11.165	Connected
 ADato a Conta (Flip Matrix		HDMI 1	HDMI 2	HDMI 1	Options	HDMI 1	HDMI 2	HDMI 1		HDMI 1	HDMI 2	HDMI 1	opuons
AT-OMNI-112 192.168.11.89		HDMI 1					0				S	9		
192.168.11.88 at-omni-112-003 Connected	49 ••	HDMI 2			0				S					
AT-OMNI-111 192.168.11.50 at-omni-111-002 Connected	00	HDMI 1												
AT-OMNI-512 192.168.11.51		HDMI 1												
at-omni-512-000 Connected	03 D .	HDMI 2												
AT-OMNI-112 192.168.11.116		HDMI 1	S								0			
Connected	••	HDMI 2		0										
AT-OMNI-112 192.168.11.183		HDMI 1									10			
at-omni-112-003 Connected	35 ••	HDMI 2												
AT-OMNI-111 192.168.11.167 at-omni-111-003 Connected	55 04	HDMI 1	•						0					



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.





The AMS Interface

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
Α	Audio only
D	Data only
V	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. Refer to Setting the Video Mode (page 30) for more information.

- Click the Video, Audio, and Data icons to return to the normal view.
- Since only HDMI (both audio and video) is being used, the V (video) and A (audio) icons are displayed. The blue circle with the checkmark indicates that the cross-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.



Updating the Firmware

IMPORTANT:

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

							NETWORK
Device Info							
AT-OMNI-112							
Model							
AT-OMNI-112	Firme	vere l'Indete					
IP Address 1 192 168 11 116		vare opuate					
	T-1	OMNI-112 - 192.168.11.116:80					
B8:98:B0:01:A5:7F		Drop or Brows	se file here to upload new Firr	nware			
	Selec	Firmware	1				
UPGRADE FIRMWARE							
Description							
						C	Clashawa
Location					Dr	ag firmware	file here
Uptime							
Temperature (°C) 49.5			CLOSE UPDATE	FIRMWARE UPDATE ONLINE			

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

Firmware Update Andrew's AT-OMNI-112 - 192 168 .11.116:80	Uploaded firmware file
Drop or Browse file here to uplo	ad new Firmware
Select Firmware	
at-omni-dual-upgrd-os-1.2.1_RC02.vpup2 05 Jun 2018 17:44:16 +0000	×



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

121.1	-
Hostname	
at-omni-112-00722	
NTP Server	
	Atlona Customer Support Live Chat (SAM PST - 5PM PST) 🏴
	Upgrade Firmware Started

6. 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.

			1
LOGO) РТР	NETWORK	·

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

Device Info	
Aliae	
AT-OMNI-112	
Model	
AT-OMNI-112	
IP Address 1	
192.168.11.116	IP Address 2
B8:98:B0:01:A5:7F	B:98:B0:01:A5:80
Firmware Version	Firmware Update
1.2.1_RG02	
	Firmware Name: "at-omni-dual-upgrd-os-1.2.1_RC02.vpup2"
	AT-OMNI-112 - 192.168.11.116:80
Description	
	CLOSE
Location	

- 7. Click the "X" to close out the progress bar window, then click the **CLOSE** button to dismiss the **Firmware Update** message box.
- 8. The firmware update process is complete.
- 9. 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.



FEC Details

Matrix Size, Overhead, and Latency

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

FEC and Video Bitrate

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



FEC rate = Configured bit rate - Video rate

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

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





FEC, Latency, and Lip Sync

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

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

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

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

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



Mounting Instructions

OmniStream decoders 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.

Included screws

- 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.



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



Rack Tray for OmniStream

OmniStream decoders 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

Single-Channel Decoder

Video	
HDMI Specification	HDMI 2.0, HDCP 1.4 / 2.2
UHD/HD	4096×2160 (DCI) @60/30/24 Hz, 3840×2160(UHD)@60 ⁽¹⁾ /50/24/25/30 Hz, 1080p@23.98/24/25/29.97/30 /50/59.94/60 Hz, 1080i2 ⁽²⁾ @25/29.97/30 Hz, 720p@30/50/59.94/60 Hz
VESA ⁽³⁾	1920x1200, 1680x1050, 1600x1200, 1600x900, 1440x900, 1400x1050, 1366x768, 1360x768, 1280x1024, 1280x800, 1280x768, 1152x768, 1024x768
Virtual Reality	2160×1200 @ 90 Hz (HTC Vive)
Color Space	YUV, RGB

Decoding	
Density	One decoding engine
Decoding Format	VC-2 (SMPTE-2042)
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0
Video Quality Optimization	User-selectable: Computer Graphics or Motion Video
Color Depth	8-bit, 10-bit, 12-bit
HDR	HDR10, HLG, Dolby [®] Vision ^{™(4)}
Bit Rate	Supports bit rates 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
Output Resolution in Ultra-Fast Switching Mode	1920x1080p60

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
Analog audio ⁽⁵⁾	Balanced output: +4 dBu nominal gain, +20 dB headroom Frequency response: 20 Hz to 20 kHz, \pm 0.5 dB Output impedance: 150 Ω Stereo channel separation: > 90 dB THD+N: < 0.03% at 20 Hz to 20 kHz SNR: > 90 dB at 1 kHz, zero clipping @ 0 dBFS, unweighted

Protocols	
Audio Video Streaming	RTP
Audio Transport	AES67
Addressing	DHCP, static
Decryption	AES-128
Management	HTTPS, SSH, SCP, and WebSockets with TLS
Authentication	IEEE 802.1x: PEAP/MSCHAPv2 or EAP-TLS
Graphics Features	
Text Insertion	Adjustable height/width, scrolling (speed, direction, or static), iterations (up to infinite), positioning, and adjustable color and alpha (transparency) channels.



Power

Appendix

Graphics Features	
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	
CEC	Supported and triggered from control systems and OmniStream encoders
RS-232	Device control and configuration; supports baud rates from 2400 to 115200 Bidirectional pass-through from control system to network Bidirectional TCP Proxy (RS-232 commands over IP)
IR	Pass-through from control system to network Pass-through from network to control system
Connectors	
HDMI	1 - Type A, 19-pin, female, locking
ETHERNET ⁽⁶⁾	1 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Euroblock, 6-pin (2 ports); RS-232 on port 1 and 2, IR on port 2 only
AUDIO	1 - Euroblock 10-pin; AUDIO IN/OUT; accepts balanced or unbalanced line

Indicators and controls	
PWR	1 - LED, tricolor (red, amber, green)
LINK	1 - 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

1 - Euroblock, 2-pin

Power	
PoE	IEEE 802.3af
Consumption	Up to 12 W (w/o analog audio), up to 25 W (w/ analog audio)
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 \times W \times 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) UHDp60 only supports 4:2:0.

(2) Scaling and deinterlacing is not supported at 1080i.

(3) All VESA resolutions are 60 Hz.

(4) Dolby Vision requires a separate license.

(5) External power supply is required when using the analog audio interface.

(6) Maximum distance per hop 300 ft (100 m), depending upon network configuration.



Dual-Channel Decoder

Video	
HDMI Specification	HDMI 2.0, HDCP 1.4
UHD/HD	4096×2160 (DCI) @60/30/24 Hz, 3840×2160(UHD)@60 ⁽¹⁾ /50/24/25/30 Hz, 1080p@23.98/24/25/29.97/30 /50/59.94/60 Hz, 1080i ⁽²⁾ @25/29.97/30 Hz, 720p@30/50/59.94/60 Hz
VESA ⁽³⁾	1920x1200, 1680x1050, 1600x1200, 1600x900, 1440x900, 1400x1050, 1366x768, 1360x768, 1280x1024, 1280x800, 1280x768, 1152x768, 1024x768
Virtual Reality	2160×1200 @ 90 Hz (HTC Vive)
Color Space	YUV, RGB
Decoding	
-	

Density	Two decoding engines
Decoding Format	VC-2 (SMPTE-2042)
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0
Video Quality Optimization	User-selectable: Computer Graphics or Motion Video
Color Depth	8-bit, 10-bit, 12-bit
HDR	HDR10, HLG, Dolby Vision ⁽⁴⁾
Bit Rate	Supports bit rates 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
Output Resolution in Ultra-Fast Switching Mode	1920x1080p60

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
Analog audio ⁽⁵⁾	Balanced output: +4 dBu nominal gain, +20 dB headroom Frequency response: 20 Hz to 20 kHz, \pm 0.5 dB Output impedance: 150 Ω Stereo channel separation: > 90 dB THD+N: < 0.03% at 20 Hz to 20 kHz SNR: > 90 dB at 1 kHz, zero clipping @ 0 dBFS, unweighted

Protocols		
Audio Video Streaming	RTP	
Audio Transport	AES67	
Addressing	DHCP, static	
Decryption	AES-128	
Management	HTTPS, SSH, Telnet, and WebSockets with TLS	
Authentication	IEEE 802.1x: PEAP/MSCHAPv2 or EAP-TLS	
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	
CEC	Supported and triggered from control systems and OmniStream encoders
RS-232	Device control and configuration; supports baud rates from 2400 to 115200 Bidirectional pass-through from control system to network Bidirectional TCP Proxy (RS-232 commands over IP)
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 ⁽⁶⁾	2 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Euroblock, 6-pin (2 ports); RS-232 on port 1 and 2, IR on port 2 only
AUDIO	2 - Euroblock 10-pin; AUDIO 1 IN/OUT, AUDIO 2 IN/OUT; accepts balanced or unbalanced line
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)
U	any listening devices.
Reboot	1 - Momentary, tact-type
Power	
PoE	IEEE 802.3af
Consumption	Up to 12 W (w/o analog audio), up to 25 W (w/ analog audio)
External Power Supply (optional)	Input: 110 - 220 V AC, 50/60 Hz Output: 48 V DC, 0.83 A
Safetv	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
L	

(1) UHDp60 only supports 4:2:0.

(2) Scaling and deinterlacing is not supported at 1080i.

(3) All VESA resolutions are 60 Hz.

(4) Dual-channel decoders support up to UHDp30 with Dolby Vision content.

(5) External power supply is required when using the analog audio interface.

(6) Maximum distance per hop 330 ft (100 m), depending upon network configuration.





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