OmniStream™
Dual-Channel Networked AV Encoder

Introduction

The Atlona **OmniStream™ 112** (**AT-OMNI-112**) is a networked AV encoder with two independent channels of encoding for two HDMI 2.0 sources up to 4K @ 60 Hz and HDR (High Dynamic Range), plus embedded audio and RS-232 or IR control pass-through. It is part of the OmniStream Series, designed for high performance, flexible distribution of AV over standard off-the-shelf Gigabit Ethernet switches in commercial audio visual applications. The OmniStream 112 is HDCP 2.2 compliant and ideal for the latest Ultra High-Definition and HDR sources. It features advanced high-quality VC-2 visually lossless video compression technology with user selectable video-quality optimization engines designed for computer-generated imaging, or motion video content. The Atlona OmniStream™ 112 achieves extremely low, sub-frame latency when paired with OmniStream Decoders. This dual-channel encoder is housed in a half-width rack with front-to-back air flow enclosure, and is ideal for high-density, compact installation in a centralized equipment location.

Applications

- **Enterprises and other large organizations**
  Maximize AV application flexibility by enabling content sharing within single meeting rooms, or corporate-wide broadcasting to every connected screen.

- **Corporate and university campuses with the need to distribute AV within the facility**
  OmniStream allows virtually unlimited AV system scope and scale, desirable for enterprise local area networks. SMPTE-standard FEC (Forward Error Correction) ensures robust, reliable image presentation at every endpoint.

- **Applications in which any AV content or resource can be shared anywhere in the system**
  AV over IP technology removes the restrictions associated with interconnecting sources and displays through standard matrix switching architecture.

Key Features

AV encoder for HDMI up to 4K/UHD, plus embedded audio and RS-232 or IR control pass-through

- Streams video, audio, and control, with the flexibility of transmitting them together or to separate network destinations.
- Allows wide-ranging versatility for integrators to design systems to specific requirements.

Dual-channel AV encoding

- Two independent channels of encoding in a single box, with dedicated processing for each channel.
- Allows high-density rack installations and reduces box count for locations with limited space for equipment.

Networked AV redundancy

- Deliver two duplicate streams from an HDMI source into two separate networks.
- Maximizes system reliability and meets IT requirements for system redundancy and failover.

Supports UHD @ 60 Hz plus HDR formats

- Ideal for new and emerging UHD and HDR-capable sources and displays.
- Supports HDR10 @ 60 Hz and 10-bit color, as well as HLG (Hybrid Log-Gamma) for current 60p HDR broadcast services.
- Supports Dolby® Vision™ @ 60 Hz and 12-bit, delivering best-in-class dynamic HDR experience. Included as of firmware version 1.2.5.

High performance, visually lossless video compression

- SMPTE 2042 VC-2 light video compression with absolutely minimal, sub-frame latency from encode to decode.
- Ensures optimal, pristine-quality graphics and motion video presentations, and is ideal for applications requiring interactivity.

HDCP Compliance

- Adheres to the latest HDCP 2.2 specification for High-bandwidth Digital Content Protection.
- Allows protected content streams to pass between authenticated devices.
- HDCP can be disabled through AMS, allowing

content to pass to non-compliant displays and teleconference systems. Protected content is not transmitted.

Network error resilience with FEC (forward error correction)

- Compensates for the possibility of AV packet losses in large systems spanning several networks.
- Enables consistent, reliable performance in enterprise-wide networked AV implementations.

Simplify integration with plug-and-play network switch compatibility

- Streamline system setup by using Atlona Certified Switch configurations for popular models from Cisco, Pakedge, and many others.
- Saves installation time and costs without the need to manually configure a network switch.

Local or PoE (Power over Ethernet) powering

- With PoE, encoders can conveniently be powered over the network from a PoE-equipped network switch.
- PoE simplifies integration without the need for local AC power, and allows centralized power monitoring and management.
- Optional AT-PS-48083-C power supply available.

Secure content distribution with AES-128 encryption

- Any AV presentation content can be secured by scrambling IP streams.
- Ideal for government, military, and enterprise applications, as well as meeting IT security requirements.

Supports industry-standard, network security features and protocols

- HTTPS, Telnet, SSH, WebSockets with TLS, and AES-128 encryption.
- Features IEEE 802.1x which meets IT authentication requirements for improved network security.

Key Features (continued)

AES67-compatible audio over IP streaming

- OmniStream features industry standard, AES67-compatible networked audio streaming between encoders, decoders, and audio interfaces.
- Streams multi-channel PCM up to 7.1 channels.
- Simultaneously stream AES67 and native RTP.

Simultaneous OmniStream and AES67 audio streaming

- OmniStream encoders can deliver native OmniStream RTP networked audio alongside an AES67-compatible audio stream.
- RTP audio streaming supports multi-channel audio formats and PCM up to 7.1 channels.
- Encoders also can provide multi-channel PCM audio downmixing.
- Use simultaneous AES and RTP audio streaming to send multi-channel PCM to OmniStream decoders, and downmixed PCM audio to an OmniStream 238 audio bridge.

2x1 HDMI input switching[1]

- HDMI input switch between two inputs.
- Supports automatic input switching, as well as manual input switching (using the front panel buttons), Velocity Control System, AMS, and the stand-alone web interface.

Enhance AV presentations with visual enhancements

- Provide corporate or institutional branding by overlaying a logo.
- Display a full-screen image as a backup in an event of an interruption in an AV stream, or between presentations.
- Identify and label presentation content with static or scrolling text.

EDID management

- Manages EDID communications between source and encoder; allows integrators to force a source to a preferred resolution.
- Ensures desired audio formats and video resolutions are provided to the AV system.
- EDID can be assigned from a display connected to an OmniStream decoder.

Encoder grouping

- Assign several encoders to a logical group.
- Allows a decoder to automatically switch between encoders in the group upon input detection.
- Create scalable, flexible switching systems with encoders placed wherever AV sources may be located.

Encoder daisy-chaining[2]

- Use a single network switch port to connect an unlimited number of encoders.
- The streamed source can be switched, either automatically or manually, using the Atlona Velocity™ control system or by pressing the INPUT button on the front panel.

Audio processing and pass-through

- Streams PCM, Dolby® Digital, Dolby Digital Plus™, Dolby TrueHD, Dolby Atmos®, DTS® Digital Surround™, DTS-HD Master Audio™, and DTS:X®.
- Supports multichannel PCM audio downmixing to two-channel PCM.

Automatic display control

- Enables display and volume control through AMS and front panel controls.
- Eliminates the need for a complex control system.

System Management

- Intuitive standalone web GUI.
- Atlona Management System (AMS). Web-based interface for configuration and management of OmniStream systems, including endpoints, AV, and data cross-connections.

Compact enclosure

- Installs side-by-side in a rack with the optional AT-OMNI-1XX-RACK-1RU rack mount shelf.

Award-winning 10-year limited product warranty

- Ensures long-term product reliability and performance in residential and commercial systems.
- Specify, purchase, and install with confidence.

Specifications

Video	
HDMI Specification[3]	HDMI, HDCP 2.2
UHD/HD/SD	4096×2160 (DCI) @ 60[4]/30/24 Hz 720x576p @ 50 Hz 3840×2160 (UHD) @ 60[4]/50/24/25/30 Hz 720x576i @ 25 Hz 1920x1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz 720x480p @ 59.94/60 Hz 1920x1080i[5] @ 25/29.97/30 Hz 720x480i @ 29.97/30 Hz 1280x720p @ 30/50/59.94/60 Hz
VESA[6]	2560x1600 1366x768 1920x1200 1360x768 1680x1050 1280x1024 1600x1200 1280x800 1600x900 1280x768 1440x900 1152x768 1400x1050 1024x768
Virtual Reality	2160×1200 @ 90[4] Hz (HTC® Vive)
Color Space	YUV, RGB

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

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

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

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

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

Connectors	
HDMI	2 - Type A, 19-pin, female, locking
ETHERNET[7]	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 1 and 2
Power	1 - Euroblock, 2-pin

Indicators and controls	
PWR	1 - LED, tricolor (red, amber, green)
HDMI	2 - LED, bicolor (red, green)
LINK	2 - LED, bicolor (red, green)
Control Buttons	5 - Momentary, tact-type, backlit (blue) DISPLAY: Triggers CEC or RS-232 display power on/off commands from cross-connected decoders. INPUT: Switches between HDMI inputs. VOLUME: Triggers CEC or RS-232 volume up/down commands from cross-connected decoders. ID: Sends an identification broadcast message over the network to any listening devices.
Reboot	1 - Momentary, tact-type

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

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

Chassis	
Dimensions (H x W x D)	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

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

Accessories

Description	SKU
48 Volt 0.83 Amp Power Supply	AT-PS-48083-C
Rack Mount Shelf for OmniStream	AT-OMNI-1XX-RACK-1RU
IR Emitter Cable for OmniStream Systems	AT-OMNI-IR-TX
IR Receiver Cable for PoE Extenders	AT-IR-SC-RX
LinkConnect™ HDMI to HDMI Cable	AT-LC-H2H

Footnotes

(1) In switching mode, encoder density is one per unit.

(2) Daisy-chaining does not support PoE. Each encoder must be powered using the external power supply (Atlona part no. AT-PS-48083-C).

(3) HDMI 2.0b and HDCP 2.2 are only supported by hardware revision C or later. Previous hardware revisions use HDMI 1.4 and HDCP 1.4.

(4) Only supported when Video Quality Optimization is set to Video mode.

(5) Scaling and deinterlacing are not supported at 1080i.

(6) All VESA resolutions are 60 Hz.

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

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