Introduction

The Atlona **AT-OMNI-111** is a networked AV encoder for HDMI sources up to 4K/60 4:4:4 and HDR (High Dynamic Range), plus embedded audio and RS-232 or IR control pass-through. OmniStream is designed for high performance, flexible distribution of AV over standard, off-the-shelf Gigabit Ethernet switches in commercial audiovisual applications. The OMNI-111 encoder features the advanced VCx™ codec which delivers 4K/60 4:4:4 video from encode to decode, with artifact-free presentation of computer-generated content and fast-motion video, and ultra-low latency less than one frame. VCx offers high-efficiency coding with simultaneous 4K/60 4:4:4 and 1080p streaming through dual encoders and scaling engines built into the OMNI-111. This encoder is housed in a half-width rack enclosure with front-to-back air flow, and is ideal for high-density, compact installation in a centralized equipment location.

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 between buildings**
  OmniStream allows virtually unlimited AV system scope and scale. For very large, expansive or interconnected LANs, 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.

- **Overflow rooms, such as in universities and conference centers**
  The OMNI-121 decoder with multiview processing, together with OMNI-111 encoders can be used to duplicate the AV presentation in the main venue, while also displaying a PIP (picture-in-picture) window of a camera shot for the presenter.

Key Features

Best-in-class AV over IP performance and reliability over Gigabit Ethernet

- Delivers pristine image quality and ultra-low latency over 1 Gbps (GbE) networks.
- Ideal for integration over new or legacy network cable infrastructure – including CAT 5e.

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.

Supports 4K/60 4:4:4 plus HDR formats

- Supports HDR10 @ 60 Hz and 10-bit color, as well as HLG (Hybrid Log-Gamma) for 60p HDR broadcast services.
- Supports Dolby Vision™ @ 60 Hz and 12-bit color.

Advanced VCx codec

- Delivers 4K/60 4:4:4 with artifact-free presentation of computer-generated content and fast-motion video.
- Ultra-low encode-to-decode latency less than 1 frame.

High-efficiency coding

- Enables simultaneous 4K/60 4:4:4 and 1080p streams over Gigabit Ethernet.
- Dedicated encoder and scaling engine for each stream.
- VCx codec also allows numerous 4K streams over 10 Gigabit uplinks between network switches.

Dual, integrated high-quality scalers

- OMNI-111 includes an integrated, high-performance scaling engine for each encoder.
- Provides upscaling and downscaling for a wide array of 4K/UHD, HD, and VESA resolutions.

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 Velocity Device Manager, allowing content to pass to non-compliant displays and teleconference systems. Protected content is not transmitted.

Ultra-fast switching between 4K/60 video streams[1]

- Provides instantaneous and precise video and audio HDMI switching.
- Works between streams at different resolutions and frame rates.
- Ideal for mission-critical applications where stable, fast AV switching is required.

Key Features (continued)

Encoder grouping

- Assign up to eight 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.

Multiview window processing (with AT-OMNI-121 decoder)

- Available for OMNI-121 decoder, together with OMNI-111 encoders.
- Decoder ingests up to 4 streams and displays them on a single screen, without the need for a dedicated windowing processor.
- Encoder sends a primary stream for full-screen display, and a secondary stream for multiview.

Integrated Ethernet link testing

- Tests integrity of the network infrastructure between encoders and decoders (cabling, terminations, switch, bandwidth).
- Allows quick, easy verification or troubleshooting from the encoder and decoder web GUI – no need to visually check each display location.

Thumbnail preview of encoded video streams

- View encoder streams as thumbnails on a Velocity touch panel or through the web GUI.
- Ideal for previewing sources before selecting for display.
- Also ideal for validating system operation.

Networked AV redundancy

- Maximizes system reliability and meets IT requirements for system redundancy and failover.

Network error resilience with FEC (forward error correction)

- Compensates for 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®, NETGEAR®, and many others.
- NETGEAR switches also available from Atlona (United States and Canada only).
- 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.

Key Features (continued)

Secure content distribution with AES-128 encryption

- Any AV presentation content can be secured by scrambling IP streams.
- Ensures secure content delivery across the network.
- 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 enhanced network security.

AES67-compatible

- OmniStream supports industry standard, AES67-compatible networked audio streams to decoders and audio interfaces.
- Supports multi-channel PCM up to 7.1 channels.

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.

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.

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 multi-channel PCM audio downmixing to two-channel PCM.

System management

- Intuitive standalone web GUI.
- Velocity Device Manager – web-based interface for configuration and management of OmniStream systems, and AV over IP cross-connections.

Key Features (continued)

Compact enclosure

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

Included accessories

- Surface mounting brackets and RS-232 / IR captive screw connector.

Specifications

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

Encoding				
Density	Dual encoding engine with independent scalers (VCx codec only)			
Compression Format	VCx and VC-2 (SMPTE-2042)			
Video Quality Optimization	User-selectable: PC Application or Video mode (VC-2 codec only)			
Chroma Subsampling	Chroma	VCx	VC-2 Video	VC-2 PC Application
	4:4:4	Yes	No	Yes
	4:2:2	Yes	No	Yes
	4:2:0	Yes	Yes	No
Color Depth	8-bit, 10-bit, 12-bit			
HDR	HDR10, HLG, Dolby® Vision™			
Bit Rate	Configurable up to 900 Mbps[4]			
Scaler[5]	Encoder 1		Encoder 2	
	Up and down, 3840x2160 max.		Up and down, 1920x1080 max.	
Latency	0.5 frame (e.g. 1080p @ 60 Hz latency is < 8 ms between encoder and decoder). 1.5 frames in Fast Switching mode (e.g. 1080p @ 60 Hz latency is < 24 ms between encoder and decoder). Note: Unusual network configurations may increase overall latency.			
Thumbnails	Number of thumbnails: 1 per HDMI input Resolution: 320x180px File format: JPG Update frequency: 2 seconds			

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

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 9600 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	1 - Type A, 19-pin, female, locking
ETHERNET[6]	1 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Captive screw, 6-pin (2 ports); RS-232 on port 1, IR on port 2
Power	1 - Captive screw, 2-pin

Indicators and Controls	
PWR	1 - LED, tricolor (red, amber, green)
HDMI	1 - LED, bicolor (red, green)
LINK	1 - LED, bicolor (red, green)
ID	1 - Momentary, tact type Provides two separate functions: (1) Sends an identification broadcast message over the network to any listening devices. (2) Reset the unit to factory-default settings.
Reboot	1 - momentary, tact-type

Power	
PoE	IEEE 802.3af
Consumption	Up to 12 W
BTU/h	40.9
External Power Supply (optional)	Input: 110 - 220 V AC, 50/60 Hz Output: 48 V DC, 0.83 A

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

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

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

Compliance		
NDAA-889	Yes	
TAA	Yes	

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

Footnotes

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

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

(3) All VESA resolutions are 60 Hz.

(4) Bandwidth is shared between both encoding engines.

(5) Scaler is limited to a fixed list of resolutions. Refer to documentation for more information.

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

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

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