



## Introduction

The Atlona **OmniStream™ 121 (AT-OMNI-121)** is a single-channel networked AV decoder for HDMI 2.0 / HDCP 2.2 output supporting resolutions up to 4K @ 60Hz and HDR (High Dynamic Range), plus audio embedding / de-embedding, 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. It features advanced high-quality VC-2 visually lossless video decoding technology with user selectable video-quality optimization engines designed for computer-generated imaging, or motion video content. The Atlona OmniStream™ 121 achieves extremely low, sub-frame latency when paired with OmniStream Encoders. This single-channel decoder 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 between buildings**  
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 decoder output for HDMI 2.0 up to 4K/UHD, plus de-embedded audio and RS-232 or IR control pass-through

- Decode video, audio, and control, with the flexibility of receiving them together or from separate network sources.
- Allows wide-ranging versatility for integrators to design systems to specific requirements.

### Networked AV redundancy

- Monitors AV streams and automatically switches to the backup stream if packet losses are detected.
- 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 decoding

- SMPTE 2042 VC-2 video decoder 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 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 Atлона Certified Switch configurations for popular models from Cisco, Packedge, 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 standard PoE, decoders 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 decryption

- Decrypt AES-128 content from any OmniStream encoder.
- 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, SCP, 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

- OmniStream supports industry-standard AES67-compatible networked audio streams from encoders and audio interfaces.
- Supports multichannel PCM up to 7.1 channels.

### Audio embedding and de-embedding<sup>(1)</sup>

- Receives up to 7.1 channels of PCM audio as AES67 or native RTP from compliant sources and embeds audio on to the HDMI output or outputs audio using the analog audio interface.
- Receives audio from analog interface and embeds the audio on to the HDMI output.

### Built-in high-quality scaler

- Integrated high-performance scaling engine provides upscaling and downscaling for a wide array of UHD, HD, and VESA resolutions.
- Ideal for applications when the video output resolution needs to match the different capabilities and requirements of sources, displays, codecs, and other equipment.
- Processing for video walls with portrait and landscape displays up to 16x16 @ 4K/30 and 2x2 @ 4K/60 with precision wall-tile alignment.

### 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.

### Ultra-fast switching<sup>(2)</sup>

- Eliminates black screen displays during HDMI and HDCP handshake.
- High-quality video scalers and internal frame rate converters provide instantaneous and precise video and audio HDMI switching.
- Ideal for mission-critical applications where stable, fast AV switching is required.

### EDID management

- EDID from a connected display can be copied and stored; EDID can also be assigned to a specific timing.
- Ensures desired audio formats and video resolutions are provided to the AV system.

### Audio processing and pass-through

- Multichannel 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.

### Display control

- Supports IR, bidirectional RS-232, and CEC to control connected displays.
- Bidirectional conversion of control data from TCP/IP to and from RS-232.

### System Management

- Intuitive standalone web GUI.
- Atлона Management System (AMS). Web-based interface for configuration and management of OmniStream systems, and AV over IP 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 commercial systems.
- Specify, purchase, and install with confidence.

## Specifications

Video	
HDMI Specification	HDMI, HDCP 2.2
UHD/HD/SD	4096x2160 (DCI) @ 60 <sup>(3)</sup> /30/24 Hz 3840x2160 (UHD) @ 60 <sup>(3)</sup> /50/24/25/30 Hz 1920x1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz 1920x1080i <sup>(4)</sup> @ 25/29.97/30 Hz 1280x720p @ 30/50/59.94/60 Hz
VESA <sup>(5)</sup>	2560x1600 1920x1200 1680x1050 1600x1200 1600x900 1440x900 1400x1050
Virtual Reality	2160x1200 @ 90 <sup>(3)</sup> Hz (HTC® Vive)
Color Space	YUV, RGB

Decoding	
Density	Single decoding engine
Decoding Format	VC-2 (SMPTE-2042)
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0
Video Quality Optimization	User-selectable: PC Application or Video mode
Color Depth	8-bit, 10-bit, 12-bit
HDR	HDR10, HLG, Dolby® Vision™
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	1080p @ 60 Hz

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
Analog audio <sup>(1)</sup>	Balanced output: +4 dBu nominal gain, +20 dB headroom Frequency response: 20 Hz to 20 kHz, ± 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	
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 <sup>(6)</sup>	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 <sup>(7)</sup>	1 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Euroblock, 6-pin (2 ports); RS-232 on port 1 only, IR on port 2 only
AUDIO	1 - Euroblock 10-pin; AUDIO IN/OUT; accepts balanced or unbalanced line
Power	1 - Euroblock, 2-pin

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

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

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

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) External power supply is required when using the analog audio interface.
- (2) UHD video is output at 1080p in ultra-fast switching mode. Logo / image display and 1080i video are not supported.
- (3) Only supported when Video Quality Optimization is set to Video mode.
- (4) Scaling and deinterlacing are not supported at 1080i.
- (5) All VESA resolutions are 60 Hz.
- (6) Slate insertion is limited to 1080p only.
- (7) Maximum distance per hop is 330 feet (100 meters), depending upon network configuration.

## Copyright, Trademark, and Registration

© 2021 Atlona Inc. All rights reserved. “Atlona” and the Atlona logo are registered trademarks of Atlona Inc. Pricing, specifications and availability subject to change without notice. Actual products, product images, and online product images may vary from images shown here.



The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI licensing Administrator, Inc.



Dolby, Dolby Atmos, and the double-D symbol are registered trademarks of Dolby Laboratories Licensing Corporation.



For DTS patents, see <http://patents.dts.com>. Manufactured under license from DTS, Inc. DTS, the Symbol, DTS and the Symbol together, and Digital Surround are registered trademarks and/or trademarks of DTS, Inc. in the United States and/or other countries. © DTS, Inc. All Rights Reserved.

All other trademark(s), copyright(s), and registered technologies mentioned in this document are the properties of their respective owner(s).