



Introduction

The Atлона **OmniStream™ R-Type 512 (AT-OMNI-512)** is a networked AV encoder with two independent channels of encoding for two HDMI 2.0 sources up to UHD @ 60 Hz and HDR (High Dynamic Range), plus embedded audio and RS-232 or IR control pass-through. It is part of the OmniStream R-Type Series, designed for high performance, flexible distribution of AV over standard off-the-shelf Gigabit Ethernet switches in residential and light commercial audio visual applications. The OmniStream 512 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, optimized for motion video content. The Atлона OmniStream™ 512 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

- **Multi-room or whole-house AV systems**
OmniStream R-Type enables cost-effective system design, allowing the connection of any number of sources to any number of displays, throughout a residence.
- **Bars, restaurants, offices, meeting spaces, and other commercial environments**
Expand the system by adding encoders and decoders, making video wall, digital signage, and many other applications simple and easy.
- **Home theater and gaming**
OmniStream™ R-Type delivers the uncompromising performance of traditional baseband video systems, making it ideal for applications where both image quality and low latency are crucial.

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.

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.

Simplify integration with plug-and-play network switch compatibility

- Streamline system setup by using Atlona Certified Switch configurations for popular models from Cisco, Luxul, 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 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.

Supports industry-standard, network security features and protocols

- HTTPS, Telnet, SSH, WebSockets with TLS, and AES-128 encryption.

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.

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 multichannel PCM audio downmixing to two-channel PCM.

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.
- Encoder delivers a full-bandwidth stream (900 Mbps) of test data packets to decoders joined to a multicast group.
- Reports percentage of packets successfully received at each decoder.

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	HDMI, HDCP 2.2
UHD/HD	4096×2160 (DCI) @ 30/24 Hz 3840×2160 (UHD) @ 60/50/24/25/30 Hz 1080p @ 23.98/24/25/29.97/30/50/59.94/60 Hz
VESA ⁽²⁾	1080i ⁽¹⁾ @ 25/29.97/30 Hz 720p @ 30/50/59.94/60 Hz
	2560x1600 1920x1200 1680x1050 1600x1200 1600x900 1440x900 1400x1050
	1366x768 1360x768 1280x1024 1280x800 1280x768 1152x768 1024x768
Color Space	YUV, RGB

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

Audio	
Pass-through	LPCM 2.0 LPCM 5.1 LPCM 7.1
	Dolby® Digital Dolby Digital Plus Dolby TrueHD
	Dolby Atmos® DTS® DTS-HD Master Audio™
Down-mixing	Multichannel LPCM to two-channel LPCM
Sample Rate	32 kHz, 44.1 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	mDNS, LLDP, SAP
Management	HTTPS, SSH, Telnet, and WebSockets with TLS
IP Multicast	IGMPv2 and IGMPv3 support

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

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 ⁽³⁾	2 - RJ45, 10/100/1000 Mbps
RS-232 / IR	1 - Euroblock, 6-pin (2 ports); RS-232 or IR on ports 1 and 2
Power	1 - Euroblock, 2-pin

Indicators and controls	
PWR	1 - LED, tricolor (red, amber, green)
HDMI	2 - LED, bicolor (red, green)
LINK	2 - LED, bicolor (red, green)
ID	1 - Momentary, tact-type, backlit (blue); sends an identification broadcast message over the network to any listening devices.
Reboot	1 - Momentary, tact-type

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

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) Scaling and deinterlacing are not supported at 1080i.
- (2) All VESA resolutions are 60 Hz.
- (3) Maximum distance per hop is 330 feet (100 meters), depending upon network configuration.

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