Telos Alliance® xNode2

Proven, reliable, trusted - and ready to meet today's AoIP standards and demands.

Telos Alliance®

Telos Alliance® xNode2 IP-Audio Interfaces
The Next Generation of the Industry's Most Trusted AoIP Interface

Control with Pathfinder

AES67 Livewire+™

Overview

The xNode2 is a lightweight, half-rack, high-performance IP-Audio interface from Telos Alliance that is loaded with advanced features and capabilities. They're fanless, which means they're noiseless too. Versatile mounting options let you deploy two xNode2s in just 1RU of rack space, or on ceilings, walls, and under counters with an available wall-mount kit. xNode2s have studio-grade audio performance specs. Redundant power options (using AC mains and Power-over-Ethernet plus) and dual 1000MB network interfaces are included. And xNode2s are fully AES67-compliant, so they work with all AES67 audio gear. Along with AES67 comes Livewire advertisement and Session Announcement Protocol (SAP).

xNode2s are available in Analog, AES/EBU, Microphone-level, Mixed-Signal, and GPIO versions to handle virtually any signal encountered in today's broadcast studio.

Features

- Fanless design with cast-aluminum heat-sinks is completely silent in-studio. Front-panel heat sinks are cooled by ambient air, not "rack air," eliminating overheating worries.
- xNode2s are "universal translators" that support a huge installed base of Livewire+ hardware as well as audio streams from other AES67-compliant devices.
- High-resolution front-panel multi-function LCD color display meters inputs and outputs or GPIO status and gives software and other status information.
- Power-efficient: xNodes use just 16 Watts each.
- Exclusive redundant power plan uses AC and Power over Ethernet plus (IEEE 802.3at) supplied by compliant Ethernet switches. Two front-panel LED glow when AC mains power is used and when PoE+ is used.
- SMPTE 2022-7, Seamless Protection Switching of RTP Datagrams: Dual NICs allow you to stream to separate network branches for RTP audio redundancy. Automatic failover to the available RTP stream.
- Built-in Syslog server with configurable event filter and external logging.
- Synchronize your AES master clock to a designated xNode AES/EBU input to keep all of your AES streams synchronized to the house clock.
- xNode2s use premium components, including rugged cast aluminum faceplates and heat sinks, high-resolution LCD displays, bulletproof power supplies designed for high availability telecom applications, and studio-quality SRCs with recording-studio specs.

Silent, fanless, and space-efficient
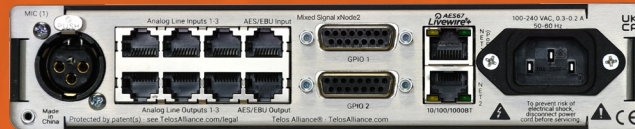
- I/O connections via industry-standard RJ-45 audio connectors or high-density DB-25 connections, both available prefabricated and ready to attach in seconds.
- Versatile mounting options: Use freestanding, rack singly or side-by-side in 1 RU, or wall-mount using an optional surface-mount kit.
- Analog xNode2 inputs can be configured to supply four stereo audio channels or eight true mono channels. Outputs support the same variety of selections, easily selectable in software via the built-in web interface.
- On the Analog, AES/EBU, Mixed Signal, and Microphone xNodes, a fully configurable mixing matrix allows for mixing of both physical and network inputs, stream conversion, and a multitude of other unique solutions.
- SAP Support

In Depth

Compact. Powerful. And more advanced than ever.

One day, all audio equipment will be networked. Until then, there are xNode2s.

xNode2s give you an easy way to add non-networked audio devices to your studio network. They pack a lot of I/O into a very small space. And xNode2s are so simple to set up, they nearly configure themselves.

All xNode2s feature a high-resolution LCD color front panel display and two "soft" buttons to provide status information and assist with initial setup, and discrete LEDs that give at-a-glance information about the xNode2's power configuration. To ensure ultra-reliable network operations and extremely low delay, xNode2s run Linux on an embedded processor, and a built-in web server in each xNode2 gives you remote configuration and control—in an intuitive, easy-to-understand manner—using any standard web browser.

xNode2s are loaded with features designed to ensure the uptime of your network. Dual Ethernet ports can provide redundant RTP streaming to separate network segments. Redundant power capability with automatic switchover enables xNode2s to run on house mains or PoE+ (Power over Ethernet Plus), letting the network switch itself supply power, and enabling easy single-cable setup in places where AC power isn't practical. Built-in Syslog servers with a configurable event filter are provided.

The xNode2 custom Matrix view or Wire view feature is one of the most flexible and capable virtual mixers available. It lets users mix physical inputs (like mics and playback devices) with digital network sources (like stream inputs) to a single output. With the xNode2 custom feature, broadcasters can bypass the studio console during automated dayparts and send on-air mixes straight to the transmitter thus simplifying audio workflows. This one-of-a-kind solution offers the power and flexibility of a big studio mixer switching system in a compact ½ RU device!

xNode2s are convenient, too. For example, a Microphone xNode2 placed in a studio can take audio from microphones and also provide outputs to associated studio monitors and headphones. An xNode2 in the rack room can collect audio from network feeds, codecs and other shared sources for system-wide use while providing handy outputs for audio processors and other terminal-room gear.

xNode2s are versatile and cost-efficient. Since they're half the size of other AoIP interfaces, they cost less. And you can mix-and-match I/O as needed: Choose between analog, AES/EBU, or Mic-level inputs, without paying for ports you won't use. High-density GPIO xNode2s let you easily provide logic and control for your audio source devices.

xNode2s are also fanless, so you can tuck one anywhere you need I/O without worrying about cooling fans or heat—they consume only 16 Watts of power! Two xNode2s fit side-by-side in a single rack space using the included rack-mount kit. Or, mount them to walls, ceilings, or under countertops, with an optional surface-mount kit.

Five different xNode2s provide analog and AES ins and outs, microphone inputs and GPIO logic ports, wherever you need them. No need for "home runs" to a central rack—one CAT-5 cable connection is all an xNode2 needs to interface multiple channels of bi-directional audio to your network.
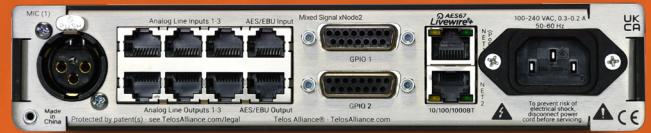
Analog xNode2

The Analog xNode2 has 8 mono or 4 stereo balanced line-level inputs and 8 mono or 4 stereo balanced line-level outputs, on RJ-45 and DB-25 connectors. The short-circuit protected outputs can deliver up to +24dBu before clipping. Telos Alliance uses only studio-grade A/D/A converters and low-noise components, so that each Analog node provides superior audio performance for high-end studio use.

AES/EBU xNode2

Our AES/EBU xNode2 has 4 AES/EBU inputs and 4 AES/EBU outputs. Left and right input signals may be split and routed independently as mono signals. Stunning performance specs include 48 kHz sampling rate, 126dB of dynamic range, and <0.0003% THD. Sample rate conversion is available on all inputs; the unit can also be synchronized to a house clock to provide sync to your entire Axia network.

Microphone xNode2

The Microphone xNode2 has four professional-grade microphone preamps with selectable Phantom power and Line input options. Software-adjustable gain adjusts the Microphone preamp. There are also four balanced analog line outputs to conveniently deliver headphone and studio monitor feeds back to your talent. Inputs and outputs are presented both on easy-to-install RJ-45s and high-density DB-25s, both of which connect to easily available 3rd-party breakout cables, to suit your connection preference.

Mixed-Signal xNode2
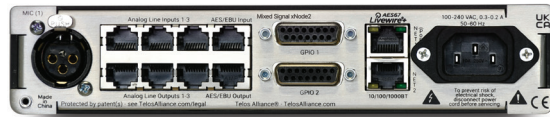
The Mixed-Signal xNode2 is your utility player; perfect for places that require a mix of different audio I/O types. It provides 1 mic input, 3 analog line inputs, 3 analog line outputs, 1 digital AES3 input, 1 digital AES3 output, and 2 GPIO ports – truly a "jack of all trades."

GPIO xNode2

GPIO xNode2 provides 6 general-purpose logic ports for machine control of studio peripherals – audio devices, loudspeaker muting relays, signal lamps, etc. – each with 5 opto-isolated inputs and 5 outputs. A logic port can be associated with any audio input or output and routes control data transparently along with the audio.

Specifications

Microphone Preamplifiers

- Source Impedance: 150 Ohms
- Input Impedance: 4k Ohms minimum, balanced
- Input type: Line or Microphone
- Microphone PreAmp Gain: Adjustable, 14 dB to 68 dB
- Phantom power: +48VDC, switchable

Analog Line Inputs

- Input Impedance: >40k Ohms, balanced
- Nominal Input Range: +4 dBu
- Input Headroom: 20 dB above nominal input

Dual Ethernet ports and SMPTE 2022-7 Seamless Protection Switching
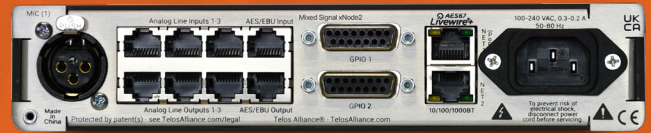
Analog Line Outputs

- Output Source Impedance: <50 Ohms balanced
- Output Load Impedance: 600 Ohms, minimum
- Nominal Output Level: +4 dBu
- Maximum Output Level: +24 dBu

Digital Audio Inputs and Outputs

- Reference Level: +4 dBu (-20 dB FSD)
- Impedance: 110 Ohm, balanced
- Signal Format: AES3 (AES/EBU)
- AES3 Input Compliance: 24-bit with sample rate conversion
- AES3 Output Compliance: 24-bit
- Digital Reference: Internal (network timebase) or external reference 48 kHz, +/- 2 ppm
- Internal Sampling Rate: 48 kHz
- Input Sample Rate: 32 kHz to 192kHz
- Output Sample Rate: 44.1 kHz or 48kHz
- A/D Conversions: 24-bit, Delta-Sigma, 256x oversampling
- D/A Conversions: 24-bit, Delta-Sigma, 256x oversampling

Frequency Response

- Any Input to Any Output: +/- 0.5 dB, 20 Hz to 20 kHz

Latency

- Analog Input to Analog Output, 4.5ms including network, converters, and mixing process
- Digital Input to Digital Output, 3.5ms including network mixing engine (ASRC off)

Dynamic Range

- Analog Inputs to Analog Outputs 104dB referenced to 0dBFs, 111dB A-weighted
- Analog Inputs to Digital Outputs 110dB referenced to 0dBFs, 113dB A-weighted
- Digital Inputs to Analog Outputs 110dB referenced to 0dBFs, 115dB A-weighted
- Digital Inputs to Digital Outputs 126dB

Equivalent Input Noise

- Microphone Preamp: -130 dBu, 150 Ohm source, reference -50 dBu input level

Total Harmonic Distortion + Noise

- Mic Pre Input to Analog Output: < 0.005%, 1 kHz, -36dBu input, +18dBu output
- Analog Input to Analog Output: < 0.005%, 1 kHz, +18dBu input, +18dBu output
- Analog Input to Digital Output: < 0.004%, 1 kHz, +18dBu input, -6dBFs output
- Digital Input to Analog Output: < 0.004%, 1 kHz, -6dBFs input, +18dBu output
- Digital Input to Digital Output: < 0.0003%, 1 kHz, 0dBFs

Crosstalk Isolation, Stereo Separation and CMRR

- Analog Line Stereo Separation: < -90dB, 20Hz to 20kHz
- Analog Line Input CMRR: < - 85dB, 20Hz to 20kHz
- Microphone Input CMRR: < -70 dB , 20 Hz to 20 kHz

Power Supply AC Input

- Auto-Ranging Supply, 95VAC to 260 VAC, 50Hz to 60Hz, IEC Receptacle, Power Consumption: 16 Watts

Operating Temperatures

- 0 degree C to +40 degree C, <90% humidity, no condensation

Dimensions

- 8.5" (22 cm) wide; two may be mounted side-by-side in a standard 1RU rack space; 1.72" (4.4 cm) height, 11.75" (30 cm) depth

Regulatory

North America: FCC and CE tested and compliant, power supply is UL approved.

Europe: Complies with the European Union Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended by Commission Decisions 2005/618/EC, 2005/717/ EC, 2005/747/EC (RoHS Directive), and WEEE.