nion nE

MediaMatrix®
Peavey Electronics Corporation

DESCRIPTION

The NION (n. nee-on) nE is a programmable digital audio processing node designed for professional and commercial audio and communications applications. Coupled with 3 floating-point DSPs and the industry's most efficient audio algorithms, the NION nE extends the world-class power of MediaMatrix to levels never seen before at a lower price that will be hard to resist. The internal processing core is supported by a wide range of features including MediaMatrix's Scalable I/O Architecture, a modular I/O scheme that supports a variety of optional plug-in cards for maximum versatility. The four module bays support up to 64 simultaneous analog audio channels using NIO-AES cards (or up to 32 channels using 8 channel Nio cards). The optional CobraNet or Dante port provides another 64 channels, for a total of 128 simultaneous configurable audio channels. The NION nE is built on an embedded Linux architecture designed for stable, efficient and robust performance. Low-latency audio across all I/O ports makes NION perfect for performance audio projects, in addition to applications where a large amount of audio processing is required. Software support includes a Windows-based interface that works with multiple nodes across an Ethernet network. Additional support for third party control and SNMP management tools is included. Control interfacing is provided by both RS-232 and EIA-422/485 ports, while a configurable GPIO system makes interfacing with hard-contacts and logic systems easier than ever.

FEATURES

- Floating point DSP Engine with 3 DSP chips
- World-famous MediaMatrix audio algorithms
- 64 channels of audio I/O
- Additional 32x32 channels of audio I/O available with optional CobraNet or Dante module
- 32 bit processing engine
- 24 bit conversion
- Scalable I/O architecture with four NIO-card bays
- Low latency audio performance
- Network-centric architecture
- Supports centralized, distributed or hybrid processing
- Integrated serial support

- Robust Linux embedded system controller
- Integrated flash-based storage
- Windows configuration and control client
- Full support for SNMP network management tools
- Universal mini-ATX industrial-grade power supply
- Software support for large-scale multi-node systems
- Advanced DSP compiler
- Configurable GPIO (compatible DIN rail package available separately)
- Transparent control grouping across physical nodes
- Supports a range of sample rates from 22.05KHz to 96KHz
- Stand alone or combined operation

Specifications

Rear Panel Connections

Mains Power: 100v > 240v 50/60 Hz 300W A/C
LAN: Female RJ-45 - transports control and communications via Ethernet on Category 5e (CAT5) cabling.
EIA-422/485 Serial: Female DB-9 - supports bidirectional EIA-422/485 multi-dropped serial communications.
RS232 Serial: Female DB-9 - supports general purpose RS-232 communications.
CobraNet: Optional CM-1 Module with 2 Female RJ-45 connectors for redundancy - transports digital audio via CobraNet audio network on CAT-5 cabling terminated with male RJ-45 jacks.
Dante: Optional DLM Module with 2 Female RJ-45 connectors for redundancy - transports digital audio via Dante audio network on CAT-5 or better cabling terminated with male RJ-45 plugs.
GPIO: Female DB-25 - breaks out configurable general purpose logic and status connections to external DIN terminating block (available separately).
I/O Bays: 4x Proprietary I/O Card Slots - supports proprietary audio and interface cards, available separately.

Digital Audio Performance

Data Format: 32-bit floating point audio.
Processing: PowerPC Host (Linux OS) with 3 ADI SHARC Hammerhead digital signal processors.
DSP MFLOPS: 1200 sustained, 1800 peak.
Sample Rate: Configurable, 22.05KHz, 24KHz, 32KHz, 44.1KHz, 48KHz, 64KHz, 88.1KHz, 96KHz., supports multi-rate processing.
Latency: Configurable, minimum latency (analog in to analog out @ 48kHz sample rate, 8 sample vector) 1.8msec. Total latency varies with audio configuration.
Storage: 2GB Compact Flash, supports OS, configuration, control and .wav audio.

CobraNet Performance

Data Format: 20/24-bit audio.
Protocol: Ethernet w/ Proprietary CobraNet protocol.
Channels: 32x32 channels at 48kHz.
Maximum CobraNet Latency: 3 sample vectors.
Cable Length: 328 foot (100m) maximum.

Dante Performance

Data Format: 24-bit audio.
Protocol: Gigabit Ethernet / IP with proprietary Dante protocol.
Channels: 32x32 channels at 48kHz.
Cable Length: 328 foot (100m) maximum.

GPIO

Connections: 25 pins with 16 individually programmable pins, 4 switchable high current outputs, plus a form C fault relay.
Configurations: Digital Input / Analog Input / Digital Output software selectable.
Digital Input: $V_{in} < 0.8v$ = logic 0; $V_{in} > 2.0v$ = logic 1 (1.2v hysteresis).
Analog Input: $0.0v < V_{in} < 24.0v$; 12-bit analog converter precision.
Digital Output: logic 0 Vout = 0.0v, Isink <= 2mA; logic 1 Vout = 3.3v, Isource <= 2mA.
High Current Outputs: 4 pins, each with a 0.5A self-resetting fuse and protection diodes for driving inductive loads. Vout = 11.5v nominal @ Isource = 0.5A. Direct short protection from ground to +36v.
Relay Contacts: Form C contacts rated at 0.3A @ 125VAC or 110VDC, or 1A @ 30VDC.

Mechanical Specifications

Chassis Style: 2RU EIA rack package.
Dimensions: 19 in. W x 16.8 in. D x 3.5 in. H

Architect's & Engineer's Specifications

Audio Processing Node

The audio processing node shall be a 2RU industrial package designed for fixed installation in engineered audio and communications systems. The unit shall include an architecture based on an integrated floating-point Digital Signal Processor (DSP) engine with at least 3 DSP chips. The DSP shall be completely configurable via a Windows-based software utility, with additional tools for creating user interface clients and integration with third-party control systems. Customizable I/O, control and signal flow design algorithms shall be integrated within the design environment for intuitive system configuration. This software shall include an XML architecture. Support for standard Ethernet management, including, but not limited to SNMP, shall be standard from an integrated, rear-panel LAN port. The audio processing node shall include an embedded Linux operating system. The operating system shall reside on non-mechanical IDE storage media. The storage system shall include support for reading/writing data from the operating system and configuration software. Audio file support for .wav audio shall be standard and shall be completely integrated with the unit's software tools. A non-mechanical storage device of at least 2GB shall be used as the primary storage media and operating system root. The audio processing node shall include a modular I/O card bay system for support of four expansion cards. Each expansion bay shall be capable of supporting not less than 16 inputs and 16 outputs of simultaneous audio. Cards shall be available for microphone and line-level analog audio with options for digital and proprietary audio transports. The audio node shall optionally include a CobraNet or Dante audio transport module with support for at least 64 20-bit digital audio channels. Separate software devices shall be provided for integrating the audio networking module I/O into the configuration file. The audio processing node shall include support for serial data transport via the RS-232 and EIA-422/485 ports. All data transports, including Ethernet, shall be available simultaneously and shall include software devices for integration into the configuration file. The audio processing node shall include an integrated GPIO control system with at least 16 configurable low-current, low voltage ports and 4 configurable high-current ports. All GPIO ports shall include software devices for integrating their function into the configuration file. The GPIO connections shall be externally terminated with a DIN-rail breakout assembly (available separately). Status LEDs shall be included on the front panel for monitoring audio faults and power conditions. The audio processing node shall be fan-cooled with a front panel intake and shall operate with a modular universal computer-grade power supply. The audio processing node shall be the MediaMatrix NION nE or approved equal.

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