NSC SERIES

Network System Controllers

Digital Signal Processors · NSC24 · NSC46 · NSC48

The Linea Research NSC series are advanced loudspeaker management processors, available in three configurations: NSC24 (2-input / 4-output), NSC46 (4-input / 6-output) and NSC48 (4-input / 8-output). Sharing the same front-panel interface and feature set across all models, the NSC series provides comprehensive loudspeaker management capabilities for touring sound reinforcement, fixed installations and high-performance audio applications.

At its core, the NSC Digital Signal Processor introduces a paradigm shift in system processing through its innovative Drive Module architecture. Rather than configuring individual processor channels, Drive Modules represent complete loudspeaker subsystems — allowing engineers to work in terms of actual speaker configurations rather than abstract channel numbers. Up to four Drive Modules can operate simultaneously, enabling control of four independent loudspeaker subsystems or zones from a single 1U device. The processor operates at 96kHz sampling frequency, ensuring exceptional audio quality with minimal latency.

Key Features

- Drive Module architecture — speaker-centric processing, up to 4 modules simultaneously
- Unique, precise, 96kHz digital signal processing throughout
- LIR (Linea Impulse Response) crossovers — exclusive true linear phase filtering without FIR
- 768-tap user-loadable FIR filter on every output channel
- Up to 4 independent DSP input channels with comprehensive processing
- Up to 8 independent DSP output channels with advanced processing
- Ethernet network control and monitoring via System Engineer 8 software
- Analogue, AES3 and Dante™ / AES67 digital network audio inputs
- Automatic input fallover: Dante → AES3 → Analogue
- VX limiter system for passive 2-way loudspeaker protection
- 50 Module Preset locations; 20 device-wide Snapshot locations
- 12 independent parameter overlay layers for complex multi-zone control
- Secure Mode for tamper-proof operation in permanent installations
- Fully designed and engineered by Linea's in-house development team
- Manufactured, tested and supported entirely in the UK

Model	NSC24	NSC46	NSC48
DSP inputs	2	4	4
DSP outputs	4	6	8
Analogue inputs	2×XLR	4×XLR	4×XLR
AES3 input pairs	1	2	2
Dante™ channels to DSP	2	4	4
Analogue outputs	4×XLR	6×XLR	8×XLR



General Specifications

Number of DSP input channels	Four (NSC46 / NSC48); Two (NSC24)
Number of DSP output channels	Eight (NSC48); Six (NSC46); Four (NSC24)
Maximum simultaneous Drive Modules	4 (NSC48) · 4 (NSC46) · 2 (NSC24)
Audio inputs	Analogue XLR: 4 (NSC46 / NSC48), 2 (NSC24) · AES3 pairs: 2 (NSC46 / NSC48), 1 (NSC24) · Dante™ / AES67 (factory-fitted option): 8 × 8 channel network card, of which 4 (NSC46 / NSC48) or 2 (NSC24) receive channels can be routed to the DSP inputs
Digital signal processing	96kHz sample rate throughout; 40-bit proprietary DSP resolution; 24-bit converters
Control, monitoring & status	Ethernet 10/100Mbps — System Engineer 8 software (Windows 10/11, 64-bit, 8GB RAM minimum)
Auxiliary port	Phoenix/Euroblock removable terminal block — snapshot recall and system muting
Network IP modes	Auto (DHCP) or Static IP (configurable via front panel Utility menu)

Audio Performance

Frequency response	10Hz to 40kHz (10Hz to 23kHz with FIR filtering enabled)
Distortion (THD)	<0.008% (20Hz to 20kHz)
Analogue input impedance	>10kΩ balanced
Input dynamic range	>120dBA typical
Maximum analogue input level	+20dBu
Nominal analogue operating level	0dBu
Analogue input gain range	−40dB to +20dB (0.2dB steps)
Analogue input connectors	Female XLR (3-pin); AES48 compliant ground scheme; pin-1 to chassis, pin-2 hot, pin-3 cold
Analogue output impedance	<100Ω impedance-balanced
Output dynamic range	>118dBA
Maximum analogue output level	+18dBu into 600Ω
Analogue output connectors	Male XLR (3-pin); pin-1 bonded to chassis per AES48; pin-2 driven, pin-3 via impedance
AES3 digital audio	Format: AES3/EBU; sample rates 28kHz–108kHz (auto-detection); channels 1&2 on Input 1 XLR; channels 3&4 on Input 3 XLR (NSC46 / NSC48 only)

Dante™ / AES67 audio networking (optional)	8 inputs, 8 outputs on the network card (configurable); up to 4 (NSC46 / NSC48) or 2 (NSC24) receive channels routable to the DSP inputs; 48kHz or 96kHz; 0.5ms typical latency (device to device); 100Mbps/1Gbps Ethernet; primary & secondary network redundancy
Automatic input fallover	Dante → AES3 → Analogue (configurable); fallover modes: Auto, Delayed (5 minutes), Latch
Base signal latency (analogue in → out)	1.57ms (as reported by device firmware)

Digital Signal Processing

Input matrix routing	Any physical input (Analogue / AES3 / Dante) to any DSP input channel; summed inputs supported — any pair (1+2, 3+4, 1+3, 1+4, 2+3, 2+4), plus 3-way and 4-way sums
Input DSP processing (per Drive Module)	Source routing · Gain & polarity · Mute · System delay (0–998ms) · High-pass filter · Input EQ: 2× low shelf, 6× bell and 1× linear-phase FIR high shelf (up to approx. 0.4ms additional latency when enabled)
Output DSP processing (per driver)	Crossover HPF & LPF · 10-band parametric EQ · 768-tap user-loadable FIR filter · Output delay alignment · Gain & polarity · Mute · VX limiter · Thermal (TMax) limiter · Amplifier gain reference
Crossover filter types	1st order, Butterworth, Linkwitz-Riley, Bessel, Hardman (elliptical), LIR (Linea Impulse Response — exclusive to Linea Research)
Crossover slopes	1st order: 6dB/oct · Butterworth: 12, 18, 24, 48dB/oct · Linkwitz-Riley: 12, 24, 48dB/oct · Bessel: 12, 18, 24dB/oct · Hardman: 4th & 8th order · LIR: 24dB/oct equivalent
LIR linear phase crossovers	True linear phase throughout; zero group delay distortion; 24dB/octave equivalent slope; latency = 1.19ms ÷ crossover frequency in kHz (e.g. 1.19ms at 1kHz, 11.9ms at 100Hz); maximum 30ms — below 40Hz the filter reverts to Linkwitz-Riley 24dB/oct
Output FIR filtering	768-tap user-loadable FIR filter per output channel
Input EQ — shelving filters	2× low shelf — 10Hz–25.6kHz; ±15dB; slope 6 to 12dB/oct, adjustable in 1dB steps · 1× FIR high shelf — linear phase; up to approx. 0.4ms additional latency when enabled
Input EQ — bell filters	6× bell (parametric) — 10Hz–25.6kHz; ±15dB; bandwidth 0.10–5.2 octaves (Q approx. 0.25–14)
Output EQ — bands 1–2	Shelving filters (low / high); 10Hz–25.6kHz; ±15dB; slope 6 to 12dB/oct, adjustable in 1dB steps
Output EQ — bands 3–10	Full parametric or All-Pass; frequency, bandwidth and gain controls; 10Hz–25.6kHz; ±15dB
Input delay range	0 to 998ms; variable resolution; 1ms ≈ 343mm at 20°C
Module Presets	50 on-device locations; store complete Drive Module configuration; recallable to specific DSP channels; factory-supplied or user-created
Snapshots	20 device-wide locations; capture all module assignments, routing and system settings; recallable via front panel, System Engineer 8 or AUX port
Parameter overlays	12 independent overlay layers; non-destructive additive/subtractive; controllable via System Engineer 8; indicated by '[ ]' suffix on display

Power Supply

Topology	Universal switch-mode; automatic voltage detection — no manual configuration required
Nominal mains input voltage range	85V to 230VAC
Mains input frequency range	50–60Hz
Power consumption	30W
Mains fuse	T1AL 250V (internal; not user-replaceable)
Mains connector	IEC C14 inlet
Power-on	No user-accessible power switch — unit powers on automatically when mains is connected

Physical

Analogue audio input connectors	Female Neutrik™ XLR (3-pin)
AES3 input connectors	Female Neutrik™ XLR — odd-numbered inputs carry AES3 pairs (Input 1 on NSC24; Inputs 1 and 3 on NSC46 / NSC48)
Analogue audio output connectors	Male Neutrik™ XLR (3-pin)
Ethernet (control / network)	Shielded RJ45 — 10/100Mbps auto-negotiating; maximum cable length 100m
Dante™ ports (optional)	2× shielded RJ45 — primary and secondary network
Auxiliary port connector	Phoenix/Euroblock removable terminal block; 3 positions (X, Y, GND); wire gauge 0.2–2.5mm² (24–14 AWG); input: contact closure or logic level; threshold <0.5V active / >2.0V inactive; max +24V DC
Front panel display	Backlit graphical LCD — high contrast, daylight visible; contrast adjustable via Utility menu
Front panel encoders	3× velocity-sensitive parameter encoders (A, B, C)
Front panel buttons	OUTPUT · INPUT · UTILITY · ENTER · ↑↓ navigation arrows · per-channel MUTE (illuminated, latching)
Input LED metering (per channel)	SIG (green) · –12dB (green) · 0dBu (yellow) · +6dB (yellow) · +12dB (yellow) · CLIP/Mute (red) · AES3 (red)
Output LED indicators (per channel)	SIG (green) · –6dB (yellow) · LIMIT (red) · +6dB (red) · °C thermal limiter active (red) · MUTE button/indicator
System status indicators	OVERLAY · NETAUDIO (Dante installed & routed) · ONLINE (network connection: off / flashing / solid)
Enclosure	Standard 19" (483mm) wide,1U (44mm) high, 178mm depth; rack ears included; designed for permanent rack installation
Net weight	2.7kg (5.95 lbs)
Operating temperature	0°C to +45°C

Storage / transport temperature	–20°C to +60°C
Humidity (operating)	0–80% relative, non-condensing
Altitude (operating)	Sea level to 2000m without derating
Compliance	CE marked; LVD 2014/35/EU (EN IEC 62368-1); EMC 2014/30/EU (EN 55032:2012; EN 55035:2017)

About Linea Research

At Linea Research you will find a company committed to designing and producing the finest audio equipment in the world. Linea Research have successfully supplied tens of thousands of products to all corners of the globe. When you choose Linea Research you are working with people who design the products, people who use the products, and above all people who know pro audio and care about performance and quality.

For more information about the NSC series processors or Linea's other high-performance audio products, please visit our website. www.linea-research.co.uk

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