

# NeuStar™ 4.0

## Digital Codec Pre-Conditioner



NeuStar 4.0 is the newest generation of Neural Codec Pre-Conditioning™ hardware. NeuStar runs either as a stand-alone Codec Pre-Conditioner/Processor or, in conjunction with traditional broadcast processing, adding the benefits of Codec Pre-Conditioning™ to any signal path. Version 4.0 also features Neural Coding Load Analysis System (N-CLAS™) that dramatically decreases codec artifacts. This breakthrough in codec pre-conditioning actually predicts and visually displays when and where the coding artifacts caused by difficult content will occur, and then it subtly modifies the content in advance of actual encoding..

### N-CLAS, the Solution for Low-Bit Rate Audio

NeuStar 4.0's patent-pending audio processing solution is not found in ANY other product. Coupled with Codec-Friendly™ audio processing, N-CLAS creates the perfect processing solution for low-bit rate audio applications. It allows broadcasters to maximize their codec performance while maintaining a "signature sound," making it the ideal tool for *HD-Radio Multicast, Internet Streams, ISDN/POTS remotes, Satellite Syndication, STL protection, DAB, DRM, Podcasts, etc.*

### Features / Benefits

- State of the art Neural Codec Pre-Conditioning algorithms featuring N-CLAS (Codec performance improvements are *immediately* audible)
- Codec-Friendly™ volume & spectral management tools not found in any other audio processor
- HD Radio™ Codec specific feature set.
- More DSP power than the original NeuStar
- Analog and Digital inputs from 22kHz to 192kHz
- Easier user interfaces including both front panel and TCP/IP web control.
- Updates to legacy features found in NeuStar 1.0 and UltraLink.
- User presets defined by both public and commercial radio broadcasters create an extremely fast setup.
- Fully upgradeable architecture for future software and hardware additions.
- Runs as a stand-alone Codec Pre-Conditioner/Processor or in conjunction with traditional broadcast processing to add the benefits of Codec Pre-Conditioning™ to any signal path.

## Technical Specifications\*

### General

Analog Inputs and Outputs . . . .	2 Balanced +4dB XLR inputs 2 Balanced +4dB XLR outputs
Digital Inputs and Outputs . . . .	AES/EBU, 110 ohm, Balanced XLR, in and out Wordclock, BNC 75 ohm, in, out and through
Audio Sampling Rate . . . . .	32-96 kHz
Frequency Response . . . . .	20 Hz to 20 kHz, $\pm 0.25$ dB
Distortion . . . . .	<0.01% at 1 kHz <0.02%, 20 Hz to 20 kHz
Analog Output . . . . .	Output level +4dB, Maximum Output Level +23dB THD+N (typical) .001% @ 1kHz 1-6dBFS Dynamic Range >110dBA @ 1kHz/-60dBS Frequency Response $\pm 0.25$ dB, 5Hz, 21kHz@FS Channel Separation >100dB @ 1kHz
Dynamic Range . . . . .	>96 dB
Communication . . . . .	TCP/IP RJ45 Ethernet 2 – GPIO ports 2 – RS-232/485
Power Requirements . . . . .	90–264 VAC, 50–60 Hz, auto-sensing, 15 W maximum; unit is designed to operate from a centrally switched power source
Dimensions and Weight . . . . .	1-U rackmount: 44 × 483 × 324 mm (1.75 × 19 × 12.75 in.) Net: 2.7 kg (5.9 lb.)
Environmental Conditions . . . .	Operating: 0°C to 50°C (32°F to 122°F), natural convection cooling; 0% to 98% relative humidity (noncondensing) Nonoperating: -20°C to 70°C (-4°F to 158°F)

\* Specifications are subject to change.

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