

Traction Engine 4|1000-DSP

DSP Power Amplifier



Combining new technology power amplification with the highest definition DSP, this amplifier offers performance and convenience at a whole new level. Powerful processing features, such as FIR filtering and optional Dante networking, work alongside unique enhancements including 4 local + 4 aux DSP channels meaning a single Delta DSP amplifier can control a stereo 4-way system with no external processing.

Configure and tune using a fast, powerful combination of AudioCore and DeltaDirect, the bespoke iPad app. Every aspect of a network of amplifiers can be controlled and monitored, wirelessly. USB, direct Ethernet and RS485 control options plus configurable GPIO offer unparalleled flexibility.

Power & Main Specifications

Output Power (per channel): Measured using continuous music with Crest Factor of 48 (14dB)	8 ohms: 500W, 4 ohms: 1000W, 27 ohms: 1400W, 2 ohms: 1200W
Output Power (bridged): Measured using continuous music with Crest Factor of 48 (14dB)	8 ohms : 2000W, 4 ohms: 2400W
THD: (0dB below maximum output power)	© 1kHz <0.18% 20Hz to 20kHz <0.2%
Gain / Sensitivity:	Gain 32dB Sensitivity (for maximum power) 6.2dBu (16V)
Frequency Response:	20Hz to 20kHz (+0.5dB)
Power Consumption:	Nominal © 240V into 4 ohms: 29A Nominal © 120V into 4 ohms: 6.0A
Dimensions:	Amplifier (2U) (mm): 88(h) x 482(w) x 428(d) Boxed (shipping size - UK): 230 x 580 x 560 (Single boxed) Boxed (shipping size - all except UK): 250 x 610 x 600 (Double boxed)
Weight:	Amplifier: 10.0kg (24.0lbs) Boxed (shipping weight): 12.0kg (27.3lbs)

Processing Specifications

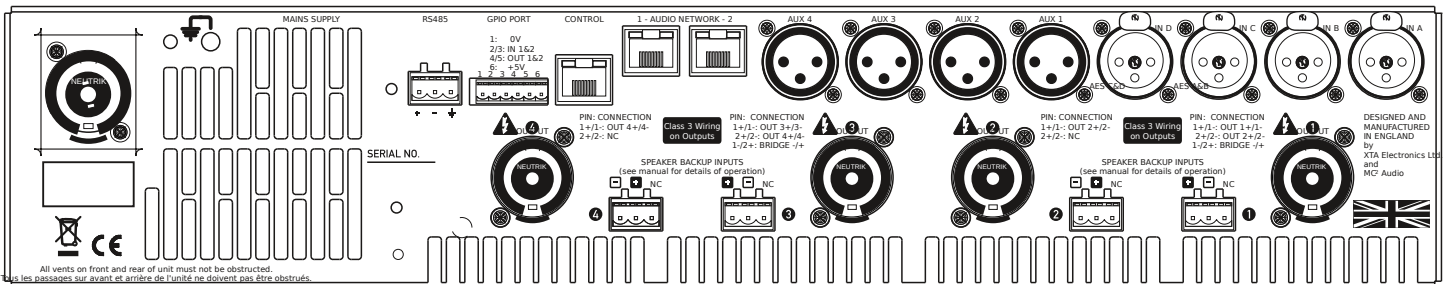
Bit Depth and Sample Rate:	24 bit ADCs and DACs, 96kHz sampling and processing throughout
Accepted Sample Rates:	(AES and Networked Audio): 44.1kHz - 192kHz(AES)
I/O Configuration:	4 Inputs (select individually from analogue/AES/Network) 8 Outputs: 4 Direct Power Amp, 4 Auxiliary with independent processing and memories
DSP Filter Suite:	4 Additional Network Audio Outputs (sourced from selectable processing point within DSP) 3 Dynamic EQ bands per input: 20Hz to 32kHz, compression/expansion above/below THD 8 Static EQ bands per input (x 4), 9 static EQ bands and per output (x 8) PEQ plus additional filter types: High/Low Variable "Q" (resonant), High/Low Pass Elliptical, Band Pass, Notch, Phase, All Pass, High/Low Shelving
Crossover Filters (outputs):	HPF: 10Hz to 31.4kHz, LPF: 35Hz to 32kHz, 1/36 octave steps, up to 48dB/Oct
Delays:	1300mS (Input to Output), Minimum step size 0.3uS (outputs), 10uS (inputs)
Limiters:	RMS Fully Variable x 8: Look Ahead (zero overshoot) Peak Limiter x 8
FIR Sections:	Total available taps (variable across 8 outputs): 4000 (DEQ bypassed)

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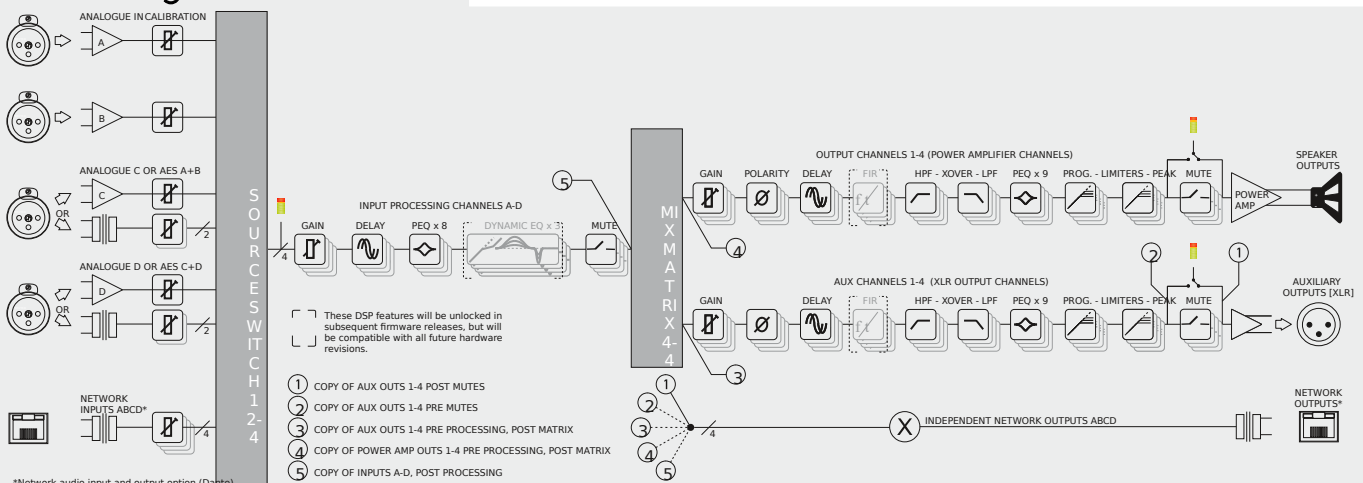
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Additional Specifications

Input Impedance: 20k ohms (Active balanced)
Input CMRR: > 60dB
GPIO: Isolated inputs (x 2) and outputs (x 2) for VCA/standby control/memory recall and fault reporting
Signal Limiters: Operate at maximum power to prevent excessive clipping
Protection: Output short circuit, DC, Over-temperature, Mains in-rush control, over voltage, over current
Output Power Additional Specifications: See Traction Engine 4|1000-N (Non-DSP Version) Datasheet
Power Consumption and Thermal Emissions: See Traction Engine 4|1000-N (Non-DSP Version) Datasheet



Signal Processing Block Diagram



Architect's and Engineer's Specification

The power amplifier shall be a 4 channel class D design with a minimum guaranteed power of 1000W into 4R (20Hz to 20kHz). THD shall be better than 0.18% (20Hz to 20kHz). The minimum load shall be 2R, and 4R in bridge mode. Input sensitivity shall be 8.3dBu for full power output. Frequency response shall be 20Hz to 20kHz (+0.5dB). The front panel shall have a 2 x 24 character LCD and a menu driven control interface. A set of 4 x 6 point LED meters shall show level of either the inputs, the power amplifier outputs (with headroom to limiting) or the auxiliary outputs, switchable using the BANK key. A front panel non-isolating main power switch shall be fitted. The rear panel shall have outputs on Neutrik Speakon connectors, with two being wired to allow channel pairs to be accessed from a single plug (4 pole). The audio inputs shall be on Neutrik 3 pole XLR connectors. Four additional auxiliary outputs shall be available on Neutrik 3 pole XLR connectors, with independent processing on all channels. The DSP sections of the amplifier shall be fully controllable from the front panel, or via remote connection to a suitable computer via the front panel USB connection, the rear panel Ethernet connection, or an RS485 connection. The amplifier shall also operate as a USB or Ethernet to RS485 data bridge. A standby mode shall allow the DSP sections of the amplifier to operate independently of the power amplifier. A GPIO interface shall also allow simple remote memory recall, standby control, or variable level adjustments, and can report fault conditions. The amplifier shall accept analogue or AES digital audio and networked audio if fitted with the optional Dante network audio card. All processing shall be at 96kHz with 24bit conversion, and a processing capabilities shall include 8 multi-type input filters, delay, gain and mute (with DEQ to follow) x 4 ch's, and 9 multi-type input filters, high and low pass filters with selectable type and slopes up to 48dB/Octave, delay, FIR filtering capability, RMS and peak limiters, gain and mute x 8 ch's. Additionally, the independent networked outputs source shall be selected from five different positions within the DSP structure. The amplifier shall be 2U, 19" rack mount in format with dimensions of 88cm X 48cm X 43cm and a weight of 10.9kg. AC mains supply shall be switchable between 120V(60Hz) and 240V(50Hz). The amplifier shall be designated the Traction Engine 4|1000-DSP.