

Architect's and Engineer's Specifications

The power amplifiers shall be a four-channel model with a switch mode power supply and bridgeable switch mode fixed frequency class D output circuit topology. The amplifier shall have a switch mode power supply with 100 V - 240 V (factory selection) \pm 10%, 50 Hz - 60 Hz, internally selectable. It shall draw no more than 580 W (3.74 A @ 230 V; 7.48 A @ 115 V) when driven with pink noise signal at 1/8 of rated power into 4-ohm loads. The amplifier shall be provided with an IEC 16A mains detachable connector and power cord set with VDEI6A on amplifier side and Schuko plug for EU and rest of the world, American 3 pin 15A plug for USA on the other. The amplifier shall have internal heat sinks cooled by a continuously variable speed fan with Microprocessor Temperature Control. Air flow shall be from front to rear.

The amplifier shall contain a module which shall connect the amplifier to 100Mbps Ethernet networks, allowing it to be remotely controlled and monitored via proprietary software running on an external PC.

The amplifier shall contain a DSP board for real-time audio processing:

- ▶ Crossover filters: Butterworth, Linkwitz-Riley, Bessel, 6 dB/oct to 48 dB/oct
- ▶ Output equalizer: up to 12 biquad fully parametric per channel: peaking, hi/lo shelving, hi/lo pass, band pass, band stop, all pass; support for custom FIR filters up to 168 taps per channel (useful for $f > 700$ Hz)
- ▶ Input Equalizer: up to 5 biquad filters (PEQ, shelving, band pass, band stop, all pass)
- ▶ delay for time alignment: up to 10 ms.
- ▶ system delay up to 170 ms for 2 in / 2 out or 340 ms for 1 in / 2 out (per channel pair)

The amplifier shall have a bank of 4 DSP presets for both channels, locally selectable via one pushbutton and LED indicator:

The amplifier shall have a synchronized off-on muting, acting for four seconds after turn-on and within 500 ms after turn-off or loss AC power. Each channel shall have DC protection in order to protect against infrasonic signal and very low frequencies at the output that could damage loudspeakers. Each channel shall have VHF protection in order to protect loudspeakers against strong, very high frequency signals. Each channel shall have circuitry to protect against short circuits or other stressful events for the output circuit. Each channel shall be equipped with an independent clip limiter in order to prevent severely clipped waveforms from reaching loudspeakers, whilst maintaining full peak power. Each channel shall have a long term limiter in order to protect loudspeakers against non musical signals such as sines, feedback etc.

Front panel controls shall include:

- ▶ switch for selecting power on and off
- ▶ a removable dust cover
- ▶ a gain reduction knob, one stepped attenuator for each channel going from $-\infty$ to 0 ($-\infty$, 4, 14, 18, 20, 22, 24, 26, 28, 30, 32 dB).

The front panel shall contain a LED bar for each channel, with two green and one red LEDs; the two green LEDs will light up for an output of -18 dB and -6 dB, while the red LED will light up when the maximum output will be reached. A green LED for each channel, marked as "signal", will light up when the input signal reaches -24 dBV;

The front panel shall also include a green LED, marked as "ready", to indicate that the amplifier is turned on, and a yellow LED, marked as "temp", to indicate when temperature has reached 75° C (167° F), before the protection circuit will mute outputs;

The rear panel shall contain these features:

A relevant button in order to recall one of four presets stored previously via proprietary software running on an external PC and four green LEDs, one for each preset, to indicate the selected preset number. The amplifier shall also have a link switch to connect input channel 1 to input channel 2 and input channel 3 to input channel 4; a removable 2-pin Phoenix®-style barrier connector for aux voltage input (9~12V) per remote on/off switching; an RJ45 connector for auto-sense 100 Mbit Ethernet network capabilities providing full monitoring and control via proprietary software running on an external PC.

- ▶ The output connectors for each channel shall be Neutrik® Speakon® NL4MD (mates with NL4FC or NL4) (positive on 1+ negative on 1- for stereo configuration; positive on 2+ negative on 2- for bridge configurations);
- ▶ Analog input connectors for each channel shall be a Neutrik® XLR with pin 2 positive (hot), pin 3 negative (cold), pin 1 ground;
- ▶ The analog loop thru connector for each channel shall be a Neutrik® XLR with pin 2 positive (hot), pin 3 negative (cold), pin 1 ground;
- ▶ The amplifier shall have a link switch to connect input channel 1 to input channel 2 and input channel 3 to input channel 4.

The power connector shall be an IEC 16A with cable retention system.

Each channel shall be capable of meeting the following performance criteria: EIAJ (1 kHz @ 1% THD) in stereo mode: 2x360 W @ 8 Ohm, 2x700 W @ 4 Ohm; EIAJ (1 kHz @ 1% THD) in bridge mode: 1x1400 W @ 8 Ohm, maximum output voltage per channel shall be 85 V peak, maximum output current shall be 60 A peak. Input impedance: 10 kOhm, balanced; input sensitivity @ 8 Ohm: 1.34 V/4.76 dBu; gain: -∞, 4, 14, 18, 24, 22, 24, 26, 28, 30, 32 dB (user selectable); frequency response (1 W @ 8 Ohm): 10 Hz - 30 kHz (± 3 dB); damping factor: >5000 @ 100 Hz; slew Rate @ 8 Ohm: 40 V/us (input filter bypassed); S/N Ratio (20 Hz - 20 kHz A weighted) in dB: 109 dBA; THD+N: <0.05% at 1/2 full power; SMPTE IMD: <0.05% at 1/2 full power; DIM100 IMD: <0.02% from 0.1 W to full power (typically <0.005%); crosstalk > 70 dB @ 1 kHz.

The dimensions of the amplifier shall allow for 19 inch (48.3 cm) EIA standard (RS-310-B) rack mounting and it shall occupy one rack space; the amplifier shall be 4.4 cm (1.75 inches) tall and 35.8 cm (14.1 inches) deep. The amplifier's weight shall not exceed 7.4 kg (16.3 lb). The amplifier shall be approved for use as specified by CE with CSA.