UNICA 4L AMPLIFIER

Architect's and Engineer's Specifications

The amplifier shall be a four-channel model with a switch mode power-supply with power factor correction, smart rail management and bridgeable switch mode fixed frequency class D output circuit topology.
The amplifier shall operate from 100 V - 240 V, -10% / +10% 50/60 Hz, universal AC input power with minimum voltage for power up at 80 V and shall draw depending on each version following power:

9K4 - 1450W (6.6A @ 230V) or 1463W (13.1A @ 115V) when driven with pink noise signal at 1/8 of rated power into 4-ohm loads.
12K4 - 1940W (8.8A @ 230V) or 1951W (17.5A @ 115V) when driven with pink noise signal at 1/8 of rated power into 4-ohm loads.
16K4 -2550W (11.6A @ 230V) or 2600W (23.2A @ 115V) when driven with pink noise signal at 1/8 of rated power into 4-ohm loads.

The power supply of the amplifier will integrate Power Factor Correction (PFC), in order to minimize interference with the electrical grid.
The amplifier shall be provided with an IEC C20 main detachable connector and power cord set with IEC C20 connector on amplifier side and Schuko plug for EU, 3 pin China Plug and 3 Pin American plug on the other for 9K4 model, for 12K4 and 16K4 American cable shall be substituted with a power cord without plug
The amplifier shall have internal heat sinks cooled by a continuously variable speed fan with a Microprocessor Temperature Control. Air flow shall be from front to rear.

The amplifier shall be able to drive low impedance loads (2/4/8/16 Ohm) and 70V/100V distributed lines selectable per channel by speaker preset loaded. Furthermore, it shall be able to provide all the possible output configurations (lo-Z, hi-Z, bridge mode, parallel mode, and combinations of these).
In Idle mode, the amplifier shall not absorb more than 62 W @ 230V or 55W @ 115V (0.52A @ 230V or 0.65A @ 115V).
There are two Energy Saving Mode: "Standby Mode" and "Eco Mode" where power consumption is reduced respectively to 20 W and 35 W, both can be enabled and disabled by User, Standby Mode

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is only manual on the other hand Eco Mode is automatically activated, if not manually disabled, after 10 minutes of no signal presence in the respective amplifier matrix output.
In both cases the transition takes less than 100ms

The amplifier can be powered with PoE; depending on the power classes different operation can be achieved. Using PoE+ it is possible to reduce the recovery time from mains power loss to 0.5 seconds. PoE++, in addition, enables loudspeaker system configuration and testing in case of power mains problems.

The amplifier shall contain a DSP board for real-time audio processing not exceeding a 2.6 ms fixed latency architecture. As part of the DSP the amplifier will offer a 8 x 8 level controllable matrix for all analogue and digital inputs. Integrated in the DSP will be filters per channel offering raised-cosine, custom FIR, parametric IIR, peaking, hi/lo-shelving, all-pass, band-pass, band-stop, hi/lo-pass filters and a crossover linear phase (FIR), Butterworth, Linkwitz-Riley, Bessel: 6 dB/oct to 48 dB/oct (IIR). For time alignment the DSP in the amplifier will offer Delay 2 s (input) + 100 ms (output). The limiters in the DSP will contain TruePower™, RMS voltage, RMS current and Peak limiters. Active DampingControl™ and LiveImpedance™ measurement will be part of the DSP. The internal memory of the amplifier will contain of predefined pre-sets with cross-over settings and will allow for users pre-sets and snapshots storing. The amplifier will offer pilot tone sensing on all inputs and outputs, redundant input switch over, pilot tone back up strategy with delay compensation, output load monitor and output load detection.

The amplifier shall have front panel Display to quickly.

- read key amplifier parameters as Device name, Ip Address
- Read inputs, outputs and Network status.
- Be informed about Amplifier warnings.
- Easy swap operation

Using Front panel operation, it is possible to Call&Match via Armonia the Amplifier & Mute all output channels.

The amplifier shall be enabled for networking operation via 3 on board RJ45 giga ethernet ports, for the purpose of controlling the internal DSP and monitoring the amplifier status. Additionally, audio over IP expansion via Dante protocol shall be provided, with a capacity of at least 8-in x8-out channels. All the 3 ports can be configured switched, split and redundant mode. AES67 standard shall also be supported. Communication protocols for the amplifier's internal DSP shall be made available for control via third-party devices of parameters including but not limited to source

selection, matrix, mute, gain, delay, parametric EQ, remote ON/OFF, and monitoring of load impedance, amplifier status, alarms, and level metering.

The amplifier shall implement industry security communication protocols as HTTPS, SSH key based authentication.

The amplifier shall connect to Powersoft Cloud, this feature is disabled by default and can be activated by user to have access to remote monitoring and control features.
The Amplifier shall have a simple replacement procedure called “Easy Swap” giving a quick way to replace products on site. It allows system operators to simply transfer the information from one product to the other using on board procedure display guided and using included USB key

The Amplifier shall be equipped with 14 GPIO pins on the rear panel, there are two pins for contact closure, 3 pins for Remote Standby Control, 3 pins port Remote Level Adjustment and 6 general purpose pins (GPX) that can be configured by the user to operate as 5V, ground, input pins, as well as digital outputs.

Each channel shall have DC protection in order to protect against infrasonic signals and very low frequencies at the output stage that could damage loudspeakers. Each channel shall have VHF protection in order to protect loudspeakers from strong, very high frequency signals. Each channel shall have circuitry to protect against short circuits or other stressful output circuits events. Each channel shall an independent clip limiter in order to prevent severely clipped waveforms from reaching the loudspeakers, whilst maintaining full peak power. Each channel shall have long term limiters in order to protect loudspeakers against non-musical signals such as sine waves, feedback signals etc.

The amplifier rear panel shall provide AC mains connector, Phoenix output connectors, Phoenix line input connector, Phoenix GPI connector, Phoenix GPO connector, Phoenix, 3 RJ45 Ethernet connectors, USB type A connector for Easy Swap, USB type C connector reserved for Service; Factory Reset pushbutton; RGB Status Leds