



# PLM 20000Q

## Overview and Functions

The unit shall comprise a two-in/four-out digital loudspeaker drive processor with power amplifier outputs. Additional capabilities and facilities shall include load verification and real-time performance monitoring; low-latency, Ethernet-based audio networking; control and monitoring of internal parameters from a remote computer; and optional software integration of industry-standard acoustical measurement tools. All control, monitoring and measurement facilities shall be remotely accessible via a custom PC software interface supplied with the unit.

## Digital Loudspeaker Processing

The unit shall include two modules of comprehensive digital audio processing configured specifically for loudspeaker drive applications. Facilities shall be included for raised cosine equalization, linear-phase and classical crossovers, peak and rms limiters, and floating ground isolation. The processor firmware, in conjunction with supplied PC software, shall accommodate flexible mixing and routing, including software-driven linkage of processing modules in two or more separate units enabling them to function as a single module with extended capabilities.

## Power Amplifier

Maximum total output of all four channels shall be 20,000 watts. In discrete four-channel mode, each amplifier channel shall deliver maximum continuous power as follows: 1150 watts into 16 ohms; 2300 watts into 8 ohms; 4400 watts into 4 ohms; 5000 watts into 2.2 – 3.3 ohms; or 4800 watts into 2 ohms. Maximum peak output per channel shall be 194 volts and maximum peak current per channel shall be 67 amps. When adjacent channels are bridged, power output per channel shall be 8800 watts into 8 ohms, 9600 watts into 4 ohms and 10000 watts into 4.4 to 6.6 ohms. The amplifier shall incorporate power factor correction (PFC) to maintain full output during extended bursts. Amplifier gain shall be adjustable in the DSP input module across a range of 22 to 44 dB in 0.1 dB increments. The unit shall exhibit the following performance parameters: Frequency response shall be 20 Hz to 20 kHz (+/-0.05 dB) at 1 watt into 8 ohms. Dynamic range with digital inputs (all supported sample rates) shall be greater than 114 dBA. Propagation delay shall not exceed 1.68 ms using analog inputs. The unit shall include a DSP-implemented zero overshoot voltage peak limiter individually adjustable per channel for maximum voltage between 17.8 and 194 V in 0.1 V increments.

## Load Verification and Circuit Protection

The unit's DSP and on-board firmware, in conjunction with supplied PC control software and loudspeaker database, shall enable the unit to verify that loudspeaker loads are connected as intended, and to identify defective drivers or faulty wiring. The DSP and associated software also shall allow real-time monitoring of critical performance parameters for both the power amplifier section and connected loudspeakers. Circuits and sensors shall be provided for warning and protection against VHF (Very High Frequencies), DC at output, over-temperature, open load, excessive current, and voltage peak clipping.

## Connectors, Network, and User Interfaces

The rear panel shall provide inputs for analog signals on two XLR-F connectors and for AES3 digital signals on one XLR-F connector, with link outputs for all three inputs on adjacent XLR-M connectors. In addition, two etherCON®-housed RJ45 Ethernet jacks shall be provided for networked digital audio as well as monitoring and control via remote PC. The unit shall be compatible with use as part of a low-latency, self-configuring digital audio network that supports sampling frequencies of 48 and 96 kHz. Output connectors on the unit shall be either binding post or Neutrik® speakON® (2 x NLT4 and 1 x NLT8). The front panel user interface shall include a high-brightness 2.5-inch LCD panel, a moisture-resistant silicone touch pad, and a rotary encoder. The user interface shall be menu-driven, with screen displays and soft-keys accessing functions of the digital loudspeaker processor and the power amplifier. Dedicated keys shall be provided for Mute Enable, Meter and Menu functions. Multicolor LEDs shall indicate presence of any warning or fault conditions. The unit shall be supplied with a custom software program for comprehensive monitoring of system status and operating parameters, as well as control of DSP and amplifier functions. The software program shall be compatible with use on a Tablet PC, and shall offer plug-in integration of proprietary audio and acoustical measurement tools in the same user interface.

## Power Supply, Protection, and Cooling

The power supply shall be a universal regulated switch mode type operating at voltages from 70 V to 265 V at line frequencies of 45 Hz to 66 Hz. Under-voltage limiting shall enable continued operation with line sags as low as 65 V. A soft start circuit shall limit current inrush at power-up to 8 A. A power average limiter shall incorporate a software-control breaker emulation to prevent tripping of mains fuses. The amplifier shall be cooled by three temperature-controlled, variable-speed fans, with air flow from front to back.

## Physical

The unit shall be 483 mm (19 in.) wide, 88 mm (3.5 in / 2 U) high, and 498 mm (19.6 in.) deep including handles and rear support. The weight shall be 17 kg (37 lbs). The chassis housing shall be black painted steel with a black painted steel and aluminum front surround and handles. The unit shall be approved for use as specified by CE, ANSI/UL, ETL and the FCC. The unit shall be the Lab.gruppen PLM 20000Q.

