



FP 4000

Overview: Channel Modes and Network

The power amplifier shall provide two channels of amplification. A rear-panel switch shall bridge the two channels for increased power output through a single channel. The amplifier shall employ a proprietary tracking Class D output circuit topology. The amplifier shall be equipped with sensing and communication circuits to allow comprehensive remote control and monitoring functions via a separate network bridge. The proprietary control and monitoring network shall use Cat-5 cable for interconnection, and shall allow control and monitoring directly from the network bridge's front-panel or, via the bridge, from an external PC running proprietary software.

Power Output and Performance

Maximum total output of both channels shall be 4000 watts. Each amplifier channel separately shall deliver maximum continuous output power as follows: 400 watts into 16 ohms, 800 watts into 8 ohms; 1600 watts into 4 ohms; or 2000 watts into 2 ohms. Maximum output voltage per channel shall be 121 Vrms; maximum output current per channel shall be 50 A peak. In bridged mode, the amplifier shall deliver maximum continuous output power as follows: 1600 watts into 16 ohms; 3200 watts into 8 ohms; or 4000 watts into 4 ohms.

Default amplifier gain shall be 35 dB, with rear-panel adjustment from 23 to 44 dB in 3 dB increments. For bridged channels, the amplifier shall automatically compensate -6 dB gain internally to maintain operation of all channels at selected gain.

The amplifier shall exhibit the following performance parameters with gain set at 35 dB and VPL (Voltage Peak Limiter) at 121 V: Frequency response shall be 2 Hz to 34.2 kHz, +0/-3 dB at 1 watt into an 8 ohm load; channel separation shall be greater than 70 dB; and signal-to-noise ratio shall be greater than 112 dBA. THD at 1 watt, 20 Hz – 20 kHz, shall be less than 0.1%; THD at 1 kHz shall be no more than 0.05% at 1 dB below clipping.

A VPL shall limit peak output as determined by rear-panel switches. In discrete two channel mode, peak voltage shall be selectable in eight steps across a range of 121 V to 38 V. In bridged mode, peak voltage shall be selectable in eight steps from 242 V to 76 V. The voltage limiter mode shall be selectable for either hard or soft limiting characteristics.

Connectors, Controls, and Indicators

The following connectors and controls shall be on the rear panel of the amplifier. The two signal inputs shall be electronically balanced on XLR-F connectors, and each input shall have a parallel LINK output on an XLR-M connector. The Speaker Output connectors shall be binding posts or Neutrik Speakon. Seven DIP-switches shall be provided to select the following: amplifier gain (23 dB to 44 dB in 3 dB increments); option active; fan masked; and bridged mode selection. Eight additional DIP-switches shall determine VPL values for each channel (selectable in seven steps), and Hard or Soft limiting characteristic. Two Ethercon-housed RJ45 connectors shall be provided for input and output of the control/monitoring network signals. An LED adjacent to the RJ45 connectors shall indicate active or inactive status of the network.

The following indicators and controls shall be on the front panel of the amplifier. Two level control potentiometers shall be detented and provide attenuation from 0 dB to infinity in 31 steps. Individual switches shall be provided for power on/off and remote power on/off enabling. Front-panel LED indicators shall be provided to show status of power on/off (green), network connection (blue), and PAL (Power Average Limiter) (red). Additional LED indicators shall be provided to show the status of the following for each channel: signal present and high-impedance warning (green/red), signal present from -20 dB to -4 dB (4x green), VPL clipping (red), CPL (Current Peak Limiter) active (orange), VHF (Very High Frequency) warning (yellow), high temperature warning (yellow flashing), and high temperature fault with output muted (yellow constant), and Mute (red).

Power Supply, Protection, and Cooling

The power supply shall be a regulated switch mode type. The amplifier shall operate from AC line sources of either 230 V nominal or 115 V nominal, with operating ranges of 130 – 265 V and 65 – 135 V at line frequencies of 50 Hz or 60 Hz. Minimum power-up voltages are 171 V (230 V nominal) and 85 V (115 V nominal). A soft start circuit shall limit current inrush at power-up to 5 A. The amplifier shall be equipped with a PAL circuit to prevent excessive current draw. The amplifier shall be cooled by two temperature-controlled, variable-speed fans, with air flow from front-to-back. Adaptive fan on/off function shall be dependent on presence of an output signal.

Physical

The amplifier shall be 483 mm (19 in.) wide, 88 mm (3.5 in / 2 U) high, and 396 mm (15.6 in.) deep. The weight shall be 12 kg (26.4 lbs). The cabinet shall be black painted steel with a black painted steel and aluminum front-panel.

The amplifier shall be approved for use as specified by CE, ANSI/UL, ETL and the FCC. The amplifier shall be the Lab.gruppen FP 4000.