EX 4000

The EX 4000 is an advanced professional power amplifier offering high power, comprehensive operational and protection features, and an extremely flexible interface standard.

The output circuit combines high power with high efficiency to provide greater average and dynamic audio performance, while reducing normal system cooling and AC requirements by greater than 50% over conventional designs. A built-in limiter prevents gross distortion during clipping to further enhance dynamic performance. A sophisticated thermal management system varies fan speed with heat requirements and, in the event of over-temperature, reduces gain until normal operating temperatures return. Thermal muting occurs only in extreme cases.

The rear panel uses QSC's Open Input Architecture™ which allows the use of second generation signal processing and a wide variety of computer control, optional input connectors, input transformers, cinema crossovers, power limiters, precision attenuators, and other signal processing cards as they become available.

<table>
<thead>
<tr>
<th>LOAD</th>
<th>FTC CONTINUOUS AVERAGE</th>
<th>EIA WATTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20Hz-20kHz, 0.1% THD</td>
<td>1kHz, 1% THD</td>
</tr>
<tr>
<td>Stereo (W/Ch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8Ω</td>
<td>800 watts</td>
<td>825 watts</td>
</tr>
<tr>
<td>4Ω</td>
<td>1200 watts</td>
<td>1250 watts</td>
</tr>
<tr>
<td>2Ω</td>
<td></td>
<td>1600 watts*</td>
</tr>
<tr>
<td>Mono-Bridged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16Ω</td>
<td>1600 watts</td>
<td>1650 watts</td>
</tr>
<tr>
<td>8Ω</td>
<td>2400 watts</td>
<td>2500 watts</td>
</tr>
<tr>
<td>4Ω</td>
<td></td>
<td>3200 watts*</td>
</tr>
</tbody>
</table>

Typical

1600 watts per channel at 2 ohms
1200 watts per channel at 4 ohms
Advanced thermal management system
Built-in clip limiter
Detented gain controls with 2 dB steps for easy resetting
Comprehensive LED status arrays
High efficiency, 3-step output circuit for improved thermal performance and lower AC current consumption
Dual mono configuration— independent transformer and power supply on each channel, for greater reliability
Quiet variable speed fan
Independent DC, sub audio speaker protection & thermal overload protection on each channel
Open Input Architecture™—Level 2
Patented Output Averaging™ short-circuit protection
XLR and barrier balanced input connectors
Mono-bridging/parallel switch
Speakon and "Touch proof" binding post output connectors
THX approved for cinema applications
3 year warranty PLUS optional 3 year extended service contract

QSC
1675 MacArthur Boulevard
Costa Mesa, California 92626-1468 USA
Phone: 714/754-6175 Fax: 714/754-6174

EX Series
OUTPUT POWER (per channel)
8 ohms, 20 Hz to 20 kHz: 0.1% THD, 800 watts
8 ohms, 1 kHz: 1% THD, 685 watts
4 ohms, 20 Hz to 20 kHz: 0.1% THD, 1200 watts
4 ohms, 1 kHz: 1% THD, 1250 watts
2 ohms, 1 kHz: 1% THD, 1600 watts

OUTPUT POWER (bridged mono)
8 ohms, 20 Hz to 20 kHz: 0.1% THD, 2400 watts
4 ohms, 1 kHz: 1% THD, 3200 watts
*nominal

DISTORTION:
SMpte-IK, less than 0.05%

FREQUENCY RESPONSE:
20 Hz to 20 kHz, ±0.1 dB
3 Hz to 100 kHz, ±2/3 dB

DAMPING FACTOR:
Greater than 200

DYNAMIC HEADROOM:
3 dB at 4 ohms

NOISE:
103 dB below rated output (2 Hz to 20 kHz)

SENSITIVITY:
1.0 Vrms for rated power (8 ohms)

VOLTAGE GAIN:
90 (10 dB)

INPUT IMPEDANCE:
10 k balanced, 20 k unbalanced

CONTROLS:
Front: AC Switch, Ch 1 and Ch 2 Gain knobs (with 2 dB detents), Phase button. Rear: Parallel/Stereo/Bridge Switch

INDICATORS:
PWR-GN: Green LED
LEVEL -30: Yellow LED
LEVEL -10: Yellow LED
LIM-CLIP: Red LED
TEMP-PROT: Red LED (for over-temperature)

CONNECTORS: (each channel)
Input: Barrier strip and XLR
Speakers: "touch proof" binding post, Neutrik "Speakon" connectors, Neutrik "Speakon" speaker

COOLING:
Continuously variable speed fan, rear-to-front air flow

AMPLIFIER PROTECTION:
Full short circuit, open circuit, ultrasonic, and RF protection. Stable into reactive or mismatched loads.

LOAD PROTECTION:
On/off muting, Clip limiting, DC-fault load grounding relay with internal fault fuses.

OUTPUT CIRCUIT TYPE:
Complementary linear outputs, 3-step high efficiency circuit.

POWER REQUIREMENTS:
100/120, 240 VAC, 50-60 Hz

POWER CONSUMPTION:
Normal Operation: 4 ohms per channel: less than 12 amps, 120 Vac (1440 VA) maximum full power, 8 ohms per channel: 58 amps, 120 Vac (7000 VA)

DIMENSIONS:
19.05 (483 cm) rack mounting
5.25 (133 cm) tall (3 spaces)
17.3 (44.5 cm) deep (rear support ears)

WEIGHT:
69 lbs (31.2 kg) net, 73 lbs (33.1 kg) shipping

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The amplifier shall contain all solid-state circuitry, using complementary silicon output devices. The amplifier shall exceed the efficiency of an ordinary class-B linear output circuit. Overall electrical efficiency, with four or eight ohm loads, shall exceed 50% at 1 kW output, and 35% at 19 kW power. The amplifier shall operate from 50-60 Hz AC power, with internal taps for selecting voltages 100, 120, or 210-240 VAC. The amplifier shall operate from an ordinary household AC outlet, drawing less than 14 A of AC current when driven with a standard program material at a rated output into four ohm loads. The amplifier shall be supplied with a single molded AC cord having an appropriate AC plug for the intended operating voltage.

The amplifier shall employ forced air cooling with a variable speed fan for minimum acoustic noise.

Air flow shall be from rear to front to avoid temperature rise inside the cabinet. Rack mounting shall be possible without clearance necessary between amplifiers for ventilation. The amplifier shall be capable of continuous operation at 1/2 power, four-ohm loads, for ambient temperatures up to 104°F (40°C).

The amplifier shall contain two independent channels on separate printed circuit boards, with separate transformers, power supplies, and protection systems. All protection systems shall be self-resetting upon removal of fault, and the remaining channel shall continue to operate. Each channel shall have independent protective circuitry against open circuit, short circuit, or mismatched loads. Each channel shall monitor temperature of its heat sink and power transformer, and shall trigger fan speed boost, and if necessary, signal routing to prevent excessive temperature rise. Each channel shall have a 5 Ohm limit, acting for three seconds after turn-on and within 1/4 second after turn-off or less of AC power. Each channel shall have a clip-fault protection for the load, consisting of a low-gain clip with fault fusing to interrupt power. Fault fuses shall be adequately large to prevent nuisance tripping at any output power the amplifier is capable of delivering. Each channel shall have a clip-limiting circuit, using compression triggered by the onset of clipping, to limit clipping to approximately 1% of the average output signal. High frequency overloads above 20 Hz shall result in muting until the excessive signal is removed.

Each channel shall have the following controls and displays: A front panel gain control, with 20 dB steps for attenuations of 0 to 14 dB. A large LED power meter indicator; two small LED output indicators, triggering at 10 dB and 100 dB; an LED showing true amplifier clipping and activation of the limiting circuit; and a red LED which indicates muting when steadily illuminated, and excessive internal temperatures when flashing.

The output connectors for each channel shall include a "touch proof" binding post and Neutrik "Speakon" connector. A third "Speakon" connector shall be provided for single-cable bridged mono, stereo, and bridge connections.

The input connectors shall be mounted on a removable panel to permit upgrades. The standard input panel shall provide barrier strip and XLR connections for each channel, with pin 2 high. Inputs shall be electronically balanced, with a minimum impedance of 10 kilohms per side, and a common mode rejection of at least 50 dB from 20 Hz to 20 kHz. The standard input panel shall contain switches for monosig and balanced inputs, jumpers for changing the polarity of the XLR connectors, and solid-state phonos for input isolation transformers, gain reduction resistors, and fixed-order high and low pass filters.

The input panel shall have enough space behind it to contain a circuit board measuring up to 5.0" wide by 4.5" deep. The multi-pin connector to the amplifier circuitry shall carry regulated DC power of 12V, unregulated DC power of 24V, and for each channel, signals for balanced inputs, on/off command, power-on signal, output signal, temperature, clipping, and muting indication.

Each channel shall be capable of meeting the following performance criteria with both channels driven: Sine-wave output power of 500 watts into eight ohms, and 1000 watts into four ohms, 20 kHz to 20 kHz, with less than 0.1% THD. Frequency response at 20 kHz below rated power shall be ±2 kHz ±2 dB. The voltage gain shall be 80, equivalent to ±3dB, and the input sensitivity shall be 1.0 mV. The signal to noise ratio over the range of 20 Hz to 20 kHz shall exceed 100 dB unweighted. IHF Damping factor shall exceed 200.

The amplifier chassis shall occupy three rack spaces, with provision for securing the rear panels. Depth from mounting surface to top of rear supports shall be 17.9" (45.5 cm).

Weight shall not exceed 69 lbs. (31.2 kg). The amplifier shall be the QSC Audio Products Model 4X 4000.