The EX 1600 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 40% 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.

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<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>400 watts</td>
<td>450 watts</td>
</tr>
<tr>
<td>4Ω</td>
<td>600 watts</td>
<td>675 watts</td>
</tr>
<tr>
<td>2Ω</td>
<td></td>
<td>800 watts*</td>
</tr>
<tr>
<td>Mono-Bridged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16Ω</td>
<td>800 watts</td>
<td>900 watts</td>
</tr>
<tr>
<td>8Ω</td>
<td>1200 watts</td>
<td>1350 watts</td>
</tr>
<tr>
<td>4Ω</td>
<td></td>
<td>1600 watts*</td>
</tr>
</tbody>
</table>

*Typical

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FEAT U R E S

- 800 watts per channel at 2 ohms
- 600 watts per channel at 4 ohms
- Advanced thermal management system
- Built-in clip limiting
- Detented gain controls with 2 dB steps for easy resetting
- Comprehensive LED status arrays
- High efficiency, 2-step output circuit for improved thermal performance and lower AC current consumption
- Split secondary configuration— independent 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
OUTPUT POWER (per channel)
8 ohms, 20 Hz to 20 kHz, 0.1%  THD, 400 watts
8 ohms, 1kHz, 1%  THD, 450 watts
4 ohms, 20 Hz to 20 kHz, 0.1%  THD, 600 watts
4 ohms, 1kHz, 1%  THD, 675 watts
2 ohms, 1kHz, 1%  THD, 800 watts*

OUTPUT POWER (bridged mono)
8 ohms, 20 Hz to 20 kHz, 0.1%  THD, 1200 watts
4 ohms, 1kHz, 1%  THD, 1600 watts*

DISTORTION:
SMPTE-IM, less than 0.05%

FREQUENCY RESPONSE:
20 Hz to 20 kHz, ±0.1 dB
8 Hz to 180 kHz, ±3 dB

DAMPING FACTOR:
Greater than 200

DYNAMIC HEADROOM: 3 dB at 4 ohms

NOISE: 100 dB below rated output (20 Hz to 20 kHz)

SENSITIVITY: 1.0 mVrms for rated power (8 ohms)

VOLTAGE GAIN: 56 (35 dB)

INPUT IMPEDANCE: 10k unbalanced, 20k balanced

CONTROLS:
Front: AC Switch, Ch 1 and Ch 2 Gain Knobs (with 2 dB detente).
Back: Parallel/Stereo/Bridge Switch

INDICATORS:
PWR-ON: Green LED
LEVEL-30: Yellow LED
LEVEL-15: Yellow LED
LIM-CLIP: Red LED
TEMP-PROT: Red LED (flashes for over-temp)

CONNECTORS: (each channel)
Input: Barrier strip and XLR
Speakers: "Touch probe" binding posts; Neutrik "Speakon" connectors; stereo Neutrik "Speakon".

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. 2-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, 2 ohms per channel: 32 amps, 120 Vac (3080 VA)

DIMENSIONS:
19.0" (483 mm) rack mounting
3.5" (89 mm) tall (2 spaces)
17.9" (455 mm) deep (rear support ears)

WEIGHT: 44 lbs (20 kg) net, 52 lbs (23.6 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 44% at 1/2 power, and 50% at 1/4 power. The amplifier shall operate from 50-60 Hz AC power, with internal fuse for protection and selection ratings 100-120, 220-240 Vac. The amplifier shall be powered from a nominal household AC outlet, drawing less than 1200 VA when driven with a random program material at 1/4 rated power 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. The front panel shall be free of glare from reflection, and not interfere with printed or illuminated signage. The front panel shall be of high quality, fine-finished, and capable of easy cleaning without damage to the finish. The front panel shall be of high quality, fine-finished, and capable of easy cleaning without damage to the finish.

The amplifier shall contain two independent channels on a common printed circuit board, with separate secondary transformer windings, 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 transistors and power transformer, and shall trigger fan speed boost if necessary, signal muting if ambient excessive temperature rises. Each channel shall have off-on muting for three seconds after turn-on, and within 1.4 seconds after turn-off loss of AC power. Each channel shall have DC fault protection for the load, consisting of a load-grounding relay with fault-fusing to interrupt power. Fault fuses shall be large enough to prevent nuisance tripping at any output power the amplifier is capable of delivering. Each channel shall have soft-start circuitry, using compensation triggered by the onset of clipping, to limit clipping to approximately 7% of the average output signal. High frequency overload above 20 kHz 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 11 detents, having 2 dB steps for attenuations of 0 to 14 dB, 12 dB, 24 dB, a green LED power-on indicator, two yellow LED output indicators, triggering at 30 dB and 100 dB, a red LED showing true clipping and indication of the clipping circuitry, and a red LED which indicates muting when steadily illuminated, and excessive internal temperatures when flashing.

The input connectors for each channel shall include a "touch probe" binding post and Neutrik "Speakon" connectors. A third "Speakon" connector shall be provided for single-cable banana plugs, stereo, and stereo XLR connection.

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 low input impedance of 10 kohms per side, and a common mode rejection of at least 50 dB at 20 Hz to 20 kHz. The standard input panel shall contain switches for mono-bridging and parallel inputs, jumpers for changing the polarity of the XLR connectors, and selector switches for input source selection and gain, reduction resistors, and front-end 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 4.3" high. The multi-pin connector to the amplifier circuitry shall carry regulated DC power of ±5 V, unregulated DC power of ±20 V, and each channel, for balanced inputs, on/off command, power-on monitor, output signal, temperature, clipping, and muting indication.

Each channel shall be capable of meeting the following performance criteria when driven by channel drivers: sine wave output power of 400 watts into eight ohms, and 600 watts into four ohms, 200 to 200 Hz, with less than 0.1% THD. Frequency response shall be ±0 dB at 315 Hz and ±1 dB at 1 kHz. The power gain shall be 30 dB, equivalent to 325 dB, and the input sensitivity shall be 1.0 microwatts. The signal to noise ratio over the range of 20 Hz to 20 kHz shall exceed 100 dB unweighted. HF damping factor shall exceed 320.

The amplifier chassis shall occupy two rack spaces, with provision for securing the rear panel. Depth from mounting surface to tips of rear supports shall be 17.6" (45.5 cm). Weight shall not exceed 44 lbs (20 kg). The amplifier shall be the QSC Audio Products Model EX 1600.