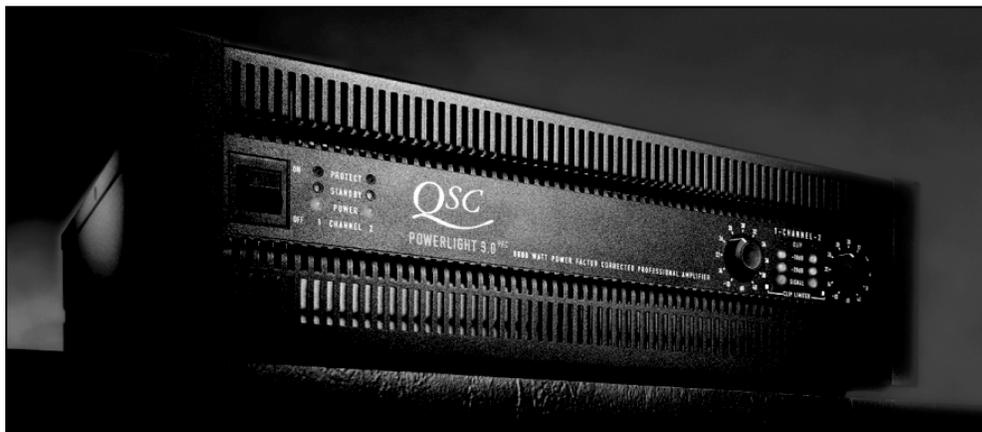


PowerLight 9.0^{PFC}

F E A T U R E S



Highest continuous output capacity of any audio amplifier

Highest output voltage swing of any audio amplifier

First audio power amp with PFC. PowerWavePFC™ Switching Technology improves audio performance and lowers AC current requirements

Lowest AC current draw per watt of output

Four-step Class H output for the highest efficiency of any linear amplifier

First Current Cell™, quasi-complementary full-bridge output circuit using ultra-high power N-channel MOSFETs

Ideal for powering subwoofers and low frequency drivers or high-power full-range systems

Zero inrush current at start-up avoids tripping circuit breakers

Line and load regulation maintains peak power output despite AC fluctuations

Clip Limiter (user defeatable)—reduces distortion, helps protect loudspeakers

Unique clip-tracking circuitry provides instant recovery and maintains constant damping

Detented gain controls with 2 dB steps for easy resetting

Neutrik “Combo” (XLR & ¼”) and Euro-style barrier balanced input connectors

Stereo/bridge/parallel mode switch

Custom-designed, extra large “touchproof” binding post output connectors—60A rating

Remote AC power control

Data port for MultiSignal Processor

3 year warranty PLUS optional 3 year extended service contract

The **PowerLight™ 9.0^{PFC}** sets new standards in high power professional amplifiers, delivering over 4500 watts/ch. at 2 ohms. At only 3RU, 19.5” deep, and 59 lbs., the PowerLight 9.0^{PFC} has the highest ratio of power to size and weight ever achieved by a professional power amplifier.

QSC engineered this massive power output capacity and compact size through several breakthroughs in power supply technology and output circuit design. Foremost among these is the first incorporation of power factor correction (PFC) in an audio amplifier power supply. PFC lowers average AC current requirements by as much as 40% and peak

requirements up to 80%, greatly reducing the strain on AC distribution.

The amplifier also features line and load regulation, making its peak power capacity immune to drops in AC line voltage. Other power supply features include true soft start and a frequency-invariant design that operates on any AC line frequency.

The amplifier’s output circuit is equally innovative. State-of-the-art high-speed components and large-die, N-channel MOSFETs combine with a four-tiered DC supply to yield efficiency comparable to Class D designs, but the audio circuitry operates in linear mode for lowest distortion and noise.

| LOAD | FTC CONTINUOUS AVERAGE | | EIA WATTS |
|----------------------|------------------------|------------|---------------|
| Both channels driven | 20 Hz–20 kHz, 0.2% THD | | 1 kHz, 1% THD |
| Stereo (W/Ch) | 8Ω | 1800 watts | 1950 watts |
| | 4Ω | 3200 watts | 3400 watts |
| | 2Ω | | 4500 watts |
| Bridged mono | 16Ω | 3600 watts | 3900 watts |
| | 8Ω | 6400 watts | 6800 watts |
| | 4Ω | | 9000 watts |

Guaranteed minimum specs

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Patents pending

PowerLight™

OUTPUT POWER (per channel)

- 8 Ω, 20 Hz–20 kHz, 0.2% THD, 1800 watts
- 4 Ω, 20 Hz–20 kHz, 0.2% THD, 3200 watts
- 8 Ω, 1 kHz, 1% THD, 1950 watts
- 4 Ω, 1 kHz, 1% THD, 3400 watts
- 2 Ω, 1 kHz, 1% THD, 4500 watts

OUTPUT POWER (bridged mono)

- 16 Ω, 1 kHz, 1% THD, 3900 watts
- 8 Ω, 1 kHz, 1% THD, 6800 watts
- 4 Ω, 1 kHz, 1% THD, 9000 watts

DISTORTION (SMPTE-IM): less than 0.02%

DISTORTION (typical):

- <0.03% THD, 8Ω, 20 Hz–2 kHz @ 1800 watts
- <0.03% THD, 4Ω, 20 Hz–2 kHz @ 3200 watts
- <0.05% THD, 2Ω, 20 Hz–2 kHz @ 4500 watts

FREQUENCY RESPONSE:

- 20 Hz to 20 kHz, ±0.15 dB
- 2 Hz to 50 kHz, +0, -3 dB

DAMPING FACTOR: (1 kHz and below)

2000 or greater

NOISE: 107 dB below rated output (20 Hz–20 kHz)

SENSITIVITY: 3.0 Vrms (+11.8 dBu) for rated power @ 8Ω

2.8 Vrms (+11.2 dBu) for rated power @ 4Ω

CONTROLS:

- Front: AC switch, Ch. 1 and Ch. 2 gain knobs, Ch. 1 and Ch. 2 Clip Limiter switches
- Rear: Parallel/Stereo/Bridge switch, Remote AC Control terminal strip

VOLTAGE GAIN: 40× (32 dB)

INPUT IMPEDANCE: 10K unbalanced, 20K balanced

INDICATORS: (each channel)

- PROT: Red LED CLIP: Red LED
- STANDBY: Yellow LED LEVEL -10 dB: Yellow LED
- PWR-ON: Green LED LEVEL -20 dB: Yellow LED
- SIGNAL: Green LED

CONNECTORS:

- Input: Euro-style terminal strip and Neutrik "Combo" XLR + ¼" TRS input
- Output: "Touch-proof" binding posts, 60A rated; and Neutrik Speakon

COOLING:

Four variable-speed fans, rear-to-front air flow

AMPLIFIER PROTECTION:

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

LOAD PROTECTION:

On/off muting, DC-fault power supply shutdown.

OUTPUT CIRCUITRY:

N-channel MOSFET Current Cell™ full-bridge, four-step Class H output

POWER REQUIREMENTS: (120 VAC)

Multiply current by 0.5 for 230V units.

| LOAD | IDLE | NORMAL PROGRAM 1/8 POWER ¹ | MAX PROGRAM 1/3 POWER ² | MAX SINEWAVE 1% CLIPPING |
|------|-------|--|---------------------------------------|-----------------------------|
| 8Ω | 2.4 A | 12 A | 23 A | 49 A |
| 4Ω | 2.4 A | 19 A | 38 A | 87 A |
| 2Ω | 2.4 A | 24 A | 52 A | 125 A |

1. Pink noise @ 1/8 of rated power represents typical audio program with minimal clipping.
2. Pink noise @ 1/3 of rated power represents audio program with heavy clipping.

DIMENSIONS:

- 19" (48.3 cm) rack mounting
- 5.25" (13.3 cm) tall (3 rack spaces)
- 17.9" (45.5 cm) deep (behind front mounting rails)
- 1.6" (4.1 cm) in front of mounting rails
- 19.5" (49.5 cm) overall depth

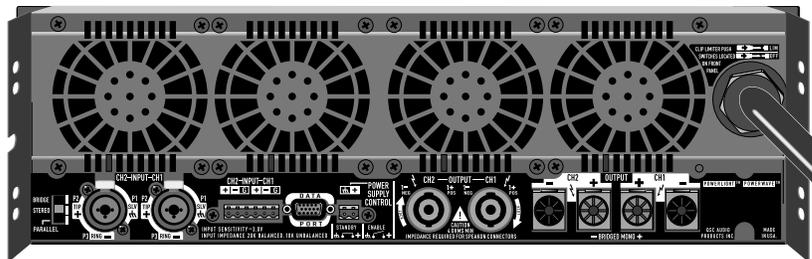
WEIGHT: 59 lbs (27 kg) net, 66 lbs (30 kg) shipping

†Output Averaging™ short circuit protection (US Patent 4,321,554)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The amplifier shall contain all solid-state circuitry, using N-channel MOSFET silicon output devices in a quasi-complementary full bridge configuration. The amplifier shall employ a four-level class-H stepped rail structure and shall exceed the efficiency of an ordinary class-B linear output circuit. The amplifier shall operate from 50–60 Hz AC power. The amplifier shall draw less than 2280 VA when driven with random program material at 1/8 rated power into four ohm loads. The amplifier shall be supplied with an AC cord having a standard twist-lock 30-ampere AC plug, NEMA L5-30, for 120 V units and shall operate from a 30A outlet; 220–240 V units shall be equipped with a 320-C19 16A IEC mains connector. The amplifier shall comply with FCC part 15 Class A requirements.



The amplifier shall employ forced-air cooling with variable speed fans for minimum acoustic noise. The flow of air shall be from rear to front to avoid temperature rise inside the equipment rack into which it is mounted. It shall be possible to fully and safely operate one or more rack-mounted amplifiers without empty space above, below, or in between them. The amplifier shall be capable of continuous operation at 1/3 power into 4-ohm loads in ambient temperatures up to 104°F (40°C).

The amplifier shall contain two independent amplifier channels, each with separate and independent power-factor-corrected switching power supplies. The amplifier's power supplies shall exhibit an AC line power factor better than 0.99 at all output powers in excess of 500 watts. The 120V units shall operate correctly on program material for line voltages of 80 volts to 135 volts when connected to a circuit nominally rated at 120 VAC, and 230V units shall have a similar compliance range on 230 VAC circuits.

All amplifier protection systems shall be self-resetting upon removal or cessation of the offending faults. Each channel shall have protective circuitry against short circuit or mismatched loads. Each channel shall independently monitor heat sink temperature and shall adjust its fan speed to reduce internal heat sink temperatures, and if necessary, shall initiate signal muting to prevent excessive temperature rise. Both channels shall have on-off muting, acting for two seconds after turn-on, and within ¼ second after turn-off or loss of AC power. Each channel shall have DC fault protection for the load, consisting of a shutdown of each amplifier channel's power supply. There shall be no relay contacts in series with the amplifier outputs.

On the front panel shall be the AC power switch; a green power-on LED indicator; a yellow standby LED indicator and a red protect LED indicator. Each channel shall have the following controls and displays: a front panel detented gain control, with 11 gain settings: 32 dB, 30 dB, 28 dB, 26 dB, 24 dB, 22 dB, 20 dB, 18 dB, 14 dB, 8 dB, -∞; a recessed clip limiter defeat switch; a green "signal present" LED triggering at -30 dB; two yellow LED output indicators, triggering at -20 dB and -10 dB; a red LED showing true amplifier clipping. Each channel shall have a user-defeatable clip limiter.

The output connectors for each channel shall be Neutrik® Speakon™ connectors in parallel with 60-ampere "touch-proof" binding posts, accepting individual banana plugs or up to 4 AWG (6 mm) wire. Connector terminals shall be arranged on one-inch centers to discourage the use of low power connections and to comply with European safety codes.

The rear panel input shall provide barrier strip and Neutrik "Combo" connectors for each channel. The XLR input shall be wired with pin 2 positive, pin 3 negative, and pin 1 shield; the ¼" TRS input shall be wired with tip positive, ring negative, and sleeve grounded. 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.

A high-density 15-pin Data Port connector shall carry audio and amplifier operational status signals to and from a QSC MultiSignal Processor.

A recessed slide switch on the rear panel shall allow selection of stereo, bridging, or parallel operating modes. A two-position barrier strip on the rear panel shall be used for remote control of the power supplies; making an electrical connection between the terminals shall place both amplifier channels in standby mode when the front panel power switch is in the "on" position, while opening the connection causes the power supplies to resume operation. The front panel power switch shall function as a master switch that removes all AC power.

Each channel shall be capable of meeting the following performance criteria with both channels driven: sine-wave output power of 1800 watts into eight ohms, and 3200 watts into four ohms, 20 Hz to 20 kHz, with less than 0.2% THD. Frequency response at 3 dB below rated power shall be 20 Hz to 20 kHz, ±0.15 dB. The voltage gain shall be 40×, equivalent to 32 dB, and the full-power input sensitivity for an 8-ohm load shall be 3 V_{RMS}. The signal to noise ratio over the range of 20 Hz to 20 kHz shall exceed 106 dB relative to full output. IHF damping factor shall exceed 2000.

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

Weight shall not exceed 60 lbs (27.3 kg). The amplifier shall be the QSC Audio Products PowerLight 9.0Pfc.



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