



## 7794

### 5-kVA, DC-enabled Linear Power Amplifier

#### Performance Overview:

AC Power (up to 20 kHz):	5000 watts RMS
Small Signal:	28V p-p to 250 kHz
For High-Power Applications to:	100 kHz
40 mS Pulse (0.25Ω):	210 Ap
Slew Rate:	>35 V/μs
Output Voltage:	±100 Vp
Output Impedance:	3.2 mΩ in series with 2.2 μH

AE Techron's **7794** amplifier is a 5,000-VA, DC-enabled, four-quadrant amplifier that offers up to 200 Ap power, DC - 100 kHz bandwidth, and controlled-current or controlled voltage operation. The 7794 works best into loads of 0.5 ohms or less. For greater voltage or current (up to 800 Ap), units can be combined in parallel or series.

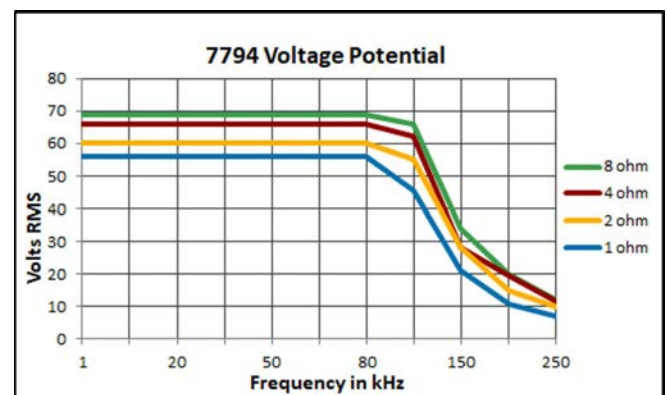
Typical use is when large currents are needed to drive very-low impedances for long periods of time. The 7794 is often used as a battery substitute for transient immunity testing requiring a battery as specified in EMC Test Standards for military, aviation, and the automotive industries.

#### One Hour DC Performance

VOLTAGE DC	DC CURRENT
13.5	60
28	106
32	115
80	70

#### Features

- Stable when driving a wide range of resistive, inductive or capacitive loads
- 60A continuous at 13.8V DC
- 200A in-rush current capability
- 250 kHz small signal bandwidth
- ±95V DC capable
- Greater than 35 V/μs slew rate
- Four-quadrant operation (source and sink).
- Field-selectable controlled-voltage or controlled-current modes of operation.
- Can be switched between rail supply modes to optimize for various load impedances
- Protection circuitry protects the amplifier from input overloads, improper output connection (including shorted and improper loads), over-temperature, over-current, and supply voltages that are too high or low.



## Specifications

### Performance

Testing performed at 208V/415V AC. 7794 amplifiers can operate from 400V AC  $\pm 10\%$ . Since these amplifiers have an unregulated power supply, low line conditions may slightly affect the maximum voltage potential.

All testing was performed in Controlled-Voltage (CV) mode. Accuracy was measured when driven into a 10-ohm load with between 0.1V DC and 6V DC or between 0.2V AC and 5V AC presented at its inputs.

**Frequency Response** (1 watt into 8 ohms),

**DC–30 kHz:** +0.1 to -0.5 dB

**DC–150 kHz:** +0.1 to -5.2 dB

**8-Ohm Power Response** (continuous duty),

**DC to 50 kHz:**  $\pm 95$  Vpk

**DC to 150 kHz:**  $\pm 50$  Vpk

**DC to 200 kHz :**  $\pm 25$  Vpk

**Maximum Continuous Output Power:** 5000 watts RMS

**Slew Rate:**  $>35$  V/ $\mu$ Sec

**Phase Response** (10 Hz - 10 kHz):  $\pm 8.3$  degrees

**Unit to Unit Phase Error:**  $\pm 0.1$  degrees at 60 Hz

**Output Offset:**  $<\pm 200$   $\mu$ V

**Output Offset Current:**  $<10$  mA, DC

**Residual Noise, 10 Hz to 20 kHz:**  $<250$   $\mu$ V ( $<0.25$  mV)

**THD** (DC - 20 kHz):  $<0.25\%$

**DC Drift,**

**From Cold to Maximum Operating Temperature:**  $<\pm 400$   $\mu$ V

**After 20 Minutes of Operation:**  $\pm 200$   $\mu$ V

**Output Impedance:** 3.2 m $\Omega$  in Series with 2.2  $\mu$ H

**Input Characteristics,**

**Balanced with ground:** Three terminal barrier-block connector, 20 k $\Omega$  differential

**Unbalanced:** BNC connector, 10 k $\Omega$  single-ended

**Gain,**

**Voltage Mode:** 20 volts/volt

**Current Mode:** 20 amperes/volt

**Gain Linearity** (over input signal, from 0.2V to 5V),

**DC:** 0.0125%

**AC:** 0.030%

**Max Input Voltage:**  $\pm 10$ V, balanced or unbalanced

**Input Impedance:** 20 k $\Omega$  differential

**Input Sensitivity:** 3.0V input for 3800W output into 1 ohm, adjustable

**Common Mode Rejection Range:**  $\pm 11$ V DC maximum

**Common Mode Rejection Ratio:** Better than 70 dB

### Status Display, Control, I/O

**Front Panel LED Displays indicate:** Ready, Standby, Fault

**Soft Touch Switches for:** Run, Stop, Reset

**LCD Display:** Can be configured for up to four simultaneous displays reporting one, two, or all four of the following:  $V_p$ ,  $V_{RMS}$ ,  $A_p$ ,  $A_{RMS}$ . Also reports any fault conditions that occur and suggests corrective action.

**Back Panel Power Connection:** NEMA-style locking receptacle; matching AC connector also included

**Signal Output:** 4-position terminal barrier block (OUTPUT / COMMON / SAMPLED COMMON / CHASSIS GROUND); resistor installed between SAMPLED COMMON AND CHASSIS GROUND is a 2.7-ohm, 2W, 5%, metal-oxide resistor

**Signal Input:** User-selectable BNC or Barrier Strip, Balanced or Unbalanced

**Interlock Connector:** 25-pin D-sub connector used for amplifier control and status applications; also used in multi-amplifier applications

### Communication Capabilities

**Current Monitor:** 20A/V  $\pm 1\%$ ; 10A/V  $\pm 1\%$  (differential configuration)

**Reporting:** System Fault, Over Temp, Over Voltage, Over Load

**Remote Control via Interlock Connector:** Force to Standby, Reset after a Fault

### Protection

**Over/Under Voltage:**  $\pm 10\%$  from specified supply voltage amplifier is forced to Standby

**Over Current:** Breaker protection on both main power and low-voltage supplies

**Over Temperature:** Separate output transistor, heat sink, and transformer temperature monitoring and protection

### Physical Characteristics

**Chassis:** The amplifier is designed for stand-alone or rack-mounted operation. The chassis is aluminum with a black powder-coat finish. The unit occupies seven EIA 19-inch-wide units.

**Weight:** 153 lbs (69 kg), Shipping 168 lbs (76.2 kg)

**AC Power:** Three-phase, 208V AC ( $\pm 10\%$ ), 47-60 Hz, 30A AC service; (400V AC ( $\pm 10\%$ ), 15A model available)

**Operating Temperature:** 10°C to 50°C (50°F to 122°F), maximum output power de-rated above 30°C (86°F.)

**Humidity:** 70% or less, non-condensing

**Cooling:** Forced air cooling from front to back through removable filters via six 100ft<sup>3</sup>/min. fans. No space is required between rack-mounted amplifiers. Air filters are removable from the rear via one fastener per side and may be eliminated if cabinet filtration is provided.

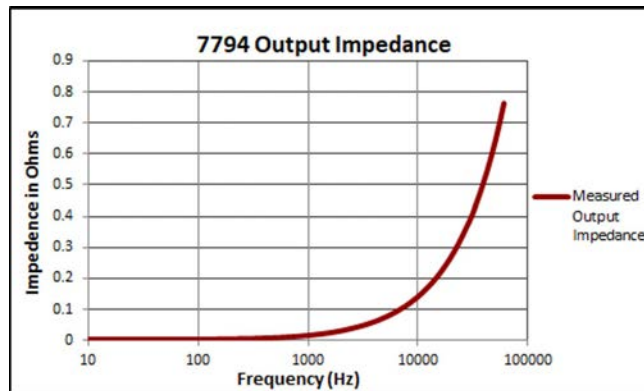
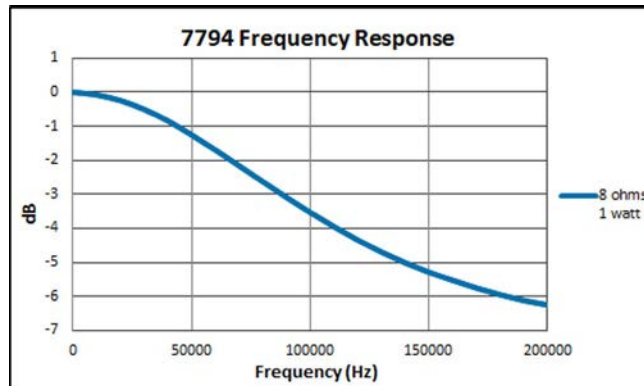
**Dimensions:** 19" x 22.8" x 12.25" (48.3 cm x 57.9 cm x 31.1 cm)

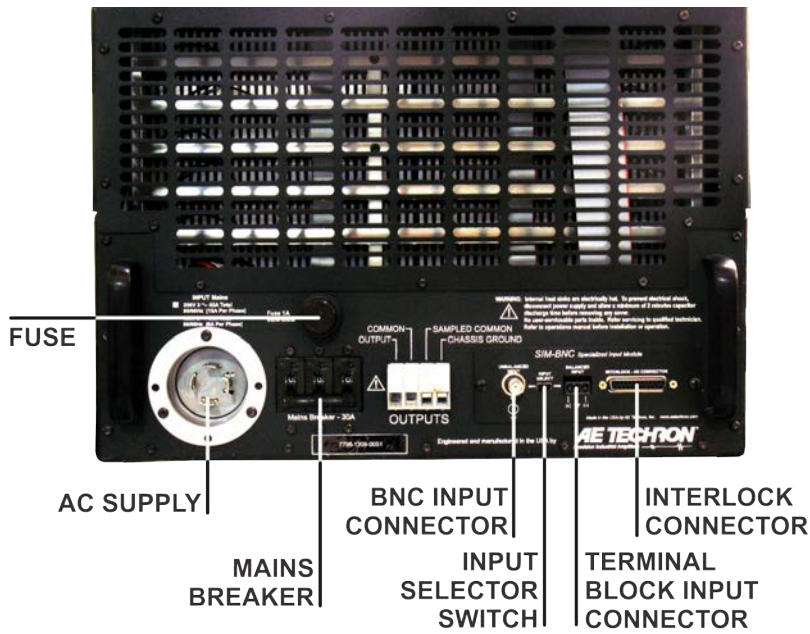
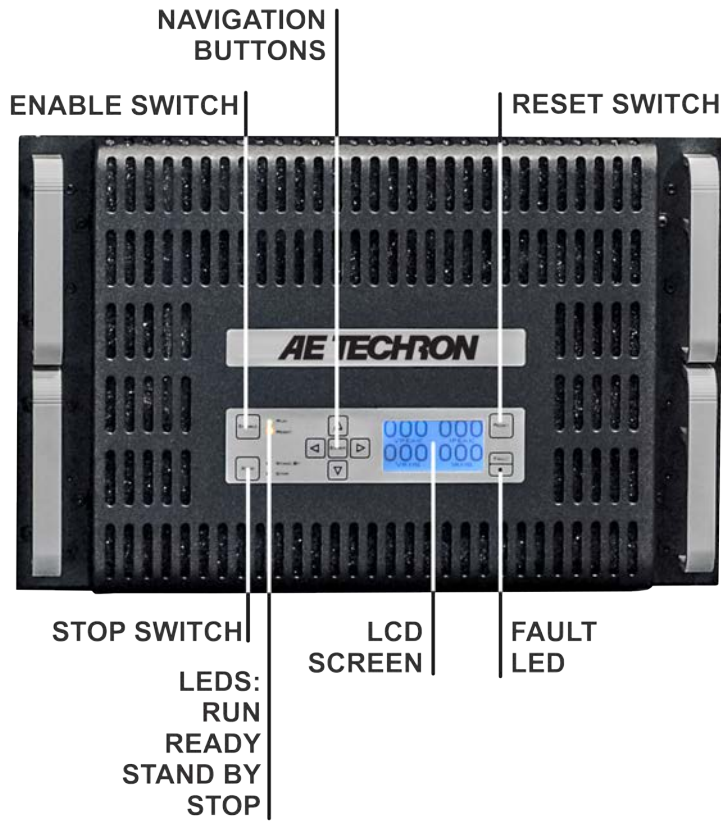
## AC Output

Ohms	PEAK OUTPUT						RMS OUTPUT					
	40 mSec Pulse, 20% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle			
	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Watts	
8	98	13	98	13	97	13	69	9	69	9	600	
4	95	23	95	23	95	23	66	16	66	16	1000	
2	88	44	88	44	88	44	60	30	60	30	1800	
1	81	81	81	81	81	81	56	56	56	56	3200	
0.5	72	144	72	144	72	144	50	100	50	100	5000	
0.25	50	210	32	134	32	134	23	91	23	91	2000	
0.125	23	197	23	194	23	191	16	133	16	130	2000	

Note: Testing performed into resistive loads as specified. Performance reported is typical into the specified load up to 20 kHz frequency levels. Performance may be affected when operating into highly reactive loads or above 20 kHz, reducing maximum voltage, current and power output.

### Performance





**CE** 400V versions of this product bear the CE mark

*AE Techron Sales Representative*