



## 7548

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

#### Performance Overview:

|                                    |                              |
|------------------------------------|------------------------------|
| AC Power<br>(up to 20 kHz):        | 3380 watts RMS               |
| Small Signal:                      | 28V p-p to 200 kHz           |
| For High-Power<br>Applications to: | 50 kHz                       |
| 40 ms Pulse (0.5Ω):                | 112 Ap                       |
| Slew Rate:                         | >35 V/μs                     |
| Output Voltage:                    | ±200 Vp                      |
| Output Impedance:                  | 3.2 mΩ in series with 2.2 μH |

AE Techron's **7548** amplifier is a 3300-VA, DC-enabled, high-powered unit designed to provide very low noise, low harmonic distortion and fast slew rates. It can safely drive a wide range of resistive, inductive loads.

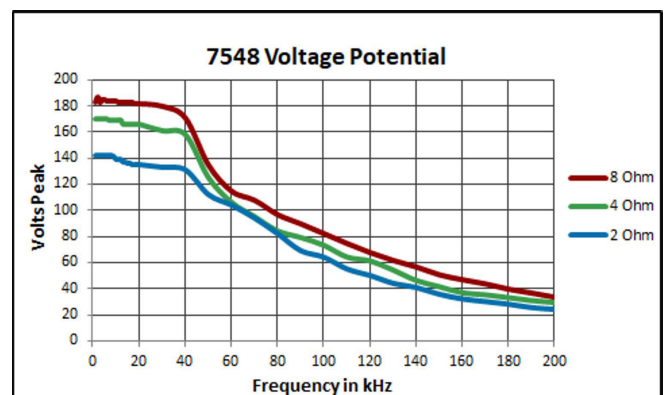
Typical use includes as a power source for EMC testing in applications that require both continuous AC or DC signals and significant short term (burst) signals. Two 7548 connected in series can output 240V RMS at 20A RMS. The 7548 can be used singly or in series to meet or exceed Aviation AC power tests requirements found in RTCA/DO 160.

The 7548 also can be used as a Voltage or Current Amplifier, so it also makes an ideal choice for driving large Helmholtz coils specified in MIL STD 461 or various Automotive Standards.

In addition, the 7548 can be connected to form large, low-distortion, two- or three-phase power systems with voltages of up to 600V L-L and 360 L-N, ideal for MIL-STD-704F (AC and 28V DC tests).

#### Features

- Four-quadrant operation (source and sink).
- Field-selectable controlled-voltage or controlled-current modes of operation
- Over 12,000 watts peak for 40 ms and 5,500 watts peak continuous into a 1-ohm load
- Continuous system output of 800 Vp or 170 Ap are possible with multiple, interconnected amplifiers
- Can be combined to form larger, more capable systems: Single-phase AC system with DC offset capable of 120VAC, 240VAC or 360VAC, or three-phase AC system with DC offset capable of 208VAC, 400VAC or up to 600VAC L-L
- 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. 7548 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, DC–30 kHz (1 watt):** +0.1 to -0.5 dB

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

**DC to 40 kHz:**  $\pm 180$  Vpk

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

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

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

**Maximum Continuous Output Power:** 3300 watts RMS

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

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

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

**Phase Response (10 Hz - 10 kHz):**  $\pm 5$  degrees plus 600 nsec propagation delay

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

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

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

**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

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

**Common Mode Rejection Ratio:** Better than -65 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 five EIA 19-inch-wide units.

**Weight:** 103 lbs (46.7 kg), Shipping 115 lbs (52.2 kg)

**AC Power:** Three-phase, 208V AC ( $\pm 10\%$ ), 47-60 Hz, 20A 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 four 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 8.75" (48.3 cm x 57.9 cm x 22.2 cm)

## AC Output

| Ohms | PEAK OUTPUT                      |      |                               |      |                            |      | RMS OUTPUT                    |      |                            |      |       |  |
|------|----------------------------------|------|-------------------------------|------|----------------------------|------|-------------------------------|------|----------------------------|------|-------|--|
|      | 40 mSec Pulse,<br>20% Duty Cycle |      | 5 Minutes,<br>100% Duty Cycle |      | 1 Hour,<br>100% Duty Cycle |      | 5 Minutes,<br>100% Duty Cycle |      | 1 Hour,<br>100% Duty Cycle |      |       |  |
|      | Volts                            | Amps | Volts                         | Amps | Volts                      | Amps | Volts                         | Amps | Volts                      | Amps | Watts |  |
| Open | 200                              | 0    | 200                           | 0    | 200                        | 0    | 141                           | 0    | 141                        | 0    | 0     |  |
| 16   | 195                              | 12   | 195                           | 12   | 195                        | 12   | 138                           | 8    | 138                        | 8    | 1170  |  |
| 8    | 183                              | 23   | 18                            | 23   | 183                        | 23   | 129                           | 16   | 129                        | 16   | 2104  |  |
| 4    | 165                              | 41   | 165                           | 41   | 165                        | 41   | 117                           | 29   | 117                        | 29   | 3381  |  |
| 2    | 150                              | 75   | *                             | *    | 86                         | 43   | *                             | *    | 61                         | 30   | 1848  |  |
| 1.5  | 134                              | 90   | *                             | *    | *                          | *    | *                             | *    | *                          | *    | *     |  |
| 1    | 116                              | 105  | *                             | *    | *                          | *    | *                             | *    | *                          | *    | *     |  |
| 0.5  | 66                               | 112  | *                             | *    | *                          | *    | *                             | *    | *                          | *    | *     |  |

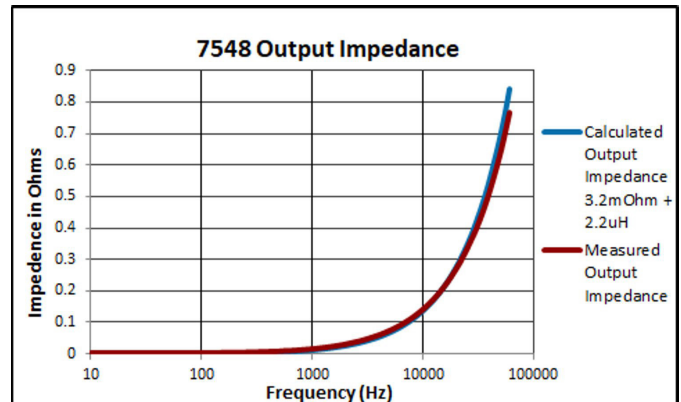
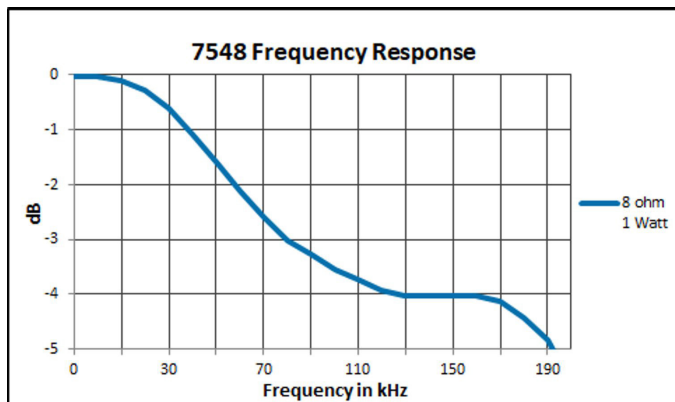
Note: Testing performed into resistive loads as specified. Performance reported is typical into the specified load up to 20 kHz frequency levels. Performance may be affected when operating into highly reactive loads or above 20 kHz, reducing maximum voltage, current and power output.

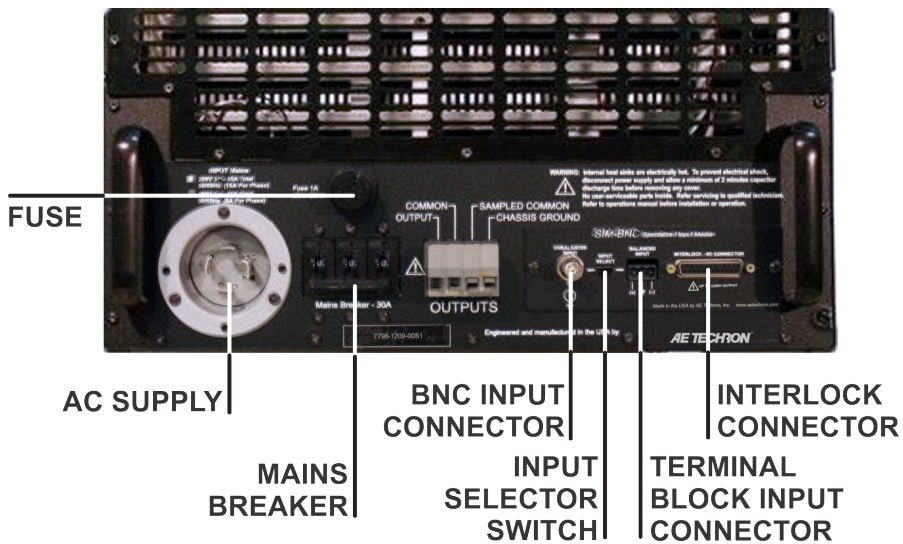
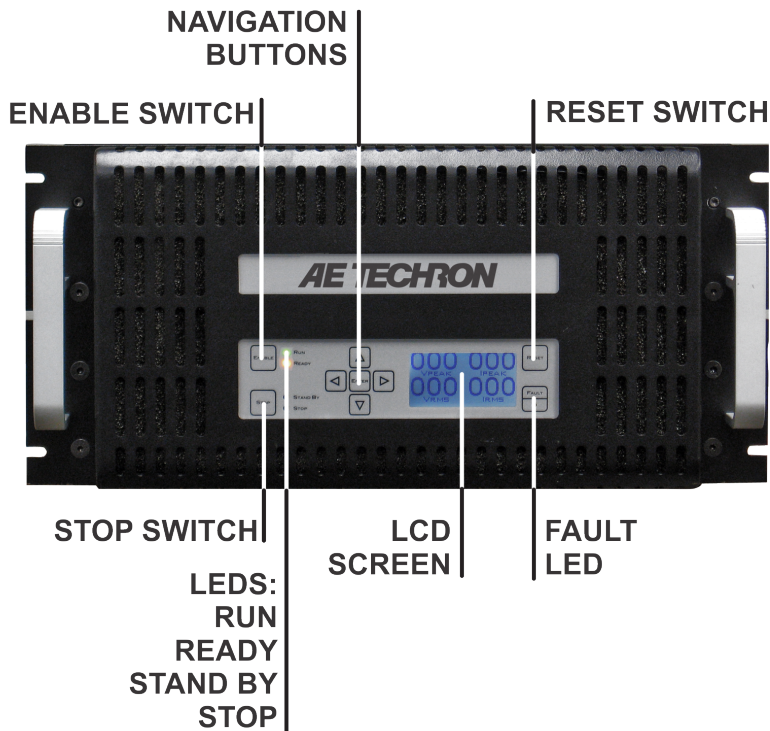
\* Testing not performed.

## DC Output

| VDC  | OUTPUT (Amperes)               |                            |
|------|--------------------------------|----------------------------|
|      | 10 Minutes,<br>100% Duty Cycle | 1 Hour,<br>100% Duty Cycle |
| 13.5 | 15                             | 10                         |
| 24   | 17                             | 12                         |
| 48   | 30                             | 20                         |

## Performance





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

*AE Techron Sales Representative*