The AE Techron **7796** is a high-powered, DC-enabled, AC amplifier that is designed to provide very low noise, low harmonic distortion and fast slew rates. The 7796 can be used singly or in series to meet or exceed Aviation AC power tests requirements found in RTCA/DO 160.

For testing to these Specifications:

MILITARY
MIL STD 461
RS101
AVIATION
DO 160, Section 16
115/230VAC
Single or Three Phase
Harmonic
DC Offset
Surge and Drop outs
AUTOMOTIVE STANDARD
SAE J1113
Part 22
AUTOMOTIVE OEM
CS2009.1
RI 140

The 7796 can be used as a Voltage or Current amplifier, and is a full four-quadrant design. This makes it an ideal choice for driving inductive loads like the large Helmholtz coils specified in MIL STD 461 or various Automotive Standards.

Two 7796 connected in series can output 200V RMS at 50A RMS at up to 30 kHz, exceeding DO 160 Section 16 normal and abnormal surge requirements.

At lower power levels it is very capable up to and past 100 kHz.

The 7796 can be connected to form large, low-distortion, two- or three-phase power systems with voltages of up to 500V L-L and 300V L-N.

7796 AC/DC Power Amplifier

Features

- Very low noise, DC enabled, 0 – 100VAC power source.
- Current-source or Voltage-source modes of operation.
- 5 kVA continuous.
- DC to 30 kHz at rated power; DC to 150 kHz at reduced power.
- Can be combined to form larger more capable systems.
  - Single phase, AC with DC offset capable systems of 0 – 200VAC or 0 – 300VAC.
  - Three phase, AC with DC offset capable systems of 208VAC, 400VAC or up to 500VAC L-L.
- 5 µS surges and drop outs.
- Four quadrant operation (source and sink).
- 3 mOhm output impedance.

Typical Performance of 7796 x 2 Series System
for DO 160 Section 16 Testing

		Continuous	In Rush / 100 mS
Steady State	115VAC	60A	140A
Abnormal Surge	180VAC	40A	100A

AC Specifications

	PEAK OUTPUT						RMS OUTPUT				
	40mSec Pulse, 30% Duty Cycle		5 Minute, 100% Duty Cycle		1 Hour, 100% Duty Cycle		5 Minute, 100% Duty Cycle		1 Hour, 100% Duty Cycle		
Ohms	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Watts
Open	181	0	181	0	181	0	128	0	128	0	0
16	159	12	159	10	159	10	112	7	112	7	795
8	159	19	154	19	154	19	109	13	109	13	1483
4	158	39	152	38	152	38	107	27	107	27	2887
2	157	79			141	71			100	50	5004
1.5	148	99			71	71			50	50	2509
1	140	140			71	71			50	50	2509
0.5	106	209			63	127			45	90	3999
0.25	53	209									

Note: Performance levels typical up to 20 kHz frequency levels. Above 20 kHz, slew rate may affect performance, reducing maximum voltage, current and power output.

Performance (Controlled Voltage Mode)

Note: Testing performed at 208V/415V AC. 7796 amplifiers can operate from 400V AC ±10%. Since these amplifiers have an unregulated power supply, low line conditions may slightly affect the maximum voltage potential.

7796P accuracy was measured when driven into a 10 ohm load with between 0.1VDC and 6VDC or between 0.2V AC and 5V AC presented at its inputs.

Frequency Response:
DC – 30 kHz, +0.1, –0.5 dB

Maximum Continuous Output Power:
5000 watts RMS

Slew Rate:
41 V/µSec

Phase Response:
±8.3 degrees (10 Hz – 10 kHz)

Unit to Unit Phase Error:
±0.1 degrees at 60Hz

Output Offset:
7796: Less than 5 mV, field adjustable to less than 1 mV
7796P: Less than 200 µV

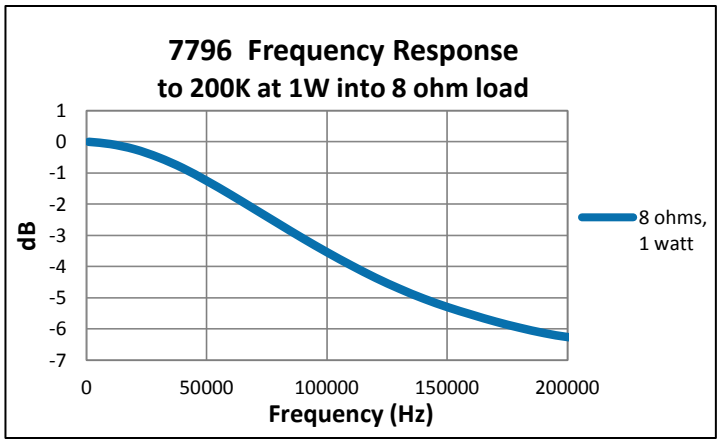
Output Offset Current:
Less than 10 milliamperes DC

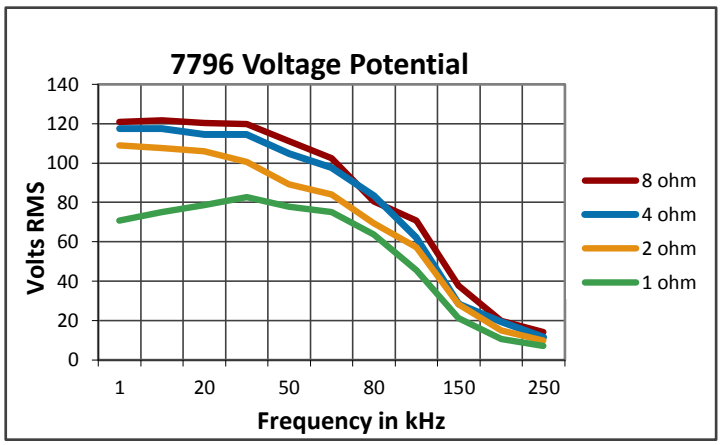
DC Drift:
7796: ±1.5 mV

7796P: ± 400 µV (from cold to maximum operating temperature); ±200 µV (after 20 minutes of operation)

Residual Noise:
Unfiltered: Less than 75 µV
Filtered (400 Hz – 30 kHz):
Less than 55 µV

THD:
DC - 30 kHz less than 0.1%





Input Characteristics

Balanced with ground:

Three terminal barrier block connector
20k ohm differential

Unbalanced:

BNC connector, 10k ohm single ended

Gain:

Voltage Mode: 20 volts/volt
Current Mode: 20 amperes/volt

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

7796: 0.1%
7796P:
DC: 0.0125%
AC: 0.030%

Max Input Voltage:

± 10 V balanced or unbalanced

Input Impedance:

20 kOhm differential

Common Mode Rejection Range:

± 11 VDC maximum

Common Mode Rejection Ratio:

70 dB

Display, Control, Status, I/O

Front Panel

LED Displays indicate:

Run, Ready, Standby, Stop, and Fault conditions in the output stage

LCD Display:

Lists type of fault condition and gives suggested corrective action

Soft Touch Switches for:

Run (Enable), Stop, Reset

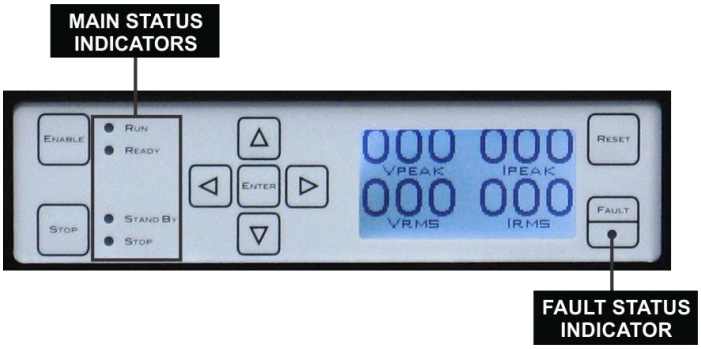
User Configurable:

LCD display can be configured for up to four simultaneous displays reporting one, two or all four of the following: Voltage Peak, Voltage RMS, Current Peak, and Current RMS

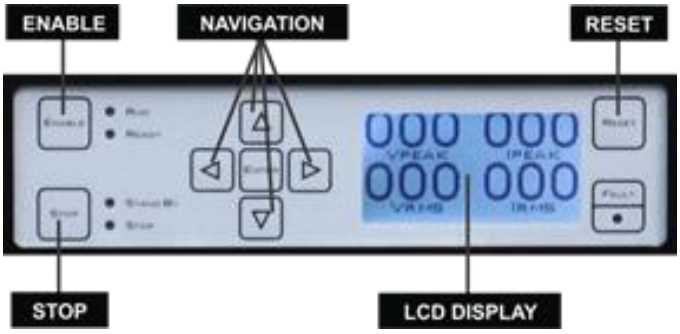
Back Panel

Power Connection:

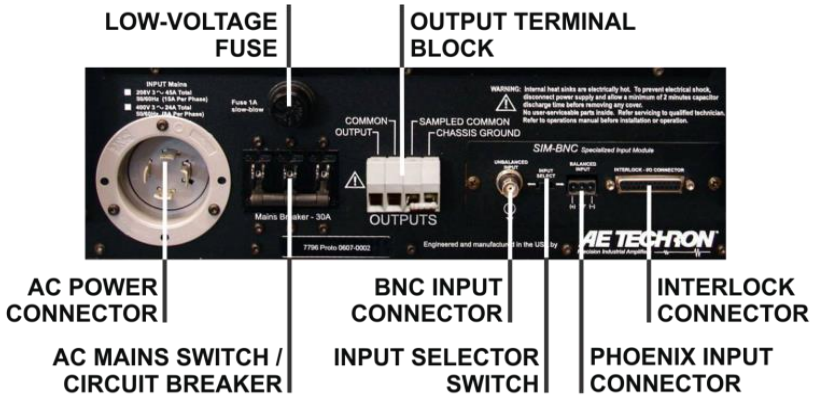
NEMA-style locking receptacle; matching AC connector also included



7796 Front Panel Indicators



7796 Front Panel Display and Controls



7796 Back Panel

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 Unbalanced BNC or Balanced Barrier Strip

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

Communication Capabilities

Current Monitor:
± 1V / 20A ±1%

Reporting:
System Fault, OverTemp, Over Voltage, Overload

Control:
Force to Standby; Reset after a fault

Protection

Over/Under Voltage:
± 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:
All aluminum construction designed for stand-alone or rack-mounted operation with black chassis; the amplifier occupies seven EIA 19-inch-wide rack units

Weight:
153 lbs. (69 kg)

AC Power:
Three-phase, 208 VAC ±10%, 47-60 Hz, 30A AC service. (400 VAC +/-10%, 20A version available). A toggle switch circuit breaker opens all legs of the AC mains on excess current demand.

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 100 ft3/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 in. x 22.8 in. x 12.25 in. (48.3 cm x 57.9 cm x 31.1 cm). Unite occupies seven EIA 19-inch-wide rack units.

AE Techron Sales Representative