The AE Techron 7224 amplifier is a 1 kVA, DC-enabled unit that provides exceptional versatility and value. It features DC to 300 kHz bandwidth and offers a wide range of field-configurable options. A single 7224 can output a 40 mSec pulse with up to 52 amperes peak current. In continuous operation, a 7224 can provide 1,100 watts RMS of output power. If more current or power is needed, up to four amplifiers can be combined in series or parallel and operate as a single system.

The 7224 can operate in either voltage or current mode and can be configured by the customer for high-voltage/low-current, medium voltage and current, or low-voltage/high-current applications. It provides very low noise and fast slew rates, and can safely drive a wide range of resistive, inductive loads.

The 7224 is typically used to create waveforms found in EMC standards like CS2009, DO-160, MIL STD 461, and as a gradient amplifier for very small bore, high-gain MRI and NMR systems.

Performance
Testing was done at 100 Hz. Continuous DC power levels are lower. See DC Specifications chart.

7224P accuracy was measured when driven into a 10-ohm load with between 0.1VDC and 6VDC or between 0.2VAC and 5VAC presented at its inputs.

Small Signal Frequency Response:
DC - 300 kHz +0.0 to -1.0 dB
### DC Specifications

#### Volts DC

<table>
<thead>
<tr>
<th>7224</th>
<th>7224P</th>
</tr>
</thead>
<tbody>
<tr>
<td>±140 Vpk DC to 60 kHz</td>
<td>±50 Vpk DC to 180 kHz</td>
</tr>
</tbody>
</table>

#### Slew Rate

75 V/μSec

#### Residual Noise

- 10 Hz to 300 kHz: 950 μV (0.95 mV)
- 10 Hz to 80 kHz: 300 μV (0.3 mV)

#### Signal-to-Noise Ratio

- 10 Hz - 30 kHz: −113 dB
- 10 Hz - 80 kHz: −106.6 dB
- 10 Hz - 300 kHz: −99.9 dB

#### Unit to Unit Phase Error

± 0.1 degrees at 60 Hz

#### THD

DC - 30 kHz less than 0.1%

### 8-Ohm Power Response:

- ±140 Vpk DC to 60 kHz
- ±50 Vpk DC to 180 kHz
- ±30 Vpk DC to 300 kHz

### Slew Rate:

75 V/μSec

### Residual Noise:

- 10 Hz to 300 kHz: 950 μV (0.95 mV)
- 10 Hz to 80 kHz: 300 μV (0.3 mV)

### Signal-to-Noise Ratio:

- 10 Hz - 30 kHz: −113 dB
- 10 Hz - 80 kHz: −106.6 dB
- 10 Hz - 300 kHz: −99.9 dB

### Unit to Unit Phase Error:

± 0.1 degrees at 60 Hz

### THD:

DC - 30 kHz less than 0.1%

### Output Offset:

- 7724: Less than ±5 mV
- 7224P: Less than ±400 μV

### DC Specifications

#### Low Voltage High Current

<table>
<thead>
<tr>
<th>Volts DC</th>
<th>Amps DC</th>
<th>Watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.0</td>
<td>26</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Output Impedance

28 mOhm in Series with 1 μH

#### Phase Response:

± 5 degrees (10 Hz - 10 kHz) plus 560 nsec propagation delay

### Input Characteristics

#### Balanced with ground:

Three terminal barrier block connector 20 k ohm differential

#### Unbalanced:

BNC connector, 10k ohm single ended. Fixed or variable gain

### Gain:

#### Voltage Mode:

20 volts/volt

#### Current Mode:

5 amperes/volt

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

- 7224: 0.15%
- 7224P: 0.02% (DC); 0.05% (AC)

### Max Input Voltage:

± 10 V balanced or unbalanced
Common Mode Rejection:
-58 dB with 5 V input

Display, Control, Status, I/O

Front Panel LED Displays indicate:
Ready, Standby, Fault, Over Temp, Over Voltage, Overload

Soft Touch Switches for:
Run, Stop, Reset

Gain Control, when enabled:
Voltage gain adjustable from 20 to 0

On/Off Breaker

Back Panel Power Connection:
25 Amp IEC (with retention latch)

Signal Output:
+/Common/Sampled Common

Signal Input:
User Selectable BNC or Barrier Strip Balanced

Communication Capabilities

Current Monitor: \( \pm 1 \ V \ / \ 5 \ A \ \pm 1\% \)

Voltage Monitor: \( \pm 1 \ V \ / 1 \ V \ \pm 1\% \)

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

Control:
Force to Standby, Reset after a fault

Multiple Unit Configuration

Series Operation:
Total Voltage (1, 2, 3, or 4-7224’s):
150 V\(_{pk}\), 300 V\(_{pk}\), 450 V\(_{pk}\) or 600 V\(_{pk}\);
Increased slew rate up to 200 V/\(\mu\)Sec

Parallel Operation:
Total Current (1, 2, 3, or 4-7224’s):
50 A\(_{pk}\), 100 A\(_{pk}\), 150 A\(_{pk}\), or 200 A\(_{pk}\)
**Physical Characteristics**

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

**Weight:**
41 lbs (18.6 kg), Shipping 51 lbs (23.2 kg)

**AC Power:**
Single phase, 120 VAC, 60 Hz, 20 Amp service; (220-240 VAC, 50-60 Hz, 10 Amp service 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.

**Airflow:**
180CFM

**Dimensions:**
19” x 22.75” x 3.5” (48.3 cm x 57.8 cm x 8.9 cm)

**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