



7224

900-VA, DC-enabled Linear Power Amplifier

Performance Overview:

AC Power (up to 20 kHz):	900 watts RMS
Small Signal (8V p-p):	400 kHz
For High-Power Applications to:	100 kHz
DC Power:	16A at 13.5 VDC
40 mS Pulse (0.5Ω):	50 Ap
Slew Rate:	75 V/μs
Output Voltage:	±150 Vp
Output Impedance:	5.3 mΩ in series with 0.95 μH

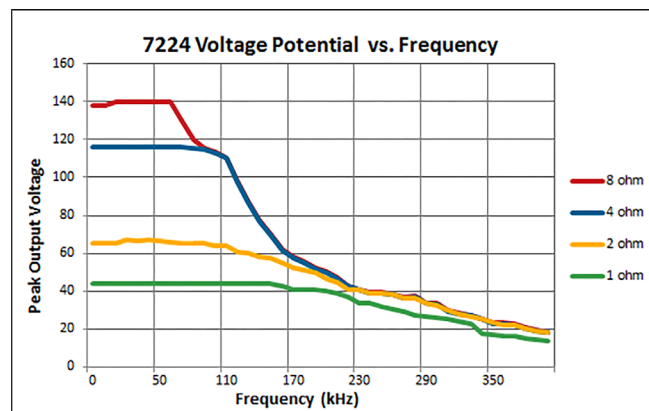
AE Techron's **7224** amplifier is a 900-VA, DC-enabled unit that provides exceptional versatility and value. It features a DC to 400 kHz small-signal bandwidth and offers a wide range of field-configurable options. In continuous operation, a 7224 can provide 900 watts RMS of output power. If more current or power is needed, up to four amplifiers can be combined in series or parallel and operate as a single system.

The 7224 can be configured by the user 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 simulate ripple, noise, drop-outs, surges and ground as required by a variety of EMC standards for DC powered electronics like FMC1278, DO-160, and MIL STD 461. It can also be used as a gradient amplifier for very small bore, high-gain MRI and NMR systems.

Features

- Stable when driving highly capacitive loads.
- Four-quadrant operation.
- User-selectable controlled-voltage or controlled-current modes of operation.
- System output of over 3,600 watts or over 200 amperes maximum is possible with multiple, interconnected amplifiers.
- Efficient design and light-weight chassis materials allow amplifier to occupy only 2U height and weighs only 41 lbs.
- 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.
- Shipped ready to operate from 120-volt (±10%) single-phase AC mains; 220/240-volt model available on request.



Specifications

Performance

AC testing was done at 100 Hz. Continuous DC power levels are lower. See DC Specifications chart for test conditions.

Frequency Response, DC–300 kHz (1 watt): +1 to -2.0 dB

8-Ohm Power Response (continuous duty),

DC to 60 kHz: ± 140 Vpk

DC to 200 kHz: ± 50 Vpk

DC to 300 kHz : ± 30 Vpk

Slew Rate: 75 V/ μ Sec

Residual Noise,

10 Hz to 500 kHz: 950 μ V (0.95 mV)

10 Hz to 80 kHz: 300 μ V (0.3 mV)

10 Hz to 30 kHz: 200 μ V (0.2 mV)

Signal-to-Noise Ratio,

10 Hz - 500 kHz: -99.5 dB

10 Hz - 80 kHz: -109 dB

10 Hz - 30 kHz: -113 dB

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

THD (DC - 30 kHz): <0.1%

DC Offset: $<\pm 5$ mV

DC Drift: $<\pm 1.5$ mV

Output Impedance: 5.3 mOhm in Series with 0.95 μ H

Phase Response (10 Hz - 10 kHz):

± 5 degrees plus 600 nsec propagation delay

Input Characteristics

Balanced with ground: Three terminal barrier block connector, 20k ohm differential

Unbalanced: BNC connector, 10k ohm single ended

Gain (variable or fixed):

Voltage Mode: 20 volts/volt

Current Mode: 5 amperes/volt

Gain Linearity (over input signal, from 0.2V to 5V): 0.15%

Max Input Voltage: ± 10 V, balanced or unbalanced

Input Impedance: 20k ohm differential

Common Mode Rejection: -58 dB with 5V 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:

Three-position terminal strip (OUTPUT/COM/CHASSIS

GROUND); resistor between COM and CHASSIS GROUND terminals is a 2.7-ohm, 2W, 5%, metal-oxide resistor

Signal Input:

User-selectable BNC or Barrier Strip, Balanced or Unbalanced

Communication Capabilities

Current Monitor:

5A/V $\pm 1\%$; 2.5A/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

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, 20A service;
(220-240 VAC, 50-60 Hz, 10A 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 in. x 22.75 in. x 3.5 in.

(48.3 cm x 57.8 cm x 8.9 cm)

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

DC Specifications – High-Current Mode

VDC	OUTPUT (Amperes)		
	100 mS Surge	10 Minute, 100% Duty Cycle	1 Hour, 100% Duty Cycle
48	40	12	12
24	45	26	20
13.5	50	20	16

AC Specifications – High-Voltage Mode

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
16	158	9.8	158	9.8	158	9.8	112	6.9	112	6.9	773
8	154	19	136	16	136	16	96	11.5	96	11.5	1104
4	124	31	108	25.7	61	14.5	76	18.2	43	10.3	443
2	98	49	*	*	*	*	*	*	*	*	*

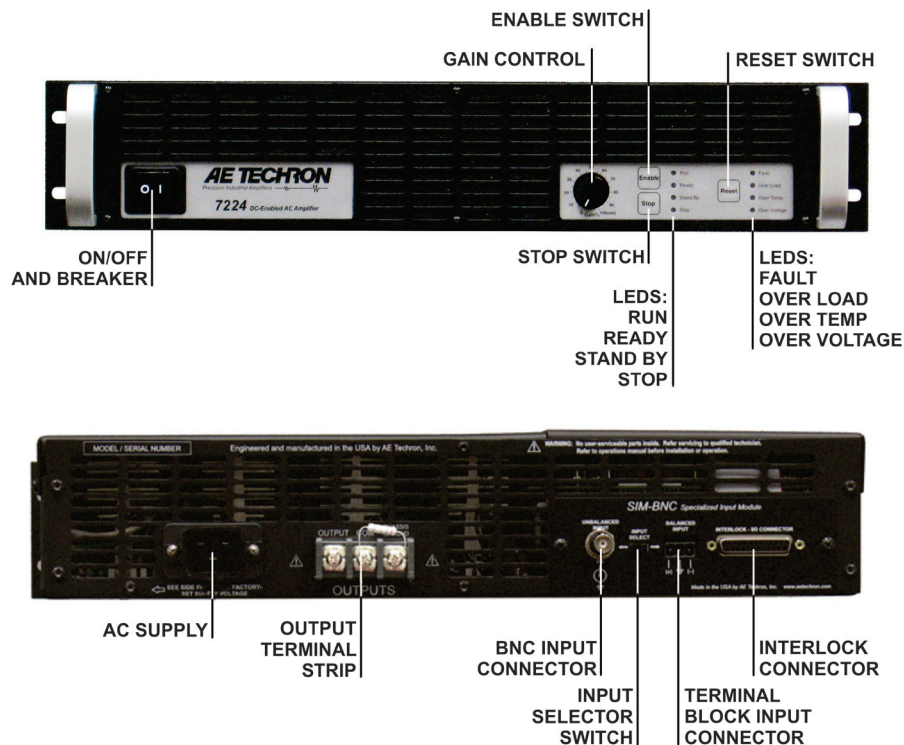
AC Specifications – Mid-Level Mode

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
4	72	18	69	16.4	69	16.4	49	12	49	11.6	568
2	61	30	57	26.2	57	26.2	40	19	40	18.5	740
1	47	47	43	39.6	21	21	30	28	15	14.8	222
0.5	26	52	*	*	*	*	*	*	*	*	*

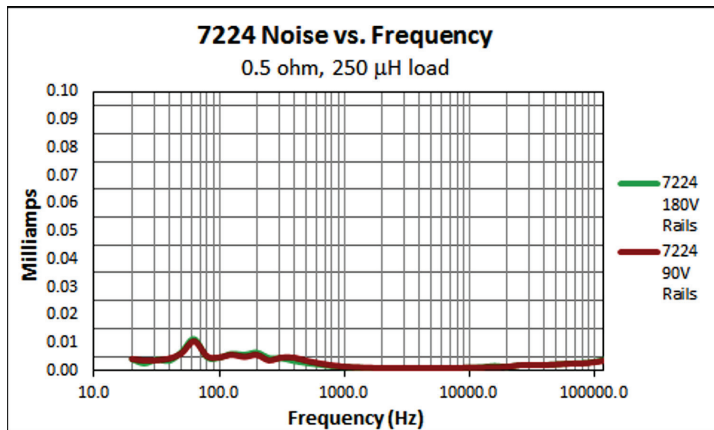
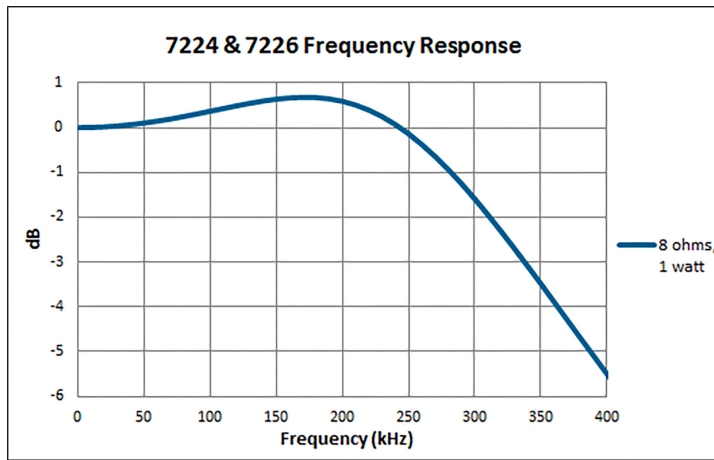
AC Specifications – High-Current Mode

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
1	*	*	29	29	29	29	21	21	20.5	20.5	420
0.75	*	*	26	34	26	34	18	24	18	24	432
0.5	*	*	22.7	45	22.7	45	16	32	16	32	512

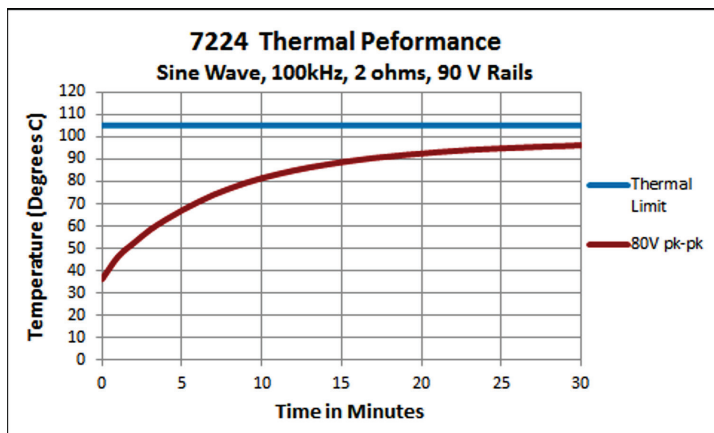
*Not tested.



FREQUENCY PERFORMANCE



THERMAL PERFORMANCE



AE Techron Sales Representative