



- 150 Volt
- 50 Amp



7224 GRADIENT POWER AMPLIFIER

7224 Pulsed Output - Current Mode

	PULSE DURATION / OFF TIME (mS)						
	DC*	500 / 500	100 / 100	10 / 20	170 / 1000	25 / 1000	4 / 100
Output ($\pm$ A Peak)	16	8.75	9	11.7	25	49	55

*DC 1 Ω

The AE Techron 7224 is a 50A capable, DC-enabled gradient amplifier with integrated power supply, that offers a wide bandwidth and exceptional control of drift and distortion. Its small size and ability to run from 120V/230V single-phase power, makes it ideal for use in small bore systems, in the lab or classroom. Its linear design provides a very-low noise floor and fast current rise times. Because the 7224 has no ripple noise, no synching with the console is required. Reducing system complexity when creating small custom imaging systems.

The AE Techron brand is known throughout the world for its robust, low-noise gradient amplifiers as well as its product service and support.

Features

- Output of 50 amperes peak, 150 volts.
- 4-quadrant linear design.
- Blanking feature lowers the noise floor on the amplifier by shutting down the output stage. This action occurs in less than 10 μ s.
- Current mode response: DC-5 kHz (compensation dependent);
Voltage mode response: DC-20 kHz at rated power.
- Efficient design and light-weight chassis materials allow amplifier to occupy only 2U height, and weigh only 46 lbs.
- Robust, linear power supply results in extremely low noise; bi-level switch design limits heat dissipation to output devices.
- Provides precision control of output offset, DC drift and gain linearity.
- Protection circuitry guards against 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 ($\pm$ 10%) single-phase AC mains; 220/240-volt model available on request.

Performance

Specification typical at 25°C ambient. Unless otherwise noted; testing was done in Current mode with a load = 500 μ H + 100 m Ω .

Peak Current Limit	55 A
Gain (adjustable)	Voltage Mode: 20 to 0.2 V/V Current Mode: 5 to 0.2 A/V
Gain Linearity (over input signal, from 0.2V to 5V)	DC: 0.02% AC: 0.05%
Output Offset (adjustable to zero)	Voltage Mode: Less than ± 400 μ V Current Mode: ± 5 mA
Input Characteristics	Three-Terminal Barrier Block Connector: Balanced with ground; 20 k Ω differential BNC Connector: Unbalanced; 10 k Ω single ended Max Input Voltage: ± 10 V balanced or unbalanced Common Mode Rejection: -58 dB with 5 V input
Output Impedance	Current Mode (effective): 2000 Ω Voltage Mode (typical): 28 m Ω in series with 1 μ H
Load	Current Mode: 500 μ H + 100 m Ω Adaptable Range: 5 μ H to 2.5 H, 0.01 Ω to 20 Ω
Current Mode Response	-3 dB at 5 kHz (compensation dependent)
Current Settling Time	Ramp 0 A to ± 50 A or ± 50 to 0 A: 20 μ s to within 1.0 A or 1% 35 μ s to within 200 mA, 0.2%
Total Harmonic Distortion	Current Mode: Less than 0.1% Load: 500 μ H + 100 m Ω
Noise Floor (when Blanking circuit is enabled)	5 μ A or less
DC Drift	Self Heating Drift, 0 to ± 60 A: 5 mA/10 minutes maximum
Noise Output	10 Hz to 1 kHz: 0.2 mA 1 kHz to 60 kHz: 0.05 mA
Ripple Noise Output	None
Slew Rate, Voltage Mode:	23 V/ μ s
Remote Control and Monitoring (back-panel D connector)	Current Monitor: ± 1 V / 5 A $\pm 1\%$ Reporting: System Fault, Over Temp, Over Voltage, Over Load Control: Force to Standby, Remove from Standby, Reset after a Fault
Amplifier Protection	Over Load/Distortion (IOC): Shutdown or clipped output Current vs Time (ODEP): Clipped output Each heat sink temperature: Shutdown 105°C Overvoltage Shutdown: 132 VAC / 253 VAC Undervoltage Shutdown: 108 VAC / 207 VAC

Status Indicators (front panel)

LEDs indicate a status of Ready, Standby, Fault, Over Temp, Over Voltage, and Overload conditions

Controls (front panel)

Soft Touch Switches: Run (Enable), Stop and Reset functions

Gain Control, when-enabled: Voltage gain adjustable from 20 to 0; Current gain adjustable from 6 to 0

On/Off and Breaker: Two-position power switch also functions as a breaker; turn off and then on to reset

Connectors (back panel)

Power Connection: 25-amp IEC (with retention latch)

Signal Output: Three terminal barrier strip (OUTPUT/COM/CHASSIS GROUND); resistor installed between COM and CHASSIS GROUND terminals is a 2.7-ohm, 2W, 5%, metal-oxide resistor

Signal Input: User-selectable unbalanced BNC or balanced Barrier Strip

Interlock I/O Connection: 25-pin D connector provides for remote monitoring and control functions

Power Requirements

Single phase, 120 VAC, 60 Hz, 20 Amp service; (220-240 VAC, 50-60 Hz, 10 Amp service model available)

Thermal Requirements

Operating Temperature: +10°C to +30°C (+50°F to +86°F).

Storage: -30°C to +85°C (-22°F to +185°F)

Humidity: 70% or less, non-condensing

Physical Characteristics

Dimensions: 19" L x 3.5" H x 22.75" D (48.3 cm L x 8.9 cm H x 57.8 cm D)

Cooling: Forced air cooling from front to back through removable filters.

Airflow: 180CFM

Weight: 46 lbs (20.9 kg)

Shipping Weight: 56 lbs (25.4 kg)