# 7224RLY FOUR-QUADRANT POWER AMPLIFIER

The *AE Techron* ***7224RLY*** amplifier was created to meet the demanding requirements of the power utility industry. Capable of outputting a 40 mSec pulse with up to 52 amperes peak current, the 7224RLY is powerful enough to put protection relays, fuses and other critical components through a full range of tests. The low noise floor, low distortion and minimal phase error of the 7224RLY make it the ideal amplifier for power grid modeling.

## Performance

**Frequency Response:**
DC to 10 kHz driving a 0.25-ohm load

**Maximum Output Current:**
35A rms, 50A peak, 0.5 ohms

**Maximum Output Voltage:**
158V peak

**Maximum Output Power:**
Dependent on load and frequency

**Load Constraint for Maximum Output:**
0.5 ohms + 200 microhenries
*All loads from 8-ohm to short are stable with 2 mH in series.

**Output Offset Current:**
Less than 10.0 milliamperes DC peak

**Input:**
**Standard Transconductance:**
20 ±0.2% from short to 1-ohm loads

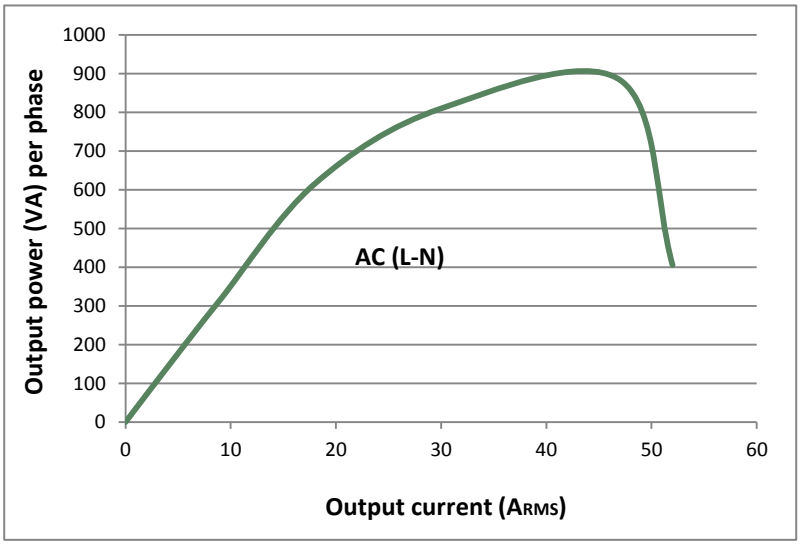
**Common Mode Rejection Ratio:**
-58 dB minimum, 40-600Hz

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

**Residual Noise:**
Less than 2.5 milliamperes peak (40Hz – 600Hz)

## Features

- High compliance voltage allows the 7224RLY to drive electromechanical relays directly.
- Maintains phase accuracy for any load from a dead short to 2 ohms.
- Front panel indicators for rapid assessment of amplifier status.
- Designed to survive input overloads, continuous operation under demanding conditions and improper output conditions – including improper loads.
- Shipped ready to operate from single-phase, 120VAC (±10%) 60 Hz, 20A service. 220/240VAC, 50/60Hz, 10A model available on request.
- Installs in just 2U of a standard 19-inch rack; or stands alone for bench-top operation.
- Backed with AE Techron's application engineering, service facilities, complete technical information and a 1-year warranty.



**Pulse/Burst Specifications**

| Total Load | Duration | Waveform | Output Power |
|---|---|---|---|
| 1.0 ohm | 5 minute | 60 Hz Sine | 28A rms / 40A peak |
| | | DC | 20A peak |
| | 20 second | 60 Hz Sine | 30A rms / 43A peak |
| | | DC | 20A peak |
| | 0.2 second | 60 Hz Sine | 33A rms / 47A peak |
| | | DC | 30A peak |

*Mid-level mode, 40 mSec pulse, 30% duty cycle*

**Input to Output Phase Delay:**
-0.2°

**Out Accuracy:**
Less than ±1%

## 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

**Standard Gain:** Switchable 10 amps/volt (+0.2%) or 2 amps/volt (+0.2%)

**Common Mode Rejection Ratio:**
-58 dB minimum, 40-600

## Display, Control, Status, I/O

**Front Panel LED Displays indicate:**
Run, 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:** ± 1 V / 6 A ± 1%

**Input Signal Monitor:** ± 1 V / 2 V ± 1%

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

**Control:**
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)

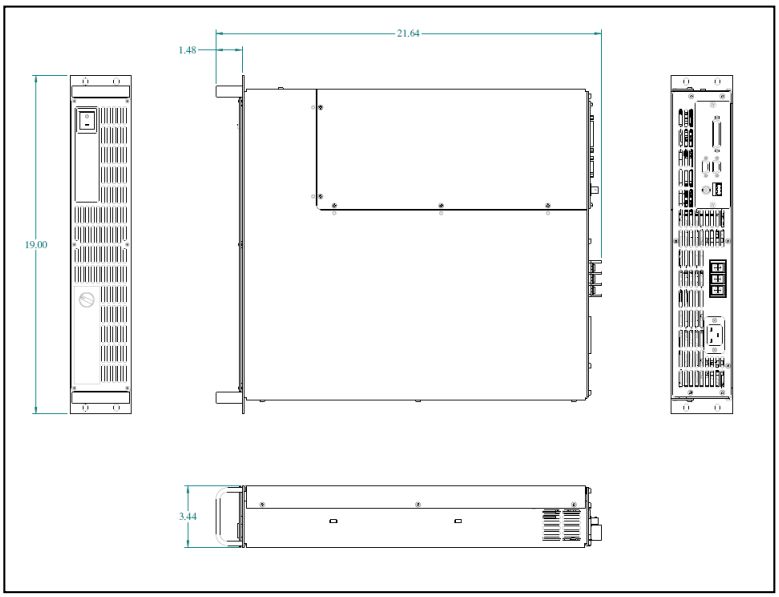
**AC Power:**
Single phase, 120 VAC, 60 Hz, 20 Amp service; (220-240 VAC, 50-60 Hz, 10 Amp service model available)

**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.

**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

*AE Techron Sales Representative*