



The AE Techron **7796RLY** amplifier was created to meet the demanding requirements of the power utility industry. With an output capability of 200A<sub>pk</sub>, the 7796RLY is powerful enough to put protection relays, fuses and other critical components through a full range of tests. It is capable of a controlled voltage bandwidth of DC – 100 kHz, and a controlled current bandwidth of DC – 10 kHz. The low noise floor, low distortion and minimal phase error of the 7796RLY make it the ideal amplifier for power grid modeling.

## Performance

### Maximum Output Current:

200 amps peak

### Maximum Output Voltage:

183 volts peak

### Maximum Output Power:

Dependent on load and frequency

### Load Constraint for Maximum Output:

0.19 ohms + 200 microhenries

### Output Impedance:

Greater than 250 ohms at 60 Hz

### Output Offset Current:

Less than 10.0 milliamperes DC peak

### Unit to Unit Phase Error:

± 0.1 degrees at 60 Hz

### Residual Noise:

Less than 2.5 milliamperes peak (40Hz – 600Hz)

### THD+N:

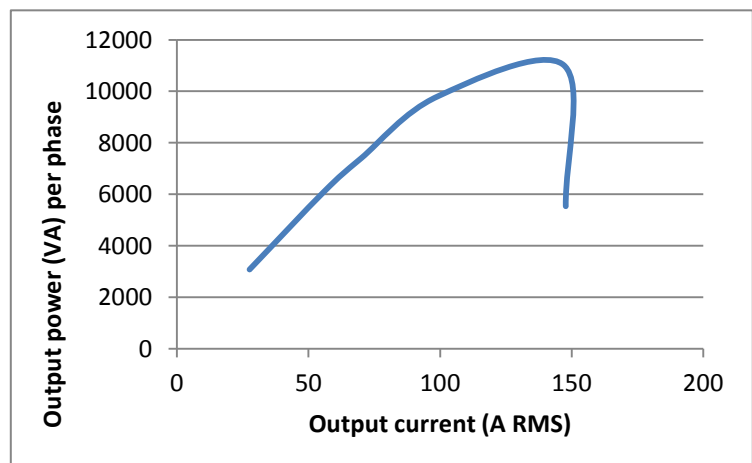
Less than 0.10% at 600 Hz, full output power



## 7796RLY FOUR-QUADRANT POWER AMPLIFIER

## Features

- High compliance voltage allows the 7796RLY to drive electromechanical relays directly.
- Maintains phase accuracy for any load from a dead short to 0.25 ohms.
- Capable of a controlled voltage bandwidth of DC – 100 kHz, and a controlled current bandwidth of DC – 10 kHz
- 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 three-phase, 208VAC (±10%), 47-60 Hz, 30A service. 400VAC (±5%) 15A model available on request.
- Installs in 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.



## Input Characteristics

### Balanced with ground:

Three terminal barrier block connector  
20 k ohm differential

### Unbalanced:

BNC connector, 10k ohm single ended.

**Gain:** 40 amps/volt (+0.2%)

### Common Mode Rejection Ratio:

-58 dB minimum, 40-600 Hz

## Display, Control, Status, I/O

### Front Panel LED Displays indicate:

Ready, Standby, Fault, Over Temp, Over Voltage, Overload

### Front Panel LCD Display:

User-configurable for up to four simultaneous displays reporting one, two, or all four of the following: Voltage Peak, Voltage RMS, Current Peak, and Current RMS. If an amplifier fault condition occurs, the front panel display lists the type of fault condition and gives suggested corrective action.

### 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 Unbalanced or Barrier Strip Balanced

## Communication Capabilities

**Current Monitor:**  $\pm 1 \text{ V} / 6 \text{ A} \pm 1\%$

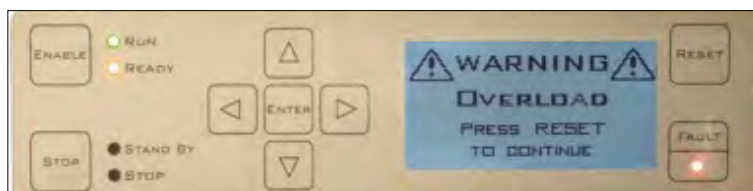
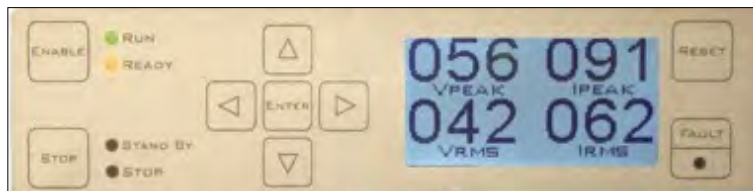
**Input Signal Monitor:**  $\pm 1 \text{ V} / 2 \text{ V} \pm 1\%$

### Reporting:

System Fault, Over Temp, Over Voltage, Over Load

## Pulse/Burst Specifications

| Load     | Duration   | Waveform   | Output Power         |
|----------|------------|------------|----------------------|
| 0.19 ohm | 1 minute   | 60 Hz Sine | 125 Arms / 176 Apeak |
|          |            | DC         | 60 Apeak             |
|          | 0.5 second | 60 Hz Sine | 141 Arms / 200 Apeak |
|          |            | DC         | 188 Apeak            |
|          | 0.2 second | 60 Hz Sine | 141 Arms / 200 Apeak |
|          |            | DC         | 188 Apeak            |
| 0.53 ohm | 1 minute   | 60 Hz Sine | 91 Arms / 128 Apeak  |
|          |            | DC         | 100 Apeak            |
|          | 0.5 second | 60 Hz Sine | 137 Arms / 193 Apeak |
|          |            | DC         | 181 Apeak            |
|          | 0.2 second | 60 Hz Sine | 139 Arms / 196 Apeak |
|          |            | DC         | 164 Apeak            |
| 1.07 ohm | 1 minute   | 60 Hz Sine | 75 Arms / 107 Apeak  |
|          |            | DC         | 66 Apeak             |
|          | 0.5 second | 60 Hz Sine | 93 Arms / 118 Apeak  |
|          |            | DC         | 108 Apeak            |
|          | 0.2 second | 60 Hz Sine | 85 Arms / 120 Apeak  |
|          |            | DC         | 108 Apeak            |



### Control:

Force to Standby, Reset after a Fault

## Protection

### Over/Under Voltage:

$\pm 10\%$  ( $\pm 5\%$  for 400VAC version) 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:

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

### Weight:

160 lbs (72.5 kg)

### AC Power:

Three-phase, 208 VAC  $\pm 10\%$ , 47-60 Hz, 30 Amp service; 400 VAC ( $\pm 5\%$ ) 47-60 Hz, 15 Amp 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:

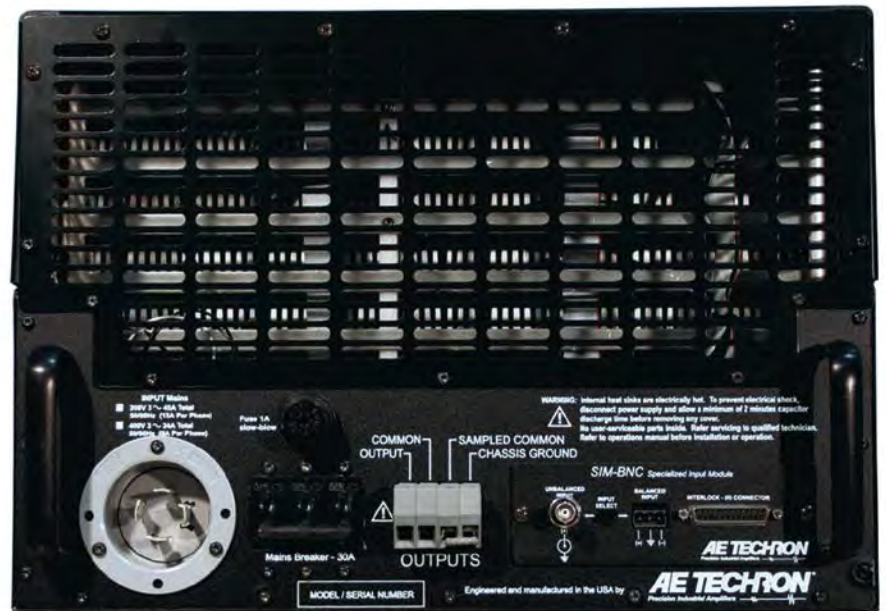
Forced air cooling from front to back through removable filters.

### Dimensions:

19" x 22.8" x 12.25" (48.3 cm x 57.8 cm x 31.1 cm)

## Accuracy

| Amplitude vs. Frequency at 1V input, 20A output, amplifier transconductance set to 20: |              |                  |        |  |
|--|--------------|------------------|--------|--|
|  |              | Transconductance |        |  |
| Load   | Input Signal | 1 kHz            | 100 Hz |  |
| 2 ohms   | Sine         | 19.9             | 20     |  |
| 1 ohm  | Sine         | 20               | 20     |  |
| ½ ohm  | Sine         | 20               | 20     |  |
| Short<br>(unimpeded wire)  | Sine         | 20               | 20     |  |



*AE Techron Sales Representative*