

# 200 & 400 amp, -48 VDC Rectifiers

## Key Features

- **UL Listed**—compliance to local codes
- **Paralleling and Proportional Load Sharing**—for increased load capacity or rectifier redundancy
- **Selective High Voltage Shutdown**—for increased rectifier system reliability
- **Current Walk-In**—to prevent step loading of the power line
- **Remote Voltage Sensing**—for precise voltage control at the battery or power board
- **Remote Controls**—for float/equalize, rectifier on/off, and high voltage shutdown and restart
- **Alarms**—LED indicators and remote contacts for rectifier failure, low current, fuse failure, high voltage shutdown and high ripple pulldown
- **Partial Current Limiting**—in the event of a high ripple condition caused by the loss of an AC input phase, local and external alarms are activated and the rectifier will automatically reduce output current to 50% of rated load

## Description

The Lorain® RL series three phase controlled ferroresonant rectifiers are available in 200 and 400 amp models. They have a modular cabinet design which allows easy front access to any component for service or maintenance. The flat rear cabinet panel maximizes floor space utilization by permitting flush mounting to a wall or in back-to-back installations. The cabinets have extendable alarms and controls for remote operation by either the Lorain SMART Data Gathering Unit (DGU) or a Lorain SMART Reporter.

These high efficiency units are convection cooled for longer equipment life and have dependable control and status circuits to assure simplified operation and total protection.

## Application

Three phase controlled ferroresonant rectifiers are ideal for switch site and customer premise use as well as other telecommunications power system applications.

## Accessories

Equalize charge timer:

Automatically or manually controls the equalize function of the rectifier following a power failure and subsequent battery discharge.

19" (48.26cm) mounting, all models, specify part number 484383500

23" (58.42cm) mounting, all models, specify part number 482383700

## Specifications

### Input

Voltage:

RL200D50 & RL400D50 — Taps for 208 volt (184-220) and 240 volt (212-254) AC, 3 phase

RL200E50 & RL400E50 — 480 volt (424-508) AC, 3 phase

Frequency: 60 Hz (57-63)

Circuit Protection: NON-automatic circuit breaker used as a switch to open all three lines. Refer to Rectifier Specifications for recommended input fusing.

### Output

Voltage:

Float — 48.0-58.0 VDC

Equalize — 50.0-58.0 VDC

Current:

RL200D50 & RL200E50 — 200 amps

RL400D50 & RL400E50 — 400 amps

Regulation: Steady-state output voltage remains within  $\pm 0.5\%$  of the set point within the range of 48 to 54 volts for any load current from no load to full load for the input voltage and frequency ranges specified.



Model  
RL200D50

# 200 & 400 amp, -48 VDC Rectifiers

## Specifications (continued)

**Temperature Coefficient:** Output voltage change does not exceed an average of 0.01% per degree C within the ambient temperature range of 0° C to +50° C (+32° F to +122° F).

**Dynamic Response:** Maximum voltage transient will not exceed ±5% of initial steady-state voltage for step change from 20% to 100% of full load for 100 and 200 amp models or a step load change of 250 amps within the range of 5% to 100% of full load for 400 and 800 amp models. Recovery (to within the steady-state voltage regulation range) does not exceed 100 ms and all transient behavior disappears within 250 ms.

**Filtering:** When connected to a battery rated in amp-hours at four times the full load current rating of the rectifier:

Voice band noise — less than 32dBnC

Wide band noise — Less than 500 mv peak-to-peak or 30 mv rms over the frequency range of 10 Hz to 14 MHz

## Protection

**Current Limit:** Circuit is adjustable from 50% to 120% of full load. Factory set at 110% of full load.

**Overvoltage Shutdown:** Causes the rectifier to shut down should its output voltage exceed a preset (adjustable) value and load current is more than 3% of output rating.

## Environmental

**Operating Temperature:** 0° C to +50° C (+32° F to +122° F)

**Storage Temperature:** -40° C to +85° C (-40° F to +185° F)

**Humidity:** 10-95%, non-condensing

**Ventilation/Altitude:** Rectifiers should be placed so that ventilating openings are not blocked and air entering the cabinet does not exceed:

Sea level to 3,300' (1,005m) — +50° C (+122° F)

3,300' to 4,800' (1,005m to 1,463m) — +45° C (+113° F)

4,800' to 7,000' (1,463m to 2,133m) — +40° C (+104° F)

7,000' to 10,000' (2,133m to 3,048m) — +35° C (+95° F)

**EMI/RFI Suppression:** Conducted RF on the AC input leads of this unit conforms to the requirements of FCC rules Part 15, Subpart B, Class A. Conducted RF on the DC output leads conforms to the requirements of NEMA PV-7-1979.

**Audible Noise:** Less than 65 dBA at any point 5' (1.52m) from any surface of the rectifier.

## Physical Characteristics

RL200D50 & RL200E50

Height: 84" (213.36cm)

Width: 13" (33.02cm)

Depth: 17.63" (44.77cm)

Weight: Net 665 lbs. (301.64 kgs) Shipping 785 lbs. (356.08 kgs)

RL400D50 & RL400E50

Height: 72" (182.88cm)

Width: 24" (60.96cm)

Depth: 17.63" (44.77cm)

Weight: Net 1,205 lbs. (546.59 kgs) Shipping 1,350 lbs. (612.36 kgs)

## Rectifier Specification

Model	RL200D50	RL200E50	RL400D50	RL400E50
Spec. No.	547202100	547501800	548104300	548202900
DC Output: Volts / amps	-48 / 200	-48 / 200	-48 / 400	-48 / 400
AC Input: Volts / Frequency Amps*	208/240 3 Phase / 60 Hz 33.4/28.6	480 3 Phase / 60 Hz 14.2	208/240 3 Phase / 60 Hz 69.9/60.3	480 3 Phase / 60 Hz 30.0
Efficiency	90.1%	90.1%	91.0%	91.0%
Heat Dist.(Btu/hr)	3,661	3,900	7,062	7,000
Protection: Input** / Output	50A / 250A	24A / 250A	100A / 500A	50A / 500A

\*Data taken at 52.08 VDC, full load.

\*\*Recommended input fusing, external to rectifier.

## Additional Information

For additional specification, engineering and installation information, specify model and spec. number in chart above.



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