DC Power Systems for
Business-Critical Continuity

LORAIN® XP 48500

DC Power System

EMERSON™
Network Power

Key Features

- **Compact expandable system —** holds up to 165 amps at 54.48V (9kw) in 2 rack spaces and 468 amps at 54.48V (25.5kw) in 6 rack spaces
- **Constant power option —** delivers more current at lower voltages to meet load or recharge demand
- **Rugged design —** rated for continuous operation from -40°C to +80°C
- **Complies with industry standards —** NEBS level 3 certified and UL Listed
- **Extensive battery management —** includes health, reserve time, and test capability
- **Four user definable binary inputs —** for external alarm or control functions
- **Alarm and event logs —** record system history
- **User programmable —** six sets of form C alarm relay contacts are available
- **Remote access —** TCP/IP, Ethernet

LORAIN® eXpandable Power (LXP), the next generation small power platform from Emerson providing expandable power, distribution, control and monitoring.

LXP System

Description

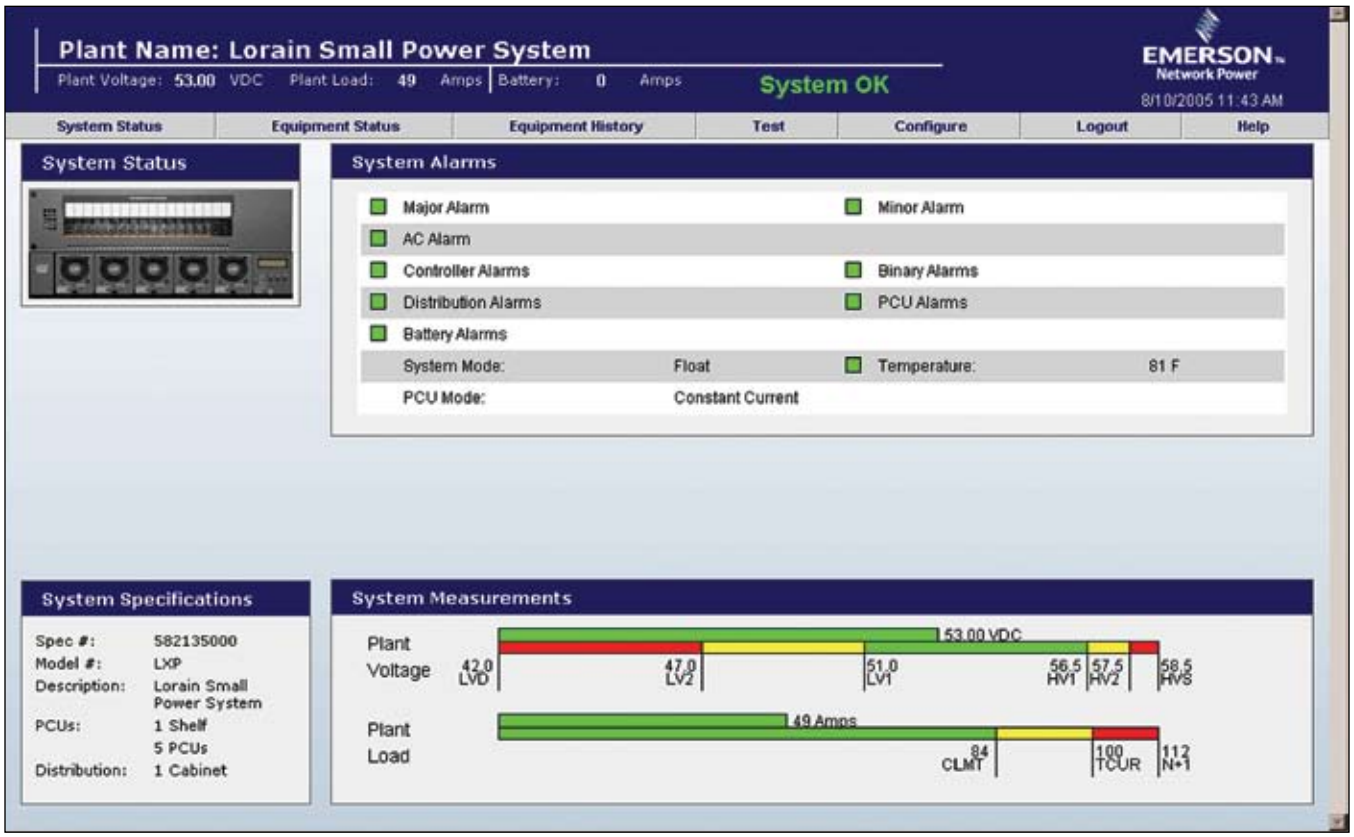
The LORAIN® eXpandable Power (LXP) System is composed of one to three rectifier shelves, each arranged for up to six 1500 watt constant power rectifier modules. A centralized controller forms the heart of the system, featuring web-based software, user-programmable inputs and alarms, remote access and battery management. The distribution cabinet is designed for up to eighteen plug-in fuse holders or breakers rated 1 to 100 amps to meet load distribution requirements. For smaller loads, an optional 10-position GMT fuse module is available. An optional low-voltage disconnect circuit can be configured for battery or load disconnect. The LXP system is a cost-effective solution for loads under 24 Kw. As load demand grows, the system can be easily expanded with additional modular components.

EMERSON Network Power

Compact. Intelligent. Simple.
Ideal for Converged Networks.

Application

LXP systems are rated for continuous operation from -40°C to +80°C and are NEBS Level 3 certified and UL Listed. 19 or 23-inch cabinet configurations are available. The system is designed for deployment in central office, POP sites, co-location sites, customer premises, outdoor cabinets, CEVs, vaults or portable shelters. Specific applications include: DLC, xDSL, DSLAM, FITL electronics, broadband communications, multiplexers, PCS, microwave and PBX.

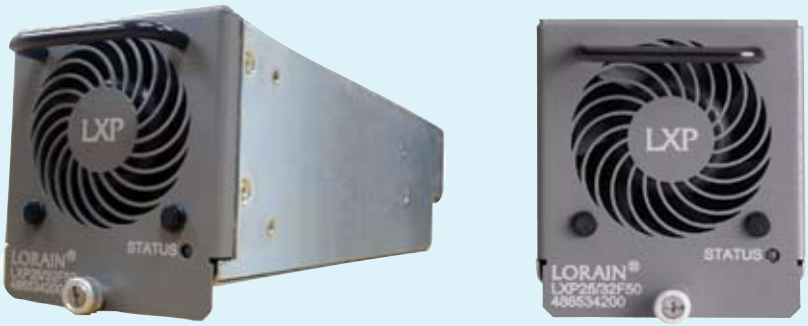


The LORAIN® XP 48500's extensive monitoring capabilities, easy configuration and maintenance are all backed by the resources and quality reputation of a nationwide service organization.

LXP System

Rectifier Shelves

LXP rectifier shelves are 3.5" (2 RU) high, 12" deep and are available in 19" or 23" widths. The 19" rack mounts up to 5 rectifier modules and the 23" rack mounts up to 6 rectifier modules. These shelves provide front to back ventilation and can be stacked up to 3 high with zero clearance above or below units, maximizing revenue-generating space. Each unit will operate from 120/208/240VAC and is equipped with dual inputs to accommodate line cords or hard wiring. DC output connection options for each shelf include dual two-hole compression lugs or bus bar terminations for connection to local or remote distribution and batteries. The shelf with rectifiers is NEBS Level 3 certified, UL Listed and meets FCC Class B EMI/RFI requirements.



LXP Rectifier Module

Rectifier Modules

LXP rectifiers are rated for 1500 watt constant output power when operated at 208/240VAC nominal input, 32.6 amps at 46VDC to 25.8 amps at 58VDC. When operated at 120VAC nominal input the output power is rated at 750 watts, 16.3 amps at 46VDC to 12.9 amps at 58VDC. The rectifier will provide up to 100% of rated power at 65°C. As the temperature increases from 65°C to 80°C, the thermal power limit circuit linearly decreases power. In the typical operating range, these rectifiers have a power factor greater than .99, total harmonic distortion less than 5% and efficiencies greater than 91%. Each hot-swappable rectifier has an integral cooling fan and a tri-color LED status indicator.

LXP Controller

As load demand grows, the system can be easily expanded with additional modular components.

Controller

The LXP controller is designed for fail safe operation and includes a two-line 20-character display, three menu navigation keys and five LED status indicators. The LEDs display the status of AC power, minor and major alarms, fault conditions and battery conditions. Four binary inputs and six form C alarm contacts, all user programmable, are provided. In addition to traditional system alarms and controls, the LXP system features a loss of redundancy alarm, activity and alarm history logs, inventory functions, and a sequential rectifier start capability. The controller features web-based software and an RJ45 connection for remote access via TCP/IP or Ethernet. The base controller provides the following battery management capabilities: temperature compensation, thermal runaway management, system conditions, functionality testing, battery recharge current limit, half-string monitoring and discharge testing.

Battery Management

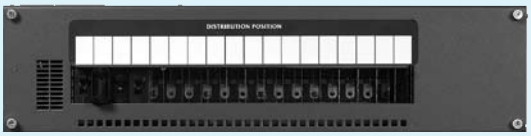
The following enhanced battery management functions are available as add on options: reserve time, float current monitoring, impedance imbalance, individual cell monitoring and multiple string monitoring.

Batteries

LXP systems can be configured with a wide range of batteries to suit specific load and reserve time requirements. Battery connections can be made directly to the rectifier shelf or the distribution cabinet. Optional battery maintenance disconnects are available if required.

Distribution Cabinet

The front access LXP distribution cabinet is 5.25" (3 RU) high, 12" deep, 23" or 19" configuration, with a maximum current capacity of 300 amps. The cabinet includes a main load shunt, a ground return bar, and an alarm circuit for local and remote fuses. The cabinet is designed for up to 18 plug-in fuse holders at 23" and 13 plug-in fuse holders at 19" or breakers rated 1 to 100 amps. An optional block of 10 GMT-type fuse positions is available for smaller loads. An optional LVD circuit is available with dual redundant controls, configurable for battery or load disconnect.



LXP Distribution Cabinet

Specifications

Input	
Voltage	Nominal 120/208/240 volts AC, single phase, 50/60 Hz, with a range of 84 to 286 volts. Extended range to 300 volt AC without damage.
Current	7.92 amps@208VAC, 6.87 amps@240VAC per PCU, 54.48VDC, 1500 watts output 23.76 amps@208VAC, 20.6 amps@240VAC per feed (3 PCUs), 54.48VDC, 4500 watts output 30 amp breaker recommended per feed 9.36 amps@176VAC, 1500 watts output (worst case) 28 amps@176VAC (worst case) per feed (3 PCUs) 6.94 amps@120VAC per PCU, 54.48VDC, 750 watts output 20.83 amps@120VAC per feed, 54.48VDC, 2250 watts output 9.92 amps@84VAC, 750 watts output (worst case) per PCU; 29.75 per feed
Inrush Current	Peak does not exceed 2 times the RMS input at full load, under any conditions of input voltage within the rated input voltage range.
Frequency	45-65 Hz
Protection	Shelf input is wired for a Dual AC input. The first feed will power PCUs 1, 3, and 5, while the second feed will power PCU's 2, 4, and 6. If the AC input voltage decreases or increases beyond a non-adjustable predetermined value, the PCU power conversion circuitry inhibits, disabling PCU output. The PCU will recover automatically when the AC input voltage is re-established within specifications limits.
Power Factor	Typical power factor greater than or equal to 99% for any load greater than or equal to 50% of rated full load at nominal line. Meets IEC 1000–3–2.
Operating Efficiency	Typical operating efficiency 91% at full load
Output	
Voltage	Nominal -48 volts DC, positive ground, adjustable from -46.0 to -58.0 volts DC
Current	25 to 32.6 amps per PCU, up to a total of 125 to 163 amps per shelf with five PCUs installed in the main shelf and up to a total of 150 to 195.6 amps per shelf with six PCUs installed in each supplemental shelf.
Power	1,500 watts maximum. The PCU employs a constant power limiting feature which limits the maximum output power to 1,500 watts over the output voltage range of –46.0 to -58.0VDC.
Regulation	Steady state output voltage remains within ±0.5% of any voltage within the range of 46.0 to 58.0 volts DC for any combination of frequency, input voltage, and load from no load to full load over the temperature range of -20°C to +65°C (-4°F to +149°F).
Filtering	On or off battery
Voice Band Noise	Less than 32 dBrnC
Wide Band Noise	Does not exceed 250 mv peak-to-peak, or 30 mv rms
Psophometric Noise	Does not exceed 1 mv

Emerson Network Power—
a complete spectrum of best-in-class reliable power, precision environmental and connectivity solutions for today's telecommunications and data network infrastructure

Specifications (continued)

Protection	
Current Limiting	Maximum output current of each PCU can be set from 2.5 to 32.6 amps
High Voltage Shutdown	If PCU output voltage exceeds an adjustable preset value, the PCU shuts down. After approximately three seconds, the PCU automatically restarts.
Monitoring	
Status/Alarm Indicators	Extensive alarming and status indicators such as AC on/off, fan fail, PCU failure and open sense are displayed on the 2 Line 20-character numerical display of the MCA and on the PCUs in the shelf.
Environmental	
Operating Temperature	-40°C to +65°C (-4°F to +149°F); -40°C to +80°C (-40°F to +176°F) derated to zero output linearly
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	0% to 95% relative humidity, non-condensing
Altitude	The maximum operating ambient temperature should be derated by 10°C (18°F) at an elevation of 10,000 feet (3,048m) above sea level. For elevations between 3,000 feet (914m) and 10,000 feet (3,048m), derate the maximum operating ambient temperature linearly.
Ventilation	Fan-cooled front to rear
EMI/RFI Suppression	Conforms to FCC rules Part 15, Subpart B, Class B and EN55022 Class B, radiated and conducted
Audible Noise	2 feet from any vertical surface; does not exceed 65dBA, 55dBA with low fan speed selected.
Physical Characteristics	
Mounting	Plug-in installation
Dimensions (H x W x D)	3.5" (8.89cm) x 3.125" (7.937cm) x 12" (30.48cm)
Weight	6 lbs. (2.239 kg)
Safety Compliance	UL recognized (UL 1950), CSA 22.2, No.950, CE

Additional Information

For additional specification, engineering and installation information, request specification number 582135100 for the 19" (48.26 cm) option and number 582135000 for the 23" (58.42 cm) option.

For ordering information, request SAG582135000 for the 23" and SAG582135100 for the 19" option.

Emerson Network Power
Energy Systems, North America
1122 F Street, Lorain, OH 44052
Toll Free: 800-800-1280 (USA and Canada)
Telephone: 440-246-6999 **Fax:** 440-246-4876
Web: EmersonNetworkPower.com/EnergySystems

Emerson Network Power.
The global leader in enabling business-critical continuity.

EmersonNetworkPower.com

- AC Power Systems
- Connectivity
- **DC Power Systems**
- Embedded Computing
- Embedded Power
- Integrated Cabinet Solutions
- Outside Plant
- Power Switching & Control
- Precision Cooling
- Services
- Site Monitoring
- Surge Protection

© 2006 Emerson Network Power Energy Systems, North America, Inc. All rights reserved.

This publication is issued to provide outline information only which (unless agreed by Emerson Network Power Energy Systems, North America, Inc. in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. Emerson Network Power Energy Systems, North America, Inc. reserves the right to alter without notice the specification, design or conditions of supply of any product or service.

The Emerson logo is a trademark and a service mark of Emerson Electric Co. Emerson Network Power is a division of Emerson Electric Co.
LORAIN® is a trademark of Emerson Network Power Energy Systems, North America, Inc.

Code: PPB-SDCP-001

October 2006