

Key Features

- **Single Point Adjustment**—no tools required to make settings and adjustments
- **Remote Access**—options allow users to view, control and interact with all power systems in a network from a remote location
- **Plug'n'Play**—add PCUs without adjustments and settings; no system shutdown
- **Front Accessible**—easy installation, additions and maintenance
- **UL Listed**—power bay (UL1950), distribution (UL1801)
- **Distribution**—distribution bays are available in 2500A or 5000A capacities
- **Modular Design**—simple to install and operate; allows users to grow system in cost-effective increments
- **High Density**—compact design takes up less floor space; power bay houses seven PCUs in a 18" x 24" (45.72cm x 60.96cm) footprint
- **Optional Temperature Compensation**—provides automatic adjustment of PCU output voltage when battery temperature increases or decreases
- **AC Input Protection**—single or dual feed circuit breakers with up to 65KA interrupt capacity, eliminating local PDSC's within the office

Marconi

200-10,000 amp, -48 VDC Vortex[®] Power System with 200 amp PCUs

Description

Built on the heritage of the Lorain[®] brand name, the Vortex power platform, with 200 amp power conversion units (PCUs) is a modular power system providing up to 10,000 amps of power for -48 volt systems. The components of a Vortex power system include the power bay, the meter-control-alarm microprocessor (MCA), the PCUs and modular distribution.

Each power bay can accommodate up to seven PCUs and is capable of controlling the PCUs through the powerful microprocessor based MCA.

The front of the MCA panel provides a 16-character alpha-numeric display which can be activated at the touch of a keypad.

The Vortex distribution is modular, expandable and offers a variety of fuse/circuit breaker distribution modules up to 600 amps. The system is designed to provide DC power to loads of up to 5,000 amps per bay. The Vortex distribution main bay features a total system solution by providing a flexible, modular hardware design, along with a variety of Vortex monitoring and control options. These options include the Data Gathering Unit (DGU), SMART, and Vortex Win Link.

Application

The Vortex power system, powered with 200 amp PCUs, is ideal for applications such as switch sites and large customer premise installations requiring up to 10,000 amps.



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MCA Module

The MCA module can be housed in the power bay or the main distribution bay. The MCA provides a single point of adjustment for such features as float voltage, test/equalize voltage, high voltage shutdown and current limit adjustments for all PCUs in the entire power system. The MCA allows users to view specific alarm conditions, system measurements and system settings. All adjustments can be performed locally via the alpha-numeric display panel or remotely via optional software and hardware. The MCA provides local indicators and the ability to transmit various alarm conditions such as PCU failure, high voltage shutdown and AC failure.

Power Bay

The modular, high frequency, switch-mode Vortex PCUs are the foundation of the Vortex platform. Plug'n'play technology allows for easy system configuration. System capacity can be increased by simply plugging an additional PCU into an existing mounting space in the power bay — no adjustments or setup are required. The PCUs allow the user to appropriately size a power plant (200 - 10,000 amps) to provide load power, battery float current and battery recharge current. An optional AC input feature provides a prewired input to a terminal block at the top of each cabinet and each rectifier is terminated with a circuit breaker. This design eliminates the cost of secondary AC distribution panels and saves installation costs. The power bay is 24" (60.96cm) wide x 84" (213.36cm) high x 18" (45.72cm) deep.

Distribution

- **Modular Design**—wide variety of distribution modules allows for maximum configuration flexibility
- **High Capacity**—offers up to 5,000 amp capacity per bay
- **Complete System Control**—full range of monitoring and control options available
- **System Interbay Bus**—modular internal and external bus systems designed for incremental growth and minimal installation time
- **Fuse Protection**—utilizing TPL, TPJ, TPS and TPA type fuses protecting circuits up to 600 amps

The Vortex distribution is a fully integrated modular solution that enables you to begin with the capacity you need today, and incrementally expand to meet future capacity requirements. The main bay can house up to four distribution modules, with eight modules for each supplemental bay. The vertical design results in ease of installation and cable flow with plant shunt, ground and battery termination bars internal or external to the bay. This results in further reduction in cable congestion, while facilitating expansion. The physical dimensions are 7' (213.36cm) high x 31.38" (79.69cm) wide x 18" (45.72cm) deep or 24" (60.96 cm) deep.

Additional Information

For additional specification, engineering and installation information, specify spec. number 582121900 (distribution bay), 582121100 (208/240 VAC) or 582121300 (480 VAC) (power bays).

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| Option | Function |
|---------------------|--|
| Vortex SMART | Advanced monitoring and control |
| Vortex DGU | Data Gathering Unit for full monitoring and control |
| Vortex MCA | Microprocessor based meter, control and alarm (if not provided in power bay) |
| Vortex Link | Software and modem for remote Vortex power system access |
| Pre-charge Unit | For use with TPS, TPJ and TPL type fuse modules and GJ breakers |
| Audible Alarm Panel | Provides for audible indication of alarm conditions |

Distribution Modules

| Quantity | Type | Description |
|----------|------|--|
| 5 | GJ | 125-250 amp circuit breakers |
| 5 | GJ | 125-250 amp circuit breakers with shunts |
| 4 | GJ | 250-400 amp circuit breakers |
| 4 | GJ | 250-400 amp circuit breakers with shunts |
| 3 | GJ | 600 amp circuit breakers |
| 3 | GJ | 600 amp circuit breakers with shunts |
| 3 | TPL | 61-400 amp fuseholders |
| 3 | TPL | 61-600 amp fuseholders |
| 6 | TPJ | 60-150 amp fuseholders |
| 12 | TPS | 0-70 amp fuseholders |
| 16 | TPA | 0-50 amp fuseholders |
| 16 | AM1 | 0-100 amp circuit breakers |

200 amp, -48 VDC Power Conversion Unit



200-10,000 amp, -48 VDC Vortex Power System with 200 amp PCUs

Power Conversion Unit Specifications

Input

Voltage:

- Nominal 208/240 VAC, three phase, 50/60 Hz, with a range of 176 to 264 volts.
- Nominal 480 VAC, three-phase, 50/60Hz, with a range of 408 to 530 volts.
- Nominal 380/415 VAC, three phase, 50/60 Hz, with a range of 325 to 456 volts.

Inrush Current: Peak does not exceed 4 times the RMS input at full load, under any conditions of input voltage within the rated input voltage range.

Frequency: 47-63 Hz

Protection: Each PCU is individually wired and connections for individual AC input branch circuits are provided. 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: Greater than or equal to 94% for any load greater than or equal to 50% of rated full load at nominal line.

Typical Operating Efficiency: 90%

Output

Voltage: Nominal -48 VDC, positive ground.

Current: 200 amps per PCU, up to a total of 1,400 amps per power bay with seven PCUs installed.

Regulation: Steady state output voltage remains within $\pm 0.5\%$ of any voltage within the range of 45.0 to 58.0 VDC.

Filtering: On or off battery

Voice Band Noise — Less than 22 dB_{BrnC}

Wide Band Noise — Does not exceed 200 mv peak-to-peak, or 30 mv rms

Psophometric Noise — Does not exceed 1 mv

Protection

Current Limiting — Output current of each PCU is automatically limited to approx. 110% of full load current.

High Voltage Shutdown — If PCU output voltage exceeds an

adjustable preset value, the PCU shuts down. After approximately four seconds, the PCU automatically restarts.
DC Output Breakers — Connects or disconnects PCU output power to/from the PCUs output terminals.

Status/Alarm Indicators and Metering

Extensive alarming and status indicators such as AC on/off, fan fail, PCU failure and open sense are displayed on the 16-character numerical display of the MCA module and on the PCUs within the cabinet.

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: 0% to 95% relative humidity, non-condensing

Altitude: The maximum operating ambient temperature should be de-rated by +10° C (+50° F) at an elevation of 10,000' (3,048m) above sea level. For elevations between 3,000' (914m) and 10,000' (1,048m), de-rate the maximum operating ambient temperature linearly.

Ventilation: Fan-cooled front to rear

EMI/RFI Suppression: Conforms to FCC rules Part 15, Subpart B, Class A.

Audible Noise: 3' (.91m) from any vertical surface does not exceed 65dBA.

Physical Characteristics

Mounting: Plug-in installation

Dimensions:

Width: 23.37" (59.36cm)

Height: 8.62" (21.89cm)

Depth: 16.76" (42.57cm)

Weight: 80 lbs. (36.29 kgs)

Safety Compliance

582121100, 582121300, 582121700 UL Listed (USA)

CUL (Canada) to UL 1950

582122100UL

CE

 Marconi

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