VERTIV™

NetSure™

801 Series

DC Power System

KEY FEATURES

- **Modular design —** simple to install and operate; allows incremental cost-effective system growth
- **Single point adjustment —** no tools required to change settings and make adjustments; MCA controls up to 168 rectifiers
- **LMS1000 monitoring with a single plug in card —** includes SNMP and Web interface
- **Remote access —** options allow users to view, control and interact with the system using an Ethernet (Telnet, web pages, SNMP or TL1), modem or RS 232
- **Plug'n'play —** add rectifiers without changing the settings and making adjustments; no system interruption
- **High density —** compact design takes up less floor space; houses (24) 5800 watt rectifiers per bay, distribution bays are rated for 6000 amps in continuous operation
- **Efficiency —** industry leading 3-phase rectifier; 93% peak, 92.6% at full load
- **Cabled plant —** offers unlimited configuration options
- **PowerShare —** allows the reuse of existing equipment with NetSure 801
- **Safety compliance —** NEBS Level 3 compliance (pending 3rd party testing); UL Listed to UL subject 1801

5,800 watt rectifiers from Vertiv™ provide up to 110 amps each. With 24 units per bay, these rectifiers provide up to a 2,640 amp output in a 24.375" x 30" footprint.

Description

The modular NetSure™ 801 power system with 5800 watt rectifiers provides up to 16,800 amps of power for -48 volt systems. The basic components of the system include 2640 amp power bays which house the rectifiers and MCA chassis, and 6000 amp distribution bays. The cabled architecture allows the placement of the bays anywhere the user desires without regard to any specific order. This also makes it more user friendly in applications where existing obstacles, such as support columns, need to be accommodated. The total plant size is defined by the maximum capacity of the Main Battery Termination Bars (MBTB).

The NetSure 801 power system contains a powerful, microprocessor-based meter, control and alarm system capable of monitoring and controlling up to 168 rectifiers. The MCA provides a 4 line, 40-character alphanumeric display, which can be activated at the touch of a keypad. Each rectifier bay can accommodate up to 24 plug'n'play rectifiers, which are controlled by the MCA. Additional bays can be added as load requirements increase.

The NetSure 801 power system offers 6000 amp modular distribution bays. Each bay can be configured with up to 70 positions of fuses and circuit breakers from 1-800 amps. Multiple bays may be used to support load levels in excess of 16,800 amps. Contact a Vertiv application expert at 1-800-800-1280.

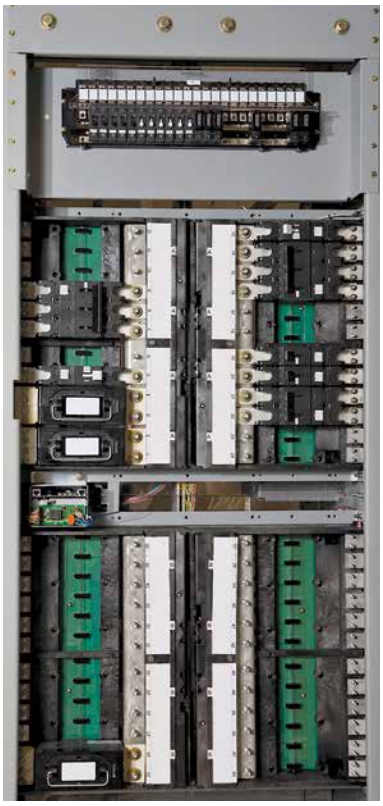
Application

The NetSure 801 system is ideal for wireline, wireless and data center applications such as switch sites, co-location, MTSO and data processing centers.

NetSure™ 801 System Elements

1. Main Power Bay (Individual Feed, No Breakers)
2. Distribution Bay
3. AC Panel (Dual Feed with Breakers)
4. MCA
5. Rectifiers
6. Bullet Fuse/Breaker Panel (Optional)
7. (4) 1500 Amp Fuse/Breaker Distribution Buses

The NetSure™ platform is globally renowned with over 500k units deployed and an unmatched reliability of less than 0.5% failure rate (200 years MTBF).



Distribution Bay with Fuses and Breakers Installed

Modules & Options

AC Input

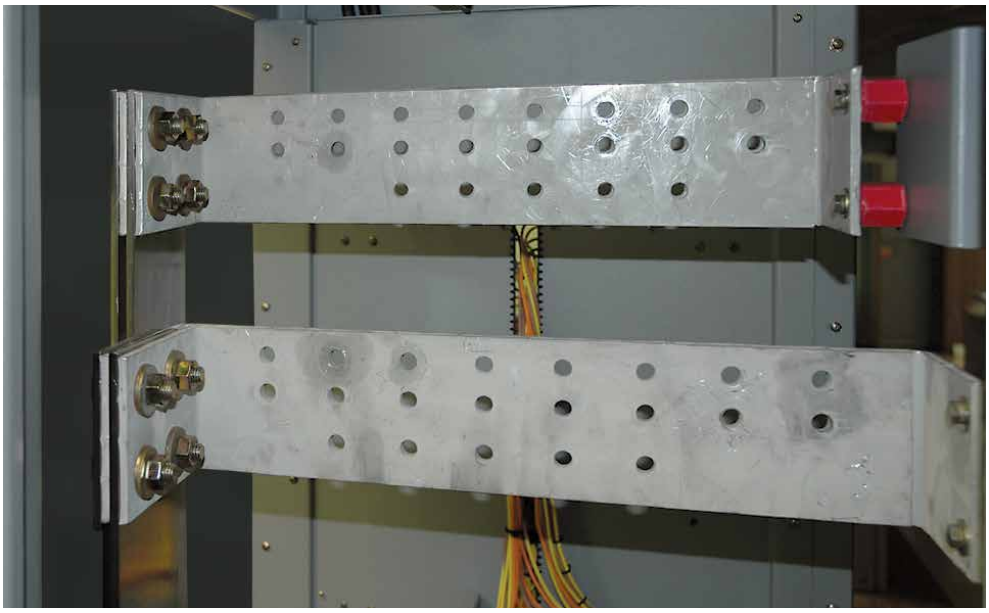
Two types of AC input are offered: dual feed or twin feed. With the dual feed option, two sources of AC are brought into the termination panels. The AC is internally distributed to the individual rectifiers by 12 on-board circuit breakers and the rectifiers are divided evenly between sources. With the twin feed option, each pair of rectifiers is sourced separately from a customer provided PDSC. This enables existing AC infrastructure to be used for 200 amp rectifiers. If individual rectifier feeds are required, simply remove the factory-installed jumpers. Conduit sizes up to 2" can be accommodated.

Distribution

The NetSure 801 distribution bay is modular. There are a total of 48 distribution positions for GJ type circuit breakers as well as an optional 24-position bullet nose panel. In addition to E-Trip and E/M Circuit breakers from 1 to 800 amps, the system will accommodate TPS/TLS and TPL fuses ranging from 1 to 800 amps. Each GJ circuit breaker and TPL fuse is individually monitored.

The system can also be expanded with additional 6000 amp bays that do not need to be adjacent to each other. The only bay-to-bay connection required is the CAN bus control cable. The power feeds are cabled from the MBTBs.

Distribution device options include 1 to 250 amp plug-in circuit breakers, 3 to 100 amp TPS/TLS-style fuses in plug-in holders, 100 to 800 amp GJ/218-style circuit breakers and 70 to 800 amp TPL-style fuses.



DC Output Termination Panel

Vertiv™ — The NetSure™ 801 power system's extensive monitoring capabilities, easy configuration and maintenance are all backed by the resources and quality reputation of a nationwide service organization.

Monitoring/Control

The MCA provides a single point of adjustment for such features as float voltage, test/equalize voltage, high voltage shut-down and current limit for all rectifiers in the entire power system. The MCA provides local indicators and the ability to transmit various alarm conditions, system measurements and system settings. All measurements and adjustments can be performed locally via the alphanumeric display on the front of the MCA panel or remotely using the optional LMS1000 monitor.

The MCA provides local indicators and the ability to transmit various alarm conditions such as rectifier failure, high voltage shutdown and AC failure. Alarm relays are programmable and will respond to SNMP gets and send traps when combined with the SNMP option. Remote communication is provided using an Ethernet connection (HTTP web browser, Telnet or SNMP), modem or RS-232 interface.

MCA (Meter, Control & Alarm)

Hybrid Applications

The NetSure 801 power system is designed to operate in conjunction with existing equipment. Leverage our patented PowerShare technology to deploy a true hybrid power plant by reusing existing power and/or distribution. Alarming and telemetry are centralized within the NetSure 801 providing a single point of contact. PowerShare offers significant cost savings through the reuse of existing equipment already onsite.

Rectifier

The modular R48-5800 is a high frequency rectifier designed with the latest patented DSP (Digital Signaling Processing) switch-mode technology. DSP reduces cost by optimizing system operation and requiring fewer components. System configuration is easily accomplished with these plug'n'play rectifiers. Rectifiers are simply added to an existing rectifier bay or newly added power bay to increase capacity — no adjustments or setup are required. NetSure 801 power systems accommodate up to 264 rectifiers, which provide load power and battery recharge current. The rectifiers are monitored and controlled by the MCA. The R48-5800 rectifiers enable the power plant to easily grow to meet specific application needs.

Rectifier Bay

The NetSure 801 rectifiers are housed in modular power bays that accommodate 24 rectifiers each. The rectifier bays are 7' high x 24.375" wide x 30" deep. System capacity can be easily expanded with additional bays.

R48-5800 Rectifier

NetSure™ 801 NLEB – System Specifications

SYSTEM FEATURES	
Nominal System Voltage	-48VDC (-47 to -58 VDC)
Control	Microprocessor (MCA)
RATED OUTPUT CAPACITY	
System	16,800 amps (higher capacity configurations are available)
Power Bay	2640 amps
Distribution Bay	6000 amps
Rectifier	5800 watt rectifier (R48-5800)
Distribution Panel	1500 amps (4 per bay)
PHYSICAL CHARACTERISTICS	
Framework Type	Box frame
Mounting (H x W x D)	Power Bay – 7' x 24.375" x 30" Distribution Bay – 7' x 30" x 30"
Access	Front and back
ENVIRONMENTAL	
Operating Temperature	-32°F to 104°F (-0°C to 40°C) continuous operation
Storage	-40°F to 185°F (-40°C to 85°C)
Humidity	0% to 95% relative humidity, non-condensing
Ventilation	Fan-cooled front to rear
EMI/RFI Suppression	Conforms to FCC rules Part 15, Subpart B, Class A and EN55022 Class A,
Safety Compliance	UL Listed 1801, cUL, NEBS Level 3 (pending)

R48-5800 Rectifier – General Specifications*

STATUS / ALARM INDICATORS AND MONITORING		
Visual Indicators	Status Normal operation Alarm Rectifier failure alarm Fan failure alarm	Visual indicator color Green Yellow Red Flashing red
Status Settings	The MCA controller establishes all rectifier settings	
PHYSICAL CHARACTERISTICS		
Mounting	Plug-in installation	
Dimensions (H x W x D)	3.36" x 8.83" x 14.62" (85.5 x 224.5 x 371.5mm)	
Weight	17.6 lbs. (8kg)	
ENVIRONMENTAL		
Temperature	-40°F to 113°F (-40°C to 50°C) at full rated output 96 Amps at 55°C	
Altitude	Up to 6562' (2000m) at full rated output	
Ventilation	Front to back with speed-controlled fan (field replaceable)	
Audible Noise	The rectifier does not produce sound levels above 50dB(A), measured 0.6m in front of the rectifier, at the same horizontal line as the middle of the rectifier at 25°C	
Safety Compliance	UL recognized (UL60950) for USA & Canada, CE marked	

*Specify R48-5800L for 208V.

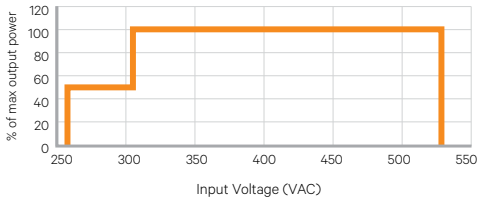
Vertiv™ — a complete spectrum of best-in-class reliable power, precision environmental and connectivity solutions for today's telecommunications and data network infrastructure.

R48-5800 Rectifier – Electrical Specifications*

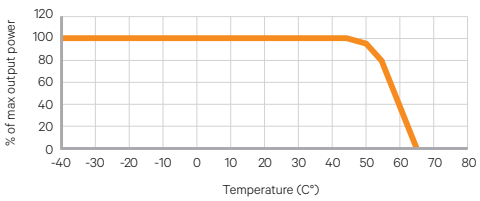
AC INPUT	
Nominal Voltage	Three phase 380/480VAC
Operating Voltage Range	R48-5800: 304VAC to 530VAC (output reduced 50% from 260-304VAC) R48-5800L: 145VAC to 230VAC (output reduced 50% from 145-176VAC)
Frequency	45 Hz to 65 Hz
Power Factor (PF)	>0.98 from 50% to 100% load
Total Harmonic Distortion	<5% from 50% to 100% load
Input Current	Max 20 amp
Inrush Current	Inrush current does not exceed 150% of the rated input steady state peak value.
Input Protection	If the input voltage decreases or increases beyond a non-adjustable predetermined value, the rectifier circuitry shuts down, disabling the output. The rectifier will recover automatically when the AC input is re-established and exceeds 260VAC (low voltage restart point) or when it decreases to 530VAC (high voltage restart point). Overcurrent is protected by an internal fuse.
Operating Efficiency	93% peak 92.6% at full load
DC OUTPUT	
Output Voltage Range	-42.0VDC to -58.0VDC
Output Power	5800W maximum from 304VAC to 530VAC
Output Current	Nominal 110 amps, adjustable from 10-110 amps
Regulation	Steady state output voltage remains within +/-0.25% for any combination of input voltage from 5% to 100% load
Voice Band Noise	The voice-frequency noise generated by a rectifier does not exceed 32dBrnC output noise from 10% to 100% load
Wide Band Noise	Does not exceed 250 mv peak-to-peak, or 100 mv rms per Telcordia GR-947-CORE
Psophometric Noise	Does not exceed 1 mv from 10% to 100% load
PROTECTION	
Current Limiting	The output current is limited to 110 amps
Over Current	Internal fuse
High Voltage Shutdown	If rectifier detects over voltage it will turn off. After 5 seconds it will restart; if it encounters an over voltage within 5 minutes it will turn off and remain off until reset.

*Specify R48-5800L for 208V.

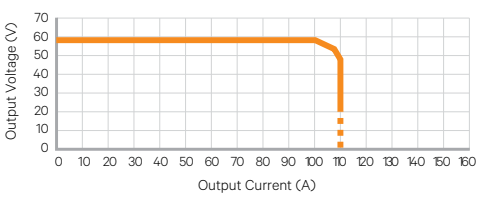
Output Power vs. Input Voltage at Ambient Temp. <45°C



Output Power vs. Temperature at Input Voltage >304VAC



Output Voltage vs. Output Current, max. Output Power 5800W



Additional Information

For ordering information, request SAG582140001. For additional specification, engineering and installation information use specification number 582140001, model number 801 NLEB.

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