



VERTIV™

NETSURE™ BULK SERIES

Reliable DC Power Solution
for Large Power Needs



Vertiv™ offers a complete range of NetSure™ Bulk Series DC power systems. These systems are well suited for large telecom and data centers, offering -48V backup with uncompromised reliability!

The NetSure™ Bulk Series is designed to satisfy the varying needs of large DC power fed sites.

Options include pure bulk systems with designated distribution cabinets for DC power output as well as space saving semi-bulk models. All systems are equipped with either R48-3200 single phase rectifiers or high end three phase R48-5800 rectifiers, delivering outstanding reliability.

Vertiv's Bulk Series is backed by decades of large DC power site experience. In addition to standard features like hot pluggable rectifiers and controllers, live expandability of cabinets and system components is also possible. Rest assured, all bulk systems from Vertiv™ deliver superior reliability while effectively protecting and backing up -48V equipment.

Application

The NetSure Bulk Series from Vertiv is designed for:

- Telecom exchanges
- Data centers
- High ohmic distribution solutions
- Replacing old rectifier cabinets in existing bulk systems.



KEY FEATURES

- Multi-high power density up to 116 kW per cabinet — saves space for telecom and datacom equipment
- High reliability — extremely low failure rates ensure safe operation and low total cost of ownership
- High efficiency — industry leading 3-phase rectifier; 93% peak, 92.6% at full load
- Plug-n-play — add rectifiers without changing the settings and making adjustments; no system interruption
- High end controller — real time remote site supervision through SNMP protocol.



NetSure's outstanding reliability, easy configuration and maintenance are all backed by the resources and quality reputation of a worldwide service organization.

System Specifications

| Electrical System | |
|--|---|
| Nominal system voltage | -48VDC |
| Adjustable range for operating voltage | -42VDC to 58VDC |
| NetSure™ 701 (3200W rectifier) | |
| Output power system | Up to 769 kW (with the Power Split function) |
| Input voltage nominal | Three phases and neutral (3x400+230VAC) – 2 incoming AC feeds per cabinet |
| NetSure™ 801 (5800W rectifier) | |
| Output power system | Up to 1392 kW (with the Power Split function) |
| Input voltage nominal | Three phases (3x400VAC) – 2 incoming AC feeds per cabinet |
| Mechanical | |
| Cabinet dimensions (H x W x D) | 2000 x 600 x 600 mm |
| Doors and panels | Door as standard, front panels as option |

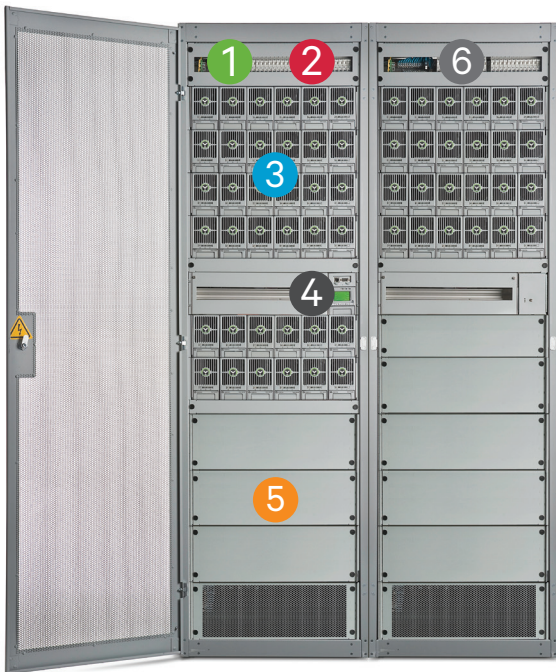
Cabinet Wattage

| Cabinet Type | 3200W Rectifiers | 5800W Rectifiers |
|------------------------------------|--------------------------|-------------------------|
| Semi-Bulk (power per cabinet) | 24 rectifiers (76,8 kW) | 12 rectifiers (69,6 kW) |
| Bulk (power per main cabinet) | 36 rectifiers (115,2 kW) | 20 rectifiers (116 kW) |
| Bulk (power per extension cabinet) | 24 rectifiers (76,8 kW) | 20 rectifiers (116 kW) |

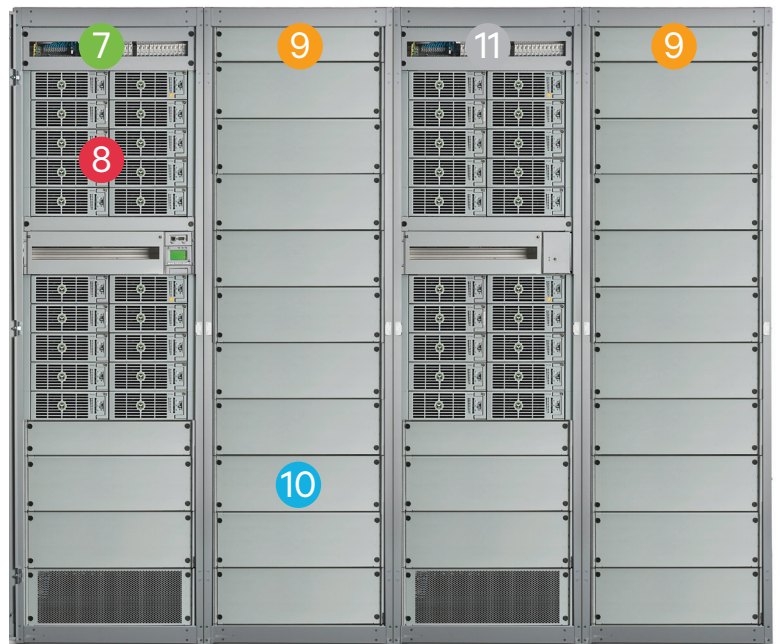
NetSure™ Bulk System Options

Bulk System power cabinets offer high rectifier capacity and separate 2500A distribution cabinet(s) for large DC power loads.

- Top or bottom cable access options
- Choice of 3200W or 5800W rectifiers
- Main power cabinet includes: rectifiers, controller, AC protection and 1 battery unit
- Extension power cabinet includes: rectifiers and 1 battery unit
- Battery Unit (BU) options:
 - 5xNH3 (fuses up to 630A) for battery connections + 3000A shunt
 - 3xNH4 (fuses up to 1250A) for battery connections + 3x2000A shunt
 - 3x circuit breakers with LVD (up to 1500A) for battery connections + 3x2000A shunt.
- Distribution Unit (DU) options:
 - Large load connections: 3xNH4 (fuses up to 1250A) or 6xNH3 (fuses up to 630A)
 - Load shunts available.



NetSure 701 Bulk DC Power System
(Bottom Cable Access)



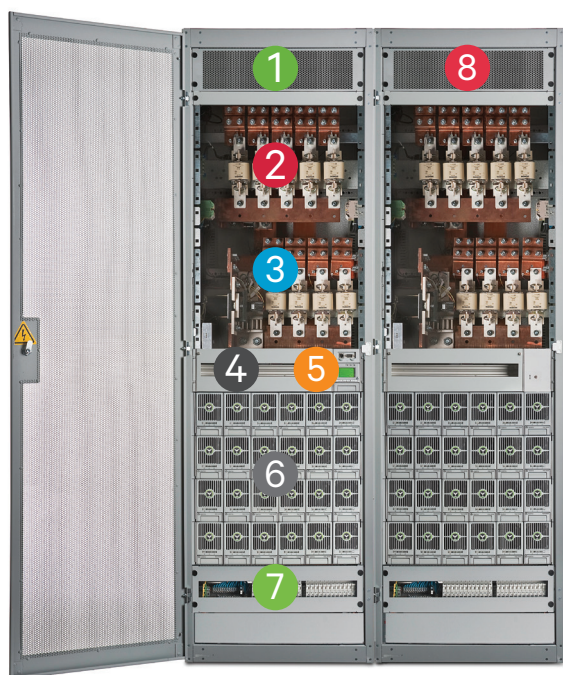
NetSure 801 Bulk DC Power System
(Bottom Cable Access)

- | | | |
|---|--|---|
| 1 NetSure™ 701 Main Cabinet | 5 Battery Unit (3 options) | 9 DC Distribution Cabinet |
| 2 AC Distribution (circuit breakers) | 6 NetSure 701 Extension Cabinet | 10 Distribution Unit (2 options) |
| 3 R48-3200 Rectifiers | 7 NetSure™ 801 Main Cabinet | 11 NetSure 801 Extension Cabinet |
| 4 ACU Controller | 8 R48-5800 Rectifiers | |

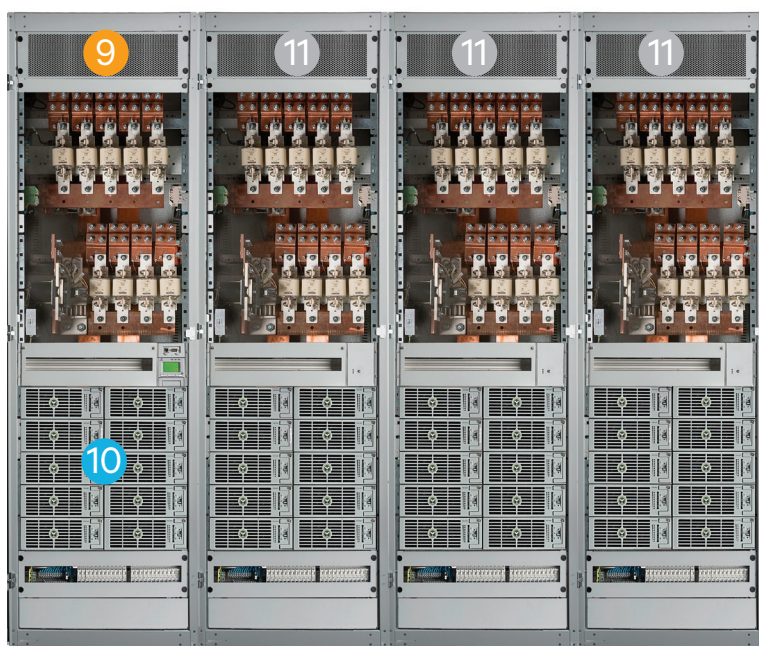
NetSure™ Semi-Bulk System Options

Semi-Bulk systems are distributed systems with high rectifier capacity. They are available as single cabinet configurations or as a series of cabinets that include a main DC power cabinet plus one or more extension cabinets for medium to large DC power loads.

- Top or bottom cable access options
- Choice of 3200W or 5800W rectifiers
- Provides AC input, DC output and battery protection
- Battery Unit (BU): 4xNH3 (fuses up to 630A) for battery connections + 2000A BLVD with automatic reconnection + 2000A shunt
- Distribution Unit (DU) options:
 - Small load connections: circuit breaker unit
 - Large load connections: 5xNH3 (fuses up to 630A)
 - Load shunts available.



NetSure™ 701 Semi-Bulk DC Power System
(Top Cable Access)



NetSure 801 Semi-Bulk DC Power System
(Top Cable Access)

- | | | |
|---|---|---|
| 1 NetSure™ 701 Main Cabinet | 5 ACU Controller | 9 NetSure™ 801 Main Cabinet |
| 2 Distribution Unit (5xNH3) | 6 R48-3200 Rectifiers | 10 R48-5800 Rectifiers |
| 3 Battery Unit (4xNH3+BLVD) | 7 AC Distribution (circuit breakers) | 11 NetSure 801 Extension Cabinet |
| 4 Distribution Unit (circuit breakers) | 8 NetSure 701 Extension Cabinet | |

Rectifiers & Controller

R48-3200 Rectifiers

The modular R48-3200 is a high frequency constant power rectifier designed with the latest patented switch-mode technology using DSP (Digital Signaling Processor) functionality. System capacity can be increased by simply plugging an additional rectifier into an existing rectifier shelf or a newly added expansion shelf — no adjustments or setup are required.



R48-5800 Rectifiers

3-phase design with a high power density and high efficiency (>93%). Installation and expansion of systems is extremely easy with its plug-and-play feature and light weight of only 8 kg. The rectifier also shows a low THD level (<5%) and very wide input voltage range. Full output power of 5800W is available at 305 - 530VAC!



ACU Controller

Our most advanced controller for connection and management of local site management modules with advanced programmable functions and other advanced power features, like our power split function, which allows extension to any brand power system in a master/slave connection.



R48-3200e Rectifier (eSure)

The modular R48-3200e is a high frequency constant power rectifier designed with the latest patented switch-mode technology. eSure rectifiers deliver an industry leading efficiency, approaching 97%. The rectifier is designed to meet the highest requirements on availability and reliability.



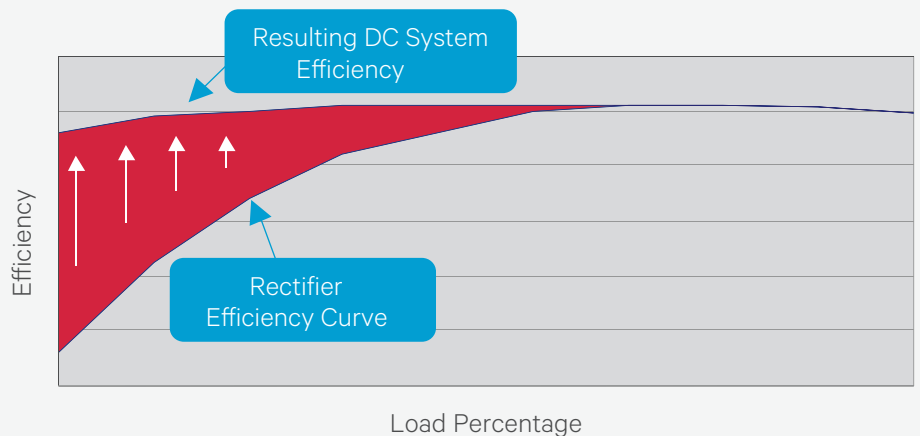
ACU+ Controller

In addition to the standard ACU features, the ACU+ offers master / slave functionality. The master / slave feature enables communication between multiple controllers in very large DC power systems.



Rectifier Redundancy Function

In this function, the ACU controller turns off some of the rectifiers in order to increase the load per rectifier. By having the rectifiers operate at their peak, system efficiency is optimized. Additionally, the ACU controller rotates the rectifiers on standby with the active rectifiers, thereby balancing the exposure.





Vertiv™ provides a complete range of communications network infrastructure solutions and services built on an industry-leading reputation for quality, reliability and value.

Vertiv™ offers a variety of additional components that expand the functionality or capacity of the system.

Remote Distribution Cabinet

- 6 distribution panels (NH fuses or HOD and/or LOD circuit breakers) in one or two groups
- Voltage and current gauges
- Outgoing alarm for each group
- Fork connected distribution panels for easy expansion.



SM Modules for Remote Supervision

Supervision Modules (SM) measure alarms, voltages, temperatures, etc. and are easily integrated in the ACU unit.

SM-IO

- (7) analog/digital inputs, (1) AC frequency input, (3) digital outputs and (5) configurable analog inputs
- Measures analog/digital signal from sensors/transducers.

SM-AC

- AC Mains supervision
- Standby diesel generator supervision.

SM-BAT

- Detailed battery monitoring of cells and string voltages
- Battery current and temperature monitoring.



Surge Protection

For maximum site protection against AC surges, additional equipment is available.

The Local Presence of a Global Organization

To be profitable, your wireline and wireless networks must be properly deployed and individual sites must perform reliably, night and day. Vertiv™ understands this and offers an array of global installation and support services.

In short, you can focus on keeping your customers connected, knowing you have Vertiv global service coverage, with over 150 service locations worldwide and 2,000 certified professionals with local knowledge behind you.



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