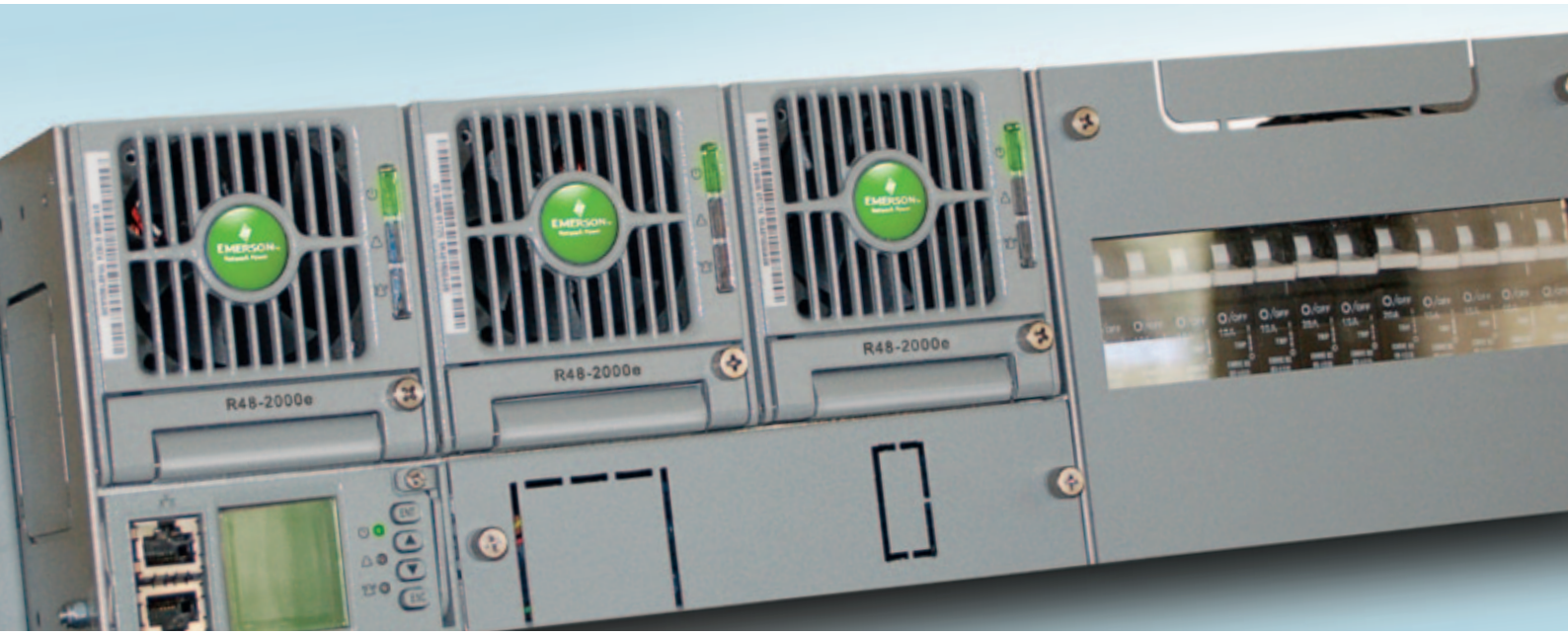
DC Power for
Business-Critical Continuity™

NetSure™ 501 Series

The Compact DC Power System with Great Flexibility 2.0 – 24.0 kW



EMERSON™
Network Power

NetSure™ 501 offers unmatched reliability and site feasibility

Key Features

- **High efficiency** — 96.5% efficient eSure™ rectifiers ensure optimized total cost of ownership
- **ECO mode** — an innovative function that enables significant energy savings even at low loads in existing NetSure™ systems with minimal investment
- **Wide AC voltage range window** — 85VAC to 290VAC
- **Wide temperature tolerance** — suitable for harsh environmental conditions
- **Multi-function unit with optimized configurations** — provides flexible yet cost-efficient DC power solution
- **Wall-mounted, battery rack-mounted or stand-alone cabinets** — to meet varying installation needs
- **Optional remote access** — enables monitoring through web browser, TCP/IP, SNMP GSM, PSTN, and ISDN

NetSure™ 501 is especially designed for all types of access applications in both fixed and wireless access networks, offering unmatched site installation flexibility.

The NetSure™ 501 small DC system features a high density power solution with a standard or advanced control unit, up to 12*2000W NetSure™ standard or eSure™ rectifiers and a multi-function unit providing battery and distribution connections. The integrated power shelf comes in 19" or 23" rack mount configurations and is available in a number of different configurations, designed to work with a wide range of applications. The distribution section supports up to 40*1-150A circuit breakers, configured for load or battery breaker, with or without LVD. Additional options and extra features further enhances the system to fit all possible customer requirements.

NetSure™ DC Power systems from Emerson offer extremely low failure rates, as well as low total cost of ownership. The optional 2000W eSure™ rectifiers, with a peak efficiency of 96.5%, decrease total cost of ownership even further. Maximum value is achieved by an advanced energy optimization function, known as ECO mode. ECO mode enables significant energy savings even at low loads in existing NetSure™ systems with minimal investment.

Application

The NetSure™ 501 DC power system is designed for deployment in the following areas:

- Base Station Trancievers (BTS) and B Nodes
- Transmission
- Co-location sites
- Wimax nodes
- Digital loop carrier
- Fiber repeaters
- Small microwave units
- Digital subscriber lines
- Smaller Telecom Exchanges (RSS)
- Private Branch Exchanges (PBX)
- Data centers
- High Ohmic distribution solutions
- Points of presence
- Data or communications equipment requiring reliable -48 V power supply

The NetSure™ 501's outstanding reliability, easy configuration and maintenance are all backed by the resources and quality reputation of a worldwide service organization

Environmental Endurance

Great output power at high temperatures
NetSure™ 501 rectifiers deliver high output power in relation to ambient temperature conditions (see diagram 1), making them especially suitable for high-temperature environments. In a system with rectifiers operating at 65°C, the output is still 90% of full power.

High efficiency eSure™ rectifiers deliver reliability
High efficiency eSure™ rectifiers achieve 96.5% efficiency (see diagram 2), compared to 92% efficiency offered by our standard rectifiers. In addition to high efficiency, eSure™ rectifiers deliver the most reliability. This combination reduces total cost of ownership substantially.

Diagram 1: Output Power vs. Temperature at Input Voltage >176VAC

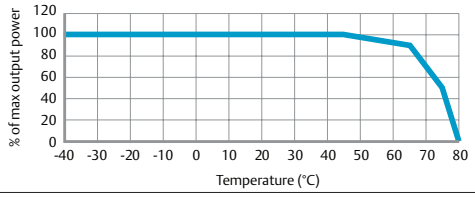
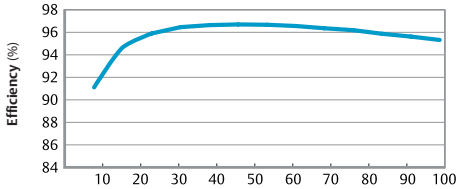
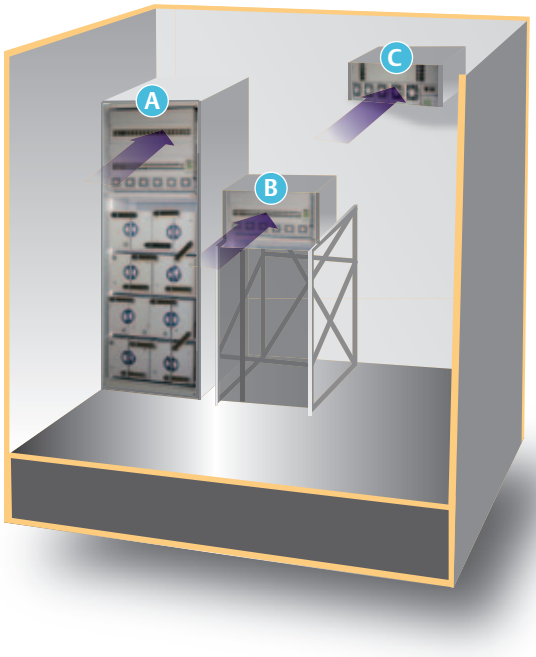


Diagram 2: Efficiency Curve





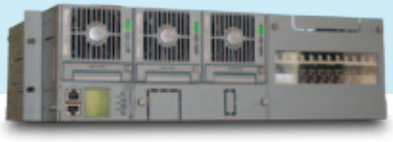
Configurability for Space and Energy Efficiency

NetSure™ 501 comes in many different shapes
This highly flexible DC power system is available in stand-alone cabinets (A), or smaller, more cost-effective compact systems in wall-mounted (B) or battery rack-mounted (C) "hardtop" cabinets. These installation alternatives are optimal for any building or shelter installation.

NetSure™ 501 can be easily integrated into any of Emerson's outdoor enclosures when a pre-manufactured space-efficient outdoor solution is needed.

Basic Models

Our basic models define the combination of rectifier and distribution (or MFU) shelves and determine the ultimate capacity of the system. The mounting width of the system is also decided.



C1 3U up to 8 kW

Our most compact system, only 3U high, available as 19" or 23" wide, is ideal for solutions embedded into a cabinet. With 16 CB positions and up to 8 kW of power, this system is designed for typical wireless access applications.

C1 5U up to 12 kW

With its 5U height, this model offers a generous allowance of up to 36 standard vertical CB positions. Available as 19" or 23" wide with up to 12 kW of power, this system covers the needs of more demanding sites where compact size, high power and many distribution points are required.

C2 9U up to 24 kW

When more power is required, this model with two shelves of rectifiers offers up to 24 kW of power. The same generous space for battery, normal or priority load circuit breaker is available here as with the C1 5U.

Cabinet & Subracks

Subrack (or power shelf)

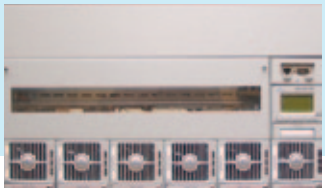
Subracks are especially suitable when you want to embed a power system in your own 19" or 23" cabinet. The system subrack comes fully operational and ready for mounting.

Wall or Stand-Mounted Cabinet

Also known as “hardtop”, this very compact cabinet should be chosen when site space utilization is crucial and the most cost-effective cabinet solution is required. It comes in 23" building practice and a variety of heights ranging from 4U (240 mm) up to 13U (650 mm).

Standard Cabinet

When the most cost-effective and space-effective solution for a stand-alone cabinet is needed, this is the cabinet to choose. With different depths (400mm or 600mm) and a variety of battery shelves, you get a complete power system in a footprint as small as 0.24 m^2, with an impressive 400Ah battery bank and up to 24 kW of power. It comes in a variety of heights from 800 mm up to 2200 mm.



G1 7U up to 12 kW
This flexible model supports our site monitoring (SM) modules. The advanced controller (ACU+) offers our power split function and other power management features.

G2 9U up to 24 kW
This is the same model as G1 7U but with more power supported by two rectifier shelves.

Earthquake Resistant Cabinet
This is your choice if cabinets will be used in areas exposed to earthquakes. The cabinet measures 1800 x 400 x 600mm (H x D x W) and is verified to BellCore Zone 4 EQ resistance, even when batteries are installed thanks to an optional EQ hardening crossbar.

Rectifiers

Our highly reliable rectifiers are the heart of our system and a cornerstone in our attempt to deliver the most reliable power systems in the industry.

R48-2000e
A high frequency constant power rectifier with 96.5% efficiency. The rectifier is designed to meet the absolute highest requirements of reliability, efficiency, energy savings and availability.

R48-2000
A reliable rectifier providing constant power of 2 kW per rectifier module. This rectifier is fully compatible with all NetSure™ 501 DC power systems.

R48-1800A
A cost-effective rectifier delivering constant 30A output. Ideal for industrial environments, where robustness and the lowest possible cost are required.

Control units

All of the control units for NetSure™ DC power solutions are designed for robustness and are hot swappable with a full, uninterruptible power supply. These controllers are used in Emerson's complete range of NetSure™ DC Power systems, so the interface is well recognized for any power system range you select (see individual data sheet for comprehensive details on each control unit).

SCU+ (with display)

SCU+ is our new standard controller offering world class functionalities packaged in a slim 1 by 2U robust module. Functions include advanced alarm monitoring and reporting. Flexible alarm settings are programmable to support effective relay signaling. Advanced battery management is provided by functions like temperature controlled charging, boost charging, battery discharge test, battery capacity prediction and battery current limitation.

An intelligent configuration file download capability minimizes installation time and allows planned network conformity. An RS232 serial port or the local display is available for setting and local/remote monitoring.

SCU+ (without display)

Our SCU+ without display offers the same functions as the standard SCU+ but with more advanced remote communication by its embedded Web server and SNMP broadcast service for remote alarm signaling.

SCU+ (with display & Web/SNMP)

This feature-rich controller offers both a display and Web/SNMP, combining the functions of the other two controllers. It can be used as a replacement for all others, if needed.

ACU+

The ACU+ is our most advanced controller. In addition to the SCU+ functionality, including display and Web/SNMP, the ACU+ also offers advanced system management. The ACU+ has the added advantage of enabling extensive site monitoring through the use of SM Modules.

Circuit breakers (CB)

For any of the categories – batteries, normal load or priority load – Emerson offers a rich selection of circuit breakers. The power feed can be adapted to your exact requirements, thus avoiding excess infrastructure space.

- Choose between the normal 18 mm width (industry or common standard), or a magnetic hydraulic 13 mm CB. Select the magnetic hydraulic type when accurate operation at high temperature is important, or when space efficiency is a driver.
- Ampere rates ranging from 2A up to 200A.
- Select the number of CBs desired. For battery connection, use our configurator to easily determine ampere rate and breaker quantity, from one large (up to 300A) to six smaller battery CBs.

Emerson Network Power provides a complete range of communications network infrastructure solutions and services built on an industry-leading reputation for quality, reliability and value

Options

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

- Extension DC DU (DC Distribution Unit) — enables another 40 circuit breaker positions. Available for all models except the C1 3U.
- Extension AC DU (AC Distribution Unit) — when individual circuit breakers are required for each rectifier. ***NOTE:*** *Not normally required since the rectifiers (and system) are fully protected by 2 pole fuses inside the rectifiers.*
- AC surge protection
- Cabinet options, tip protection, door, adjustable feet
- Temperature sensor, battery and/or ambient with 3 or 10 meter cable
- Site monitoring modules

Special features

Due to a smart combination of hardware and software in our controllers, a number of useful features can be defined and offered:

Expansion of Existing Sites
With our power split function any 48V DC power system can be expanded with the NetSure™ 501 system. This feature requires an ACU controller.

AC Input Current Limitation
The ability to limit the rectifiers to a pre-defined AC ampere level is useful in some site scenarios. This is easily accomplished by setting an ampere value for the AC in our controller. This value is then permanently stored in each rectifier and used by the rectifier-embedded controller to limit the AC ampere below the set value.

Battery Charge Current Limitation
This feature is enabled by the combination of battery shunt readings and a setting in all our controllers.

Automatic Battery Capacity Test
With the combination of battery shunt measurements and rectifier power readings, you can set periodical or event-triggered battery capacity tests. Activation of this feature often results in less frequent site visits.

ECO Mode
ECO mode is an innovative power saving function enhancing system efficiency with minimal investment. With ECO mode, only the number of rectifiers required for normal load conditions need to be upgraded to eSure™ rectifiers. Then, during normal load conditions, only the eSure™ rectifiers run while the remaining original rectifiers are reserved for charging and redundancy. The result is the benefit of eSure™ efficiency at a fraction of a cost.

Emerson Network Power, the leading supplier of DC power systems in the world, is close to you wherever you are. Our global network of DC power specialists has experience second to none. We have more DC power installations in operation on all continents than anybody else in our industry. Call us, or come and see us, to talk about how we can meet your DC power needs.

Emerson (NYSE: EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets through its network power process management, industrial automation, climate technologies, and tools and storage businesses. For more information, visit: **Emerson.com**.

Emerson Network Power, a business of Emerson (NYSE:EMR), is the global leader in enabling *Business-Critical Continuity™* from grid to chip for telecommunication networks, data centers, health care and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power, precision cooling, embedded computing and power, integrated racks and enclosures, power switching and controls, infrastructure management, and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. For more information on Emerson Network Power's full suite of solutions specifically supporting the communications network infrastructure, including NetSure™ DC power systems, NetXtend™ outside plant enclosures, and NetPerform™ optimization services, visit: **EmersonNetworkPower.com/EnergySystems**.

Learn more about Emerson Network Power products and services at: **EmersonNetworkPower.com**.

Emerson Network Power
Energy Systems
P.O. Box 92113
SE-120 07 Stockholm, Sweden
Telephone: +46 8 721 60 00 **Fax:** +46 8 721 71 77
Web: EmersonNetworkPower.com/EnergySystems

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- Services
- Surge Protection

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