

# Increased power density for mission-critical DC power systems

Modular DC rectifiers provide high scalability and energy density for mission-critical DC power systems.

**R**eliable, efficient and flexible modular DC power systems must be at the heart of all mission-critical infrastructure, and modular DC rectifiers can play a significant role in improving energy density and efficiency for such systems.

A DC rectifier is a device that converts AC power from the utility grid to DC power, which is then used to charge batteries or power other DC loads. A modular DC rectifier consists of several smaller rectifier modules that can be added or removed as needed, providing redundancy, flexibility and scalability in DC power systems.

## Mission-critical applications

Eaton Modular DC power systems are engineered to provide uninterrupted DC power to mission-critical equipment such as telecommunications, industrial and any other application that needs essential power. Eaton has now expanded its range of modular rectifiers with the HDR48-ES, providing 3 kW of power capacity at 48 VDC and energy saving through extra-high efficiency and much-improved energy density. It is intended to power telecom infrastructure like 4G and 5G macro base stations, fibre-optic repeaters, telecom data centres and industrial mission-critical equipment.

## Efficient energy density

Darren Salter, Eaton's APAC Product Manager, said the HDR48-ES is designed for ease of deployment and delivers industry-leading power efficiency leading to significant cost savings for telecom operators over time.

"Energy consumption is increasing dramatically as 5G is deployed — similar to the same way previous generations were deployed," he said. "In the past, densifying networks implied high energy outputs which led to substantial increases in operator expenses. "The HDR48-ES is designed to flatten the energy curve for network operators while enabling dense network deployments, reducing operational costs and environmental impacts."

The HDR48-ES features intelligent digital signal processing for enhanced control, producing peak efficiency approaching 97% for typical operating loads, while also maintaining a very high minimum operating efficiency of 96% over a very wide range of loads.

The HDR48-ES is part of the Eaton APS (Access Power Solutions) Series 8 modular power systems. These 19" rack-mount systems are available with up to nine of the Eaton HDR48-ES 3 kW rectifier modules, providing an output of up to 562 A. A modular subrack system such as the APS9 allows the operator to start with only the capacity needed and then scale up with additional rectifier modules as the DC load increases over time.

For superior operating efficiency to further reduce operating costs, these systems are also compatible with Eaton 2 kW Energy Saver (ES) and 3G Access Power (APR) rectifiers. The systems include an integral DC distribution panel, with a range of MCB and low voltage disconnect options available.

## Advanced control

The systems also include the SC300 system controller that manages all the rectifier modules, ensuring a

good state of health, equitable load sharing, and perfectly managing power to the batteries. The controller offers advanced control and monitoring features including Smart Alarms and a complete array of communications options with Ethernet, 4G/5G cellular (including text messaging), standard modem, TCP/IP and Modbus communications options.

The Access Power Solutions are pre-configured, and all system settings are fully adjustable in software and stored in transferable configuration files for repeatable and quick one-step system set-up.

## Fault tolerance

The rectifier modules are hot-swappable, since the SC300 microprocessor controller allows them to automatically configure themselves to the power system requirements upon insertion. This means that the modules can be removed and replaced easily by general technical staff without specialist power training. Mean time to repair becomes only a matter of minutes and can be done on site by keeping a strategic set of modules as spares.

Case studies and product demonstration can be arranged with an Eaton DC BDM. If you are interested to learn more, please contact Eaton or email [EatonANZ@eaton.com](mailto:EatonANZ@eaton.com).

**EATON**

Powering Business Worldwide

**Eaton Electrical (Australia) Pty Ltd**  
[Eaton.com/au](http://Eaton.com/au)