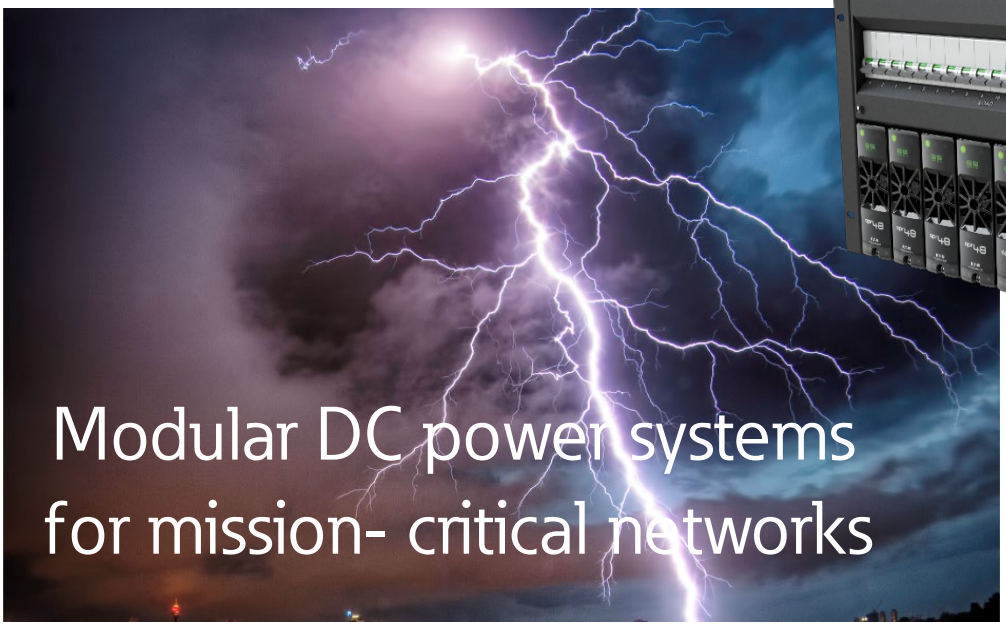

Modular DC power systems for mission- critical networks

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Reliable, efficient and flexible modular DC power systems must be at the heart of all mission-critical infrastructure.

In the modern era, society expects and relies on highly reliable systems to support our quality of life. Standard utility power just does not have the levels of reliability needed by mission-critical applications.

During times of natural disaster, utility power is usually one of the first services lost. Only properly engineered and designed backup power systems can provide the levels of security and reliability needed by modern society. Eaton Modular DC Power Systems are engineered to provide uninterrupted DC Power to mission critical equipment such as telecommunications, public safety radio networks, fibre optic cables and any other application that needs essential power.

Eaton Modular DC Power Systems are designed for 24Vdc and 48Vdc, which are the most common voltages used globally for critical equipment and vary in size from 1 kilowatt all the way up to hundreds of kilowatts. Together with lead acid or lithium batteries, such systems can provide backup power from tens of minutes to several days.

The building block of modular DC Power Systems is the rectifier module, which converts AC utility or AC generator power into clean and noise-free DC power at a voltage suitable for the critical load and for recharging batteries.

Eaton rectifier modules range from 900W rating to 5,800W rating, with the most popular and common being the 2,000W module. Modules can be paralleled together to provide scalability to build systems from the smallest to the largest.

Eaton modular rectifiers are based on leading- edge switch mode technology using highly efficient resonant mode topology and active power factor correction. They also use digital signal processing and embedded control to automatically and efficiently control the power electronics resulting in 96+% conversion efficiency and extremely low electrical output noise and input THD.

Reliability is achieved by redundancy of the rectifier modules. Commonly, systems are designed with N+1 redundancy meaning one more rectifier module is provided above and beyond that needed to support the critical load. Modular systems also allow for even greater redundancy such as N+2 or N+N simply by adding more rectifiers. This level of design flexibility is something not easily achieved in monolithic power systems. Diversity is also possible in Eaton's modular systems, for example by having multiple AC utility power sources feeding each half the rectifier modules.

Because the core power rectifier modules used in Eaton DC systems are microprocessor controlled, they automatically configure themselves to the power system requirements upon insertion. This means that the modules are hot swappable and 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.

Often DC Power Systems need to cater for growth as the load changes over time. Financial controllers are looking for ways to defer capital expenditure; Eaton modular DC systems accommodate this requirement. At Day 1 the DC system can be designed for the future load requirements but only initially deployed with the minimum number of rectifiers. More can then be added if and when the load grows.

All of this design flexibility and reliability would not be possible unless the system had a sophisticated controller. Eaton DC systems include a system level controller that manages all the rectifier modules, ensuring good state of health, and equitable load sharing, and perfectly managing power to the batteries. The system controller can communicate using TCP/IP or RS232 and with popular protocols such as Modbus, SNMP, HTTP/HTTPS.

Eaton has also built in resilience, such that even the controller can be removed and replaced (if failed) without stopping the DC power system from continuing operate. The rectifiers just keep doing what they were last told to do if they no longer have the central controller available. Eaton APS and DV2 range of DC power system are available as stock items or as engineer-to-order solutions.

For more information, visit www.dcpower.eaton.com/australia

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