Eaton Telecommunications Power Solutions Business

DC Power Solutions Catalogue February 2010

SMARTER ENERGY

Powering Business Worldwide

Contents

To see a comprehensive list of DC power solutions including previous generation power systems and components, visit www.eaton.com/telecompower

Powering Business Worldwide

Eaton's Telecommunications Power Solutions Business

Our Business

Eaton Corporation is a global diversified industrial manufacturer and a leader in electrical power quality, distribution and control. Eaton serves the needs of customers located in over 125 countries.

Eaton's telecommunications power solutions business provides telecommunications and related sectors with world-leading infrastructure products and services.

Global Presence

Headquarters are located in Raleigh, North Carolina and regional sales headquarters are located in USA, Asia and Europe with offices in over 30 additional countries and with representation in over 100 countries it is one of the few telecommunications infrastructure providers with a truly global presence.

Environmental Standards

Eaton strives for the highest environmental standards across both our operations and products and our commitment goes beyond compliance with existing regulations. We wish to become recognized as an industry leader in creating safe workplaces and conserving world resources.

Eaton is committed to environmental stewardship and participates in a number of volunteer government partnership programs worldwide.

We were among the first diversified industrial companies to pursue global ISO 14001 certification - a rigorous standard for managing and improving environmental performance. Today, virtually all of Eaton's facilities worldwide have earned this designation.

We've also set tough performance goals for ourselves, like reducing our greenhouse gas emissions by 18 percent (adjusted for production) by 2012.

Unsurpassed Experience

Eaton has in excess of 40 years experience of working closely with customers to deliver tailored power management solutions. for communications networks around the world.

Customer led Solutions

Eaton's insight into customer needs is demonstrated through its products in terms of reliability, efficiency, smart energy features, power density, and ease of installation,

Intelligent monitoring and control capabilities add flexibility, precision, reliability, and automation - without added complexity.

Comprehensive Range

Our telecom power solution range includes AC and DC power systems, power and ancillary equipment management software, cabinets and enclosures, and other products. Eaton also offers a wide range of DC services including design, installation and commissioning remote monitoring, turnkey integration and site support, to provide a seamless solution.

Delivery

Eaton's global scale manufacturing and logistic capability means that products and services can be delivered with maximum cost-effectiveness and with the delivery speed and flexibility that you expect.

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Services Capability

Eaton's offers a wide range of DC secure power services including power quality evaluation, sizing, design consultancy, installation and commissioning, full project management and turnkey integration, anywhere in the world.Our individually tailored service contract plans can provide ongoing service maintenance, training, after-sales service, and repairs, Eaton's global presence ensures quick response times for all of our customers.

Design Services

Skilled engineering staff can provide a full design service for DC power systems to specifically suit individual applications and sites.

World-Wide On-Site Services

Eaton's fully trained customer service engineers can carry out all installation tasks or supervise and assist local staff.

Integration Services

Our telecommunications integration services provide complete install, testing and integration services for any type of communications or other electronic equipment, to world leading standards of quality.

Typical projects Eaton has completed include the integration of network access equipment into roadside cabinets and the on-site installation and commissioning of telecoms equipment.

Eaton is now applying this expertise to the provision of integration services for original equipment manufacturers and network operators.

Power Monitoring

Eaton can provide 24 x 7 DC power system and battery monitoring, and provide remote diagnostics to maximize responsiveness and uptime, Monthly performance reports and trend analysis assist optimum system performance.

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After-Sales Service and Repairs

Eaton DC Regional Repair Sites, staffed by fully trained technicians, are strategically located around the world to provide rapid turnaround times. Individually tailored service contracts are also available so customers can choose the ongoing service package that best suits their requirements.

Options include extended warranty periods, unlimited out-of- warranty repairs, immediate replacement, on–site maintenance, and battery testing and conditioning. Special terms and conditions apply to some DC services.

Training

Eaton offers a comprehensive range of training courses designed to provide the right level of product knowledge with practical demonstrations and hands-on opportunities. Courses can be arranged at an Eaton location or at a customer's site.

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Application and Product Selection Guide for Eaton DC Power Solutions

	Application	Eaton DC Power Solutions			
		Enterprise Power Solutions	Access Power Solutions [1]	Metro Power Solutions [2]	Core Power Solutions [3]
			1-744A, 24V or 48V	Up to 1500A, 24V or 48V	Up to 15,360A, 48V
Customer Premises Equipment	PBX/VoIP	✓	✓		
	Wireless Access	✓	✓		
Wireless	Mini/metro sites		✓		
	Base transceiver stations (BTS)		✓	✓	
	Base station controllers (BSC)		✓	✓	
	Main switches			✓	✓
Wireline	Fiber transmission systems	✓	✓	✓	✓
	Digital microwave radio		✓	✓	
	Broadband voice data services	✓	✓	✓	
	Satellite earth stations			✓	✓

1 Including DV2 (Data-Voice-Video) Power Solutions with APR rectifier modules.
2 Including DV2 (Data-Voice-Video) Power Solutions with NPR rectifier modules.
3 Systems with higher output are also available

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Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

3G Enterprise Power Solutions - EPS2 Series

The **Eaton® 3G Enterprise Power Solutions** are the ideal solution for converged data networks and low power tele-communications applications requiring compact, efficient and flexible DC power supplies.

This EPS2 series is a 19" rack mounted system and is available with up to two of the Eaton 3G Enterprise or Access 48V rectifier modules providing a total output of up to 4000W.

The versatile SC200 system controller features a front access USB port for ease of system setup along with a RS232 rear port and a 10BaseT Ethernet port for remote networking and communications.

Communication features of the SC200 system controller include TCP/IP, SNMP and an onboard web server allowing access with standard web browsers. The SC200 also supports GSM cellular (including text messaging) and standard PSTN modems.

The Enterprise systems include an integral DC distribution panel with easy to fit push-in circuit breakers and low voltage disconnect contactor to prevent over discharging of the optional backup batteries.

Typical applications include providing secure power for customer premises equipment, roadside cabinets, converged VoIP/data networks, PoE, IP routers and small PABX's.

Features

- 19" rack mounting
- High power density
- Intelligent system controls
- Pre-configured software
- Onboard secure web server
- Push-in easy to fit circuit breakers
- Low voltage disconnect
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Easy to use menu & full color display
- Optional batteries
- Compatible with Eaton's Energy Saver (ES) rectifier

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Technical Specifications

Input

AC Supply	Nominal: 120V, 240V Operating Range: 90V – 275V
Power Factor †	>0.99 (50 – 100% Output Current)
Efficiency †	>96% peak >95% (20% to 100% load, 230Vac)

Output

DC Output Voltage Range	43 – 57.5V	
DC Output Power (maximum*) †	240V AC:	APR48-ES: 4.0kW APR48-3G: 3.6kW EPR48-3G: 1.8kW
	120V AC:	APR48-ES: 2.3kW APR48-3G: 2.2kW EPR48-3G: 1.1kW
	** Based on two rectifiers fitted, refer to rectifier data sheets.*	

Environmental

Operating Temperature Range	Rated: -10°C to +50°C [-14°F to +122°F] Extended*: -40°C to +70°C [-40°F to +158°F] *Output current is derated above 50°C [122°F]

Mechanical

Dimensions H,W,D	2U , 19" mounting, 13.2" [335mm]* ** Additional clear depth space is required for exhaust air.*

System

System Controller	SC200
DC Distribution Module	12-way circuit breakers (2 x Battery, 10 x Load) Circuit breaker type: Magnetic/Hydraulic, push fit Battery circuit breakers: Heinemann AC1R Series Typical ranges available: 30A, 40A, 50A, 60A, 70A Load circuit Breakers: Heinemann JC1S Series Typical ranges available: 6A,10A, 15A, 20A, 25A, 30A
Communication Features	USB direct 10BaseT Ethernet, TCP/IP, SNMP, Modbus-TCP, Modbus-RTU and on board web server RS232 to external PSTN or GSM modem (modem not included)
Rectifier Blank Panels	For unused rectifier positions

Software

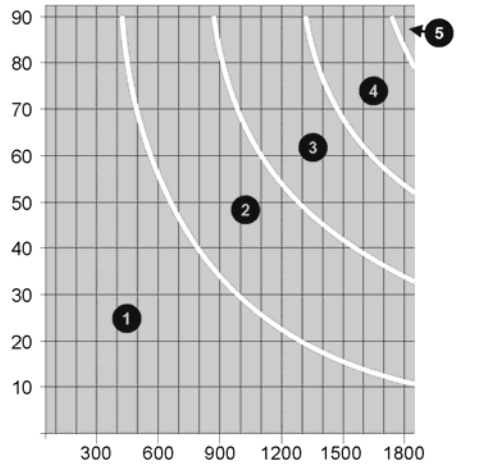
DCTools	Configuration software. Free download from: www.powerware.com/downloads
PowerManagerII	Remote control and monitoring software

† *Power factor, efficiency and DC output power are dependant on rectifier model fitted. Refer to the rectifier data sheet for further details.*

Options

Battery*	Eaton Extended Battery Module (EBM) PW5130 48V EBM RM P/N 103006587-6591 Weight: 29.5kg [65lb] Dimensions (H,W,D*): 85mm (2U), 432mm (19" mounting), 487mm **Additional space is required at the rear for cables.* Typical Run time values* (see graph).

Battery Run Time (minutes)



Equipment Power (watts)

A = Required number of battery modules.

*Battery times are approximate and vary depending on factors such as:
- load configuration
- battery charge
- battery age and temperature.

* Other battery options available - consult your local Eaton agent.

Battery Cables	CKBATT-02 Eaton EBM 5130 connection cable, 2000mm long or CKBATT-01 'other batteries' connection cable, 2000mm long
Equipment Cable	Customer Equipment Connection Cable CKLOAD-00 10-way connection loom, 1000mm long
EBM Rack Mounting Kit	Included with EBM5130 as standard

Certifications

All products comply with International Standards.

North America	UL (Canada, USA), FCC Class B
Europe	CE
Australia and New Zealand	C-Tick

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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Internet: www.eaton.com/telecompower

3G Enterprise Power Solutions - EPS5 Series

The **Eaton® 3G Enterprise Power Solutions** are the ideal solution for converged data networks and low power tele-communications applications requiring compact, efficient and flexible DC power supplies.

The EPS5 series is a 19" rack mounted system and is available with up to five of the Eaton 48V 3G Enterprise power rectifier modules, providing a total output of up to 4500W. The modular design of the system allows users to simply add additional rectifiers and batteries as required to meet future growth of their network power demand, thus, better protecting the initial power system investment.

The versatile SC200 system controller features a front access USB port for ease of system setup along with a RS232 rear port and a 10BaseT Ethernet port for remote networking and communications.

Communication features of the SC200 system controller include TCP/IP, SNMP and an onboard web server allowing access with standard web browsers.

The Enterprise systems include an integral DC distribution panel with easy to fit push-in circuit breakers and low voltage disconnect contactor to prevent over discharging of the optional backup batteries.

Typical applications include providing secure power for customer premises equipment, roadside cabinets, converged VoIP/data networks, PoE, IP routers and small PABX's.

Features

- 19" rack mounting
- High power density
- Intelligent system controls
- Pre-configured software
- Onboard secure web server
- Push-in easy to fit circuit breakers
- Low voltage disconnect
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Easy to use menu & full color display
- Optional batteries

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Technical Specifications

Input

AC Supply	Nominal: 120V, 240V Operating range: 90V – 275V
Power Factor †	>0.99 (50 – 100% output current)
Efficiency †	91% (50 – 100% output current)

Output

DC Output Voltage Range	43 – 57.5V
DC Output Power (maximum*) †	240V AC: 4.5kW 120V AC: 2.25kW ** Based on five rectifiers fitted, refer to EPR48-3G rectifier data sheets.*

Environmental

Operating Temperature Range	Rated: -10°C to +50°C [-14°F to +122°F] Extended*: -40°C to +70°C [-40°F to +158°F] *Output current is derated above 50°C [122°F]

Mechanical

Dimensions H,W,D	3U, 19" mounting, 13.2" [335mm]* ** Additional clear depth space is required for exhaust air.*

System

System Controller	SC200
DC Distribution Module	12-way circuit breakers (2 x battery, 10 x load) Circuit breaker type: magnetic/hydraulic, push fit Battery circuit breakers: Heinemann AC1R Series Typical ranges available: 30A, 40A, 50A, 60A, 70A Load circuit breakers: Heinemann JC1S Series Typical ranges available: 6A,10A, 15A, 20A, 25A, 30A
Communication Features	USB direct 10BaseT Ethernet, TCP/IP, SNMP, Modbus-TCP, Modbus-RTU and on board web server RS232 to external PSTN or GSM modem (modem not included)
Rectifier Blank Panels	For unused rectifier positions

Software

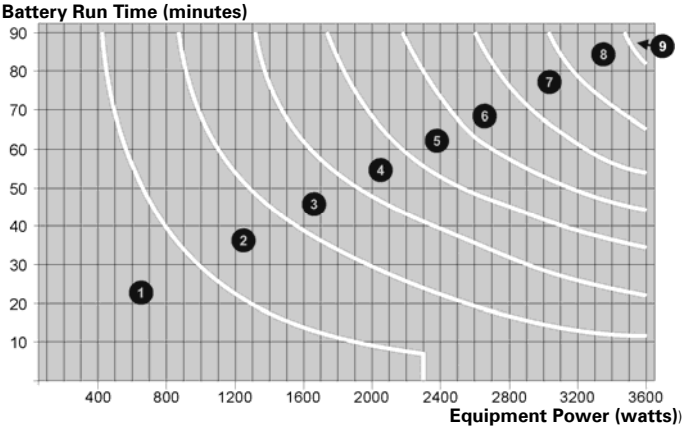
DCTools	Configuration software. Free download from: www.powerware.com/downloads
PowerManagerII	Remote control and monitoring software

† Power factor, efficiency and DC output power are dependant on rectifier model fitted. Refer to the rectifier data sheet for further details.

Options

Battery*	Eaton Extended Battery Module (EBM) PW5130 48V EBM RM P/N 103006587-6591 Weight: 29.5kg [65lb] Dimensions (H,W,D*): 85mm (2U), 432mm (19" mounting), 487mm **Additional space is required at the rear for cables.* Typical run time values* (see graph).

Battery Run Time (minutes)



Equipment Power (watts)

● = Required number of battery modules.

*Battery times are approximate and vary depending on factors such as:
- load configuration
- battery charge
- battery age and temperature.

* Other battery options available - consult your local Eaton agent.

Battery Cables	CKBATT-02 Eaton EBM 5130 connection cable, 2000mm long. or CKBATT-01 'other batteries' connection cable, 2000mm long.
Equipment Cable	Customer equipment connection cable CKLOAD-00 10-way connection loom, 1000mm long
EBM Rack Mounting Kit	Included with EBM5130 as standard

Certifications

All products comply with international standards.

North America	UL (Canada, USA), FCC Class B
Europe	CE
Australia and New Zealand	C-Tick

In the interests of continual product improvement all specifications are subject to change without notice.

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Enterprise Battery Module

The **Eaton® 3G Enterprise Extended Battery Module (EBM**) is designed as an optional integrated backup power source to the 3G Enterprise Power Systems, providing secure power during AC grid failure for anything from orderly shutdowns through to extended runtimes for continuity of service.

Multiple battery modules can be connected together to achieve increased backup capacity for a given output demand.

This module is slim and rack mountable to suit the likely applications for these systems such as server room racks.

The battery modules use simple 'plug and play' cables for connecting the Enterprise Power Solution. No specialized tools are required, thus making installation very easy in an IT environment.

The scalability of the EBM ensures that your investment is protected into the future as the demands of your network increase. Simply add more EBM modules as your network grows.

EBM has an 18Ahr capacity and is service maintenance free for the life of the battery module. Battery function is monitored and controlled by the power system controller for complete battery protection.

Features

- Easy to install
- Slimline 19" rack mounting
- Extended runtime -18Ahr capacity
- Modular and scaleable
- Service maintenance free VLRA batteries

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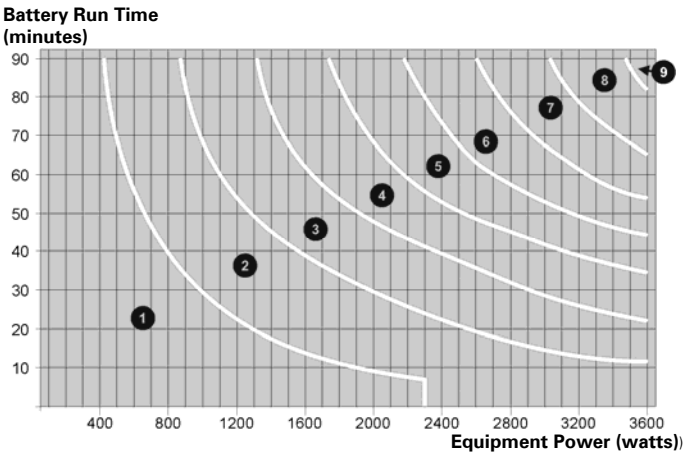
Technical Specifications

Output	
DC Output Voltage	48V nominal
DC Output Capacity	18Ahr Maximum input/output current should not exceed 55Amps

Mechanical	
Weight	29.5kg
Dimensions H,W,D	85mm (2U), 432mm (19" mounting), 487mm* ** Additional space is required at the rear for cables.*

Battery

Typical Run Time Values*



● = Required number of battery modules.

*Battery times are approximate and vary depending on factors such as:
- load configuration
- battery charge
- battery age and temperature.

Order Number	Eaton Extended Battery Module (EBM) PW5130 48V EBM RM P/N 103006587-6591

Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

North America	UL listed
Europe	CE

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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3G Access Power Solutions - APS3 and APS6 Series

Features

- 19" sub-rack
- Modular 3U and 6U options
- Up to 6 rectifier modules
- Pre-configured software
- High power density (24/48V: 300/250A, 6U, 19")
- Multiple AC option (1Ø, 3Ø, 2Ø)
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Priority and non priority options for DC distributions
- Compatible with Eaton Energy Saver (ES) Rectifiers

ES ENERGY SAVER VERIFIED SOLUTION

24V and 48V secure DC power up to 8.64kW and 12kW respectively.

The **Eaton® 3G Access Power Solutions** are ideal for low to medium power telecommunications applications, offering compact, efficient, flexible and reliable secure DC power supply.

These 19" rack mount systems are available with up to 3 or 6 of the Eaton 3G Access power rectifier modules as either 24V or 48V with output up to 300A. For superior operating efficiency to further reduce operating costs, these systems are also compatible with Eaton Energy Saver (ES) Access power rectifiers which provides operating efficiency in excess of 96%.

The systems include an integral DC distribution panel with a range of MCB and Low Voltage Disconnect (LVD) options available.

The SC200 series of system controller offers highly advance control and monitoring features including Smart Alarms – a configurable logic for automated site energy control. The SC200 also offers a complete array of communications options with Ethernet, GSM cellular (including text messaging), standard modem and TCP/IP communications options. The slightly lower specification SC100 is also available.

These systems also feature Load Based Rectifier Shutdown (LBRS) capability. LBRS ensures the highest possible system operating efficiency over a wide range of loads.

Typical applications include providing secure power for customer premises equipment, roadside terminals, data networks and IP routers. The 3G 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.

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Technical Specifications

Input

AC Supply†	100 – 240V, 50 – 60Hz (nominal) 175 – 275V full power output up to 50°C [122°F] 90 – 175V reduced power output	
Power Factor†	>0.99 (50 – 100% Output Current)	
Efficiency†	APR48-3G : 92% (50 – 100% Output Current) APR48-ES : >96% peak, >95% (20% to 100% load, 230Vac)	

Output

DC Output Voltage Range	21.5V – 32V / 43-57.5V	
DC Output Power (maximum)†*	APS3-300	48V: 6.0kW 24V: 4.32kW
	APS6-300	48V: 10.8kW
	APS6-500	48V: 12.0kW 24V: 8.64kW
	* Ratings are stated without LVD's fitted. In some cases lower ratings may result when LVDs are used.	

Environmental

Operating Temperature Range*	-40°C to +70°C [-40°F to +158°F] * Refer to rectifier data sheet for more information. Output current is derated above 50°C [122°F] and below -10°C [14°F]

Mechanical

Dimensions H,W,D	APS3-300: 3U, 19" mounting, 306mm [12"]* APS6-300: 6U, 19" mounting, 306mm [12"]* APS6-500: 6U, 19" mounting, 306mm [12"]* ** Additional clear space is required for exhaust air.*

System

System Controller	SC200 or SC100	
DC Distribution Module	APS3-300:	12-way circuit breakers (2 x battery, 10 x load)
	APS6-300:	20-way circuit breakers (4 x battery, 16 x load)
	APS6-500:	20-way circuit breakers (4 x battery, 16 x load)
Communication Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only	
Low Voltage Disconnect (LVD)	APS3-300:	optional battery LVD
	APS6-300:	optional 200A LVD's for battery or load, or both.
	APS6-500:	optional 400A LVD's for battery or load, or both.
Rectifier Blank Panels	For unused rectifier positions	
Options	External Surge Protection	

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.*

Software

DCTools	Configuration software. Free download from: www.powerware.com/downloads
PowerManagerII	Remote control and monitoring software

Certifications

All products comply with international standards.

In the interests of continual product improvement all specifications are subject to change without notice.

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APSX-300 F

3G Access Power Solutions - APS3-400 Series

Features

- Compact and scalable 19" sub-rack solution
- High power density (6kW @ 48V/3U, 19")
- Easy plug-and-go rectifier set-up
- Fast on-line rectifier expansion (hot-plug)
- High efficiency and unity power factor
- Single AC input or individual rectifier feeds
- Intelligent system management features
- Remote access (TCP/IP, web browser, SNMP)
- Pre-configured software for quick & simple deployment
- Onboard energy management software optimizes operating efficiency for lower OPEX
- Compatible with Eaton Energy Saver (ES) Rectifiers

The **Eaton® 3G Access Power Solutions** are ideal for low to medium power telecommunications applications requiring compact, efficient and flexible DC power supplies with or without batteries.

This Eaton 3G Access Power Solution 400 series has UL and FCC standards certifications. A technician friendly user-interface includes a full color menu screen and is preconfigured for fast install and easy commissioning. All system settings are fully adjustable in software and stored in transferable configuration files for repeatable one-step system set-up.

With up to 6kW of power output, it features state-of-the-art 48V 3G or Energy Saver (ES) Access Power Rectifiers for superior operating efficiency (>96%). The DC distribution panel, simple to use hydraulic magnetic circuit breakers, and optional low voltage disconnect (LVD) modules are fully integrated.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

The 19" rack mount system is ideal for rapid deployment into customer facilities or enclosures.

Typical applications include standby power for customer premises equipment, outdoor power plants, data networks and IP routers.

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Technical Specifications

Input

AC Supply†	Nominal:	120V, 208-240V
	Operating Range:	90V – 275V*
	** Output power derates below 175V AC.*	
Power Factor†	>0.99 (50 – 100% Output Current)	
Efficiency†	APR48-3G : 92% (50 – 100% Output Current)	
	APR48-ES : >96% peak,	
	>95% (20% to 100% load, 230Vac)	
Total Harmonic Distortion	<5% THD from 50% to 100% at load.	

Output

DC Output Voltage Range	43 – 57.5V	
DC Output Power (maximum)†	APR48-3G : 120V AC:	3.3kW @ 48V
	208-240V AC:	5.4kW @ 48V
	APR48-ES : 120V AC:	3.45kW @ 48V
	208-240V AC:	6kW @ 48V

Environmental

Temperature Range*	Rated:	-10°C – +50°C [14°F – +122°F]
	Extended:	-40°C – +65°C [-40°F – 149°F]
	** Output current is derated above 50°C [122°F]*	

Mechanical

Dimensions H,W,D	3U [5.25", 133mm], 19" [483mm] mounting, 14" [356mm]* ** Additional clear space is required for exhaust air. Rear access is required for cable terminations.*

System

System Controller	SC200 as standard. SC100 optional.
DC Distribution Module	10-way circuit breakers (2 x Battery, 8 x Load). Load circuit breakers: Heinemann AMIR Series 5A,10A, 20A, 30A, 40A, 50A, 70A, 80A, 100A. Battery circuit breakers: Heinemann AMIR 100A or AMIP 120A.
Communication Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only
Low Voltage Disconnect (LVD)	Battery disconnect: 200A internal.
Rectifier Blank Panels	For unused rectifier positions.
Options	Relay Rack Batteries.

† Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.

Software

DCTools	Configuration software. Free download from: www.powerware.com/downloads
PowerManagerII	Remote control and monitoring software

Certifications

All products comply with International Standards including UL (US and Canada) and FCC (Class B) Verification.

In the interests of continual product improvement all specifications are subject to change without notice.

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APSX-400 D

3G Access Power Solutions - APS12 Series

48V secure power up to 17.2kW

The **Eaton® 3G Access Power Solutions** are ideal for low to medium power telecommunications applications, offering compact, efficient, flexible and reliably secure DC power supply.

This 19" rack mount system has an integrated distribution panel and is available with up to 12 of the 48V Eaton 3G Access Power Rectifier modules or, for superior operating efficiency, with Energy Saver (ES) Rectifier modules with output up to 400A.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

The 3G 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.

Typical applications include providing secure power for cellular base stations, roadside terminals, data networks and IP routers.

Features

- Compact 9U, 19" sub-rack
- Up to 12 rectifier modules
- Compatible with Eaton Energy Saver (ES) Rectifiers
- Pre-configured software
- High power density (400A/9U)
- Dual AC input
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Priority and non priority options for DC distributions

ES ENERGY SAVER VERIFIED SOLUTION

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Technical Specifications

Input	
AC Supply†	100 – 240V, 50 – 60Hz (nominal) 175 – 275V full power output up to 50°C [122°F] 90 – 175V reduced power output Dual AC input - 1Ø, 2Ø or 3Ø (one supply feed per 6-rectifier shelf)
Power Factor†	>0.99 (50 – 100% Output Current)
Efficiency†	APR48-3G : 92% (50 – 100% Output Current) APR48-ES : >96% peak >95% (20% to 100% load, 230Vac)

Output	
DC Output Voltage Range	43 – 57.5V
DC Output Power (maximum)†*	APR48-3G : 17.2kW @ 48V APR48-ES : 17.2kW @ 48V * Ratings are stated without LVD's fitted. In some cases lower ratings may result when LVDs are used.

Environmental	
Operating Temperature Range	-40°C to +70°C [-40°F to +158°F] Output current is derated above 40°C [104°F] and below -10°C [14°F]

Mechanical	
Dimensions H,W,D	9U, 19" mounting, 306mm [12"]* ** Additional clear space is required for exhaust air.*

System	
System Controller	SC200 or SC100
DC Distribution Module	20-way circuit breakers (4 x Battery, 16 x Load)
Communication Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only
Low Voltage Disconnect (LVD)	Optional battery LVD, or non priority LVD, or battery and non priority LVD's. (Contactors 400A rated)
Rectifier Blank Panels	For unused rectifier positions
Options	External Surge Protection

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.*

Software	
DCTools	Configuration software. Free download from: www.powerware.com/downloads
PowerManagerII	Remote control and monitoring software

Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

Europe	CE
Australia / New Zealand	C-tick

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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APS12-300 E

Flexi - 3G Access Power Solution

The **Eaton® Flexi – 3G Access Power Solution** is designed for low to medium power applications requiring compact, efficient and flexible DC power supplies.

It is well suited to limited space installations with its reduced depth and battery cabinet height options. The innovative systems design reduces shipping costs, improves storage and handling, and is easily assembled onsite.

This solution uses the APR48-3G rectifier module or, for superior operating efficiency, can be fitted with Energy Saver (ES) rectifier modules. The system accommodates up to five 48V strings of high capacity VRLA batteries. Low Voltage Disconnect (LVD), for battery protection, is included. All systems offer integral AC and DC distribution with flexible combinations of MCBs.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

The Flexi – 3G series of power systems are configured for fast installation and set-up. All systems settings are fully adjustable in software and stored in transferable, configuration files for repeatable one-step system set-up.

Typical Applications

- Wireless BTS and MSC sites (CDMA/GSM/3G UMTS)
- WiMAX Nodes
- Local and central office switching
- IP switching nodes

Features

- Innovative system design reduces shipping costs and is easily assembled on-site
- Integrated batteries with optional rack heights
- Reduced rack-depth option (450mm) ideal for installations with restricted space
- Integral DC distribution
- Wide AC input voltage range
- Hot swappable rectifiers
- High power density
- Pre-configured software
- Flexible modular design
- Remote monitoring and control
- Ethernet communications offering SNMP
- Compatible with Eaton Energy Saver (ES) Rectifiers

ES ENERGY SAVER VERIFIED SOLUTION

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Technical Specifications

Input	
AC Supply†	230/400 3Ø+N+PE (cabinets may be supplied from 230V single-phase) 120/208 3Ø+PE (specific version with protection in each phase) 230/400 dual, single or 3-phase connection (specific version)
Frequency	50/60Hz (nominal)
Power Factor†	>0.99 (50 – 100% Output Current)
Efficiency †	>96% peak >95% (20% to 100% load, 230Vac)

Output	
DC Output Voltage Range	43 – 57.5V
Maximum DC Output Power† *	APR48-3G : 16.2kW APR48-ES : 18.0kW * Ratings are stated with LVD's fitted.

Environmental	
Operating Temperature Range	-40°C to +70°C Maximum output power is derated according to rectifier used:- APR48-3G: below -10°C and above 50°C APR48-ES: below -10°C and above 55°C

Mechanical	
Dimensions H,W,D	Combined battery rack / Power Box: 1800/2000mm, 600mm, 450mm 2121mm, 600mm, 600mm Battery Rack: 1150mm – Maximum 4 Battery Shelves (258mm min. space) 1350mm – Maximum 4 Battery Shelves (308mm min. space) 1471mm – Maximum 5 Battery Shelves (262mm min. space)
Weight	System cabinet: <110kg (excluding rectifiers and batteries) Rectifiers : APR48-3G/APR48-ES: 1.7kg
Finish	Cabinet is constructed with a galvanised finish (unpainted)

System	
System Controller	Extended functionality: SC200
Communication Features	USB direct 10BaseT Ethernet, TCP/IP, SNMP, Modbus-TCP, Modbus-RTU and on board web server RS232 to external PSTN or GSM modem (modem not included)

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information*

Options	
Battery Rack Extension	Extension kit for extending battery rack from 450mm to 600mm depth, is available for 1150 and 1350mm battery racks
DC Distribution	22 Load MCB (18mm) positions * 4 Battery MCB (27mm) positions * *other configurations available
Cabinet Doors	Optional doors available for battery racks and Power Box
Rectifier Blank Panels	For unused rectifier positions

Software	
PowerManagerII	Remote control and monitoring for small to large networks
DCTools	Configuration Software. Free download from www.powerware.com/downloads

Certifications	
All products comply with International Standards. Contact your local Eaton DC product representative for details on the specific product versions available with these safety and EMC approvals:	
Europe	CE

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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DV2 - 3G Access Power Solutions with Batteries

48V and 24V integrated systems up to 20kW

The **Eaton® Data-Voice-Video Access Power Solutions** range of DC power systems is designed to provide small to medium network applications with compact, efficient, flexible and secure DC power.

These DC power systems can accommodate either the 24V or 48V rectifier modules, including Eaton's Energy Saver Rectifiers, and up to eight 24V or four 48V strings of high capacity VRLA batteries. All systems include an integral AC and DC distribution with flexible combinations of fuses and MCBs, and an SC200 or SC100 system controller. Low Voltage Disconnect (LVD) options are also available.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

Systems are pre-configured for fast installation and set-up and fully adjustable and transferable for repeatable one-step system set-up.

Typical applications are providing secure power for cellular base transceiver stations, WiMAX nodes, base station controllers, long-distance transmission systems, local office switches and other telecommunication switch installations requiring distributed power.

Typical Applications:

- Wireless BTS sites (CDMA GSM/3G/UMTS)
- Transmission terminals
- Access nodes
- Local and central office switching

Features

- Intelligent system management features
- Pre-configured software
- High power density
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Range of DC distribution configurations
- Integrated batteries and battery condition monitoring
- Wide AC input voltage range
- Seismic rated cabinet
- Remote monitoring and control
- Full length security door (optional)
- Compatible with Eaton Energy Saver (ES) Rectifiers

ENERGY SAVER VERIFIED SOLUTION

Powering Business Worldwide

Technical Specification

Input	
AC Supply†	3P+N+PE, 3P+PE, 2P+PE, 1P+N+PE 50/60Hz (nominal)
Power Factor†	>0.99 (20 – 100% Maximum System Current)
Efficiency†	>96% peak >95% (20% to 100% load, 230Vac)

Output	
DC Output Voltage Range	20 – 57.5V
Typical DC Output Power†*	APR24-3G : 14.4kW (500A @ 28.8V) † or APR48-3G : 18 kW (375A @ 48V) APR48-ES : 20kW (416A @ 48V) * Ratings are stated without LVD's fitted. In some cases lower ratings may result when LVDs are used.

Environmental	
Operating Temperature Range*	-25°C to +50°C * Output current is derated above 50°C [122°F] Refer to rectifier data sheet for more information.

Mechanical	
Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	870kg [1914lb] Typical maximum with 10 rectifier modules and 4 x 48V/150Ah battery strings.

System	
Rectifiers	APR24-3G APR48-3G APR48-ES
System Controller	SC100/SC200
Communications Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only
Batteries	Typically up to 4 strings @ 48V, or 8 strings @ 24V, 600Ah total capacity. Other battery configurations available.

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.*

Options	
AC Distribution	Coordinated transient protection up to 40kA, 8/20µs Incoming isolator Individual rectifier MCBs
DC Distribution	Up to 4 groups of MCBs or fuses. Each group comprises up to: 9 x 18mm MCBs (1-63A), or 6 x 27mm MCBs (10-125A), or 4 x DIN00 HRC fuses (20-160A) Custom options available on request.
Low Voltage Disconnect (LVD)	Single or dual LVD configured as battery disconnect.
Rectifier Blank Panels	For unused rectifier positions
SiteSure	Input/output modules to monitor and control external equipment
CellSure	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

Software	
PowerManagerII	Remote control and monitoring software
DCTools	Configuration Software. Free download from www.powerware.com/downloads

Certifications	
All products comply with International Standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:	
Europe	CE
Australia / New Zealand	C-tick, Seismic rating to NZS4203

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RoHS COMPLIANT

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DV2 - 3G Metro Power Solutions

48V integrated systems up to 80kW

The **Eaton® Data-Voice-Video Metro Power Solutions** range of DC power systems is designed for telecommunications network applications requiring compact, efficient and flexible DC power.

These DC power systems use Eaton APR-3G or, for superior operating efficiency, can be fitted with Energy Saver (ES) rectifier modules. AC and DC distribution is integral with flexible combinations of fuses and MCBs, and an SC200 system controller. Low Voltage Disconnect (LVD) options are also available.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

Eaton DV2 Metro Power Solutions are pre-configured for fast installation and set-up. All system settings are fully adjustable in software and stored in transferable configuration files for repeatable one-step system set-up.

Typical applications are providing 48V standby power for end-of-row and centralized architecture such as local and central office switches and other large switch installations, wireless switching centers and long-distance transmission systems.

Typical Applications:

- Wireless MSC sites (CDMA/GSM/3G UMTS)
- Transmission terminals
- Local and central office switching
- Point of presence (POP) sites

ES ENERGY SAVER VERIFIED SOLUTION

Features

- Intelligent system management features
- Pre-configured software
- High power density
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Range of DC distribution configurations
- Battery condition monitoring
- Wide AC input voltage range
- Seismic rated cabinet
- Remote monitoring and control
- Full length security door (optional)
- Compatible with Eaton Energy Saver (ES) Rectifiers

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Technical Specification

Input	
AC Supply†	3P+N+PE, 3P+PE, 2P+PE, 1P+N+PE 50/60Hz (nominal) Other options available depending on system capacity.
Power Factor†	>0.99 (20 – 100% Maximum System Current)
Efficiency†	>96% peak >95% (20% to 100% load, 230Vac)

Output	
DC Output Voltage Range	40 – 57.5V
Typical DC Output Power†*	APR48-3G : 72kW (1500A @ 48V) APR48-ES : 80kW (1667A @ 48V) * Ratings are stated without LVD's fitted. In some cases lower ratings may result when LVDs are used.

Environmental	
Operating Temperature Range*	-25°C to +50°C * Output current is derated above 50°C [122°F]. Refer to rectifier data sheet for more information.

Mechanical	
Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	200kg [443lb] Typical configuration with 40 APR-3G rectifier modules.

System	
Rectifiers	APR48-3G APR48-ES
System Controller	SC100/SC200
Communications Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.*

Options	
AC Distribution	Coordinated transient protection up to 40kA, 8/20µs Incoming isolator Individual rectifier MCBs
DC Distribution	A wide range of DC distribution elements are available including: 24 x 18mm MCBs (1-63A) 16 x 27mm MCBs (10-125A) 10 x DIN00 type HRC fuses (20-160A) 6 x DIN1 type HRC fuses (63-250A) 6 x DIN2 type HRC fuses (100-400A) 4 x DIN3 type HRC fuses (400-630A) 4 x DIN4 type HRC fuses (800-1200A)
Low Voltage Disconnect (LVD)	Single or dual LVD can be configured as battery or load disconnect including non-priority load disconnect.
Rectifier Blank Panels	For unused rectifier positions
SiteSure	Input/output modules to monitor and control external equipment
CellSure	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

Software	
PowerManagerII	Remote control and monitoring software
DCTools	Configuration Software. Free download from www.powerware.com/downloads

Certifications	
All products comply with International Standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:	
Europe	CE
Australia / New Zealand	C-tick, Seismic rating to NZS4203

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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DV2-3G D

DV2 - 3G Core Power Solutions

48V integrated systems up to 750kW

The **Eaton® Data-Voice-Video Core Power Solutions** range of DC power systems is designed for telecommunications network applications requiring high powered, efficient and flexible DC power supplies.

These DC power systems use Eaton CR48-3G rectifier modules and include an integral AC and DC distribution with flexible combinations of fuses and MCBs, and an SC200 system controller. Low voltage disconnect (LVD) options are also available. DC distribution cabinets can be connected in parallel where additional distribution space is required. Systems up to 4000A can be configured using internal horizontal busbars, and up to 15,000A using external busbars.

Intelligent system management features include battery temperature compensation, fast charge, battery current limit, automatic equalize charging and automatic battery condition monitoring.

Typical applications are providing 48V standby power for centralized architecture such as local and central office switches and other large switch installations, wireless switching centers, long-distance transmission systems and data centers.

Eaton DV2 Core Power Solutions are pre-configured for fast installation and set-up. All system settings are fully adjustable in software and stored in transferable configuration files for repeatable one-step system set-up.

Typical Applications

- Wireless MSC sites (CDMA/GSM/3G UMTS)
- Local and central office switching
- Point of presence (POP) sites
- Data centers

Features

- Intelligent system management features
- Pre-Configured Software
- High Power Density
- Fast On-Line Expansion of Rectifiers (Hot-Swap)
- High Efficiency and Unity Power Factor
- Range of DC distribution configurations
- Battery condition monitoring
- Wide AC input voltage range
- Seismic rated cabinet
- Remote monitoring and control
- Full length security door (optional)

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Technical Specifications

Input	
Nominal AC Supply	3P+PE, Δ 208VAC 3P+N+PE, Y 230/400VAC 50/60Hz
Power Factor	>0.99* (20 – 100% Maximum System Current)
Efficiency	up to 92%*

Output	
DC Output Voltage Range	40 – 58V
Typical DC Output Power	46kW - 750kW †

Environmental	
Operating Temperature Range	-25°C to +50°C*

Mechanical	
Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	200kg [443lb] Typical configuration with 16 CR48-3G rectifier modules.

System	
System Controller	SC200

** Refer to rectifier specifications for more information.*
† System output power will vary depending on rectifiers and batteries selected.

Options	
AC Distribution	Coordinated transient protection up to 40kA, 8/20µs Incoming isolator Individual rectifier MCBs
DC Distribution	A wide range of DC distribution elements are available including: 24 x 18mm MCBs (1-63A) 16 x 27mm MCBs (10-125A) 10 x DIN00 type HRC fuses (20-160A) 6 x DIN1 type HRC fuses (63-250A) 6 x DIN2 type HRC fuses (100-400A) 4 x DIN3 type HRC fuses (400-630A) 4 x DIN4 type HRC fuses (800-1200A)
Low Voltage Disconnect (LVD)	Single or dual LVD can be configured as battery or load disconnect including non-priority load disconnect.
Rectifier Blank Panels	For unused rectifier positions
SiteSure	Input/output modules to monitor and control external equipment
CellSure	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

Software	
PowerManagerII	Remote control and monitoring software
DCTools	Configuration Software. Free download from www.powerware.com/downloads

Certifications	
All products comply with International Standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:	
China	MII
Europe	CE
Australia / New Zealand	C-tick, Seismic rating to NZS4203

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MPS12-30

Secure Micro Power Solution for In-Home Optical Network Terminals (ONT)

Eaton's MPS12-30 Micro Power Solution provides secure DC power for 'next generation' customer premise equipment (CPE) including fibre based communication and IP telephony applications. An integrated battery provides secure power backup to critical services such as phone, medical alert, home automation and security during a commercial (mains) AC power outage.

Typical backup time on battery power is approximately 4 to 8 hours depending on factors such as usage, battery age, state of charge, and environmental conditions. The MPS12-30 indoor solution greatly improves battery service life compared to comparable outdoor designs.

The MPS12-30 is the ideal secure power protection unit where continuation of critical services is the objective.

Features

- Universal input range of 85 - 260VAC
- 12V DC (30W max.) output
- Integrated, hot-swappable battery backup allows replacement by the owner, without power interruption
- Microprocessor controlled for maximizing reliability
- Audible power failure alarm with mute
- Digital outputs for remote monitoring
- Wall mountable design for flexibility
- Multiple LED design for AC power and battery status indications

Powering Business Worldwide

Technical Specifications

Brief Technical Specifications

AC Supply	Input range: 85-260Vac
	Input frequency Range: 45-65Hz
	Inlet: IEC inlet
DC Output	Output power (max.): 30W
Nominal voltage:	12VDC
Output Voltage Range:	10.5 – 13.8VDC
Tolerance:	10.5V (-0.2V,+0.25V)
	13.8V (-0.35V, +0.15V)
Output Protection:	80%
	10Amps fuse soldered on PCB
Battery	Typical type/rating: 12V/7Ah (see figure 1)
	Discharge prevention: 10.5V ± 0.5V
	Rated charging voltage: 13.7V ± 0.25V
	Recharge time (internal battery): 4 hours to 90%
	without load after complete discharge
	Charge current: 2.5A maximum
	Hot swappable
LED Indicator	AC mode: green LED continuous
	Backup mode: yellow LED continuous
	Battery low: yellow LED flashing
	Battery replace: red LED flashing
	Battery missing: red LED continuous
	Fault: red LED continuous
	Battery self-test: green LED flashing
Audible Alarm	Battery mode: every 5 seconds
	Battery low: every 1 second
	Battery replace: every 2 seconds
	Battery missing: continuous
	Fault: continuous
Physical Specification	Weight of unit: 3.5kgs
	Dimensions H, W, D: 368mm, 120mm, 81mm
	Operating temperature: 0°C to 40°C
	Operating humidity: 0% to 90%
	Operating elevation: 0 to 3000m

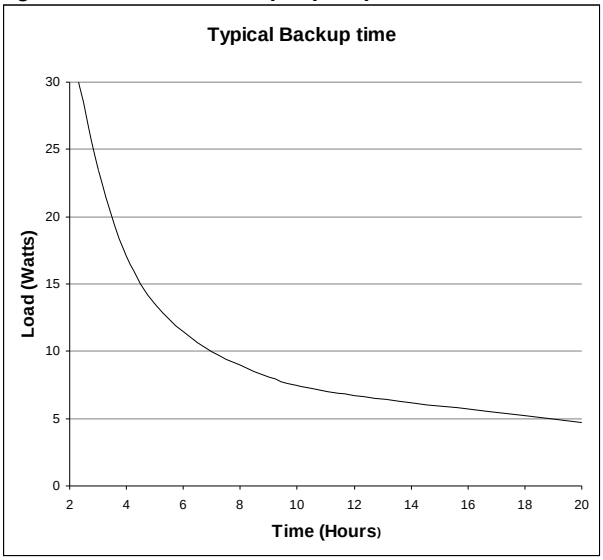
Certifications

All products comply with international standards.

North America:	UL (pending)
Europe:	CE

In the interests of continual product improvement all specifications are subject to change without notice. Performance ratings are valid with all other variables at Nominal. Specifications guaranteed over rated operating range.

Figure 1: 12V/7Ah Battery Capacity



Email: dc.info@eaton.com
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Matrix™ Modular Inverter Solution

The **Eaton® Matrix™ Modular Inverter Solution** is an integrated inverter power system designed for applications where a very high reliability AC supply is required.

The Matrix modular design ensures maximum flexibility to configure solutions to customers' requirements. Modules include inverters, Static Transfer Switch, controller, interface module and Maintenance Bypass Module. With its versatile "building block" design and n+x redundant configuration, the Matrix ensures reliable telecommunication and industrial AC power.

The Matrix Static Transfer Switch provides automatic and instantaneous load transfer between mains power and inverter power and back again, to ensure uninterrupted AC supply to sensitive electronic equipment.

The Matrix solution uses digital microprocessor control. The monitoring controller gives real-time system status through comprehensive LCD /LED displays, and allows program settings through the display panel.

With the Matrix communication interface module installed, you can control and monitor the system remotely.

Features

- Ultimate high power density reducing space demand
- Hot-pluggable connection allows module addition or removal without interruption to AC supply
- Versatile modular design allows a variety of configurations for different power needs
- Capacity up to 18kVA
- n+x redundancy
- Single phase 120Vac or 230Vac output options
- High efficiency, >89%
- Comprehensive LCD/LED display provides system status, and user-friendly panel eases program settings
- Optional maintenance bypass switch with integrated AC distribution
- Optional USB/RS232/RS485 communication for local and remote management

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Technical Specifications

DC Input

Nominal Voltage	48Vdc
Operating Range	40.5Vdc ~ 58Vdc
Surge Protection	Telcordia GR-1089 CORD, ANSI C62.41-IEEE, STD 587-1980
Input Protection	Reverse polarity protection

AC Output

Output Waveform	Pure sine wave
Output power	18kVA (max)
Power factor	0.8
Nominal Output	110/115/120Vac 208/220/230/240Vac
Frequency	50/60Hz ±0.5%
Crest factor	3:1
THD	<3%, linear load <5%, non-linear load
Efficiency	Min 88% at rated load
Overload	1.5*Inom >20s 1.25*Inom temperature controlled

Modules

Inverter	INV-4810E: 1000VA/800W inverter module INV-4810: 1000VA/800W inverter module INV-4815E: 1500VA/1200W inverter module INV-4815: 1500VA/1200W inverter module
Static Transfer Switch	INV-STS-050: 50A static transfer switch INV-STS-100: 100A static transfer switch
Controller	INV-MC-1000: Controller module INV-IFC-1000: RS232/USB/RS485 interface module
Shelf	INV-SS-2-1U: Chassis for two inverters (1U) INV-STSSS-1U: Chassis for controller/STS-050 (1U) INV-STSSS-2U: Chassis for controller/STS-100 (2U) INV-MBSDU-50: 50A maintenance bypass, power distribution module (2U) INV-MBSDU-100: 100A maintenance bypass module (2U)

Mechanical

Inverter Shelf	INV-SS-2-1U: (HxWxD) 1U x 19" x 330mm (1.75"x19"x13") Weight 2.7kg (6lb)
50A STS Shelf	INV-STSSS-1U: (HxWxD) 1U x 19" x 330mm (1.75"x19"x 13") Weight 2.7kg (6 lb)
50A MBS/DU	INV-MBSDU-50: (HxWxD) 2U x 19" x 330mm (3.5"x19"x13") Weight 7.0kg (15.4lb)
100A STS Shelf	INV-STSSS-2U: (HxWxD) 2U x 19" x 330mm (3.5"x19"x13") Weight 3kg (6.6 lb)
100A MBS	INV-MBS-100: ' (HxWxD) 2U x 19" x 330mm (3.5"x19"x13") Weight 7.0kg (15.4lb)

Maximum Number of Inverter Modules for Parallel Operation (Max Power)

Model	Without STS	With STS-050	With STS-100
INV-4810	12 (12kVA)	6 (6kVA)	12 (12kVA)
INV-4810E	12 (12kVA)	12 (12kVA)	12 (12kVA)
INV-4815	12 (18kVA)	4 (6kVA)	8 (12kVA)
INV-4815E	12 (18kVA)	8 (12kVA)	12 (18kVA)

Certifications

All products comply with international standards including CE and UL.

In the interests of continual product improvement all specifications are subject to change without notice.

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Matrix™ 2000 Standalone Inverter

Features

- Designed for telecom applications
- Pure sine wave output
- Unity power factor (full 2000 watt output power)
- Significant overload capability, 120% continuously, 200% for 5 seconds
- High efficiency, >91%
- High power density
- Built in Static Transfer Switch (STS)
- DSP design for improved reliability and performance
- Single phase 120Vac or 230Vac output options
- Comprehensive LCD/LED with keypad
- USB interface for connecting to PC
- Wide selection of configurable parameters.
- International certifications

The **Eaton® Matrix™ 2000 Standalone Inverter** is designed for use in telecommunications applications where a very reliable AC supply is required. The high efficiency and compact size makes the Matrix 2000 Inverter an outstanding solution for powering all types of critical AC equipment.

The Matrix 2000 Standalone Inverter provides 2000W of reliable AC power in a 1U x 19" rack mount package that includes a built-in Static Transfer Switch (STS). The STS automatically and instantaneously switches the AC output, from the DC inverter to an alternative source such as AC mains (and back again), providing extra security of the AC supply to the load equipment.

The Matrix 2000 solution uses digital microprocessor control to provide maximum performance under all operating conditions. The built-in controller gives real-time system status through comprehensive LCD/LED displays, and allows program setting through a keypad panel.

The Matrix 2000 Standalone Inverter includes a built in USB interface for monitoring and control.

EATON
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Technical Specifications

DC Input	
Operating Range	48V: 40Vdc ~ 60Vdc

AC Input (to Transfer Switch)	
Voltage Range: (50/60Hz)	INV-4820SA: 89Vac to 138Vac INV-4820ESA: 176Vac to 276Vac
Transfer Time	<10ms

AC Output	
Power Output	2000VA / 2000W
Wave Form	Pure sine wave
Power Factor	1.0
Nominal Output Voltage (selectable)	INV-4820SA: 110/115/120Vac INV-4820ESA: 208/220/230/240Vac
Output Frequency	50,60Hz
Efficiency	>91% at rated load
Over Load Protection	2*Inom, 5sec max 1.5*Inom, 10sec max 1.25*Inom, temperature controlled

Environmental Requirements	
Operating Temperature Range	-20°C to 60°C (-4°F to 140°F) -20°C to 50 °C (-4°F to 122°F), full performance
Cooling	Fan Cooled

Certifications

All products comply with international standards.

Safety	EN60950-1 / UL60950-1
Europe	CE

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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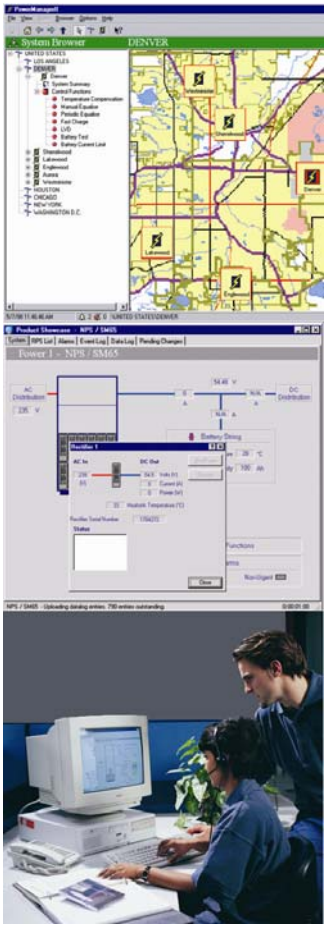
MTX2000 B

PowerManagerII™ Control and Monitoring Software



Features

- Windows® Based Graphical User Interface
- Real-Time Monitoring
- Automatic Alarm Indication
- Alarm and Activity Logging
- On-Line Access to System Control Functions
- Reduces the Need for Site Visits
- International Language Options
- User Configurable Navigation Maps
- Remote Battery Testing

The **Eaton® PowerManagerII** software provides effective remote management for Eaton DC power systems. The intuitive, Windows® - based graphical user interface enables you to quickly 'zoom in' and view concise summary information, or specific control functions, key operational data, or alarm details.

PowerManagerII is cost-effective. Remote management can reduce operating and maintenance costs. The latest power system information is available where and when you want it, greatly reducing the need for site visits. Alarms are highlighted and detailed, to help you analyze faults and produce maintenance histories and schedules.

PowerManagerII is comprehensive. You can connect as many power systems as you like, and all necessary data is clearly presented. PowerManagerII is flexible. You can set up area map views of urban areas and wider regions, to help you visually navigate to any site - the choices are yours. And it's simple to add new maps and site locations.

Remote Control and Monitoring

PowerManagerII can control and monitor power equipment at multiple sites from one central location. It provides real-time graphical displays of system operating conditions, and monitors all system functions including individual rectifier modules.

Event Logs and Data Logs

PowerManagerII lists data from each site. This includes all alarms, with activation details. Historical data can be recorded for fault analysis and preparation of maintenance schedules. The information can be filtered, sorted or exported to other applications.

Customization

PowerManagerII is designed for easy customization. Maps and locations of the sites can be added to the PowerManagerII interface.

In addition to Eaton DC Power Systems, air-conditioning equipment and intruder alarms and other plant connected to the system Supervisory Module I/O connections, can also be monitored.

With the SiteManager option, PowerManagerII can monitor a wide range of inputs using SiteSure modules.

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Technical Specifications

Control Functions	
PowerManagerII includes graphical displays of all system control processes. All parameters are displayed together with real-time displays of the system operating conditions:	
System schematic	Displays operating conditions and system status.
Individual rectifier	PowerManagerII monitors individual rectifier performance.
System summary	Graphical real-time display of system status.
System control functions	Display of output voltage control systems.
Temperature Compensation	Set temperature compensation parameters for optimum battery charging.
Manual Equalize	Initiate battery equalize charge.
Periodic Equalize	Set the duration and level of auto battery equalize charges.
Fast Charge	Set-up fast battery recharge parameters for optimum system recovery after AC outage.
Low Voltage Disconnect	Set the operational parameters of the low voltage disconnect module.
Battery Current Limit	Set the maximum battery recharge current.
Battery Test	Conduct on-line battery tests to determine battery condition.
Discharge Test	Calibrates the Battery Capacity remaining algorithm.

Data Networks
The Eaton Customer Services Team offers a complete installation and software customization service, and can provide advice on integration of PowerManagerII into existing data networks.

Computer Minimum Requirements	
Operating System	Windows 98, Windows NT 4.0 or later
Ram	16Mb Windows 98, 24Mb Windows NT
Connection	Standard Serial port (Com port)
Disc drive	CD-ROM

Comms	
Protocols	SNMP (Can emit traps) S3P three layer protocol
Interfaces	RS232, RS485, Ethernet, TCP/IP, modem

User Configurable Graphics	
Format	Windows bitmap format (.BMP), or Windows Metafile (.WMF) file formats supported

Accessories	
Hardware Included	Copy protect device, null modem cable.

In the interests of continual product improvement all specifications are subject to change without notice.

Powering Business Worldwide

Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

DCTools™ Configuration Software

Eaton® DCTools is the new configuration software for field technicians installing and maintaining Eaton DC power systems. It is supplied at no charge by download from the Internet and simplifies the setup and operation of all Eaton DC power systems.

Frontline staff will find DCTools is a major benefit during the installation, troubleshooting and support of any Eaton DC power system, CellSure battery monitoring systems and SiteSure ancillary monitoring and control systems.

For added flexibility DCTools can connect to an Eaton DC power system in three ways; directly through an RS232 serial connection; through a dialup or cellular modem, or through an Ethernet LAN/WAN.

DCTools is the ideal setup and diagnostic tool for field technicians. It provides a very easy way for them to configure an Eaton DC product, and view status and alarm conditions.

Among the advantages of using DCTools are reduced installation times, lower fault response times, less need to visit sites and better access to operating data for fault analysis and operating conditions such as load growth.

These make the processes of power system installation and operation more efficient with the potential for real operating cost savings.

DCTools is available for download at www.powerware.com/downloads

Features

- DC power system configuration software
- Windows® compatible
- Easy to use graphical display
- Operates with all Eaton DC power systems, CellSure™ and SiteSure™
- Local (RS232 serial) or remote (dialup modem or Ethernet) connection
- Downloadable from the Internet at no charge

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Technical Specifications

Computer Minimum Requirements	
Operating System	Windows 98, Windows NT 4.0 or later
RAM	16Mb Ram Windows 98, 24Mb Windows NT

Connection	Standard serial port (Com port)
Internet connection	Required for download only

Interfaces	
Communications interfaces supported	RS232, Ethernet, or modem

Availability	
Free download	www.powerware.com/downloads

In the interests of continual product improvement all specifications are subject to change without notice.

Powering Business Worldwide

Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

EPR48-3G Rectifier Module

The **Eaton® EPR48-3G Enterprise Power Rectifiers** are designed specifically for enterprise applications such as PoE and VoIP converged data networks, customer premises equipment and also tele-communications roadside cabinet installations.

The EPR48-3G is a telecom network grade rectifier with 900W output. It is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

The EPR48-3G rectifier is microprocessor controlled and includes intelligent features such as automatic set up during installation, temperature dependant variable speed fans for lowest audible noise and automatic self protection over wide ranging environmental conditions.

The EPR48-3G also has power factor correction and is up to 91% efficient, with optimum performance available at typical load currents. Together these give the EPR48-3G some of the lowest running costs for any DC power system of its type available.

The EPR48-3G rectifier module will provide years of costeffective, and trouble free service for your 48V enterprise access equipment.

Typical Applications:

- PoE equipment
- VoIP/IP converged data networks
- PABX for any business network
- Telecom roadside cabinets

Features

- Fast on-line expansion of rectifiers (hot-swap)
- Automatic set-up from system controller
- Intelligent microprocessor controlled
- High efficiency and unity power factor
- Universal AC supply input
- Wide output voltage ranges
- Constant power output
- Compliance with international standards

Powering Business Worldwide

Technical Specifications

Input	
AC Supply	Nominal: 220/240V, 50/60Hz Extended Operating Range: 90V – 275V
Power Factor	>0.98 (50 – 100% Output Current)
Efficiency	91% (50 – 100% Output Current)

Output	
DC Output Voltage Range	48V: 43 – 57.5V
DC Output (maximum)	900W (240V AC nominal) 550W (120V AC nominal)

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output current is derated above 50°C [122°F]
Cooling	Temperature controlled, variable speed, high reliability fans

Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
North America	UL, FCC Verification
Europe	CE
Australia / New Zealand	C-tick, Telepermit

In the interests of continual product improvement all specifications are subject to change without notice. Performance ratings are valid with all other variables at Nominal. Specifications guaranteed over rated operating range.

RoHS COMPLIANT

Powering Business Worldwide

Email: dc.info@eaton.com
Internet: www.eaton.com/telecompower

EPR48-3G D

APR24-3G Rectifier Module

The **Eaton® APR24-3G Access Power Rectifier** is the 24V series of rectifier modules designed specifically for telecom access networks and light industrial applications such as cellular base stations, radio trunk networks and SCADA systems. The APR24-3G is also suitable for NiCad battery applications.

The new generation 3G architecture is reliable, power dense and compact. The high power density allows as little as 1U of rack space to be occupied by power, therefore, maximizing space available for telecom equipment.

The APR24-3G rectifier incorporates a combination of leading-edge high frequency switch mode technology for a flexible and efficient DC power source, with high reliability fan cooling which further contributes to its high overall reliability.

Designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions, the APR24-3G is perfectly suited to the demanding environments found in network access applications.

With up to 90% efficiency, optimum performance at typical load currents, and power factor correction the APR24-3G has some of the lowest running costs for any 24V DC power system of its type available.

The APR24-3G is designed to operate with the Eaton SC100 and SC200 system controllers in any of the versatile Access Power Solutions and provide years of cost-effective and trouble-free service for your network access equipment.

Features

- Fast on-line expansion of rectifiers (hot-swap)
- Automatic set-up from system controller
- Intelligent microprocessor controlled
- High power density
- High efficiency and unity power factor
- Wide AC supply conditions
- Wide output voltage ranges
- Constant current output
- NiCad battery compatible
- Compliance with international standards

EATON
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Technical Specifications

Input	
AC Supply	220/240V, 50/60Hz (nominal) 175-275V full output power up to 50°C [122°F]
Power Factor	>0.98 (50 – 100% Output Current)
Efficiency	89% (50 – 100% Output Current)

Output	
DC Output Voltage Range	24V: 20 – 32V
DC Output (maximum)	Constant power 1440W, 28.8 - 32V Constant current 50A, 20 - 28.8V

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output current is derated above 50°C [122°F] and below -10°C [14°F]
Cooling	Temperature controlled, high reliability fans

Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
North America	UL, FCC Verification, CSA, IC
Europe	CE
Australia / New Zealand	C-tick, Telepermit

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RoHS COMPLIANT

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Internet: www.eaton.com/telecompower

APR24-3G F

APR48-3G Rectifier Module

The **Eaton® APR48-3G Access Power Rectifiers** are designed specifically for network access applications such as cellular base stations, customer premises equipment and road-side cabinet installations.

The new generation 3G architecture is reliable, power dense and compact. The high power density allows as little as 1U of rack space to be occupied by power, therefore, maximizing space available for telco equipment.

The APR48-3G rectifier incorporates a combination of leading-edge high frequency switch mode technology for a flexible and efficient DC power source, with high reliability fan cooling which further contributes to its high overall reliability.

The APR48-3G is a high powered rectifier with 1800W output. It is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

These features make the APR48-3G perfectly suited to the wide variety of equipment and demanding environmental conditions found in network access applications.

The APR48-3G also has power factor correction and is up to 92% efficient, with optimum performance available at typical load currents. Together these give the APR48-3G some of the lowest running costs for any DC powersystem of its type available.

Operating with the Eaton SC100 or SC200 system controller, the APR48-3G rectifier modules will provide years of cost-effective, and trouble free service for your 48V network access equipment.

Features

- Fast on-line expansion of rectifiers (hot-swap)
- Automatic set-up from system controller
- Intelligent microprocessor controlled
- Industry leading power density
- High efficiency and unity power factor
- Wide AC supply conditions
- Wide output voltage ranges
- Constant power output
- Compliance with international standards

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Technical Specifications

Input	
AC Supply	220/240V, 50/60Hz (nominal) 175-275V full output power up to 50°C [122°F]
Power Factor	>0.99 (50 – 100% Output Current)
Efficiency	92% (50 – 100% Output Current)

Output	
DC Output Voltage Range	48V: 43 – 57.5V
DC Output (maximum)	1800W @ 48V

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output current is derated above 50°C [122°F] and below -10°C [14°F]
Cooling	Temperature controlled, high reliability fans

Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
North America	UL, FCC Verification, CSA, IC
Europe	CE
Australia / New Zealand	C-tick, Telepermit

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RoHS COMPLIANT

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APR48-3G F

APR48-ES Energy Saver Rectifier

The **Eaton® APR48-ES Energy Saver Rectifier** is designed for communications network operators who are striving to cut energy costs across the network, and/or to meet aggressive carbon footprint reduction targets.

Operating with well over 96% efficiency, it produces at least 50% less waste energy than most other modern rectifiers, and with potentially greater savings over older infrastructure.

The 2kW Energy Saver Rectifier is the ideal module size for powering access applications within a telecom network such as cellular base stations, ADSL equipment, and fibre nodes.

This rectifier features intelligent digital signal processing for enhanced control, producing peak efficiency in excess of 96% for typical operating loads, while also maintaining a very high minimum operating efficiency of 95 to 96%, over a very wide range of loads (from 20% to 100% of the 2kW capacity).

Achieving very high energy saving efficiency levels is further ensured as the Energy Saver Rectifier also operates with Load Based Rectifier Shutdown (LBRS) which automatically ensures the rectifiers are operating in their optimal efficiency band for maximum system efficiency.

The high power density, short depth and flexible mounting options makes the Energy Saver Rectifier well suited to limited space applications such as ETSI and road side cabinets.

The Energy Saver Rectifier is fully compatible with existing Eaton 3G systems and it is one of the easiest rectifiers to use, with a simple plug-and-go insertion. It operates under a wide range of AC power conditions and in temperatures at up to 70°C (158°F).

Features

- 2000W output power
- Energy saving efficiency greater than 96%
- Wide efficiency curve
- Industry leading power density
- Fast on-line expansion of rectifiers (hot-swap)
- Simple ‘plug and go’ insert
- Unity power factor
- Digital signal processing for enhanced control
- Wide AC supply conditions
- Wide output voltage range
- Constant power output
- Compliance with international standards

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An Eaton Green Product

Technical Specifications

Input	
AC Supply	120V/208-240V, 50/60Hz (nominal) 185-275V full output power up to 50°C [122°F] 90-185V reduced output power
Power Factor	>0.99 (50 – 100% output current)
Efficiency	>96% peak >95% (20 – 100% output power)

Output	
DC Output Voltage Range	43 – 57.5V
DC Output (maximum)	2000W @ 48V

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output power derates above 50°C [122°F]
Cooling	Temperature controlled, variable speed, high reliability fan <50dBA ambient temperature 25°C

Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
North America	UL, FCC Verification, CSA, IC
Europe	CE
Australia / New Zealand	C-tick

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APR48-ES B

CR48-3G Rectifier Module

The **Eaton® CR48-3G Core Network Rectifiers** are designed specifically for core network applications such central office and data centres.

The new generation 3G architecture of the CR48-3G rectifier has improved space utilisation so rack space can be maximised for use with telco equipment and not power equipment.

The combination of industry leading power density and high frequency switch mode technology with high reliability fan cooling makes the CR48-3G a flexible, efficient, and very highly reliable DC power source.

The CR48-3G is a very high powered rectifier with 5800W output, it is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

The CR48-3G also has power factor correction and is up to 92% efficient, with optimum performance available at typical load currents. Together these give the CR48-3G some of the lowest running costs for any DC power system of its type available.

These features make the CR48-3G ideally suited to central office and data center applications that require the highest level of performance and reliability from the DC power system.

Operating with the Eaton SC200 system controller, the CR48-3G rectifier modules will provide years of cost-effective, and trouble free service for your core 48V network equipment.

Features

- Fast on-line expansion of rectifiers (hot-swap)
- Automatic set-up from system controller
- Intelligent microprocessor controlled
- Industry leading power density
- High efficiency and unity power factor
- 3Ø AC supply
- Wide AC supply conditions
- Wide output voltage ranges
- Constant power output
- Compliance with international standards

Powering Business Worldwide

Technical Specifications

Input	
AC Supply	208V, 50/60Hz (nominal) 3-phase Δ 400V, 50/60Hz (nominal) 3-phase Y 323-510V full output power up to 50°C [122°F]
Power Factor	>0.99 (50 – 100% Output Current)
Efficiency	92% (50 – 100% Output Current)

Output	
DC Output Voltage Range	43 – 58V
DC Output (maximum)	5800W @ 48V

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output current is derated above 50°C [122°F] and below -10°C [14°F]
Cooling	Temperature controlled, high reliability fan

Mechanical	
Dimensions H,W,D	3U: 130mm [5.25”], 121mm [4.8”], 321mm [12.6”] overall
Weight	4.4kg [9.7 lb]

Certifications	
North America	UL, FCC Verification, CSA, IC
Europe	CE
Australia / New Zealand	C-tick, Telepermit

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

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CR48-3G D

NPR24 Network Power Rectifier

The Eaton NPR24 series of 24V rectifier modules is designed for a wide range of telecommunications network applications including wireless, radio transmission and switching.

The combination of leading high frequency switch mode technology with high reliability fan cooling makes the NPR24 a flexible, efficient, and reliable DC power source. It is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

The Eaton NPR24 series rectifiers are up to 89% efficient with optimum performance available at typical load currents. These rectifiers also offer two output modes; either constant power or constant current.

Designed to operate with the Eaton SM60 or SM65 Series Supervisory Modules, the NPR24 rectifier modules will provide years of cost-effective, and trouble free service for your network equipment.

Features

- Fast on-line expansion of rectifiers (hot-swap)
- Automatic set-up from supervisory module
- Intelligent microprocessor controlled
- High power density
- High efficiency and unity power factor
- Wide AC supply conditions
- Wide output voltage range
- Constant power or constant current output modes
- Compliance with international standards

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Technical Specifications

Input	
AC Supply	240V, 50/60Hz (nominal)
Power Factor	> 0.99 (20 – 100% Output Current)
Efficiency	> 88% 30-100% Output Current > 89% @ 50% Output Current

Output	
DC Output Voltage Range	20 – 29V
DC Output (maximum)	Constant power mode: 1740W (66.6A@ 26V) Constant current mode: 60A @ 29V
Power Density	6 Rectifiers: 400A in 5U/19-inch

Environmental	
Operating Temperature Range	-25°C – +70°C [-13°F – +158°F] Maximum output current is derated above 40°C [104°F] (66.6A @ 40°C [104°F])
Cooling	Dual, temperature controlled, high reliability fans

Mechanical	
Dimensions H,W,D	5U: 220mm [8.75”], 70mm [2.75”], 360mm [14.2”] overall
Weight	4.5kg [9.9lb]

Certifications	
North America	UL (USA, Canada), FCC Verification, CSA, IC
Europe	CE
Australia / New Zealand	C-tick, Telepermit

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Internet: www.eaton.com/telecompower

NPR24 I

NPR48 Network Power Rectifier

The Eaton NPR48 Series of rectifier modules is designed for a wide range of telecommunications applications including switching, wireless, and transmission.

The combination of leading high frequency switch mode technology with high reliability fan cooling makes the NPR48 a flexible, efficient, and reliable DC power source. It is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

The NPR48 Series rectifiers are up to 92% efficient with optimum performance available at typical load currents. These rectifiers also offer two output modes; either constant power or constant current.

Designed to operate with the SM60 or SM65 Series Supervisory Modules the NPR48 rectifier modules will provide years of cost-effective, and trouble free service for your network equipment.

Features

- Fast on-line replacement of rectifiers (hot-swap)
- Automatic set-up from supervisory module
- Intelligent microprocessor controlled
- High power density
- High efficiency and unity power factor
- Wide AC supply conditions
- Wide output voltage range
- Constant power or constant current output modes
- Compliance with international standards

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Technical Specifications

Input	
AC Supply	240V, 50/60Hz (nominal)
Power Factor	> 0.99 (20 – 100% Output Current)
Efficiency	> 90% for 20 – 100% Output Current > 92% @ 50% Output Current

Output	
DC Output Voltage Range	40 – 58V
DC Output (maximum)	Constant power mode: 3000W (62.5A @48V) Constant current mode: 52A
Power Density	6 Rectifiers: 375A in 5U/19-inch (10W/cu.inch)

Environmental	
Operating Temperature Range	-25°C – +70°C [-13°F – +158°F] Output current is derated above 50°C [122°F]
Cooling	Dual, temperature controlled, high reliability fans

Mechanical	
Dimensions H,W,D	5U: 220mm [8.75”], 70mm [2.75”], 360mm [14.2”] overall
Weight	4.5kg [9.9lb]

Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

North America FCC, UL (Canada, USA), IC

Europe CE

Australia/New Zealand
C-tick

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Internet: www.eaton.com/telecompower

NPR48 G

SC200 System Controller

The **Eaton® SC200 System Controller** is an advanced control and monitoring solution for the Eaton Enterprise, Access, Metro and Core Power Solutions.

It provides a full suite of advanced communications options, including built-in Ethernet interface, Web server, and SNMP agent.

Alarm notifications may be by SNMP traps, SMS, dial-out to PowerManagerII remote monitoring software, or relay contact closures.

An intelligent new "Smart Alarms" feature provides highly configurable control and alarms for automated site management and performance improvement. Examples include disconnection of non essential loads during peak AC grid loading for reduced energy costs, running outdoor cabinets in low noise mode at night, intelligent management of cooling, and customising site alarms to match network requirements.

The SC200 is supplied preconfigured with either a default configuration file, or with one factory customized for a particular application. This ensures fast and problem free installation. If on-site changes are needed then these can be easily made from the front panel or with a Windows PC using DCTools configuration software.

The front panel incorporates a high-resolution back-lit color LCD display with easy to read characters and easy to use menu system. All system values and alarms can be displayed and the keypad provides easy access to check or edit settings.

The SC200 works with separate system I/O boards for powerful and user-friendly interfacing. Easy and low cost I/O expansion is possible by adding additional I/O boards.

Typical Applications:

- 24V and 48V power systems
- Wireless cell sites and switches
- Transmission terminals
- Local and central office switching

Options:

- External GSM or PSTN modem
- Additional I/O boards for system expansion
- SiteSure-3G modules for site management

Features

- Ethernet interface built-in
- SNMP agent
- Battery mid-point monitoring
- Eaton Fuel Saver
- SMS alarm messages (with GSM modem)
- Comprehensive system control functions
- Color display with user-friendly menus
- Complies with international standards
- Setup via web, keypad or DCTools configuration software
- Language options
- Optional extra I/O boards or SiteSure-3G modules for expansion
- Smart alarms
- Modbus
- Battery time remaining during discharge

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Technical Specification

Operation	
Supply Voltage Range	18 to 60Vdc
Operating Range	Standard: -10 to +50°C [14 to 122 °F] Extended: -25 to 70°C [-13 to 158 °F]

Input/Output Standard	
Analog inputs	Current sensor (3), Bus voltage (1), Temperature (2)
Digital inputs	4 Internal (pre-defined), 6 external (user-defined)
LVD contactor outputs	2 with one IOBGP module Up to 16 with additional IOBGP modules
Relay outputs	6 Voltage free, NO-C-NC, 0.1A @ 60VDC Screwless terminal block, 0.5mm^2 - 2.0mm^2 conductors

Communications Interfaces	
Physical	Ethernet, USB and RS232
Software	IP, http, https (secure web), S3P, modbus
Management software	DCTools configuration / local management software. PowerManagerII remote management software. SNMP version V1, V2c or V3. Supports standard Network Management System software including HP OpenView Network Node Manager.

User Interface	
Display	Back-lit color dot matrix LCD 160 x 128 pixel Adjustable viewing angle
Keypad	6 keys
Language Options	English: Standard Spanish, German and Chinese available on request. Other language software upgrades by arrangement.
Indicators	Power on, Critical/Major alarm, Minor alarm

Mechanical	
Dimensions H,W,D	SC200: 133.5mm (3U), 44.5mm, 70mm IOBGP: 106mm, 175mm, 18mm
Mounting	SC200: rectifier slot or flush panel mount Orientation: vertical or horizontal IOBGP: panel mount

Datalogging	
Event Log	10,000 records
Data Log	10,000 records

Options	
Input/Output	With IOBSS module (SiteSure-3G): Analog inputs: 48 Digital inputs: 108 Digital outputs: 32
Modem communications	PSTN or GSM. Requires external modem.

Certifications	
China	MII
North America	UL, FCC Verification, IC
Europe	CE
Australia / New Zealand	C-tick

In the interests of continual product improvement all specifications are subject to change without notice.

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Internet: www.eaton.com/telecompower

SC100 System Controller

The **Eaton® SC100 System Controller** is a control and monitoring solution for the Eaton 3G power solutions.

It provides a full suite of system control functions including Temperature Compensation, Equalize and Fast Charge.

A comprehensive range of alarms and alarm notification options are available, including SMS, relay contacts and modem dial out to PowerManagerII.

The SC100 is supplied preconfigured with either a default configuration file, or with one factory customized for a particular application. This ensures fast and problem free installation.

If on-site changes are needed then these can be easily made from the front panel or with a Windows PC using DCTools configuration software.

The front panel incorporates a high-resolution back-lit LCD display with easy to read characters and easy to use menu system.

All system values and alarms can be displayed and the keypad provides easy access to check or edit settings.

The SC100 works with a separate system I/O board for powerful and user-friendly interfacing.

Typical Applications:

- 24V and 48V power systems
- Wireless cell sites and switches
- Transmission terminals

Options:

- External GSM or PSTN modem

Features

- Comprehensive system control functions
- Supports PSTN and GSM external modems
- User-friendly menus
- Pre-loaded customized configuration file
- Complies with international standards
- Setup via DCTools configuration software
- Language options
- Low cost

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Technical Specifications

Operation	
Supply Voltage Range	19 to 60Vdc
Operating Range	-10 to +70 °C [14 to 158 °F]

Input/Output with IOBGP-00	
Analog inputs	Current sensor (3), Bus voltage (1), Temperature (2)
Digital inputs	4 Internal (pre-defined), 6 external (user-defined)
LVD contactor outputs	2
Relay outputs	6 Voltage free, NO-C-NC, 0.5A @ 100VDC Screw terminal block, 0.5mm^2 - 2.0mm^2 conductors

Communications Interfaces	
Physical	RS232
Software	S3P, MII
Management software	DCTools configuration / local management software. PowerManagerII remote management software.

User Interface	
Display	Back-lit dot matrix LCD 128 x 128 pixel Adjustable viewing angle
Keypad	4 keys
Language Options	English: Standard Other languages by arrangement.
Indicators	Power on, Critical/major alarm, Minor alarm

Mechanical	
Dimensions H,W,D	SC100: 133.5mm (3U), 44.5mm, 60mm IOBGP: 106mm, 175mm, 18mm
Mounting	SC100: rectifier slot or flush panel mount Orientation: vertical or horizontal IOBGP: panel mount

Datalogging	
Event Log	100 records

Options	
Modem communications	PSTN or GSM. Requires external modem.

Certifications	
China	MII
North America	FCC Verification, IC
Europe	CE
Australia / New Zealand	C-tick

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SM65 Supervisory Module

Features

- Ethernet interface built-in
- SNMP agent
- Supports PSTN and GSM external modems
- SMS alarm messages (with GSM modem)
- Comprehensive system control functions
- Simplified front panel controls
- Pre-loaded customized configuration file
- Complies with international standards
- Setup via keypad or DCTools configuration software
- 19'' or 23'' rack mounting
- Sliding 19'' mounting option
- 3-phase AC metering option
- Language options

The SM65 supervisory module is an advanced control and monitoring solution for the Eaton Access, Network and Large Power Solutions. It provides a full suite of advanced communications options, including built-in Ethernet interface, Web server, and SNMP agent.

Alarm notifications may be by SNMP traps, SMS, dial-out to PowerManagerII remote monitoring software, or relay contact closures.

Like all Eaton DC supervisory modules the SM65 is supplied pre-configured with either a default configuration file or with one factory customized for a particular application. This ensures fast and problem free installation. If on-site changes are needed then these can be easily made from the front panel or with a Windows PC using DCTools configuration software.

The front panel incorporates a high-resolution back-lit LCD display with easy to read characters.

All system values and alarms can be displayed and the keypad provides easy access to check or edit settings.

The SM65 can be installed in place of an SM50 and SM60 supervisory module in nearly all applications, providing new features that make it an advanced addition to the Eaton DC product range.

Typical Applications

- 24V and 48V power systems
- Wireless cell sites and switches
- Transmission terminals
- Local and central office switching

Options

- Slider magazine with cable support tray

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Technical Specifications

Brief Technical Specifications

Supply Voltage Range	19 to 60V DC
Operating Range	-10 to +60 °C [14 to 140 °F]
Input/Output Standard	Analog inputs: Current sensor (3), Bus voltage (1), Temperature: (2) Digital inputs: 10 internal (pre-defined), 6 external (user-defined) Relay outputs: 6 Voltage free, NO-C-NC, 0.5A @ 100VDC Screw terminal block, 1.5mm2 conductors
Communication Interfaces	Physical: Ethernet and RS232. Software: IP, http (Web) and SNMP, S3P. Management software: DCTools configuration / local management software. PowerManagerII remote management software. SNMP agent supports standard network management system software including HP OpenView Network Node Manager.
Display	Back-lit dot matrix LCD Adjustable viewing angle
Key Pad	5 keys
Languages	English: Standard Chinese: Chinese language software upgrade available on request. Other languages: Other language software upgrades by arrangement.
Indicators	Power on Urgent alarm Non-Urgent alarm
Dimensions H,W,D	1U: 44.5mm, 480mm, 150mm [1.75", 19" mounting, 6"] (depth excludes optional cable support tray)
Data Logging	10,000 record event log 10,000 record data log

Options

Mounting Options	Standard: 19'' fixed brackets. Options: 19'' slider magazine with cable support tray. 23'' fixed brackets
Input/Output with SiteSure Modules	Analog inputs: 48 Digital inputs: 108 Digital outputs: 32
CellSure	Full support for communications and alarms from CellSure battery monitoring and fault diagnosis systems
Modem Communications	PSTN or GSM. Requires external modem.
AC Metering	3-phase voltage and frequency measurement and alarms. Requires external AC meter.

Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

China	MII
North America	UL (Canada, USA), FCC Verification, IC
Europe	CE
Australia / New Zealand	C-tick

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RoHS COMPLIANT

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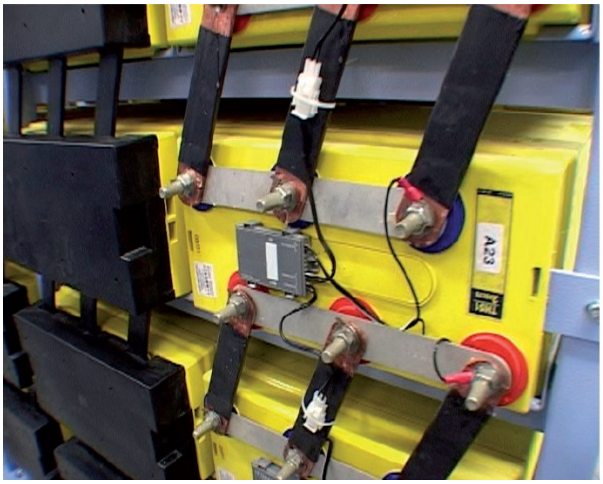
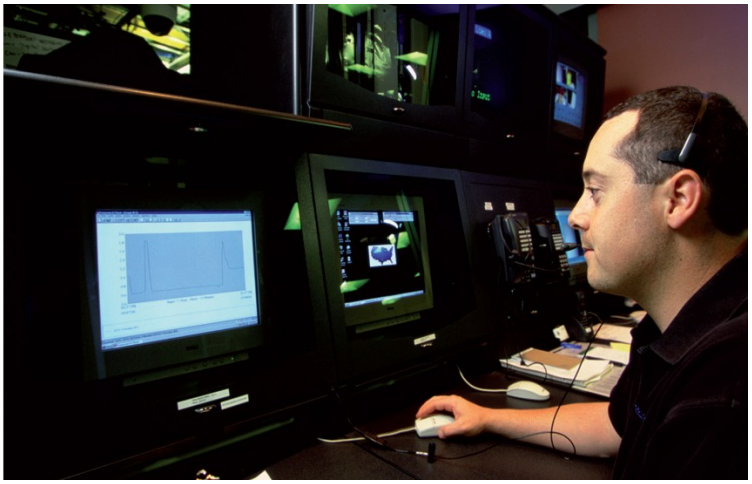
CellSure™ Battery Monitoring and Fault Diagnosis





Features

- Early warning of potential failures
- Reserve Time remaining on Discharge
- Accurate battery capacity and state-of-health measurements
- Patented software algorithm
- Cost effective for network wide deployment
- Remote communications options
- Graphical data displays
- Data export capability
- Real-time monitoring and alarms
- Modular and expandable
- Easy to install and operate
- Remote Battery Testing (with PowerManagerII™ software)

When there's a power failure there is only one thing between your network never missing a beat and an outage – the battery. Batteries tend to be the forgotten safety net. Rarely needed, they sit quietly waiting to do their job.

However, when they are called to action will they be ready?

A battery monitoring system is the best way to keep track of a battery's condition and to highlight ahead of time if any maintenance is needed.

But until now the hardware requirements, and the need for regular site visits to setup and run a monitoring system, have made this an expensive option.

Now there's the Eaton® CellSure battery monitoring and fault diagnosis system.

CellSure provides a method to report on batteries, showing where problems may occur and giving the most important information - reliable battery capacity measurements in real time.

Powering Business Worldwide

Technical Specifications

System configurations	
Nominal system voltages	24V or 48V
Battery strings per system	1-4 strings
Cell/monobloc voltage	2V, 6V or 12V
Battery types	VRLA (standard) or flooded cells (on request)

Alarms and Indicators	
Controller module indicators	Status LED, 4 String Alarm LEDs
Controller module alarms	Voltage free relay contacts (Urgent and Non-urgent)

Inputs	
Cell/monobloc voltage	±0.5% accuracy
String current	±1% accuracy
Ambient temperature	±1°C accuracy
String temperature	±1°C accuracy

Data Output	
Alarm conditions	Cell/monobloc voltage low, Cell/monobloc divergence, Discharge voltage low, String temperature, String overcharge, Low capacity, Low charge.
Measured values	Actual capacity, Reserve charge, Reserve time, "State of Health"
Data	Weekly log: 7day x 24hour cell/monobloc data Yearly log: 365day cell/monobloc data (averaged) Last two partial discharges. Last full discharge.

Certifications	
All products comply with International Standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:	
North America	UL, FCC Verification
Canada	IC
Europe	CE
Australia / New Zealand	C-tick

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RoHS COMPLIANT

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SiteSure™

Features

- Modular
- DIN Rail Mounted
- Plug-in Connectors
- Remote Control and Monitoring
- Real Time Data Collection
- Compliance with International Standards

SiteSure is a suite of add-on modules to provide control and monitoring of a wide range of external devices. It uses the communications capability of an Eaton DC power system to monitor and control security, air conditioning, engine alternators and other building services, or sense DC currents for load metering.

The SiteSure modules can be added as required to provide the number of inputs and outputs needed for a particular application.

SiteSure modules can be remotely controlled and configured using the PowerManagerII remote control and monitoring software or with DCTools.

The SiteSure range of modules includes:

SiteSure General Purpose Modules (SSGP)
Allows the collection of status information at the telecommunications site via configurable digital and analog inputs.

SiteSure Digital Input Modules (SSDI)
Provides additional digital inputs.

SiteSure Digital Output Module (SSDO)
Provides relay outputs for local control or alarm indication.

Auxiliary Power Module (APM)
Provides additional power for larger installations or where sensors require DC power.

Current Input Module (IOMCS)
Provides configurable current sensor inputs.

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Technical Specifications

Supply Voltage Range	18 – 70V
Rated Operating Range	-10°C to +80°C [+14°F to +176°F]

Input/Output

SSGP	Digital Inputs: 6 (2 configurable as frequency inputs) Analog Inputs: 6 (2 configurable as temperature sensors)
IOM-CS	Current Inputs: 6 Temperature Input: 1 Digital Input: 1
SSDI	Digital Inputs: 12
SSDO	Digital Outputs: 8
APM	2 Outputs: 1: 12V, 500mA auxiliary 12V supply for third party equipment 2: 9V, 400mA supply for RCP bus extender
Dimensions H,W,D	All modules except APM 80mm [3.15"], 27mm [1.06"], 65mm [2.60"] APM 80mm [3.15"], 54mm [2.13"], 65mm [2.60"]

Certifications

All products comply with International Standards. Contact your local Powerware DC representative for details on the specific product versions available with these safety and EMC approvals:

North America	UL (USA, Canada), FCC Verification, IC
Europe	CE
Australia / New Zealand	C-tick

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RoHS COMPLIANT

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SiteSure-3G™

The **Eaton**® **SiteSure-3G** adds on to the SC200 Controller to provide control and monitoring of a wide range of external devices. It uses the communications capability of an Eaton DC power system to monitor and control security, air conditioning, engine alternators and other building services, or sense DC currents for load metering.

Additional SiteSure-3G modules can be added as required to provide the number of inputs and outputs needed for a particular application.

SiteSure-3G modules can be remotely controlled and configured using the PowerManagerII remote control and monitoring software or with DCTools local craft terminal.

SiteSure-3G is also compatible with Network Management Systems using SNMP.

Features

- Remote control and monitoring
- Expandable
- Modular
- Real time data collection
- Compliance with international standards

Powering Business Worldwide

Technical Specifications

Operation

Supply Voltage Range	19 to 60V
Rated Operating Range	-10°C to +80°C [+14°F to +176°F]

Input/Output

Bus voltage input	Number: Range:	1 -60V to +60V
Current inputs	Number: Range:	3 -50mV to +50mV
Temperature inputs	Number: Range:	2 2.53V to 3.23V (-20°C to +70°C with TS02 temperature sensor)
Digital inputs	Number:	10
General purpose analog inputs	Number: Range:	4 0V to +10V
Digital Outputs (Relays)	Number: Type:	6 Voltage free, NO-C-NC 0.3A @ 60VDC / 1A @ 30VDC

Certifications

All products comply with international standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:

North America	UL, FCC Verification, IC
Europe	CE
Australia / New Zealand	C-tick

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RoHS COMPLIANT

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SiteSure-3G B

Whisper Cabinet™ Roadside Telecom Equipment Enclosures

Double Bay

Single Bay

Features

- Whisper quiet operation – to minimize neighborhood noise pollution
- Air to air heat-exchangers – giving 1300W heat dissipation with only 10°C internal temperature rise
- Variable speed DC fans – lowest noise, highest efficiency, and operation under mains fail
- Removable fan plates – to simplify servicing
- 19", 21" or 23" standard equipment bay mounting – flexibility to adapt
- Single or double equipment bays – more room for revenue generating equipment
- Double skin design, cabinet within a cabinet – to fully protect your electronics
- Graffiti resistant paint – aids cleaning and against vandal impact
- Three point locks – secure locks to resist tampering
- Marine grade aluminum – ensures long life and corrosion resistance
- Galvanized steel plinth – for secure and simplified installation
- Separate MDF chamber – enables contractor maintenance access
- Large battery compartment – for high power loads and longer battery reserve times
- High seismic withstand capability – for reliability in adversity

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Technical Specification

Dimensions (H, W, D)	
Overall	Single bay: 1500mm x 1650mm x 600mm Double bay: 1500mm x 2240mm x 600mm
Equipment bay(s)	1330mm x 660mm x 500mm Single bay: 1 x 27RU 19”/23”, 1 x 48SU, 21” (ETSI) Double bay: 2 x 27RU 19”/23”, 2 x 48SU, 21” (ETSI)
MDF bay	1330mm, 630mm, 300mm 1 x 48SU (ETSI 21”) Space 2000 pairs R&M disconnect
Battery bay	1330mm, 300mm, 630mm Suits 2 x 48V x 150Ah FT type

Cable access	
Cable Entry	3 x removable panels

Environmental	
Thermal Performance	1300W per 10°C above ambient (in equipment chamber)
External Ambient Temperature	-40°C to +45°C
IP Rating	IP56 (equipment bay) IP54 (MDF and battery bay)
Seismic Rating	2g in any direction

Construction	
Cabinet	2.5mm marine grade aluminum
Base	5mm MS hot dipped galvanized
Color/Finish	Anti-graffiti green or beige, powder-coat

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Pedestal Enclosure™

Typical applications include micro-rollouts or expansion for Broadband, POTS and IP. It is ideally suited where the existing cabinet infrastructure is full to capacity.

The design of the base eliminates the need for a concrete plinth, reducing installation time and cost.

The double skin equipment bay, with internal heat exchangers, is ideal where equipment is being installed in a hostile environment.

When fitted with the Eaton® range of power and site monitoring hardware, full visibility and control is possible.

Features

- No concrete plinth - single visit installation
- Low audible noise
- Dual skin design to enhance environmental protection
- Sealed air to air heat exchanger designed with thermostatically controlled DC fans giving 450W heat dissipation with only 10°C internal temperature rise
- 12RU Equipment bay (300mm deep)
- Up to 400 line Krone connections
- Battery space in base
- AC Switchboard

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Technical Specification

Mechanical	
Dimensions	1100mm(H) x 720mm(W) x 600mm(D)
Weight	60kg

Internal space	
Rack Units	19” ANSI, 16RU total
IP Rating	IP56 protection to equipment chamber

Construction	
Outer	Roto molded Polyethylene, UV Stabilized
Base Material	Roto molded Polyethylene, UV Stabilized
Inner	Marine Grade Aluminum
Colors	Off-white, Green

Options	
DC Power System	Eaton EPS DC Power System
Batteries	Eaton front terminal batteries

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