DC Power Solutions - North America
February 2010

SMARTER ENERGY

EAT•N

Powering Business Worldwide

Contents

<u>Contact Information</u>:

DC Technical Support:
DCPowerTS@eaton.com
Ph 800-843-9433 (opt. 2 : opt. 6)

General email inquiry:
dc.info@eaton.com

Internet:
www.eaton.com/dcpower

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.

F·T·N

Powering Business Worldwide

Eaton's Telecommunications Power Solutions Business

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.

E·T·N
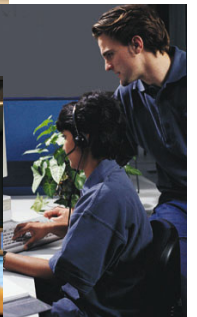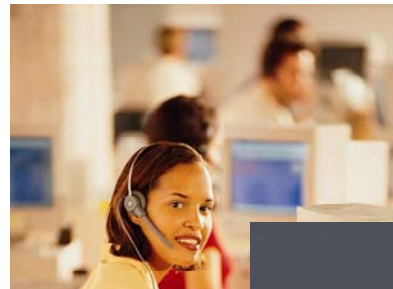
Powering Business Worldwide

Eaton's Telecommunications Power Solutions Business

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.

F·T·N

Powering Business Worldwide

Application and Product Selection Guide for Eaton DC Power Solutions

Eaton DC Power Solutions

Application		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

E·T·N

Powering Business Worldwide

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

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

Powering Business Worldwide

Technical Specification

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

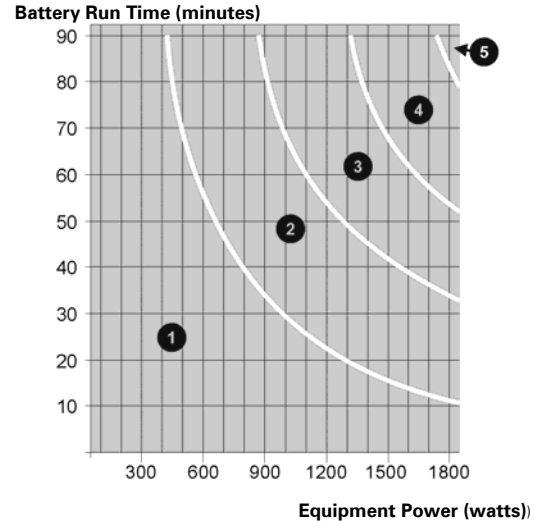|	
System Controller	SC200
DC Distribution Module	12-way circuit breakers (2 x Battery, 10 x Load) Circuit breaker type: Magnetic/Hydraulic, push fit Battery circuit breakers: Heinemann AC1R Series Typical ranges available: 30A, 40A, 50A, 60A, 70A Load circuit Breakers: Heinemann JC1S Series Typical 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
Power Xpert	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)

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

EAT•N
Powering Business Worldwide

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

Powering Business Worldwide

Technical Specification

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: 120V AC:	4.5kW 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

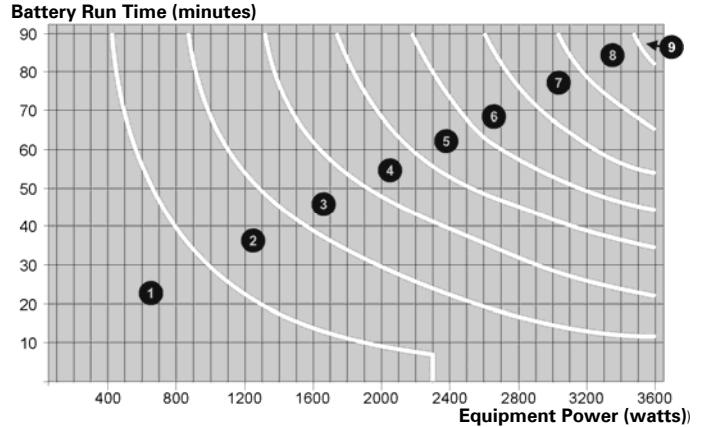|	
System Controller	SC200
DC Distribution Module	12-way circuit breakers (2 x battery, 10 x load) Circuit breaker type: magnetic/hydraulic, push fit Battery circuit breakers: Heinemann AC1R Series Typical ranges available: 30A, 40A, 50A, 60A, 70A Load circuit breakers: Heinemann JC1S Series Typical 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
Power Xpert	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.

RoHS COMPLIANT

E·A·T·O·N
Powering Business Worldwide

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

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 scalable
- Service maintenance free VLRA batteries

E·A·T·N

Powering Business Worldwide

Technical Specification

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*

Battery Run Time (minutes)
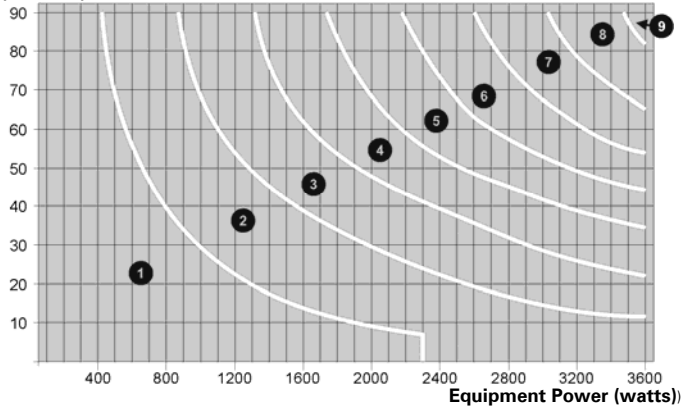
Equipment Power (watts))

● = Required number of battery modules.

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

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

3G Access Power Solutions – APS3-400 Series

Features

- Compact and scalable 19″ sub-rack solution
- High power density (5.4kW @ 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

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.

Powering Business Worldwide

Technical Specification

Input

AC Supply†	Nominal: Operating Range: * *Output power derates below 175V AC.*	120V, 208-240V 90V – 275V*
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: Extended: * *Output current is derated above 50°C [122°F]*	-10°C – +50°C [14°F – +122°F] -40°C – +65°C [-40°F – 149°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
Power Xpert	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.

RoHS COMPLIANT

Access Power Solutions

Features

- High reliability fan cooling
- 19″ sub-rack
- Modular 3U/6U and expandable option
- Up to 24 rectifier modules
- Pre-configured software
- High power density (186A/3U, 19″)
- Multiple AC option (1Ø, 3Ø, 2Ø)
- Fast on-line replacement of rectifiers (hot-swap)
- High efficiency and unity power factor
- AB feeds option for DC distribution
- Scalable system solution

Eaton Access Power Solutions are the ideal solution for low to medium power telecommunications applications requiring compact, efficient and flexible DC power supplies.

These 19″ rack mount systems are available with 3, 6, 12, 18, or 24 of the Eaton Access Power series of 24V and 48V rectifier modules with output up to 744A.

The systems also include an integral DC distribution panel and the versatile SM40 or SM45 series of supervisory modules with Ethernet, GSM cellular (including text messaging), standard modem and TCP/IP communications options.

Other features include temperature compensated voltage output for better battery life, a range of circuit breaker configurations and optional low voltage disconnect (LVD) modules.

Typical applications are providing standby power for customer remises equipment, roadside terminals, data networks and IP routers.

The Access 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.

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

AC Supply	APR24/APR48: 220/240V, 50/60Hz (nominal) 185-275V full output power up to 50°C [122°F] 150-185V full output power up to 30°C [86°F] APU48: 110/240V, 50/60Hz (nominal) 95-275V full output power up to 50°C [122°F]
Power Factor	>0.99 (50 – 100% output current)
Efficiency	24V: 88% (50-100% Output Current) 48V: 90% (50-100% Output Current)
DC Output Voltage Range	24V: 21.5-29V 48V: 43-57.5V
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]
Dimensions H,W,D	APS3: 3U, 19" mounting, 300mm [11.8"]* APS6: 6U, 19" mounting, 300mm [11.8"]* APS12: (typical): 15U, 19" mounting, 300mm [11.8"]* APS18: (typical): 18U, 19" mounting, 300mm [11.8"]* APS24: (typical): 21U, 19" mounting, 300mm [11.8"]* * Additional clear space is required for exhaust air (all models) and bus bars (APS12 and larger systems).
Weight	APS3 6kg [13lb]* APS6 10kg [22lb]* Access Power Rectifier 1.9kg [4.2lb] * Typical configuration, excluding rectifiers.
Supervisory Module	SM40 or SM45 Series
DC Distribution Module	APS3: 10-way Miniature Circuit Breakers (MCB) Other models: 24-way Miniature Circuit Breakers (MCB) Custom MCB or fuse options are available on request. Distributions are configurable for battery, load and AC connections.

Options

Communications	All models: RS232 direct, or connect to external PSTN or GSM modem (modem not included). With SM45: TCP/IP, SNMP, or web server.
Low Voltage Disconnect (LVD)	APS3: 100A internal APS6: 200A internal Other systems: 400 and 800A options
Rectifier Blank Panels	For unused rectifier positions
DCTools	Configuration software. Free download from: www.powerware.com/downloads
Power Xpert	Remote control and monitoring software
Other Options	External Surge Protection

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, 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.

Nominal Output Voltage	Rectifier Module	System type	Maximum Number of Rectifier Modules	Maximum Output Power (kW)	Maximum Output Current
24V	APR24	APS3	3	2.25	93A @ 24V
		APS6	6	4.5	186A @ 24V
		APS12	12	9	372A @ 24V
		APS18	18	13.5	558A @ 24V
		APS24	24	18	744A @ 24V
48V	APR48	APS3	3	4.5	93A @ 48V
		APS6	6	9	186A @ 48V
		APS12	12	18	372A @ 48V
		APS18	18	27	558A @ 48V
		APS24	24	36	744A @ 48V
48V	APU48	APS3	3	2.16	45A @ 48V
		APS6	6	4.32	90A @ 48V
		APS12	12	8.64	180A @ 48V
		APS18	18	12.96	270A @ 48V
		APS24	24	17.28	360A @ 48V

Data-Voice-Video Power Solutions with Batteries

48V integrated systems up to 18kW (UL-Listed)

The Eaton Data-Voice-Video Power Solutions range of DC power systems is designed for converged network applications requiring compact, efficient and secure DC power supplies.

These DC power systems use Eaton APR48 rectifier modules and can accommodate up to four 48V strings of high capacity VRLA batteries.

All systems include an integral AC and DC distribution with flexible combinations of MCBs, and an SM65 series supervisory module. A low voltage disconnect (LVD) option and extension battery cabinets are also available.

Intelligent system management features include battery temp-erature charge compensation, fast charge, battery current limit and automatic equalize charging.

Typical applications are providing 48V secure power for POTS or VoIP PABX, customer premises equipment, or wireless base stations.

Eaton Data-Voice-Video 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

- VoIP PABX
- Media gateways
- Enterprise data networks
- Wireless BTS sites (CDMA,
- GSM/3G/UMTS)

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
- Automatic battery condition testing
- Wide AC input voltage range

E·T·N

Powering Business Worldwide

Technical Specification

Input

AC Supply	208/220/240 VAC, 50/60 Hz (nominal) Via 4 x NEMA L6-30 twist lock plug and cord sets supplied.
Power Factor	>0.99* (20 – 100% maximum system current)
Efficiency	90% (50 - 100% output current)*

Output

DC Output Voltage Range	40 – 58V
Typical DC Output Power	18 kW (375A @ 48V) †

Environmental

Operating Temperature Range	-25°C [-13°F] to 40°C [104°F]*

Mechanical

Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	System (DV2-A12B-130): 866kg [1910 lb]. Typical maximum with 12 rectifier modules and 4 x 48V/150Ah battery strings. Battery cabinet (DV2-EBC4-130): 849kg [1871 lb]. Typical maximum with 4 x 48V/150Ah battery strings.

System

System Controller	SM65 series
Communications	10 baseT Ethernet port On board web server SNMP agent
Batteries	Up to 4 strings 600Ah total capacity, or 8 strings 1200Ah total capacity with extension battery cabinet.
DC Distribution	Up to 28 MCBs (2 - 63A)

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

Options

Low Voltage Disconnect (LVD)	Single LVD (battery disconnect)
Rectifier Blank Panels	For unused rectifier positions
Power Xpert	Remote control and monitoring software
DC Tools	Configuration Software. Free download from www.powerware.com/downloads
SiteSure	Input/output modules to monitor and control external equipment
CellWatch	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

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:

UL
FCC

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

EATON
Powering Business Worldwide

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

Data-Voice-Video Power Solutions with Batteries

48V integrated systems up to 36kW (UL-Listed)

The Eaton Data-Voice-Video Power Solutions range of DC power systems is designed for converged network applications requiring compact, efficient and secure DC power supplies.

These DC power systems use Eaton APR48 rectifier modules and can accommodate up to three 48V strings of high capacity VRLA batteries.

All systems include an integral AC and DC distribution with flexible combinations of MCBs, and an SM65 series supervisory module. Optional extension battery cabinets are also available.

Intelligent system management features include battery temp-erature charge compensation, fast charge, battery current limit and automatic equalize charging.

Typical applications are providing 48V secure power for POTS or VoIP PABX, customer premises equipment, or wireless base stations.

Eaton Data-Voice-Video 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

- VoIP PABX
- Media gateways
- Enterprise data networks
- Wireless BTS sites (CDMA,
- GSM/3G/UMTS)

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
- Automatic battery condition testing
- Wide AC input voltage range

Powering Business Worldwide

Technical Specification

Input

AC Supply	208/220/240 VAC, 50/60 Hz (nominal) Via 8 x NEMA L6-30 twist lock plug and cord sets supplied.
Power Factor	>0.99* (20 – 100% maximum system current)
Efficiency	90% (50 - 100% output current)*

Output

DC Output Voltage Range	40 – 58V
Typical DC Output Power	36 kW (750A @ 48V) †

Environmental

Operating Temperature Range	-25°C [-13°F] to 40°C [104°F]*

Mechanical

Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	System (DV2-A24B-130): 713kg [1572 lb]. Typical maximum with24 rectifier modules and 3 x 48V/150Ah battery strings. Battery cabinet (DV2-EBC4-130): 849kg [1871 lb]. Typical maximum with 4 x 48V/150Ah battery strings.

System

System Controller	SM65 series
Communications	10 baseT Ethernet port On board web server SNMP agent
Batteries	Up to 3 strings 450Ah total capacity, or 27 strings 4050Ah total capacity with extension battery cabinet.
DC Distribution	Up to 28 MCBs (2 - 63A)

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

Options

Rectifier Blank Panels	For unused rectifier positions
Power Xpert	Remote control and monitoring software
DC Tools	Configuration Software. Free download from www.powerware.com/downloads
SiteSure	Input/output modules to monitor and control external equipment
CellWatch	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

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:

UL
FCC

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

RoHS COMPLIANT

F·T·N
Powering Business Worldwide

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

DV2 - 3G Core Power Solutions North American Models

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 15,000A can be configured 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)

F·T·N

Powering Business Worldwide

Technical Specification

Input

Nominal AC Supply	3P+PE, Δ 208Vac 3P+N+PE, Y 230/400Vac, 277/480Vac 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 +40°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

Options

AC Distribution	Rectifier MCBs
DC Distribution	DC Distribution (19") - DCD1M DCM2000 – Bullet Breakers to 250A per circuit DCB1000 – Bullet Breakers 600A per circuit DCF0208 – 2U Fuse Panel, 2xTPL fuses up to 800A each DCF0408 – 4U Fuse Panel, 4xTPL fuses up to 800A each
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
CellWatch	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

Software

Power Xpert	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:

North America	UL pending
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

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

Features

- Universal input range of 80 - 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

E·T·N

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

AC Supply	Input range: 80-260Vac
	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 batter): 4 hours to 90% 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: 358mm, 120mm, 85.6mm
	Operating temperature: 0°C to 40°C
	Operating humidity: 0% to 90%
	Operating elevation: 0 to 3000m

Certifications

All products comply with international standards.
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.

RoHS COMPLIANT

Figure 1:   12V/7Ah Battery Capacity

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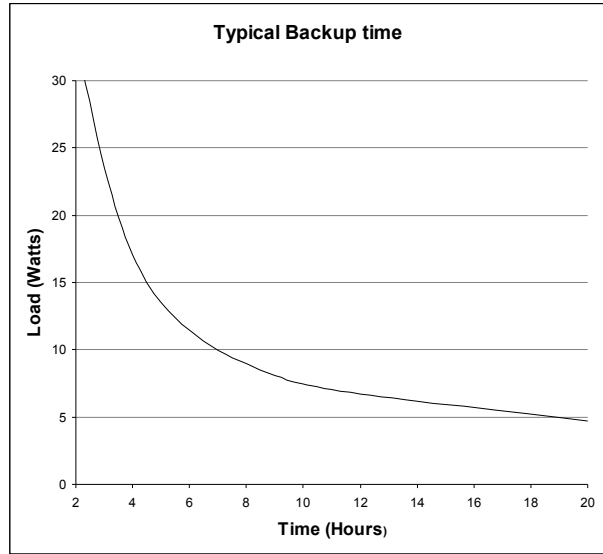
*Battery times are approximate and vary depending
on factors such as:
- battery type
- load configuration
- battery charge
- battery age and temperature.

Country/Region Product Variance
Standard Product
MPS12-30 - Micro Power Solution, 12V, 30Watt, Includes Battery. AC cordset not included.

United Kingdom
MPS12-30-UK - Micro Power Solution, 12V, 30Watt, Includes Battery and UK 3pin cordset.

European Union
MPS12-30-EU - Micro Power Solution, 12V, 30Watt, Includes Battery and Schucko cordset.

Australia and New Zealand
MPS12-30-ANZ - Micro Power Solution, 12V, 30Watt, Includes Battery and Australia/New Zealand cordset.

North America
MPS12-30-NA - Micro Power Solution, 12V, 30Watt, Includes Battery and North America cordset.

EATON
Powering Business Worldwide

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

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

E·T·N

Powering Business Worldwide

Technical Specification

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.

RoHS COMPLIANT

FAT•N
Powering Business Worldwide

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.

Powering Business Worldwide

Technical Specification

DC Input

Operating Range	48V: 40Vdc ~ 60Vdc

AC Input (to Transfer Switch)

Voltage Range:	INV-4820SA:	89Vac to 138Vac
(50/60Hz)	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.

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, CellWatch 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, CellWatch™ and SiteSure™
- Local (RS232 serial) or remote (dialup modem or Ethernet) connection
- Downloadable from the Internet at no charge

E·T·N

Powering Business Worldwide

Technical Specification

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.

EAT·N

Powering Business Worldwide

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

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

E·T·N

Powering Business Worldwide

Technical Specification

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

EAT•N
Powering Business Worldwide

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

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 power system of its type available.

Operating with the Eaton SC100 or SC200 system con-troller, 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

E·T·N

Powering Business Worldwide

Technical Specification

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

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

EAT•N
Powering Business Worldwide

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

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 30% 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

Powering Business Worldwide

Technical Specification

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% (30 – 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

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.

RoHS COMPLIANT

EAT•N
Powering Business Worldwide

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

APR24 Access Power Rectifier

The Eaton APR24 series of 24V rectifier modules are designed specifically for network access applications such as customer premises equipment, and road-side cabinet installations.

The combination of high frequency switch mode technology with high reliability fan cooling makes the APR24 a flexible, efficient, and reliable DC power source.

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

This rectifier has power factor correction and up to 88% efficiency, giving optimum performance at typical load currents.

Designed to operate with the Eaton SM40/SM45 and SM60/SM65 supervisory modules in any of the versatile Access Power Solutions DC power systems, the APR24 rectifier modules will provide years of cost-effective, and trouble free service for your network access 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 ranges
- Constant power output
- Compliance with international standards

F·T·N

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

AC Supply	220/240V, 50/60Hz (nominal)
	185V-275V: full output up to 50°C [122°F]
	150V-185V: full output up to 30°C [86°F]
Power Factor	>0.99 (50 –100% Output Current)
Efficiency	88% (50 – 100% Output Current)
DC Output Voltage Range	24V: 21.5 – 29V
DC Output (maximum)	750W, 31A @ 24V
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]
Relay outputs	6 Voltage free, NO-C-NC, 0.1A @ 60VDC
	Screw terminal block, $0.5mm^2$ - $2.0mm^2$ conductors
Cooling	Temperature controlled, high reliability fan
Dimensions H,W,D	3U: 133mm [5.25"], 13E: 66mm [2.6"], 257mm [10.1"] overall
Weight	1.9kg [4.2lb]

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, 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

EAT•N
Powering Business Worldwide

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

APR48/APU48 Access Power Rectifiers

The Eaton APR48 and APU48 Access Power Rectifiers are designed specifically for network access applications such as cellular base stations, customer premises equipment and road-side cabinet installations.

The combination of field proven performance with high reliability fan cooling and high frequency switch mode technology makes the APR48 and APU48 flexible, efficient, and reliable DC power sources.

The APR48 has a 1500W output and it is designed for operation at up to 70°C (158°F) and under a wide range of AC power conditions.

The APU48 is designed specifically for operation from 110V or 240V nominal AC supplies making it a universal DC power source suitable for use in any country.

These features make the APR48 and APU48 perfectly suited to the wide variety of equipment and demanding environmental conditions found in network access applications.

Both models also have power factor correction and are up to 90% efficient, with optimum performance available at typical load currents.

Operating with the Eaton SM40/SM45 or SM60/SM65 series supervisory modules the APR48 and APU48 rectifier modules will provide years of cost-effective, and trouble free service for your 48V network access equipment.

Features

- Fast on-line replacement of rectifiers (hot-swap)
- Automatic set-up from supervisory module
- Intelligent microprocessor controlled
- Industry leading power density
- High efficiency and unity power factor
- Wide or universal AC input
- Wide output voltage ranges
- Constant power output
- Compliance with international standards

Powering Business Worldwide

Technical Specification

Input

AC Supply	APR48: 220/240V, 50/60Hz (nominal)
	185-275V full output power up to 50°C [122°F]
	150-185V full output power up to 30°C [86°F]
	APU48: 110/240V, 50/60Hz (nominal)
	95-275V full output power up to 50°C [122°F]
Power Factor	>0.99 (50 – 100% Output Current)
Efficiency	90% (50 – 100% Output Current)

Output

DC Output Voltage Range	48V: 43 – 57.5V
DC Output (maximum)	APR48: 1500W, 31A @ 48V APU48: 720W, 15A @ 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"], 13E: 66mm [2.6"], 257mm [10.1"] overall
Weight	1.9kg [4.2lb]

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. Performance ratings are valid with all other variables at Nominal. Specifications guaranteed over rated operating range.

RoHS COMPLIANT

EATON
Powering Business Worldwide

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 Specification

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

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

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 Power Xpert remote monitoring software, or relay contact closures.

An intelligent new "Smart Alarms" feature provides highly configurable control and alarms for automated site management. Smart Alarms enables improved site performance and reduced site energy consumption. Some 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

E·T·N

Powering Business Worldwide

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. Power Xpert 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.

RoHS COMPLIANT

F·A·T·O·N
Powering Business Worldwide

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 Power Xpert.

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

E·T·N

Powering Business Worldwide

Technical Specification

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. Power Xpert 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

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

RoHS COMPLIANT

SM45 Supervisory Module

Features

- Ethernet interface built-in
- SNMP agent
- Web server
- Supports PSTN and GSM external modems
- SMS alarm messages (with GSM modem)
- Temperature compensation
- Serial control of up to 24 rectifiers
- Controls up to two Low Voltage Disconnects (LVD)
- Battery current limiting
- Setup via keypad or DCTools configuration software
- Compliance with international standards
- Data Logging
- 3-phase AC metering option
- Language options

The SM45 supervisory module is an advanced control and monitoring solution for the Eaton Access Power Solutions range on DC 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 Power Xpert remote monitoring software, or relay contact closures.

The SM45 can also be re-configured on-site using the Windows compatible DCTools configuration software via the front panel RS232 communication port or remotely via Ethernet.

The SM45 supervisory module provides full control of system voltage, load current, status and alarms, which can be displayed and changed on the optional LCD display and keypad.

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

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/shunt (2), Bus voltage (1), Temperature: (2) Digital inputs: 9 internal (pre-defined), 6 external (user-defined) Relay outputs: Up to 6 open-collectors. Relays fitted on system backplane or interface PCB.
Communication Interfaces	Physical: Ethernet and RS232. Software: IP, http (Web) and SNMP, S3P. Management software: DCTools configuration / local management software. Power Xpert remote management software. SNMP agent supports standard network management system software including HP OpenView Network Node Manager.
Indicators	Power on Urgent alarm Non-Urgent alarm
Data Logging	10,000 record event log 10,000 record data log

Options

Display and Keypad	Display: Back-lit dot matrix LCD Keypad: Membrane type, 5 keys
Languages	English: Standard Chinese: Chinese language software upgrade available on request. Other languages: Other language software upgrades by arrangement.
Input/Output with SiteSure Modules	Analog inputs: 48 Digital inputs: 108 Digital outputs: 32
CellWatch	Full support for communications and alarms from CellWatch 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.

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

RoHS COMPLIANT

E·T·N
Powering Business Worldwide

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

SM65 Supervisory Module Panel Mount Version

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 Power Xpert 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 optional keypad and display module incorporates alarm LEDs and 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.

Typical Applications

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

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
- 3-phase AC metering option
- Language options

F·A·T·N

Powering Business Worldwide

Technical Specification

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. Power Xpert remote management software. SNMP agent supports standard network management system software including HP OpenView Network Node Manager.
Indicators	Power on Urgent alarm Non-Urgent alarm
Dimensions H,W,D	43mm, 360mm, 156mm
Data Logging	10,000 record event log 10,000 record data log

Options

Display and Keypad	Display: Back-lit dot matrix LCD Keypad: Membrane type, 5 keys
Languages	English: Standard Chinese: Chinese language software upgrade available on request. Other languages: Other language software upgrades by arrangement.
Input/Output with SiteSure Modules	Analog inputs: 48 Digital inputs: 108 Digital outputs: 32
CellWatch	Full support for communications and alarms from CellWatch 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

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

RoHS COMPLIANT

EATON
Powering Business Worldwide

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 Power Xpert 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.

E·T·N

Powering Business Worldwide

Technical Specification

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 Eaton 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

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

EAT•N
Powering Business Worldwide

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 Power Xpert 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 Specification

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:	1
	Range:	-60V to +60V
Current inputs	Number:	3
	Range:	-50mV to +50mV
Temperature inputs	Number:	2
	Range:	2.53V to 3.23V
	(-20°C to +70°C with TS02 temperature sensor)	
Digital inputs	Number:	10
General purpose analog inputs	Number:	4
	Range:	0V to +10V
Digital Outputs (Relays)	Number:	6
	Type:	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

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

RoHS COMPLIANT

FAT•N
Powering Business Worldwide

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

RM3-300 Series Rectifier Magazine

Features

- 48V or 24V
- 19-inch cabinet mounting
- Compact 1U height, 150A output
- Suitable for Enterprise and Access 3G power rectifiers including Energy Saver Rectifier
- Independent AC input to each rectifier
- Compliance with international standard

The Eaton RM3-300 rectifier magazine is a versatile and compact 1U high, 19-inch modular power shelf. It can accommodate both the Enterprise and Access series of Eaton 3G and Energy Saver (ES) rectifiers and can be configured for up to 3 rectifiers or, 2 rectifiers and a system controller.

The RM3-300 series has an output capacity of up to 150A (actual output is dependent on the rectifier model fitted). Both the top-entry AC cords and air exhaust airflow allow the RM3 to mount in limited depth of space applications.

The DC output is via a field wiring termination box to provide an easily accessed connection (take-off) point for flexible cables.

Independent AC supply to each rectifier position is via plug & cord sets where country and voltage specific sets are available upon request.

The RM3-300 series is suitable for both 600mm and 300mm deep cabinets and includes mounting brackets that can be moved along the chassis to provide a wide range of mounting position options.

EATON

Powering Business Worldwide

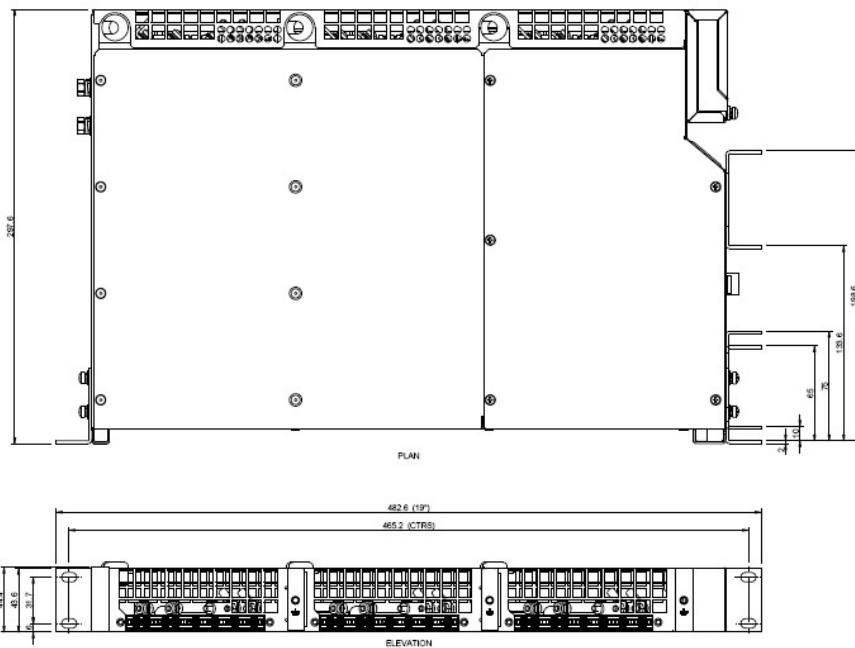# Technical Specifications

Brief Technical Specifications

AC Supply	1Ø or 2Ø via individual cord sets
DC Output	24V: up to 150A
	48V: up to 125A (dependent on rectifiers fitted)
	Interconnecting busbars with flexible cable take-off (field wire-able).
Dimensions H,W,D	Standard: 1U*, 19", 298mm [11.7"]
	*Additional clear space is required for exhaust air and top AC cable entry at the rear.
Weight	3.9kg [8.6lb] including AC cable sets.
Rectifier Configurations	3 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES
	2 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES plus system controller
Options	Rectifier cover for unused rectifier positions (RM3B-A01).
	AC cord sets - country/voltage specific.
	23" mounting brackets.
Versions	RM3-300 series (3 rectifiers, no system controller)
	RM3-310 series (2 rectifiers, SC100 system controller)
	RM3-320 series (2 rectifiers, SC200 system controller)

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

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

RoHS COMPLIANT

PLAN

ELEVATION

482.6 (19")

465.2 (CTRS)

EAT•N

Powering Business Worldwide

RM3-400 Series Rectifier Magazine

Features

- 48V or 24V
- 19-inch relay rack or cabinet mounting
- Compact 1U height, 150A output
- Suitable for Enterprise and Access 3G power rectifiers including the Energy Saver Rectifier
- Independent AC input to each rectifier
- Compliance with international standards

The Eaton RM3-400 rectifier magazine is a versatile and compact 1U high, 19-inch module designed to UL specifications. Its can accommodate both the Enterprise and Access series of Eaton 3G and Energy Saver (ES) rectifiers and can be configured for up to 3 rectifiers or, 2 rectifiers and a system controller.

It has an output capacity of up to 150A (actual output is dependent on the rectifier model) however, the front-to-back airflow allows two RM3 magazines to be stacked for higher capacity solutions.

The DC output is via a field wiring termination box to provide an easily accessed connection (take-off) point for flexible cables.

Independent AC supply to each rectifier position is via either plug & cord sets or IEC plugs where country and voltage specific sets are available upon request.

The RM3-400 series is suitable for both cabinet and relay rack mounting. The mounting brackets can be moved along the chassis to provide a wide range of mounting position options.

The RM3-400 series is an ideal solution to supply front end power to customer equipment or as a building block for integrated systems in custom applications.

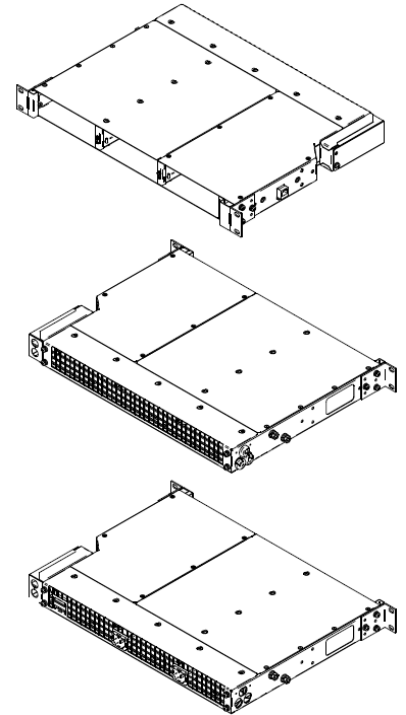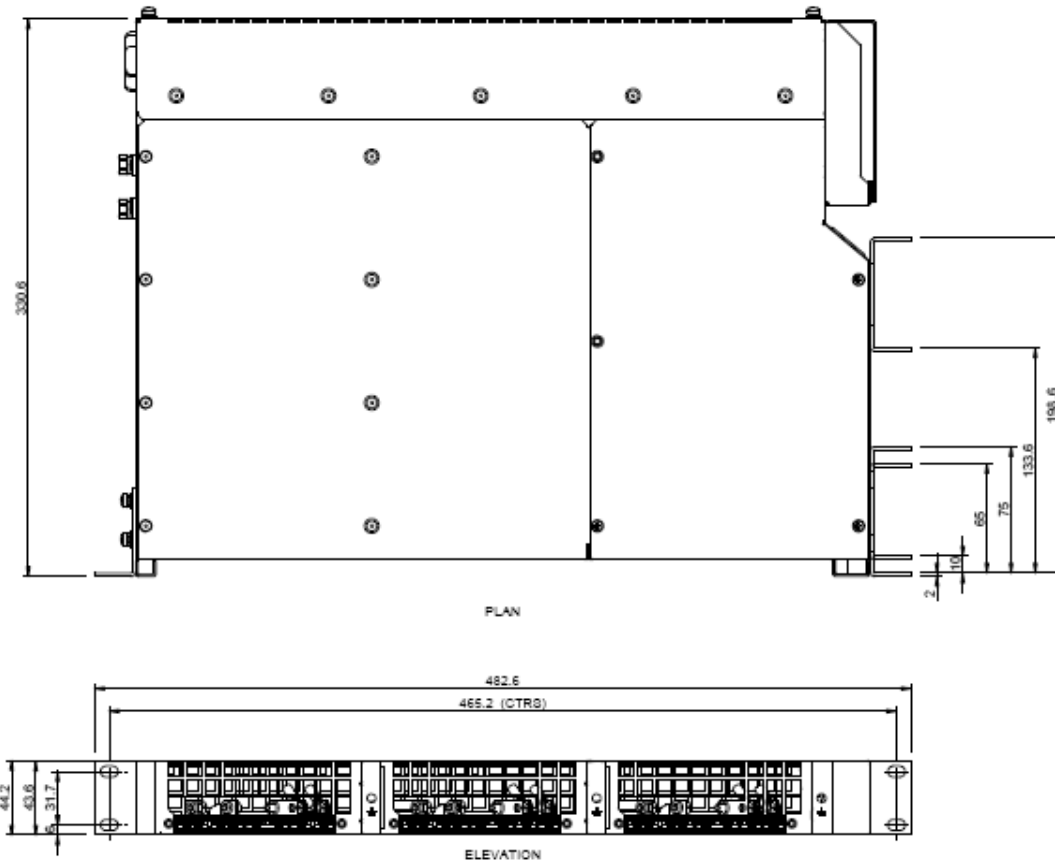# Technical Specifications

Brief Technical Specifications

AC Supply	1Ø or 2Ø via individual cord sets
DC Output	24V: up to 150A 48V: up to 125A (dependent on rectifiers fitted) Interconnecting busbars with flexible cable take-off (field wireable).
Dimensions H,W,D	Standard: 1U, 19", 335mm [13.2 "]* *Additional clear space is required for exhaust air.
Weight	3.9kg [8.6lb] including AC cable sets.
Rectifier Configurations	3 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES 2 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES plus system controller
Options	Rectifier cover for unused rectifier positions (RM3B-A01) AC cord sets - country/voltage specific 23" mounting brackets
Versions	RM3-400 series (3 rectifiers, no system controller) RM3-410 series (2 rectifiers, SC100 system controller) RM3-420 series (2 rectifiers, SC200 system controller)

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:
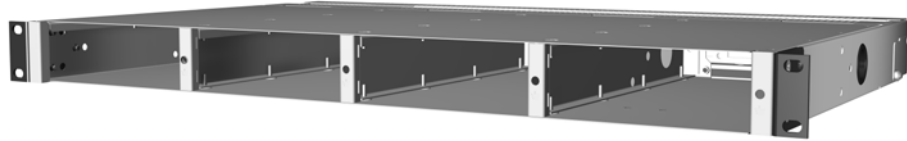
Europe	CE
North America	UL (recognized)

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

RoHS COMPLIANT

PLAN

ELEVATION

482.6
465.2 (CTRS)
330.6
198.6
133.6
75
65
10
2
44.2
43.6
31.7
5

E·A·T·O·N
Powering Business Worldwide

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

RM4-400 Series Rectifier Magazine

Features

- 48V or 24V
- 23″ relay-rack or cabinet mounting
- Compact 1U height, 200A output
- Suitable for Enterprise and Access 3G and Energy Saver (ES) power rectifiers
- Fast on-line expansion of rectifiers (hot-swap)
- Single or two-phase AC input
- Compliance with international standards

The Eaton RM4-400 series rectifier magazine is a versatile and compact 1U high, 23-inch module that is designed to UL specifications. It can accommodate both the Enterprise and Access series of Eaton 3G and Energy Saver (ES) rectifiers and can be fitted with up to four rectifiers or three rectifiers and a system controller.

It has an output capacity of up to 200A (actual output is dependent on the rectifier model), however the front-to-back airflow allows two RM4 magazines to be stacked for higher capacity solutions.

The DC output is via a field wiring termination box to provide an easily accessed connection (take-off) point for flexible cables.

AC supply is via two flexible cords (one cord per two rectifier positions) and is suitable for both single-phase and two-phase AC supply applications.

The RM4-400 series is suitable for both enclosed cabinet and open frame relay-rack mounting. The mounting brackets can be moved along the chassis to provide a wide range of mounting position options.

The RM4-400 series is an ideal solution to supply front end 48V power to customer equipment or as a building block for integrated systems in custom applications.

Powering Business Worldwide

Technical Specification

AC Supply	1∅ or 2∅ via two flexible cords (2 rectifiers per cord)
DC Output	48V: Up to 166A (dependant upon rectifiers fitted) 24V: Up to 200A Internal interconnecting bus bars with flexible cable take-off (field wireable)
Dimensions (H,W,D)	1U, 23" mounting, 436mm [17.2inch]* *Additional clear space is required for exhaust air
Output	4.1kg [9lb]
Rectifier Configurations	4 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES or 3 x EPR48-3G / APR48-3G / APR24-3G / APR48-ES plus system controller (SC100 or SC200)

Options

Rectifier Blank Panels	RM3B-A01
System Controllers	SC200-00 (feature enhanced system controller) SC100-00 (basic system controller)

Certifications

All products comply with international standards.

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

PLAN

FRONT ELEVATION

3G DC Distribution Module - DCD1M Series

Features

- 1U High
- 19" rack mounting
- Battery & load circuits
- Easy to fit push-in circuit breakers
- Optional low voltage disconnect
- Integrated current sensor
- Cabinet or relay rack mounting

The Eaton 3G DCD1M Series of DC Distribution Module is a 1U high, 19" rack mount 48V DC distribution module, an ideal solution for converged data networks and low power telecommunications applications requiring compact, efficient and flexible DC power supplies.

The DCD1M series is available with up to two battery circuits and 10 individual load circuits. It may be used with either the Eaton 3G series of secure DC power systems or as 'standalone' for use with 3rd party equipment.

The high interrupt rating of the battery circuit breakers make the DCD1M series suitable for use as a primary protection module with a wide range of batteries.

This module features front access, easy to fit, push-in circuit breakers for ease of installation and servicing in the field.

The DCD1M is available with an optional low voltage disconnect contactor to prevent over discharging of backup batteries, an onboard current sensor and MCB trip detection monitoring for use with the Eaton 3G series of secure DC power systems.

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

Powering Business Worldwide

Technical Specification

DC Voltage Range	48V (nominal) 43V - 58V
DC Power (maximum)	4080W (85A @ 48V)
Efficiency	92% (50 – 100% Output Current) †

Output

DC Output Voltage Range	20V – 58V
DC Distribution Circuits	12-way circuit breakers (2 x Battery, 10 x Load) Circuit breaker type: magnetic/hydraulic, push fit type **Battery circuit breakers:** Heinemann AC1R Series Typical ranges available: 40A, 50A, 60A Interrupt rating: 5000A **Load circuit breakers:** Heinemann JC1S Series Typical ranges available: 5A, 10A, 20A, 30A(max)
DC Circuit Connections	**Load:** 10way terminal barrier strips (screw terminals, max 10AWG/4mm2 cable) **Battery:** Anderson Powerpole, PP45 (max 10AWG/4mm2 cable)
Polarity /Grounding	Positive ground or floating (in-field selectable)
Operating Temperature Range	-10°C to +50°C [14°F to +122°F]
Dimensions H,W,D	1U , 19" mounting*, 11" [280mm]** * Optional 23" mounting brackets available ** Additional access space is required see installation guide for details.
Weight	DCD1M-00 4.1kg [9.1lb] DCD1M-01 4.4kg [9.8lb]
System Controller	Compatible with SC200 & SC100 based systems (when LVD included, onboard current sensor and MCB trip detection features required)

Optional

Low Voltage Disconnect (LVD)	Battery disconnect: 100A internal contactor
Load Circuit Cable	CKLOAD-00 10sets, 1500mm long, 10AWG/4mm2
Battery Input Connection Cable	CKBATT-00 2000mm long, for connection to Powerware EBM module CKBATT-01 2000mm long, for connection to generic battery
23" rack mounting brackets	621-04998-29 23" mounting bracket (2 required)
Rectifier Blank Panels	For unused rectifier positions

Part Numbers

DCD1M-00	1U, 19" rack mount DCD distribution module.
DCD1M-01	1U, 19" rack mount DCD distribution module. c/w low voltage disconnect and onboard current sensor

Certifications

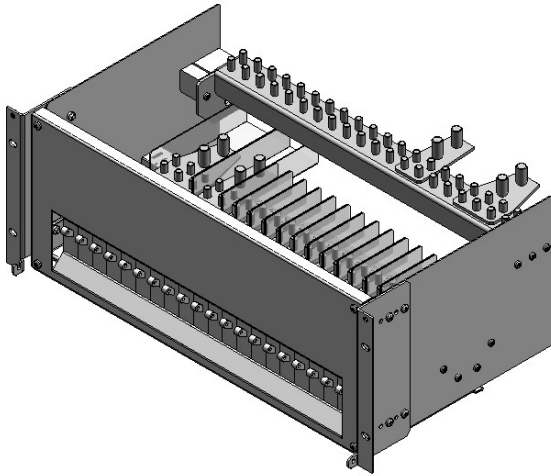All products comply with international standards.

North America	UL (Canada, USA)
Europe	CE

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

RoHS COMPLIANT

Eaton, CellSure, SiteSure, DCTools and PowerManager are trade names, trademarks, and/or service marks of Eaton Corporation or its subsidiaries and affiliates. All other trademarks are property of their respective owners.

© 2009 Eaton Corporation
All Rights Reserved
DCD1 B

EAT•N
Powering Business Worldwide

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

DCM2000 - DC Distribution Module

The DCM2000 DC distribution provides circuit protection for a wide selection of telecommunications loads up 250A per circuit and 800A per distribution. All circuit breakers are alarmed through aux contacts providing volts free alarm signals. The DCM2000 is designed to comply with recognized international standards and for complete operator safety. Full front access is provided to allow easy termination of load cables in either vertical or horizontal cable entry.

Features

- 4U Module
- Up to 20 bullet terminal breakers
- Selection of MCB ratings to 250A
- Tool access front cover
- Front access for cable termination
- Circuit breaker trip alarms
- Compliance with international standards

Technical Specification

Brief Technical Specifications

Voltage Range	20 – 70Vdc
Maximum Current	800A @ 50°C [122°F], (CE) 600A @ 40°C [104°F], (UL)
CB Type	Heinemann AM1R or AMA1P
CB Current Ratings (Other ratings available on request)	Single Pole: 10A, 20A, 30A, 40A, 50A, 60A, 70A, 80A, 100ª Multi Position: 150A (2P), 200A (2P) , 250A (3P)
Load Cable Termination	Two hole lug, vertical or horizontal cable entry
Alarms	MCB Aux contacts.
Operating Temperature Range	-10°C — +50°C [+14°F — +122°F] (CE) -10°C — +40°C [+14°F — +104°F] (UL)
Dimensions H,W,D	4U: 177mm [12.25"], 480mm [19" mounting], 300mm [12"]

Certifications	Europe:	CE
	North America:	UL60950 pending
		UL1801 pending

RoHS COMPLIANT

EAT•N
Powering Business Worldwide

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

DCB1000
MCCB Distribution Module
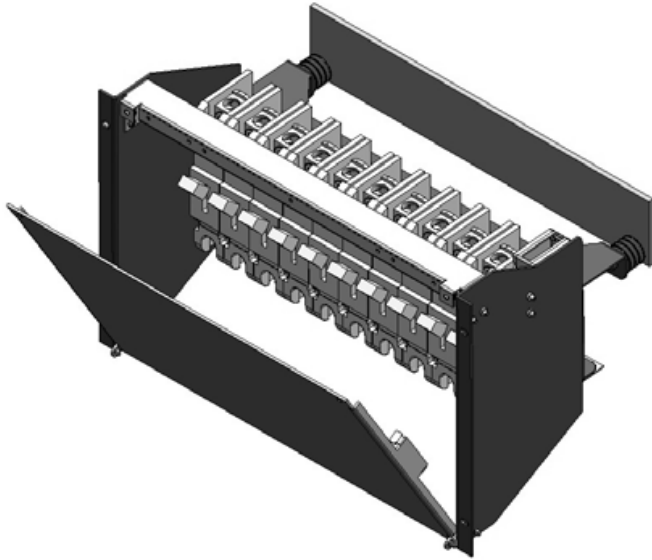
The DCB1000 DC distribution provides circuit protection for a wide selection of telecommunications loads up to 1200A per distribution. All MCCBs are alarmed with automatic detection of load current to prevent false alarms from unused circuits. The DCB1000 is designed to comply with recognized international standards and for complete operator safety. Full front access is provided to allow easy termination of load cable.

Features

- 7U module
- Up to 10, 250A circuit breakers
- Selection of MCCB ratings to 400A
- Tool access front cover
- Front access for cable termination
- MCCB alarms with load detection
- Compliance with international standards

E·T·N

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

|	
Voltage Range	20 – 70Vdc
Maximum Current	1200A @ 50°C [122°F]
MCCB Type	Heinemann GJ1 or Airpax JLM
MCCB Current Ratings	Single Pole: 100A, 125A, 150A, 175A, 200A, 225A, 250A
	Multi Pole: 275A, 300A, 350A, 400A, 450A, 500A, 550A, 600A, 700A, 800A, 900A, 1000A, 1100A, 1200A.
Load Cable Termination	Load termination is direct onto MCCB. Specify requirements when ordering MCCB's.
Alarms	Electronic type with load detection
Operating Temperature Range	-10°C — +50°C [+14°F — +122°F]
Dimensions H,W,D	7U: 177mm [12.25"], 480mm [19" mounting], 300mm [12"]
Certifications	North America: UL60950 pending UL1801 pending

RoHS COMPLIANT

EAT•N
Powering Business Worldwide

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

DCF0208 and DCF0408 Fuse Distributions Modules

The DCF0208 and DCF0408 DC fuse distributions provide circuit protection for a wide selection of telecommunications loads requiring up to 800A fuse protection. All Fuses are alarmed and provide volts free alarm contacts through shunt trip circuit breakers. The DCF0208 and DCF0408 are designed to comply with recognized international standards and for complete operator safety.
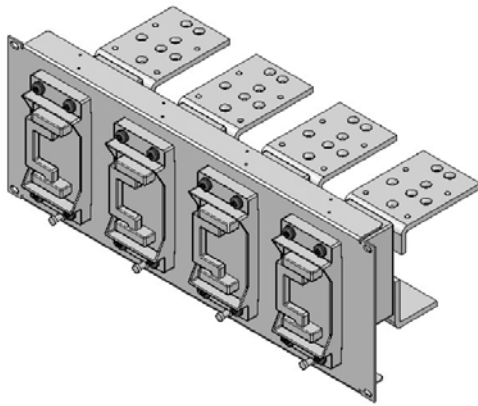
Features

- 19" rack mount
- 2U or 4U module
- 2 or 4 telpower fuse holders
- Selection of fuse ratings up to 800A
- Volts free fuse fail alarms
- Compliance with international standards

E:T•N

Powering Business Worldwide

Technical Specification

Brief Technical Specifications

Voltage Range	20 – 70Vdc
Maximum Current	640A @ 40°C [102°F] per fuse
Fuse Type	Bussmann TPL
Fuse Current Ratings	250A, 300A, 350A, 400A, 450A, 500A, 600A, 700A, 800A
Load Cable Termination	Two hole lugs onto output busbar
Alarms	Voltage free contacts
Operating Temperature Range	-10°C — +40°C [+14°F — +104°F] (UL)
Dimensions H,W,D	2U: 88mm [3.5"], 480mm [19" mounting], 200mm [8"] 4U: 177mm [7.0"], 480mm [19" mounting], 200mm [8"]

Certifications	Europe:	CE
	North America:	UL60950 pending
		UL1801 pending

RoHS COMPLIANT

SMARTER ENERGY SOLUTIONS

EAT·N

Powering Business Worldwide