Pulsar Series and Powerware Series Product Catalogue

UPS Solutions

Powering Business Worldwide

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Powering Business Worldwide

Founded in 1911, Eaton Corporation is a diversified power management company which helps customers operating in a wide variety of industries and residential environments manage power and do more while consuming less energy. As an integrated global company, we are unified in our commitment to powering business worldwide.

Eaton® operates in two main sectors:

Electrical

The Electrical Sector is a leader in electrical power distribution, power quality systems, industrial automation and control products and services. The electrical sector provides technology-driven solutions that serve the mission-critical needs of the industrial, utility, commercial, residential and information technology markets.

Industrial

The Industrial Sector combines the Aerospace, Hydraulics, Trucks and Automotive business groups.

The Hydraulics and Aerospace businesses design and manufacture reliable, high-efficiency hydraulic systems and components for use in mobile and industrial applications.

The Truck business designs and delivers intelligent truck drivetrain systems that enable safety and fuel economy in commercial vehicles.

The Automotive business develops innovations that help the automotive industry to deliver improved fuel economy, safety and performance to car buyers.

With 2008 sales of 15.4 billion USD, Eaton employs 75 000 people worldwide and has customers in more than 150 countries. Eaton is headquartered in Cleveland (Ohio, USA).

Power Quality Business

Eaton Power Quality Division, a part of the Electrical Sector, has more than 45 years of experience in designing and producing innovative power quality products. The result is an expansive portfolio of products, which help to protect our customer's business processes, critical applications and systems from all power problems and failures.

Eaton product and service range

- AC UPS from 350 VA up to 4000 kVA
- DC systems of all sizes
- A broad portfolio of rack-based power distribution units (ePDU®)
- Software and connectivity products for power management and remote control
- Technical support and maintenance
- Complete power quality solutions

Eaton products are manufactured in Finland, USA, China, Taiwan, India, Brazil, UK and New Zealand.

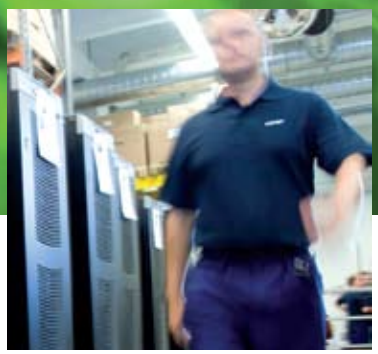
Global Markets and Diverse Customers

Our customers can be confident that they will receive the best products and solutions available on the market as well as a comprehensive range of services, professional personnel, Eaton's commitment to the high standards of business ethics and a customer-oriented business approach.

Eaton serves customers in any business where a high level of power quality is critical for success:

- IT and data centres
- Electrical
- Industry
- Financial institutions
- Telecomms
- Government
- Healthcare
- Oil and Gas
- Security
- Media
- Retail
- Defence
- Transport

Sustainable by Design



Sustainability means meeting the current needs of our society in ways that enable future generations to meet their own needs. At Eaton, sustainability is an integral part of the design of our products and production processes right from the start and extends through to the end of the products´ life.

An Eaton Green Solution

Eaton's commitment to being a leader in reducing its own ecological footprint covers green technologies, products and services that help our customers utilise electrical power more efficiently while improving environmental performance. In line with goals, we are also fully committed to decreasing our own greenhouse gas (GHG) emissions by 18 percent by 2012.

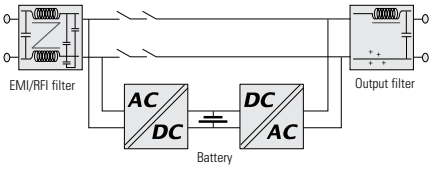
In recent years Eaton's internal environmental programmes have resulted in significant reductions in electricity and water consumption, waste generation and GHG emissions at our manufacturing sites. All Eaton Electrical sites throughout the world are ISO 14001 certified.

In addition, Eaton has developed a rigorous certification process based on the guidelines of international organisations such as the European Union, the US Federal Trade Commission and the International Organisation for Standardisation (ISO). As a result, the exceptional environmental performance is verified with widely accepted methods such as life cycle assessment (LCA). Eaton products and services meeting the environmental standards of this certification process earn the Eaton "Green Leaf" label. The label is our promise of exceptional, independently verified environmental performance to customers, consumers and our communities.

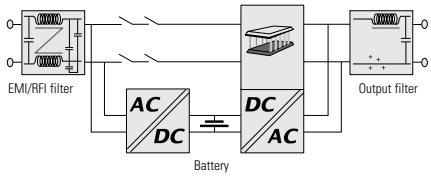
For more information on how Eaton is Sustainable by Design, please visit www.eaton.com/sustainability.

Power Protection for Different Needs

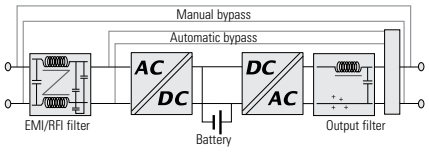
There are nine common types of power problems, including power failure, power sag, power surge, undervoltage, overvoltage, switching transient, line noise, frequency variation and harmonic distortion. Based on three UPS topologies, Eaton offers a wide range of UPS solutions to provide an appropriate level of power protection against different power problems and failures.



Passive standby topology (off-line) is the most frequently used UPS topology for protecting PCs against power failure, power sag and power surge. In normal mode, the UPS supplies power to the application directly from the mains, filtered but without active conversion. The battery is charged from the mains. In the event of a power cut or fluctuation, the UPS delivers stable power from the battery. The advantages of this topology are low cost and adequacy for office environments. Passive standby topology is not suitable if the power supply is of low quality (industrial sites) or subject to frequent disruptions.



Line interactive topology is used for protecting enterprise networks and IT applications against power failure, power sag, power surge, undervoltage and overvoltage. In normal mode, the device is controlled by a microprocessor that monitors the quality of the supply and reacts to fluctuations. A voltage compensation circuit is enabled to boost or reduce the supply voltage to compensate for the fluctuations. The main advantage of this topology is that it enables compensation of under and overvoltage without using the batteries.



Double conversion topology (on-line) is a basis for UPSs designed for continuous power protection of critical equipment against all nine power problems: power failure, power sag, power surge, undervoltage, overvoltage, switching transient, line noise, frequency variation and harmonic distortion. It ensures a consistent quality of power supply regardless of disturbances in the incoming mains. The output voltage is entirely regenerated by a sequence of AC to DC conversion followed by DC to AC conversion in order to create power supply without any electrical interference. Double conversion UPSs can be used with any type of equipment as there are no transients when changing over to battery power.

1. POWER FAILURE

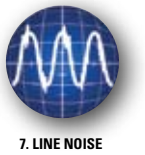
2. POWER SAG

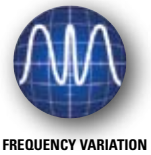
3. POWER SURGE

4. UNDERVOLTAGE

5. OVERVOLTAGE

6. SWITCHING TRANSIENT


7. LINE NOISE


8. FREQUENCY VARIATION

9. HARMONIC DISTORTION

Eaton Protection Box

Eaton Protection Box 8

Eaton Protection Box 5

Eaton Protection Box 1

Advanced protection for:

- Computers, peripherals and multimedia
- TV, Video and Hi-Fi equipment: Home cinema, DVD writers, digital decoders, etc.
- Broadband modems (Internet and TV)
- IP telephony
- Household goods, etc.

Surge protection

The Eaton Protection Box multi-way block with high performance surge protection is a simple solution for protecting delicate equipment.

Effective surge protection

The Protection Box is designed to filter the power supply for delicate equipment to protect it against surges, interference and the indirect effects of lightning.

The high performance of the Protection Box is based on an advanced design with surge protection in compliance with IEC 61643-1.

Complete protection

The Protection Box range has models with 1, 5 or 8 sockets. Some models also provide protection for telephone connections that can carry surges to the equipment.

- Tel@ models: with telephone/broadband Internet access protection
- Tel@ + TV models: with telephone/broadband Internet access protection + Audio/Video protection module (surge protection for television and FM radio with TV and F-Type connectors)

Practical and economical: replaceable surge protection module

(Protection Box 5 Tel@, 5 Tel@ + TV and 8 Tel@ + TV)

The surge protective components for these models are grouped into a pluggable module for:

- Easy replacement if the surge protective devices are destroyed by a major surge (no need to disconnect the equipment and the pluggable unit is an Eaton standard replacement part)
- Can be updated (adding functions, changing connectors, etc.)

Warranty for connected equipment

Eaton offers free warranty for the equipment connected (applicable for EU countries and Norway only). This insurance is included in the purchase price of the Protection Box and covers up to 50 000 € for an 8 socket model to cover damage caused by a failure of the surge protection.

And lots of features to simplify life

- Power ON and active protection indicators
- PowerLine Communications compatibility (Protection Box 5/8) for connecting PLC adapters
- Cable ties and cable markers supplied (5 and 8 socket models)
- Sockets arranged to allow blocks to be plugged side by side

COMPATIBLE WITH IEC 61643-1 STANDARDS

Eaton Protection Box

1 Power ON indicator
2 Active protection indicator
3 Telephone / broadband protection
4 Replaceable surge protection module

Eaton Protection Box 8

Eaton Protection Box 5

5 Widely spaced sockets for transformer units, 1 PLC-ready outlet (for Protection Box 5 and 8)
6 All outlets with safety shutters

+

Audio/Video protection module available (for Protection Box 5 Tel@ + TV and 8 Tel@ + TV only)

TECHNICAL SPECIFICATIONS	1	1 Tel@	5	5 Tel@	5 Tel@+TV	8 Tel@+TV
Rating (A/W)	16 A / 3 520 W	16 A / 3 520 W	10 A / 2 500 W	10 A / 2 500 W	10 A / 2 500 W	10 A / 2 500 W
Voltage/frequency	220/250 V - 50/60 Hz					
IEC 61643-1 tested	Yes	Yes	Yes	Yes	Yes	Yes
PowerLine compatibility	/	/	Yes	Yes	Yes	Yes
Surge test conditions						
Surge test conditions for IEC 61643-1 with 8/20µs pulse	Uoc = 6.6 kV - Up = 1.5 kV - In = 2.5 kA - Imax = 8 kA					
Protective devices						
Total rating	30 000 A, 3 x MOV 10 000 A					
Response time	<1ns					
Total power absorbed	1110 Joules					
EMI/RFI filter						
52dB from 100kHz to 100MHz	/	Yes	/	Yes	Yes	Yes
Telephone and audio/video line protection						
RJ11/RJ45 telephone including broadband	/	10 000 A	/	10 000 A	10 000 A	10 000 A
Audio/Video line	/	/	/	/	10 000 A	10 000 A
Marking and standards						
Safety	IEC 60-950, NFC 61-303					
EMC	EN 55082-2, EN 55022 class B, EN 61000-4-4 level 4 IEC 61000-4-5, level X=10kV					
Surge protection	IEC 61 643-1					
Dimensions and weight						
Dimensions H x W x D	67 x 70 x 105 mm	67 x 70 x 105 mm	65 x 120 x 255 mm	65 x 120 x 260 mm	65 x 120 x 260 mm	65 x 150 x 315 mm
Weight	0.160 kg	0.210 kg	0.610 kg	0.770 kg	0.840 kg	0.850 kg
Customer Service & Support						
2 years warranty	Standard product exchange ; warranty for connected equipment up to 50 000 €					
Replaceable surge protection module	Standard exchange free of charge from Eaton aftersales services					

Part Numbers	1	1 Tel@	5	5 Tel@	5 Tel@+TV	8 Tel@+TV
French sockets (FR)	66 706	66 707	66 710	66 711	66 934	66 935
“Schuko” sockets (DIN)	66 708	66 709	66 712	66 713	66 936	66 937
French sockets (FR-B) for Belgium	/	/	66 932	66 933	66 938	/

Eaton Protection Box PowerLine

Eaton Protection Box PowerLine is available with 5 or 8 sockets and 85 or 200 Mbits modules.

Advanced protection for:

- HDTV via broadband
- TV via broadband
- Internet broadband

Combined PowerLine/surge protection/ multi-way socket block

Broadband and HDTV over mains sockets

Unique: plug in - protect - connect

Eaton Protection Box PowerLine is the first unit on the market to combine a multi-way socket block, an 85 or 200 Mbits PowerLine Communication (PLC) module and a PowerLine-compatible surge protection.

It optimizes the use of PLC technology to route broadband data over existing mains wiring.

Eaton Protection Box PowerLine can be used in pairs or larger groups and is compatible with other PowerLine adapters (see compatibility table overleaf).

Elimination of interference to get the best from PowerLine technology

Two models of the Eaton Protection Box PowerLine are available:

- 85 Mbits (HomePlug 1.1 standard), ideal for broadband TV and sharing Internet access
- 200 MBits (HomePlug AV standard), essential for HDTV, video file transfer and VoIP

In the design of the Eaton Protection Box PowerLine, Eaton has used its know-how in eliminating electrical interference.
It optimizes the transmission of the PowerLine signal to provide the maximum possible data rate:

- the surge protection is designed so that the PowerLine signal is not blocked or weakened ("PLC-Ready" function)
- a filter prevents the PowerLine signal being affected by interference from equipment connected to the socket block: mobile phone chargers, laptops, power supplies, etc ("PLC-Shield" function)

Surge protection for delicate, expensive equipment

HDTVs, HD DVD players, Multimedia PCs, Media Centers, NAS file servers contain precious data (personal photos and videos, film collections, music libraries, personal files, etc).

- Eaton Protection Box PowerLine protects them from damage caused by the indirect effects of lightning strikes or surges: it is a high performance surge protective device rated according to IEC 61 643-1

More advantages to simplify life

- The sockets are spaced so that transformer blocks can be plugged in without obstructing the adjacent sockets
- Cable ties and markers are supplied
- An encryption button is used to enable secure data transmission (200 Mbits model)
- 3 indicators: mains, surge protection status and PowerLine status
- The equipment connected to the Protection Box PowerLine is insured for up to 25000€ (Protection Box 5) and up to 50000€ (Protection Box 8) (EU countries and Norway, 20,000£ for UK)

Eaton Protection Box PowerLine

1. 1 PLC-Ready socket
2. 7 PLC-Shield sockets to protect the PowerLine signal
3. Power ON indicator
4. 8 widely spaced sockets for plugs and transformer blocks

Eaton Protection Box 8 PowerLine

5. All outlets with safety shutters
6. Protection ON indicator
7. Combined surge protection and 85 or 200 Mbits PowerLine module
8. Tel/Modem Internet broadband line protection

TECHNICAL SPECIFICATIONS	Protection Box 5 PowerLine	Protection Box 8 PowerLine
Rating (VA/W)	16 VA / 2500 W	10 VA / 2500 W
Voltage/frequency	220/250 V - 50/60 Hz	
IEC 61643-1 tested	Yes	Yes
PowerLine compatible	Yes	Yes
Surge protection		
Performance	Uoc = 6.6 kV - Up = 1.5 kV - In = 2.5 kA - Imax = 8 kA to IEC 61643-1 with a 8/20 µs pulse	
Overvoltage protection		
Total protection	30 000 A 3 x MOV 10 000 A	
Response time	<1ns	
Total surge absorption	1110 Joules	
EMI/RFI filter		
Maximum attenuation	52 dB from 100 kHz to 100 Mhz	
Data line protection		
Tel line. RJ11/RJ45 including broadband	10 000 A	10 000 A
Audio/Video line	/	10 000 A
Marking and standards		
Safety	IEC 60-950, NFC 61-303	
EMC	EN 55082-2, EN 55022 class B, EN 61000-4-4 level 4, IEC 61000-4-5 level X = 10 kV	
Surge protection	IEC 61 643-1	

Compatibility	Protection Box PowerLine 85	Protection Box PowerLine 200
Compatible with	Protection Box PowerLine 85	Protection Box PowerLine 200
	DEVOLO dLAN 85 HighSpeed	DEVOLO dLAN 200AV/200 AVeasy
	HomePlug 1.1 products (Orange Liveplug, LEA Netplug Turbo, Netgear XE, Darty Box CPL, Sagem F@st PLUG TV, Bewan E85,…)	HomePlug AV products (Freeplug, Orange Liveplug HD, LEA NetPlug AV, Sagem F@st PLUG AV, Bewan E200,…)
No compatible with	UPA (DS2) products (Netgear HDX, DLink, Ilevo, Corinex AV200…) and Panasonic	
PowerLine compatibility	Built-in PLC-Ready socket: surge protection compatible wit PowerLine signals	
PowerLine signal protection	Built-in PLC-Shield: EMI-RFI filter (except on PLC-Ready socket) to eliminate interference from equipment such as mobile phone chargers, portable computers, etc	
PowerLine specifications		
Standard	HomePlug 1.1	HomePlug AV
Data rate	up to 85 Mbits	up to 200 Mbits
PLC Technology	DEVOLO dLAN HighSpeed 85	DEVOLO dLAN 200 AVeasy
Encryption	DESpro	AES 128 bits
Interface	1 x Ethernet RJ45	1 x Ethernet RJ45
Dimensions and weight		
Dimensions H x W x D	65 x 260 x 120 mm	65 x 315 x 150 mm
Weight	0.770 kg	0.850 kg
Customer Service & Support		
2 years guarantee	Standard product exchange ; warranty for connected equipment up to 50 000 € (Protection Box 8 models) and up to 25 000€ (Protection Box 5 models)*	

*for EU countries and Norway, 20 000 £ for UK

	Protection Box PowerLine 85		Protection Box PowerLine 200	
Part Numbers	**5**	**8**	**5**	**8**
FR sockets	68 593	68 589	/	68 591
DIN sockets	68 594	68 590	/	68 592
BS sockets	68 597	/	68 598	/

FR DIN BS

Eaton Protection Station

500/650/800 VA

ECO CONTROL

UP TO 30% energy saving

Eaton Protection Station 800

Multi-position

Advanced protection for:

- Home computing
- Digital leisure equipment

Combined UPS/surge protection/ multiple socket device

Innovative solutions offering total protection for home computers and digital leisure devices.

Connect all your equipment and protect them against power failures and voltage fluctuations…

Eaton Protection Station can do this, offering in a single device:

- Up to 8 standard outlets
- A high performance surge suppressor
- A UPS with 20 to 30 minutes battery back-up for a typical PC

The first UPS in this class with energy saving features

Eaton Protection Station boasts an efficient electrical design with **EcoControl function** that **automatically disables peripherals** when the master device (Computer, HD TV, Home network storage, etc...) is turned off. This will help you **save up to 30% energy** compared to previous generation UPSs.

One model suitable for each application

3 versions (500 VA/250 W, 650 VA/400 W or 800 VA/500 W backup power), to protect an internet PC, a multimedia computer with peripherals or a hardcore gamer configuration.
Thanks to its multi-position format Eaton Protection Station can fit anywhere.

Guarantees total peace of mind

- Surge suppressor compatible with IEC 61 643-1 standard (+ status indicator)
- USB port and power management software as standard (650 & 800 models)
- Data line protection to ensure that the internet line (including xDSL) is protected against surges
- Unlimited warranty for the connected computer equipment (EU countries and Norway)
- Periodic test and battery replacement indicator

COMPATIBLE WITH IEC 61643-1 STANDARDS

RUNTIME/AUTONOMIA AUTONOMIE/AUTONOMIA 30min

WARRANTY* UNLIMITED WARRANTY

Eaton Protection Station

1 Surge protection status indicator
2 Line protection for telephone/Internet ADSL
3 Spaced outlets, compatible with local standards
4a Outlets with surge protection
4b Outlets with surge protection and back-up power
4c 2 EcoControl outlets (650 & 800)

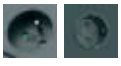
4d 1 PLC-ready outlet
5 Replaceable batterie
6 Reset button (circuit breaker)
7 USB port (650 & 800) with Windows/Linux/Mac software
8 Indicator for mains/battery operation, overload, fault + audible alarms

Eaton Protection Station 650 & 800

TECHNICAL SPECIFICATIONS	500	650	800
Technology	High frequency UPS with surge protection		
Application			
Outlets	6 standard outlets (3 with back-up power and surge protection + 3 with surge protection)	8 standard outlets (4 with back-up power and surge protection + 4 with surge protection)	
Performance			
Output power capacity (backup outlets)	500 VA - 250 W	650 VA - 400 W	800 VA - 500 W
Output power capacity (all outlets)	5 A - 1150 VA	10 A - 2300 VA	10 A - 2300 VA
Input voltage range	184 V - 264 V	Up to 160 V - 284 V (adjustable)	Up to 160 V - 284 V (adjustable)
Output voltage and frequency	230 V - 50 / 60 Hz auto-selection		
Protection	Resettable circuit breaker		
Batteries			
Battery type	Replaceable sealed lead-acid batteries		
Battery monitoring	Automatic battery test, battery replacement indicator, protection against deep discharges (4-hour limit)		
Battery operation	Cold-start capable (mobile power source), battery charging even in OFF position		
Typical application	1 internet computer	1 multimedia computer + peripherals	1 computer high graphics power
Backup time with typical application	20 min	30 min	30 min
Features			
User interface	Operation with mains/battery power, surge suppressor status, overload, battery replacement, fault, audible alarms		
EcoControl	/	Save up to 30% energy* (efficient electrical design and automatic deactivation of idle peripherals)	
Surge protection	Complete common and differential mode protection - 3 MOV – Total power: 525 Joules, compatible with IEC 61643-1 standard		
Performance on 8/20 wave	Uoc = 6 kV Up = 1.5 kV In = 2.5 kA I max = 8 kA	Uoc = 6 kV Up = 1.7 kV In = 2.8 kA I max = 8 kA	Uoc = 6 kV Up = 1.7 kV In = 2.8 kA I max = 8 kA
PowerLine compatibility	/	1 PLC-ready outlet	1 PLC-ready outlet
Data line protection	Protection for telephone/fax/modem/Internet ADSL line + Ethernet network		
Installation	Requires earth connection		
Standards			
Standards	IEC 62040-1-1, IEC 62040-2, IEC 61643-1, Marquage CE		
Quality and environment	ISO 9001, ISO14001		
Dimensions and weight			
Dimensions W x H x D	155 x 304 x 137 mm	185 x 327 x 149 mm	185 x 327 x 149 mm
Weight	2.9 kg	3.8 kg	4 kg
Power Management			
Com port	/	USB port	USB port
Software	/	Personal Solution-Pac software on CD, compatible with Windows Vista/XP/Mac/Linux (power management, Automatic system shutdown, Alarm notification, Events log)	
Customer service & support			
2 years guarantee	Standard product exchange, including the battery ; warranty for the connected computing equipment for an unlimited amount (EU countries)		
Warranty+	Optional 3 years warranty (depending on the country please visit www.eaton.com/powerquality)		

*compared to UPS from the previous generations

Part Numbers	500	650	800
FR outlets	66 942	61 061	61 081
DIN outlets	66 943	61 062	61 082



FR DIN

An Eaton Green Solution

Eaton Ellipse ASR
450/600/750/1000/1500 VA

Eaton Ellipse ASR range

Eaton Ellipse ASR versatility

Passive standby (off-line)

Protecting business computer equipment

The highest level of protection for business computers

- **Eaton Ellipse ASR** UPSs not only provide a battery backed up supply to keep equipment operating when there is a power cut but also provide effective protection against damaging surges
- **Ellipse ASR** (Advanced Surge Reduction) UPSs include a high performance surge protective device which complies with IEC 61643-1 standards
- **Ellipse ASR** UPSs also protect telephone, broadband and Ethernet for complete protection

The widest range of sockets

- 4 sockets (450/600/750 models) or 8 sockets (1000/1500 models)
- Practical: French, "Schuko" and universal sockets. Also available with IEC sockets

The greatest flexibility

Extra flat for easy installation in all business environments:

- Vertical box format or below the desk
- Horizontal under a monitor
- 9" rack mounted (optional 2U kit)

The best compatibility with computer equipment

The USBS models are designed for compatibility with a wide variety of computers:

- Combined USB and serial ports
- Power management software available under Windows, Linux and Mac OS

Eaton Ellipse ASR

1 4 sockets with surge protection
2 4 sockets with surge protection and backup
3 Tel/broadband and Ethernet 10/100 MB protection
4 Combined USB / serial port
5 Replaceable batteries
6 Circuit breaker reset button

Eaton Ellipse ASR 1000/1500

Eaton Ellipse ASR 450/600/750

1 Combined USB/serial port (USBS models)
2 Tel/broadband and Ethernet 10/100 MB protection
3 Replaceable batteries
4 3 sockets with surge protection and backup and 1 socket with surge protection
5 Circuit breaker reset button

TECHNICAL SPECIFICATIONS	450	600/600 USBS	750 USBS	1000 USBS	1500 USBS	XL
Rating (VA/W)	450 VA / 250 W	600 VA / 360 W	750 VA / 450 W	1000 VA / 600 W	1500 VA / 900 W	420 VA / 250 W
Application						
Multi-way sockets	4	4	4	8	8	5
Sockets with surge protection and backup / Sockets with surge protection for peripherals	3/1	3/1	3/1	4/4	4/4	4/1
Characteristics						
Input voltage	184 V to 264 V	184 V to 264 V (adjustable from 161 V to 284 V)				
Output voltage	230 V	230 V (settable to 220 V, 230 V, 240 V)				
Frequency	50-60 Hz autoselect					
Surge protection	Integral surge protection device to IEC 61643-1, Total surge absorption: 525 Joules					
Circuit breaker	With reset					
Battery						
Replaceable battery	Compact sealed lead acid					
Battery charger	Operates when the UPS is under power					
Battery test	Yes	Yes	Yes	Yes	Yes	Yes
Cold start (no mains)	Yes	Yes	Yes	Yes	Yes	Yes
Deep discharge protection	4 hours	4 hours	4 hours	4 hours	4 hours	48 hours
Battery replacement indicators	LED + audible alarm					
50% load backup	11 min	15 min	13 min	18 min	16 min	4 EXB : 15h
70% load backup	6 min	7 min	6 min	9 min	8 min	4 EXB : 9h20 min
Communication						
Communications port (USBS models)	/	Combined USB and serial port	Combined USB and serial port	Combined USB and serial port	Combined USB and serial port	/
Software supplied as standard (USBS models)	/	Compatible with: Windows Vista XP/2003/2000/98/95/Me/NT, Mandrake Linux,/ Mandriva Linux, Red Hat Linux, Suse Novell, Debian GNU/Linux, Mac OS X				
Line protection	Tel/Fax/Modem/Internet et Ethernet (available for all models)					
Standards						
Safety	IEC/EN 62040-1-1, CB Report, CE mark					
EMC	IEC 62040-2					
Surge protection	IEC 61643-1					
Mounting, colors, dimensions and weight						
Dimensions H x W x D	242 x 81 x 245 mm	270 x 82 x 265 mm	270 x 82 x 265 mm	305 x 80 x 312 mm	317 x 80 x 390 mm	317 x 80 x 390 mm
Weight	3 kg	4.2 kg	4.4 kg	8.1 kg	11 kg	11 kg
19" rack mounting kit	2U	2U	2U	2U	2U	2U
Color	Black	Titanium Grey	Titanium Grey	Titanium Grey	Titanium Grey	Titanium Grey
Customer Service & Support						
2 years warranty	Standard product exchange, including the battery ; warranty for the connected computing equipment for an unlimited amount (EU countries)					
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)					

Part Numbers	450	600	600 USBS	750 USBS	1000 USBS	1500 USBS	XL
French sockets (FR)	66 940	66 765	66 769	66 773	66 777	66 781	66 792
Schuko sockets (DIN)	66 941	66 766	66 770	66 774	66 778	66 782	66 793
UNI sockets	/	66 767	66 771	66 775	66 779	66 783	66 794
IEC sockets	*	66 768	66 772	66 776	66 780	66 784	66 795
Accessories							
19" rack mounting kit	68 561	68 561	68 561	68 561	68 561	66 561	68 561
Ellipse EXB	/	/	/	/	/	/	66 791

* Ellipse ASR 375 IEC (66 764) available upon request.

FR DIN UNI IEC

Eaton Ellipse MAX
600/850/1100/1500 VA

Eaton Ellipse MAX range

Eaton Ellipse MAX versatility

Advanced protection for:
- Workstation
- Small servers
- Office equipment

Line interactive
Power protection for workstations and small servers

Availability
- **Line Interactive technology:** Eaton Ellipse MAX provides effective protection, even in disturbed electrical environments. Fluctuations in voltage are automatically corrected by an AVR device (booster/fader), without using the batteries. UPSs not only provide a battery backed up supply to keep equipment operating when there is a power cut but also provide effective protection against damaging surges.
- **Surge protection:** Eaton Ellipse MAX includes a high performance surge protective device which complies with IEC 616431 standard.
- **Robust:** A wide tolerance of input voltage avoids excessively frequent changeover to battery power. This means that maximum capacity is always available. The thresholds for changeover to battery power can be adjusted using the supplied Solution-Pac software.

Value
- **Easy installation:** Eaton Ellipse MAX USBS models are supplied with power management software & communication cables
- **Unlimited warranty:** Eaton Ellipse MAX provides a warranty of connected computer equipment for an unlimited amount

Flexibility
- **Connection:** 4 or 8 standard outlets for each country (FR, DIN or UNIversal), IEC version also available
- **Integration:** Eaton Ellipse MAX can be installed in vertical position over & under the desk, or horizontally under a monitor
- **Rackable:** the optional 2U kit allows you to install the Eaton Ellipse MAX in a 19" rack
- **Power management:** the USBS models feature a combined USB and serial port

Eaton Ellipse MAX

1 4 sockets with surge protection
2 4 sockets with surge protection and backup
3 Internet and Ethernet protection
4 Combined USB / serial port
5 Replaceable batteries
6 Circuit breaker reset button

Eaton Ellipse MAX 1500

Eaton Ellipse MAX 600

1 Combined USB/serial port (USBS models)
2 Tel/broadband and Ethernet 10/100 MB protection
3 Replaceable batteries
4 3 sockets with surge protection and backup and 1 socket with surge protection
5 Circuit breaker reset button

TECHNICAL SPECIFICATIONS	600	600 USBS	850 USBS	1100 USBS	1500 USBS
Rating (VA/W)	600 VA / 360 W	600 VA / 360 W	850 VA / 550 W	1100 VA / 660 W	1500 VA / 900 W
Technology	Line-Interactive High Frequency (Automatic Voltage Regulation)				
Connections					
Multi-way sockets: French, Schuko, Universal, IEC	4	4	8	8	8
Sockets with surge protection and backup / Sockets with surge protection for peripherals	3/1	3/1	4/4	4/4	4/4
Characteristics					
Input voltage	165 V - 285 V (adjustable to 150 V - 285 V)				
Output voltage	230 V (adjustable to 220 V - 230 V - 240 V)				
Frequency	50-60 Hz autoselect				
Surge protection	Integral surge protection device to IEC 61643-1, Total surge absorption: 525 Joules				
Circuit breaker	With reset				
Battery					
Replaceable battery	Compact sealed lead acid				
Battery charger	Operates when the UPS is under power				
Battery management	Battery test, Cold start (no mains), Deep discharge protection				
Battery replacement indicators	LED + audible alarm				
Typical backup times for 50 and 70% of the VA rating	12/7 min	12/7 min	18/12 min	15/9 min	12/7 min
Communication					
Communications port	/	Combined USB and serial port			
Software supplied as standard	/	Compatible with: Windows Vista/XP/2003/2000/98/NT, Mandrake Linux, Mandriva Linux, Red Hat Linux, Suse Novell, Debian GNU/Linux, Mac OS X			
Line protection	Tel/Fax/Modem/Internet et Ethernet 10/100 MB				
Standards					
Safety	IEC/EN 62040-1-1, CB Report, CE mark				
EMC	IEC / EN 62040-2 C1				
Surge protection	IEC 61643-1				
Mounting, Dimensions and Weight					
Dimensions H x W x D	314 x 82 x 301 mm	314 x 82 x 301 mm	314 x 82 x 410 mm	314 x 82 x 410 mm	314 x 82 x 410 mm
Weight	5.75 kg	5.75 kg	10.2 kg	10.2 kg	10.2 kg
19" rack mounting kit	2U	2U	2U	2U	2U
Customer Service & Support					
2 years warranty	Standard product exchange, including the battery ; warranty for the connected computing equipment for an unlimited amount (EU countries)				
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)				

Part Numbers	600	600 USBS	850 USBS	1100 USBS	1500 USBS
French sockets (FR)	68 541	68 545	68 549	68 553	68 557
Schuko sockets (DIN)	68 542	68 546	68 550	68 554	68 558
UNI sockets	68 543	68 547	68 551	68 555	68 559
IEC sockets	68 544	68 548	68 552	68 556	68 560
Accessories					
19" rack mounting kit	68 561	68 561	68 561	68 561	68 561

FR DIN UNI IEC

Eaton Evolution
650/850/1150/2000 VA

1U rack model & tower model

Line interactive

High density protection for network devices

Maximum availability

- **Powershare:** the Eaton Evolution output sockets are individually controlled to provide load-shedding to maximise the backup time and provide remote reboot and sequential start-up as standard
- **Continuous power supply:** Hot swappable batteries. The optional HotSwap MBP (Maintenance By-Pass) module allows the UPS to be replaced without interrupting the power supply
- **Pure sinewave output:** when operating in batterie mode the Eaton Evolution still provides high quality output signal for sensitive connected equipment

Minimum total cost of ownership

- **Line-interactive HF technology:** the best price/performance ratio
- **No additional cost:** rack 1U and RT models are provided with the rail kits
- **Remote supervision:** a wide range of options using the Eaton Software suite, including point-to-point power management, SNMP, relay outputs, etc...

Total flexibility

Evolution has unmatched Flexibility.

- **Format:** Evolution is available in tower format, rack 1U format, RT2U convertible rack/tower (2kVA model)
- **Communication:** the Evolution includes both serial and USB ports, plus remote On/Off connector and an extra slot for optional communication cards. The UPS comes with a complete Eaton software suite.

Advanced protection for:

- Rack servers
- Tower servers
- Network devices
- Storage systems

Eaton Evolution UPS

1 Full user interface:
- ON/OFF button for UPS and outlets
- Load protected/ not protected LED
- Utilised power level/Battery charge level
- Status of switchable outlets

2 Panel for batteries replacement (Hot swappable)

3 1 USB port + 1 serial port + remote ON/OFF

4 4 IEC 10A sockets, including 2 programmable sockets

5 Communication card slot

Eaton Evolution 1550 Tower

TECHNICAL SPECIFICATIONS	650	850	1150	1550	2000
Rating (VA/W)	650 VA / 420 W	850 VA / 600 W	1150 VA / 770 W	1550 VA / 1100 W	2000 VA / 1600 W
Format	Tower or 1U Rack	Tower or 1U Rack	Tower or 1U Rack	Tower or 1U Rack	RT2U (tower / rack 2U)
Electrical characteristics					
Technology	Line-Interactive High Frequency (Booster + Fader)				
Input voltage and frequency ranges without using batteries	160V-294V (adjustable to 150V-294V) 47 to 70 Hz (50 Hz system), 56.5 to 70 Hz (60 Hz system), up to 40 Hz in low-sensitivity mode (programmable using Personal Solution-Pac software).				
Output voltage and frequency	230 V (+6/-10 %) (Adjustable to 200 V (10 % derating of output power) / 208 V / 220 V / 230 V / 240 V), 50/60 Hz +/- 0.1 %				
Connections					
Input	1 IEC C14 (10 A) socket				
Outputs	4 IEC C13 (10 A)	4 IEC C13 (10 A)	4 IEC C13 (10 A)	4 IEC C13 (10 A)	8 IEC C13 (10 A)
Remotely controlled sockets	2 groups of 1 x IEC C13 (10 A)	2 groups of 1 x IEC C13 (10 A)	2 groups of 1 x IEC C13 (10 A)	2 groups of 1 x IEC C13 (10 A)	2 groups of 2 x IEC C13 (10 A)
Additional outputs with HS MBP	4 FR/Schuko sockets or 3 BS sockets or 6 IEC 10 A sockets or terminal blocks (HW version)				
Additional outputs with FlexPDU	8 FR/Schuko sockets or 6 BS sockets or 12 IEC 10 A sockets				
Batteries					
Typical backup times for 50 and 70% load	9/6 mn	16/7 mn	14/7 mn	14/7 mn	14/7 mn
Battery management	Automatic weekly test (period adjustable), automatic recognition of external battery units => continuous maximisation of backup time + deep discharge protection				
Interfaces					
Communication ports	1 USB port + 1 RS232 serial port and relay contacts (USB and RS232 ports cannot be used simultaneously) + 1 mini terminal block for remote ON/OFF and Remote Power Off				
Communications card slots	1 slot for NMC Minislot card or NMC ModBus/JBus or MC Contacts/Serial				
Operating conditions, standards and approvals					
Operating temperature	0 to 35°C	0 to 35°C	0 to 35°C	0 to 40°C	0 to 40°C
Noise level	< 40dbA	< 40dbA	< 40dbA	< 40dbA	< 45 dBA
Performance - Safety - EMC	IEC/EN 62040-1-1 (Safety), IEC/EN 62040-2 EN 50091-2 class B (EMC), IEC/EN 62040-3 (Performance), IEC/EN 61000-4-2, 61000-4-3, 61000-4-4; 61000-4-5, 61000-4-6, 61000-4-8 (EMI)				
Approvals	CE, CB report, TÜV				
Dimensions W x D x H / Weight					
Dimensions of the Tower	147 x 418 x 234 mm	147 x 418 x 234 mm	147 x 418 x 234 mm	147 x 492 x 234 mm	440 x 509 x 86.2 (2U) mm
Dimensions of the Rack	438 x 366 x 43.2 (1U)	438 x 512 x 43.2 (1U)	438 x 512 x 43.2 (1U)	438 x 556 x 43.2 (1U)	440 x 509 x 86.2 (2U)
Weight of the Tower/Rack	8.4/10.1 kg	10.85/16.1 kg	12.5/16.6 kg	16.53/20 kg	25.7 kg
Customer Service & Support					
2 years warranty	Standard product exchange, including the battery				
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)				

Part Numbers	650	850	1150	1550	2000 RT2U
Tower	68 450	68 452	68 454	68 457	/
Rack1U	68 451	68 453	68 455	68 458	/
Convertible Tower/Rack	/	/	/	/	68 460

Eaton Evolution S
1250/1750/2500/3000 VA

Eaton Evolution S

Eaton Evolution S with EXB

Advanced protection for:

- Rack servers
- Tower servers
- Network devices
- Storage systems

Line interactive

High density protection for network devices

Maximum availability

- **Powershare:** the Eaton Evolution S output sockets are individually controlled to provide load-shedding to maximise the backup time and provide remote reboot and sequential start-up as standard
- **Continuous power supply:** Hot swappable batteries. The optional HotSwap MBP (Maintenance By-Pass) module allows the UPS to be replaced without interrupting the power supply
- Long backup times: 1 to 4 EXB battery units can be added to the Evolution S
- Pure sinewave output: when operating in batterie mode the Eaton Evolution still provides high quality output signal for sensitive connected equipment

Minimum total cost of ownership

- **Line-interactive HF technology:** the best price/performance ratio
- **No additional cost:** all models are provided with tower stands and rail kits
- **Remote supervision:** a wide range of options using the Eaton Software suite, including point-to-point power management, SNMP, relay outputs, etc...

Total flexibility

Evolution has unmatched Flexibility.

- **Format:** Evolution S is available in RT2U convertible rack/tower version (optimised for rack mounting) or RT3U (for tower or short-depth racks)
- **Connections:** with FlexPDU and HotSwap MBP the Evolution S can be connected by sockets or terminal blocks. They can be installed as required behind, on the side or on top of the unit
- **Compatible with high power factor loads:** the Evolution S are rated for 0.9 total power factor (1250 VA/1150 W, 1750 VA/1600 W, 2500 VA/2250 W and 3000 VA/2700 W)
- **Communication:** the Evolution S includes both serial and USB ports, plus remote On/Off connector and an extra slot for optional communication cards. The UPS comes with a complete Eaton software suite.

Eaton Evolution S UPS

1 Full user interface:
- ON/OFF button for UPS and outlets
- Load protected/ not protected LED
- Utilised power level/Battery charge level
- Status of switchable outlets

2 Panel for batteries replacement (Hot swappable)

3 1 USB port + 1 serial port + remote ON/OFF

Eaton Evolution S 3000 RT2U Netpack

4 EXB battery unit connector

5 EXB units recognised automatically

6 8 IEC 10A sockets, including 4 programmable sockets

7 Communication card slot

TECHNICAL SPECIFICATIONS	1250	1750	2500	3000
Rating (VA/W)	1250 VA / 1150 W	1750 VA / 1600 W	2500 VA / 2250 W	3000 VA / 2700 W
Format	RT2U (tower / rack 2U)	RT2U (tower / rack 2U)	RT2U (tower / rack 2U)	RT2U & RT3U
Electrical characteristics				
Technology	Line-Interactive High Frequency (Booster + Fader)			
Input voltage and frequency ranges without using batteries	160V-294V (adjustable to 150V-294V) 47 to 70 Hz (50 Hz system), 56.5 to 70 Hz (60 Hz system), up to 40 Hz in low-sensitivity mode (programmable using Personal Solution-Pac software.			
Output voltage and frequency	230 V (+6/-10 %) (Adjustable to 200 V (10 % derating of output power) / 208 V / 220 V / 230 V / 240 V), 50/60 Hz +/- 0.1 %			
Connections				
Input	1 IEC C14 (10 A) socket	1 IEC C14 (10 A) socket	1 IEC C20 (16 A) socket	1 IEC C20 (16 A) socket
Outputs	8 IEC C13 (10 A)	8 IEC C13 (10 A)	8 IEC C13 (10 A) sockets 1 IEC C19 (16 A) socket	8 IEC C13 (10 A) sockets 1 IEC C19 (16 A) socket
Remotely controlled sockets	2 groups of 2 x IEC C13 (10 A)			
Additional outputs with HS MBP	4 FR/Schuko sockets or 3 BS sockets or 6 IEC 10 A sockets or terminal blocks (HW version)			
Additional outputs with FlexPDU	8 FR/Schuko sockets or 6 BS sockets or 12 IEC 10 A sockets			
Batteries				
Typical backup times for 50 and 70% load*				
Evolution S	20/14 mn	14/9 mn	17/11 mn	15/10 mn
Evolution S + 1 EXB	105/60 mn	60/36 mn	85/55 mn	60/42 mn
Evolution S + 4 EXB	300/200 mn	180/115 mn	290/200 mn	210/135 mn
Battery management	Automatic weekly test (period adjustable), automatic recognition of external battery units => continuous maximisation of backup time + deep discharge protection			
Interfaces				
Communication ports	1 USB port + 1 RS232 serial port and relay contacts (USB and RS232 ports cannot be used simultaneously) + 1 mini terminal block for remote ON/OFF and Remote Power Off			
Communications card slots	1 slot for NMC Minislot card (included in Netpack versions) or NMC ModBus/JBus or MC Contacts/Serial			
Operating conditions, standards and approvals				
Operating temperature	0 to 40°C			
Noise Level	< 45 dBA	< 45 dBA	< 50 dBA	< 50 dBA
Performance - Safety - EMC	IEC/EN 62040-1-1 (Safety), IEC/EN 62040-2 EN 50091-2 class B (EMC), IEC/EN 62040-3 (Performance), IEC/EN 61000-4-2, 61000-4-3, 61000-4-4; 61000-4-5, 61000-4-6, 61000-4-8 (EMI)			
Approvals	CE, CB report, TÜV			
Dimensions W x D x H / Weight				
Dimensions	440 x 509 x 86.2 (2U) mm	440 x 509 x 86.2 (2U) mm	440 x 634 x 86.2 (RT2U) mm 440 x 484 x 130.7 (RT3U) mm	440 x 634 x 86.2 (RT2U) mm 440 x 484 x 130.7 (RT3U) mm
Weight of the Tower/Rack	24.3 kg	26.6 kg	33.8 kg	33.8 kg (RT2U) - 34.3 kg (RT3U)
Dimensions of EXB	See UPS			
Weight of the EXB	30.4 kg	30.4 kg	41.7 kg	41.7 kg
Customer Service & Support				
2 years warranty	Standard product exchange, including the battery			
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)			

* Runtimes are shown at 0.7 power factor. Backup times are approximate and may vary with equipment, configuration, battery age, temperature, etc.

Part Numbers	S 1250 RT2U	S 1750 RT2U	S 2500 RT2U Netpack*	S 3000 RT3U	S 3000 RT2U Netpack*
Convertible Tower/Rack	68 456	68 459	68 463	68 464	68 465
EXB Models	68 470	68 470	2U = 68 472 - 3U = 68 471	2U = 68 472 - 3U = 68 471	2U = 68 472 - 3U = 68 471

* NMC card included in Netpack versions.

Eaton EX
700/1000/1500/2200/3000 VA

Eaton EX 1500

Eaton EX Rack/Tower versatility

Ideal protection for:

- Servers, data storage and network equipment
- Telephony - VoIP
- Medical equipment - Industrial processes

Double conversion (on-line)

Maximum availability

- **Topology:** double conversion on-line UPS with automatic by-pass and power factor correction
- **Powershare:** the Eaton EX output sockets are individually controlled to provide load-shedding to maximise the backup time and provide remote reboot and sequential start-up as standard
- **Continuous power supply:** Hot swappable batteries. The HotSwap MBP (Maintenance By-Pass) module allows the UPS to be replaced without interrupting the power supply
- **Long backup times:** 1 to 4 EXB battery units can be added to the Eaton EX. The Eaton EX 3000XL has a built-in super charger for extra long backup times

Minimum total cost of ownership

- **Easy operation:** the LCD gives you access to a wide range of measurements and set-up menus
- **Remote supervision:** the Eaton software suite offers a wide range of communication option including: SNMP and HTML, ModBus/JBus and relay outputs

Total flexibility

Eaton EX has unmatched Flexibility.

- **Format:** EX 700 to 1500 are available in tower format or RT2U convertible rack/tower format (compatible with short-depth rack). EX 2200 & 3000 are available in RT2U format (optimised for rack mounting) or RT3U (for tower or short-depth racks)
- **Connections:** with FlexPDU and HotSwap MBP, the RT2U and RT3U models can be connected by sockets or terminal blocks.
  They can be installed as required, on the side or on top of the unit
- **Compatible with high power factor loads:** Eaton EX is rated for 0.9 power factor (700 VA/630 W, 1000 VA/900 W, 1500 VA/1350 W, 2200 VA/1980 W and 3000 VA/2700 W)
- **Communication:** the EX includes both serial and USB ports, plus remote On/Off connector and an extra slot for optional communication cards. The UPS comes with a complete Eaton software suite.

Eaton EX UPS

1 LCD Multilingual display
- 6 languages,
- displays measurements,
- displays alarms,
- access to control and set-up menus.

2 Panel for batteries replacement (Hot swappable)

Eaton EX RT

3 1 USB port + 1 serial port + remote ON/OFF and emergency stop inputs.

4 EXB battery unit connector.

5 EXB units recognised automatically.

6 8 IEC 10A sockets, including 4 Powershare programmable sockets and 1 IEC 16A socket.

7 Communication card slot.

8 Mountings for HotSwap MBP and FlexPDU.

TECHNICAL SPECIFICATIONS	700	1000 - 1000 RT2U	1500 - 1500 RT2U	2200	3000 - 3000 XL
Rating (VA/W)	700 VA / 630 W	1000 VA / 900 W (1)	1500 VA / 1350 W (1)	2200 VA / 1980 W	3000 VA / 2700 W (1)
Format	Mini tower	Mini tower or RT2U (tower/rack 2U)		RT2U (tower/rack 2U) and RT3U (tower/rack 3U)	
Electrical characteristics					
Architecture	On-line double conversion with automatic by-pass and power factor correction				
Input voltage and frequency ranges without using batteries	100/120/140/160 V(2) to 284V - 40 to 70 Hz			100/120/160/184 V(2) to 284V - 40 to 70 Hz	
Output voltage and frequency	230 V (adjustable to 200/208/220/240/250 V), 50/60 Hz auto-select or frequency converter mode (3)			230 V (adjustable to 200/208/220/240 V), 50/60 Hz auto-select or frequency converter mode	
Connections					
Input	1 IEC C14 (10A) socket			1 IEC C20 (16A) or terminal block on HotSwap MBP HW (Hard-Wired)	
Outputs	6 IEC C13 (10A) sockets			8 IEC C13 (10A) sockets + 1 IEC C19 (16A) socket	
Remotely controlled Powershare sockets	2 independent groups: 2 + 1 IEC C13 (10A) sockets			2 groups of 2 x IEC C13 (10A) on Eaton EX	
Additional outputs with HotSwap MBP FR/DIN/BS/IEC/HW	4 FR/Schuko sockets or 3 BS sockets or 6 IEC 10A sockets or terminal blocks (HW version)				
Additional outputs with FlexPDU FR/DIN/BS/IEC	8 FR/Schuko sockets or 6 BS sockets or 12 IEC 10A sockets				
Battery					
Typical backup times for 50 and 70% load (6) except for Eaton EX 3000 XL (5)					
EX	16 min / 10 min	18 min / 12 min	13 min / 9 min	17 min / 12 min	15 min / 10 min
EX + 1 EXB	/	75 min / 50 min	50 min / 35 min	85 min / 60 min	60 min / 40 min
EX + 4 EXB	/	250 min / 200 min	180 min / 120 min	285 min / 200 min	190 min / 150 min
Battery management	Automatic weekly test (period adjustable using LCD display or in software supplied), automatic recognition of external battery units => continuous maximisation of backup time + deep discharge protection				
Interfaces					
Indicators and display	3 LEDS + adjustable multilingual display: display of measurements, access to control and set-up menus				
Communication ports	1 USB port + 1 RS232 serial port and relay contacts (4) + 1 mini terminal block for remote ON/OFF and emergency stop				
Communications card slots	1 slot for NMC Minislot card (included in Netpack version) or NMC ModBus/JBus or MC Contacts/Serial				
Operating conditions, standards and approvals					
Operating temperature noise level	0°C to 40°C continuous, 45 dBA				
Performance - Safety - EMC	IEC/EN 62 040-3 (VFI-SS-113), IEC/EN 62 040-1-1, IEC/EN 60 950-1 (RD), IEC/EN 62 040-2 C1 Class				
Approvals	CE, TüV GS, CB report, cTüV-US			CE, TüV, CB Report, UL	CE, TüV, CB Report, UL
Dimensions (H x W x D) / Weight					
EX	242 x 153 x 440 mm / 12.5 kg	242 x 153 x 440 mm / 15 kg	242 x 153 x 490 mm / 18 kg	440 x 131 x 490 mm (7) / 30 kg (3000 XL = 18 kg)	
EX RT2U	/	86.5 x 438 x 483 mm / 18 kg	86.5 x 438 x 483 mm / 20.5 kg	86 x 440 x 640 mm / 31 kg	
EX EXB	/	242 x 153 x 440 mm / 21 kg		440 x 131 x 490 mm (7)	
EX EXB RT2U	/	86.5 x 438 x 483 mm / 24.5 kg		/	/
Customer Service & Support					
2 years warranty	Standard product exchange, including the battery				
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)				

1: Maximum rating with EXB battery units: Eaton EX 1000 = 800 W, Eaton EX 1500 =1200 W and Eaton EX 3000=2400W. **2**: Lower limits for <20%, <33%, <66%, >=66% of nominal power (VA). For active output power greater than 0.7 and 0.8 nominal rating, the lower limit is 180V and 190V respectively. **3**: Derated by 15% when used as a frequency converter. **4**: USB and RS232 serial ports cannot be used simultaneously. **5**: Except Eaton EX 3000 XL: UPS with high speed charger, without built-in batteries, for custom configurations: ask us for details. **6**: Runtimes are shown at 0.7 power factor. Backup times are approximate and may vary with equipment, configuration, battery age, temperature, etc. **7**: compatible with 600 mm deep rack

Part Numbers	700	1000	1500	2200	3000
EX	68 180	68 181	68 183	68 400	68 402 - XL: 68 404
EX RT2U (includes rack kit)	/	68 182	68 184	68 401	68 403
EX RT3U HotSwap. (includes rack kit + HotSwap MBP)	/	/	/	FR: 68406 DIN: 68407 BS: 68408 IEC: 68409 HW: 68410	FR: 68412 DIN: 68413 BS: 68414 IEC: 68415 HW: 68416
EX RT2U Netpack (includes rack kit and NMC card)		/	/	68 411	68 417
EX EXB	/	68 185	68 185	68 405	68 405
EX EXB (includes rack kit) RT2U	/	68 186	68 186	/	/
EX Rack Kit 2U/3U	/	/	/	68 441	68 441

Eaton MX
4/5/8/10/15/20 kVA

Eaton MX versatility

Eaton MX Frame

Advanced protection for:

- Departmental networks, servers and workstations

Double conversion (on-line)

High performance UPS upgradeable from 4 kVA to 20 kVA

Continuous power supply

- Two front access hot-swappables sub-modules (power and battery) for maintenance without load interruption
- Automatic battery test (test period can be set)
- Internal bypass built-in to supply the load even if the UPS fails
- Large input voltage and frequency ranges to avoid using the batteries unnecessarily

Total flexibility

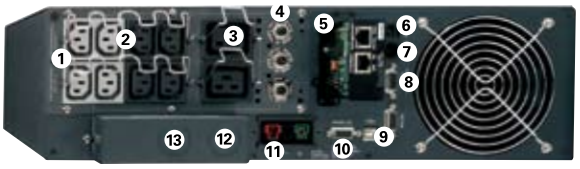
- Can be used as a free-standing tower unit or 19" rack-mounted: only 3U for Eaton MX 4000 and 5000, 16U for Eaton MX Frame
- LCD multilingual display with mimic and LEDs for rapid view of the UPS status, diagnostics and event log
- **Outputs:** IEC 10A and 16A outlet sockets and hardwired outputs.
- Built-in Powershare system for remote reboot of the equipment connected, sequential start-up or load shedding while operating from battery to maintain the power to critical loads
- Eaton MX Frame is compatible with three phase or single phase supplies
- **Backup time:** 10 mins up to 2 hours by adding 3U battery extension modules

Minimum total cost of ownership (TCO)

- More power with an output power factor of 0.9
- When the power supply needs to be upgraded, the Eaton MX 4000 and 5000 can be paralleled to provide 8 kVA or 10 kVA using the ModularEasy kit: without extra cost on the initial purchase
- Eaton MX Frame is a modular system with 5 kVA sub-modules paralleled to provide up to 20 kVA or 15 kVA with redundancy

Eaton MX UPS

1 8 IEC 10A sockets
2 Retention clips
3 2 IEC 16A sockets
4 Output circuit protection
5 1 minislot for NMC, Modbus/JBus or MC Contacts/Serial card
6 RJ11 remote power off



Eaton MX 4000/5000

7 RJ45 EXB battery module detection
8 DB 9 with 5 output contacts
9 DB 9 serial and USB ports
10 DB 15 for paralleling
11 EXB battery extension module power connector
12 Input
13 Output

TECHNICAL SPECIFICATIONS	4000	5000	MX Frame 15000	MX Frame 20000
Rating (kVA/kW)	4 kVA / 3.6 kW	5 kVA / 4.5 kW	15 kVA / 13.5 kW	20 kVA / 18 kW
Paralleling				
Maximum rating / redundancy (1)	8 kVA / 4 kVA + 4 kVA redundancy	10 kVA / 5 kVA + 5 kVA redundancy	15 kVA / 10 kVA + 5 kVA redundancy 5 kVA + 2 x 5 kVA redundancy	20 kVA / 15 kVA + 5 kVA redundancy 10 kVA + 2 x 5 kVA redundancy
Inputs				
Technology	VFI-SS-113, on-line double conversion with power factor correction, convection cooled static bypass switch			
Number of phases, input connections	L + N, terminals up to 6 mm²	L + N, terminals up to 6 mm²	L + N or 3P + N, terminals up to 35 mm², separate or common AC normal and AC bypass	
Nominal voltage	200/208/220/230/240/250 V	200/208/220/230/240/250 V	200/208/220/230/240/250 V (L + N) or 380/400/415 V (3P + N)	
Voltage range without using battery (2)	120 - 280 V	120 - 280 V	120 - 280 V (L + N), 250 - 465 V (3P + N)	
Input frequency range, THDI	40-70 Hz, < 7%			
Outputs				
Output connections (3)	Terminals + 8 IEC C13 (10A) + 2 IEC C19 (16A)		Terminals + 8 IEC C13 (10A) + 4 IEC C19 (16A)	
Remotely controlled Powershare sockets	2 groups (2 IEC C13 10A per group)			
Output voltage and frequency (4), THDU, efficiency (5)	200/208/230/240 /250 V, 50 / 60 Hz autoselect, frequency converter as standard, <2%, 97%			
Backup time (6)				
Eaton MX standard backup time	10 minutes	8 minutes	8 minutes	8 minutes
Eaton MX + EXB / MX + 2 EXB / MX + 3 EXB	45 / 80 / 120 minutes	35 / 60 / 95 minutes	35 min (3 EXB)/60 min (6 EXB) /90 min (9 EXB) (7)	35 min (4 EXB)/60 min (8 EXB) /90 min (12 EXB)
Communications				
Slots	1 slot (MX) or 2 slots (MX Frame) for Network Management Card, NMC ModBus/JBus card or MC Contacts/Serial card			
Ports	Remote Power off (RJ11), 5 output contacts (DB9), setup using Solution-Pac (8) , (USB and DB9-serial ports), EXB module detection (RJ45), paralleling (DB 15)			
Operating conditions, standards and approvals				
Performance, safety, EMC, surge protection	IEC/EN 62 040-3, IEC/EN 62 040-1-1, IEC/EN 62 040-2 class A (class B as option), 4 kV IEC 61 643, UL 1778 and CSA 22.2 (9)			
Operating temperature, noise, approvals, guarantee	0°C to 40°C continuous, 45 dbA (10), UL, TüV, GS mark, CB, C-Tick, CE, IEC 61 931, one year (11)			
Dimensions H x W x D / Weight				
Eaton MX standard backup tower	444.5 mm x 130.6 mm x 735 mm / 57 kg		Tower 690mm high (795mm casters) x444.5mm wide x735mm deep / 250 kg	
Eaton MX standard backup rack	3U x 444.5 mm wide compatible with 800-1000 mm deep rack		Rack 16U x 444.5 mm wide, compatible with 800-1000 mm deep rack	
Eaton MX EXB battery unit tower / rack	444.5 mm x 130.6 mm x 650 mm / 3U x 444.5 mm wide / 70 kg		Dimensions same as MX Frame / 194 kg for 15 kVA, 239 kg for 20 kVA	
Eaton MX ModularEasy, paralleling kit	Dimensions same as EXB battery unit / 10 kg		/	
Customer Service & Support				
1 year guarantee, including batteries.				
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)			

1: Eaton MXs can be paralleled using ModularEasy. **2**: At 70% load. 3: 4 IEC C13 (10A) 2 m long cables for use with retention clips (8 cables for use with Eaton MX Frame). **4**: Frequency conversion for non-paralleled units only. **5**: Economy mode, 91% in normal mode. **6**: At 70% nominal rating with power factor 0.7 typical values after 3 charge/discharge cycles, with 3-5 years old batteries. Weekly battery test without interrupting the load (daily or monthly if required). EXB compatible with 0.8 power factor loads. **7**: With Eaton MX Frame EXB (4 battery units). **8**: Solution-Pac CD-ROM supplied as standard. **9**: Applicable to US models. 10: 50 dbA above 5 kVA. **11**: Depending on the country, see www.eaton.com/powerquality.

Part Numbers	MX 4000	MX 5000	MX Frame 15000	MX Frame 20000
Eaton MX Tower or rack-mounting: standard backup time	68 501	68 504	68 513 (1)	68 514 (2)
Eaton MX Netpack: standard backup time + NMC + rack kit	68 502	68 505	68 513 (1)	68 514 (2)
Eaton MX EXB: battery extension module	68 515	68 515	add multiple MX EXB : 68 515	
Eaton MX ModularEasy: paralleling kit (2 Eaton MX)	68 520	68 520	/	/
Eaton MX / EXB Rack Kit: rail kit for 19" rack mounting	68 002	68 002	/	/
IEC 32 A kit , 2 X 2 m long cables: male to hardwired and female to hardwired	68 525	68 525	/	/
MX 1,8 m Battery extension cable	68 528	68 528	68 528	68 528
MX Battery / Power electronics sub-module	68 524 / 68 522	68 524 / 68 523	68 524 / 68 523	68 524 / 68 523
Eaton MX Frame empty chassis	/	/	68 526	68 526
Battery Integration System (up to 9 EXB)	/	/	68 527	68 527

1: (with rack kit, casters, NMC card) 68 513 = 68 526 (empty Eaton MX Frame) + 3 x 68 524 + 3 x 68 523.
2: (with rack kit, casters, NMC card) 68 514 = 68 526 (empty Eaton MX Frame) + 4 x 68 524 + 4 x 68 523.

Eaton EX RT

7/11 kVA single phase input / single phase output
5/7/11 kVA three phase input / single phase output

Eaton EX RT

Battery Integration system

Advanced protection for:

- Rack servers enclosures and industrial environment

Double conversion (on-line)

High performance UPS for single phase applications.

Maximum availability

- Hot swappable UPS and battery modules
- Internal bypass and maintenance bypass included as standard
- The UPS can be connected to two independent electrical sources (sources 1 and 2 can be common or separate)
- Large input voltage range without draining the battery: 230V + 20% to - 30% single phase and 400V + 15% to - 20% three phase
- Batteries tested automatically at regular intervals and protected against deep discharge
- N+1 redundancy supported by two single units

Wide choice of backup times

- From 10 minutes to 2 hours with battery modules or up to 8 hours using the CLA charger module
- Automatic recognition of battery modules and easy battery installation with battery integration system

Ergonomy

- Multilingual LCD display and LEDs for rapid view of the UPS status and the operating log
- Self diagnosis and fault messages

Can be integrated into even the most demanding environments:

Computer

- Tower / 6U Rack convertible
- Comprehensive range of Power Distribution Units for convenient power distribution within the rack

Industrial

- Compatible with all types of generator set
- Can be integrated into building management systems
- Steel casing
- Operating temperature up to 45°C
- Meets Marine vibration test requirements

Eaton EX RT UPS

1 Slot for Eaton minislot communication card
2 9-pin D output connector
3 RJ11 port for remote emergency power off
4 Connectors for automatic detection of battery module(s)
5 RS 232 communication port
6 Connector for EXB modules

7 Manual bypass for hot maintenance
8 Output connectors
9 Source switch 1
10 Source 1 connector
11 Source 2 connector
12 Battery circuit breaker

TECHNICAL SPECIFICATIONS	**5 kVA**	**7 kVA**	**11 kVA**
Active power kVA / kW	5 kVA / 4 kW (single phase input not available for 5 kVA)	7 kVA / 4.9 kW	11 kVA / 8 kW
Technology	On-line double conversion with PFC (Power Factor Correction) system (applicable to single phase models))		
Rated input voltage	200/208/220/230/240/250 V single phase 380/400/415V three phase		
Input voltage range	(- 30%; + 20%) 230 V; (- 20%, + 15%) 400 V		
Input, output frequency range	40-70 Hz, 50 / 60 HZ autoselection, frequency converter as a standard		
Output voltage / THDU	200/208/230/240 /250 V +/- 2%; THDU < 2%		
Overall efficiency	Normal mode 91%, eco mode 97%		
THDI	THDI < 5% (single phase input value)		
Crest factor / short circuit current	3:1 / 100 A	3:1 / 100 A	3:1 / 150 A
Overload capacity	>150% 500 ms; 150% 30 s; 125% 60 s; 110% 120 s		
Temperature operating	45°C for 8 Hrs (at nominal output power for 230 V or 400V input and 230V output), 40°C continuous		
Back-up times* at 70% load			
From 10 up to 15 minutes	Standard: 1 power mod. 3U + 1 battery mod. EXB 3U = 6U		
From 15 up to 20 minutes	Standard + 1 battery mod. EXB 3U = 9U		
From 40 up to 65 minutes	Standard + 2 battery mod. EXB 3U = 12U		
Connection			
Input /output	Terminal block for 13 mm^2 (stranded cable) or 10 mm^2 (solid cable)		
Communication			
Port type	6 voltage free contacts DB9 2 A 48 V DC, 1 RS 232, RJ11 for remote emergency power off		
Slot	1 slot for communication card		
Standards and certification			
Performance and safety	IEC 62040-1/IEC 60950/UL 1778 and CSA 22.2 (applicable to single phase models)		
EMC	IEC 62040-2; EN 50091-2; FCC class A (applicable to single phase models), EMC B level (option for single phase model)		
Certification	UL (applicable to single phase models)/TÜV, GS mark,CB, C-Tick,CE, IEC 68-2-6 (vibration tests Marine approval)		
Dimensions H x W x D / Weight (single phase input / three phase input)			
Eaton EX RT standard backup tower	444.5 x 261.2 x 700 mm 89.5 kg	444.5 x 261.2 x 700 mm 88.3 kg / 89.5 kg	444.5 x 261.2 x 700 mm 94.2 kg / 95.3 kg
Eaton EX RT standard backup Network Pack rack mounting	261.2 (6U) x 444.5 x 700 mm 97.3 kg	261.2 (6U) x 444.5 x 700 mm 96.1 kg / 97.3 kg	261.2 (6U) x 444.5 x 700 mm 102 kg / 103.1 kg
Eaton EX RT Power module	444.5x130.6x700/130.6 (3U)x444.5x700 mm 24.2 kg	444.5x130.6x700/130.6 (3U)x444.5x700 mm 23 kg / 24.2 kg	444.5x130.6x700/130.6 (3U)x444.5x700 mm 24.9 kg / 26 kg
Battery module Eaton EXB RT	444.5x130.6x650/130.6 (3U)x444.5x650 mm 64.5 kg	444.5x130.6x650/130.6 (3U)x444.5x650 mm 64.5 kg	444.5x130.6x650/130.6 (3U)x444.5x650 mm 68.5 kg
EX RT CLA module / EX RT Transformer	130.6 (3U) x 444.5 x 650 mm / 12 kg / 87 kg	130.6 (3U) x 444.5 x 650 mm / 12 kg / 87 kg	130.6 (3U) x 444.5 x 650 mm / 12 kg / 87 kg
Customer Service & Support			
1 year warranty, including battery	Free standard replacement for faulty units, including the batteries		
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)		

* (typical values after 3 discharge cycles, batteries 3-5 years, longer backup times available using the CLA or EXB module, ask for details)

Part Numbers	**EX RT 5**		**EX RT 7**		**EX RT 11**	
Input voltage	Single-phase	Three-phase	Single-phase	Three-phase	Single-phase	Three-phase
Eaton EX RT standard back-up time Tower	/	68 054	68 070	68 074	68 110	68 114
Network Pack Rack Format (1)	/	68 056	68 072	68 076	68 112	68 116
EXB RT battery module / EXB RT battery module with EPO built-in	/	68 078 / 68 079	68 078 / 68 079	68 078 / 68 079	68 118 / 68 119	68 118 / 68 119
Eaton EX RT Power module (for use with EXB or CLA module)	/	68 057	68 075	68 077	68 115	68 117
Rack kit for Eaton EX RT Power module / Eaton EXB RT and CLA	/	68 001 / 68 002	68 001 / 68 002	68 001 / 68 002	68 001 / 68 002	68 001 / 68 002
Eaton EX RT Transformer module	/	68 003	68 003	68 003	68 003	68 003
Eaton EX RT CLA module (2 to 8 hours)	/	68 004	68 004	68 004	68 004	68 004
EX RT Battery Integration System (2)	/	68 005	68 005	68 005	68 005	68 005
EMC B level filter module	/	/	68 008	/	68 008	/
EX RT PDU 19" rack format (3)	/	66 857	66 857	66 857	66 857	66 857
1.8 m battery connection cable (4)	/	68 006	68 006	68 006	68 006	68 006
UPS Control, remote UPS monitor display	/	66 080	66 080	66 080	66 080	66 080

1: the Network Pack version includes standard back-up time unit + Network Management Card + rack mounting kit. 2: trolley capacity 8 modules max, casters, adjustable feet. 3: 12 sockets 4 X IEC 16 A + 8 X IEC 10 A. 4: for non standard inter-module spacing.

Eaton STS 16

Eaton STS 16

Source transfer system

Power supply redundancy for single-connection circuit equipment.

With the Eaton STS 16, power from 2 independent sources can be supplied to servers and circuit equipment which only have one input power supply.

Redundancy

Only advanced servers are equipped with a dual electrical power supply. A majority of network devices and entry-level servers are single connection witch means that the only have one electrical power input. With the Eaton STS, every critical equipment can be connected to a redundant power supply.

Both sources (primary and secondary) are connected, in a very straightforward manner, to the STS in the base of the rack.

The Eaton STS then controls the redundancy of this electrical power supply.

Both sources (primary and secondary) are connected, in a very straightforward manner, to the STS in the base of the rack. The Eaton STS then controls the redundancy of this electrical power supply. If the primary source fails, transfer to the secondary source is automatic and instantaneous.

Simple and cost-effective

Considering its advanced design, the price of the Eaton STS is highly competitive compared with the 'dual power supply' options available from suppliers of computer equipment.

1U high, the unit can be installed easily within the rack. Five LEDs indicate the status of the sources and the Eaton STS.

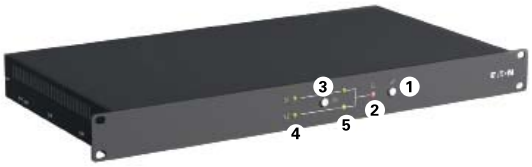
Reliability

Designed to provide redundancy as close as possible to the equipment, the Eaton STS deploys a 'break before make' technology based on relays:

- In the event of a short-circuit, the Eaton STS ensures that the fault cannot affect the alternative source, so that power continues to be supplied to the fault-free equipment
- Power is transferred without overlap of the sources in order to prevent any node of reliability
- Even if it suffers a fault, the Eaton STS continues to supply power to the equipment from the remaining available source

Eaton STS 16

1 Buzzer stop
2 Fault indicator
3 Select primary source



STS 16, front view

4 Status of the sources
- source OK
- source failed

5 Eaton STS output
- power supplied via the primary source
- supplied via the secondary source

1 Circuit breakers
2 Output
3 Input

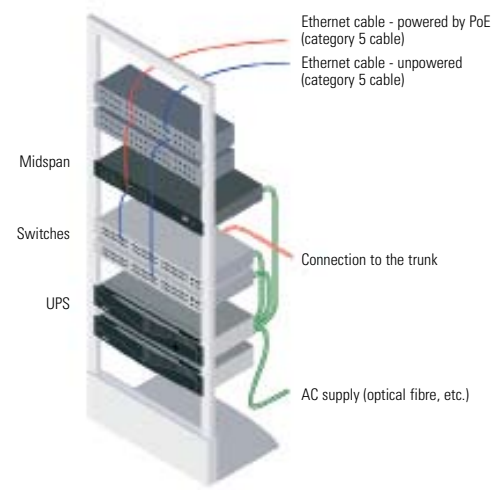
STS 16, rear view

TECHNICAL SPECIFICATIONS	STS 16
Nominal current	16 A
Compatibility	With all uninterruptible power supplies which use on-line double conversion technology
Input/output	
Voltage/input frequency	208/220/230/240 V +/- 12% ; 50/60 Hz
Output protection	1 thermal cutout per set of IEC 13 connectors
Performance	
Transfer time	6 ms
Technical standards	
Safety	EN 50091-1
EMC	EN 50022/B, IEC 1000-4
Marking	CE, TÜV/GS/UL
Connection	
Inputs	2 connecting cables with IEC C20 connector (16 A male connector)
Outputs	2 set of 3 IEC C13 connectors - 1 set of 1 IEC C19 connector
Dimensions and weight	
Dimensions H x W x D	430 x 43 x 250 mm
Weight	5 kg
Customer Service & Support	
2 years guarantee	Standard exchange of the product
Communications software and hardware	
A simple and complete mimic diagram	Displays the various status of the sources and the Eaton STS
An 'STS COM' communication port	Of the dry contact type indicates the status of the sources and the Eaton STS: primary source, source OK, fault within the Eaton STS

Part Numbers	STS 16
STS 16	66 028
Set of two 16 A connecting cables IEC female connector / USE-DIN male connector length 1.5 m	66 397
1 cable / IEC 10 A male to IEC 16 A female	66 029

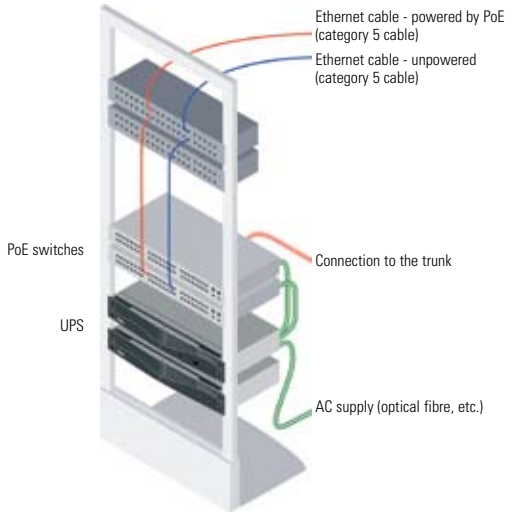
Eaton Midspan for VoIP

PoE Midspan solution
Network rack in a data/communications centre



The midspan unit can be installed between a standard Ethernet switch and the terminals without modifying the existing wiring. It is the ideal solution for updating equipment: quick and easy to install, improved continuity of service, cheaper than adding new PoE switches. This solution improves the availability of critical applications even further when used with remote supervision of the midspan and the UPS.

Ethernet PoE switch solution
Network rack in a data/communications centre



The PoE switches incorporate Power over Ethernet technology to provide a DC supply on the Ethernet ports. This solution is the most suitable when installing a new switch.

Eaton provides you with complete solutions for protecting your critical network applications.

Enterprise IT networks are undergoing major changes. One of these developments is Midspan for VoIP (Voice over IP) telephone technology which requires the same availability and voice quality as conventional telephones. In addition, Power over Ethernet (PoE) technology can be used to supply IP network equipment such as IP telephones and WiFi access points using the existing local network cables.

To ensure total availability, Eaton provides a solution that is:

- **Reliable:** a Power over Ethernet system protected by a UPS eliminates power cuts and ensures that the IP telephone network is always available
- **Economical:** power is supplied to the equipment connected to the IP network over the existing wiring
- **Simple to install:** "plug and play" installation

This technology has two advantages:

- It provides a more practical, cheaper supply for the equipment connected
- The supply to the whole installation can be protected centrally directly from the switch/distribution enclosure

Power over Ethernet can be installed in two ways:

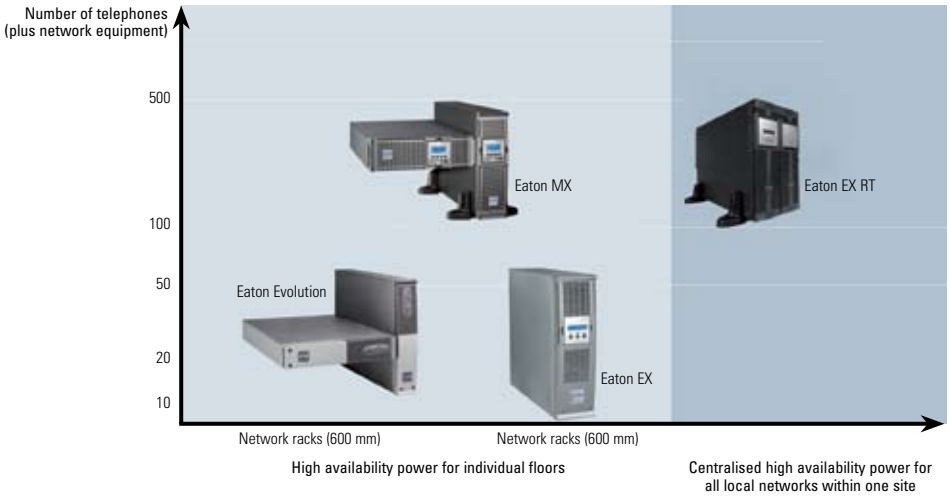
- Using a PoE midspan system
- Using PoE Ethernet switches.
  Both solutions comply with IEEE 802.3af which ensures interoperability between the various terminal suppliers

When supplied by a UPS, both solutions provide a level of availability and reliability equivalent to conventional switched telephone networks, but with all the advantages of IP telephony.

Unique: Crisis Management for PoE

UPS communicates with Midspan (NM2 version) via network and launches pre-defined actions. In case of a power failure the Midspan NM2 can shutdown non-priority PoE ports to increase the availability of critical ports.

Eaton Midspan for VoIP



TECHNICAL SPECIFICATIONS	Midspan 24	Midspan 24 NM2
Ethernet network	Category 5/5e/6	
Number of ports	24	
Data rate	10/100 Mbps	
PoE outputs		
Output voltage	48 VDC	
Rating per RJ45 port	15.4 W max.	
Total rating available	200 W	
Input supply		
Voltage/frequency	90 to 264 VAC / 47 to 63 Hz	
Current	4 A at 110 VAC / 2 A at 220 VAC	
Connectors	RJ45 screened	
On-unit monitoring	On front panel, by LED	
Indicators	System status - AC supply (green/orange LEDs) - Supply to RJ45 ports - (green/orange LEDs)	
Remote supervision	Midspan 24 NM2 + “Enterprise Power Manager” software	
Dimensions and weight		
Dimensions H x W x D	4.4 cm (1U) x 43.8 x 27.1 cm	
Weight	4.6 kg	
Operating conditions		
Temperature	0 to 40°C	
Relative humidity	90% maximum	
Altitude	- 300 to 3000 m	
Storage conditions		
Temperature	- 20 to 70° C	
Relative humidity	95% maximum	
Conformity	CE	
Electromagnetic compatibility	FCC part 15, class B with FTP cable EN 55022 (CISPR 22), class B with FTP cable EN 55024 (CISPR 24)	
Approvals	UL/cUL to EN60950 GS Mark to EN60950	
UPS		
High availability supply	On-Line Double Conversion technology is the most effective	
Long backup time	Between 1/2 hour and 4 hours backup time and more if required - Compatible with 600 mm rack enclosures up to 3 kVA - Easy to build into network enclosures	
Remote management	Easy to integrate into enterprise networks	
Midspan		
Universal	Compatible with more than 120 different DTEs - SNMP supervision - 100% IEEE 802.3af compatible	
Plug and play installation	No configuration required - Intelligent PoE terminal detection	
Compact	24 ports in 1U rack mounted unit	
Supervision		
Using Enterprise Power Manager (only for “Midspan 24 NM2”)	Auto-detection of midspans - Status and alarms from the main page with level of criticality - Direct access to the midspan page for more information	
Customer Service & Support		
2 years guarantee for the midspan		
Warranty+	Optional 3-years warranty (depending on the country please visit www.eaton.com/powerquality)	

Part Numbers

Without management	Midspan 24	66 891
With SNMP management	Midspan 24 NM	66 897
Warranty+	3 years extended guarantee	66 814

Eaton FlexPDU
Eaton HotSwap MBP

FlexPDU range

HotSwap MBP range

EX RT PDU

Power distribution

The no hassle solution for improving availability and adding flexibility for single phase UPSs.

Eaton FlexPDU

Having the right connectors just where you need them

- FlexPDUs (Power Distribution Units) are flexible mounting multiway socket blocks for easy connection of multiple loads either as free-standing or on rack-mounted UPSs
- FlexPDUs have a large number of sockets (8 French or Schuko sockets, 6 BS sockets or 12 IEC 10A sockets) which fit into a very compact unit (1U - 19")
- FlexPDUs are easy to implement into any type of installation: they can be rack mounted horizontally (1U) or vertically or directly onto all Eaton RT format (rack/tower) UPSs

Eaton HotSwap MBP

High availability for all UPSs up to 3 kVA.

- HotSwap MBP provides a maintenance bypass for all UPSs up to 3 kVA: UPSs can be hot swapped or upgraded without interrupting the power supply
- HotSwap MBP has an IEC16A input connector with retaining clip for compatibility with any UPS now and in the future from Eaton or any other supplier
- There is a range of HotSwap MBP units with different output connectors: French, Schuko, British and IEC sockets - terminal blocks on the HW (Hard-Wired) version
- HotSwap MBP units can be installed as required; at the back, side, top of the UPSs, or rack-mounted (horizontally (1.5U) or vertically)

Eaton EX RT PDU

Socket blocks for single phase UPSs with output terminal blocks.

- Eaton EX RT PDUs (Power Distribution Units) make it easy to connect equipment to single phase UPSs with output terminal blocks (Eaton EX RT, etc)
- Eaton EX RT PDUs provides 8 IEC 10A and 4 IEC 16A sockets on a 2U rack-mounting module
- All the outputs have retaining clips for high reliable connections

Eaton FlexPDU
Eaton HotSwap MBP

1 Flexible system for 19" rack-mounting or on Eaton RT UPSs
2 French/Schuko/British/IEC 10A sockets
3 IEC 16A output for cascading
4 IEC 16A input socket
5 Retaining clip

Eaton FlexPDU

Eaton HotSwap MBP

1 Flexible system for 19" rack-mounting or on Eaton RT UPSs
2 French/Schuko/British/IEC 10A sockets
3 IEC 16A output for cascading
4 IEC 16A input socket
5 Retaining clip
6 Rotary bypass switch
7 Colour coded input and output sockets for connecting the UPS
NB: hard-wired version available

TECHNICAL SPECIFICATIONS

		Eaton FlexPDU	Eaton HotSwap MBP	Eaton EX RT PDU
Current rating		16 A	16 A	52 A
Voltage rating		220-230-240-250 V		
Installation				
Format		1U (except BS) 19" rack-mounting with multi-position mountings	>1U 19" rack-mounting with multi-position mountings	2U 19" rack
Installation		19" rack horizontal or vertical mounting or on	Eaton RT UPSs	19" rack or wall mounting
Dimensions H x W x D		44 x 483 x 80 mm (BS: 52 x 483 x 120 mm)	52 x 483 x 120 mm	89 x 483 x 90 mm
Connection				
Inputs		1 IEC C20 (16A) connector and 2 cables (1 IEC 16A - 16A cable and 1 IEC 10A - 16A cable) for connection to any UPS	FR / DIN / BS / IEC models: 1 IEC C20 (16A) connector and 1 IEC 16A - 16A cable [1] HW (Hard-Wired): terminal block	Pre-wired 0.5 m cable for connection
Outputs	FR	8 French sockets + 1 IEC 16A socket	4 French sockets + 1 IEC 16A socket	/
	DIN	8 Schuko sockets + 1 IEC 16A socket	4 Schuko sockets + 1 IEC 16A socket	/
	BS	6 British sockets + 1 IEC 16A socket (with 2 circuit breakers)	3 British sockets + 1 IEC 16A socket (with 1 circuit breaker)	/
	IEC	12 IEC 10A sockets + 1 IEC 16A socket (with 2 circuit breakers)	6 IEC sockets + 1 IEC 16A sockets (with 1 circuit breaker)	8 IEC 10A sockets + 4 IEC 16A sockets (with 4 circuit breakers)
	HW	NA	Terminal block	/
Cascading		Yes, IEC 16A output socket (except HW)		
Retaining clips		Retaining clips on the IEC input and output sockets		
Operating conditions, standards and approvals				
Operating temperature		0°C to 45°C continuous		
Performance - Safety - EMC		FR models: IEC 60 884-1 - DIN models: DIN 49 440-1, DIN 49 440-5, DIN 49 440-6 - BS models: BS 1363 IEC models: IEC 60 320-1, EN 60 320-1 - HW models: IEC 60 950, EN 50 091		IEC/EN 60 320-1
Approvals		CE		

1: Use cable kits P/N 66 439 (French/Schuko) or 66 440 (British) for connecting a low power UPS <2.2 kVA (with IEC 10A outputs) - see below.

Part Numbers	Eaton FlexPDU	Eaton HotSwap MBP	Eaton EX RT PDU
FR	FlexPDU 8 FR: 68 435	HotSwap MBP 4 FR: 68 430	/
DIN	FlexPDU 8 DIN: 68 436	HotSwap MBP 4 DIN: 68 431	/
BS	FlexPDU 6 BS: 68 437	HotSwap MBP 3 BS: 68 432	/
IEC	FlexPDU 12 IEC: 68 438	HotSwap MBP 6 IEC: 68 433	Eaton EX RT PDU: 66 857
HW (Hard-Wired)	/	HotSwap MBP HW: 68 434	/
10A French/Schuko cable kit for HotSwap MBP	/	68 439	/
10A British cable kit for HotSwap MBP	/	68 440	/

Cables	Typical applications	Part numbers
2 IEC 10A (IEC C13 - IEC C14) cable kit	Extra output cables for UPSs	66 395
1 IEC 16A (IEC C20 - IEC C19) cable	For connecting to the IEC 16A output of a UPS	66 396
2 16A FR/Schuko cable kit	Connecting Eaton STS 16 to wall sockets	66 397
1 IEC 10A/16A (IEC C14 - IEC C19) cable	connecting Eaton STS to IEC 10A outlets	66 029
1 BS power cable	BS input power cable for 2.2 to 3 kVA UPSs	66 236
1 Swiss power cable	Swiss input power cable for 2.2 to 3 kVA UPSs	66 243

FR DIN/Schuko BS IEC C13 10 A IEC C19 16 A IEC C14 10 A IEC C20 16 A

Power Management Solutions

Improve equipment reliability and guarantee data integrity

Uninterruptible power supplies (UPSs) are used as backup systems in case of a power failure to prevent downtime. This type of protection is essential, but is only fully effective if the user is in control of the situation. With Eaton´s Power Management Solutions, the user is notified immediately of the status of the power quality and distribution system and can initiate automatic actions depending on the events, control the system remotely and manage it more effectively.

Benefits of using Eaton´s Power Management Solutions

- Real-time notification makes it easy to prevent or analyse possible failures immediately
- Helps to prevent data losses by enabling controlled shut-down of servers and PC operating systems
- View and analyse power events and measured values from recorded logs
- Save time and money with remote equipment control, which removes the need for additional site visits to restart equipment. It also enables prolonged runtime of essential equipment during power outages by allowing orderly remote shutdown of non-critical systems and processes.

Connection to IP networks

There are two ways of connecting a UPS to an IP network:

- adding a Web/SNMP card to the UPS, which becomes the interface to the network;
- using a nearby PC or server connected to the network as a proxy.

Network Management Card

Web/SNMP cards are recommended for central UPS systems that protect a complete network or for UPS systems providing back-up for critical equipment. When the card is fitted, the UPS has its own IP address with local intelligence to:

- serve web pages with reports, settings and alarms;
- plug in to SNMP-based network management systems such as Openview, IBM, Tivoli Netview and Computer Associates Unicenter;
- communicate with shutdown software installed on the servers to be protected.

Network Management Proxy

The Web/SNMP Proxy is a more economical solution for small UPS systems. It allows a UPS to be controlled over the network without adding to the basic cost of the UPS. The proxy software agent is installed on the system to which the UPS is connected via a USB or RS232 port. The Web/SNMP Proxy agent is used to manage a UPS remotely using a standard browser or network management system.

UPS system supervision

Supervision using a web browser

A Network Management Card enables UPS management using a standard web browser. The web interface provides details of all UPS parameters, measurements and settings, from any point in the network, by using the IP address of each UPS.

Supervision using a Network Management System (NMS)

SNMP protocol is the standard way of monitoring networked devices such as servers, switches, routers, disks and also UPSs, among other devices. Eaton Network Management Cards communicate with leading NMSs, for example HP OpenView, IBM Tivoli and CA Unicenter, using SNMP. Network administrators can use the same familiar tools and alarm management methods for UPS monitoring as for any other piece of IT equipment. Eaton provides SNMP MIBs (Management Information Base) which cover all the Eaton product-specific functions and data. They can be easily incorporated into NMSs or server management software.

Supervision using Intelligent Power Manager

Easy supervision of power protection and distribution

Intelligent Power® Manager is a software tool for managing networked UPS and PDU systems more easily and at lower cost than the major NMS platforms, and is a dedicated tool for power management functions. Administrators have an overall, consolidated view of the main operating parameters of all UPS systems. The web-based interface is intuitive and easy to use while also having high configurability and powerful features. Devices can be grouped by function or location and sorted according to parameters like status description, type and location. Device icons can be freely placed on background images such as maps or floor plans to aid identification.

Powerful alarm management

Intelligent Power Manager centralises alarm management. It can collate several events into a single message and deliver the message via email or SMS. Events and actions are stored in a log to help in analysing and mitigating power problems. The calendar view provides quick way to get an overview of event history.

Simple start up

Intelligent Power Manager is very easy to install – only a few clicks of the mouse are needed. Once running, the software discovers manageable power devices automatically and is operational in just a few seconds.

Informative views

Intelligent Power Manager features several view panels which summarise the operational status of a UPS. Users can choose the most relevant views for their needs. Complete information and control is only a click away, since there is a link to the web interface of each individual device.

Secure operation

Intelligent Power Manager uses Secure Sockets Layer (SSL) and several levels of password (administrator, user, and so on) for comprehensive security.

Scalable and cost efficient

A version of Intelligent Power Manager limited to 10 monitored devices is available free with each networked UPS. This version can also be used to evaluate the software for use with a more extensive network before purchasing the full version, which can be used to manage 100 or more power devices (UPSs and ePDUs).

Protection: shutting down servers

To ensure the integrity of the system and the data, a computer operating system must be shut down in the correct sequence. Dedicated shutdown software must be installed on the servers to execute various functions before the power supply is cut off. These functions include:

- executing a script to close applications running on the server;
- initiating a shutdown sequence or hibernation after a pre-set timeout or just before total battery discharge;
- rebooting the operating system automatically or manually when the mains power is restored;
- showing UPS alerts to the user.

The Network Shutdown Module can be used to carry out actions selectively for redundant UPS systems (servers with multiple power supplies, paralleled UPSs, etc.) to provide the highest availability and data integrity for the most critical data. Eaton Network Shutdown Modules operate equally well with Web/SNMP card and SNMP proxy systems and can easily be configured remotely via a browser.

Additional functions

Individual outlet socket control

Many systems from Eaton have individual output receptacles for turning groups of devices on and off. This feature is particularly useful for:

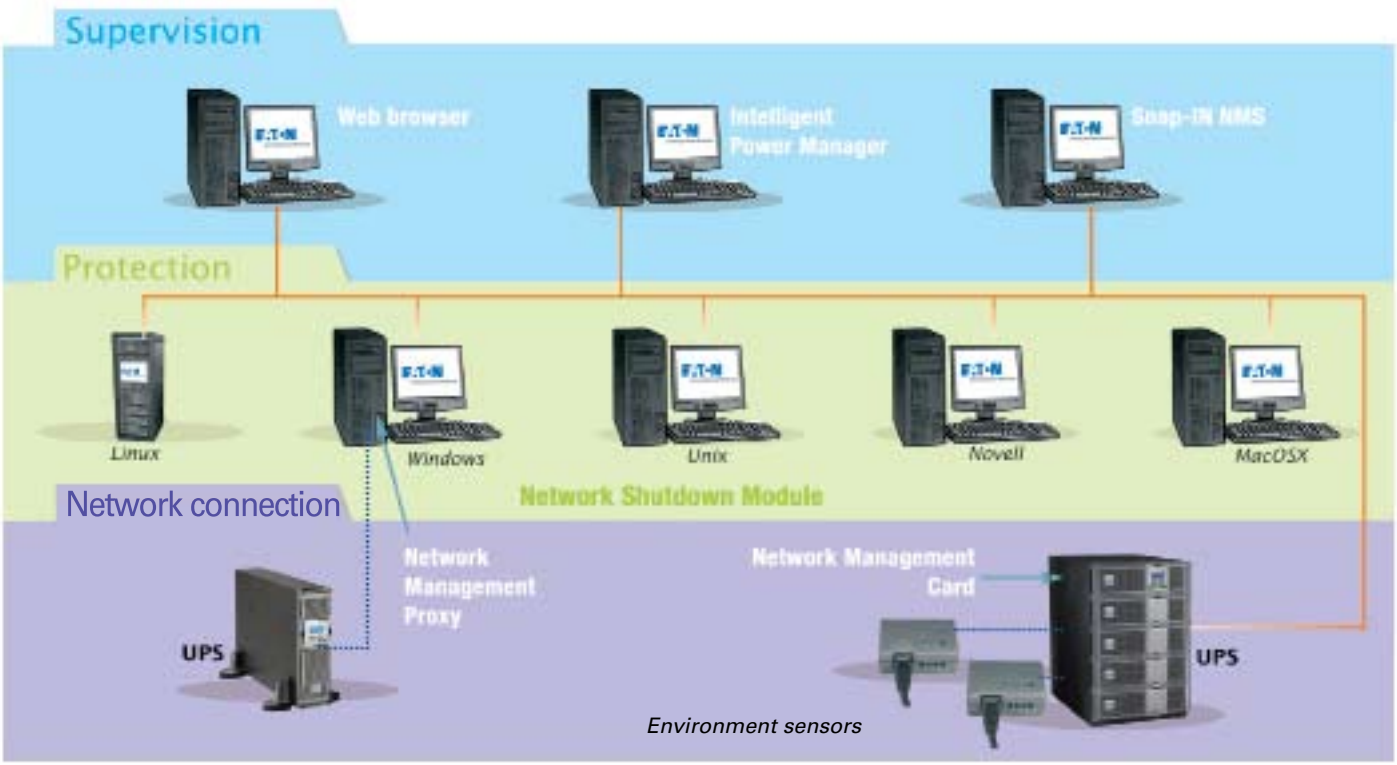
- shedding non-critical systems when there is a power cut;
- defining start-up sequences;
- individual management of several IT systems connected to a central UPS.

Remote on/off control

As an entire UPS or some of its outlets can be turned on and off remotely, it becomes a smart IT equipment switch. This function makes it possible, for example, to restart a locked-up hardware device from a remote site. Outlet control can be automatic or manually controlled locally or remotely.

Saving energy function

This function can be used to program shutdown and restart sequences for all UPS-protected devices. For example, workstations, printers, network devices and selected servers can be shut down and powered off outside of business hours.



Other options

Environment Sensor for Web/SNMP card

UPSs are often used in sensitive environments such as computer bays. Environmental conditions (temperature, humidity and opening and closing of doors) can also affect system availability. To address this, Eaton provides an environment sensor which incorporates a temperature sensor, humidity sensor and two switch inputs. It is designed to work with Web/SNMP cards and can be easily installed in various environments.

Individual computer applications

When the UPS is protecting only one device the point-to-point link (RS232 or USB) is used.

The operating system 'plug-and-play' solution

Some operating systems, such as Windows, have built-in power management functions for critical tasks. Eaton's Pulsar series UPS units are plug and play: when the UPS is connected to the system using a USB cable, the operating system detects the UPS automatically and installs the appropriate drivers.

Personal Solution-Pac

Additional control and settings to those built in the operating system can be provided by the Eaton Personal Solution-Pac. This system can be used to fine-tune shutdown parameters and provide additional capabilities such as controlling individual devices, programming responses to events and calculating true backup time in case of mains power loss.

Linux and Eaton uninterruptible power supplies

For several years Eaton has been actively supporting the trend towards open source software by providing the most advanced power management facilities. One example is the new Personal Solution Pac management system for Linux, which is based on the open source code to which Eaton has made a significant contribution.

Ordering information

Connection to IP networks	
Network Management Card (Web/SNMP)	66 102 NMC "Minislot" for Eaton Evolution and Eaton Evolution S, Eaton EX, Eaton MX, Eaton MX Frame, Eaton EX RT
SNMP Proxy	On the Solution-Pac 2 CD-ROM delivered with most UPSs or free from the web: www.eaton.com/powerquality
Protection	
Network Shutdown Module	On the Solution-Pac 2 CD-ROM delivered with most UPSs or free from the web: www.eaton.com/powerquality
Remote management and monitoring	
Snap-in application for HP/Compaq Insight Manager	Available free of charge from the web: www.eaton.com/powerquality
Management-Pac	66 923
Intelligent Power Manager	
Base license (up to 10 devices)	Available on the CD bundled with each UPS or free of charge from the web: www.eaton.com/powerquality
Silver license (up to 100 devices)	66 925
Gold license (unlimited number of devices)	66 926
Other options	
Environment sensor for Web/SNMP card	66 846

Powerware Hot Sync Technology

Paralleling UPS technology

The number one function of a UPS is to supply continuous conditioned, reliable electricity to a critical load. In case of a single unit, reliability can be increased by modular design, where redundant internal modules can take over each others' tasks, if one of the modules fails.

To further increase reliability, a true parallel configuration can be employed, where two or more units share the load. A failed unit is isolated while the remaining ones continue to support the critical load. Competitive UPS products on the market utilise centralised or distributed load-sharing technology with the master-slave principle, which introduces a risk of single point failure. The absolute reliability of a UPS system can be achieved with patented Powerware Hot Sync® parallel load-sharing technology. (Figure 1)

Hot Sync technology is designed for parallel redundant N+1 systems to satisfy 24/7 applications. It can also be used in parallel capacity systems to benefit from scalability for customers' ever-increasing load demands.

Hot Sync erases single point of failure, with an ability to synchronise and support critical loads independently of other UPS modules in the system. UPS modules can share loads without any communication wiring to the outside world.

User benefits

- Available for both single- and three -phase products to meet any mission-critical need up to 2.5 MVA (400V) systems
- Easy and modular parallel UPS system upgrade with additional capacity or redundancy
- Erases single point of failure

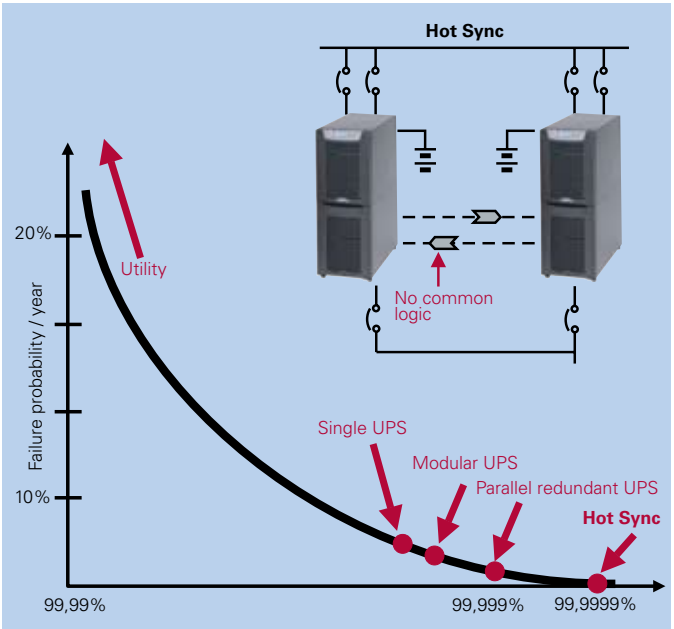


Figure 1. Power availability with various power supply configurations.

Powerware Hot Sync Technology

The secret here is a patented built-in digital signal processor (DSP) algorithm, running continuously in each unit. It drives the UPS outputs toward synchronisation and takes care of load sharing. If there is a common bypass available, it is used as valid synchronisation source for output. In the absence of a common bypass, the processor makes subtle adjustments to the inverter frequency on the basis of output power level measurement in order to find a common frequency and load balance among the units. There exists, as shown in Figure 2, a relationship between the power imbalance and the voltage phase difference.

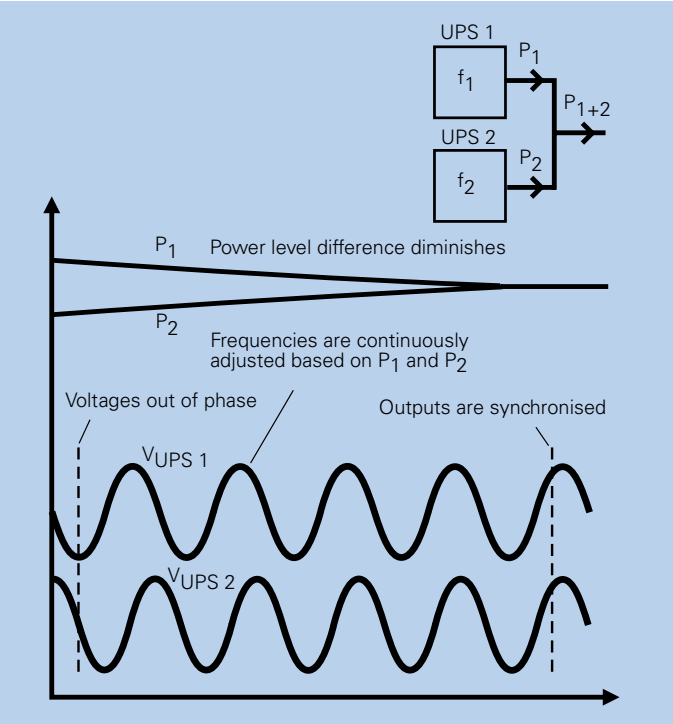


Figure 2. Well-balanced load share is achieved by adjusting output frequencies; thus the phase difference between parallel UPS output voltages is forced to zero.

The internal output impedance of a UPS is inherently mainly inductive, i.e. it looks as a small inductor in series with a stiff alternating voltage source. So, if there is any difference between the output voltage phases, it means that there is a power flow from unit to unit, resulting in unequal load sharing. In the Figure 3, two units have equal output voltages with phase angle displacement.

The voltage Vdiff and current Idiff between units exhibit a 90 degrees phase shift due to the inductive source impedance. The main voltage (V1 and V2) and the current between units Idiff are in phase resulting in active power flow.

The greater the phase shift, the heavier the power imbalance. If

we now introduce a controller to adjust the voltage phase by the output power, the phase difference can be forced to decrease. To adjust the phase difference to zero and to achieve accurate load sharing, we may integrate the measured phase thus arriving at power-controlled frequency. For the purpose of fast frequency locking and to enable synchronisation to external bypass, a term containing the power level change rate is added.

The flow diagram (Figure 4) shows how the load sharing proceeds.

The output power is monitored and the new frequency calculated at 3000 times per second. The measurements are also used for fast identification of a failed module. This feature is based on the computation of instantaneous output power. A negative value, even for a single instant, is an indication of an internal failure, e.g. a shorted inverter IGBT. In a response the UPS trips immediately off-line, causing minimal voltage disturbance. This feature is known as 'selective tripping'.

Hot Sync technology allows full maintenance to be performed one-by-one on redundant UPS modules without an external maintenance bypass switch. The critical load does not need to be disconnected from the conditioned power. Scheduled or unscheduled maintenance can be performed with the load supported continuously by the UPS-grade clean power.

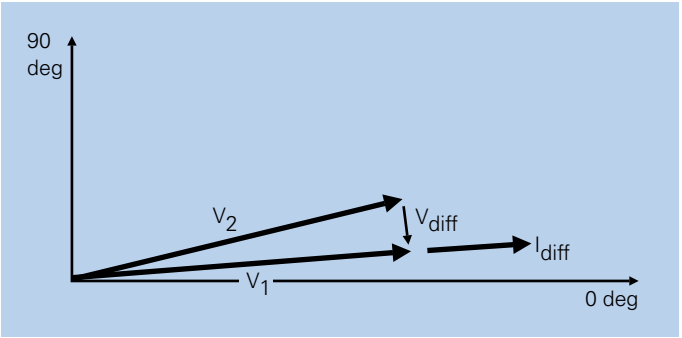


Figure 3. A phase displacement between parallel connected UPS voltages (V1 and V2) causes current flow between the units thus imbalances load share.

$Fn = F_{n-1} - K1(Pn) - K2(\Delta Pn)$

Where:

Fn = frequency

F_{n-1} = previous frequency

Pn = power to load

K1 = frequency reduction factor

K2 = power change rate factor

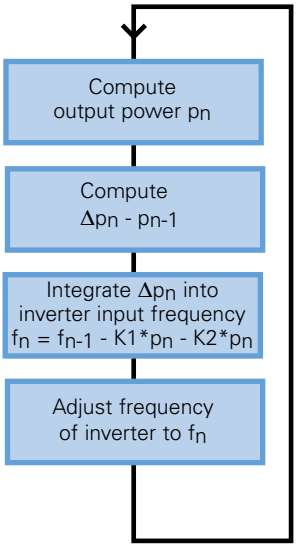


Figure 4. With HotSync algorithm, inverter phase angel is adjusted by output power and its change rate.

Accurate, equal load share is the number one characteristic to determine the integral quality and reliability of the parallel UPS system providing redundancy or increased capacity. With HotSync technology this is achieved without need for additional communications line between UPSs thus no single point of failure is added when introducing parallel modules to a system. From operational and also economical viewpoint, the achieved "close to perfect" reliability returns clear savings in the long run as every downtime incident is costly and might lead to unpredictable consequences.

ABM Technology

User benefits

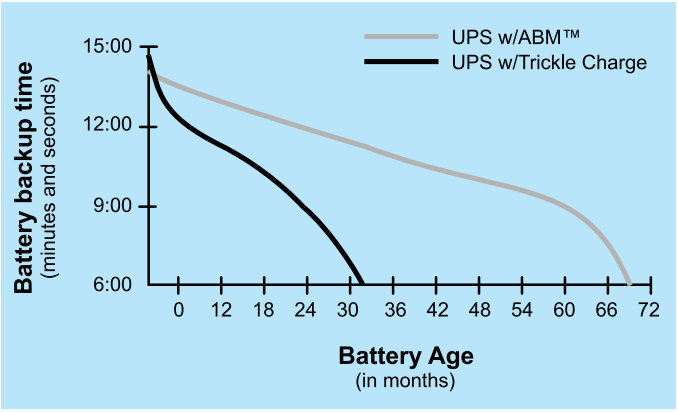
- Predictive and automatic diagnostics of battery health
- Significant extension of battery life compared to traditional charging method
- Optimisation of battery recharging time with dual mode charging method
- Automatic battery charge voltage compensation within 0 to +50°C temperature range

Superior battery management

Battery service life is a major contributor to UPS reliability. Since batteries are electrochemical devices, their performance gradually decreases over time. Premature wear-out means higher costs in terms of replacement labour and shorter service cycle. A worn battery entails a risk of unexpected load loss. In normal UPS operation, backup power is needed only occasionally and the battery 'wearing' rate depends strongly on how the full charge is being maintained. Excess charging is detrimental under any operating circumstances.

Significant extension of battery life

Eaton has created ABM® technology to extend the life of valve-regulated lead-acid batteries by applying sophisticated logic to the charging regime. Using the traditional trickle charge method, batteries become subject to electrode corrosion and electrolyte dry-out, especially in standby service use due to continuous float charging. ABM is essentially an addition of intelligence to the charging routine by preventing unnecessary charging, thus significantly retarding wear-out. ABM provides an additional feature for monitoring battery condition and advance warning about the end of battery life upon detection of a weak battery. It also optimises the recharge time, which is advantageous when there may be consecutive power outages within a short period. ABM has been used for over 15 years in our UPSs ranging from 1 to 160 kVA and is now applied in UPSs up to 1100 kVA.

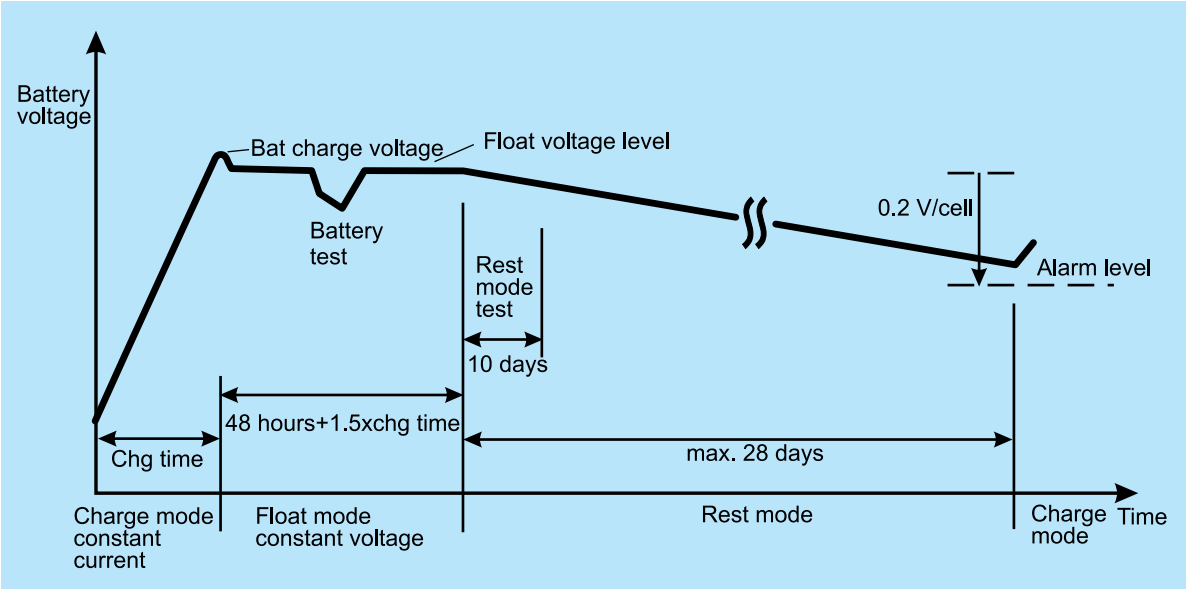


ABM technology significantly increases battery service life.

ABM Technology

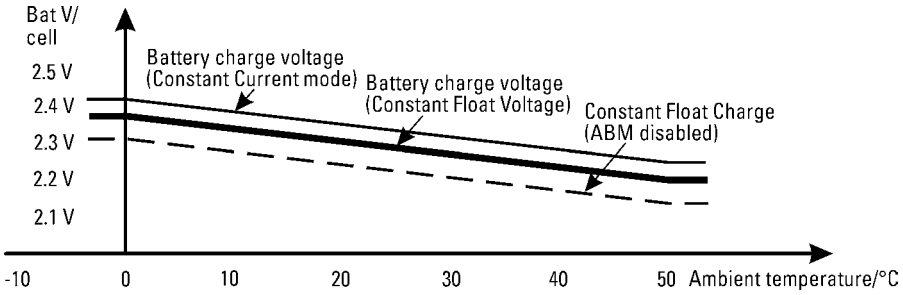
ABM cycle and operation – how does it work?

The basic idea of ABM is to leave a fully charged battery in rest mode for most of the time, and then apply charge current only at certain intervals. Initially, in order to charge up a fully or partly discharged battery, the charger starts at a constant current appropriate for the battery type used. When the battery voltage reaches a set level, the operation is changed to float mode using a constant but lower voltage, thus providing an optimum recharge time. The battery is kept at this voltage for 24 hours until it comes to the first test point. This takes approximately one minute, and during this period voltage drop measurements are taken while loading the battery, giving an indication of battery condition. The float charging is continued for an additional 24 hours, plus a period equal to 1.5 times the constant current charging time, before the rest mode is initiated. At this point, charging is discontinued for a maximum of 28 days – as if the batteries were disconnected. During the first 10 days the battery voltage is continuously monitored, and if it drops below 2.1 V/cell, the ABM restarts in charge mode and the user gets a notification of improper battery operation. If it drops below this limit after the 10-day period, charging is resumed without an alarm being raised. In short, the algorithm uses three charging stages in its operation. Thus, the batteries experience much less stress than in the case of traditional charging. A typical battery charging cycle without power interruptions is shown in the graph below.



Battery voltage during one ABM charging cycle.

For convenience, the user has the facility to disable the ABM and instead select continuous 'constant voltage' charging whereby the charger uses a constant float voltage. 'ABM enabled' is the default setting. The charger voltage levels are (by default setting) programmed to be dependent on an internal temperature sensor measurement, thus providing further enhancement to battery health. The external batteries can be also provided with temperature dependent charger voltage. For this purpose a Web/SNMP card with Environmental Monitoring Probe (EMP) is required.



Temperature compensated charger between ±0°C...+50°C internal/ external measurements.

Optional Web/SNMP card with EMP probe for temperature measurement of an external battery cabinet or rack.

Eaton 9155 and 9355 UPS

8 - 15 kVA

Advanced power protection for:

- Banking
- Small server and computer rooms
- Healthcare
- Network communications
- Security systems
- Automation systems

Double conversion UPS

Premium power performance

- Double conversion topology provides the highest level of protection available by isolating the output power from all input anomalies.
- With a transformer-free design and sophisticated sensing and control circuitry the 9155/9355 delivers an efficiency of up to 92%.
- Active power factor correction (PFC) provides unbeatable 0,99 input power factor and less than 4,5% ITHD, thus eliminating interference with other critical equipment in the same electrical network and enhancing compatibility with generators.
- With 0.9 output power factor, UPS is optimized to protect modern IT equipment without need to oversize.

True reliability

- HotSync technology enables paralleling of two or more UPS modules to increase availability or add capacity. The technology enables load sharing without any communication line, thus eliminating single point of failure.
- ABM technology charges batteries only when necessary, reducing batteries corrosion and prolonging batteries service life by up to 50%.
- Internal batteries in all standard configurations provide an extended runtime with the smallest footprint.

Extensive configurability

- Further runtime extension is possible with external battery cabinets.
- A multilingual graphical LCD display makes possible to monitor the UPS status easily.
- The 9155/9355 can also be integrated into network management, industrial automation and building management systems.
- Bundled Eaton Software Suite provides an orderly network shutdown in an event of extended power outage.

Cost savings and sustainability

- The 9155/9355 features high up to 92% efficiency, thus reducing utility costs, extending battery runtimes and producing cooler operating conditions.
- Compact space efficient tower design offers smaller footprint enabling easy data centre space-planning and preserving valuable raised-floor real estate.
- Included internal batteries eliminate the need for costly and space-consuming external battery cabinets.
- A single technical platform used in Eaton´s three-phase UPS products guarantee easy upgrades and similarity in service, thus lowering total cost of ownership.
- A range of service agreement options can be easily customized for customers' needs and budget.
- Eaton uses sustainable materials and highly efficient manufacturing technology, thus generating dramatic savings in carbon footprint as compared to competitive UPS systems.

Eaton 9155/9355 UPS 8-15 kVA

TECHNICAL SPECIFICATIONS

UPS output power rating (0,9 p.f.)				
kVA	8	10	12	15
kW	7,2	9	10,8	13,5

General	
Efficiency in double conversion mode (full load)	92%
Efficiency in double conversion mode (half load)	90%
Efficiency in high efficiency mode	up to 98%
Distributed parallelling with Hot Sync technology	4
Field upgradeable	yes
Inverter/rectifier topology	transformer-free IGBT with PWM
Audible noise	<50 dB
Altitude (max)	1000 m without derating (max 2000 m)

Input	
Input wiring	1 ph or 3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Input voltage range	±20% from nominal at 100% load, 50%, +20% from nominal at 50% load
Input frequency range	45-65 Hz
Input power factor	0,99
Input ITHD	less than 4,5%
Soft start capability	Yes
Internal backfeed protection	Yes

Output	
Output wiring	1 ph or 3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Output UTHD	<3% (100% linear load); <5% (standard non linear load)
Output power factor	0,9 (e.g. 9 kW at 10 kVA)
Permitted load power factor	0,7 lagging - 0,8 leading
Overload on inverter	10 min 100-110%; 1 min 110-125%; 5 sec 125-150%; 300 ms >150%
Overload when bypass available	60 min 100-110%, 10 min 110-125%; 1 min >125-150%

Battery	
Type	Maintenance free VRLA batteries, NiCD
Charging method	ABM technology or Float
Temperature compensation	Optional
Battery nominal voltage (lead-acid)	384 V (32x12 V, 192 cells)
Charging current / Model	Default 3 A *Max 30 A

*Limited by maximum UPS input current rating

Accessories	
	Isolation transformer, long-life batteries, external battery cabinets, UPS Center (input, bypass, distribution), X-Slot connectivity (Web/SNMP, ModBus/Jbus, Relay, Hot Sync, ViewUPS-X remote display), Hot Sync parallel tie cabinet, integrated manual bypass, external maintenance bypass switch

Communications	
X-Slot	2 communication bays
Serial ports	1 available
Relay inputs/outputs	2/1 programmable

Compliance with standards	
Safety (CB certified)	IEC 62040-1, IEC 60950-1
EMC	IEC 62040-2
Performance	IEC 62040-3

Stand-alone UPS with 1-phase input

Part number	Description	Rating	Back-up (pf. 0.7)	Dimensions (HxWxD)	Weight
1022532	9155-8-S-10-32x7Ah	8 kVA / 7.2 kW	10 min	817x305x702 mm	155 kg
1022533	9155-8-S-15-32x9Ah	8 kVA / 7.2 kW	15 min	817x305x702 mm	160 kg
1022534	9155-8-S-28-64x7Ah	8 kVA / 7.2 kW	28 min	1214x305x702 mm	250 kg
1022535	9155-8-S-33-64x9Ah	8 kVA / 7.2 kW	33 min	1214x305x702 mm	275 kg
1022536	9155-10-S-10-32x9Ah	10 kVA / 9 kW	10 min	817x305x702 mm	160 kg
1022537	9155-10-S-20-64x7Ah	10 kVA / 9 kW	20 min	1214x305x702 mm	250 kg
1022538	9155-10-S-25-64x9Ah	10 kVA / 9 kW	25 min	1214x305x702 mm	275 kg

Stand-alone UPS with 3-phase input

Part number 9155/9355	Description	Rating	Back-up (pf. 0.7)	Dimensions (HxWxD)	Weight
1022480	9155-8-N-10-32x7Ah	8 kVA / 7.2 kW	10 min	817x305x702 mm	155 kg
1022481/1023411	9155/9355-8-N-15-32x9Ah	8 kVA / 7.2 kW	15 min	817x305x702 mm	160 kg
1022482	9155-8-N-28-64x7Ah	8 kVA / 7.2 kW	28 min	1214x305x702 mm	250 kg
1022483/1023412	9155/9355-8-N-33-64x9Ah	8 kVA / 7.2 kW	33 min	1214x305x702 mm	275 kg
1022484/1023413	9155/9355-10-N-10-32x9Ah	10 kVA / 9 kW	10 min	817x305x702 mm	160 kg
1022485	9155-10-N-20-64x7Ah	10 kVA / 9 kW	20 min	1214x305x702 mm	250 kg
1022486/1023414	9155/9355-10-N-25-64x9Ah	10 kVA / 9 kW	25 min	1214x305x702 mm	275 kg
1022487/1023415	9155/9355-12-N-8-32x9Ah	12 kVA / 10.8 kW	8 min	817x305x702 mm	160 kg
1022488	9155-12-N-15-64x7Ah	12 kVA / 10.8 kW	15 min	1214x305x702 mm	250 kg
1022489/1023416	9155/9355-12-N-20-64x9Ah	12 kVA / 10.8 kW	20 min	1214x305x702 mm	275 kg
1022490/1023417	9155/9355-15-N-5-32x9Ah	15 kVA / 13.5 kW	5 min	817x305x702 mm	160 kg
1022491	9155-15-N-10-64x7Ah	15 kVA / 13.5 kW	10 min	1214x305x702 mm	250 kg
1022492/1023418	9155/9355-15-N-15-64x9Ah	15 kVA / 13.5 kW	15 min	1214x305x702 mm	275 kg

External battery cabinets

Part number	Description	Rating	Back-up (pf. 0.7)	Dimensions (HxWxD)	Weight
1022561	9X55-BAT5-64x7Ah	2x32x7 Ah	Check technical specifications	817x305x699 mm	195 kg
1022562	9X55-BAT5-96x7Ah	3x32x7 Ah		1214x305x699 mm	310 kg

Eaton 9355 UPS

20 - 40 kVA

Advanced power protection for:

- Financial services
- Medium size servers and computers
- ICT
- Critical building infrastructure
- Industrial applications

Double conversion UPS

Premium power performance

- Double conversion topology provides the highest level of protection available by isolating the output power from all input anomalies.
- With a transformer-free design and sophisticated sensing and control circuitry the 9355 delivers an efficiency of up to 93%.
- Active power factor correction (PFC) provides unbeatable 0,99 input power factor and less than 4,5% input ITHD, thus enhancing compatibility with generators and eliminating interference with other critical equipment in the same network.
- The UPS enables optimal power protection for modern 0,9 p.f. rated IT equipment without the need to oversize.
- The 9355 design is also available with 1-phase output (9155) at 20-30kVA power ratings.

True reliability

- HotSync technology makes possible to parallel two or more UPSs to increase availability or add capacity. The technology enables load sharing without any communication line, thus eliminating single point of failure.
- ABM technology charges batteries only when necessary, preventing batteries corrosion and prolonging batteries service life by up to 50%.
- Internal batteries in all standard configurations support more runtime than comparable UPS.

Extensive configurability

- Configurable and multilingual LCD control panel with back light and graphical mimic screen monitors the UPS status easily.
- Connectivity options guarantee a smooth integration with various application systems requirements.
- Bundled with Eaton Software Suite the 9355 provides an orderly network shutdown in an event of extended power outage. If required, the 9355 can also be integrated to network management, industrial automation and building management systems.

Cost savings and sustainability

- The 9355 features high up to 93% efficiency, thus reducing utility costs, extending battery runtimes and producing cooler operating conditions.
- Compact space efficient tower design offers smaller footprint enabling easy data centre space-planning and preserving valuable raised-floor real estate.
- Internal batteries often eliminate the need for costly and space-consuming external battery cabinets.
- A single technical platform used in Eaton´s three-phase products guarantee easy upgrades and similarity in service, thus lowering total cost of ownership.
- A range of service agreement options can be easily customized for customers needs and budget.
- Eaton uses sustainable materials and highly efficient manufacturing technology, thus generating dramatic savings in carbon footprint as compared to competitive UPS systems.

Eaton 9355 UPS 20 - 40 kVA

TECHNICAL SPECIFICATIONS

UPS output power rating (0,9 p.f.)			
kVA	20	30	40
kW	18	27	36

General	
Efficiency in double conversion mode (full load)	93%
Efficiency in double conversion mode (half load)	91%
Distributed parallelling with Hot Sync technology	4
Field upgradeable	yes
Inverter/rectifier topology	transformer-free IGBT with PWM
Audible noise	<50 dB
Altitude (max)	1000 m without derating (max 2000 m)

Input	
Input wiring	1 ph or 3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Input voltage range	±20% from nominal at 100% load, 50%, +20% from nominal at 50% load
Input frequency range	45-65 Hz
Input power factor	0,99
Input ITHD	less than 4,5%
Soft start capability	Yes
Internal backfeed protection	Yes

Output	
Output wiring	1 ph or 3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Output UTHD	<3% (100% linear load); <5% (standard non linear load)
Output power factor	0,9 (e.g. 27 kW at 30 kVA)
Permitted load power factor	0,7 lagging - 0,8 leading
Overload on inverter	10 min 100-110%; 1 min 110-125%; 5 sec 125-150%; 300 ms >150%
Overload when bypass available	60 min 100-110%, 10 min 110-125%; 1 min >125-150%

Battery	
Type	Maintenance free VRLA batteries, NiCD
Charging method	ABM technology or Float
Temperature compensation	Optional
Battery nominal voltage (lead-acid)	432 V (36x12 V, 216 cells)
Charging current / Model	Default 3 A *Max 60 A

*Limited by maximum UPS input current rating

Accessories	
	Isolation transformer, long-life batteries, external battery cabinets, X-Slot connectivity (Web/SNMP, ModBus/Jbus, Relay, Hot Sync, ViewUPS-X remote display), Hot Sync parallel tie cabinet, integrated manual bypass, external maintenance bypass switch

Communications	
X-Slot	2 communication bays
Serial ports	1 available
Relay inputs/outputs	2/1 programmable

Compliance with standards	
Safety (CB certified)	IEC 62040-1, IEC 60950-1
EMC	IEC 62040-2
Performance	IEC 62040-3

Standard UPS with 3-phase input

Part number 9355	Description	Rating	Runtime (pf 0.7)	Dimensions (HxWxD)	Weight
1025061/1026598	9355/9155-20-N-5-1x9Ah-MBS	20 kVA / 18 kW	5 min	1684x494x762 mm	300 kg
1025062/1026599	9355/9155-20-N-13-2x9Ah-MBS	20 kVA / 18 kW	13 min	1684x494x762 mm	400 kg
1025063/1026600	9355/9155-20-N-22-3x9Ah-MBS	20 kVA / 18 kW	22 min	1684x494x762 mm	500 kg
1025064/1026601	9355/9155-20-N-31-4x9Ah-MBS	20 kVA / 18 kW	31 min	1684x494x762 mm	600 kg
1025065/1026602	9355/9155-30-N-7-2x9Ah-MBS	30 kVA / 27 kW	7 min	1684x494x762 mm	400 kg
1025066/1026603	9355/9155-30-N-13-3x9Ah-MBS	30 kVA / 27 kW	12 min	1684x494x762 mm	500 kg
1025067/1026604	9355/9155-30-N-20-4x9Ah-MBS	30 kVA / 27 kW	20 min	1684x494x762 mm	600 kg
1025795	9355-40-N-8-3x9Ah-MBS	40 kVA / 36 kW	8 min	1684x494x762 mm	517 kg
1025796	9355-40-N-12-4x9Ah-MBS	40 kVA / 36 kW	12 min	1684x494x762 mm	617 kg

External battery cabinets 9155/9355

Part number	Description	Rating	Runtime	Dimensions (HxWxD)	Weight
1025169	9355-BAT-1x24Ah (30 kVA)	1x36x24 Ah	See page 31	1684x494x758 mm	510 kg
1025170	9355-BAT-2x24Ah (30 kVA)	2x36x24 Ah	See page 31	1684x494x758 mm	870 kg

9355 20-40 kVA runtimes

Runtimes for UPS with internal batteries ...p.f. 0.7 (typical IT server/computer load)

Battery	Qty	5	10	15	20	25	30	35	40	kVA
7 Ah 12 V	1 x 36	24	8	5	-	-	-	-	-	min
9 Ah 12 V	1 x 36	30	12	7	5	-	-	-	-	min
7 Ah 12 V	2 x 36	60	24	14	10	6	-	-	-	min
9 Ah 12 V	2 x 36	70	28	18	13	10	7	5	-	min
7 Ah 12 V	3 x 36	103	41	26	17	12	10	7	5	min
9 Ah 12 V	3 x 36	115	46	31	22	16	13	10	8	min
7 Ah 12 V	4 x 36	152	55	40	26	18	15	11	9	min
9 Ah 12 V	4 x 36	158	63	42	31	23	20	15	12	min

Eaton 9390 UPS

40 - 160 kVA

Advanced power protection for:

- Data centers
- Financial services
- Building management
- Telecommunications
- Industrial automation equipment
- Healthcare

Double conversion UPS

Premium power performance

- Double conversion provides the highest level of protection available by isolating the output power from all input anomalies.
- With a transformer-free design and sophisticated sensing and control circuitry the 9390 UPS delivers an efficiency of up to 94%.
- Active power factor correction (PFC) provides unbeatable 0,99 input power factor and less than 4,5 percent ITHD, thus eliminating interference with other critical equipment in the same network and enhancing compatibility with generators.
- The UPS is optimized for protecting modern 0,9 p.f. rated IT equipment without the need to oversize.

True reliability

- HotSync technology makes possible to parallel up to four UPSs to increase availability or add capacity. The technology enables load sharing without any communication line, thus eliminating single point of failure.
- ABM technology charges batteries only when necessary, preventing batteries corrosion and prolonging batteries service life by up to 50%.
- Increased overall reliability of the UPS due to the high level of efficiency.

Extensive configurability

- The 9390 offers small footprint compared to competitive UPS offerings. Cabling can enter the UPS from either the top or bottom of the cabinet to provide easier and flexible installation.
- A multilingual graphical LCD display makes possible to monitor the UPS status easily.
- Wide software and connectivity options provide monitoring, management and shutdown capabilities over the network.
- Connectivity options are available to suit nearly any communication requirements, from standard serial communications to secure remote monitoring over the Web.

Cost savings and sustainability

- High level of system efficiency leads to utility cost saving, extension of battery run times and cooler operating conditions within the UPS, which extends the life of components.
- As the compact 9390 can be installed against back and side walls, customers have more location options, installation is faster and easier, deployment costs are lower and more valuable data centre space can we saved for future needs.
- A single technical platform used in Eaton´s three-phase UPS products guarantee easy upgrades, similarity or service trainings and documentation, thus lowering total cost of ownership.
- A range of service agreement options can be easily customized for customers needs and budget.
- Eaton uses sustainable materials and highly efficient manufacturing technology, thus generating dramatic savings in carbon footprint as compared to competitive UPS systems.

Eaton 9390 UPS 40-160 kVA

TECHNICAL SPECIFICATIONS

UPS output power rating (0,9 p.f.)						
kVA	40	60	80	100	120	160
kW	36	54	72	90	108	144

General	
Efficiency in double conversion mode (full load)	94%
Efficiency in double conversion mode (half load)	92,5%
Efficiency in Energy Saver System (ESS)	up to 99%
Distributed parallelling with Hot Sync technology	6
Field upgradeable	yes
Inverter/rectifier topology	transformer-free IGBT with PWM
Audible noise	<65 dB
Altitude (max)	1000 m without derating (max 2000 m)

Input	
Input wiring	3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Input voltage range	±15, +20% from nominal at 100% load, -30%, +20% from nominal at 50% load
Input frequency range	45-65 Hz
Input power factor	0,99
Input ITHD	less than 4,5%
Soft start capability	Yes
Internal backfeed protection	Yes

Output	
Output wiring	3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Output UTHD	<3% (100% linear load); <5% (standard non linear load)
Output power factor	0,9 (e.g. 72 kW at 80 kVA)
Permitted load power factor	0,7 lagging - 0,8 leading
Overload on inverter	10 min 100-110%; 30 sec 110-125%; 10 sec 125-150%; 300 ms >150%
Overload when bypass available	Continuous 100-110%, 10 min 110-150%, 5 ms 1000% Note! Nypass fuses may limit theover-load capability

Battery						
Type	Maintenance free VRLA batteries, NiCD					
Charging method	ABM technology or Float					
Temperature compensation	Optional					
Battery nominal voltage (lead-acid)	480 V (40 x 12 V, 240 cells)					
Charging current / Model	40	60	80	100	120	160
Default A	10	20	20	30	30	40
Max* A	20	40	40	60	60	80

*May be limited by maximum UPS input current rating

Accessories

External battery cabinets with long-life batteries, X-Slot connectivity (Web/SNMP, ModBus/Jbus, Relay, Hot Sync, ViewUPS-X remote display), Hot Sync parallel tie cabinet, integrated manual bypass up to 80 kVA, external maintenance bypass switch

Communications	
X-Slot	4 communication bays
Serial ports	1 available
Relay inputs/outputs	5/1 programmable

Compliance with standards	
Safety (CB certified)	IEC 62040-1, IEC 60950-1
EMC	IEC 62040-2
Performance	IEC 62040-3

Standard UPS				
Part number	**Description**	**Rating**	**Dimensions (HxWxD)**	**Weight**
1028510	9390-40-N-4x0	40 kVA / 36 kW	1879x519x808 mm	257 kg
1028511	9390-60-U-4x0	60 kVA / 54 kW	1879x519x808 mm	313 kg
1028512	9390-80-N-4x0	80 kVA / 72 kW	1879x519x804 mm	313 kg
1028513	9390-100-U-4x0	100 kVA / 90 kW	1879x944x804 mm	430 kg
1028514	9390-120-N-4x0	120 kVA / 108 kW	1879x944x804 mm	430 kg
1028515	9390-120-U-4x0	120 kVA / 108 kW	1879x944x804 mm	530 kg
1028516	9390-160-N-4x0	160 kVA / 144 kW	1879x944x804 mm	530 kg
Standard external battery				
1025570	9390-BAT10-S-40x38Ah (250A)	38 Ah	1877x575x773 mm	700 kg
1025572	9390-BAT10-S-200 (250A)	200 W	1877x575x773 mm	1176 kg
1026327	9390-BAT10-S-205 (250A)	205 W	1879x1125x808 mm	1270 kg
1025467	9390-BAT10-280 (250A)	280 W	1879x1125x808 mm	1430 kg
1025468	9390-BAT10-500 (250A)	500 W	1879x1125x808 mm	1444 kg
1025469	9390-BAT10-280 (400A)	280 W	1879x1125x808 mm	1625 kg
1025470	9390-BAT10-330 (400A)	330 W	1879x1125x808 mm	2188 kg
1025471	9390-BAT10-500 (400A)	500 W	1879x1125x808 mm	2188 kg
Battery racks				
1026273	9390-RACK10-1x40x200W	200 W	1714x566x1246 mm	985 kg
1026274	9390-RACK10-1x40x280W	280 W	1726x690x1246 mm	1228 kg
1026275	9390-RACK10-1x40x330W	330 W	1726x690x1546 mm	1431 kg
1026276	9390-RACK10-1x40x390W	390 W	1729x690x1546 mm	1587 kg
1026277	9390-RACK10-1x40x500W	500 W	1789x690x1546 mm	1995 kg
1026278	9390-RACK10-2x40x500W	500 W	1714x866x1856 mm	3879 kg
1026279	9390-RACK10-3x40x500W	500 W	1789x690x3666 mm	5865 kg
See runtime from the runtime specification				
Standard accessories				
1021887	External Bypass Switch 60-80kVA (wall-mount)	wall	840x380x130 mm	17 kg
1021888	External Bypass Switch 120 kVA (wall-mount)	wall	1040x560x130 mm	25 kg
1024626	External Bypass Switch 160 kVA (wall-mount)	wall	1040x560x130 mm	25 kg
1025476	SPM-60-2	wall	700x500x250 mm	50 kg
1023540	SPM-80-4	floor	1530x520x788 mm	230 kg
1024687	9390 Tie Cabinet 3x120 kVA	floor	1879x519x808 mm	217 kg
1024506	9390 Tie Cabinet 3x160 kVA	floor	1879x519x808 mm	217 kg

Eaton 9395 UPS

225 - 1100 kVA

An Eaton Green Solution

Due to outstanding green performance, the 9395 has earned the "An Eaton Green Solution"™ label

Advanced power protection for:

- Big data centers and server farms
- Financial services
- Building management
- Telecommunications
- Hospitals

Double conversion UPS

Premium power performance

- Double conversion provides the highest level of protection available by isolating the output power from all input anomalies.
- With a transformer-free design and sophisticated sensing and control circuitry the 9395 UPS delivers an efficiency of up to 94,5%.
- Active power factor correction (PFC) provides 0,99 input power factor and less than 4,5% ITHD, thus eliminating interference with other critical equipment in the same network and enhancing compatibility with generators.
- The UPS is optimized for protecting modern 0,9 p.f. rated IT equipment without the need to oversize.

True reliability

- HotSync technology makes possible to parallel up to four UPSs to increase availability or add capacity. The technology enables load sharing without any communication line, thus eliminating single point of failure.
- The multi-module 9395 can be configured with inherent redundancy – anytime the load is below 50%, the system becomes automatically redundant.
- ABM technology charges batteries only when necessary, preventing batteries corrosion and prolonging batteries service life by up to 50%.

Extensive configurability

- The 9395 is a completely integrated system than incorporates multiple power modules and system switchgear on factory pre-wired bases.
- A multilingual graphical LCD display makes possible to monitor the UPS status easily.
- Wide software and connectivity options provide monitoring, management and shutdown capabilities over network

Cost savings and sustainability

- High level of system efficiency enables to reduce utility cost, extend battery run times and ensure cooler operating conditions.
- Compared to traditional UPS design, a transformer-free UPS is only 50% the weight and occupies just 60% the footprint, thus reducing impact on shipping.
- The new design requires 50-80% less energy in manufacturing due to less energy required for testing and to the smaller configuration.
- Pre-wired configuration enables to reduce cabling busbar costs and installation time. Front accessible design minimizes installation costs and saves valuable data centre space.
- With Easy Capacity Test feature the 9395 can test its entire power train under full load stress without the requirement of an external load.
- A single technical platform used in Eaton´s three-phase UPS products guarantee easy upgrades and similarity in service, thus lowering total cost of ownership.
- More than 90% of the materials can be recycled, further decreasing end-of-life impact.

Eaton 9395 UPS 225 - 1100 kVA

TECHNICAL SPECIFICATIONS

UPS output power rating (0,9 p.f.)							
kVA	225	275	450	550	675	825	1100
kW	202	247	405	495	606	742	990

General	
Efficiency in double conversion mode (full load)	>94,5%
Efficiency in double conversion mode (half load)	94%
Efficiency in Energy Saver System (ESS)	up to 99%
Distributed parallelling with Hot Sync technology	5
Internal N+1 redundance capable	from 225 to 825 kVA
Field upgradeable	yes
Inverter/rectifier topology	transformer-free IGBT with PWM
Audible noise	<76 dB; <80 dB (825 and 1100 kVA)
Altitude (max)	1000 m without derating (max 2000 m)

Input	
Input wiring	3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Input voltage range	+10% / -15%
Input frequency range	45-65 Hz
Input power factor	0,99
Input ITHD	less than 4,5%
Soft start capability	Yes
Internal backfeed protection	Yes

Output	
Output wiring	3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Output UTHD	<3% (100% linear load); <5% (standard non linear load)
Output power factor	0,9 (e.g. 247 kW at 275 kVA)
Permitted load power factor	0,7 lagging - 0,8 leading
Overload on inverter	10 min 100-110%; 30 sec 110-125%; 10 sec 125-150%; 300 ms >150%
Overload when bypass available	Continuous <115%, 20 ms 1000% Note! Bypass fuses may limit the overload capability

Battery				
Type	VRLA, AGM, Gel, Wet Cell			
Charging method	ABM technology or Float			
Temperature compensation	Optional			
Battery nominal voltage (lead-acid)	480 V (40 x 12 V, 240 cells)			
Charging current / Model	275	550	825	1100
Default A	38	76	114	152
Max* A	83	166	249	332

*Limited by maximum UPS input current rating

Dimensions and weights		
225 kVA, 275 kVA	1350 x 880 x 1880 mm (wxdxh)	830 kg
225 kVA redundant, 275 kVA redundant	1890 x 880 x 1880 mm	1430 kg
450, 500, 550 kVA	1890 x 880 x 1880 mm	1430 kg
450, 550 kVA redundant	2520 x 880 x 1880 mm	2030 kg
Field upgrade module, 225 or 275 kVA	740 x 880 x 1880 mm	600 kg
675, 825 kVA	3710 x 880 x 1880 mm	2520 kg
675, 825 kVA + 1 redundant	4450 x 880 x 1880 mm	3120 kg
1100 kVA	4450 x 880 x 1880 mm	3120 kg

Accessories	
	External battery cabinets with long-life batteries, X-Slot connectivity (Web/SNMP, ModBus/Jbus, Relay, Hot Sync, ViewUPS-X remote display), integrated manual bypass for 225-550 kVA

Communications	
X-Slot	4 communication bays
Serial ports	1 available
Relay inputs/outputs	5/1 programmable

Compliance with standards	
Safety (CB certified)	IEC 62040-1, IEC 60950-1
EMC	IEC 62040-2
Performance	IEC 62040-3

Eaton BladeUPS
12 – 60 kW

An Eaton Green Solution

Due to outstanding green performance, the BladeUPS has earned the "An Eaton Green Solution"™ label

Advanced power protection for:

- Small, medium and large data centres
- Blade servers
- Network environment
- PBX and VoIP equipment
- Networking applications: IPTV, security
- Storage devices: RAID, SAN

High Efficiency UPS for Data Centres

Premium power performance

- BladeUPS provides scalable, flexible backup power optimized for high-density blade servers and IT equipment.
- A single module of BladeUPS provides 12 kW of power in only 6U of standard rack space, including batteries
- A scalable solution that delivers up to 60 kW of redundant power in a single rack enclosure.
- BladeUPS delivers an industry-leading 97% efficiency, resulting in cooler operating conditions and less heat dissipation.

True reliability

- Hot Sync technology makes possible to parallel six UPS modules for extra capacity or redundancy.
- ABM technology charges batteries only with necessary, preventing battery corrosion and prolonging battery service life by up to 50%.
- Replacing hot-swappable batteries and electronic modules can be done without interrupting the power, which dramatically improves the availability of the protected IT equipment.

Extensive configurability

- BladeUPS is extremely flexible and supports a variety of system architectures to fit to your specific requirements and desired levels of redundancy. BladeUPS also accommodates growth through it's saleable building-block architecture.
- Due to the low heat dissipation, air conditioning requirement reduce by up to a third and BladeUPS can be located close to IT equipment.
- BladeUPS automatically detects parallel modules and self-configures for parallel operation.
- A module working in a parallel configuration can be separated and easily re-deployed as a stand-alone module.
- Each BladeUPS can be configured with its own external battery backup.
- BladeUPS is a scalable UPS with it's own power distribution, courtesy of the Rack Power Module. The 3U RPM delivers single-phase power and can be deployed in the same rack as the UPS and IT equipment.
- The BladeUPS can be monitored over LAN or the Internet.

Cost savings and sustainability

- A high level of efficiency leads to utility cost saving, with a 60 kW N+1 solution paying for itself over a 5 year period through energy and cooling savings alone.
- The small footprint of BladeUPS allows extra space for IT equipment in the rack and data centre.
- Eaton uses sustainable materials and highly efficient manufacturing technology to dramatically reduce the carbon footprint when compared to UPS systems on the market.

TECHNICAL SPECIFICATIONS

General	
Power Rating	12 kW per UPS module
Efficiency	Up to 97 per cent
Heat Dissipation	371W/1266 BTU/hr at 100% rated load
Cooling	Fan cooled, temperature microprocessor monitored; front air entry, rear exhaust
Audible Noise, Normal Operation	<60 dBA at 1 meter
Altitude Before Derating	1000 meters (3300 ft ASL)

Input	
Input Voltage	400 Vac
Voltage Range	400V: 311 to 519 Vac, phase to phase
Frequency Range	50 or 60 Hz, ±5 Hz
Input Current Distortion	<5% with IT loads (PFC power supplies)
Input Power Factor	>0.99 with IT loads (PFC power supplies)
Inrush Current	Load dependent
Input Requirements	Three-phase, four-wire + ground
Bypass Source	Same as input (single feed)
Generator Compatibility	Fast sync slew rate for generator synchronisation

Output	
Rated Output Voltage	400V: 180 to 240 Vac, Ph to N
Output Configuration	Three-phase, four-wire + ground
Output Frequency (nominal)	50 or 60 Hz auto-detection on startup
Frequency Regulation	0.1 Hz free running
Load Power Factor Range	Lagging: 0.7 Leading: 0.9
Total Output Voltage Distortion	<3% with IT loads (PFC power supplies) <5% non-linear or non-PFC power supplies

Battery	
Battery Type	VRLA - AGM
Battery Runtime (Internal)	13 minutes at 50 per cent load 4.7 minutes at 100 per cent load
Battery String Voltage	240 Vdc
Battery Test	Automatic battery test standard (remote scheduling capable) Manual battery test from front display
Battery Recharge Profile	ABM three-stage charging technology
Battery Cut-off Voltage	Variable from 1.67 VPC at <5 min. runtime
Battery Low Condition	Announced with alarm
Extended Battery Capability	Yes, add up to four additional 3U battery enclosures (~34 min at 100 per cent load, >1 hour at 50 per cent load)

Physical	
Dimensions (HxWxD) UPS	261 (6U) x 442 x 660 mm 132 (3U) x 437 x 660 mm
Note: Total Chassis Weight without batteries or electronics	46 kg
Total Chassis Weight with batteries or electronics	140 kg
Total UPS Weight without Batteries	61 kg
Total UPS Weight with Batteries	140 kg
EBM Weight	77 kg

Communications and User Interface	
Software Compatibility	UPS ships with Software Suite CD containing LanSafe power management software and a trial version of PowerVision
X-Slot Bays	Two available for the cards listed below
Control Panel LCD	Two lines by 20 characters Four menu-driven interface buttons Four status at a glance LEDs
Multi-language	English standard; 20 languages available
Configuration Changes	User capable, firmware auto configures
Dry Contact Inputs	Two, user-configurable
Dry Contact Outputs	One, user-configurable

Service	
Installation	User capable, located in the IT racks
Preventative Maintenance	User capable, optional factory service available
Corrective Maintenance	User capable, optional factory service available
Serviceability Features	Hot-swappable batteries Hot-swappable electronics module Automated internal maintenance bypass Auto-configure firmware Flash firmware upgradeable

Certifications	
EMI	IEC 62040
Surge Protection	ANSI C62.41, Cat B-3
Hazardous Materials (RoHS)	EU Directive 2002/95/EC Category 3 (4 of 5)

Warranty	
Standard	12 months
Warranty Repair	Factory depot repair or replace

Options and Accessories
Detachable input cord
Detachable input/output cord assembly
Detachable paralleling cord assembly
Extended Battery Modules (EBMs)
3U output sub-distribution module
0U to 3U rack power strips
60 kW Powerware BladeUPS Parallel Bar
Four-post rail kit

Optional X-Slot Communication Cards	
Application	Card
Web SNMP	ConnectUPS-X Web/SNMP Card
Environment Monitoring	EMP Environmental Monitoring Probe (requires Web/SNMP card)
Modbus® RTU	Modbus Card
IBM eServer™ (i5™, iSeries™, or AS/400), industrial	Relay Interface Card
Parallel	Powerware Hot Sync Card
Remote Monitoring	Modem Card
Remote LCD Display	ViewUPS-X

Recommended ePDU:	
Y032440CD100000	RPM - Rack Power Module (BladeUPS in, 12xC13 + 6xC19 out) 20 ft lead
PW107BA0UC08	ePDU - Basic (0U, Dual 16A C20 in, 24xC13+ 8xC19 out) use in addition to RPM
PW107MI0UC08	ePDU - IP Monitored (0U, Dual 16A C20 in, 24xC13+ 8xC19 out) use in addition to RPM

Eaton ePDU

User benefits:

- Eaton ePDUs are designed for Mission Critical reliability and server applications
- Support all enclosure power densities - Standard 0-4 to Ultra 15 kW and up
- Wide choice of outlets, including UK, Schuko, French, Nema, C13, C19
- Up to 3 types of outlet on a single zero U ePDU
- Solutions include Basic, Metered, Monitored and Managed technologies
- Vertical zero U, or horizontal 1U/2U configurations
- Custom product capabilities to meet the most demanding needs
- Integrated isolation mounting hardware provides maximum enclosure integrity
- High quality sockets ensure maximum reliability
- Multi-option mounting improves installation flexibility. Have confidence that the strip can be adapted to suit any on-site rack configuration.

Enclosure Power Distribution Units

With today's changing technology and the demand for reliability, data centre professionals need sophisticated equipment to monitor consumption at a server level as well as at the data center level to understand and control what is happening within their infrastructure.

Wide choise of models

Eaton ePDUs feature the broadest portfolio in the industry across all power densities and technologies to satisfy the needs of every data centre. This complete suite of power products is designed specifically to help data centre IT managers understand their rapidly escalating power requirements.

The ePDU family includes models with a variety of power inputs and outputs to fit your power requirements. You can select from UK, Schuko, French and IEC (C13 & C19) output sockets and local (UK or Schuko), EN 60309, IEC (C14 & C20) or unterminated cords for termination directly to the output terminals of the UPS.

The ePDU range includes an extensive range of vertical Zero U products that do not occupy server space in racks as well as 1U and 2U formats. Environmental Monitoring options are also available.

From single to dual corded, four technology options, the broadest power range and the ability to manufacture ePDUs with custom arrangement of outlets (number and type) for every region, Eaton ePDUs are distinguished for their quality, dependability and versatility. All products are designed for the specific application with an emphasis on safety and reliability.

Choose your Perfect Solution

Every data centre is unique – choose the right solution of enclosure power distribution units with three simple questions:

1. How much power do you need?

We have power solutions from Standard Power - 1 to 4 kW to Ultra High Power 15kW and up, including single phase 10A, 13A, 16A, 32A and 63A, 3 Phase 16A and 32A

2. Which inputs and outlets do you need?

ePDUs are highly configurable, allowing multiple outlet and plug configurations including 3 types of outlet on a single ePDU – UK, Schuko, French, Nema as well and C13 and C19

3. What functionality do you need?

We offer a broad range of functionalities including Basic, Metered, Monitored and Managed technologies

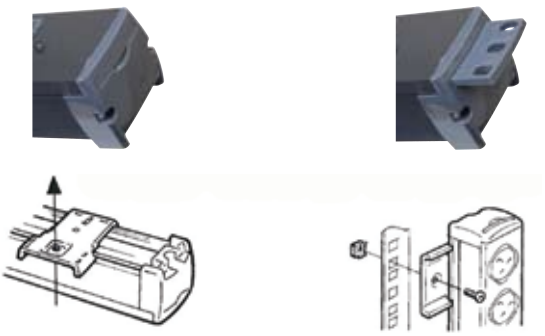
Basic ePDU

Designed for reliable and cost effective power distribution, Basic ePDUs have the form factor and outlet choices to meet your needs. All ePDUs, including basic ePDUs, are made of rugged aluminium chassis and incorporate fully shrouded circuit breakers and switches.

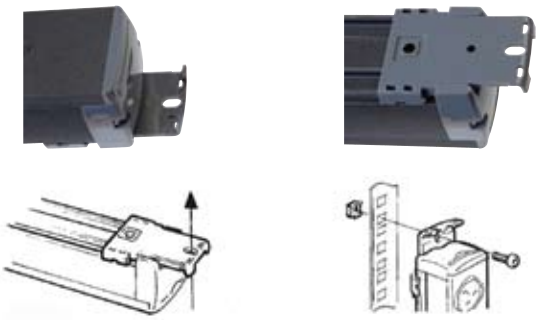
- Rugged construction
- Data centre grade components
- Multiple mounting options
- Fully shrouded circuit breakers and switches
- High-density units available to support blade servers and network switches

Basic ePDU

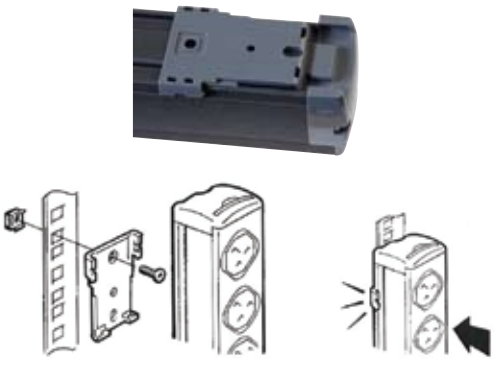
Multiple Mounting Options



Side Mounting



End Mounting



Blind Mounting

Eaton ePDU

Metered ePDU

Metered ePDUs offer an easy-read digital ammeter for easy start-up and provisioning of servers. The display is large and bright and can be viewed from afar and through perforations in the cabinets. The ePDU assures easy management and monitoring for current requirements and future expansion.

- Local ammeter display enables load balancing and load segmentation
- Easy-read digital ammeter
- True RMS ammeter provides accurate power measurement

Example 1U and 2U configurations

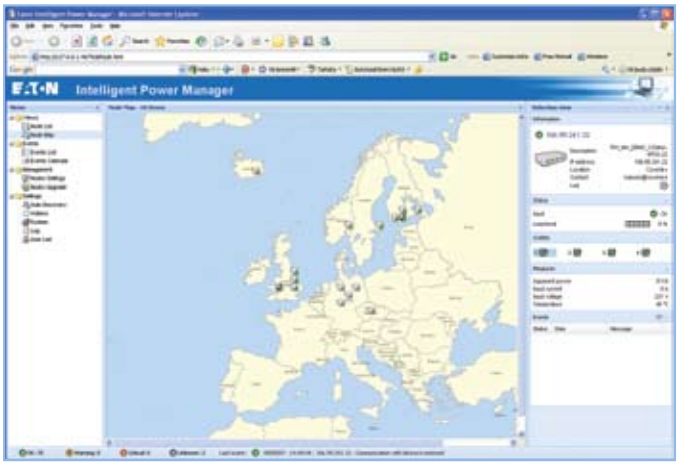
Metered ePDU

Monitored ePDU

Monitored ePDUs offer customers the ability to remotely monitor the current draw over an Ethernet connection. This allows the user to aggregate the information from thousands of ePDUs in one location. All monitored ePDUs also include an easy-read digital ammeter for local provisioning and load balancing of servers.

The multi-channel Ammeter allows the monitoring of current on input and each branch circuit to ensure accurate load balancing. The Ammeter can manually or automatically scroll through up to eight circuits. Eaton ePDU's offer a reliable, scalable solution for your current and future requirements.

- Monitor current draw over an Ethernet connection
- Easy-read digital ammeter with up to 8 circuits
- Accurate load balancing
- True RMS ammeter provides accurate measurement
- Manual or auto scrolling through circuits



Monitored ePDU

Managed ePDU

Manage your power consumption to the individual server level. Managed ePDUs have unprecedented management and monitoring capabilities.

You can even monitor your power down to the individual outlet level to gain a full understanding of your data centre. User-definable grouping and sequencing of outlets with time delays allow controlled remote boot-up of servers and equipment. 256-bit encryption ensures secure communication and IPMI and SMASH CLI capability provides harmonised user access to computer hardware and ePDUs.

- Monitor and control individual outlets to manage the efficiency of the Data Centre at server level
- Comprehensive monitoring to the outlet level (Amps, Volts, Watts)
- Individual outlet switching enables remote reboot of servers
- User defined grouping and sequencing of outlets over multiple ePDUs (for A&B feed)
- Communication using SSL, TELNET, http, https, SNMP, IPMI, SMASH CLI, Serial 256-bit encryption security and in-built firewall
- Email capability for instant alert notification
- SNMP network management protocol enables you to monitor thousands of ePDUs in the network
- Optional temperature and humidity sensors available

Managed ePDU

Eaton ePDU

In-Line Monitored ePDU

Retrofit for existing PDUs without power metering.

Designed for new or retrofit applications, our in-line monitoring units provide simple single and dual fed local and remote monitoring solutions. Available with IP connectivity, as well as the Easy-Read digital ammeter.

- Adds power distribution monitoring to existing or Legacy data centres
- Available in 16A & 32A, single & dual circuits
- 19" horizontal mounting or 0U vertical mounting
- Single or Dual fed – allows A and B feeds to be monitored
- Fuse-less and breaker-less design: no inline break

ePDU.com is Making Product Configuration as Easy as 1, 2, 3...

Making the right decisions from the start can make a difference in the dependability and efficiency of an infrastructure.

ePDU.com is helping make the selection of enclosure power distribution units, as easy as 1, 2, 3. This product configuration wizard is a simple interface that allows the customer to search over 1,000 products for the perfect solution.

This site allows the customer to ask themselves three key questions about their power needs.

1. How much power do you need?

2. What functionality do you need?

3. What inputs and outputs do you need?

This innovative site allows the customer to explore features, benefits and learn basic fundamentals of ePDUs, as well as allows them to demo the live interface.

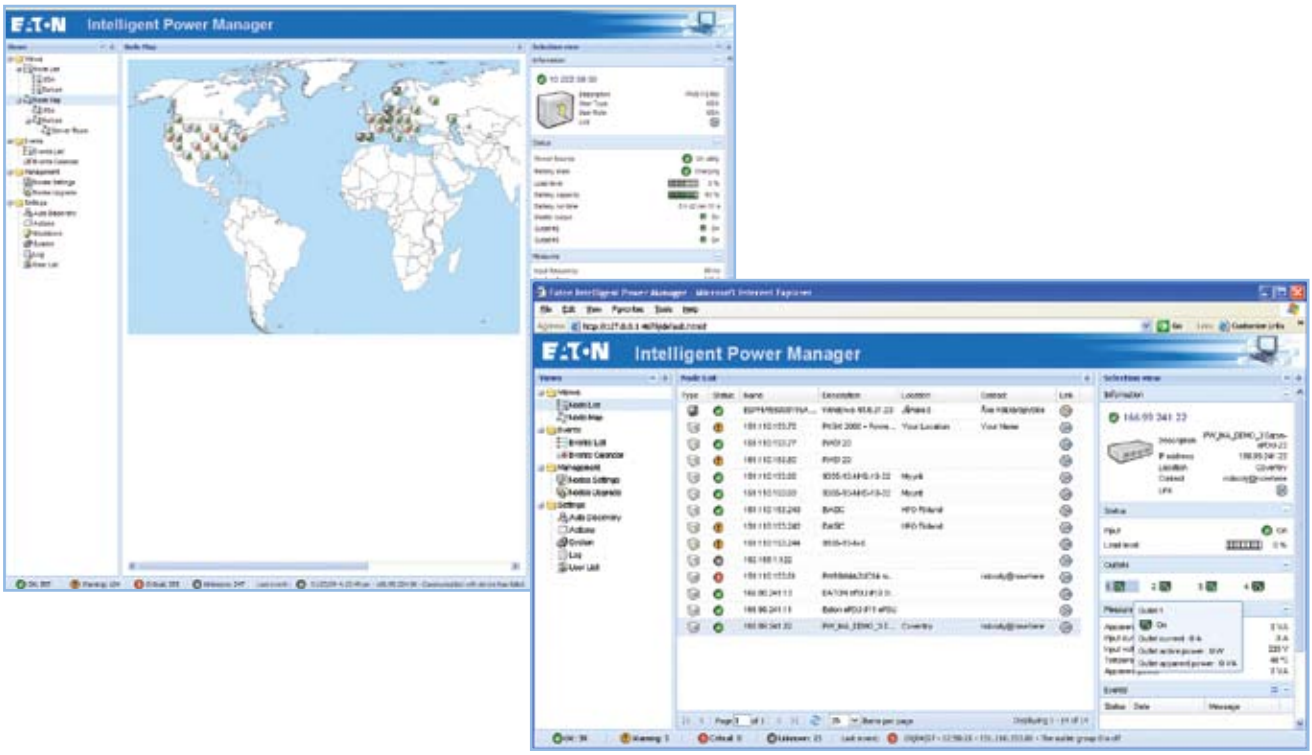
Eaton ePDUs are covered by a two-year limited factory warranty.

Supervise your ePDU power distribution with Intelligent Power Manager

Intelligent Power® Manager is a new power monitoring software product from Eaton. It supports Eaton Monitored and Managed ePDU products as well as UPS, so customers can monitor and manage their power distribution via one interface and one IP address.

Benefits:

- Monitor and manage multiple ePDUs and UPS systems over an IP network using a standard web browser
- IPM provides details of ePDU parameters, measurements and settings, from any point in the network, simply using the IP address of each ePDU
- Drill down to individual devices
- User-definable alarms including E-mail and SMS alerts through a single point
- Supervision and management of a whole system though a single user interface
- Configurable views
- Automatic discovery of devices
- Free of charge for up to 10 devices (ePDU or UPS)



Intelligent Power Manager Features and Benefits

Key Feature	Benefit
Browser Based	IE 6 and 7; Firefox 2 and 3; Safari. The system can be installed locally, or on a main server and browsed to.
Auto Discovery	Fast installation - automatically detect devices on your network.
Security	Application has multiple password protected access levels and support for secure communications.
Remote access	Interface is web-based which enables remote monitoring and access to systems.
User definable tree structure	Simplifies management of multiple devices over multiple locations through grouping.
User definable graphics view	Helps in visualising physical locations of devices on maps or schematic drawings.
Aggregation of device alarms	Single interface to view all alerts. Minimise response time, reduce time to repair, maximise uptime. Alerts via mobile phones & e-mail.
Aggregated device views	Grouping of multiple 'like' devices simplifies management. Single interface accessible from anywhere on the network through a web browser.
Device firmware management	Reduce set-up and maintenance time of Network Management Cards by mass-configuring parameters and mass-upgrading firmware (not currently functional with ePDU).
Shutdown agent management	Enables safe shutdown of servers.
Automatic updates	Keeps the software at the latest version level.
Support for many device types	UPS and ePDU with network interface devices are visible and their individual web interfaces accessible for editing / configuration from a single view.
Customisable views	Lets users select the most relevant data for fast viewing and sorting on the interface.

Eaton Enclosures

Superior rack enclosures for IT equipment

IT availability and reliability are critical issues in today's demanding environments, so it is important to ensure stable conditions for your server and software systems.

Eaton introduces a range of enclosures and accessories for your network closets, computer rooms and data centres.

Designed specifically for IT applications, this 42U x 600 mm (w) x 1000 mm (d) modern enclosure offers strength, stability and a vendor-neutral environment to house IT equipment.

The Eaton Enclosure allows for ultimate baying flexibility to create additional space, and the 16-fold unique frame design delivers the highest dimensional stability and load bearing capability. The enclosure is complemented with a range of cable management, cooling and power distribution accessories to enable you to tailor your enclosures to your specific application.

Features

- Designed specifically for IT applications
- Universal server platform (EIA 310-D)
- Full line of accessories
- Excellent heat dissipation
- Strong frame structure

Reliable Power distribution for:

- Data centres
- MDC/IDC
- Wiring closets
- Office environments
- Central offices
- Co-location and application environments

Eaton Enclosures

Specifications

- Frame system – multi-fold steel frame design for strength and rigidity
- No horizontal or vertical supports, keeping entire structure open for equipment and cable management
- Perforated roof with four 114 mm holes with grommets for overhead cable management
- Torsion-free structure
- Multiple internal surfaces and mounting points
- Maximum internal volume for footprint
- External access to all installation points for doors and walls
- Maximum load bearing capacity – 907 kg

External Surfaces – Doors and Walls

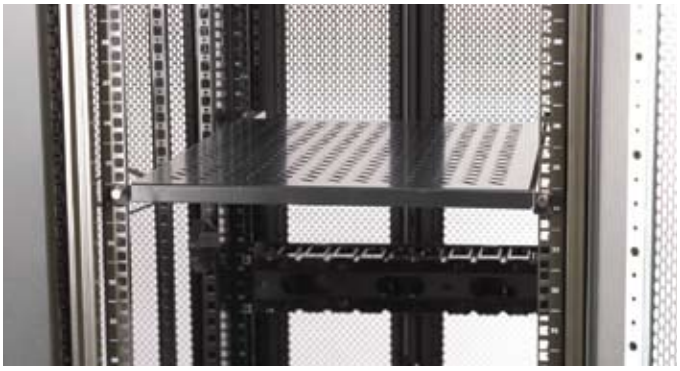
- Doors can be easily removed or reversed
- Sidewalls can be screwed on or locked in place
- Internal door hinge and lock points offer maximum security
- Door stiffener stabilizes door and provides additional mounting surfaces
- Maximum perforated door area meets or exceeds server manufacturer specifications for air flow
- Ground studs on all surfaces
- External surfaces do not affect load bearing capacity – same ratings with or without side walls
- Door handle provides customised locking solutions and simple ID tag capability
- Split rear doors to maximise floor space availability

Vertical Mounting Rails

- Designed to meet EIA-310-D standards
- Fully depth-adjustable to maintain load capacity regardless of rail positioning
- Floating isolation system – vertical rails are not secured to frame members or lateral support channels – can be adjusted independently
- "Z"-shaped, multi-fold profile offers high load-bearing capacity and multiple mounting surfaces
- "U" markings on front and rear near surfaces of each rail for ease of installation

Key Accessories

- Sidewalls - for security and thermal control
- Baying kits - for universal flexibility in joining enclosures together
- Shelves – (482 mm)
  68 kg – 113 kg capacities
- Casters - for ease of movement on flat surfaces
- Tool-less cable management hardware reduces installation time and costs
- Bolt-down kits - for securing cabinets in place
- Tool-less blanking panels - to control airflow and improve cooling efficiency
- Plinths, roof fans and pull out stabilisers
- Compliment your Eaton rack enclosure with Eaton Enclosure Power Distribution Units - ePDUs
- For a full list of accessories and ePDUs please speak with your local Eaton representative



Description	Dimensions mm	Weight kg	Shipping Dimensions mm	Shipping Weight kg	Part Number
No Sides or Casters	2000x600x1000	99	2160x800x1200	116	1052734
With Sides, no Casters	2000x600x1000	116	2160x800x1200	133	1052735
No Sides, with Casters	2000x600x1000	104	2160x800x1200	121	1052736
With Sides and Casters	2000x600x1000	121	2160x800x1200	138	1052737

Power Management Solutions

Benefits of using Power Management Solutions

- Real-time notification makes it easy to prevent or analyse possible failures immediately
- Helps to prevent data losses by enabling controlled shutdown of servers and PC operating systems
- View and analyse power events and measured values from recorded logs
- Save time and money with remote equipment control, which removes the need for additional site visits to restart equipment. It also enables prolonged runtime of essential equipment during power outages by allowing orderly remote shutdown of non-critical systems and processes.

Minimize downtime and prevent data loss

In order to get full benefit out of a UPS it needs to communicate with the outside world. IT system administrators need to be informed if power supply is compromised, facility managers have to be notified if temperature rises in the UPS or battery room and service has to be alarmed if there is a component failure in the system. Having the ability to control power systems remotely or automatically opens up new opportunities and can bring huge savings in work effort, energy usage and response time. Controllable power distribution can be used to reboot equipment or turn it off when it is not needed.

Eaton's Power Management Solutions, including software and connectivity products, scale from homes to most mission-critical data centres and from largest factories to unmanned remote observation stations. They link to network, IT, facility, automation and building management systems delivering information to e-mail, mobile devices and Web among others.

In the optimum case sophisticated analysis in power devices themselves or software such as PowerVision® can prevent the risk of downtime. Even in the case where risk is present, a fast delivery of an alarm increases the likelihood that it can be dealt with before there are any consequences to the operation of the powered system. Even in case where power loss can't be avoided, software can help by automatically shutting down systems in a controlled and predefined manner, preventing data corruption on storage devices and databases. Eaton's offices and representatives have experts who can help in designing and installing these solutions.

Protection: shutting down servers

To ensure the integrity of the system and the data, a computer operating system must be shut down in the correct sequence. Dedicated shutdown software must be installed on the servers to execute various functions before the power supply is cut off. These functions include:

- executing a script to close applications running on the server;
- initiating a shutdown sequence or hibernation after a preset timeout or just before total battery discharge;
- rebooting the operating system automatically or manually when the mains power is restored;
- showing UPS alerts to the user.

Software Suite

Eaton offers a full line of shutdown and monitoring software products to enhance the protection provided by its UPSs. The Software Suite, conveniently packed on one CD-Rom, follows every UPS free of charge.

NetWatch is a shutdown agent for the ConnectUPS Web/SNMP card. It is a very compact piece of software, but still features powerful configuration options for shutdown actions, timings and user notification.

LanSafe is a network shutdown software product that currently supports up to 20 operating systems. It ensures controlled sequential shutdown of the whole network across platforms in case of a prolonged power failure. LanSafe allows the shutdown of up to 64 computers protected by a single UPS.

Intelligent Power Manager is a software tool for managing networked UPS and PDU systems more easily and at lower cost than the major NMS platforms, and is dedicated to power management functions. Administrators have an overall, consolidated view of the main operating parameters of all UPS systems. The web-based interface is intuitive and easy to use while also having high configurability and powerful features.

Intelligent Power Manager centralises alarm management. It can collate several events into a single message and deliver the message via email or SMS.

Intelligent Power Manager is very easy and fast to install. Once running, the software discovers manageable power devices automatically and is operational in just a few seconds.

A version of Intelligent Power Manager limited to 10 monitored devices is available free with each networked Eaton UPS.

PowerVision is performance monitoring and trend analysis software for critical UPSs and multiple UPSs in a network. It stores information about the operation of the UPS device in its relational database where it can be retrieved for display and analysis. PowerVision's alert and notification behaviour is highly configurable, which makes it a great tool for system administrators.

Integrated shutdown controller module can host hundreds of shutdown clients and it can also be used in case of paralleled UPSs. PowerVision's shutdown logic is based on user definable script, which gives almost unlimited flexibility in deciding when to initiate operating system shutdown. The Software Suite CD offers a 30-day trial license of PowerVision Network Edition.

- **Network Edition**, which monitors multiple UPSs in the network.
- **Facility Edition**, which provides support for other equipment in the power chain and more options for parallel systems.
- **Enterprise Manager**, which adds a data view client and support for multiple PowerVision Facility or Network editions.

Linux and Eaton uninterruptible power supplies

For several years Eaton has been actively supporting the trend towards open source software by providing information on our products to the Network UPS Tools development community. For more information on this tool, please see www.networkupstools.org

Software Compatibility

LanSafe	Compatible with		Operating system support*
	3105		Windows 2000/XP/2003/Vista/2008
	5110		VMware ESX 3.5
	5115		Novell NetWare 5.0, 6.0, 6.5
	5125		AT&T SVR4 v.3.0
	5130**		HP UX 10.20, 11.0, 11i (PA RISC) 11i 1.6, 2 (Itanium)
	9120		AIX 4.x (RISC) 4.X, 5.1, 5.2, 5.3 (PowerPC)
	9125		SCO OpenServer 5.0.6, 5.0.7
	9130		Solaris 7, 8, 9, 10 (SPARC, Intel)
	9135**		SGE Irix 6.5 (MIPS)
	9140		Mac OS X 10.2.8, 10.3.X, 10.4.X (PowerPC)
	9155		Red Hat Enterprise Linux 3, 4, 5
	9355		SuSE 8, 9, 10
	9390		SuSe Enterprise Linux Server 8, 9, 10
	9395		Fedora Core 5, 6, 7, 8

Intelligent Power Manager	Compatible with		Operating system support*
	All UPS models with Eaton Web/ SNMP card, managed and monitored ePDUs		Windows 2000/XP (Home or Pro) /2003 / Vista / 2008

PowerVision	Compatible with		Operating system support*
	Network Edition	Facility Edition	PowerVision Editions
	5115	5115	Windows
	5125	5125	2000 Server, Advanced Server, Professional
	9120	9120	XP Home Edition, Professional
	9125	9125	Server 2003 Standard, Web, Enterprise
	9130	9130	
	9140	9140	PowerVision shutdown agent
	9155	9155	Windows
	9355	9355	2000 Server, Advanced Server, Professional
	9390	9390	XP Home Edition, Professional
	9395	9395	Server 2003 Standard, Web, Enterprise
	Generic third party UPS	Generic third-party UPS	
	Generic redundant units (1+1)	Generic redundant units (1+1)	UNIX
		93xx Hot Sync parallel (2, 3, or 4 module)	HP-UX v. 10.x and higher
			IBM AIX v. 4.x and higher
			Sun Solaris v. 6.x and higher
			SGI Irix v. 6.3 and higher
			Linux (kernel version 2.2 and higher)
			BSD OS v. 4.x and higher
			Novell NetWare
			Netware v. 4.11 and higher, requires TCP/IP

NetWatch OS Support	Compatible with	Operating system support*
	All models with ConnectUPS Web/SNMP card	Windows 2000, XP, 2003, Vista, 20008, VMware ESX 3.5, Novell NetWare, SGI IRIX, HP-UX, IBM AIX, Linux, BSD, SCO, Solaris, Mac OS X

* Check latest information at www.eaton.com/powerquality

** LanSafe v.6 or higher

Connection Options to Manage and Monitor Your UPS

ConnectUPS Web/SNMP card is a complete UPS monitoring, control and shutdown solution in a networked IT environment. In case of alert the Web/SNMP card can notify users and administrators through e-mail and SNMP traps. In case of a prolonged power failure the protected computer systems can be shut down in a graceful manner with NetWatch and LanSafe software. The unique three-port switching hub on the X-Slot model provides additional network connections.

ConnectUPS-X
P/N 116750221-001 for Eaton 5115 RM, 5125, 5125 RM, 9125, 9140, 9155, 9355, 9390, 9395, BladeUPS.

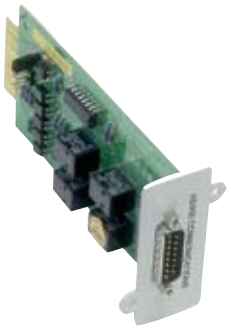
ConnectUPS-BD
P/N 116750222-001 for Eaton 9120 and 9130.

ConnectUPS-E
P/N 116750223-001 is an external model that is connected to a serial port on a UPS.

ConnectUPS-MS
P/N 103006826 for Eaton 5130, 9135.

Environmental Monitoring Probe (EMP) adds temperature, humidity and two contact closure monitoring capability to ConnectUPS Web/SNMP cards. It is well suited for monitoring rack temperature and door status, as well as battery temperature. Operating system shutdown can be triggered if user defined thresholds are exceeded or contact closure status changes.
P/N 116750224-001 for all UPSs with a Web/SNMP card installed.

Relay/AS400 cards are an easy connection to IBM AS/400 series computers as well as industrial and building management systems.
P/N 1018460 for Eaton 5115 RM, 5125, 5125 RM, 9125, 9140, 9155, 9355, 9390, 9395, BladeUPS.
P/N 1014018 for Eaton 9120 and 9130.



X-Slot ModBus card connects the UPS to industrial and building management systems using ModBus/JBUS RTU protocol. P/N 103002510-5501 for Eaton 5115 RM, 5125, 5125 RM, 9125, 9155, 9355, 9395.

ViewUPS-X remote display is an LCD panel that lets users view the status of the UPS from as far as 100 m. ViewUPS-X has also four status LEDs and an alarm sound. The display is bundled with a dedicated X-Slot card that also powers the display through the communication cable. In addition to the remote display connection the card has also a SELV isolated relay port for connection to monitoring systems and AS/400 computers.
P/N 1027020 for 5115 RM, 5125, 5125 RM, 9125, 9140, 9155, 9355, 9390, 9395, BladeUPS.

UPS Runtime Tables

BladeUPS

Load			#42U Racks	4 kW	8 kW	12 kW	24 kW	36 kW	48 kW	60 kW
1 x BladeUPS (12 kW Internal battery)	6	6	1	23	8,7	4,7				
+ 1 External Battery Module	9	9	1	41	17,6	9,5				
+ 2 External Battery Module	12	12	1	65	28	17				
+ 3 External Battery Module	15	15	1	93	43	27				
+ 4 External Battery Module	18	18	1	119	55	34				
2 x BladeUPS (12 kW N+1 Internal battery)	12	18	1	44	23	13,6				
+ 1 External Battery Module	18	24	1	85	41	27				
+ 2 External Battery Module	24	30	1	137	65	41				
+ 3 External Battery Module	30	36	1	198	93	59				
+ 4 External Battery Module	36	42	2	257	119	76				
3 x BladeUPS (24 kW N+1 Internal battery)	18	24	1		34	23	8,7			
+ 1 External Battery Module	27	33	1		34	41	17,6			
+ 2 External Battery Module	36	42	2		102	65	28			
+ 3 External Battery Module	45	51	2		147	93	43			
+ 4 External Battery Module	54	60	2		190	119	55			
4 x BladeUPS (36 kW N+1 Internal battery)	24	30	1			30	13,6	7,3		
+ 1 External Battery Module	36	42	2			56	27	14,7		
+ 2 External Battery Module	48	54	2			89	41	24		
+ 3 External Battery Module	60	66	2			128	59	37		
+ 4 External Battery Module	72	78	2			165	76	47		
5 x BladeUPS (48 kW N+1 Internal battery)	30	36	1				19	10	6,6	
+ 1 External Battery Module	45	51	2				34	21	13,3	
+ 2 External Battery Module	60	66	2				54	31	23	
+ 3 External Battery Module	75	81	2				77	48	35	
+ 4 External Battery Module	90	96	3				98	61	44	
6 x BladeUPS (60 kW N+1 Internal battery)	36	42	2				23	13,5	8,7	6,2
+ 1 External Battery Module	54	60	2				41	27	17,6	12,6
+ 2 External Battery Module	72	78	2				65	41	28	21,6
+ 3 External Battery Module	90	96	3				93	59	43	33
+ 4 External Battery Module	108	114	3				119	76	55	42

* Note: each UPS requires the same number of external batteries

Time in minutes

9155 and 9355 8-15 kVA runtimes

Runtimes for UPS with internal batteries (UPS load with typical 0.7 p.f.)

Battery	Qty	3	4	5	6	7	8	9	10	11	12	13	14	15	kVA
7 Ah 12 V	1 x 32	36	26	20	15	12	10	7	6	-	-	-	-	-	min
9 Ah 12 V	1 x 32	42	32	24	21	16	15	12	10	9	8	7	6	5	min
7 Ah 12 V	2 x 32	86	66	46	38	33	28	23	20	16	15	13	12	10	min
9 Ah 12 V	2 x 32	95	74	61	44	38	33	29	25	22	20	18	16	15	min

Runtimes for UPS with external battery cabinet

Battery	Qty	3	4	5	6	7	8	9	10	11	12	13	14	15	kVA
7 Ah 12 V	3 x 32	130	100	81	68	57	44	39	35	27	24	22	20	18	min
7 Ah 12 V	4 x 32	200	133	108	91	78	69	61	47	40	35	32	29	27	min
7 Ah 12 V	5 x 32	250	182	141	114	95	81	70	61	53	47	43	39	36	min
7 Ah 12 V	6 x 32	316	230	178	144	120	102	89	78	67	60	54	50	45	min
7 Ah 12 V	7 x 32	385	280	217	176	146	124	106	93	82	73	66	60	55	min
7 Ah 12 V	8 x 32	458	333	258	209	174	147	126	110	97	87	79	72	66	min

UPS Runtime Tables

Runtimes for UPS with internal batteries (4 x 36 pcs 9 Ah) and external battery cabinet(s) with 24 Ah batteries (one external battery cabinet can fit 2 strings of 24 Ah batteries)

Internal Battery		External Battery										
Battery	**Qty**	**Battery**	**Qty**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**kVA**
9 Ah 12 V	4 x 36	24 Ah 12 V	1 x 36	268	113	77	56	43	34	25	20	min
9 Ah 12 V	4 x 36	24 Ah 12 V	2 x 36	402	175	115	84	69	57	47	38	min
9 Ah 12 V	4 x 36	24 Ah 12 V	3 x 36	555	243	154	121	90	75	63	54	min
9 Ah 12 V	4 x 36	24 Ah 12 V	4 x 36	> 10 h	318	197	147	123	100	77	66	min

External battery (Panasonic LC-X1224AP) with four internal strings back up table for UPS ratings 20-40 kVA, p.f. 0.7 (typical IT server/computer load).

Runtimes for UPS with internal batteries (4x 36pcs 9Ah) and external battery cabinet(s) with 110W batteries (one external battery cabinet can fit 2 strings of 24 Ah batteries)

Internal Battery		External Battery										
Battery	**Qty**	**Battery**	**Qty**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**kVA**
9 Ah 12 V	4 x 36	110 WPC12 V	1 x 36	318	132	82	62	47	41	32	25	min
9 Ah 12 V	4 x 36	110 WPC12 V	2 x 36	518	225	138	104	81	66	50	42	min
9 Ah 12 V	4 x 36	110 WPC12 V	3 x 36	> 10 h	318	204	147	114	95	77	66	min
9 Ah 12 V	4 x 36	110 WPC12 V	4 x 36	> 10 h	430	266	198	153	124	103	87	min

External battery (CSB HRL 12110W) with four internal strings back up table for UPS ratings 20-40 kVA, p.f. 0.7 (typical IT server/computer load).

9390 40-160 kVA, external battery capacity

Battery configuration	UPS load with typical load p.f.0,8						
	40	**60**	**80**	**100**	**120**	**160**	**kVA**
1xBAT (HR250)	30	17	10	-	-	-	min
2xBAT (HR250)	73	44	30	22	15	10	min
3xBAT (HR250)	128	72	51	35	30	21	min
4xBAT (HR250)	180	106	75	54	41	30	min
2xBAT (HR305)	39	22	15	-	-	-	min
2xBAT (HR305)	96	57	40	25	22	15	min
3xBAT (HR305)	160	96	64	45	37	26	min
4xBAT (HR305)	220	136	96	72	55	40	min
1xBAT (HRL12280)	40	24	15	10	7	-	min
2xBAT (HRL12280)	100	57	33	30	24	15	min
3xBAT (HRL12280)	144	96	69	50	30	28	min
1xBAT (HRL12330)	47	30	20	13	10	6	min
2xBAT (HRL12330)	116	72	50	36	30	20	min
3xBAT (HRL12330)	163	105	84	60	48	35	min
1xBAT (HRL12500)	80	49	35	24	18	12	min
2xBAT (HRL12500)	196	121	81	60	48	34	min
3xBAT (HRL12500)	266	178	121	92	80	57	min
1xBAT (NSB125)	87	53	36	27	20	12	min
2xBAT (NSB125)	200	128	91	69	55	38	min
3xBAT (NSB125)	305	200	145	115	94	64	min

9395 225-275 kVA, external battery capacity

Battery configuration	UPS load with typical load p.f. 0,9					
	160	**200**	**225**	**250**	**275**	**kVA**
1xBAT CSB HRL 500	9	5	-	-	-	min
2xBAT CSB HRL 500	29	20	17	14	12	min
3xBAT CSB HRL 500	49	37	32	28	24	min

*Load power factor 0,9

Battery configuration	UPS load with typical load p.f.0,8					
	160	**200**	**225**	**250**	**275**	**kVA**
1xBAT CSB HRL 500	12	7	5	3	-	min
2xBAT CSB HRL 500	34	25	20	17	15	min
3xBAT CSB HRL 500	57	43	37	33	28	min

The battery backup table is given with end voltage 1.70 VPC and temperature +25ºC.
The batteries are fully charged and measured after minimum (5) full discharge cycles.

Notes

Notes

In addition to the wide product portfolio Eaton has a comprehensive range of service packages to match different type of maintenance needs and budgets.

For assistance with your power quality needs, contact your local Eaton service and sales representatives.

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00BROC1018124 Rev A July 2009
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