Powerware Series Product Catalogue

UPS Solutions & Services

Powering Business Worldwide

Contents


Aerospace


Truck

Powering business worldwide

Discover Eaton – a leader in the power management field

Since 1911, when our company began trading as a small truck parts supplier, Eaton® Corporation has come a long way. Today, as a diversified power management company, Eaton has sales of $13.7 billion USD (FY 2010), employs 70,000 people and has customers in more than 150 countries. Everyday, we help companies across the world to manage power, and do more, while consuming less energy.

Eaton's innovative products, solutions and technologies are designed to help customers to manage power and conserve resources while working more productively, safely and sustainably. Our integrated and diversified business strategy ensures that we remain at the forefront of our industry, decade after decade.

Electrical

A global leader in electrical control, power distribution, uninterruptible power supply and industrial automation products and services. Our products provide customer-driven PowerChain Management® solutions to serve the power system needs of the industrial, institutional, government, utility, commercial, residential, IT, mission critical and OEM markets worldwide.

Aerospace

A leading global supplier to commercial and military aviation and aerospace industries. An extensive technology portfolio includes hydraulic systems, fuel systems, motion control systems, propulsion sub-systems, cockpit controls and displays and fluid health monitoring systems. Our products improve fuel economy, aircraft performance, reliability and safety.

Truck

A leader in the design, manufacture and marketing of complete line of drivetrain systems and components for medium- and heavy-duty commercial vehicles. Under the "Roadranger" brand, Eaton also markets lubricants, safety products and service tools. Eaton's hybrid power systems have earned the company recognition as a global leader in alternative power for commercial vehicles.

Automotive

A supplier of critical components that reduce emissions and fuel consumption and improve stability and performance of cars, light trucks and commercial vehicles. Principal products include engine valves and valve train components, transmission and engine controls, supercharger, locking and limited slip differentials, cylinder heads, fluid conveyance components, body mouldings and spoilers.

Hydraulics

A worldwide leader in reliable, high-efficiency hydraulic systems and components for use in mobile and industrial applications. Markets include agriculture, construction, mining, forestry, utility, material handling, earth moving, truck and bus, machine tools, moulding, primary metals, automotive, power generation, port machinery and entertainment.

... more sustainably

Sustainability – smaller footprint in the world

The principle of sustainability means meeting the current needs of our own society without compromising the needs or options of future generations. It is a principle, which forms the very core of our design and production philosophy and guides all our activities across the world. Eaton commitment to reducing it's own ecological footprint covers a wide range of green technologies, products and services that help customers utilise electrical power more efficiently, while improving environmental performance.

Green Leaf certification

Eaton has developed a rigorous internal environmental certification process called the Eaton Green Leaf based on the guidelines of major international standards bodies, such as the European Union, the US Federal Trade Commission and the International Organisation for Standardisation (ISO). Although all of Eaton's products and solutions are designed to meet or exceed government standards for protecting the environment, products and solutions with the Green Leaf designation go well beyond these standards to provide exceptional environmental benefit.

TM

An Eaton Green Solution

When you see this symbol, you know the solution represents an Eaton benchmark for environmental performance.

Learn more about Eaton Green Solutions at **www.eaton.com/greensolutions**

Powering electrical systems worldwide

Eaton is a market-leader in electrical power distribution, power quality systems, industrial automation and control products and services. Our technology-driven solutions serve the mission-critical needs of the industrial, utility, commercial, residential and information technology markets.

Buildings

Residential, Healthcare, Education, Commercial offices, Retail, Public sector, Airports

- Electrical distribution solutions for safe and efficient power delivery
- Power quality systems for uptime and reliability
- Power metering and monitoring to add intelligence and save costs
- Industrial control products for HVAC applications

Information Technology

Data centers, Telecommunication, Networks, Computer rooms

- World's most efficient line of UPSs to reduce footprint and save energy
- Reliable power systems with inherent redundancy to improve availability
- Power metering and monitoring to diagnose problems and lower costs
- Local service and support for quick response

Industrial & Machinery

Manufacturing, Agriculture, Construction, Mining and Metals, Petrochemicals, Pharmaceuticals, Pulp and Paper, Material handling

- Electrical distribution equipment to deliver power throughout the enterprise
- Control & automation and power quality equipment for process control
- Power metering and monitoring to manage energy costs and uptime
- Power and motion control products to optimize productivity, reliability, safety and operator comfort

Energy & Utilities

Renewable energy: Solar, Wind, Hydropower-
Traditional energy: Oil, Gas,
Smart grid, Water and waste water

- Electrical balance of system and turnkey services for residential, utility and commercial solar installations
- Power distribution equipment, control components and system installations services
- Network power grid technology for intelligent data, lower costs and crew/public safety

Power Quality Business

Eaton's power quality business 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 reliably and efficiently.

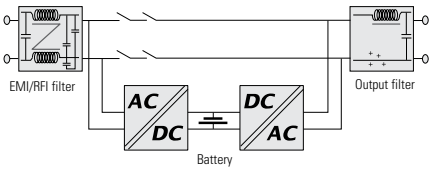
Eaton product and service range

- AC UPS from 550 VA up to 4400 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

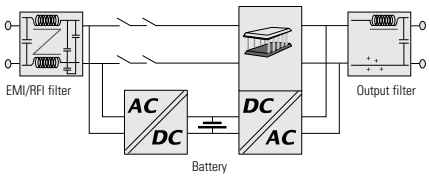
Eaton products are manufactured in Finland, USA, China, Taiwan, India, Brazil, UK and New Zealand.

Power Protection for Different Needs

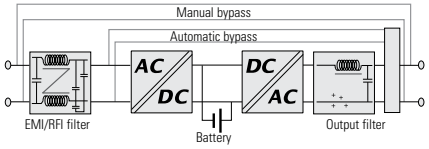
There are nine common types of power problems, including power failure, power sag, power surge, undervoltage, overvoltage, switching transient, line noise, frequency variation and harmonic distortion. Based on three UPS topologies, Eaton offers a wide range of UPS solutions to provide an appropriate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

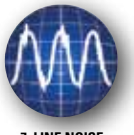

2. POWER SAG


3. POWER SURGE


4. UNDERVOLTAGE


5. OVERVOLTAGE


6. SWITCHING TRANSIENT


7. LINE NOISE


8. FREQUENCY VARIATION


9. HARMONIC DISTORTION

Energy Saver System

Energy Advantage Architecture (EAA)

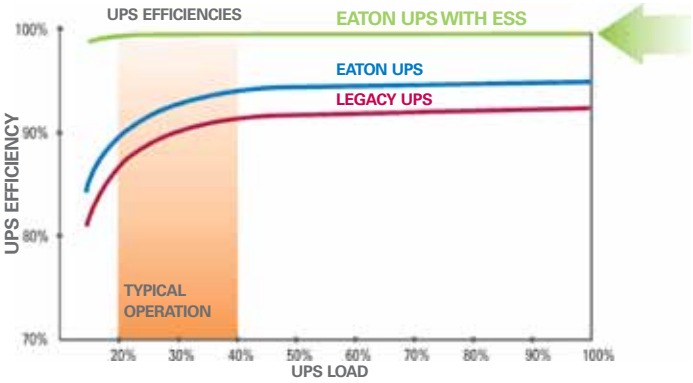
The rising demand for highly available, reliable and efficient power is a continuous challenge for data centre operators. Higher energy efficiency helps to address increasing environmental, regulatory and economic pressures.

Eaton has developed innovative and proprietary technologies that improve system efficiency without compromising on reliability under the Energy Advantage Architecture (EAA) umbrella.

Energy Saver System (ESS) is one of these technologies.

Maximised energy efficiency

With **85 percent reduction in UPS energy losses**, ESS technology dramatically reduces energy consumption, environmental impact and power costs without compromising load protection. With these outstanding energy savings, it is possible to recover the entire cost of the UPS over a three to five year period.



ESS enables market-leading 99 percent efficiency across the entire operating range. Compared to conventional 'eco-mode' capabilities available with legacy products, ESS offers the best possible efficiency and the fastest transition times to double conversion when power disturbances occur.

Applications

Energy Saver System is available for all Eaton 9390 and 9395 UPSs including:

- stand-alone single UPSs
- parallel systems

All existing installations can be upgraded with the ESS capability.

Energy Saver System

No compromise on reliability

In ESS mode the UPS safely provides mains current directly to the load when the input is within the acceptable limits by its voltage and frequency. If input power exceeds the predefined limits by frequency or voltage, the UPS switches to double conversion. If input power is outside the tolerances of the system, the UPS draws power from available battery modules.

Superior detection and control algorithms continuously monitor incoming power quality and allow the UPS to engage power converters in less than two milliseconds when the utility source exceeds predefined limits by its voltage or frequency, thus always providing secured power to the critical load while maximising efficiency. If the UPS detects a fault condition while operating in ESS, it is able to detect and determine whether the fault is caused by the load or if it is upstream from the UPS. A fault at the bypass source results in immediate switchover to the inverter; a fault in the load keeps the UPS in Energy Saver System (ESS).

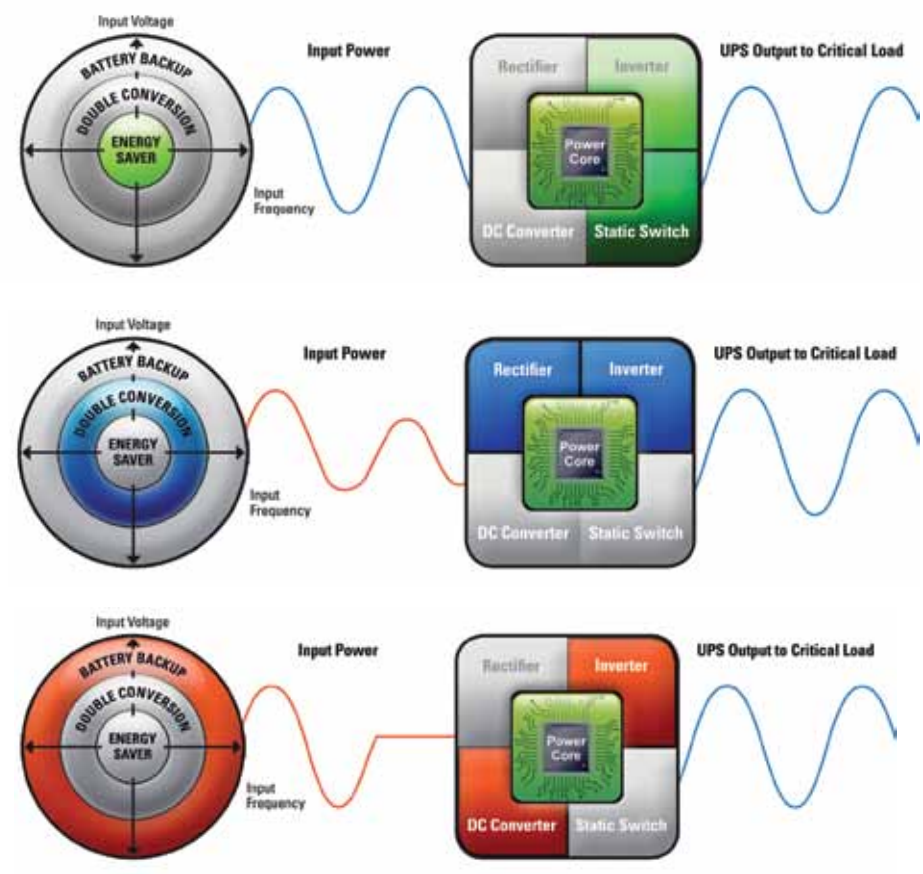
Proven Eaton technology ensures reliability and continuous load availability without compromising the protection of the supported equipment.

Extensive configurability

Eaton UPS with Energy Saver System features three configurable modes of operation:

- Standard double conversion mode: the UPS operates as normal, supplying power through the power converters.
- Energy Saver System: the power converters are in ready state and the static bypass switch allows the UPS to supply mains power directly.
- High Alert mode: the UPS automatically transfers from ESS to double conversion mode and in case of multiple recurring utility line disturbances it stays there for a predefined time (default one hour) until it is safe to return to ESS.

The UPS seamlessly executes transitions through different operating modes as needed. This is only possible with transformer-free topologies.



Active components engaged during Energy Saver System mode

Availability

ESS is available for all 9390 and 9395 UPSs. Parallel UPS systems also support operation in ESS mode. Existing installations can be upgraded with ESS capability.

Variable Module Management System

Energy Advantage Architecture (EAA)

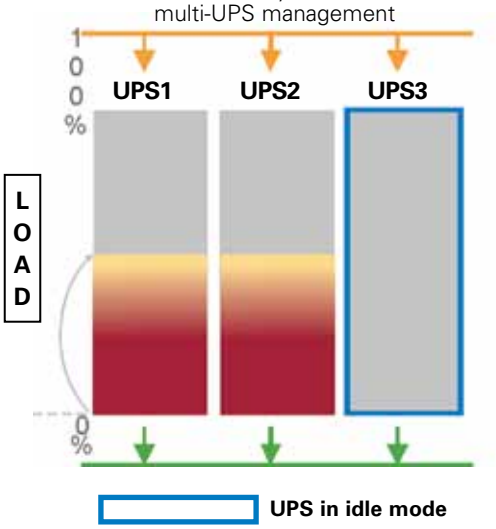
The rising demand for highly available, reliable and efficient power is a continuous challenge for data centre operators. Higher energy efficiency helps to address increasing environmental, regulatory and economic pressures.

Eaton has developed innovative and proprietary technologies that improve system efficiency without compromising on reliability under the Energy Advantage Architecture (EAA) umbrella.

Typical field operations are usually within low load range, but UPSs do not operate at optimal efficiency when used for lighter loads.

In some multi-UPS parallel systems used with lighter loads, the system maximises the load percentage of the UPSs by putting the UPSs that are not needed to power the load into idle mode. This results in partial energy savings and is limited to multi-UPS systems, with no efficiency improvements for single-UPS systems.

Typical operations
Parallel 800 kVA system with some multi-UPS management



Variable Module Management System (VMMS) technology maximises efficiencies at lighter loads without compromising reliability.

Applications

Typical applications where VMMS is particularly efficient include:

- UPSs in redundant N+1 and 2N systems
  - Lightly loaded: UPSs in these systems typically operate at low loads, < 45% load level
- Data centres, especially when the UPS system feeds dual-corded servers
- Any applications where load is not constant

Variable Module Management System (VMMS)

Maximised energy efficiency

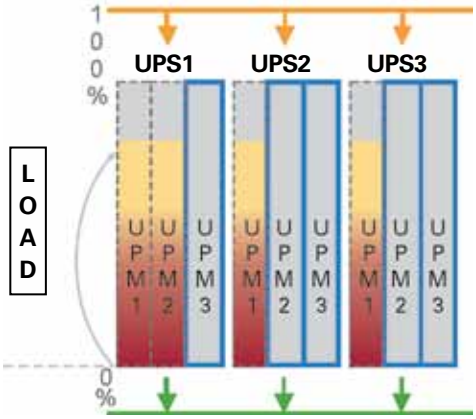
VMMS optimally employs uninterruptible power modules (UPMs) in the UPS to achieve higher efficiencies in double conversion mode in order to maximise the percentage load level of the remaining active UPMs by switching UPMs that are not needed to ready state*.

This is calculated according to the UPMs' VMMS load threshold – 80% by default – and the system configuration (redundancy requirements). This results in maximised energy savings.

VMMS is only possible thanks to Eaton 9395 UPS modularity. VMMS–can also be applied in multimodule single-UPS systems.

**In "ready state," the UPM rectifies the DC-link, generates logic level PWM (Pulse Width Modulation) signals and filters EMI and lightning spikes.*

VMMS
Parallel Eaton 9395 – 825 kVA modular UPS and VMMS



Full system efficiency is automatically optimised according to the load level

No compromise on reliability

When a disturbance or load increase occurs on a critical bus, all all the UPMs in ready state are able to react quickly, immediately switching back to double conversion mode connecting the existing PWM signals to the IGBT gates.

In VMMS, all UPMs will switch to double conversion if:

- the output voltage fluctuates by more than 3% for any reason
- any UPM reaches its current limit or discharges its battery
- battery recharge is necessary.

Once the above conditions are resolved, the system switches back to VMMS, after a customer-preset time delay (1 to 60 hours): once the load stabilises, Eaton proprietary design and algorithms allow the system to determine which UPMs to switch back to ready state to maximise efficiency according to the new operating conditions.

Extensive configurability

Customers can decide how to configure their system, establishing the number of redundant UPMs and the max percentage load level per UPM allowed in VMMS setting other UPM's in ready state.

VMMS can be used in all multi-module (multiple-UPM) 9395 systems:

- Single 9395 units from 550kVA to 1100kVA
- Distributed parallel systems (Xx550, Xx825, Xx1100)
- SBM system

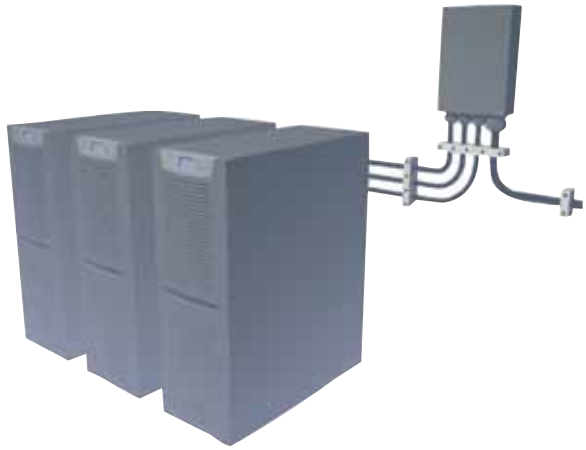
Existing installations can also be upgraded with VMMS capability:

- VMMS maintains redundancy and achieves higher efficiency by intelligently controlling the load levels of UPMs
- Number of redundant UPMs can be selected (N+0, N+1, N+2, N+X)
- UPMs in ready state can be used as redundant units (N+0)

Data centre with dual-corded servers, 825 (3x275) kVA UPS on A and B side – 440 kVA load

UPS configuration	Without VMMS	VMMS on N + 1 redundancy	VMMS on N + 0 redundancy
Efficiency @ 440 kVA load	91.2%	92.8%	94.3%
UPS energy savings	Used as reference for savings calculation	56 MWh / year	108 MWh / year
Additional benefits & comments	✓ Industry-leading UPS efficiency in double conversion	✓ Additional energy savings from reduced cooling in VMMS (typically 30-40% on top of UPS energy savings) ✓ UPMs in VMMS ready state available for redundancy	
	 A Feed 220 kVA  B Feed 220 kVA	 A Feed 220 kVA  B Feed 220 kVA	 A Feed 220 kVA  B Feed 220 kVA

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 4.4 MVA (400V) systems
- Easy and modular parallel UPS system upgrade with additional capacity or redundancy
- Erases single point of failure

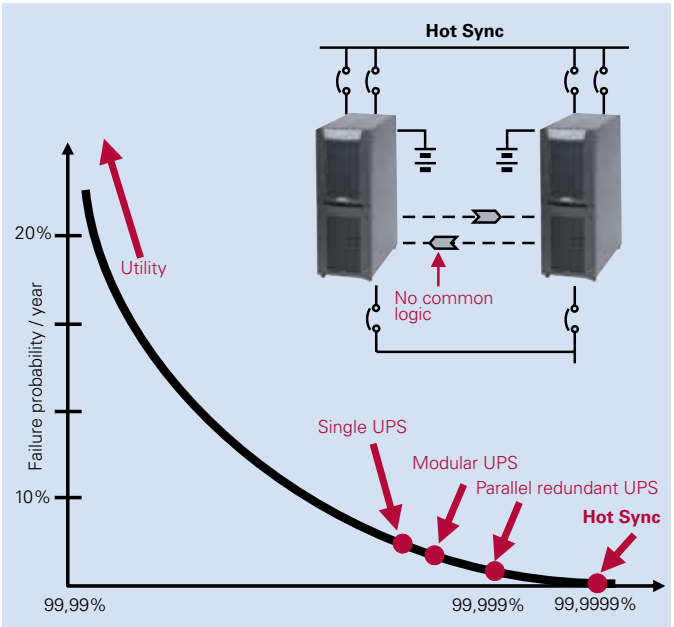


Figure 1. Power availability with various power supply configurations.

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.

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.

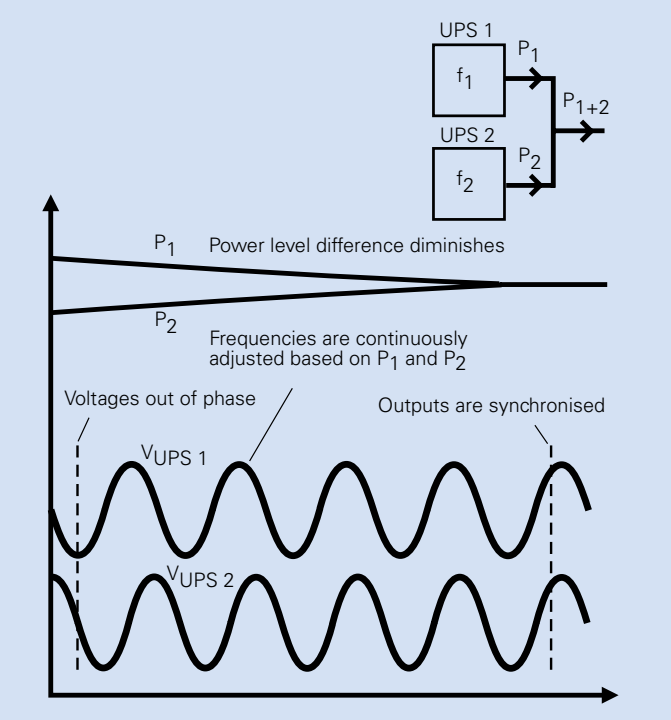


Figure 2. Well-balanced load share is achieved by adjusting output frequencies; thus the phase difference between parallel UPS output voltages is forced to zero.

The 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.

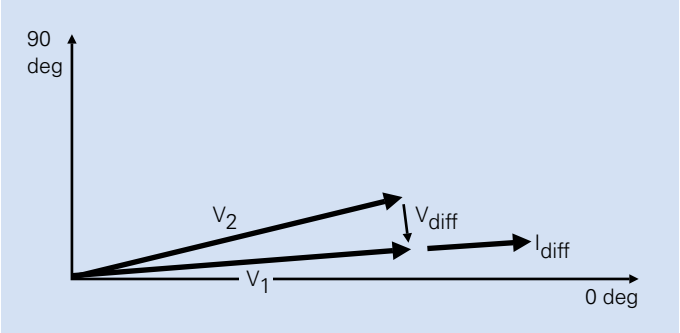


Figure 3. A phase displacement between parallel connected UPS voltages (V1 and V2) causes current flow between the units thus imbalances load share.

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

Where:

Fn = frequency

F_{n-1} = previous frequency

Pn = power to load

K1 = frequency reduction factor

K2 = power change rate factor

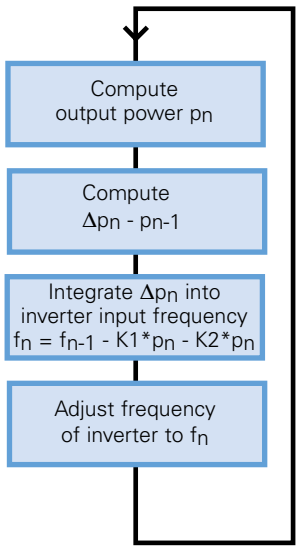


Figure 4. With HotSync algorithm, inverter phase angel is adjusted by output power and its change rate.

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

Superior battery management

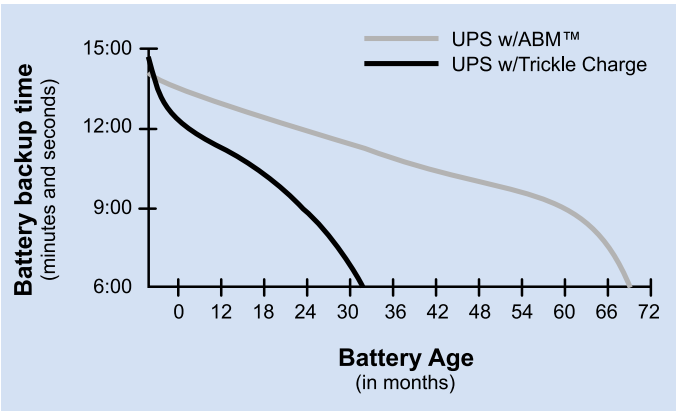
Battery service life is a major contributor to UPS reliability. Since batteries are electrochemical devices, their performance gradually decreases over time. Premature wear-out means higher costs in terms of replacement labour and shorter service cycle. A worn battery entails a risk of unexpected load 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.

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

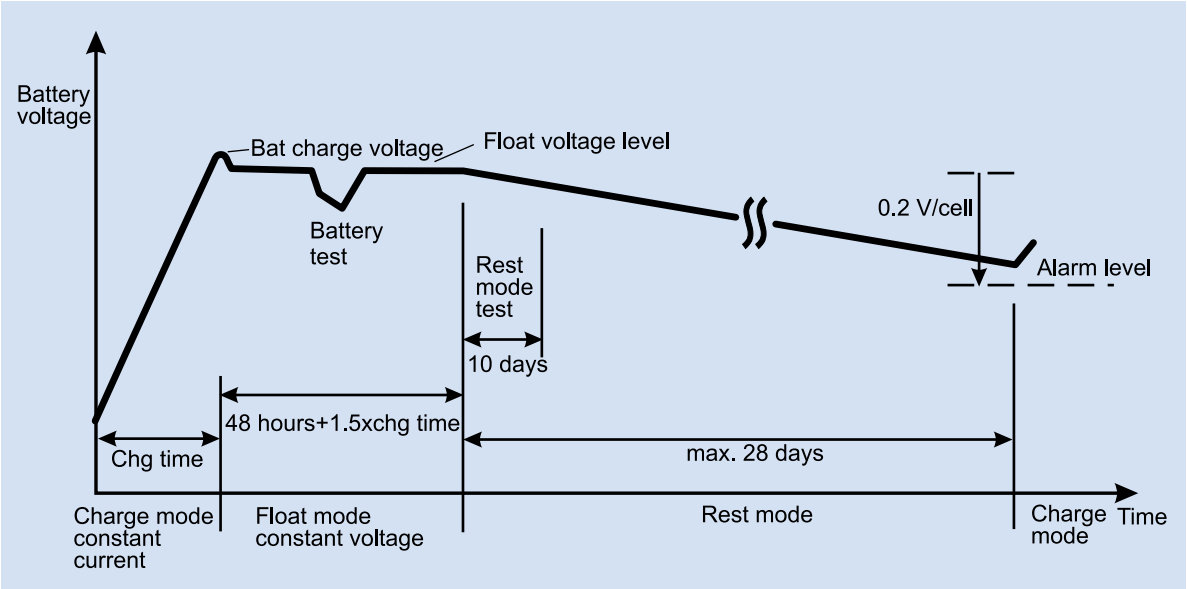


ABM technology significantly increases battery service life.

ABM Technology

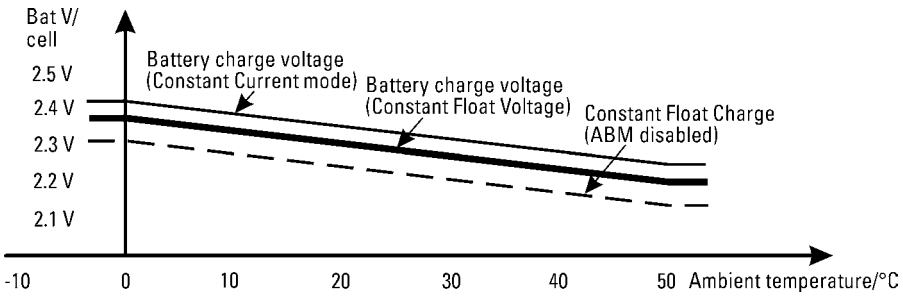
ABM cycle and operation – how does it work?

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 3S UPS

550 – 700 VA

Ideal for protecting:

- Computers and peripherals
- Broadband modems (internet and TV)
- IP telephony equipment
- POS equipment

Power protection for office and home computer equipment

Protection against power problems

- The Eaton 3S UPS helps to protect your computer equipment in case of everyday events such as lightning strikes, storms, over-demand on the utility grid, accidents, and natural disasters knocking out power without warning.
- In the event of a total blackout, the unit provides sufficient battery backup time to last through most power outages.
- The 3S also protects telephone, broadband and Ethernet line from "back door" power surges.
- The shutdown software makes it possible to automatically save your work and shut down your application without losing any data. Once the power is restored, you can continue working exactly where you left off.

Easy integration and installation

- Attractive design and glossy finish make the 3S a perfect fit for the modern office environment.
- The 3S comes with either 6 Schuko (DIN) or 6 French (FR) outlets for easy connection of typical computer configurations with peripherals (IEC model also available with 8 outlets).
- The 3S features a HID-compliant USB port (cable supplied), for automatic integration with common operating systems (Windows/Mac OS/Linux).
- Compact unit fits on or under your desk or can be mounted on a wall.
- Easy-to-replace battery helps to extend UPS service life.

Eaton 3S UPS

1. 3 Schuko or FR outlets with surge protection
2. 3 Schuko or FR outlets with battery backup and surge protection
3. On/Off button + LED interface
4. USB port
5. Dataline protection
6. Replaceable battery
7. Reset button (circuit breaker)
8. Wall-mounting system

Eaton 3S 700 DIN

Eaton 3S 700 IEC

1. 4 IEC outlets with surge protection
2. 4 IEC outlets with battery backup and surge protection
3. On/Off button + LED interface
4. USB port
5. Dataline protection
6. Replaceable battery
7. Reset button (circuit breaker)
8. Wall-mounting system

TECHNICAL SPECIFICATIONS	Eaton 3S 550	Eaton 3S 700
Rating (VA/W)	550 VA / 330 W	700 VA / 420 W
Application		
Output connection (FR/DIN models)	3 outlets with battery backup and surge protection + 3 outlets with surge protection	
Output connection (IEC models)	4 outlets with battery backup and surge protection + 4 outlets with surge protection	
Characteristics		
Input voltage	Up to 161-284 V (adjustable)	
Output voltage	230 V (settable to 220 V, 230 V or 240 V)	
Frequency	50-60 Hz autoselect	
Input protection	Resettable circuit breaker	
Battery		
Battery type	Compact, sealed lead-acid (replaceable)	
Battery test	Yes	Yes
Cold start (no mains power)	Yes	Yes
Deep-discharge protection	Yes	Yes
Battery replacement indicators	LED	LED
50% load backup	10 min	9 min
70% load backup	6 min	6 min
Communication		
Communications port	HID-compliant USB port for automatic integration with most common operating systems (Windows XP, Vista and 7, Linux, Mac OS X), cable supplied	
Line protection	Tel/fax/modem/internet/Ethernet	
Standards compliance		
Safety	IEC/EN 62040-1-1, CE mark	
EMC	IEC 62040-2	
Dimensions, weight and colour		
Dimensions H x W x D	86 x 140 x 335 mm	86 x 170 x 335 mm
Weight	2.9 kg	3.8 kg
Colour	Black	Black
Customer service & support		
2-year warranty	Standard product exchange, including battery	
Warranty+	Optional 3-year warranty (depending on the country please visit www.eaton.com/powerquality)	

Part numbers	550	700
French sockets (FR)	3S550FR	3S700FR
Schuko sockets (DIN)	3S550DIN	3S700DIN
IEC sockets	3S550IEC	3S700IEC

FR DIN IEC

Eaton 5110 UPS

500, 700 and 1000 VA

Power protection for:

- Workstations
- Office computers
- Office equipment

Line interactive UPS

Highest power performance

- The 5110 UPS offers an appropriate level of power protection for office computers and workstations.
- The UPS does not only offer backup when power is totally lost, it also regulates the voltage and thereby offers protection against five of nine typical power problems: power failures, sags, surges, undervoltage and overvoltage.
- All 5110 models have four battery backup protected outlets as well as four "surge-protection" only outlets for the load not needing battery backup.

Unmatched reliability

- Buck and Boost operation corrects a wide range of input voltage variations through continuous regulation, without the use of batteries.
- Extend UPS service life with user-replaceable batteries.
- Protect networked equipment from "back door" power surges coming through LAN or telephone lines.

Outstanding versatility

- The 5110 occupies a small footprint and can be placed on its side under the monitor.
- The UPS is equipped with a USB port and if you choose to install the bundled shutdown software it automatically manage your operating system graceful shutdown in case of extended power outages.
- All models come bundled with the shutdown software, USB cable and two IEC-IEC load cables as well as a RJ-11 cable your Tele/DSL line from surges.

Eaton 5110 UPS

1. LED user interface
2. Panel for replacing batteries
3. USB port
4. Dataline protection
5. 4xIEC 10A + 4xIEC 10A surge only
6. Circuit breaker reset button

TECHNICAL SPECIFICATIONS

Rating	500 VA	700 VA	1000 VA
Part number	103004261-5591	103004262-5591	103004263-5591
Capacity (VA/Watts)	500/300	700/420	1000/600
Dimensions W*D*H (mm)	87*260*270 mm	87*260*270 mm	87*384*270 mm
Weight (kg)	6 kg	8 kg	12 kg
Input connection	IEC320/ 10A	IEC320/10A	IEC320/10A
Output connection	4*IEC320 10A + 4 IEC320 10A surge only	4*IEC320 10A + 4 IEC320 10A surge only	4*IEC320 10A + 4 IEC320 10A surge only
Typical runtime (full load) (half load)	3 min 8 min	3 min 8 min	5 min 15 min
Bundled with	(2) IEC-IEC cables Sofware & USB cable RJ 11 cable	(2) IEC-IEC cables Sofware & USB cable RJ 11 cable	(2) IEC-IEC cables Sofware & USB cable RJ 11 cable
Operational			
Nominal Input voltage (VAC)	230 VAC		
Input voltage range	178-275 VAC		
Operating frequency	50/60 Hz auto sensing		
Nominal Output voltage	230 VAC		
Output voltage regulation	230 V +/- 10%		
Overload capacity	130%+/- 10% immediate shutdown 105% shutdown after 5 min		
Efficiency	95%, normal mode		
User interface			
LED	UPS On, UPS on Battery, Overload,		
Standard communication ports	USB		
Environmental			
Operating temperature	0°C - +40 °C		
Altitude	< 3000 m		
Audible noise at 1 meter	< 40 dB		
Certification			
Markings	CE		

BACKUP TIME TABLE

Load	500 VA	700 VA	1000 VA
50W	40 min	50 min	80 min
100W	17 min	20 min	60 min
150W	10 min	14 min	40 min
200W	6 min	9 min	25 min
250W	4 min	7,5 min	20 min
300W	3 min	6 min	17 min
350W		4 min	14 min
400W		3 min	12 min
450W			10 min
500W			8 min
550W			6 min
600W			5 min

Eaton 5115 UPS

500 – 1400 VA

Line interactive UPS

Highest power performance

- The 5115 UPS protects critical equipment from five of nine typical power problems: power failures, sags, surges, under-voltage and overvoltage.
- The UPS guarantees pure sine wave output during battery operations. The connected load continues to receive high quality electrical wave and operates smoothly ever during power outages.

Unmatched reliability

- Buck and Boost operation corrects a wide range of input voltage variations through continuous regulation, without the use of batteries and ensures consistent input voltage to the loads protected.
- ABM technology uses an innovative three-stage charging technique, that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%.
- Batteries can be hot-swapped without ever having to shut down connected equipment.

Outstanding versatility

- Incorporating both serial and USB communications ports, the Eaton 5115 is well-equipped to meet today's communication requirements
- The 5115 comes complete with the Eaton Software Suite CD, where wizard guides you through the installation process and helps you choose components that are compatible with your systems to make the installation of the shutdown software as easy as possible.

Power protection for:

- Small servers
- Network devices
- Storage systems

Eaton 5115 UPS

1. LED user interface
2. Panel for replacing batteries
3. 1 USB port + 1 serial port
4. Dataline (network) protection
5. 4 to 6 IEC 10A sockets

TECHNICAL SPECIFICATION

Rating	500 VA	750 VA	1000 VA	1400 VA
Part number	05146549-5591	05146555-5591	05146561-5591	05146567-5591
Capacity (VA/watts)	500/320	750/500	1000/670	1400/950
Dimensions WxDxH (mm)	150x268x185	150x333x185	150x333x185	150x388x185
Weight (kg)	8	12	13	17
Input connection	IEC320/10A	IEC320/10A	IEC320/10A	IEC320/10A
Output connection	4xIEC320/10A	4xIEC320/10A	6xIEC320/10A	6xIEC320/10A
Typical runtime (full load) (half load)	5 min 15 min	6 min 17 min	5 min 15 min	5 min 15 min
Operational				
Nominal input voltage (Vac)	220/230/240 Vac			
Input voltage range	184-276 VAC(± 20% of nominal)			
Operating frequency	50/60 Hz auto sensing			
Input power factor	Same as load			
Nominal output voltage	220/230/240 Vac			
Output voltage regulation	-10%/+6% of selected nominal voltage			
Overload capacity	110% 3 min; 150% 10 cycles			
Efficiency	95%			
User interface				
LED	Four LEDs; UPS on, UPS on battery, overload, alarm			
Standard communication ports	RS232 & USB			
Optional	External SNMP adapter			
Environmental				
Operating temperature	0°C - +40°C			
Storage temperature	-15°C -+55°C			
Altitude	<3000 m			
Audible noise at 1 metre	<40 dB			
Certification				
Markings	CE			
Safety	IEC 62040-1-1, UL 1778			
EMC	IEC 62040-2			

EATON 5115 RUNTIMES FOR TYPICAL APPLICATIONS

Load VA / W	500 VA	750 VA	1000 VA	1400 VA
200 VA / 128 W	17	38	41	58
300 VA / 192 W	11	27	28	41
500 VA / 320 W	5	14	15	28
600 VA / 400 W		9	10	19
750 VA / 500 W		6	8	14
900 VA / 600 W			6	10
1000 VA / 670 W			5	8
1200 VA / 800 W				6
1400 VA / 950 W				5

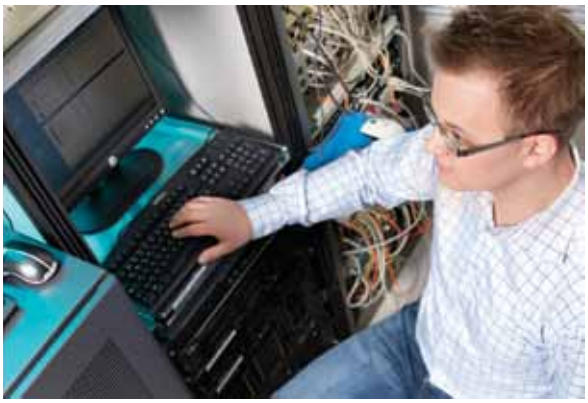
Eaton 5115 RM UPS

500 – 1500 VA

5115 RM front panel

Power protection for:

- Small rack servers
- Rack network devices
- Small storage equipment



Line interactive UPS

Highest power performance

- The 5115 RM UPS protects critical equipment from five of nine typical power problems: power failures, sags, surges, undervoltage and overvoltage.
- The UPS guarantees pure sine wave output during battery operations. The connected load continues to receive high quality electrical wave and operates smoothly event during power outages.

Unmatched reliability

- Eaton ABM technology uses an innovative three-stage charging technique, that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%.
- Batteries can be hot-swapped without ever having to shut down connected equipment.
- The load segment control makes it possible to optimize the runtime of critical devices by shutting down non essential devices first and saving battery capacity for the most critical ones.

Outstanding versatility

- The 5115 design provides high power density, occupying only 1U (45 mm), which conserves valuable space in the rack for other equipment.
- USB and RS232 communication is offered as standard plus an extra slot for optional communication card (including SNMP/Web card).
- The UPS comes complete with the Eaton Software Suite CD, where wizard guides you through the installation process and helps you choose components that are compatible with your systems to make the installation of the shutdown software as easy as possible.

Eaton 5115 RM UPS

1. Led user interface
2. Panel for replacing batteries
3. 1 USB port + 1 serial port
4. Data line protection
5. Load segments
6. Communication card slot

TECHNICAL SPECIFICATIONS

Rating	500 VA	750 VA	1000 VA	1500 VA
Part number	103003267-6591	103003270-6591	103003273-6591	103003276-6591
Capacity (VA/watts)	500/320	750/500	1000/670	1500/1000
Dimensions WxDxH (mm)	440x580x45	440x580x45	440x580x45	440x580x45
Weight (kg)	9	15	15	19
Input connection	IEC320/10A	IEC320/10A	IEC320/10A	IEC320/10A
Output connection	4xIEC320/10A	4xIEC320/10A	4xIEC320/10A	4xIEC320/10A
Typical runtime (full load) (half load)	5 min 15 min	6 min 17 min	5 min 15 min	5 min 15 min
Operational				
Nominal input voltage (Vac)	220/230/240 Vac			
Input voltage range	(± 20% of nominal)			
Operating frequency	50/60 Hz auto sensing			
Nominal output voltage	220/230/240 Vac			
Output voltage regulation	-10%/+6% of selected nominal voltage			
Overload capacity	110% 3 min; 150% 10 cycles			
Efficiency	95%			
User interface				
LED	Four LEDs; UPS on, UPS on battery, overload, alarm			
Standard communication ports	RS232/USB and X-slot			
Optional	Internal SNMP adapter			
Environmental				
Operating temperature	0°C - +40°C			
Storage temperature	-15°C -+55°C			
Altitude	<3000 m			
Audible noise at 1 metre	<40 dB			
Certification				
Markings	CE			
Safety	IEC 62040-1-1 & UL 1778			
EMC	IEC 62040-2, EN 6100-3-2			

Eaton 5115 RM runtimes for typical applications

Load VA / W	500 VA	750 VA	1000 VA	1500 VA
200 VA / 128 W	17	38	41	76
300 VA / 192 W	11	27	28	58
500 VA / 320 W	5	14	15	28
600 VA / 400 W		9	10	19
750 VA / 500 W		6	8	14
900 VA / 600 W			6	10
1000 VA / 670 W			5	8
1200 VA / 800 W				6
1500 VA / 1000 W				5

Eaton 5130 UPS

1250, 1750, 2500, 3000 VA

2U rackmount installation

Power protection for:

- IT and networking environments
- Servers, networking gear
- Telecommunications, VoIP, security systems

Line interactive UPS

Highest power performance

- The 5130 protects connected equipment from five of the most common power anomalies: failures, surges, sags, under-voltage and overvoltage.
- 0.9 power factor: more real power to your protected load. By delivering more real output power, the 5130 powers more servers than another UPS of equivalent VA rating with a lower power factor. 5130 is compatible with all modern IT equipment.

Unmatched reliability

- Load segment control enables prioritized shutdown of non-essential equipment during outages to maximize battery runtime for critical devices. Load segment control can also be used to remotely re-boot locked-up network equipment or manage scheduled shutdowns and sequential startups.
- You can extend the runtime to several hours by adding up to four external battery modules. Each external battery module occupies only 2U for most models (3U for reduced depth, 3000 VA models).
- With hot-swappable batteries, you can replace a battery module without disrupting server room operations or power to protected equipment. With an optional, hot-swap maintenance bypass module, you can even replace the entire UPS.

Outstanding versatility

- The UPS offers the choice of rackmount or tower installation. Pedestal and rail kits are included in all models at no extra charge.
- The 2U model is optimized for rack mounting but is easily deployed as a tower. The 3U unit is optimized for tower deployment or short-depth racks, which makes it especially suitable for telecom equipment racks.
- The 5130 offers Serial and USB communication plus an extra slot for optional communication card (including SNMP/Web card, relay contact card) allowing remote monitoring in a variety of networking environments.
- The UPS comes complete with the Eaton Software Suite CD, including SNMP compatible power management software.

Eaton 5130 UPS

1. Panel for replacing batteries
2. Load segments
3. USB & Serial ports + RPO/ROO connector
4. Communication card slot
5. LED user interface
6. EBM connector

TECHNICAL SPECIFICATIONS

General	
LEDs	13 status-indicating LEDs
Topology	Line interactive
Diagnostics	Full system self-test at power up
Transfer time	1–4 ms typical
ROO/RPO	Rear deck emergency stop connector (for remote on/off and power off)
Rail kit/tower stand	Included with all units
Electrical Input	
Nominal voltage	230 Vac
Voltage range*	160–294 V
Frequency	50/60 Hz
Frequency range	47–70 Hz for 50 Hz operation 56.5–70 Hz for 60 Hz operation
Dedicated circuit breaker rating	700–2000 VA: 10A 3000 VA: 16A
Electrical Output	
Power factor	0.9
On utility voltage regulation	184–265 Vac
On battery voltage regulation	-10%, +6% of nominal
Efficiency	Normal or line mode: >94%
Over current protection	Electronic current limit
Load crest factor	3:1
Load segments	Two groups of two individually controlled output receptacles

Battery	
Battery replacement	Hot-swappable internal batteries
Start-on-battery	Allows start of UPS without utility input
Communications	
Serial port	RS-232 (RJ45) port
USB port	As standard (HID), for communicating with Windows XP/Vista
Optional communication cards	ConnectUPS-MS Network Management Card, Relay/Serial Management Card -MS
Cables	RS 232 and USB communications cables included
Power management software	Eaton Software Suite CD-ROM (bundled with UPS)
Environmental	
Safety markings	CE; C-Tick; TUVus
Safety conformance	IEC/EN 62040-1-1, UL 1778
EMC compliance	IEC/EN 62040-2 EN 50091-2 class B
Operating temperature	0°C to +40°C
Storage temperature	-15°C to +50°C
Relative humidity	20–95% non-condensing
Audible noise	Max 45 dBA
Heat dissipation table (battery fully charged)	

Description	Part number	Rating (VA/Watts)	Input connection	Output receptacles	Dimensions H x W x D, mm	Weight, kg
PW5130i1250-XL2U	103006590-6591	1250/1150	IEC C14-10A	(8) IEC-C13-10A	86 x 441 x 509	24,3
PW5130i1750-XL2U	103006591-6591	1750/1600	IEC C14-10A	(8) IEC-C13-10A	86 x 441 x 509	26,6
PW5130i2500-XL2U	103006592-6591	2500/2250	IEC C20-16A	(1) IEC-C19-16A (8) IEC-C13-10A	86 x 441 x 634	33,8
PW5130i3000-XL2U	103006593-6591	3000/2700	IEC C20-16A	(1) IEC-C19-16A (8) IEC-C13-10A	86 x 441 x 634	33,8
PW5130i3000-XL3U	103006594-6591	3000/2700	IEC C20-16A	(1) IEC-C19-16A (8) IEC-C13-10A	131 x 441 x 484	34,3
Extended Battery Modules						
PW5130N1750-EBM2U	103006587-6591	NA	NA	NA	86 x 441 x 509	30,4
PW5130N3000-EBM2U	103006589-6591	NA	NA	NA	86 x 441 x 634	41,7
PW5130N3000-EBM3U	103006588-6591	NA	NA	NA	131 x 441 x 484	41,7

	Internal batteries		+1 EBM		+2 EBMs		+3 EBMs		+4 EBMs	
BATTERY RUNTIMES*	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load
PW5130i1250-XL2U	13	20	52	105	90	175	125	225	175	300
PW5130i1750-XL2U	9	14	33	60	55	100	80	145	105	180
PW5130i2500-XL2U	10	17	50	85	80	130	130	210	180	290
PW5130i3000-XL2U/3U	9	15	38	60	70	100	90	150	120	210

Eaton 9130 UPS

700 – 6000 VA

Multilingual LCD

Advanced power protection for:

- IT and networking environments
- Servers, networking gear
- Telecommunications, VoIP, security systems
- Medical systems
- Diagnostics and medical screening
- Patient record archives
- Manufacturing systems
- Chip fabrication
- Pharmaceutical production
- Chemical processing

Double conversion UPS

Highest power performance

- Double conversion topology. The 9130 constantly monitors power conditions and regulates voltage and frequency. Even when presented with the most severe power problems, UPS's output remains within 3% of nominal voltage.
- More real power. High 0.9 output power factor enables the 9130 to provide its full power capability to modern IT equipment.
- Highest efficiency to reduce utility and cooling spending. The 9130 can provide up to 95% efficiency in online double conversion mode and up to 98% in high-efficiency mode.

Unmatched reliability

- The internal bypass allows service continuity in case of internal fault, a maintenance bypass is also available (as option) for easy replacement of the UPS without powering down critical systems.
- Stronger, longer battery life. Eaton ABM® battery management technology uses an innovative three-stage charging technique, that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%.
- Batteries can be hot-swapped without ever having to shut down connected equipment.
- Possibility to add more runtime at any time with up to four external hot-swappable battery modules to run systems for hours if necessary.
- Enables prolonged runtime of essential equipment during power outages by allowing for orderly, remote shutdown of non-critical systems and processes thanks to a capability to control load segments (available up to 3kVA).

Outstanding versatility

- One platform, two factors, dozens of choices. Up to 3000 VA of UPS power is packed into only 2U of rack space. The tower option is about the size of a modern, compact PC.
- Enhanced configuration capability through easily navigated multilingual graphical display.
- Remote monitoring. The 9130 comes complete with the Eaton Software Suite CD including SNMP-compatible power management software providing control and visibility over all your UPS systems.
- Connectivity options are available for almost any network environment.

Eaton 9130 UPS

1. Multilingual graphical LCD display
2. Panel for replacing batteries
3. 1 USB port + 1 serial port
4. 1 Relay Output + 1 EPO connector
5. EBM battery unit connector
6. Load segments
7. Communication card slot

TECHNICAL SPECIFICATIONS

General	
User interface	Graphical LCD with blue backlight and text in English, French, German, Russian and Spanish
LEDs	Four status-indicating LEDs
Topology	True online, double-conversion
Diagnostics	Full system self-test
UPS bypass	Automatic bypass
Rail kit	Included with all rackmount units
Electrical Input	
Nominal voltage	220–240V
Voltage range	up to 120–276 VAC (depending on load level)
Frequency range	40–70 Hz (50/60 Hz)
Electrical Output	
Power factor	0.9
Voltage	±3 % of nominal regulation (on utility and battery)
Frequency regulation	±3 Hz online
Load crest factor	3 to 1

Communications	
Ports	RS-232 and USB HID port as standard
Relay output	Common alarm standard
Optional communication cards (BD/MS Slot)	SNMP/Web card for monitoring in SNMP-based networks, monitoring through Web browser interface. Relay card for integration to industrial environment and BMS, remote shutdown for IBM AS/400 systems
Environmental	
Safety and EMC markings	IEC/EN 62040-1-1, IEC/EN 62040-2, CE marking
Audible noise	<50 dB
Ambient operating	0˚C to +40˚C
Storage temperature	-20˚C to +40˚C with batteries and -25˚C to +55˚C without batteries
Relative humidity	5–90% non-condensing

Description	Part number	Rating (VA/Watts)	Input connection	Output receptacles	Dimensions H x W x D, mm	Weight, kg
Tower Models						
PW9130i700T	103006433-6591	700/630	C14	(6) C13	230 x 160 x 350	12.2
PW9130i1000T-XL	103006434-6591	1000/900	C14	(6) C13	230 x 160 x 380	14.5
PW9130i1500T-XL	103006435-6591	1500/1350	C14	(6) C13	230 x 160 x 430	19.0
PW9130i2000T-XL	103006436-6591	2000/1800	C14	(8) C13, (1) C19	325 x 214 x 410	34.5
PW9130i3000T-XL	103006437-6591	3000/2700	C20	(8) C13, (1) C19	325 x 214 x 410	34.5
PW9130i5000T-XL	103007841-6591	5000/4500	Hardwire	Hardwire	574 x 244 x 542	75.5
PW9130i6000T-XL	103007842-6591	6000/5400	Hardwire	Hardwire	574 x 244 x 542	75.5
Tower Extended Battery Modules						
PW9130N1000T-EBM	103006438-6591	NA	NA	NA	230 x 160 x 380	18.5
PW9130N1500T-EBM	103006439-6591	NA	NA	NA	230 x 160 x 430	24.3
PW9130N3000T-EBM	103006440-6591	NA	NA	NA	325 x 214 x 410	50.0
PW9130N6000T-EBM	103007843-6591	NA	NA	NA	574 x 244 x 542	111
Rack Models						
PW9130i1000R-XL2U	103006455-6591	1000/900	C14	(6) C13	86.5 x 438 x 450	16
PW9130i1500R-XL2U	103006456-6591	1500/1350	C14	(6) C13	86.5 x 438 x 450	19
PW9130i2000R-XL2U	103006457-6591	2000/1800	C14	(8) C13, (1) C19	86.5 x 438 x 600	29
PW9130i3000R-XL2U	103006463-6591	3000/2700	C20	(8) C13, (1) C19	86.5 x 438 x 600	29.5
Rack Extended Battery Modules						
PW9130N1000R-EBM2U	103006458-6591	NA	NA	NA	86.5 x 438 x 450	22.1
PW9130N1500R-EBM2U	103006459-6591	NA	NA	NA	86.5 x 438 x 450	28.1
PW9130N3000R-EBM2U	103006460-6591	NA	NA	NA	86.5 x 438 x 600	41.1

	Internal batteries		+1 EBM		+2 EBMs		+3 EBMs		+4 EBMs	
BATTERY RUNTIMES*	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load	75% Load	50% Load
Rack models										
PW9130i1000R-XL2U	13	22	55	82	103	186	151	250	223	312
PW9130i1500R-XL2U	11	18	47	81	83	143	126	208	195	262
PW9130i2000R-XL2U	13	24	63	95	118	190	170	242	221	345
PW9130i3000R-XL2U	8	14	34	62	70	92	96	156	130	211
Tower models										
PW9130i700T-XL	12	19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PW9130i1000T-XL	13	22	55	82	103	186	151	250	223	312
PW9130i1500T-XL	11	18	47	81	83	143	126	208	195	262
PW9130i2000T-XL	21	34	81	130	145	198	184	293	248	431
PW9130i3000T-XL	12	20	49	79	90	143	134	180	165	240
PW9130i5000T-XL	20	34	81	136	153	232	217	328	273	477
PW9130i6000T-XL	16	27	66	107	120	194	178	267	231	372

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

Eaton 9135 UPS

5000 – 6000 VA

Hot swappable batteries

LCD rotatable display

Advanced power protection for:

- Medium-density data centers
- Banking and security systems
- Manufacturing process control
- Retail point-of-sale systems
- Telecommunications/VoIP equipment

Double conversion UPS

Highest power performance

- The 9135 is constantly monitoring power conditions—regulating both voltage and frequency. Even when presented with the most severe power problems, this UPS's output remains within two percent of nominal voltage.
- Under normal power conditions, the 9135 can operate in high-efficiency mode at up to 97 percent efficiency thus decreasing utility and cooling bills. In double conversion mode, the UPS operates at up to 91 percent efficiency.

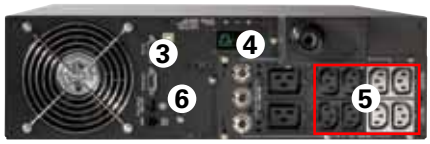
Unmatched reliability

- With a wide range of acceptable input voltages, this UPS does not depend on batteries to smooth out power fluctuations. Batteries are conserved for those times when utility power is highly unstable or completely out.
- The 9135 features hot-swappable components and an automatic internal bypass. Users can even remove and replace the battery and power modules without powering down the UPS or interrupting power to loads.
- Up to four external battery modules (EBMs) can be added to deliver more than an hour of extended runtime at full load—or hours under lighter loads. Each EBM occupies only 3U of rack space.
- With load segments users can also remotely re-boot locked-up network equipment. During a power outage, you could shut down power to less essential loads to extend battery backup time for more critical devices.

Outstanding versatility

- The 9135 increases power density, delivering 5000 - 6000 VA/4200W in only 3U of rack space, freeing more rack space for IT and telecom equipments.
- The UPS offers deployment versatility through rack and tower installation options with rail kits and pedestals provided.
- This UPS is even more user-friendly than its predecessors offering greater distribution capabilities, with eight IEC 10A & two IEC 16A outlets to power multiple pieces of equipment without a PDU.
- An intuitive LCD interface provides detailed information and menu-driven functions for UPS management. The blue, backlit LCD screen displays four lines of alphanumeric information. LEDs clearly display UPS status.
- The 9135 comes complete with the Eaton Software Suite CD, including SNMP compatible power management software.

Eaton 9135 UPS



1. Multilingual graphical LCD display
2. Panel for replacing batteries
3. USB & Serial ports, Contact port, EPO connector
4. EBM battery unit connector
5. Load segments
6. Communications card slot

TECHNICAL SPECIFICATIONS

General	
User interface	Graphical LCD with blue backlight and text in English, French, German, Portuguese, Italian and Spanish
LEDs	Four status-indicating LEDs
Topology	Double-conversion
Diagnostics	Full system self-test
UPS bypass	Automatic bypass
Rail kit	Included with all units
Electrical Input	
Nominal voltage	230V (220V-240V user selectable)
Voltage range	156–280 Vac (output PF 0.7)
Power draw of UPS (full load)	5000VA: 21.7A @230V 6000VA: 26A @230V
Recommended input-breaker rating	35A
Frequency	50/60 Hz autoselect
Frequency range	40–70 Hz
Electrical Output	
Power factor	0.7
On utility voltage	±2% of nominal regulation
On battery voltage	±2% of nominal regulation
Efficiency	>97% in high-efficiency mode; 91% in normal mode
Frequency regulation	±3 Hz online
Load crest factor	3 to 1
Battery	
Internal battery type	5.5 Ah, sealed, lead-acid; maintenance free
External battery modules	Up to four per 9135, rail kits included for rack mounting
EBM battery type	5.5 Ah, sealed, lead-acid; maintenance free
Battery recharge time	Six (6) hours to recover 90 percent of nominal backup time after 100 percent RCD load discharge
Battery replacement	Hot-swappable internal and external batteries
Start-on-battery	Allows start of UPS without utility input
Communications	
Serial port	RS-232 standard, RS-232 cable provided
USB port	HID standard, for communicating with Windows XP/ Vista
Relay output	DB-9 Dry Contact-common alarm standard
Software	LanSafe & NetWatch monitoring and management software
Optional communication cards	ConnectUPS-MS Network Management Card for direct control and monitoring in SNMP networks ConnectUPS-MS Card with ModBus RTU interface Serial Management Card-MS for integration to industrial environment and building management systems, remote shutdown for IBM AS/400 systems
Environmental	
Safety markings	CE, GS
EMC	IEC/EN 62 040-2 class A
Audible noise	Max 46 dB
Ambient operating	0˚C to +40˚C
Storage temperature	-20˚C to +40˚C with batteries and -25˚C to +55˚C without batteries
Relative humidity	5–90% non-condensing

Heat dissipation (BTUs/hr)			
Operating mode	Efficiency	5 kVA	6 kVA
Normal	91%	1150	1350
Battery	86%	1650	1960
High efficiency	97%	370	450

Description	Part number	Rating (VA/Watts)	Input plug	Output receptacles	Dimensions H x W x D, mm	Weight, kg
Rack Tower Models						
PW9135G5000-XL3UEU	103006721-6591	5000/3500	Hardwired	Hardwired + (2) C19, (8) C13	130 x 444 x 741	57
PW9135G6000-XL3UEU	103006722-6591	6000/4200	Hardwired	Hardwired + (2) C19, (8) C13	130 x 444 x 741	57
Extended Battery Modules						
PW9135N6000-EBM3U	103006723-6591	NA	NA	NA	130 x 444 x 650	77.5

	Internal batteries		+1 EBM		+2 EBMs		+3 EBMs		+4 EBMs	
BATTERY RUNTIMES*	**70% Load**	**50% Load**	**70% Load**	**50% Load**	**70% Load**	**50% Load**	**70% Load**	**50% Load**	**70% Load**	**50% Load**
PW9135G5000-XL3UEU	8	13	33	50	62	91	93	134	124	177
PW9135G6000-XL3UEU	7	10	27	40	51	74	76	110	101	146

* Backup times are approximate and may vary with equipment, configuration, battery age, temperature, etc.

Eaton 9140 UPS

7.5 - 10 kVA

Advanced power protection for:

Wire closets, server rooms

Double conversion UPS

Highest power performance

- Double conversion topology provides the highest level of protection available by isolating the output power from all input anomalies.
- 9140 protects mission-critical rackmount applications from downtime, data loss/corruption, and process interruption and delivers efficient, reliable power protection in only 6U of rack space, including batteries.

Unmatched reliability

- ABM technology uses an innovative three-stage charging technique, that only recharges the battery when necessary, so the battery experiences less corrosion and service life is prolonged by up to 50%.
- Batteries can be hot-swapped without ever having to shut down connected equipment.
- Possibility to add more runtime at any time with up to four external hot-swappable battery modules to run systems for hours if necessary.
- An internal automatic bypass feature allows the 9140 to continuously provide power to critical equipment while the system is serviced – even when the electronics are removed. A manual bypass switch in the chassis eliminates transfer time and allow for module repair and replacement without shutting down the load.

Outstanding versatility

- All 9140 UPS models and corresponding EBMs come with pre-installed rackmount hardware for easy installation in standard equipment racks (compatible with seismic requirements).
- The 9140 conservers valuable rack space with up to 10 kVA of power in only 6U of height, including batteries.
- Modular lightweight design facilitates installation and improves service time.
- The UPS is blade servers compatible with standard IEC receptacles.
- The 9140 features both LEDs and an intuitive, multilingual LCD screen on the front of the unit. This relays more in-depth operational information, communicates specific alarms and predictive service needs, and can be used to program certain features.

Eaton 9140 UPS

1. Multilingual graphical LCD display
2. Panel for replacing batteries
3. 1 USB port + 1 serial port
4. 1 REPO connector
5. EBM battery unit connector
6. Harwired output + 3xIEC 16A and 2xIEC 10A
7. Communication card slot

TECHNICAL SPECIFICATIONS

Rating	7,5 kVA	10 kVA
Part number	103005093-6591	103004728-6591
Capacity (kVA/kW)	7.5 / 6	10 / 8
Dimensions HxWxD (mm)	263x430x760	263x430x760
Weight		
UPS	115 kg	115 kg
EBM	79 kg	79 kg
Battery modules	17 kg	17 kg
Power module	18 kg	18 kg
Input connection	Hardwired	Hardwired
Output connection	Hardwired + 3xIEC320 16A & 2xIEC320 10A	Hardwired + 3xIEC320 16A & 2xIEC320 10A
Battery runtime	65 minutes with 4 EBMs at full load	45 minutes with 4 EBMs at full load
Operational		
Nominal input voltage (Vac)	Single phase 200-208 V (for 200-208 V nominal output): 220-240 V Three phase 380 / 220 V, 400 / 230 V, 415 / 240 V	
Input voltage range	Single phase 160-253 V (for 200-208 nominal output); 174-288 V (for 220-240 V nominal output) Three phase 301-499 V / 174 -288 V	
Operating frequency	50/60 Hz auto-sensing	
Input power factor	0,99	
Input current distortion	< 5% THD	
Nominal output voltage	200 V / 208 V / 220 V / 230 V / 240 user selectable	
Output voltage regulation	±2% static, ±10% dynamic	
Overload capacity	±10% of 112 to 130% for 60 sec, transfer to bypass	
Permitted load power factors	0,7 lag – 0,8 leading	
Efficiency	> 90%	
User interface		
LCD display	Multilingual graphical LCD with blue backlight	
LED	4 LED	
Standard communication ports	1 x USB, 1 x RS232 serial, 1 x REPO	
Communication Slot	1 x XSlot communication bay	
Power management software	Bundled software suite CD Eaton 9140 is HID-compliant	
Optional	Extended battery modules 3U EBM Slot connectivity: Web/SNMP, Modbus/Jbus, Relay, RS 232 cards	
Environmental		
Operating temperature	0°C to +40°C	
Storage temperature	-20°C to +50°C	
Altitude	Operating 3000 m, transit 15000 m	
Audible noise	< 55 dB(A) at 1,5 metres	
Certification		
Markings	CE, GOST	
Safety	IEC/EN 62040-1-1, CE, UL, cULus, NOM, TUV	
EMC	IEC/EN 62040-2, CE, FCC, VCCI, C-tick	

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

- Hot Sync 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	Low -20% at 100% load/-50% at 50% load without battery discharge; High +10%/max +20%
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% (reference 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

*May be 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	See page 58	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

- Hot Sync 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	3 ph + N + PE
Nominal voltage rating (configurable)	220/380, 230/400, 240/415 V 50/60 Hz
Input voltage range	Low -20% at 100% load/-50% at 50% load without battery discharge; High +10%/max +20%
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% (reference 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

*May be 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 59	1684x494x758 mm	510 kg
1025170	9355-BAT-2x24Ah (30 kVA)	2x36x24 Ah	See page 59	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%.
- Innovative Energy Saver System (ESS) technology enables UPS efficiency to reach 99 percent.
- 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

- Hot Sync technology makes possible to parallel up to seven 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 savings, extended battery run times and cooler operating conditions thus extending 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 be saved for future needs.
- A single technical platform used in Eaton´s three-phase UPS products guarantees 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.
- ESS and the use of sustainable materials generate 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 + 1
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	Low -20% at 100% load/-50% at 50%load without battery discharge; High +10%/max +20%
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% (reference 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! Bypass fuses may limit the overload 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	6/3 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	1444 kg
1025468	9390-BAT10-500 (250A)	500 W	1879x1125x808 mm	2188 kg
1025469	9390-BAT10-280 (400A)	280 W	1879x1125x808 mm	1444 kg
1025470	9390-BAT10-330 (400A)	330 W	1879x1125x808 mm	1625 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 page 61

Standard accessories				
1021887	External Bypass Switch 60-80 kVA (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%.
- Maximised UPS energy efficiencies with Energy Advantage Architecture (EAA): Variable Module Management System (VMMS) optimises system efficiency at low load levels and Energy Saver System (ESS) allows dramatic increase in UPS efficiency without sacrificing load protection.
- Active power factor correction (PFC) provides 0,99 input power factor and below 3-5% ITHD (depends on utility UTHD), 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

- Hot Sync technology makes possible to parallel up to 4 -6 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 that 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 system efficiency reduces utility cost, extends battery run times and ensures 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 needed for testing thanks to Easy Capacity Test.
- Pre-wired configuration reduces cabling busbar costs and installation time. Front accessible design minimizes installation costs and saves valuable data centre space.
- A single technical platform used in Eaton´s three-phase UPS products guarantees 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.

TECHNICAL SPECIFICATIONS

UPS output power rating (0,9 p.f.)								
kVA	225	275	450	550	675	825	900	1100
kW	204	250	408	500	612	750	816	1000

General	
Efficiency in double conversion mode (full load)	>94%
Efficiency in double conversion mode (half load)	>93%
VMMS (double conversion)	significantly increased efficiency at low loads
Efficiency in Energy Saver System (ESS)	up to 99%
Distributed parallelling with Hot Sync technology	5 + 1
Internal N+1 redundance capable	in 550 : 275 kVA in 825 : 550 kVA in 1100 : 825 kVA
Inverter/rectifier topology	transformer-free IGBT with PWM
Audible noise	<76 dB; <81 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	+15% / -15%, +10% /-10% for bypass
Input frequency range	45-65 Hz
Input power factor	0,99
Input ITHD	< 3-5% on nominal load, depending on the utility UTHD
Soft start capability	Yes
Internal backfeed protection	Yes, standard

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% (reference non linear load)
Output power factor	0,9 (e.g. 250 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	with EMP			
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, 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	2630 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, Eaton 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 98% efficiency, resulting in cooler operating conditions and less heat dissipation.

True reliability

- Hot Sync technology makes it possible to parallel up to 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 scaleable 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.
- 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 other UPS systems on the market.

TECHNICAL SPECIFICATIONS

General	
Power Rating	12 kW per UPS module
Efficiency	Up to 98 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
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
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 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)
IBM eServer™ (i5™, iSeries™, or AS/400), industrial	Relay Interface Card

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

With today's changing technology, increasing power demands and the need for reliability, data centre professionals require sophisticated equipment to provide and monitor power. Increasing power requirements to rack enclosures means a greater understanding is needed at a server level, rack level and at the entire data centre level in order to manage and control what is happening within the infrastructure.

Eaton intelligent rack-based power distribution solutions ePDUs® provide reliable, flexible, cost effective power distribution as well as a better understanding and management of power consumption in the data centre, together with increased control.

User benefits:

- Eaton ePDUs are designed for mission critical reliability in server applications
- Wide choice of outlets, including UK, Schuko, French, Nema, C13, C19
- Up to 3 types of outlet on custom zero U ePDUs
- Solutions include Basic, Metered, Monitored and Managed technologies
- Choose from a standard set of products, or custom products to meet the most demanding needs.
- Vertical zero U, or horizontal 1U/2U configurations
- Isolation mounting available to provide maximum enclosure integrity
- Multi-option mounting improves installation flexibility. Have confidence that Zero U ePDUs can be adapted to suit any on-site rack configuration.

Standard and custom models

Choose from either our standard or custom range of ePDUs:

Standard Range

Standard ePDUs feature our top sellers. These are designed to meet the most popular needs in today's data centre. Our standard range includes:

- Managed units to provide individual outlet monitoring together with outlet Switching and sequencing.
- Advanced Monitored units to provide individual outlet monitoring
- Monitored units to provide branch circuit and rack-level monitoring
- Basic units to provide reliable and flexible power distribution

Our standard units offer either IEC outlets or national outlets for the most popular models.

Custom Range

If you require something special, then we can offer custom Eaton ePDUs tailored to your needs.
Requesting a custom ePDU opens up the broadest portfolio in the industry to you, across all power densities and technologies to satisfy the needs of the most demanding data centre.
Custom ePDUs allow you to specify your power density and monitoring requirements together with inputs and outputs.

Custom ePDUs are available in five different categories: Basic, Metered, Monitored, Advanced Monitored and Managed. 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 portfolio 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.

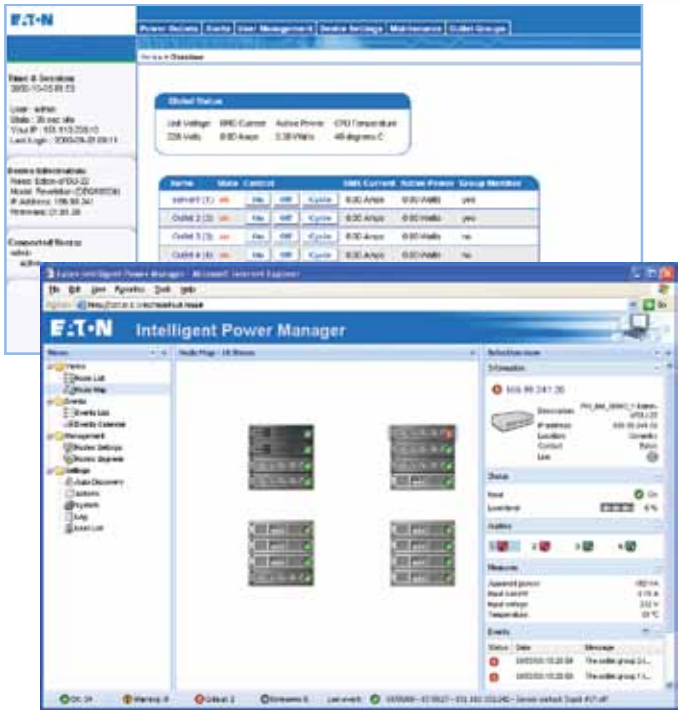
From single to dual corded, five technology options, the broadest power range and the ability to manufacture ePDUs with custom arrangement of outlets (number and type), Eaton ePDUs are distinguished for their quality, dependability and versatility.

Both our standard and custom ePDUs are designed for the specific application with an emphasis on safety and reliability.

Managed ePDU

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

You can even monitor your consumption 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

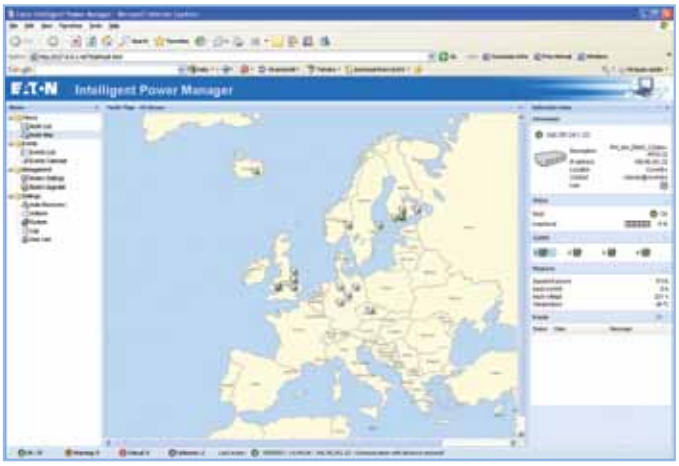
Advanced Monitored ePDU

Advanced Monitored ePDUs offer customers the capabilities of the Monitored ePDUs but with each outlet individually remotely monitored over an Ethernet connection. Advanced monitored ePDUs also include an easy-read digital ammeter for local provisioning and load balancing of servers.

- 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

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 circuits. Eaton Monitored ePDU's offer a reliable, scalable solution for your present and future requirements.



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

Monitored ePDU

In-Line Monitored ePDU

The In-line Monitored ePDU is a retrofit ePDU to upgrade existing PDUs without power metering, and for installation while live without downtime.

Designed for new or retrofit applications, our in-line monitoring units provide accurate single and dual fed local and remote monitoring solutions. The In-line Monitored ePDUs are available with Ethernet connectivity, as well as the easy-read digital ammeter for local monitoring.

- 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
- Simple to add to A and B feeds without any downtime
- Fuse-less and breaker-less design: no inline break

Metered ePDU

Custom-made 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 2U configurations

High Density and dual input configurations available

Appropriate Breaker protection, or individually fused sockets available

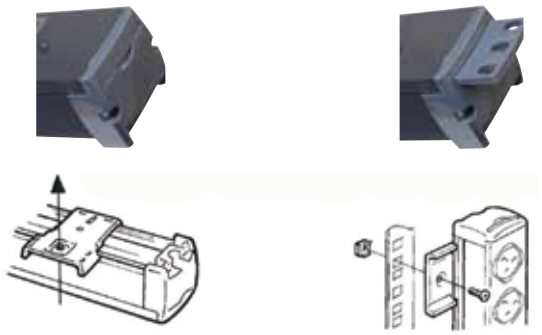
Metered ePDU

Basic ePDU

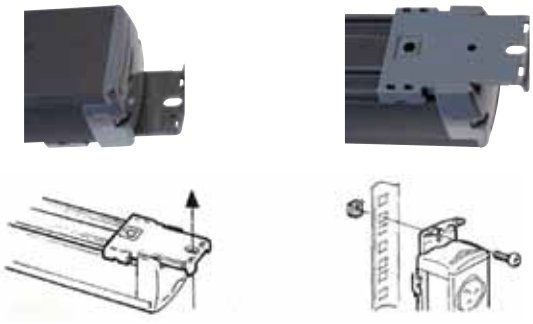
Designed for reliable and cost effective power distribution, Basic ePDUs have the form factor and outlet choices to meet your needs. All ePDUs, including basic ePDUs, are made of rugged aluminium or steel chassis and incorporate fully shrouded circuit breakers and switches.

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

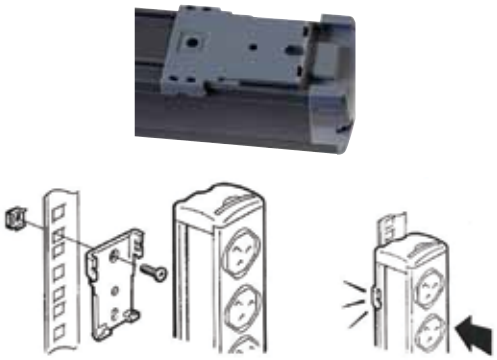
Multiple Mounting Options



Side Mounting



End Mounting



Blind Mounting

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.

Integration with virtualization platforms

IPM integration with Vmware's vCenter and Microsoft's SCVMM increases productivity and operational responsiveness.

This also makes it possible to trigger vCenter's vMotion™ and SCVMM's Live Migration to transparently move virtual machines from a server affected by a power interruption to an available server on the network, ensuring data integrity and enabling zero downtime.

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.

TECHNICAL SPECIFICATIONS

Technology	Part number	Form	Rating (A)	Input Type	Outlet type: Qty	Breakers	Dimensions (HxWxD, mm)	Weight (kg)
Managed IEC								
	PW102MA0UC60	0U	10	C14	C13, 16		57x1525x52	10
	PW104MA0UC34	0U	16	IEC309 16A	C13, 16: C19, 4		57x1676x52	10
	PW104MA0UC61	0U	16	C20	C13, 16: C19, 4		57x1676x75	10
	PW107MA0UB61	0U	32	IEC309 32A	C13, 16: C19, 4	2 single pole	57x1837x75	10
	PW104MA1UB44	1U	16	IEC309 16A	C13, 8		45x482x190	5
	PW107MA2UC93	2U	32	IEC309 32A	C13, 16	2 single pole	89x440x267	5,5
Advanced Monitored IEC								
	PW322MI0UC58	0U	32 3P	IEC309 32A 3P	C19, 6	6 Single pole	57x1475x116	10
	PW104AM1UC59	1U	16	IEC309 16A	C13, 8		45x482x150	5
IP Monitored IEC								
	PW102MI0UB95	0U	10	C14	C13, 16		57x838x52	7
	PW104MI0UB96	0U	16	IEC309 16A	C13, 20: C19, 4		57x1097x52	7
	PW104MI0UB97	0U	16	C20	C13, 20: C19, 4		57x1097x52	7
	PW107MI0UB88	0U	32	IEC309 32A	C13, 20: C19, 4	2 single pole	57x1429x91	7
	PW312MI0UC07	0U	16 3Ph	IEC309 16A 3P	C13, 36: C19, 6		57x1682x52	10
Inline Monitored IEC								
	PW104IM0UC05	0U 19"	16	IEC309 16A	IEC309 16A	None	57x436x52	6,5
	PW107IM0UC04	0U 19"	32	IEC309 32A	IEC309 32A	None	57x436x52	6,5
	PW322IM0UC17	0U 19"	32 3P	IEC309 32A 3P	IEC309 32A 3P	None	57x436x75	6,5
	PW107IM0UB81	0U 19"	2x16	2x IEC309 16A	2x IEC309 16A	None	57x436x75	6,5
	PW344IM0UC18	0U 19"	2x32	2x IEC309 32A	2x IEC309 32A	None	57x573x75	6,5
Basic IEC								
	ePBZ03	0U	16	C20	C13, 16		48x635x60	1,5
	ePBZ05	0U	10	C14	C13, 16		48x635x60	1,4
	ePBZ32	0U	16	IEC309 16A	C13, 20: C19, 4		45x768x50	1,7
	ePBZ33	0U	16	C20	C13, 20: C19, 4		45x768x50	1,6
	ePBZ31	0U	32	IEC309 32A	C13, 20: C19, 4	2 single pole	45x921x50	2,7
	PW312BA0UC07	0U	16 3Ph	IEC309 16A 3P	C13, 36: C19, 6		57x1400x52	10
	PW322BA0UC56	0U	32 3Ph	IEC309 32A 3P	C13, 3: C19, 6	6 single pole	57x1200x116	10
	PW322BA0UC57	0U	32 3Ph	IEC309 32A 3P	C19, 6	6 single pole	57x1135x116	10
	ePBZ06	1U	16	C20	C13,10: C19,2		43x439x59	1,6
	ePBZ04	1U	16	C20	C13,12		43x439x59	1,6
	ePBZ01	0U	10	C14	C13, 8		43x439x59	1,4
	ePBZ02	0U	10	C14	C13, 12		43x439x59	1,4

Schuko socket

Technology	Part number	Form	Rating (A)	Input Type	Outlet type: Qty	Breakers	Dimensions (HxWxD, mm)	Weight (kg)
Basic Schuko	ePBZ25	0U, 19"	16	Schuko	schuko, 4		45x444x50	1,4
Basic Schuko	ePBZ26	0U, 19"	16	Schuko	schuko, 8		45x444x50	1,5
Basic Schuko	ePBZ27	0U	16	Schuko	schuko, 12		45x667x50	2
Monitored Schuko	PW104MI0UC72	0U	16	Schuko	schuko, 16		57x1328x52	8
Monitored Schuko	PW102MI0UC73	0U	10	C14	schuko, 16		57x1328x52	8
Monitored Schuko	PW104MI0UC74	0U	16	C20	schuko, 20: C19, 4		57x1850x52	8
Monitored Schuko	PW107MI0UC75	0U	32	IEC309 32A	schuko, 20: C19, 4	2 single pole	57x1860x116	10
Monitored Schuko	PW104MI0UC76	0U	16	IEC309 16A	schuko, 20: C19, 4		57x1850x52	8
Managed Schuko	PW104MA0UC77	0U	16	Schuko	schuko, 16		57x1425x75	10
Managed Schuko	PW102MA0UC78	0U	10	C14	schuko, 16		57x1425x75	10
Managed Schuko	PW104MA0UC79	0U	16	C20	schuko, 16: C19, 4		57x1695x75	10
Managed Schuko	PW107MA0UC80	0U	32	IEC309 32A	schuko, 16: C19, 4	2 single pole	57x1840x116	10
Managed Schuko	PW104MA0UC81	0U	16	IEC309 16A	schuko, 16: C19, 4		57x1695x75	10

French socket

Technology	Part number	Form	Rating (A)	Input Type	Outlet type: Qty	Breakers	Dimensions (HxWxD, mm)	Weight (kg)
Basic French	ePBZ28	0U, 19"	16	FR	FR, 4		45x444x50	1,4
Basic French	ePBZ29	0U, 19"	16	FR	FR, 8		45x444x50	1,5
Basic French	ePBZ30	0U	16	FR	FR, 12		45x667x50	2
Monitored French	PW104MI0UC82	0U	16	FR	FR, 16		57x1328x52	8
Monitored French	PW102MI0UC83	0U	10	C14	FR, 16		57x1328x52	8
Monitored French	PW104MI0UC84	0U	16	C20	FR, 20: C19, 4		57x1850x52	8
Monitored French	PW107MI0UC85	0U	32	IEC309 32A	FR, 20: C19, 4	2 single pole	57x1860x116	10
Monitored French	PW104MI0UC86	0U	16	IEC309 16A	FR, 20: C19, 4		57x1850x52	8
Managed French	PW104MA0UC87	0U	16	FR	FR, 16		57x1425x75	10
Managed French	PW102MA0UC88	0U	10	C14	FR, 16		57x1425x75	10
Managed French	PW104MA0UC89	0U	16	C20	FR, 16: C19, 4		57x1695x75	10
Managed French	PW107MA0UC90	0U	32	IEC309 32A	FR, 16: C19, 4	2 single pole	57x1840x116	10
Managed French	PW104MA0UC91	0U	16	IEC309 16A	FR, 16: C19, 4		57x1695x57	10

UK socket

Technology	Part number	Form	Rating (A)	Input Type	Outlet type: Qty	Breakers	Dimensions (HxWxD, mm)	Weight (kg)
Basic UK	ePBZ20	0U, 19"	13	UK	UK, 4		55x444x47	1,4
Basic UK	ePBZ21	0U, 19"	13	UK	UK, 6		55x444x47	1,5
Basic UK	ePBZ22	0U	13	UK	UK, 8		55x591x47	1,9
Basic UK	ePBZ23	0U	13	UK	UK, 10		55x718x47	2
Basic UK	ePBZ24	0U	13	UK	UK, 12		55x845x47	2,2
Monitored UK	PW103MI0UC62	0U	13	UK	UK, 16		57x1328x52	8
Monitored UK	PW102MI0UC63	0U	10	C14	UK, 16		57x1328x52	8
Monitored UK	PW104MI0UC64	0U	16	C20	UK, 20: C19, 4		57x1850x52	8
Monitored UK	PW107MI0UC65	0U	32	IEC309 32A	UK, 20: C19, 4	2 single pole	57x1860x116	10
Monitored UK	PW104MI0UC66	0U	16	IEC309 16A	UK, 20: C19, 4		57x1850x52	8
Managed UK	PW103MA0UC67	0U	13	UK	UK, 16		57x1425x75	10
Managed UK	PW102MA0UC68	0U	10	C14	UK, 16		57x1425x75	10
Managed UK	PW104MA0UC69	0U	16	C20	UK, 16: C19, 4		57x1695x75	10
Managed UK	PW107MA0UC70	0U	32	IEC309 32A	UK, 16: C19, 4	2 single pole	57x1840x116	10
Managed UK	PW104MA0UC71	0U	16	IEC309 16A	UK, 16: C19, 4		57x1695x75	10

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

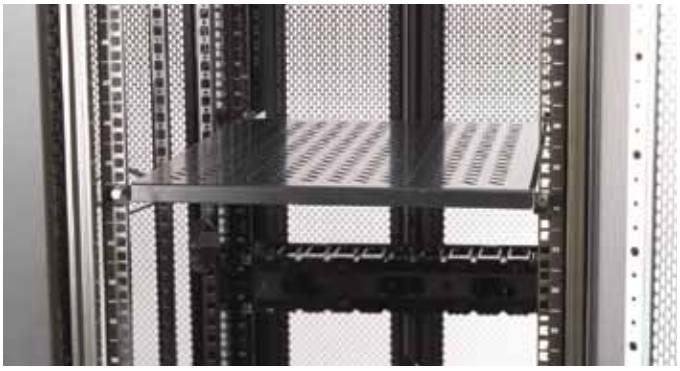
- Doors can be easily removed or reversed
- Sidewalls can be screwed on or locked in place
- Internal door hinge and lock points offer maximum security
- Door stiffener stabilizes door and provides additional mounting surfaces
- Maximum perforated door area meets or exceeds server manufacturer specifications 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

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 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.

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 the web interface of Intelligent Power Protector software on a nearby computer connected to the UPS via serial or USB cable.

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 HP Network Management Center and IBM Tivoli.
- communicate with shutdown software installed on the servers to be protected.

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.

vmware PARTNER TECHNOLOGY ALLIANCE

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.

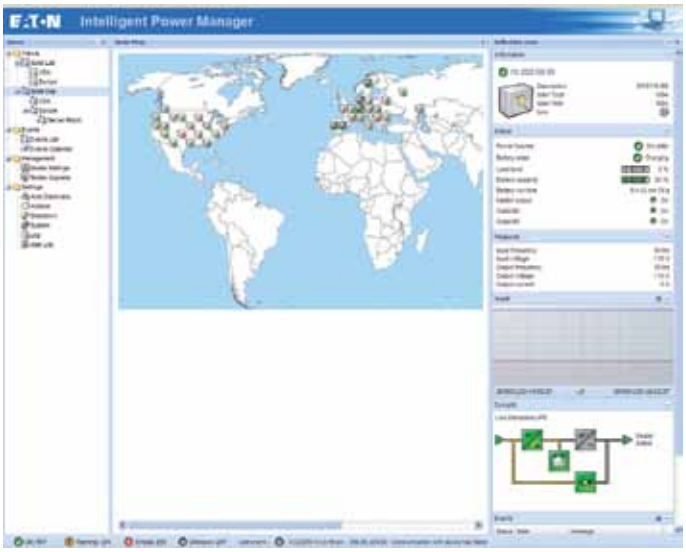
Scalable and cost efficient

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).

Integration with virtualization platforms

IPM integration with Vmware's vCenter and Microsoft's SCVMM increases productivity and operational responsiveness.

This also makes it possible to trigger vCenter's vMotion™ and SCVMM's Live Migration to transparently move virtual machines from a server affected by a power interruption to an available server on the network, ensuring data integrity and enabling zero downtime.



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.

The Intelligent Power Protector software supports network, serial and USB communication to Eaton UPS.

Multiple IPP installations can be monitored and mass configured with the help of Intelligent Power Manager software. These two software packages work seamlessly together reducing the cost of ownership and improving the reliability of the power management system.

Intelligent Power Software has comprehensive support for virtualization. IPP can shut down VMware and Hyper-V hosts together with their guest operating systems while IPM integrates with VMware vCenter management system.

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:

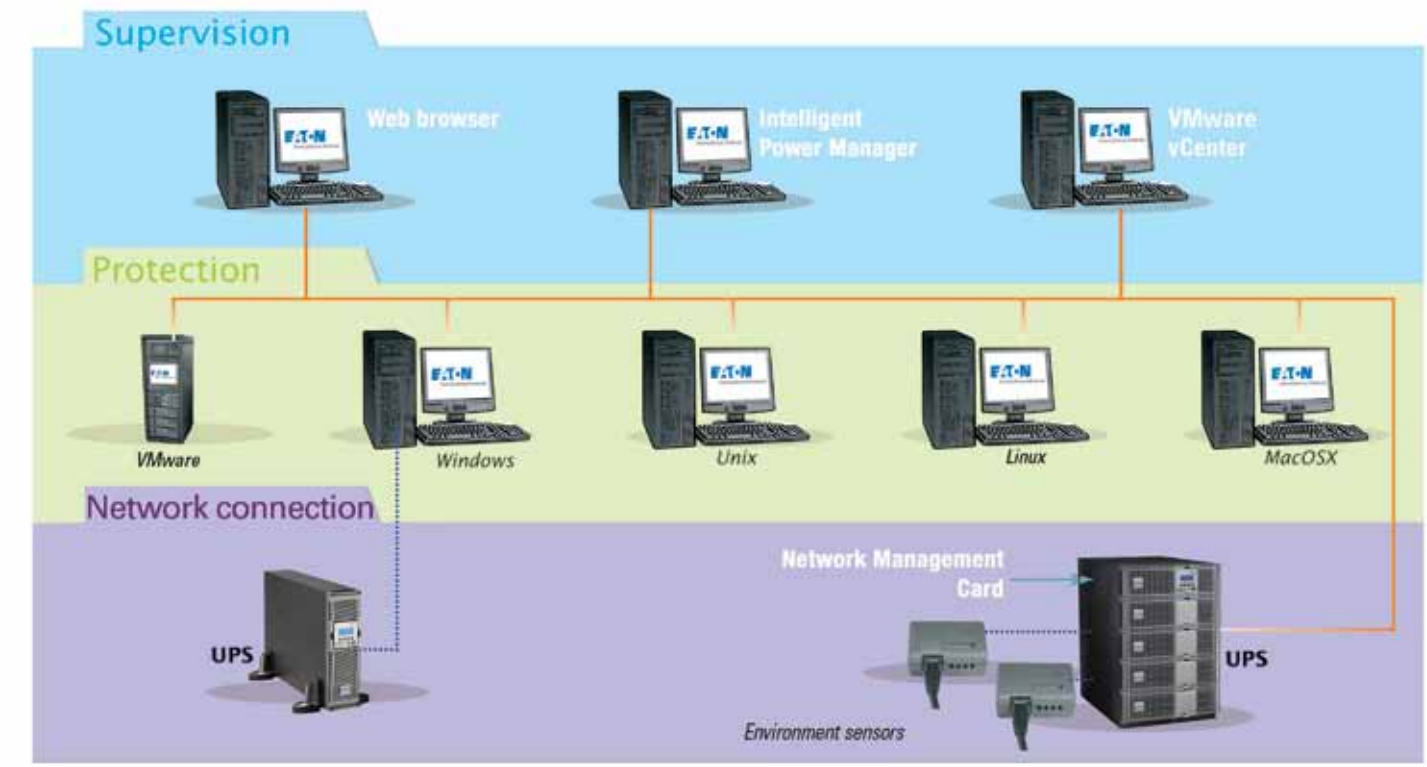
- shedding non-critical systems when there is a power cut;
- defining start-up sequences;
- individual management of several IT systems connected to a central UPS.

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.

Energy saving 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.



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 Intelligent Power Protector software. The unique three-port switching hub on the X-Slot model provides additional network connections.
ConnectUPS-X
P/N 116750221-001 for Eaton 9155, 9355, 9390, 9395, BladeUPS.
ConnectUPS-E
P/N 116750223-001 is an external model that is connected to a serial port on a UPS.

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 9155, 9355, 9390, 9395, BladeUPS.

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

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 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.

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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