Eaton BladeUPS
12–60kW

The power quality solution that
simply grows with your needs

E·A·T·N

Powering Business Worldwide

Celebrating
100 YEARS
Ideals that Endure

Delivering power – reducing costs

Two key trends have emerged in the data centre: the demand from today's IT equipment for more power, and the increasing cost of that power.

Couple these with the worldwide growth in demand for data centres and IT servers, and it is clear that data centre managers are facing growing pressure to manage and optimise their available power for sustainability and growth, at the same time as managing the increasing associated costs.

As a result, they need to find new ways to design and maintain their data centre. Eaton's solutions for the data centre are designed specifically with these issues in mind.

Addressing the problems

Eaton's Data Centre Solutions deliver real-world tools, technology and solutions, that directly address the key problems of today and tomorrow.

Eaton® BladeUPS® allows you to optimise and manage the Total Cost of Ownership of your power quality and distribution system, without compromising availability. It does this by enabling the optimisation of both initial capital expenditure and operational expenditure.

Key features

- Full double conversion and high-efficiency modes
- High-efficiency mode provides over 98% efficiency across the operating range
- Rack-mountable units designed for the data centre, with 12kW 6U and up to 60kW N+1 in a single 42U rack
- Unity (1) power factor
- Advance Battery Management (ABM®) and Hot Sync® technology, for enhanced battery life and simple configuration and paralleling
- Long runtimes – add up to 4 extra battery modules
- Multiple power distribution possibilities, including hardwired, BladeUPS Rack Power Modules, and ePDUs
- Designed with multiple points of redundancy to minimise single points of failure
- Hot-swappable units and components including electronics and batteries
- Built-in intelligent maintenance bypass or full rack bypass
- 18 month standard warranty
- Simple pre-packaged data centre solutions
- Pre-configured base infrastructure for parallel units

The benefits of Eaton BladeUPS

Simply scalable

- Optimise capital expenditure. Modular, scalable units allow you to grow your capacity as required
- 12 kW to 60 kW N+1 mounted in a single IT rack enclosure

Highly flexible

- Multiple configurations including power protection in each rack, centralised protection, zone protection or hybrid as required
- If your needs change or you need to move your IT equipment, simply redeploy and re-use BladeUPS elsewhere

Highly efficient

- Optimise operational expenditure – 98% efficiency, with 65% less heat dissipation and 70% reduction in footprint (compared with competition)
- Utilise available power for your IT equipment, rather than for your base infrastructure
- Designed for the data centre – to ensure maximum uptime and maximum efficiency

Simple to choose

- Choose a pre-packaged solution, or configure yourself

Design for demand

Eaton BladeUPS allows you to optimise capital expenditure by allowing a 'design for demand' approach through modular and scalable technology. This allows the data centre to scale uninterruptible power quality in line with business growth.
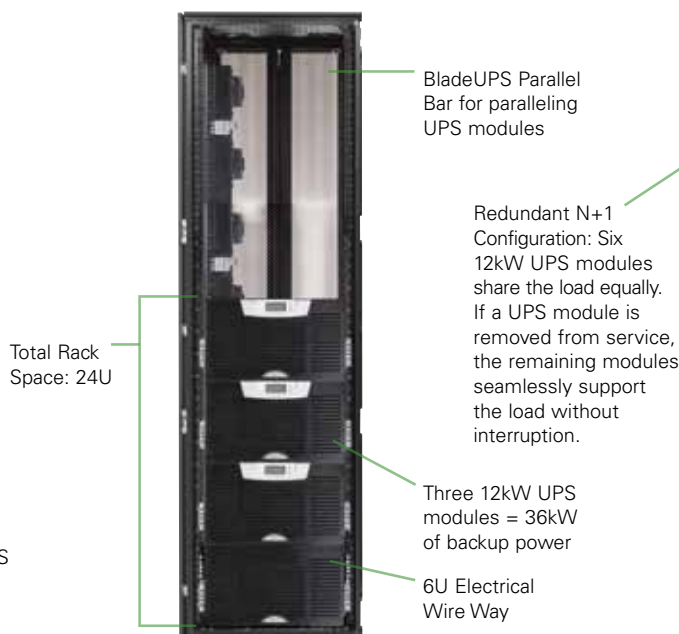
- By utilising new technologies and keeping pace with actual and expanding needs – rather than paying in advance for capacity that may never be required – you are able to add uninterruptible power capacity when and where you need it. Adopting this 'pay as you grow' approach has the benefit of spreading capital expenditure over the lifetime of the data centre, without the risk of over-specifying the initial power needs and spending unnecessarily, and without compromising business continuity

- Scalable architecture also has other benefits, including optimising the set-up time for new data centres or new areas of an existing data centre, and optimising the time and cost of moving, adding to, or applying changes to the data centre

YEAR 1:
INITIAL INSTALL

42U Standard Enclosure

12kW BladeUPS occupies 6U of space

12kW

YEAR 3:
EXPANSION

BladeUPS Parallel Bar for paralleling UPS modules

Total Rack Space: 24U

Three 12kW UPS modules = 36kW of backup power

6U Electrical Wire Way

36kW or 24kW, N+1

YEAR 5:
FURTHER EXPANSION

Redundant N+1 Configuration: Six 12kW UPS modules share the load equally. If a UPS module is removed from service, the remaining modules seamlessly support the load without interruption.
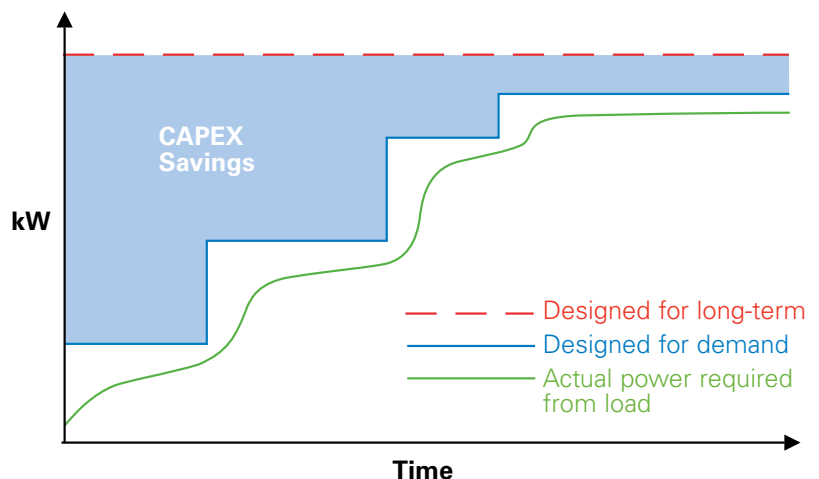
60kW, N+1

Optimise capital expenditure

A scalable 'Design for Demand' approach allows for scaling of the data centre's uninterruptible power quality capability in line with business growth.

- Eaton BladeUPS' scalable architecture enables you to grow and scale from 12kW to 60kW N+1 in a single rack enclosure, including the batteries

- Eaton BladeUPS adapts with you and your data centre. Flexible technology enables you to redeploy and re-use your UPS and power distribution as your needs change

CAPEX Savings

kW

- - - Designed for long-term
—— Designed for demand
—— Actual power required from load

Time

Design for flexibility

Power where you need it

The flexibility of BladeUPS offers you the choice of utilising your power protection and distribution in multiple different configurations in the data centre, including centralised protection, zone protection, distributed protection, or a hybrid of these to suit your exact needs.

Because BladeUPS is so efficient, it can be mounted in the same rack as IT equipment without creating hotspots, or in its own IT rack.

Changing your mind

If you need to move elements of your data centre, or make additions or changes, simply redeploy BladeUPS as you redeploy your IT equipment. BladeUPS can easily be adapted to work on its own or as part of a parallel system – and if you need more power, simply add more BladeUPS.

BladeUPS also offers the smallest footprint of any UPS in its class, with double the power density of any other UPS system on the market.

Multiple power distribution options

BladeUPS Remote Power Distribution Modules (RPMs) can be attached to a single BladeUPS or to a parallel system – and be located directly in the rack with IT equipment – to distribute power directly to your servers.

They offer a choice of C13 and C19 outputs, together with a digital display for load balancing. Seamlessly connecting to the busbar and UPS system, they continue to offer power capability when you need to service or replace components on your UPS.

Enclosure Power Distribution Units with Intelligent Power Monitoring

Eaton Enclosure Power Distribution Units (ePDUs) can be used to distribute the power from either one BladeUPS or multiple RPMs, directly into the rack. Eaton ePDUs offer Intelligent Power® distribution, to provide a highly accurate level of monitoring and control of rack power distribution – including V, W, A and kWhr monitoring and switching right down to the individual server level.

Alternatively, you can simply hardwire to get up to the full 60kW N+1 out of a single rack enclosure.

System Architecture with the BladeUPS

Centralised Power Protection

Zone Power Protection

Centralised Power Protection – Dual Power Feeds

Distributed Power

Hybrid Power Protection

Optimise your data centre for demand

An Eaton Green Solution

Data Centre UPS are available as Online Double Conversion or Line-Interactive UPS. The first provides the unparalleled safety, power quality and availability that data centres need for effective operation, but at a high efficiency cost. The second conditions utility power and provides battery back-up when needed, offering greater efficiency but with a potential forfeit of reliability.

However, Eaton have developed new 'game-changing' UPS technology to address this energy efficiency versus reliability issue, to provide the best of both worlds: **maximum efficiency with no compromise on reliability.**

No compromise

BladeUPS offers the choice of full-time Double Conversion and high-efficiency modes, and can automatically choose the best operating mode for your data centre at any time.

Designed specifically for the data centre, BladeUPS works in harmony with incoming power and server power supplies and their operating characteristics, to ensure uptime. BladeUPS high-efficiency mode includes advanced power conditioning and a maximum of 2-4ms switching times to battery, meaning no compromise on data centre reliability

Optimised operational expenditure and running costs

The latest high-efficiency technologies incorporated in Eaton BladeUPS enable the unit to offer a maximum efficiency of 98% across the operating range, even at low load levels. This helps to optimise the operational expenditure and running costs of the data centre. Close monitoring of power distribution also enables you to maximise the efficiency of your data centre, according to the real-time power needs of your load.

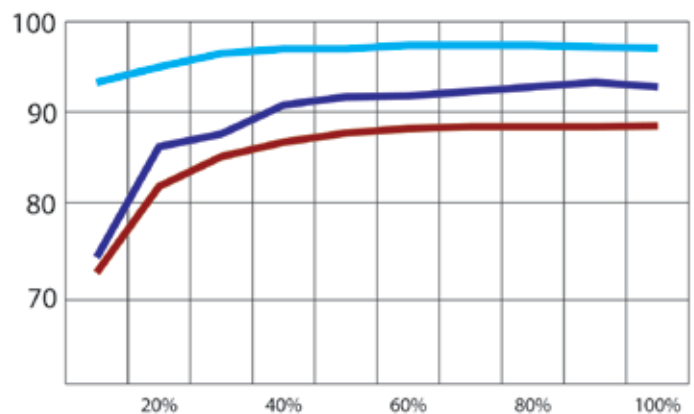The high efficiency technology also offers several other benefits:

- Low energy consumption, and hence low energy charges and cost savings

- A 65% reduction in heat generated compared to legacy UPS

- Optimised available power for IT equipment, rather than for the support infrastructure

Maximum efficiency with BladeUPS: the bottom line

	Eaton BladeUPS
Critical load	60kW
Electricity costs	0.08
Legacy UPS efficiency	91.5%
Eaton BladeUPS efficiency	98%
Monthly electric cost savings	€ 218
Monthly cooling savings	€ 197
Annual electric costs savings	€ 4,990
5 year savings with BladeUPS	€ 24,952 Saved in Five Years

Even at very small loads, where you would expect efficiency to be lower, the Eaton BladeUPS is still more efficient than other UPS products at full load.

Blade UPS
Best-in-class
Traditional UPS

Power distribution with Intelligent Power Monitoring

Power distribution with Intelligent Power Monitoring

Eaton BladeUPS offers several power distribution options, including Eaton Rack Power Modules (RPMs) – which deliver the power into the rack and directly to the servers – and enclosure Power Distribution Units (ePDUs). Both are designed to be easy to set up and maintain, either directly or through Intelligent Power Manager software.

Eaton ePDUs, with Intelligent Power Distribution and Monitoring, enable the data centre manager to monitor and manage power distribution right down to the individual server level, for optimisation and utilisation of all available power. They also facilitate further control of the operational expenditure required for running a data centre, including kWhr measurements for rack enclosures and individual servers. Last but not least, they enable effective management and planning for new and existing infrastructure – and all through a single intuitive web-based interface.

Maximise and manage available power

Intelligent Power Distribution means Eaton ePDUs provide the high level of information and high level of control needed to effectively manage your rack power distribution.

Eaton's Intelligent ePDUs offer different levels of monitoring and control, to provide the solution that works for you and your data centre. Choose your required level of monitoring – either true V, W, A or kWhr consumption – to enable you to track, trend, analyse and utilise all your available power. Alternatively, you can switch to secure full control and remote reboot options, or combine the two to fully manage the rack power.

Intelligent Power Manager

Eaton Intelligent Power Manager (IPM) software offers complete control and monitoring of multiple UPSs and ePDUs over an IP network, via a simple and intuitive web-based interface. With user-configurable views, and user-definable alarms – including email and SMS alerts – it allows the simple and secure monitoring and control of the data centre, to simplify the process of management of high volumes of information.

Intelligent Power Manager integrates seamlessly with VMware vCenter – the leading virtualisation management tool – and can even trigger vMotion to move virtual machines to other servers or sites if there is a fear of power loss, resulting in zero downtime.

Intelligent Power Manager also integrates with Eaton's Intelligent Power® Protector software, allowing for safe and co-ordinated shutdown of servers that need to be rebooted or removed. Intelligent Power Protector supports traditional server operating systems as well as VMware ESX, Microsoft Hyper-V, Xen and KVM virtual environments, and is free to download for up to 10 devices.

BladeUPS Technical Specifications

TECHNICAL SPECIFICATIONS

General

Power Rating	12kW per UPS module
Efficiency	Up to 98,6%
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 metre
Altitude Before Derating	1000 metres (3300 ft ASL)

Input

Input Voltage	400Vac
Voltage Range	400V: 311 to 519Vac, 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 240Vac, Ph to N
Output Configuration	Three-phase, four-wire + ground
Output Frequency (nominal)	50 or 60 Hz auto-detection on start-up
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% load 4.7 minutes at 100% load
Battery String Voltage	240Vdc
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 1.67VPC 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% load, >1 hour at 50%)

Physical

Dimensions (HxWxD) UPS	261 (6U) x 442 x 660mm
Note: Total Chassis Weight without Batteries or Electronics	46kg
Total Chassis Weight with Batteries or Electronics	140kg
Total UPS Weight without Batteries	61kg
Total UPS Weight with Batteries	140kg
EBM Weight	77kg

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

60kW 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
Parallel	Hot Sync Card
Remote Monitoring	Modem Card
Remote LCD Display	ViewUPS-X

Recommended ePDU:

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

Due to continuing product improvement programmes, specifications are subject to change without notice.

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

www.eaton.com/powerquality

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