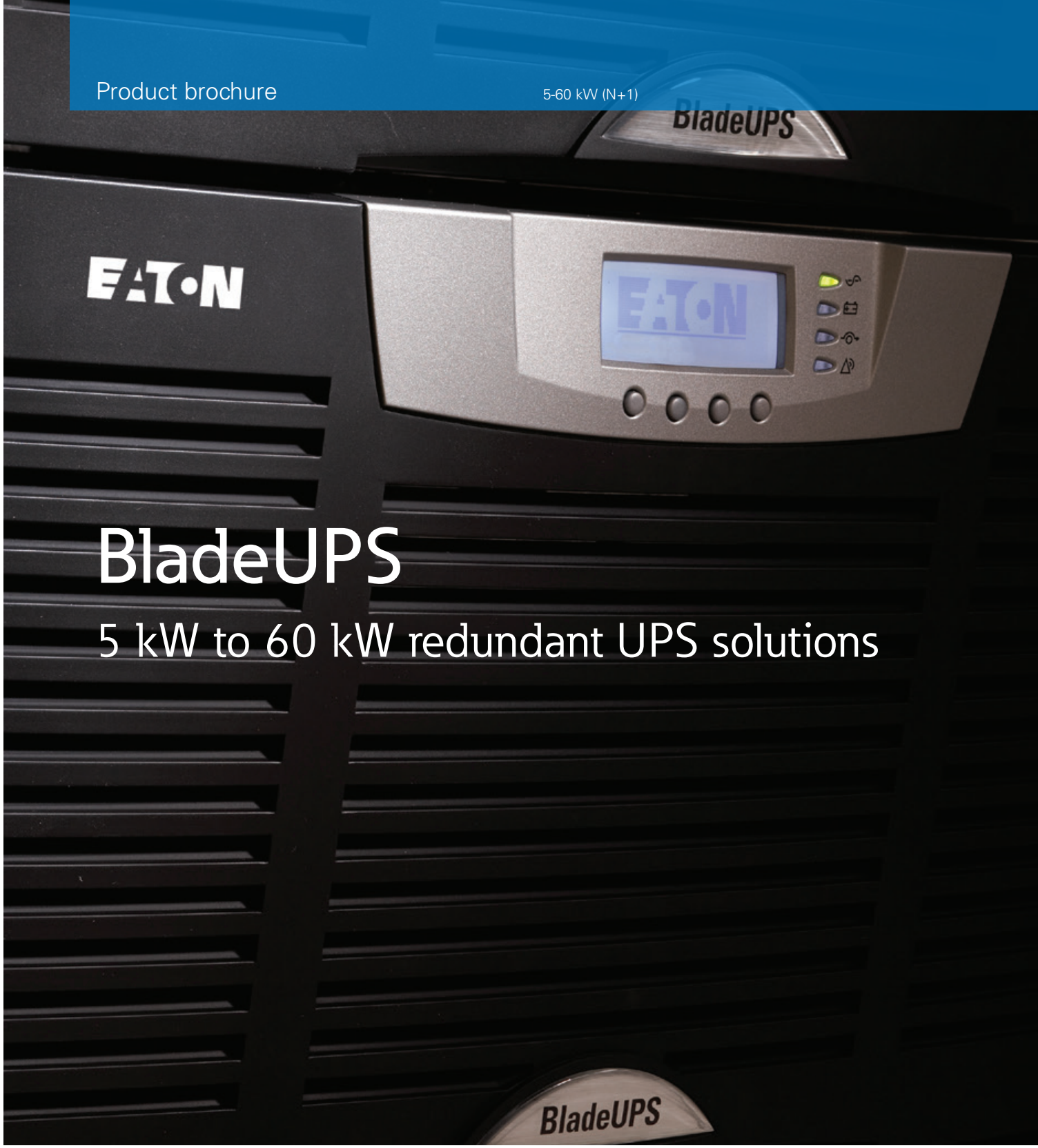
Product brochure

5-60 kW (N+1)




# BladeUPS

## 5 kW to 60 kW redundant UPS solutions

Powering Business Worldwide

An Eaton Green Product

# BladeUPS uninterruptible power system

Designed specifically for high-density computing environments, the Eaton® BladeUPS® delivers 5, 8 or 12 kW of efficient, reliable power in only 6U of standard rack space, including batteries. Expand capacity by combining 12 kW modules in a building block fashion to deliver 60 kW (N+1) from a single rack enclosure. This powerful configuration delivers higher power density than competitive, modular solutions, while dissipating only one-third of the heat.

The standard internal batteries provide needed ride-through power until an auxiliary power source takes over or systems are gracefully shut down. Extend runtime up to 94 minutes at full load* (or 250 minutes at half load) with extended battery modules (EBMs).

** 5 kW model only available at 208V input.*


**Eaton BladeUPS**

**Features**

- Protects mission-critical applications with innovative backup power technology designed specifically for high-density computing environments
- Supports the constant moves, adds and changes of today's dynamic data centers with a modular, scalable, and flexible backup power architecture
- Conserves valuable rack space with 5, 8 or 12 kW of power in only 6U of rack height, including batteries
- Accommodates growth by enabling building-block upgrades from 12 to 60 kW in a single rack enclosure
- Reduces energy costs and cooling needs through best-in-class efficiency performance
- Delivers highest levels of reliability at the rack with patented Powerware Hot Sync paralleling technology and intelligent bypass design, field proven in thousands of large data centers globally
- Simplifies installation and service with true plug-and-power connections and hot-swappable batteries and electronics modules
- Increases battery life through ABM® technology, resulting in more uptime and fewer battery replacements

**POWER PROTECTION FOR:**

- Blade servers
- Small, medium and large data centers
- Network closets
- PBX and VoIP equipment
- Networking applications: IPTV, security
- Storage devices: RAID, SAN
- Converged infrastructure
- Database clusters

**BladeUPS in a rack (60 kW, N+1 redundant)**


**The BladeUPS is TAA Compliant**

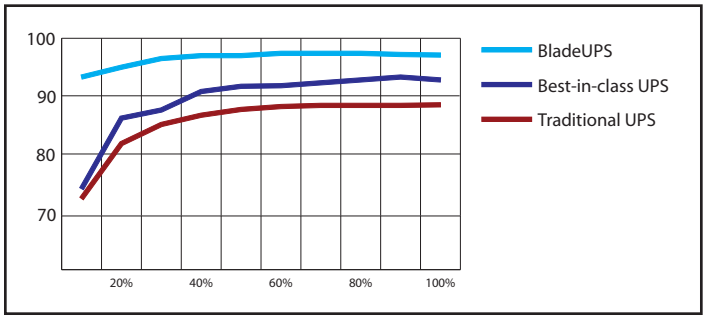
## Reduce energy costs with high efficiency

As utility rates continue to climb, energy efficiency becomes a sticking point with data center managers.

The BladeUPS delivers an outstanding, industry-leading 98 percent efficiency in normal operation. Even at a load of less than 50 percent, where efficiency is typically much lower, this UPS performs more efficiently than competitors' modular products at full load.

In addition to dramatic cost savings, high system efficiency extends battery runtimes and produces cooler operating conditions within the UPS. This extends the life of components and increases the life of components and increasing overall reliability and performance.

Even small increases in efficiency can quickly translate into thousands of dollars. The example below compares annual and five-year energy costs for the BladeUPS and a competitor's solution. It's easy to see that the BladeUPS pays for itself through energy and cooling savings alone.




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

**Efficiency comparison and savings**

| | BladeUPS | Traditional UPS |
|---|---|---|
| UPS efficiency rating | >98% | 91.5% |
| Rack power consumption | 60 kW | 60 kW |
| Cost per kWh | $0.10 | $0.10 |
| Cost to operate per hour | $6.18 | $6.56 |
| Monthly power savings | $273 | |
| Heat dissipation (BTUs per hour) | 6,300 | 19,000 |
| *Monthly cooling savings | $246 | |
| Annual savings with the BladeUPS | $6,238 | |
| **Five-year savings with the BladeUPS** | **$31,190** | |

** Cooling savings based on industry calculation of cooling costs per kW of power costs.*

## Reduce cooling costs with lower heat dissipation

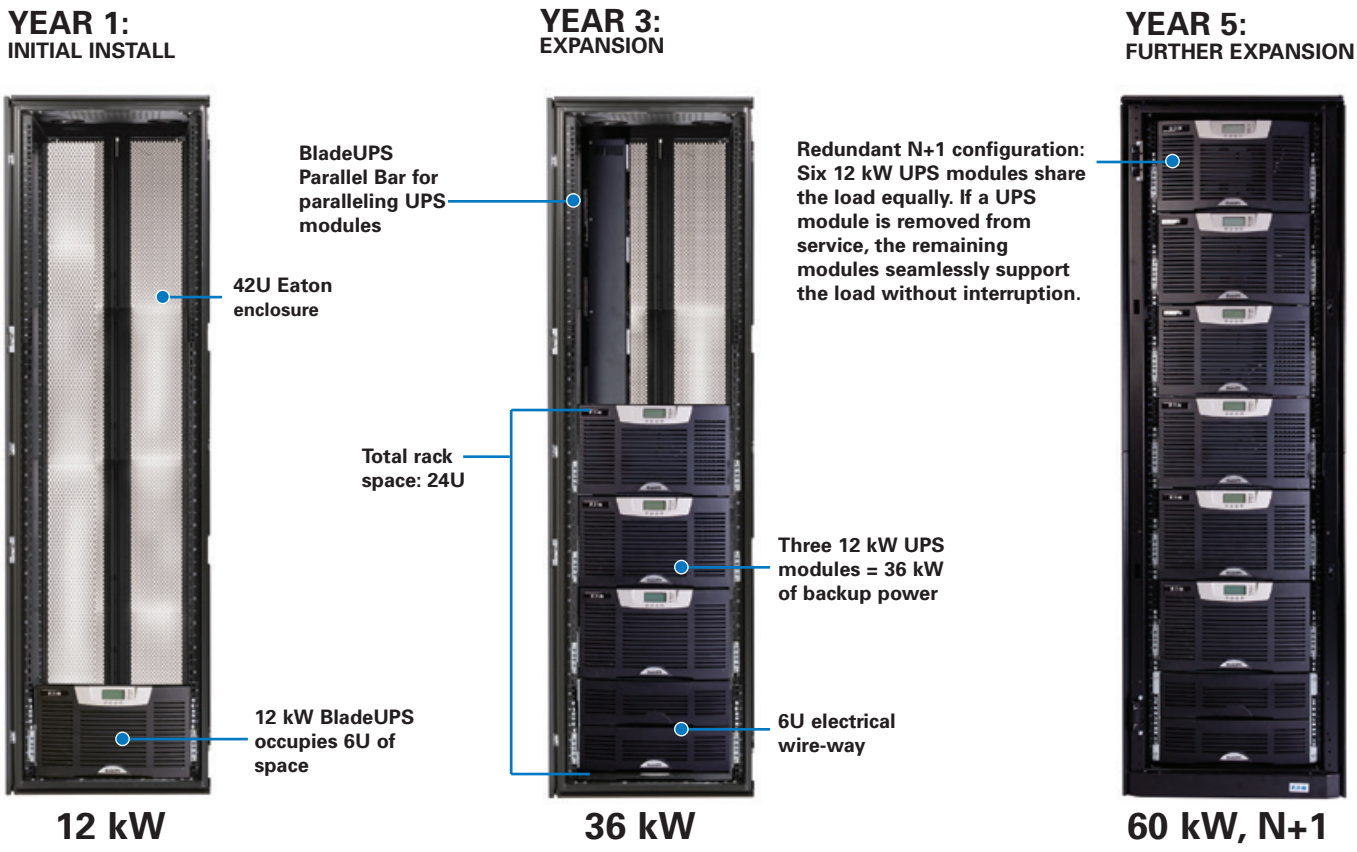
The high-efficiency BladeUPS reduces the power requirements for the data center. In the example shown, the BladeUPS reduces energy costs by an average of $273 per month. In addition, the high efficiency of a BladeUPS reduces overall air conditioning needs by more than one third; multiply that with a reduction in cooling costs by one-third and utility bills are further decreased by an additional $246 per month. The savings compound with the data center size and the number of UPS products. The low heat dissipation means this UPS can be located close to equipment racks without a concern for creating hot spots in the data center.

**The BladeUPS remains cool even in a data center full of servers.**

**Meet current and changing requirements with modular architecture**

The building block of the scalable BladeUPS system is a 6U rackmount module that provides 12 kW of backup power protection. The system expands easily to provide maximum results. As your data center grows, the system's modularity plays a key role in optimizing your capital planning and deployment. Using the patented and field-proven Powerware Hot Sync paralleling technology, up to six BladeUPS modules can be paralleled for extra capacity or redundancy, providing 60 kW of redundant backup power protection in one 19-inch rack.

Patented load-sharing control intelligently distributes the workload among modules without requiring direct synchronization links among them. Any module can provide backup support for any other, with no interruption or downtime. For instance, in a redundant system you could perform full maintenance on any module without any interruption of conditioned power to the protected IT equipment.




The BladeUPS is extraordinarily flexible—configured as a single module or multi-module system (up to six modules) in a standard 42U enclosure. The modular design enables you to deploy just the right amount of backup protection at the right price for your current needs and expand later whenever needed.

The BladeUPS can also be deployed as a single UPS module in 5, 8 or 12 kW sizes. This allows a high power UPS to be placed in the same rack as IT equipment, reducing footprint. In addition, it ensures the backup power is close to the loads being supported so chances of power wiring or human error issues between systems are minimized. This is optimal for high power converged infrastructure applications.

**12 kW BladeUPS with extended battery module (EBM)**

### Easy setup with simple parallel configuration changes

The BladeUPS is easy to install, configure, and deploy—and easy to expand later, without help from Eaton. To link multiple BladeUPS modules into a parallel configuration, all you need is a BladeUPS Parallel Bar—a simple kit installed in the top or bottom of the rack and on the back rail. IT personnel can then simply plug additional modules into the parallel bus bar. The system is intelligent, so it automatically detects paralleled modules and fully configures itself for parallel operations.

Eaton also offers an assortment of plug-and-play power distribution accessories with various input and output connections to distribute power from the BladeUPS to rack power strips or directly to high-power servers. You can choose from distribution designs with or without monitoring capability for redundant or non-redundant applications spanning from 0U to full rack height.

**Adding modules is a simple plug-and-power procedure for IT personnel with safety-approved connectors.**


**The BladeUPS Parallel Bar easily connects up to six modules in parallel.**

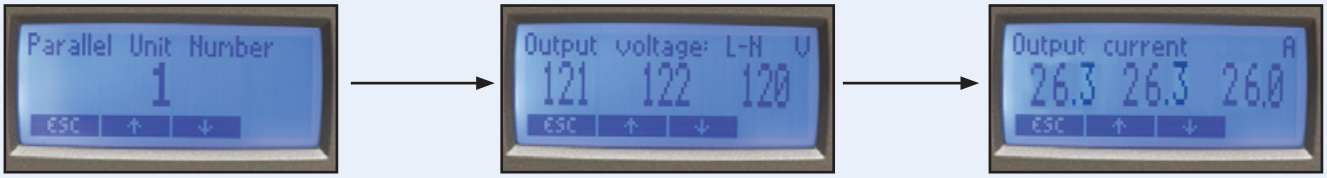
Administrators can monitor and manage the BladeUPS using the unit's LCD panel or remote monitoring software. The UPS provides data for the entire multi-module system, as well as the individual module. In addition, a module working in a parallel configuration can be separated at any time and re-deployed as a standalone module to meet a data center's changing requirements.

## The brightly backlit 2.6" LCD shows parameters of the system or a module.


**Access parallel system information**

**Display output from multiple modules on one screen**

**Display full system output from any UPS**



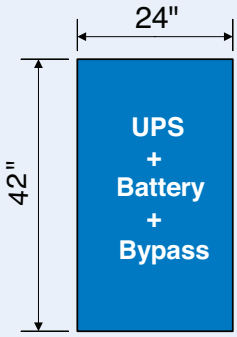

**Review any UPS from any display**

**Display individual module output voltage**

**Display individual module output current**

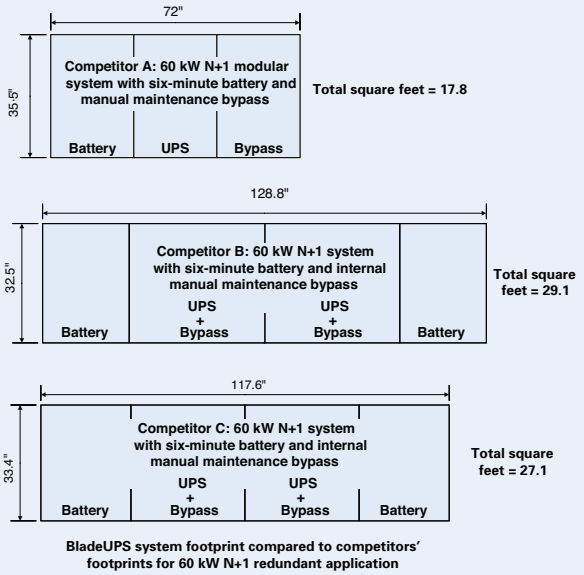
## Save space with a high power density UPS

The BladeUPS offers the smallest footprint of any UPS in its class, as well as double the power density of other UPSs on the market. This compact design leaves more space for IT equipment in the rack and data center.




**BladeUPS**
**60 kW N+1 modular system with six-minute battery and automatic maintenance bypass**

**Total square feet = 7.0**




**BladeUPS system footprint compared to competitors' footprints for 60 kW N+1 redundant application**

### Expedite deployment with flexible installation options

The BladeUPS can be deployed in a variety of system architectures to support the specific requirements of your computer room or data center and the desired level of redundancy (Tier I through Tier IV, as defined by the Uptime Institute). Data center managers can tailor power protection to adapt to changing needs, often without the need for an electrician or service technician.

### Hybrid power protection

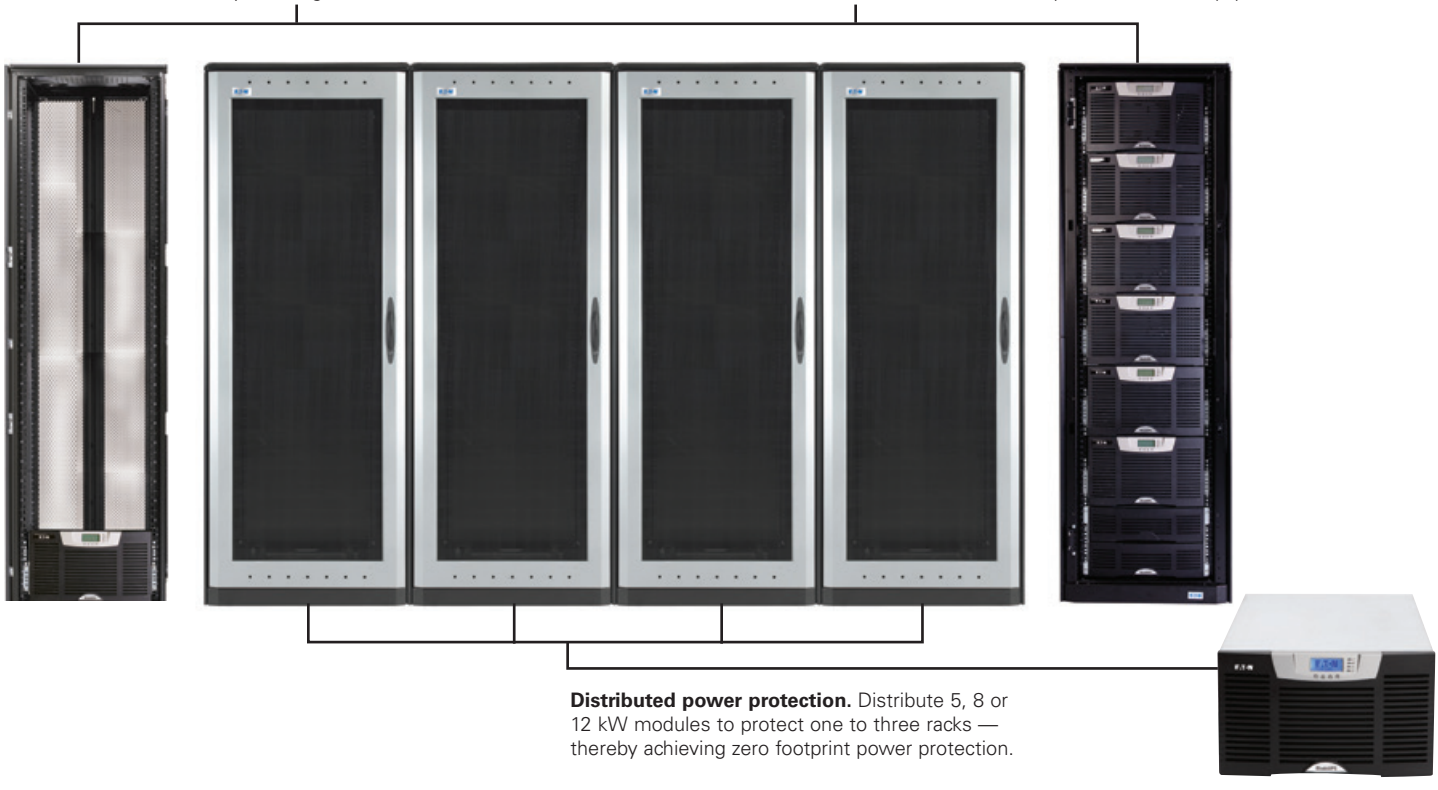
The BladeUPS also offers stronger redundancy of power protection for equipment racks containing critical IT equipment.

- For dual-corded loads with one source on a central UPS and the other on utility power, you can back up selected loads with a local BladeUPS, deployed in a distributed or zone fashion.
- For dual- or single-corded loads on a central UPS, you can back up selected loads with a local BladeUPS (distributed or zone) in series with the central UPS. This configuration provides maximum reliability close to critical loads, with minimal heat dissipation and maximum efficiency.

### System architecture with the BladeUPS

**Centralized power protection for small computer rooms.** Start with one 12 kW module and expand to 60 kW with N+1 redundancy in a single 19-inch rack enclosure.

**Zone power protection for mid-sized computer rooms.** Deploy 60 kW (N+1) in a 19-inch rack to protect a row of IT equipment racks. Use 3U rack mount RPMs to distribute power to the IT equipment.



**Distributed power protection.** Distribute 5, 8 or 12 kW modules to protect one to three racks — thereby achieving zero footprint power protection.

# Eaton BladeUPS pre-assembled system

Take advantage of Eaton's turnkey solution with the BladeUPS pre-assembled system. Depending on your power requirements, order pre-assembled systems with one to six BladeUPS units installed to provide the right level of power protection today while looking ahead to future growth. The top-entry models are ideal for data center environments that don't have a raised floor and a flexible option is available to facilitate data center moves, additions or changes. Bottom entry models are also available.

Each pre-assembled system is factory installed, tested and placed in the Eaton S-Series Enclosure (42U). Eaton fully assembles the system prior to shipping, complete with communications cards and system wiring validation. It's delivered on a single, shock-absorbent pallet*.

Please note that extended battery modules and other BladeUPS accessories for these systems must be ordered separately.

### Cost savings

BladeUPS pre-assembled systems are more affordable than ordering the standard system components and onsite installation service separately; you'll save 7 percent on the overall cost of the product by purchasing the pre-assembled unit. Even more, since it's shipped on a single pallet, you can save up to 20 percent on shipping costs!

### Easy installation

Each pre-assembled system comes with all UPS modules and communication cards already installed. For BladeUPS systems with five and six modules, the internal batteries are shipped uninstalled for better weight distribution.

Simply unwrap the enclosure and roll it off the pallet via a specially designed ramp that's packaged with the unit. Once the enclosure is set in place, all you have to do is bring electricity to the unit and initiate the startup.

The maintenance bypass module (MBM) is available factory installed in the BladeUPS preassembled systems. Six module parallel systems will lose one UPS slot to make room for the MBM. Four module parallel systems will have wire way moved to allow all four ups modules to be installed.

**BladeUPS pre-assembled system on shock-absorbent pallet with specially-designed ramp.**

** Batteries for top two UPS modules shipped on a separate pallet for 60 kW and 60 kW (N+1)*

### S-Series Enclosure

Eaton S-Series Enclosures are scalable and feature a fully welded steel frame. A wide range of horizontal and vertical cable management options enhance cabinet-to-cabinet and top-to-bottom cable routing. Split rear doors provide easier access and maneuverability in data center environments and a broad range of rack accessories, as well as power distribution, management and protection products, provide a proven platform you can depend on to support your critical IT operations. Interact with the S-Series enclosure at **Eaton.com/S-Series.**

**Fully welded frame allows unobstructed access along the sides, eliminating cumbersome pass-through holes.**

**Open base offers unsurpassed access of cables through the bottom of the enclosure.**

**Enclosed, integrated trough allows for overhead cable distribution.**

### Key technology features

- Factory pre-tested system accelerates installation and minimizes on-site testing requirements
- Save up to 20 percent in shipping costs
- Top and bottom entry models available
- Modularity and scalability allow the system to be easily moved
- Installed in Eaton S-Series Enclosure
- Quick and easy installation process

### Shipping features

- Shock-absorbent pallet
- Specially-designed ramp included for easy on-site product placement
- Extra space on pallet for internal batteries to provide improved weight distribution for five- and six-module systems during shipping
- Shipped as one unit, resulting in lower cost and easier installation

**BladeUPS pre-assembled system – bottom entry (12 kW to 60 kW N+1)**

| Part Number | Model |
|---|---|
| ZP21110XXXXX000 | 12 kW, 208V |
| ZP21115XXXXX000 | 12 kW, 208V with (1) INDGW-X2 card |
| ZP212100XXXX000 | 24 kW, 208V |
| ZP212150XXXX000 | 24 kW, 208V with (1) INDGW-X2 card |
| ZP2131000XXX000 | 36 kW, 208V |
| ZP2131500XXX000 | 36 kW, 208V with (1) INDGW-X2 card |
| ZP21410000XX000 | 48 kW, 208V |
| ZP21415000XX000 | 48 kW, 208V with (1) INDGW-X2 card |
| ZP215100000X000 | 60 kW, 208V |
| ZP215150000X000 | 60 kW, 208V with (1) INDGW-X2 card |
| ZP2161000000000 | 60 kW N+1, 208V |
| ZP2161500000000 | 60 kW N+1, 208V with (1) INDGW-X2 card |

**BladeUPS pre-assembled system – top entry (12 kW to 60 kW N+1)**

| | |
|---|---|
| ZP22110XXXXX000 | 12 kW, 208V |
| ZP22115XXXXX000 | 12 kW, 208V, with (1) INDGW-X2 card |
| ZP222100XXXX000 | 24 kW, 208V |
| ZP222150XXXX000 | 24 kW, 208V, with (1) INDGW-X2 card |
| ZP2231000XXX000 | 36 kW, 208V |
| ZP2231500XXX000 | 36 kW, 208V, with (1) INDGW-X2 card |
| ZP22410000XX000 | 48 kW, 208V |
| ZP22415000XX000 | 48 kW, 208V, with (1) INDGW-X2 card |
| ZP225100000X000 | 60 kW, 208V |
| ZP225150000X000 | 60 kW, 208V, with (1) INDGW-X2 card |
| ZP2261000000000 | 60 kW N+1, 208V |
| ZP2261500000000 | 60 kW N+1, 208V, with (1) INDGW-X2 card |

**BladeUPS standalone systems (or capacity additions to parallel systems)**
*W represents wire count in plug or connector assembly**

| | |
|---|---|
| ZC0517700110000 | 5 kW 208V w/20A 5W in/5W out, One internal battery string |
| ZC0517708110000 | 5 kW 208V w/20A 5W in/5W out, INDGW-X2, One int battery |
| ZC0517700100000 | 5 kW 208V w/20A 5W in/5W out, Two internal battery string |
| ZC0517708100000 | 5 kW 208V w/20A 5W in/5W out, INDGW-X2, Two int battery |
| ZC0811100100000 | 8 kW 208V w/30A 5W in/5W out |
| ZC0811108100000 | 8 kW 208V w/30A 5W in/5W out, INDGW-X2 |
| ZC1212200100000 | 12 kW 208V w/60A 5W in/5W out |
| ZC1212208100000 | 12 kW 208V w/60A 5W in/5W out, INDGW-X2 |
| ZC1212600100000 | 12 kW 208V w/60A 5W in/4W out |
| ZC1212608100000 | 12 kW 208V w/60A 5W in/4W out, INDGW-X2 |
| ZC121P060100000 | 12 kW 208V for parallel configuration |
| ZC121P068100000 | 12 kW 208V for parallel config, INDGW-X2 |
| ZC1224408100000 | 12kW 400V w/30A 5W in/5W out, INDGW-X2 |
| ZC122P060100000 | 12kW 400V for parallel configuration |
| ZC122P068100000 | 12kW 400V for parallel config, INDGW-X2 |

**BladeUPS pre-assembled system – bottom entry (12 kW to 48 kW)**

| Part Number | Model |
|---|---|
| ZP23110XXXXX000 | 12 kW, 208V |
| ZP23115XXXXX000 | 12 kW, 208V with (1) INDGW-X2 card |
| ZP232100XXXX000 | 24 kW, 208V |
| ZP232150XXXX000 | 24 kW, 208V with (1) INDGW-X2 card |
| ZP2331000XXX000 | 36 kW, 208V |
| ZP2331500XXX000 | 36 kW, 208V with (1) INDGW-X2 card |
| ZP23410000XX000 | 48 kW, 208V |
| ZP23415000XX000 | 48 kW, 208V with (1) INDGW-X2 card |

**BladeUPS pre-assembled system – top entry (12 kW to 48 kW)**

| | |
|---|---|
| ZP24110XXXXX000 | 12 kW, 208V |
| ZP24115XXXXX000 | 12 kW, 208V, with (1) INDGW-X2 card |
| ZP242100XXXX000 | 24 kW, 208V |
| ZP242150XXXX000 | 24 kW, 208V, with (1) INDGW-X2 card |
| ZP2431000XXX000 | 36 kW, 208V |
| ZP2431500XXX000 | 36 kW, 208V, with (1) INDGW-X2 card |
| ZP24410000XX000 | 48 kW, 208V |
| ZP24415000XX000 | 48 kW, 208V, with (1) INDGW-X2 card |

*Preassembled systems have hardwire input and output.*
*Additional configurations available, please contact your Eaton sales representative.*

**Preassembled system dimensions**

| Unit dimensions (H x W x D, in) | (H x W x D, mm) |
|---|---|
| 81.0 x 24.0 x 42.0 | 2057.4 x 609.6 x 1066.8 |
| **Shipping dimensions (H x W x D, in)** | **(H x W x D, mm)** |
| 86.5 x 32.0 x 77.0 | 2197.1 x 812.8 x 1955.8 |

**Standalone system dimensions**

| Unit Dimensions (H x W x D, in) | (H x W x D, mm) |
|---|---|
| 10.3 x 17.4 x 26.0 | 267 x 442x 660 |
| **Shipping Dimensions (H x W x D, in)** | **(H x W x D, mm)** |
| 27 x 39.0 x 46.0 | 677 x 979 x 1155 |

** Wire count in plug or connector assembly.*
*12 kW 208V - IEC 60309 60A, Input 560P9, Output 560C9 or 460C9*
*8 kW 208V - NEMA 30A, Input L21-30P, Output L21-30R*
*5 kW 208V - NEMA 20A, Input L21-20P, Output L21-20R*
*12 kW 400V - IEC 60309 30A, Input 532P6, Output 532C6*

*To add maintenance bypass module (MBM) to preassembled configurations, change digit 13 from "0" to "1". Not available in 60 kW (N+1) configurations.*

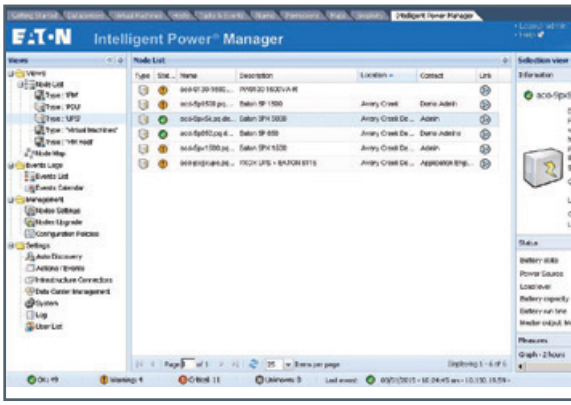
# Power management software

Eaton's BladeUPS configurable and pre-assembled systems seamlessly integrate into the leading virtualization platforms, allowing you to view your entire data center on a single dashboard.

### Intelligent Power® Manager (IPM) software

Eaton's IPM software provides all the tools you need to monitor and manage power devices in your physical or virtual environment. This innovative software solution ensures system uptime and data integrity by allowing you to remotely monitor, manage and control devices on your network. IPM provides a solution that is easy to use and maintains business continuity.

- Remotely monitor and manage multiple devices across your network from a single interface; this can be integrated into an already existing platform, such as VMware, Microsoft or Citrix
- Suspend non-critical virtual machines, consolidate critical virtual machines and shut down unused servers to extend battery runtime
- Set server power consumption limits for extended battery runtime with UCS management software

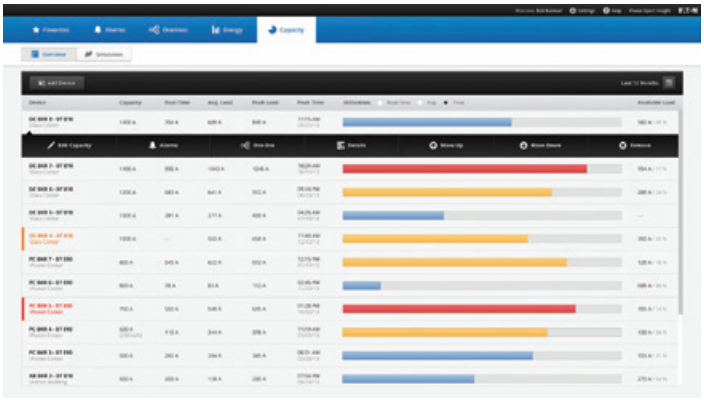



**Intelligent Power Manager plugs into VMware's vCenter dashboard.**

**A single INDGW-X2 card can be used to monitor all BladeUPS in a parallel system.**

### Brightlayer software

Brightlayer software takes the complexity out of monitoring your entire electrical system. It's simple to install, simple to use, simple to add new devices and simple to obtain the information needed to make important operating decisions.



**Brightlayer software seamlessly handles Eaton's communications equipment in a graphical manner without additional serial interfaces, protocols or customization.**

### FORESEER services

FORESEER® analyzes thousands of data points to proactively manage key equipment throughout an enterprise-wide infrastructure. This system interfaces with an extensive collection of devices from most major manufacturers of power and environmental equipment, as well as subsystems for fire detection and suppression, security, fuel handling and building controls.

Software and connectivity options provide a unified window into the state of IT and facilities systems. With this level of visibility, you can transform the power system into a powerful strategic asset.

**FORESEER has a highly configurable user interface to allow you to see everything needed to run your data center.**

# Count on reliable performance and uptime

Recognizing the mission-critical nature of data center operations, the BladeUPS has been designed for premium reliability and continuous operation. It incorporates leading technologies that Eaton developed for its largest UPSs, such as:

**Robust paralleling.** With Eaton's patented Powerware Hot Sync technology, UPS modules work in peer-to-peer fashion when configured in a parallel system. Most other paralleling systems on the market use a single central main controller with a backup controller. If the main controller fails, the system must recognize this and transfer control to the backup control, or the entire system fails. With Eaton's patented approach, each UPS module operates independently, yet is completely synchronized with the others. There is no change in control, therefore no single point of failure.

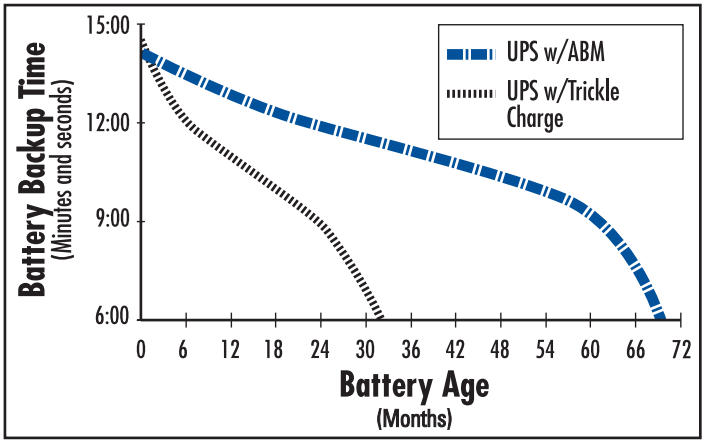
**Intelligent maintenance bypass switch.** The internal switch inside the UPS chassis automatically activates bypass mode whenever an electronics module is removed. This feature ensures that power to protected loads is not accidentally interrupted by human error. (If the UPS is in a parallel environment with N+1 redundancy, removing an electronics module only causes that particular UPS module to go offline while the protected equipment is supported by other modules in the configuration).

**Static bypass switch.** All BladeUPS modules have their own static switch for normal operations and internal bypass in case of a high overload condition, output load fault or internal failure.

**Hot-swappable electronics and battery modules.** Replacing batteries or electronics modules can be done in minutes without interrupting power to IT equipment. This hot-swap capability helps reduce mean time to repair (MTTR) and dramatically improves the availability of the protected IT equipment.

**IT staff can easily replace battery modules.**

**Eaton's advanced battery management technique.** ABM technology significantly extends battery service life with a unique three-stage charging technique. The UPS automatically tests battery health and provides advance notification when preventive maintenance is needed, allowing ample time to hot-swap batteries without ever having to shut down connected equipment.




**Eaton's ABM technology significantly increases battery service life.**

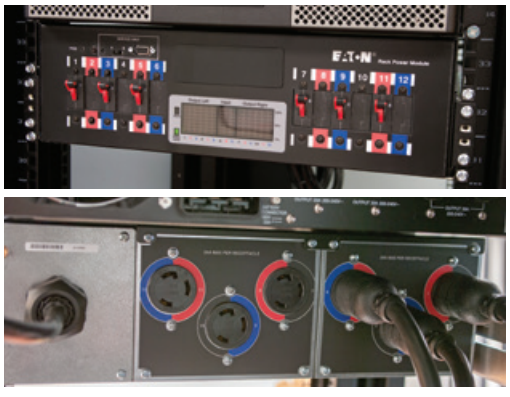
**Flexibly distribute power to racks.**

Partner the BladeUPS with a rack power module (RPM) to create a highly flexible, adaptable power delivery architecture at the rack level. The RPM delivers up to 36 kW (hardwired models) of power in an organized manner to loads of various voltages, power cords and layouts.

The 3U RPM can be deployed in the same rack with the UPS and IT equipment; there's no need for a dedicated infrastructure rack. The resulting architecture has fewer cables to manage, fewer distribution points to monitor and greater flexibility for IT personnel to make changes without an electrician.

When BladeUPS and RPMs are used in a "plug and play" configuration, each RPM will supply 12 kW of power to the IT loads or other ePDUs. Power distribution changes can be made easily and in some situations while equipment is operating.

Consider a Tier II data center with 42 racks at 5 kW per rack: the BladeUPS with RPM can meet power requirements with half the number of racks, 60 percent less rack space, 45 percent less cabling and 41 percent less square footage than other vendors' power distribution products that require dedicated racks. These advantages make the BladeUPS with RPM ideal for distributed protection in small to mid-sized data centers, or to add zone protection in large data centers that have centralized UPSs.



**Eaton RPM front and Eaton RPM rear**

### Simplify UPS installation and maintenance

The BladeUPS is easy to install, configure and deploy. All BladeUPS modules (UPS and battery) come with rackmount kits for easy installation in standard equipment racks. In-house IT staff can install and service this UPS themselves. Adding parallel units for future expansion is a simple, plug-and-play procedure.

The BladeUPS internal battery trays are user-replaceable so that one person, working alone, can replace the battery without disrupting data center operations or power to protected equipment.

Most IT teams are confident managing the BladeUPS without outside help because of its simplicity. However, Eaton is ready to provide support with its world-class service organization of customer service technicians who deliver 24x7 support including on-site corrective and preventive maintenance, battery solutions, service training, integration services and spare parts.

The BladeUPS is also compatible with Eaton's PredictPulse™ remote monitoring service. It collects and analyzes data from connected power infrastructure devices 24x7, providing Eaton's staff of technical experts with the insight needed to make recommendations and take action on your behalf. PredictPulse comes with an online dashboard for real-time status information, mobile app for alarm updates and monthly summary report that details UPS performance and alarm history. Visit **Eaton.com/PredictPulse** to learn more..

### Flexible runtime options

Each BladeUPS can be configured with its own external battery backup. The BladeUPS design eliminates this single point of failure. Competitive, modular systems use a centralized battery bank with a shared connection point that presents a potential single point of failure.

**IT staff can easily install electronics modules.**

**BladeUPS extended battery module**

**12 kW BladeUPS typical battery runtime chart (in minutes)**

| Single Module | | Internal Battery | + 1 EBM | + 2 EBMs | + 3 EBMs | + 4 EBMs |
|---|---|---|---|---|---|---|
| Load kW | Load % | | | | | |
| 12 | 100% | 4.7 | 9.5 | 17 | 27 | 34 |
| 11 | 92% | 5.4 | 10.9 | 20 | 30 | 38 |
| 10 | 83% | 6.2 | 13 | 22 | 33 | 42 |
| 9 | 75% | 7.3 | 15 | 24 | 38 | 48 |
| 8 | 67% | 8.7 | 18 | 28 | 43 | 55 |
| 7 | 58% | 10.7 | 23 | 32 | 50 | 64 |
| 6 | 50% | 13.6 | 27 | 42 | 60 | 76 |
| 5 | 42% | 18.5 | 33 | 51 | 73 | 94 |
| 4 | 33% | 23 | 42 | 66 | 94 | 120 |
| 3 | 25% | 30 | 56 | 89 | 128 | 165 |
| 2 | 17% | 44 | 85 | 137 | 199 | 258 |

**8 kW BladeUPS typical battery runtime chart (in minutes)**

| Single Module | | Internal Battery | + 1 EBM | + 2 EBMs | + 3 EBMs | + 4 EBMs |
|---|---|---|---|---|---|---|
| Load kW | Load % | | | | | |
| 8 | 100% | 8.7 | 18 | 28 | 43 | 55 |
| 6 | 75% | 13.6 | 27 | 42 | 60 | 76 |
| 4 | 50% | 23 | 42 | 66 | 94 | 120 |
| 2 | 25% | 44 | 85 | 137 | 199 | 258 |

**5 kW BladeUPS typical battery runtime chart (in minutes)**

| Single Module | | Internal Battery | Internal Battery | + 1 EBMs | + 2 EBMs | + 3 EBMs | + 4 EBMs |
|---|---|---|---|---|---|---|---|
| Load kW | Load % | One (1) string | Two (2) string | | | | |
| 5 | 100% | 8.7 | 18 | 33 | 51 | 73 | 94 |
| 2.5 | 75% | 13.6 | 27 | 68 | 109 | 157 | 203 |

**BladeUPS typical battery runtime chart (Parallel UPS, in minutes)**

| Number of UPS Models | Total Load kW | Internal Battery | +1 EBM per UPS | | +2 EBMs per UPS | | +3 EBMs per UPS | | +4 EBMs per UPS | | Configuration | Load % | kW per UPS Modules |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Min | EBMs | Min | EBMs | Min | EBMs | Min | EBMs | | | |
| 6 | 60 | 6.2 | 13 | 6 | 22 | 12 | 33 | 18 | 42 | 24 | N+1 | 83% | 10 |
| 5 | 48 | 6.7 | 13 | 5 | 23 | 10 | 35 | 15 | 44 | 20 | N+1 | 80% | 9.6 |
| 4 | 36 | 7.3 | 15 | 4 | 24 | 8 | 38 | 12 | 48 | 16 | N+1 | 75% | 9 |
| 3 | 24 | 8.7 | 18 | 3 | 28 | 6 | 43 | 9 | 55 | 12 | N+1 | 67% | 8 |
| 2 | 12 | 14 | 27 | 2 | 42 | 4 | 60 | 6 | 76 | 8 | N+1 | 50% | 6 |

** 5kW EBM runtimes shown with two (2) internal battery strings*

## Technical specifications[1]

| General characteristics | |
|---|---|
| Power rating | 5, 8 or 12 kW per UPS module (5 kW only available at 208V) |
| Efficiency | Up to 98% |
| Heat dissipation (HE mode) | 371 watts/1266 BTU/hr at 100% rated load (12 kW)<br>264 watts/903 BTU/hr at 100% rated load (8 kW)<br>210 watts/707 BTU/hr at 100% rated load (5 kW) |
| 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 characteristics | |
| Input voltage | 208 Vac and 400 Vac models |
| Voltage range | 208V model: 180 to 265 Vac<br>400V model: 311 to 500 Vac |
| 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 in HE mode, 100% in normal mode |
| Input requirements | Three-phase, four-wire + ground |
| Bypass source | Same as input (single feed) |
| Generator compatibility | Fast sync slew rate for generator synchronization, programmable return to AC source delay |

| Output characteristics | |
|---|---|
| Rated output voltage | 208V model: 180 to 225 Vac, Ph to Ph<br>400V model: 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<br>Leading: 0.9 |
| Total output voltage distortion | <3% with IT loads (PFC power supplies)<br><5% non-linear or non-PFC power supplies |

| Battery characteristics | |
|---|---|
| Battery type | VRLA - AGM |
| Battery runtime (internal) | 50% loading 23 min (8 kW) 13 min (12 kW)<br>100% loading 9 min (8 kW) 4.7 min (12 kW) |
| 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 to 1.75 VPC at >90 min runtime |
| Battery low condition | Announced with alarm |
| Extended battery capability | Yes, add up to four additional 3U battery enclosures<br>50% loading 120 min (8 kW) 76 min (12 kW)<br>100% loading 55 min (8 kW) 34 min (12 kW) |

| Physical characteristics | |
|---|---|
| Dimensions H x W x D, in (mm) | UPS: 10.3 (6U) x 17.4 x 28.4 (267 x 442 x 720)<br>EBM: 5.2 (3U) x 17.2 x 26 132 x 437 x 660) |

**Note:**
Total chassis weight without batteries or electronics: 80 lb (36 kg)
Total chassis weight with batteries or electronics: 307 lb (140 kg)

| | |
|---|---|
| Total UPS weight without batteries | 135 lb (61 kg) |
| Total UPS weight with 2 strings of batteries | 307 lb (140 kg) |
| Total UPS weight with 1 string of batteries | 218 lb (99 kg) (5 kW UPS only) |
| EBM shipping weight | 170 lb (77 kg) |

| Communications and user interface | |
|---|---|
| Software compatibility | UPS ships with Software Suite CD containing Intelligent Power Manager supervisory software and Intelligent Power Protector protection software |
| X-Slot Bays | Two available for the cards listed below |
| Optional X-Slot communication cards | Application:<br>Web/SNMP: INDGW-X2 card<br>Modbus RTU: Modbus card<br>Modbus TCP/IP: PowerXpert Gateway Series UPS card<br>IBM eServer™ (i5™, iSeries™, or AS/400): Relay interface card<br>N/O, N/C dry contacts: Industrial relay card<br>Parallel: Powerware Hot Sync CAN Bridge card |
| Control panel LCD | Two lines by 20 characters<br>Four menu-driven interface buttons<br>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, optional factory service available |
| Preventive maintenance | User capable, optional factory service available |
| Corrective maintenance | User capable, optional factory service available |
| Serviceability features | Hot-swappable batteries<br>Hot-swappable electronics module<br>Automated internal maintenance bypass<br>Auto-configure firmware<br>Flash firmware upgradeable |

| Certifications | |
|---|---|
| Safety | 208V model: UL1778, cUL<br>400V model: CE,EN 62040-1, EN 60950-1: 2006, cULus |
| EMI/EMC | 208V model: FCC Part 15 Class A<br>EN 62040-2: 2006 |
| Surge protection | 208V ANSI C62.41, Cat B-3 EN 62000-4-5 |
| Additional ratings | EN 61000-3-2, EN 61000-3-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8 |
| Hazardous materials (RoHS) | EU Directive 2002/95/EC |

| Warranty | |
|---|---|
| Standard | 18 months from date of shipment |
| Warranty repair | Factory depot repair or replace |

| Service Support Agreements[2] | |
|---|---|
| Depot | PowerTrust Express |
| On-site 8x5 | PowerTrust Value |
| On-site 24x7 | PowerTrust eight-, six- or two-hour response |

**Options and accessories**

Detachable input cord
Detachable input/output cord assembly
Detachable paralleling cord assembly
EBMs
3U output sub-distribution module
0U to 3U rack power distribution units (ePDU)
60 kW BladeUPS Parallel Bar, Top Entry, Bottom Entry and 4-high versions
Part: EMPDT1H1C2
X-Slot communication cards (see Communications and user interface section)
6U Maintenance Bypass Module
External Battery Interconnect for use with 400V models

*1. Due to continuing product improvement programs, specifications are subject to change without notice.*
*2. PredictPulse remote monitoring and 24x7 technical support included.*

For complete information about the BladeUPS, please visit **Eaton.com/BladeUPS.**

Powering Business Worldwide

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