

The world's only supplier of Strategic Power Management™

Not one solution for every problem. Or a solution that only works under certain conditions. But instead, a global solution that makes proactive power management available to everyone.

Like no other offering in our industry, Strategic Power Management lets you select from a combination of resources to match your exact power protection needs. And when those needs change, you have the flexibility to adapt -- easily and efficiently!

More than a box of batteries, a single UPS technology, or simple aftersale maintenance, Strategic Power Management from Exide Electronics delivers comprehensive solutions for the ultimate in reliability.

solutions

A new level of reliability The Powerware Plus Family

The loss of power in any business means a loss of some things forever. Whether it's irreplaceable data, or lost time and productivity, electrical downtime is serious business.

That's why businesses like yours around the world choose Exide Electronics to protect their critical applications -- from 911 service to airport radar; from leading financial institutions to Internet service providers; from critical client/server applications to the largest mainframe computers.

Exide Electronics understands your serious power problems better than anyone. And we know the first things you look for in a UPS are reliability and quality. These words mean much more, however, than our cutting-edge technology or ISO 9001 ratings. We back them up with the world's largest dedicated service organization and a company-wide vision that always puts your needs first.

Exide Electronics understands that you can't afford power problems

And we developed our Powerware Plus UPS family
to make sure they never occur.



We raised the bar

From the first all digitally controlled UPS, to the first UPS with advanced switching technology, to the first Hot-Tie® UPS – Exide Electronics leads the industry with innovations. Our latest development takes reliability one step higher. Powerware Hot Sync™ uses the best digital signal processing (DSP) and patented software algorithms to offer the most reliable UPS topology today. With Powerware Hot Sync™, each module in a parallel configuration synchronizes to the others with nothing more than the electrical power wiring connecting them. As loads shift and change the other modules instantly adjust to balance or assume the load.



Daily, traditional data centers evolve into server farms and modem banks, with an array of complex electronic equipment to protect. Exide Electronics is a leader in providing UPS solutions for global communications.



Complete battel An expert in your corner

Your power protection strategy must include alternate power sources like batteries. Once again, we lead with a suite of battery monitoring and management software products that begin with DC ExpertTM. The system structure of DC ExpertTM allows the Powerware Plus UPS to learn about battery health regardless of the manufacturer. DC ExpertTM proactively provides you with extremely accurate battery run time information (+/- 3%) before a utility outage occurs. And it does so without **ever** placing your critical load at risk or reducing your battery life. Plus, if you link DC ExpertTM to our optional power management software, you can see exactly what's happening, graphically -- right from your desktop.

Power Management

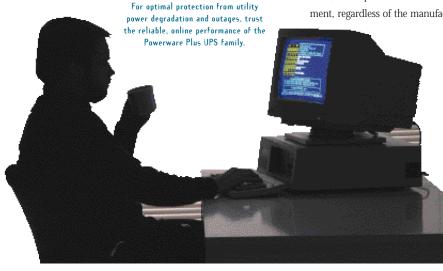
You now have desktop access to all the information you need, so you don't have to interrupt your work to deal with power management problems. All Powerware Plus products offer a variety of communications options including SNMP, automatic notification and powerful management applications to keep our systems in touch with your systems.

What's more, our award-winning software applications, OnliNet® and LanSafe/FailSafe, are available for all Powerware Plus UPS products. When necessary, they provide timely server shutdown for all major operating systems. And with our ConnectUPS™ adapter, you can connect your Powerware Plus UPS to either Ethernet (TCP/IP) or token-ring networks.



Answers for the enterprise

Your desktop is also the door to total enterprise management. Exide Electronics' PowerVision® software builds on OnliNet/LanSafe features to ensure that the most critical areas of your facility's power - utility feed, critical load, and UPS performance - are expertly managed. And with FORESEER™, you gain the ability to proactively monitor and manage foundation equipment enterprise-wide. From UPS, to air handlers, to temperature and humidity, the FORESEER product line monitors all equipment, regardless of the manufacturer. It's the ultimate solution.





Parallel for Redundancy



Parallel for Capacity

Powerware Hot Sync™

Today your critical power loads demand even greater protection. That's why we developed a unique paralleling system that provides redundancy and capacity capability with system availability of 99.99% and greater.

While you may be familiar with paralleling, Powerware Hot Sync's totally new design eliminates more risks to your system. Typically, in order for modules to operate in parallel as a system, they have to communicate with each other through intricate wiring to coordinate the primary paralleling operations of output synchronization, load sharing and selective tripping of a module. But this traditional method of communication introduces a system level single point of failure. If this communication link goes down, so does your critical load. And that's a risk you just can't afford to take.

Instead, Powerware Hot Sync $^{\mathbb{T}}$ eliminates the need for the modules to communicate with each other. Each UPS module has the ability to synchronize and support the critical load independent of the other modules. This unique approach to paralleling completely eliminates the traditional single point of failure.

Powerware Hot Sync™ - Redundant

This two module system provides unmatched system reliability and availability. This configuration allows full maintenance to be preformed on both modules and the parallel cabinet without need for an external maintenance bypass and without having to remove the critical load from conditioned power. No other UPS manufacturer can provide this capability.

Powerware Hot Sync™ - Capacity

This system topology can accommodate up to eight modules in parallel for your larger and most critical applications. Superior monitoring and highly automated controls make this system as easy to operate as a single module system.

You may not require this level of reliability now, if you are just purchasing a single UPS module. However, after the purchase you can effortlessly expand from a single module system to a 2 module Hot Sync™ Redundant system and on to an 8 module HotSync™ Capacity system. Isn't it reassuring to know that the Powerware Plus is that flexible -- if you need it.

From high yield critical industrial processes to automated mass transit...





Exide Electronics can provide the UPS solution for your business.

reliability

DC Expert™

DC Expert^{\mathbb{M}} provides real time information on battery string health and battery run time remaining. With this integral feature, you always know the condition of your battery string. Most importantly, DC Expert^{\mathbb{M}} allows you to plan for battery maintenance and avoid any unexpected load losses due to battery deterioration.

DC Expert's battery test method outperforms the competition. Examine its battery test method and the method used by other manufacturers to see for yourself how the DC Expert's technique offers the highest level of assurance and battery run time accuracy.

Inverter



DC Expert™ Battery Test Method

- Consistent testing proactively provides battery run time information, accurate to +/-3%
- During a utility outage, battery time remaining automatically updates with load shedding
- ▶ Battery string health determined during periodic testing
- Programmable, automatic monthly testing, any day, any time
- The monthly battery tests perform very light battery discharges, removing less than 10% of available battery run time, to ensure you are always ready for a utility outage
- Light load testing does not impact battery life
- Rectifier does not turn off during battery testing; rectifier shares load with battery for consistent battery load testing regardless of inverter load
- Since the rectifier does not turn off, the critical load is never at risk during battery testing
- DC Expert[™] log stores results of last 30 tests for trending analysis
- Accommodates either valve regulated ("maintenancefree") or wet cell batteries

Other UPS Manufacturers' Battery Test Method

Bypass Inverter Inverter

Rectifier

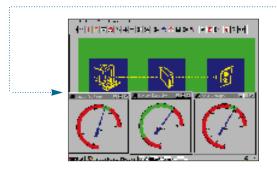
DC Link

During the battery test, the rectifier regulates DC link voltage to

obtain consistent battery power discharge month to month.

- Other UPS manufacturers turn off the rectifier to initiate battery testing
- ▶ The battery fully supports the inverter load
- As the critical load changes from test to test, so does the battery load
- Inconsistent battery test load yields inaccurate battery run time estimates
- If the battery were to fail during testing, the inverter must perform an emergency transfer to bypass to prevent dropping the critical load

This type of testing needlessly places the critical load at risk.





Network Access

We've made it easy to monitor the Powerware Plus remotely. Optional network adapters provide LAN connectivity and SNMP compatibility with any network management system. In addition, OnliNet/LanSafe allows UPS monitoring and unattended PC or server shutdown capability.

Power Management and Enterprise Monitoring

PowerVision and FORESEER options integrate monitoring of site facilities and power equipment, while they ensure proactive maintenance.

For powertrain monitoring and management, PowerVision gives you the ability to predict problems before they occur. Its unique graphic tools show you where you need to devote your attention. FORESEER builds on OnliNet/LanSafe and PowerVision to offer a comprehensive management system for all your critical support systems, such as power, HVAC, life/safety. It integrates with your other systems via SNMP to provide total enterprise management.

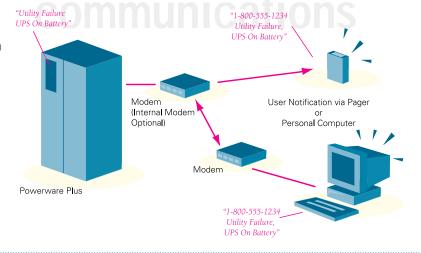
Remote Display and Input Accessories

You can monitor your Powerware Plus system up to 500 feet away through several useful accessories:

- ▶ **Remote monitor panel** -- reports the UPS status, as well as any alarms, with both audible and visual indicators.
- Supervisory contact module -- reports UPS status as well as any alarms, through both normally open and normally closed contacts.
- Relay interface module -- reports UPS operation over a 9-pin connector, providing unattended shutdown capability for up to eight critical loads.

Remote Notify

- Provides UPS outcall capability
- UPS initiates outcall for user selected events
- Devices monitored by UPS can initiate outcalling (e.g.: computer room overtemperature indication)
- Allows up to 2 phone numbers to be contacted for each event
- Provides PC dial-in capability over same modem for detailed UPS interrogation
- Easily configurable to stay current with your requirements
- Number of outcalls per event is programmable
- ▶ Time delay between outcalls is programmable



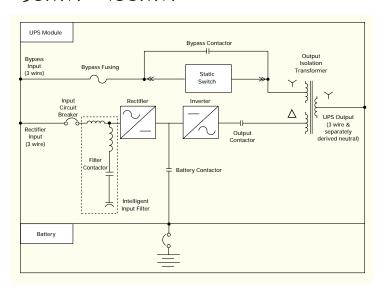
The Powerware Plus family delivers the highest performance in the industry. High power Insulated Gate Bipolar Transistors (IGBTs) are combined with a high-speed switching, true pulse width modulation (PWM) control design to yield an inverter which precisely controls the output voltage waveform. The results are superior output voltage regulation, tight output frequency regulation and minimum output voltage total harmonic distortion (less than 5% while supporting 100% non-linear load with 3:1 crest factor). Quality power is required to insure maximum reliability of your most sensitive loads.

Powerware Plus provides high efficiency operation. This results in lower operating costs, less heat generation, cooler UPS components and ultimately, higher reliability. High operating efficiency and a superior cooling design allow the UPS to operate reliably under extreme environmental conditions.

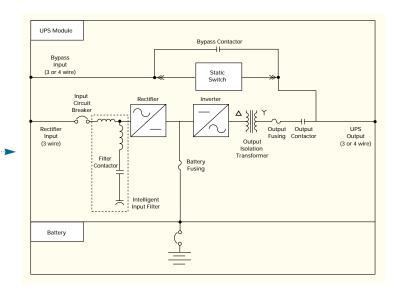


Plus 400 - 500

30kVA - 160kVA

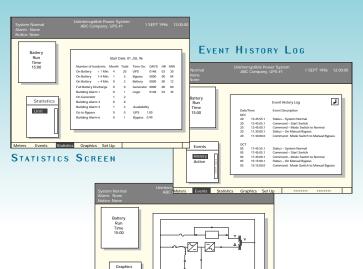


200kVA - 500kVA



FEATURES AND BENEFITS

- Separately derived neutral provided for all modes of operation, eliminating need for transformer in power distribution modular panel (Plus 40-160).
- Static switch features quick power disconnects for easy removal and servicing.
- Battery contactor with UPS module provides convenient battery isolation for UPS maintenance (Plus 40-160).
- Intelligent input filter:
 - → Contactor isolates filter capacitors from rectifier input feeds during utility outages, providing a superior generator interface
 - Contactor also disconnects filter during low load conditions, reducing operating costs
- Dual feed inputs are standard for 480V and 400V, thereby providing increased availability (optional for other voltages).
- Advanced UPS control design features only 4 printed circuit boards. By minimizing the number of control components, there are fewer components which can fail. This means higher overall reliability and less downtime.
- All control signal communications in the Powerware Plus UPS occur over a 3 wire deterministic control bus. This high speed topology completely eliminates the use of fragile ribbon cables within the UPS, thereby reducing downtime and increasing overall system reliability.



MIMIC SCREEN

Monitor Panel

Full size liquid crystal display provides graphical performance data, statistics, alarm history and metering

Control Panel

Easy-to-use control panel provides:

- One button start-up (Plus 40 -160)
- ▶ Bypass transfer control
- Input circuit breaker operation
- ▶ Battery contactor operation (Plus 40 -160)

Communication Panel

External communication interface accommodates remote monitoring and configuration by network or direct connection:

- ▶ Internal modem option, powered by the UPS
- ▶ System monitoring and control from any location through:
 - →RS-232 and accessory ports
 - →Remote terminal capabilities
- UPS remote control capability via programmable building

The Monitor Panel

- Large easy-to-read LCD measures 191mm x 152mm (7.5" x 6")
- Push-button controls allow easy access to data through user-friendly windows interface.

30 - 80kva - shown with doors removed

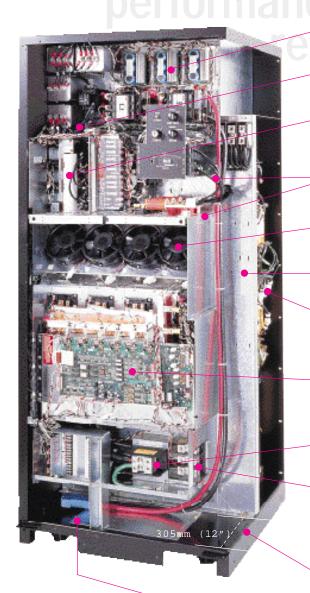


The Plus

- ► DC Expert[™] provides state of charge and dynamically updates battery time remaining
- Operational metering features:
 - → True RMS sensing of voltage and current
 - → Real-time display

- Displays up to 400 of the most recent events. All data is accessible via modem
- Intelligent alarm management event record separates informational notices from situations requiring operator intervention

30 - 80kva - shown with safety sheilds removed



- A Redundant power supplies support control logic for reliable online operation and provide local and remote failure notification.
- B Intelligent input filter disconnects from rectifier input with loss of utility and low load conditions, providing superior generator compatibility.
- C Static switch assembly can be removed for servicing without interrupting the critical load. All electrical connections feature quick disconnects for safe access.
- D Standard dual feed inputs for 480V and 400V increase availability (optional for other voltages).
- E Redundant fans ensure direct consistent cooling, quiet operation and provide local and remote failure notification.
- F Internal wireway with standard top and bottom entry access allows installation flexibility.
- G All power wiring is secured to magnetics with maintenance-free, cold welded connections, eliminating periodic retorquing of fasteners and rear access requirements.
- H Intelligent controls incorporating digital signal processing provide 5% output THD, ±1% output voltage regulation, programmable operating limits and failure proof make-before-break bypass transfers.
- 1 2x rated neutral supports higher currents associated with non-linear loads.
- J Output terminals: The output isolation transformer provides common mode noise rejection and qualifies as a separately derived source (with isolated neutral) whether online, on battery or on bypass (Plus 40-160); mechanical connectors on all input and output terminals reduce installation time.
- K Modular design and construction places all serviceable components within a 305mm (12") depth for easy maintenance. Only requires front access for servicing convenience and low mean time to repair.
- L Standard DC interface cable provides plug and play capability (Plus 40-160) with matching battery cabinets.

- Unique system performance statistics include summary information on:
 - → UPS and bypass availability
 - → Frequency and length of on-battery conditions
 - → Building alarms
 - → Time on bypass, and much more

- A hinged access cover protects an emergency power-off (EPO) that quickly de-energizes the UPS and critical load
- In addition to the LCD panel, LEDs indicate UPS operating status at a glance

200 - 300kva - shown with doors removed

Monitor Panel

Full size liquid crystal display provides graphical performance data, statistics, alarm history and metering

Control Panel

Easy-to-use control panel provides:

- One button start-up (with optional battery breaker)
- ▶ Bypass transfer control
- Input circuit breaker operation

Communication Panel

External communication interface accommodates remote monitoring and configuration by network or direct connection:

- ▶ Internal modem option, powered by the UPS
- System monitoring and control from any location through:
- \rightarrow RS-232 and accessory ports
- →Remote terminal capabilities
- UPS remote control capability via programmable building alarms





Plus 200 - 300

sophisticated yet simple co

Exide Electronic's is pleased to introduce the latest Powerware Plus family member – the Plus 500.

All of the features and performance that you expect from the Plus 40-300 (30-300Kva)

are now available up to 500kVA! Key features of the Plus 500:

- ▶ The smallest footprint in the industry
- The most reliable UPS in the industry
- ▶ The highest performance in the industry

ALL OF THIS IN A PACKAGE THAT IS ONLY 74" / 1880mm WIDE! NOW THAT'S POWERFUL!

200 - 300kva - shown with safety sheilds removed



- A Redundant power supplies support control logic for reliable online operation and provide local and remote failure notification.
- B Intelligent controls incorporating digital signal processing provide 5% output THD, ±1% output voltage regulation, programmable operating limits and failure proof make-before- break bypass transfers.
- C Static switch assembly can be removed for servicing without interrupting the critical load. All electrical connections feature quick disconnects for safe access.
- D Standard dual feed inputs for 480V and 400V increase availability (optional for other voltages).
- E All power wiring is secured to magnetics with maintenancefree, cold welded connections, eliminating periodic retorquing of fasteners and rear access requirements.
- F 2x rated neutral supports higher currents associated with non-linear loads.
- G Intelligent input filter disconnects from rectifier input with loss of utility and low load conditions, providing superior generator compatibility.
- H Input and output terminals: mechanical connectors on all input and output terminals reduce installation time.
- Redundant fans ensure direct consistent cooling, quiet operation and provide local and remote failure notification.
 - J Modular design and construction places all serviceable components within a 305mm (12") depth for easy maintenance. Only requires front access for servicing convenience and low mean time to repair.
- K Removable wireway section: 9" removable sections aids in installation. Standard top or bottom entry allows for installation flexibility.
 - ▶ Plus 200-300 reduces from 65" (1654mm) to 56" (1422mm)
 - Plus 400-500 reduces from 74" (1880mm) to 65" (1654mm)

controls

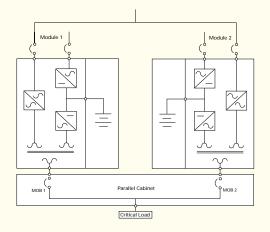
system configurations

Powerware Hot Sync™

7 by 24 by 365. That is the world we live in today. As the availability requirements of your critical loads have increased, the need to incorporate module level redundancy into your UPS configurations has also increased. With this in mind, Exide Electronics developed the Powerware Hot Sync™ Redundant and Powerware Hot Sync™ Capacity systems. The advanced controls technology integrated into these products yields unsurpassed system level reliability and availability through the following unique features:

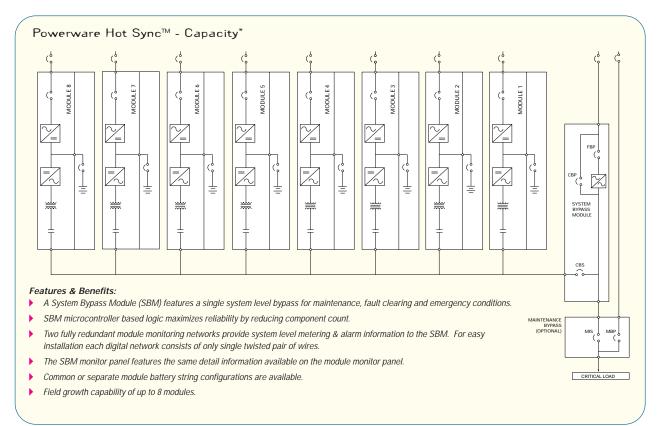
- No inter-module signals or control connections are required for module synchronization. Modules share load equally to within +/-5%.
- No inter-module signals or control connections are required to remove a faulty module from the critical bus (selective tripping).
- Wireless selective tripping and module synchronization eliminate a system level single point of failure.
- All modules are identical. They do not have master/slave relationships. They are true peers.
- With the failure of one module, the system does not interrupt the flow of conditioned power to the critical load. The faulty module simply removes itself from the critical bus.
- No central synchronization clock featured.

Powerware Hot $\mathsf{Sync}^\mathsf{TM}\operatorname{-Redundant}^*$

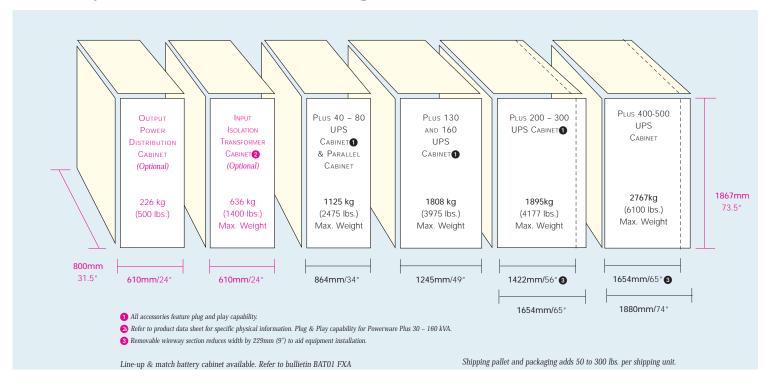


Features & Benefits:

- Each module features an internal emergency bypass circuit. With two parallel bypass paths, the system provides fault clearing current rated at twice the single module fault clearing current rating.
- The parallel cabinet provides either module with the ability to be completely isolated from the critical bus for service, while the critical load remains energized with protected power. The module output breakers (MOB) also provide output wiring protection.
- Following any module maintenance action, an indicator light is illuminated when it is "OK" to close a MOB.



Physical Dimensions and Weights



ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature: $0^{\circ}C$ to $+40^{\circ}C$

Storage: -20°C to +70°C

Relative Humidity: 5-95% non-condensing Altitude: 1500 meters (5000ft.) at 40°C ambient temperature without load derating

Audible Noise: At 1 meter;

in accordance with ISO 7779:

- Plus 40-160: less than 65dBA
- Plus 200-300: less than 69dBA
- Plus 400-500: less than 72dBA

Electrostatic Discharge: Withstands 25kV without damage or disturbance to the load; exceeds requirements of IEC 801-2

EMC: Meets FCC Class A, Subpart J of Part 15 and EN 50091-2 (CISPR 22, Class A)

INPUT SPECIFICATIONS

Voltage Range: (refer to product data sheets) Frequency Range: (60 Hz) 57-63 Hz;

(50 Hz) 47-53 Hz

Surge Protection: Meets ANSI C62.41, Category A & B, EN 50091-2 and EN 50082-2

Power Factor: 0.95 typical at full load with input filter

Input current distortion less than 10% with input filter

OUTPUT SPECIFICATIONS

Voltage THD: Less than 5% (100% non-linear load with 3:1 crest factor); less than 3% (100% linear load)

Voltage Regulation: Better than ±1% Transient Response: Less than 5% for 100% load step; full recovery within 1 cycle Frequency: (Free Run) ±0.005 Hz

Frequency Sync Range: ±0.5 Hz Frequency Slew Rate: 1 Hz/second maximum Voltage Adjustment Range (Operator): ±5%

BATTERY SPECIFICATIONS

Matching Cabinets – Line-up or remote Battery Type: Sealed, valve regulated lead acid Recharge Time: 10–12 times the discharge time to 95%

Other Battery Options: Wet cell and nickelcadmium batteries; open racks available

SAFETY

UL1778 Listed CUL CAN/CSA C22.2 NO.107.1-M91 Listed EN 50091-1

All Cabinets provide seismic mounting features Selectable DC ground fault detection capability

specifications

Specifications subject to change without notice.









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STANDARD FEATURES														
Casters and Leveling Feet	•	•	•	•	•	•	•	•	_	_	_	_	_	_
DC Expert™ System	_	_	•	•	•	•	•	•	•	•	•	•	•	•
Ethernet Compatibility	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Field kVA Upgrade Capability	•	•	•	•	•	•	•	•	_	_	•	•	•	•
Input Filter (THD 10%) in U.S.	_	_	_	_	_	•	_	•	_	_	_	_	_	_
LCD monitor Panel	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output Isolation	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bypass Isolation	_	-	•	•	•	•	•	•	_	_	_	_	-	-
SNMP Capability	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Token Ring Compatibility	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Top & Bottom Wire Entry	-	-	•	•	•	•	•	•	•	•	•	•	•	•
PowerCare Plus Pak (2 year) in U.S.	•	•	•	•	•	•	•	•	_	_	_	_	_	-
OPTIONAL FEATURES														
ConnectUPS Adapters	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Hot Sync Redundant	_	_	•	•	•	•	•	•	•	•	•	•	•	•
Hot Sync Capacity	_	_	_	_	_	_	_	_	•	•	•	•	•	•
Input Filter (THD 10%) U.S.	_	•	•	•	•	_	•	_	•	•	•	•	•	•
Input Filter (THD 10%) non U.S.	_	•	•	•	•	•	•	•	•	•	•	•	•	•
Input Isolation Transformer	_	_	_	_	•	•	•	•	•	•	•	•	•	•
Internal Modem	_	_	•	•	•	•	•	•	•	•	•	•	•	•
Maintenance Bypass Panels	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output Power Distribution Panels	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Power Management Software	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Relay Interface Module	_	_	•	•	•	•	•	•	•	•	•	•	•	•
Remote Monitor Panel	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Remote Notify	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Server Shutdown via OnliNet/LanSafe	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SNMP Adapters	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PowerCare Plus Pak (2 year) in U.S.	-	_	-	_	_	_	_	_	•	•	•	•	•	•

¹ Information on Powerware Plus 18 and Plus 36 not included in brochure. Please contact Exide Electronics for more information.

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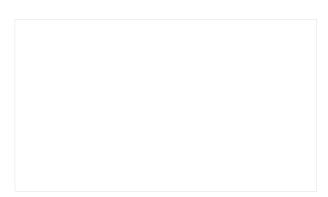
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² Optimized for 50Hz applications, 380–415VAC.