EATON | Powerware

Powerware® 9155 Single-phase UPS

Product Focus

8-15 kVA

Reliability *and* ***efficiency*** *have never looked so attractive.*

Product Introduction

9155 8-15 kVA

Product Snapshot

Technology:	Split-phase double-conversion online UPS
Power Rating:	8 kVA, 10 kVA, 12 kVA and 15 kVA at 0.9 power factor
Input Voltage:	200–240 Vac with Neutral or with optional input isolation transformer
Output Voltage:	100/200, 110/220, 120/240 Vac 180° phase displacement; 120/208, 127/220 Vac 120° phase displacement
Frequency:	50/60 Hz auto-sensing
Dimensions:	32.2" H x 12" W x 32.5" D
Configuration:	Small-footprint tower, black
Battery Backup:	Up to 29 minutes typical, extendable up to four hours (See battery backup charts)

Features of the Powerware 9155 UPS

- A true online, double-conversion topology protects connected equipment from all nine of the most common power problems
- Delivers maximum power density in a compact tower design: 12" wide and 33" deep, including batteries
- Provides more real power in less space (5,500 watts per square foot) with a 0.9 output power factor – protecting more equipment for every utility dollar and leaving more room for expansion of the data center
- Patented Powerware Hot Sync® paralleling of multiple modules delivers extra capacity or redundancy
- Customizable output distribution provides user-specified power outlets along with terminals for connecting hard-wired equipment
- Microprocessor-controlled ABM® technology significantly increases battery life
- Provides a 0.99 input power factor and generator friendly <5% total harmonic distortion using an active IGBT rectifier to control the input power factor
- Ensures data and system integrity with complete power management software for remote monitoring, management and shutdown
- An Eaton factory limited warranty, technical support and optional service plans provide investment protection and peace of mind

Reliability and efficiency have never looked so attractive.

The Powerware 9155 single-phase Uninterruptible Power System (UPS) delivers a combination of advanced technology, user-friendly design and low price that's absolutely unmatched by competing products. This innovative design offers high efficiency (90 percent or better across all load ranges), low input current distortion (less than 5 percent total harmonic distortion, with an active IGBT rectifier that delivers 0.99 power factor correction) and high power factor output (0.9 PF).

With advances being made in miniaturization and processing power and more equipment being served by dual-cord power supplies, the challenge of protecting that power, and doing so in a limited space, grows ever greater.

Fortunately, advances in technology have also meant that more power protection per square foot can now be provided. Like the Powerware 9355 UPS, the Powerware 9155 UPS delivers premium levels of efficiency, reliability and flexibility, all in a sleek tower half the size of most other units on the market today.

These double-conversion, online UPSs resolve all nine common utility power problems and supply clean, continuous power to all connected equipment. Even when presented with the most severe power problems, power output remains stable. And if the utility power goes out altogether, there is no delay transferring to backup power.

These capabilities make the Powerware 9155 ideal for protecting essential data center, communications and electrical engineering infrastructures in corporate, telecom, healthcare, banking, public sector and industrial networks.

Premium power protection is now easier than ever.

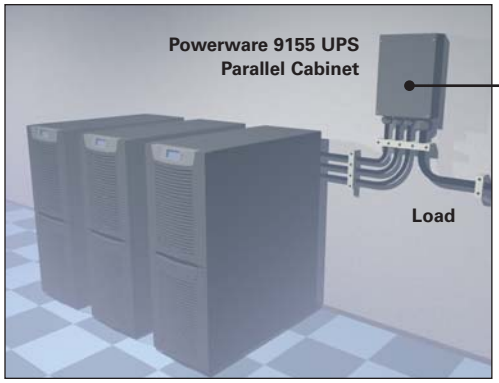
With raised-floor real estate at a premium, you'll appreciate that the Powerware 9155 requires only three to six square feet of floor space, including internal batteries. Such a small footprint gives you more location options and more space available for future expansion.

Equipment installation is inexpensive and easy – essentially plug-and-play. You can order 9155 UPS models with your choice of more than 19 types of output receptacles. To rearrange or add data center equipment, you simply unplug from the old receptacle and plug into a new one – no need for an electrician to run new conduit and wiring.

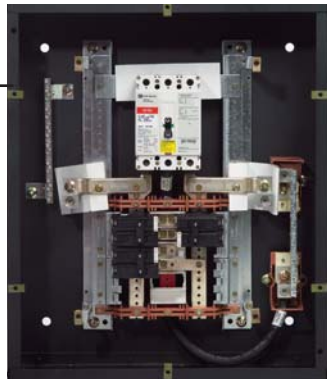
Scalable architecture meets current and future load requirements.

Powerware 9155 UPSs are available in four models: 8, 10, 12 and 15 kVA, so you can choose the configuration that most closely meets your own capacity requirements and price point. And you can scale from there. Using our signature Powerware Hot Sync paralleling technology, up to three Powerware 9155 modules can be paralleled for extra capacity or redundancy. A 15 kVA UPS, for example, can grow to support loads of up to 45 kVA. There's no dependence on communications wiring among these modules, enhancing reliability and simplifying installation. This paralleling capability Is far more easily achieved than is the case with competitors' products.

Powerware Hot Sync Redundant/Capacity



Inside view of Powerware 9155 Parallel Cabinet Maintenance Bypass



Battery innovations optimize battery performance and service life.

Standard internal batteries provide power until auxiliary power takes over or systems are gracefully shut down. Battery runtime can be extended to hours by adding matching Extended Battery Modules (EBM).

POWERWARE 8-15 kVA UPS BACKUP TIMES (IN MINUTES)

VA	Watt	UPS + Internal 32 Battery	(1) EBM 64	(2) EBM 64	(3) EBM 64	(4) EBM 64	UPS + Internal 64 Battery	(1) EBM 96	(2) EBM 96	(3) EBM 96
15000	13500	4.6	23.0	43.0	65.1	88.6	13.3	43.0	76.7	113
14500	13050	4.9	24.1	45.2	68.3	93.0	14.1	45.2	80.5	119
14000	12600	5.2	25.2	47.3	71.5	97.4	14.9	47.3	84.2	125
13500	12150	5.5	26.4	49.4	74.7	102	15.8	49.4	88.1	130
13000	11700	5.8	27.6	51.6	78.1	106	16.7	51.6	92.0	136
12500	11250	6.1	28.8	54.0	81.6	111	17.6	54.0	96.2	142
12000	10800	6.5	30.2	56.5	85.5	116	18.6	56.5	101	149
11500	10350	6.9	31.6	59.3	89.7	122	19.2	59.3	106	156
11000	9900	7.3	33.3	62.4	94.4	129	20.2	62.4	111	164
10500	9450	7.8	35.1	65.9	99.6	136	21.4	65.9	117	174
10000	9000	8.4	37.2	69.8	106	144	22.6	69.8	124	184
9500	8550	9.1	39.6	74.2	112	153	24.1	74.2	132	196
9000	8100	9.9	42.3	79.4	120	163	25.7	79.4	141	209
8500	7650	10.8	45.5	85.2	129	175	27.6	85.2	152	225
8000	7200	11.9	49.1	91.9	139	189	29.8	91.9	164	242

POWERWARE 8-15 kVA UPS BACKUP TIMES (IN MINUTES)

VA	Watt	UPS + Internal 32 Battery	(1) EBM 64	(2) EBM 64	(3) EBM 64	(4) EBM 64	UPS + Internal 64 Battery	(1) EBM 96	(2) EBM 96	(3) EBM 96
7500	6750	13.1	53.2	99.7	151	205	32.3	99.7	178	263
7000	6300	14.6	58.0	109	164	224	35.2	109	194	286
6500	5850	16.3	63.5	119	180	245	38.6	119	212	314
6000	5400	18.4	70.0	131	198	270	42.5	131	234	346
5500	4950	20.1	77.6	145	220	300	47.2	145	259	383
5000	4500	22.4	86.6	162	245	334	52.6	162	289	428
4500	4050	25.2	97.4	182	276	376	59.2	182	325	-
4000	3600	28.6	110	207	313	426	67.1	207	369	-
3500	3150	32.8	127	238	359	-	77.0	238	423	-
3000	2700	38.3	148	277	418	-	89.7	277	-	-
2500	2250	45.6	176	329	-	-	107	329	-	-

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

Front view

Rear view

Powerware 9155

The Powerware 9155 UPS uses sophisticated technologies that maximize the health and service life of batteries:

- ABM technology uses a unique three-stage charging technique that significantly extends battery service life and optimizes recharge time (compared to traditional trickle charging).
- Temperature-compensated charging monitors battery temperature and adjusts the charge rate accordingly, which properly charges the battery and greatly extends battery life.
- An integrated battery management system tests and monitors battery health and remaining lifetime, providing notification to guide preventive maintenance.

Unlike heavy, old-style batteries, Eaton's batteries are easily field-replaceable. One person, working alone, can replace a battery without disrupting data center operations or power to protected equipment.

After 15 years of in-service experience, Eaton has real-world proof that ABM technology can significantly increase battery service life.

Advanced design delivers unequaled power performance.

Lower costs, lower temperatures. High efficiency (greater than 90 percent across all load ranges) reduces utility costs, extends battery runtimes and produces cooler operating conditions.

Generator-friendly design. Total input harmonic distortion (THD) remains below five percent without compromising overall efficiency. The result is maximum transfer of power between source and protected load and exceptional compatibility with auxiliary generators.

10-20% more real power. On the output side, a high (0.9) power factor enables the Powerware 9155 UPS to provide more real power to modern IT equipment that may have a wide range of leading and lagging power factors. And, with a 0.99 input power factor, these UPSs avoid the disturbances energy converters tend to cause.

Protect your investment

Rest easy knowing your UPS is always on the job.

While it protects your critical systems, the Powerware 9155 UPS itself is protected in several ways:

Self-diagnosis. The 9155 UPS constantly monitors its own operation – such as voltage, temperature or function of internal elements – and sends alarms or takes action if it detects a potential problem. You'll know your UPS is always performing up to specifications to protect your equipment.

Self-correction. If it senses an issue – planned or unplanned – the 9155 UPS instantly transfers the power path to a bypass source with zero interruption to power. When the alarm condition passes, the UPS automatically reverts from bypass to normal power.

Remote monitoring. You can choose to have Eaton specialists securely monitor your Powerware 9155 UPSs around the clock with eNotify service or opt to monitor your own UPSs over your LAN or the Internet. Either way, you'll always be informed of conditions in your power protection infrastructure.

Redundancy. Using Powerware Hot Sync technology, you can configure your Powerware 9155 UPS for up to N+3 redundancy. Any module can serve as backup for any other with no interruption or downtime. For instance, you could perform full maintenance on any UPS without having to remove any loads from conditioned power.

Most other paralleling systems on the market use a top-down configuration – and so if the master fails, the subsidiary units fail. With Eaton's patented approach, each UPS module is independent yet synchronized with the others. There is no single point of failure.

Get central control and visibility of your UPS systems.

The Powerware 9155 Is shipped with a CD that includes Powerware LanSafe™ power management software and a 30-day trial version of Powerware PowerVision® UPS performance analsis and monitoring software. Using an intuitive, graphical interface and Simple Network Management Protocol (SNMP), administrators can:

Powerware Software Suite

- Securely monitor UPS and battery performance over your existing Ethernet network and the Internet
- Establish prioritized shutdown of network devices and client/server applications
- Test all networked UPS systems from one node
- Analyze trends and network conditions
- Stay informed of potential power problems by pager and e-mail

Enjoy maximum flexibility with connectivity options.

The standard unit is equipped with an RS-232 serial port to communicate with power management software. You can customize your Powerware 9155 UPS by adding one or two interface cards for other applications:

Monitor the UPS from anywhere.
Connect your 9155 UPS to your Ethernet network and the Internet for secure monitoring and management using a standard Web browser or SNMP.

ConnectUPS™ Web/SNMP Card

Interwork with your existing building management system.
A Modbus® Card enables real-time monitoring of UPS systems through a building management system or industrial automation system.

Modbus Card

Gather information from relay contact devices.
The package provides a dry-contact interface between the 9155 UPS and any relay-connected device, including the IBM® e-server® iSeries and a variety of industrial applications.

Relay Interface Card

Independently manage diverse servers.
A Multi-Server card enables up to six serially connected devices of mixed operating systems to be independently managed and controlled by a single UPS.

Multi-Server Card

Monitor environmental conditions. An optional Environmental Monitoring Probe remotely monitors temperature, humidity and two user-supplied contacts/sensors, such as smoke and intrusion detection.and two user-supplied contacts/sensors, such as smoke and intrusion detection.

Environmental Monitoring Probe

Gain peace of mind with industry-leading warranty and service plans.

We're so confident in the performance and reliability of the Powerware 9155 UPS and its battery system that we back them up with extensive warranty and service plans. Gain the peace of mind that comes with factory warranty coverage (parts and labor, UPS and batteries) and rapid response from certified support engineers:

- 2-year limited factory warranty
- 10-year pro-rated warranty
- $250,000 load-protection guarantee

Beyond the warranty period, service plans are available to match any need – from basic UPS and/or battery support to all-inclusive packages with unique features, such as advanced remote monitoring with trending, customized capacity planning reports and power protection audits. Add your choice of guaranteed response times, and you can tailor just the right support package for your needs.

From Eaton—a global leader in power quality solutions.

Backed by 40 years of R&D excellence, the Powerware 9155 UPS delivers confidence – confidence that your organization's critical electronics are protected by the most reliable, efficient and full-featured systems available and that Eaton will be there with you for the long term with premium warranty coverage and expert technical support.

Eaton is a global leader in power quality and management solutions – the #1 manufacturer of UPSs above 5000 VA (Frost & Sullivan; World UPS Markets, 2004). Eaton's Power Quality Solutions Operation is headquartered in Raleigh, North Carolina, U.S.

For more information on the Powerware 9155 UPS:
www.powerware.com
1-800-356-5794

Powerware 9155 at-a-glance

MODEL SELECTION TABLE - POWERWARE 9155 UPS (8–15 kVA)

Order Number[1]	Description	Power Rating[2] (kVA/kW)	Input & Output Connection[4]	Output Receptacles	Dimensions H x W x D (in)	Unit Weight[3] (lb)
K408110000	PW9155 Model 8 - 32 Battery (2-high)	8/7.2	Hardwired	See PDM chart	32.2 x 12.0 x 32.0	352
K408120000	PW9155 Model 8 - 64 Battery (3-high)	8/7.2	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	590
K408130000	PW9155 Model 8 - 32 Battery with Transformer (3-high)	8/7.2	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	558
K410110000	PW9155 Model 10 - 32 Battery (2- high)	10/9	Hardwired	See PDM chart	32.2 x 12.0 x 32.0	352
K410120000	PW9155 Model 10 - 64 Battery (3- high)	10/9	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	590
K410130000	PW9155 Model 10 - 32 Battery with Transformer (3-high)	10/9	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	558
K412110000	PW9155 Model 12 - 32 Battery (2-high)	12/10.8	Hardwired	See PDM chart	32.2 x 12.0 x 32.0	352
K412120000	PW9155 Model 12 - 64 Battery (3-high)	12/10.8	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	590
K412130000	PW9155 Model 12 - 32 Battery with Transformer (3-high)	12/10.8	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	558
K415110000	PW9155 Model 15 - 32 Battery (2- high)	15/13.5	Hardwired	See PDM chart	32.2 x 12.0 x 32.0	352
K415120000	PW9155 Model 15 - 64 Battery (3- high)	15/13.5	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	590
K415130000	PW9155 Model 15 - 32 Battery with Transformer. (3- high)	15/13.5	Hardwired	See PDM chart	47.8 x 12.0 x 32.0	558

1. 50/60 Hz auto-sensing. All models can be used for frequency/phase conversion with de-rated 80% load. Please refer to manual for details.
2. Input voltage 200–240V with neutral or with optional input isolation transformer. Output voltages are user-selectable 100/200, 110/220, 120/240 Vac 180° phase displacement, or 120/208, 127/220 Vac 120° phase displacement.
3. Weight is installed weight; add 47 lbs (2-high models) or 50 lbs (3-high models) to determine shipping weight.
4. An input neutral is required for all configurations unless the input isolation transformer is used.

POWERWARE 9155 UPS WARRANTY AND SERVICE CHART

Service Plan Features	Limited Factory Warranty	On-Site Gold Plan	On-Site Gold Plan Plus
Service plan terms available	**2 Yr**	**2, 3, 5 Yr**	**2, 3, 5 Yr**
90 days on-site labor (5x8); two years parts coverage	■		
On-site startup of UPS and batteries, 7/24	▒	■	■
On-site corrective maintenance, 7x24		■	■
Full coverage of UPS and internal battery module	■	■	■
7x24 technical telephone support		■	■
Service priority		■	■
Full coverage of extended battery modules		▒	▒
One 7x24 annual preventive maintenance inspection		■	■

■ Service included
▒ Optional service

Powerware 9155 Accessories

ACCESSORIES

Order Number	Description	Dimensions H x W x D (in)	Unit Weight (lb)
Powerware Hot Sync			
124100017-001	Powerware 9155 Parallel Cabinet	24.0 x 20.3 x 2.2	57.3
103004336	Powerware HotSync CAN Bridge Card	-	-

Notes: Up to three Powerware 9155 UPS and up to four Powerware 9355 UPS (available Fall 2005) UPSs can be paralleled with the Parallel Cabinet. Each Powerware 9155 UPS and Powerware

Extended Battery Module (EBM) or Cabinets (EBC)			
103004192-5501	Powerware 9155 and Powerware 9355 EBM 64 (2-high)	32.2 x 12.0 x 30.2	480
103004193-5501	Powerware 9155 and Powerware 9355 EBM 96 (3-high)	47.8 x 12.0 x 30.2	710

Notes: up to four EBM 64 cabinets or three EBM 96 cabinets can be added to each 8-15 kVA UPS for extended runtime.

Seismic Mounting Kit			
103004194-5501	Seismic Kit, Rated Zone 4, UL Tested, Performance rating based on NEBS GR-63-CORE Standard Vibration Test	Fits both 2- & 3-high models	136
Maintenance Bypass Module (MBM)			
103004184-5501	Rear UPS-mounted Maintenance Bypass Module	16.5 x 12 x 7	15
BPE20MBB1A	Wall-mounted Maintenance Bypass Module for Powerware 9155	21 x 14 x 6.75	53

Powerware 9155 Parallel System Start Up	
OSTUP9155P15KCX	Powerware 9155 8-10 kVA 2 or 3 Unit Parallel
OSTUP9155P10KCX	Powerware 9155 12-15 kVA 2 or 3 Unit Parallel
103004626	Powerware 9155 Parallel System 2 unit upgrade kit (includes Can Bridge Cards, Procedures, and Parallel User's Guide)
103004627	Powerware 9155 Parallel System 3 unit upgrade kit (includes Can Bridge Cards, Procedures, and Parallel User's Guide)
Connectivity Options	
103002974-5501	ConnectUPS-X Web/SNMP/xHub Card
05146288-5501	ConnectUPS-MX SNMP/Modem Card (9155 only)
103002510-5501	Modbus Card
05146508-5501	USB Card
05146447-5501	Multi-Server Card (9155 only)
1018460	Relay Interface Card (AS/400 Compatible)
103003055	Industrial Relay Card
103003637-5501	Environmental Probe (requires ConnectUPS Web/SNMP card)
Spare Parts	
106711155	Powerware 9155 Spare Parts Kit "A"
Upgrades	
103004195	Powerware 9155 8 kVA to Powerware 9155 10 kVA
103004196	Powerware 9155 12 kVA to Powerware 9155 15 kVA

Power Distribution Module (PDM) with Mechanical Bypass Switch

Optional Receptacle Panels	Breaker	Voltage	Phase
(1) L15-30R	30A	208V	3
(1) L21-20R	20A	208/120V	3
(1) L21-30R	30A	208/120V	3
(2) 5-15R	15A	120V	1
(2) 5-20R	20A	120V	1
(2) 6-15R	15A	208V	2
(2) 6-20R	20A	208V	2
(2) L5-15R	15A	120V	1
(1) L5-20R[1]	20A	120V	1
(1) L5-30R[1]	30A	120V	1
(2) L6-15R	15A	208V	2
(1) L6-20R[1]	20A	208V	2
(1) L6-30R[1]	30A	208V	2
(1) L14-20R[1]	20A	120/208V	2
(1) L14-30R[1]	30A	120/208V	2
(2) IEC 320 C13 (120V)	20A	120V	1
(2) IEC 320 C19 (120V)	20A	120V	1
Blank panel			

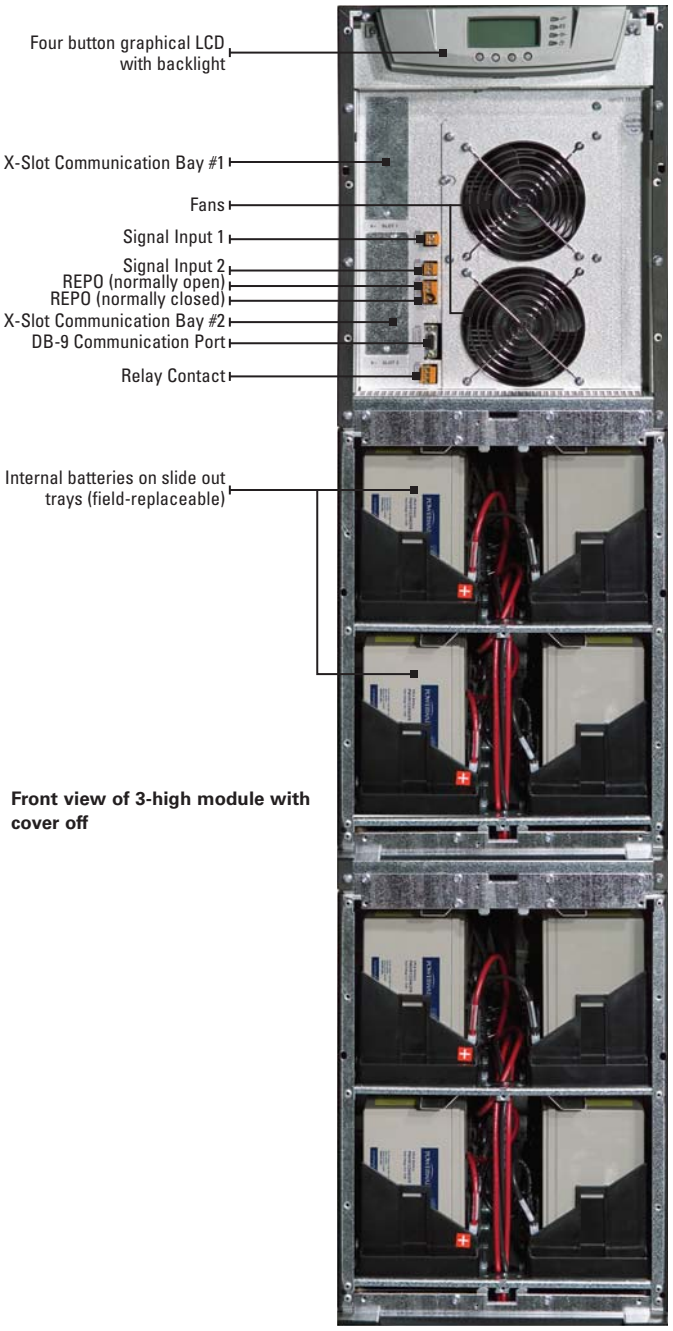
Note: Maximum of eight panels per PDM (Powerware 9155).

1. The combined quantities of single-locking receptacle panels must not exceed five per PDM.

TECHNICAL SPECIFICATIONS FOR 10 AND 15 KVA

Power	
Ratings (kVA/Watts)	8, 10, 12 and 15 kVA at 0.9 power factor
Topology	True double-conversion online UPS
Electrical Input	
Nominal Input Voltage	200V-240V with neutral or with optional input transformer
Input Voltage Range	-15%, +10% from nominal at 100% load without depleting battery
Operating Frequency	50/60 Hz (45 to 65 Hz)
Input Power Factor	P.F >0.99 typical, >0.96 frequency converter
Input Current Distortion	5% THD
Electrical Output	
Nominal Output Voltage	100/200, 110/220, 120/240 Vac 180° phase displacement; 120/208, 127/220 Vac 120° phase displacement
Output Voltage Regulation	±1% Static; ±5% dynamic at 100% resistive load change, <1 ms response time
Efficiency	90% typical
Battery	
Battery Type	9Ah, sealed, lead-acid, maintenance-free
Battery Runtime	See Battery Runtime Chart
Battery Replacement	Field-replaceable
Charger	Default is 3.4A per battery string. Charger current is configurable from 0.5A to 25A per string with an overall maximum of 34A (limited by input current)
Start-On-Battery	Allows start of UPS without utility input
General	
Diagnostics	Full system self-test at startup
UPS Bypass	Automatic on overload or UPS failure
Parallel for Redundancy and Capacity	Yes, using Powerware Hot Sync technology
Dimensions and Weights	See Model Selection Table
Overload	150% for 5 sec / 125% for 1 min (online), (Normal Operation) 110% for 10 min
Communications	
LCD Display	Graphical LCD with blue backlight
LEDs	(4) LEDs for notice and alarm
Audible Alarms	Yes
Communication Ports	(1) RS-232, (1) relay contact, (1) REPO, (2) environmental input
Communication Slot	(2) X-Slot communication bays
Power Management	Bundled Software Suite CD Software
Environmental	
Operating Temperature	10ºC to +40ºC, +45ºC with 7.5% derating; Batteries recommended max. +25ºC
Storage Temperature	-15ºC to +25ºC
Relative Humidity	0–95%, non-condensing
Audible Noise	Audible Noise: < 53 dBA at 1 meter (noise less room) typical
Altitude	< 1000m at +40°C, < 3000m at +25°C
Certifications	
Safety Certifications	NOM-0190SCFI-1993, UL 1778, CSA C22.2, No. 107.3; EN 5502 Class A (CISPR22 Class A) and IEC 60950; IEC 62040-1-1
EMC Compliance	IEC 62040-2, FCC Part 15, ICES-003, VCCI
Quality	ISO 9001: 2000 and ISO 14001:1996
Markings	UL, cUL, CSA, CE and NOM-NYCE

1. Due to continuous product improvements, program specifications are subject to change without notice.



Front view of 3-high module with cover off

PowerChain™ Management Solutions

UNITED STATES
8609 Six Forks Road
Raleigh, NC 27615 U.S.A.
Toll Free: 1.800.356.5794
or 919.872.3020

www.powerware.com

CANADA
Ontario: 416.798.0112
Toll Free: 1.800.461.9166

LATIN AMERICA
Argentina: 54.11.4343.6323
Brazil: 55.11.3616.8500
México: 52.55.5488.5252

EUROPE/MIDDLE EAST/AFRICA
Denmark: 45.3686.7910
Finland: 358.94.52.661
France: 33.1.6012.7400
Germany: +49-(0)7841-604-0
Italy: 39.02.66.04.05.40
Norway: 47.23.03.65.50
Sweden: 46.8.598.940.00
United Kingdom: 44.1753.608.700

ASIA PACIFIC
Australia/NZ: 61.2.9693.9366
China: 86.21.6361.5599
HK/Korea/Taiwan: 852.2745.6682
India: 91.11.2649.9414 to 18
Singapore/SEA: 65.6825.1668

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