

Features and Benefits

- ▶ Power Factor Corrected (PFC) design protects more equipment
- ▶ 6U rack height conserves valuable rack space
- ▶ Advanced Battery Management (ABM™) doubles battery service life
- ▶ Buck and Boost voltage regulation with pure sine wave output
- ▶ Extended Battery Modules (EBMs) prolong runtimes
- ▶ Modular design eases setup and service
- ▶ Load Segments (separate receptacle groups) enable scheduled shutdowns and maximize runtime for critical devices
- ▶ Hot-Swappable batteries and Manual Bypass Switch simplify service
- ▶ Warranty (U.S. and Canada)
 - 2-Year Limited Warranty
 - 10-Year Pro-Rated Warranty
 - \$25,000 Load Protection Guarantee

Powerware® 5140 Rack-mount UPS



Product Snapshot

Rating:	6000 VA/ 6000 Watts
Voltage:	200-240 Vac
Frequency:	50/60 Hz
Configuration:	6U rack-mount for standard 19-inch racks

To meet the power protection needs of rapidly expanding rack-based applications, Powerware Corporation proudly introduces the Powerware 5140 Rack-mount uninterruptible power system (UPS). The Powerware 5140 is powerful and flexible enough to respond to the demands of virtually any enterprise computing network.

The Powerware 5140 is designed with a unity power factor rating, meaning it is ideally suited to meet the requirements of today's Power Factor Corrected (PFC) loads. With proven and reliable technology, it delivers up to a third more power than traditionally rated UPSs while still occupying only 6U (10.5 inches) of valuable rack space.

In addition to its exceptional power rating and size, the Powerware 5140 also incorporates Advanced Battery Management

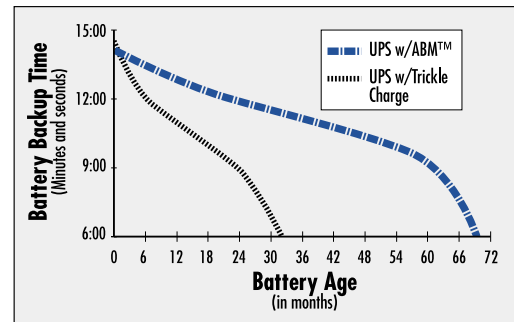
(ABM™) which assures reliability and improves performance by doubling battery service life, optimizing recharge time, and providing up to a 60-day notice of the end of useful battery life.

The Powerware 5140 utilizes multiple receptacle groups, called Load Segments, which can be pre-configured to shutdown peripherals first to effectively triple battery run times for the most critical equipment. Extended Battery Modules (EBMs) are also available to extend runtimes, and to preserve data integrity, the Powerware 5140 is bundled with award-winning LanSafe II power management software.

Technical Specifications¹

Advanced Battery Management (ABM™) Technology Doubles Battery Service Life

The lead-acid batteries typically used in a UPS are considered viable as long as they can maintain backup times of at least half that of new batteries. The illustration to the right shows that batteries that are constantly trickle charged (as are virtually all other UPS batteries on the market today) reach the end of their useful life in less than half the time of batteries charged using ABM. ABM uses a patented three-stage charging technique that not only doubles battery service life, but also optimizes battery recharge time and provides up to a 60-day advanced notification of pending end of useful battery life.



Data based upon tests performed by an independent battery manufacturer.

ELECTRICAL INPUT

Voltage	200, 208, 220, 230, & 240 Vac user-selectable; see Model Selection Guide for default settings
Normal Voltage Range	±20% of nominal voltage without using batteries
Extended Voltage Range	160-288V without using batteries (set via front panel)
Frequency	50/60 Hz, ±3 Hz (+5/-3 Hz with extended voltage range)
Connection	Hardwired
Efficiency	96%

ELECTRICAL OUTPUT

Power Out	6000 VA/6000 Watts
Voltage Range (online)	±10% of nominal voltage
Voltage Range (on battery)	±5% of nominal voltage
Wave Form (on battery)	Sine Wave
Frequency	Same as input (±0.5% during battery operation)
Connections	Receptacles or hardwired; see Model Selection Guide
Max Current	29A at 208 Vac; 26A at 230 Vac
Output Protection	Resettable circuit breakers

BATTERY

Type	Maintenance-free, sealed, valve-regulated lead-acid (VRLA), (28), 12V 5 Ah
Extended Batteries	Maximum of 2 Extended Battery Modules (EBMs)
Backup Time	See Battery Runtimes table
Recharge Time	<3 hours to 80% usable capacity
Extended Battery Recharge Time	<10 hours to 80% usable capacity

COMMUNICATIONS

Serial Ports	(2) Serial communication ports for use with power management software and installable option cards, including ConnectUPS SLC-EM SNMP Adapter and the Port Expander Card
User LEDs	Normal Operation (green), On Battery (yellow), On Bypass (yellow), and Alarm (red)
LCD	Two-line LCD with three button control
LCD Languages	Danish, Dutch, English, French, German, Spanish, Italian, and Japanese
Front Panel Buttons	On, Off, and Alarm Silence/Self Test
Communications Cable	6-foot communication cable included

ENVIRONMENTAL AND SAFETY

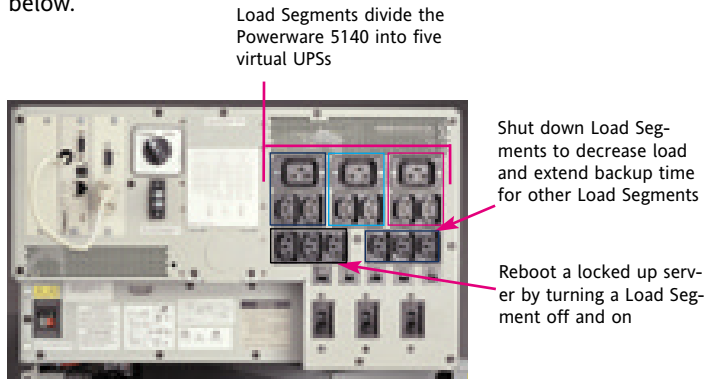
Operating Temperature	10°C to 40°C (25°C for optimal performance)
Transit Temperature	-20°C to 55°C
Storage Temperature	0°C to 25°C
Humidity (Operation)	20 to 80% (noncondensing)
Humidity (Non-operating)	5 to 95%
Operating Altitude	0 to 10,000 ft (non-operating: 0 to 30,000 ft)
Audible Noise	55 dBA at 1 meter
Safety Markings	UL, CSA, NOM. Models PW5140 6000i and PW5140 6000 HW also CE and VDE
Safety Certifications	UL1778; CSA22.2 No.107.1, No.107.2, No.950; CB Bulletin No.86A1; EN50091-1; EN60950; EMKO-TSE207/95; NOM-019-SCFI-1993
EMC Markings	FCC-A; CISPR-A; VCCI
Immunity	IEC 801-2, IEC 801-3, IEC 801-4, IEC 801-5
Surge Suppression	Conforms to IEEE 587B and ANSI C62.41
REPO Port	Meets NEC code 645-11 intent and UL requirements

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

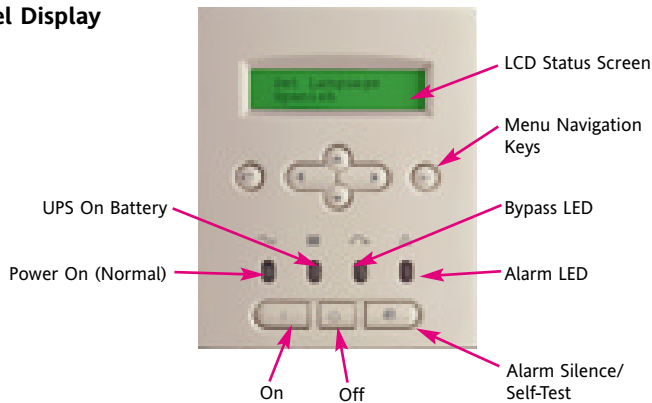
Powerware 5140 Features

Load Segments

Load Segments are groups of receptacles that can be independently controlled via the front panel LCD interface and/or LanSafe III, which is bundled with the Powerware 5140. Load Segments provide extended battery runtimes and flexible management of the UPS. The five Load Segments of model PW5140 6000i are outlined below.



Front Panel Display



Extended Battery Modules (EBMs)

To extend battery backup times, you can connect up to two EBMs. Each EBM occupies 3U (5.25 inches) of rack space.



You can hot-swap both the standard batteries and EBMs without powering down the connected load. This makes it possible to extend the life of the UPS without returning the unit for service.

Unity Power Factor Rating

What does unity power factor rating mean? Quite simply, it means that the watt rating of the UPS is equal to its VA rating. Traditionally, UPSs have been designed, built, and sold with a power factor rating of approximately 0.6 to 0.7. For example, a 1000 VA UPS could supply a maximum of 600 to 700 watts. Historically, this 0.7 power factor was appropriate for the majority of computer loads the UPS was intended to support since most computers demanded power at a 0.7 power factor.

Today, however, a large percentage of high-end computers, utilize Power Factor Corrected (PFC) power supplies, which have a power factor of approximately 1.0. Take a look at the configuration below:

Equipment	Load: Watts	Load: VA
(3) Servers*	3300	3366
(2) Workstations*	1000	1020
(1) Color Monitor	200	300
Total	4500	4686

**Equipment with PFC power supplies.*

To support this load, you need to select a UPS with a rating that meets or exceeds both the watt and VA demand shown above. A traditionally rated 5000 VA/3750 watt UPS without a unity power factor rating cannot be used. The Powerware 5140, on the other hand, has capacity to spare.

Powerware® 5140 Model Selection Guide

Model Number	Power Out (VA/Watt)	Input/Output Voltage (Vac)	Frequency (Hz)	Input Connection	Output Receptacles	Dimensions (HxWxD) ¹	Weight (kg/lb)
PW5140 6000i	6000/6000	208/230 ²	50/60 ³	Hardwired	(12) IEC-320, C13 & (3) IEC-320, C19 ⁴	10.5 x 17.25 x 24.3 in 26.7 x 43.8 x 61.7 cm	114/250 ⁶
PW5140 6000	6000/6000	208/230 ²	50/60 ³	Hardwired	(2) L6-30R & (2) IEC-320 ⁵	10.5 x 17.25 x 24.3 in 26.7 x 43.8 x 61.7 cm	114/250 ⁶
PW5140 6000 HW6000/6000		208/230 ²	50/60 ³	Hardwired	Hardwired & (2) IEC-320 ⁵	10.5 x 17.25 x 24.3 in 26.7 x 43.8 x 61.7 cm	114/250 ⁶
Options							
PW5140 BATT	–	–	–	Custom Adapter	–	5.25 x 17.25 x 22.5 in 13.3 x 43.8 x 57.2 cm	80/175
PW5140 PDU ⁷	250/250	120	60	Custom Adapter	(2) 5-15R	1.98 x 19.28 x 9.90 in 5.03 x 48.97 x 25.15 cm	8.6/19

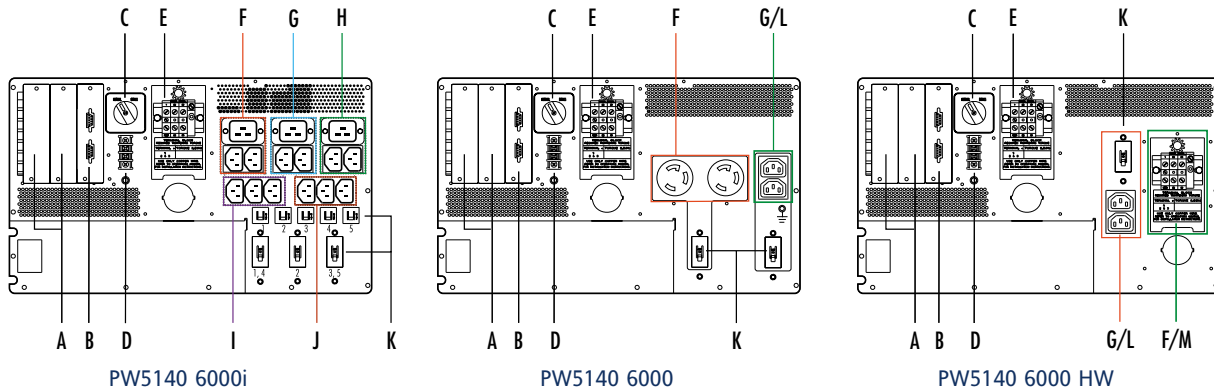
1. 19-inch wide front panel with a 17.25-inch wide chassis; depth does not include front panel (.5 inches). All models ship with rail mounting kit.
 2. 208/230 Vac auto-sensing default. User-selectable via LCD interface for 200, 208, 220, 230, and 240 Vac. 3. Automatic frequency synchronization. 4. Divided into 5 Load Segments. 5. Divided into 2 Load Segments; IEC-320 receptacles are used to connect optional PW5140 PDU. 6. Shipping weight is 325 pounds (147 kg). 7. Sidewall design occupies 0U of rack space.

Battery Runtimes

Load	Standard Batteries	One Additional Extended Battery Module	Two Additional Extended Battery Modules
1000 Watts	1 hour 2 minutes	2 hours 24 minutes	3 hours 56 minutes
2000 Watts	28 minutes	1 hour 6 minutes	1 hour 47 minutes
3000 Watts	18 minutes	40 minutes	1 hour 6 minutes
4000 Watts	12 minutes	28 minutes	47 minutes
5000 Watts	8 minutes	21 minutes	36 minutes
6000 Watts	6 minutes	18 minutes	28 minutes

This table provides typical information. Battery times are approximate and may vary with equipment, configuration, disk access, battery use, temperature, etc.

Rear Panels



- A (2) Installable Option Slots
- B (2) Communication Ports
- C Manual Bypass Switch
- D REPO Port
- E Hardwire Input

- F Load Segment 1
- G Load Segment 2
- H Load Segment 3
- I Load Segment 4
- J Load Segment 5

- K Circuit Breaker(s)
- L IEC-320 Receptacles for PDU Connection
- M Hardwire Output

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