POWERWARE
UNINTERRUPTIBLE POWER SYSTEMS

Benefits

- **Maximum Availability –** with true double conversion online design, the proven technology that is used for the most mission-critical applications in the world. It's unusual to find line-interactive, pseudo-online or any other kind of UPS, other than double conversion online, supporting 24/365 data centers, facilities, ISPs and major telecommunications installations.
- **Maximum Reliability –** with Powerware Hot Sync®, the award-winning, patented technology that achieves paralleling for redundancy and capacity (up to four modules) with no system-level single-point-of-failure. The preferred paralleling technology installed around the world with such major customers as E*Trade, Colo.com, and Citibank, Powerware Hot Sync will be available in the 10-40 kVA range with the Powerware 9330*.
- **Maximum Efficiency –** the Powerware 9330's advanced design features efficiency of up to 93%, the highest for a double conversion online UPS in this kVA range. No need to compromise reliability for efficiency with the Powerware 9330.
- **Maximum Performance –** the Powerware 9330 delivers the highest performance by using digital signal processing, true pulse-width-modulation and maximum IGBT responsiveness. This provides easy setup, drift-free operation and a pristine output.
- **Global Services –** Powerware service professionals provide round-the-clock monitoring, remote diagnostics, and on-site maintenance programs. More than just a material warranty, this is the most comprehensive service coverage available in the industry. Powerware Global Services provides you with peace of mind that potential downtime is prevented by proactive service and monitoring.

*Available late-2001

Powerware® 9330 Features and Benefits

Double Conversion Online Technology

The Powerware 9330 is a traditional double conversion online UPS module, with true dual input capability, providing the highest level of isolation from the input and protection to the load. The output voltage and frequency are independent of input voltage and frequency conditions. The double conversion architecture has proven itself the most reliable UPS design and has been deployed, with progressively updated technologies, for almost 40 years supporting such critical applications as NASA, FAA installations, E*Trade and Citibank.

True Pulse Width Modulation (PWM) Technology and Digital Signal Processing

Digital Signal Processing (DSP) eliminates all 50/60 Hz magnetics and "control pots" facilitating easy setup, drift-free operation and a pristine output signal. True PWM is achieved through the use of DSP, by enabling the IGBTs to work at their highest capacity, increasing overall system reliability and ensuring near perfect power on the output.

The real-time performance of DSP is how the Powerware 9330 achieves high performance with fewer components. DSP allows for the implementation of control algorithms that increase overall system performance while simultaneously increasing the reliability and availability of the 9330.

High Efficiency

Higher efficiency equals lower overall cost of ownership. The Powerware 9330, a true double conversion online UPS, can provide efficiencies as high as 93% (100% load). Higher system efficiencies also mean cooler operating conditions, which extends the life of UPS components (less stress due to excessive heat) and increases overall system reliability, availability and performance.

Powerware Hot Sync Technology*

The Powerware 9330 is available in a single module reverse transfer configuration, as well as in parallel redundant and N+I on up to 3 modules for capacity configurations using patented Powerware Hot Sync® technology, the most reliable UPS paralleling architecture in the world. (*Available late 2001)

DC Expert Plus™ Built-in Battery Monitoring

Real world business applications require a complete range of battery management and testing features, including battery runtime remaining, lifetime remaining, battery health, and notification, to help make critical decisions, from scheduling preventive maintenance to load shedding. Advances in firmware, digital technology and battery monitoring techniques enable the Powerware 9330 to offer sophisticated battery management features, previously available only in expensive add-on systems. By ensuring optimal battery health and availability, DC Expert Plus raises the reliability of the Powerware 9330 far beyond any other UPS in this kVA range.

DC Expert Plus advanced features include:

- **Powerware Battery Lifetime Monitor** uses measures of chronological time, number of battery discharges, battery temperature, and system loading to determine runtime remaining and battery lifetime remaining.
- **Battery Runtime Remaining Monitor** uses system loading plus internal sensing points for voltage and current data to calculate runtime remaining.
- **Advanced Battery Management (ABMä)** uses patented three-stage charging technique that not only doubles battery service life, but also optimizes recharge time.
- **Battery Circuit Test (BCT)** performs a periodic pulse test of the battery string to ensure that there are no open circuits that would jeopardize battery performance and system availability.
- **Temperature Compensated Charging (TCC)** monitors the battery temperature and through sophisticated algorithms adjusts the rate of charge, compensating for the ambient temperature to prolong the life of the battery.

Global Services

Powerware service professionals provide around-the-clock monitoring, remote diagnostics, and on-site maintenance programs. More than just a warranty, this is the most comprehensive service coverage available in the industry. Powerware Global Services provides our customers with peace of mind that potential downtime is prevented by taking steps ahead of time.

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Intelligent Communications & Monitoring

Powerware's extensive array of communication includes:

Local

- Monitor Panel–gives you graphical performance data, alarm history and metering
- RS-232 Communications Port
- Remote Terminal Capabilities

Remote

- Remote Monitor Panel that shows UPS status,visual and audio alarms

Network

- OnliNet Software Suite
- PowerVision enterprise monitoring software
- Network adapters
- Remote Notify allows for outcall capability or dial-in interrogation to the UPS Network
- SNMP communication capability

With an industry–leading graphical user interface, you can view real-time data, manage alarms, and trend historical data for each device monitored. By deploying these options the customer has the ability to mange the Powerware 9330 locally or remotely via serial or network communications.

Built-in Control Area Network (CAN)

The internal and external Control Area Network (CAN) incorporated in the Powerware 9330 assists in integrating peripherals and options, controllable from the control panel. It also reduces the internal wiring connections required therefore increasing overall system reliability.

Superior Cooling Design

The Superior Cooling Design of the Powerware 9330 draws from Powerware's extensive 40 years of industry and product development experience.

The unique design uses:

- Constant positive air flow pushes cool ambient air through the UPS over the most critical and sensitive components, such as electronics and power switching elements. Thereby maintaining the coolest possible levels at all times to ensure correct operation and extend operational life.
- Four individual fans, located in the front of the Powerware 9330, pull in cool ambient air and push it through the unit. By locating the fans in front and pulling cool ambient air into the UPS, rather than locating fans in back or the top and exhausting hot air from the UPS cabinet, the fans run cooler and last longer. Fan redundancy also enhances availability and lowers MTTR.
- Fan Power is monitored to detect fan failure and the UPS logic controls the fan speed, automatically adjusting speed according to load and ambient temperature. Fan failures are annunciated locally on the monitor panel and remotely through the communications port.
- An air filter is used in front to keep airborne contaminants from entering the unit and extend the life of the fans and other critical electronic components.

By keeping critical components at the coolest possible levels, the Superior Cooling Design enhances the already superior performance of the Powerware 9330 by ensuring precise system operation and extending the life of system elements.

Environmental Capabilities

High efficiency combined with a well-engineered cooling design allows the UPS to reliably operate under extreme environmental conditions.

- Operating temperature: 40°C maximum.
- Operating Altitude: 5,000ft at 40°C without derating.

Internal Maintenance Bypass

Provides the ability to quickly service or perform maintenance on the critical load essential to maintaining overall systems availability and reliability

Field Expandable

Based on the explosive growth of our customers critical load requirements it is difficult to forecast UPS size requirements one, two or three years in the future. The Powerware 9330 provides our customers with a UPS that can grow with their system needs, whether it's to increase the kVA rating or change system configuration from a single module system to a multi-module redundant or capacity system.

Comprehensive Communications and User Interface

A large LCD display and control panel is ergonomically situated for operator interface with the unit. Soft keys help guide the operator through all menus and setups. A dedicated microprocessor had been designed and engineered to provide sophisticated full featured monitoring, extensive alarm history, and additional communication options, including Ethernet, network links, and modems. The intelligent firmware controls are designed to provide maximize protection to the critical load, and prevent operator actions that might jeopardize the load, such as the Smart Load Off button.

Generator Compatibility

Double-conversion online UPS technology, such as in the Powerware 9330, is the only topology that can regulate frequency without transferring to battery. High input power factor and low current THD with the optional input filter insures good coordination with generator sources.

Dual Feed Inputs

Separate rectifier and bypass feeds are standard which increases availability by providing dual input feeder buses, if available in the customer application.

ISO9001 Certification

The National Standards Association of Ireland certifies Powerware under the strict requirements of ISO 9001. ISO 9001 certification ensures the quality; engineering, field service, and Manufacturing are in place and are strictly followed.

Invensys Powerware Division
8609 Six Forks Road
Raleigh, NC 27615 U.S.A.
Toll Free: 1.877.797.9273
or 919.872.3020
Fax: 1.800.753.9433
www.poweware.com

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Europe/Middle East/Africa
Finland: + 358 9 452 661

Southeast Asia
Singapore: 65-8610377

China and North Asia
Hong Kong: 852.2745.6682

Japan
Shinagawa Tokyo: 813.3447.5251

Australia and South Pacific
Sydney, Australia: 612..9878.5000

Canada
Toronto, Ontario: 416.798.0112

Brazil
Sao Paulo, Brazil:
55.11.3933.8555/855.8500

Mexico
Col. Napoles C.P.,
Mexico 525.527.61.69/
525.488.33.33

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