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 Double Conversion Online Topology

The Powerware 9330 is a traditional double conversion online UPS module with true dual source 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 *(see Figure 1 below)*.

In the normal operating mode, the inverter powers the load and the bypass is in standby. The inverter is powered by the utility via the rectifier, and the battery is in standby, either charging or resting. This mode is typically selected when the input is within a specified range (usually +/- 15%), or when the bypass power is unacceptable.

Who Cares?

A majority of the decision makers for the Powerware 9330 product will be the CIO, IT director or IT manager. On the whole, this group will not care or even understand "double conversion online;" what they are concerned about is purchasing a UPS that will deliver 24/365 system availability and reliability. The traditional influencers - consulting engineers, facility managers and electrician's - may not be involved in this purchase but they are the ones most likely to understand the merits of increased availability and reliability provided by double conversion online. The Powerware 9330 is not tied to any specific industry or application, since in this 24/365 world applications run the gamut of verticals and channels.

Why is it important?

The preference for double conversion online technology for mission-critical applications is not a subject up for debate. If you check the UPS in any data center, ISP, major telecommunications installation or any other business critical installation, it will be a double conversion online system, virtually without fail. The higher the need for availability, the more intense and complex the application, and the more dollars that are riding on the protected technology, the less likely you'll see anything but double conversion online.

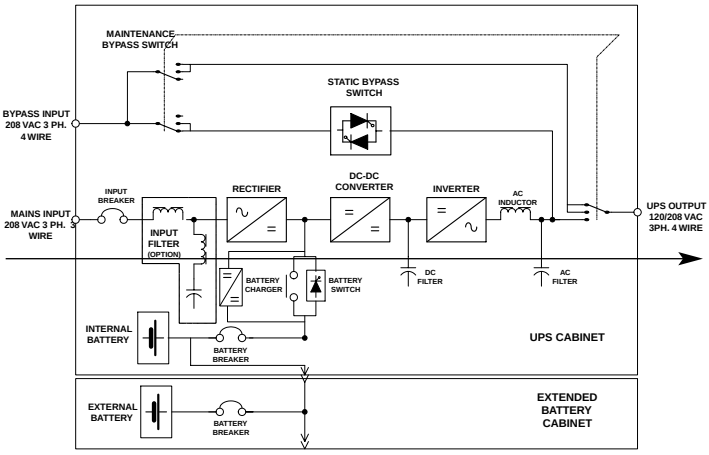

Figure 1:
Traditional double conversion online operation

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The elite status of double conversion online is demonstrated by the desire of UPS vendors of non-double conversion online UPS to find a way to market their units as online. Desperate to be able to give their customers the confidence of double conversion online, some vendors have developed "pseudo" online units that are really simply line-interactive or standby units with cosmetic changes that attempt to mask their less reliable technology.

The important benefit to our customers is the increased reliability of a double conversion online design. It might best be communicated in terms of system reliability – by isolating utility input from UPS output, we are eliminating any fluctuations or disturbance to their critical applications. Not only will they achieve higher system reliability but the availability of the applications to their customers is also improved.

It should also be pointed out that the IEC (International Electrotechnical Commission) established standards in November 1999 for the different types of UPS and the methods used to measure their performance. This standard defines a UPS in terms of its performance and not individual UPS functional units. The standard **IEC 62040-3** defines the three types of UPS as:

- Passive Standby
- Line-Interactive
- Double Conversion

These terms define how the UPS operates with utility power, that is, the way the power is passed on to the critical load – the Powerware 9330 is a true Double Conversion UPS system based on this standard definition. (For actual definitions please see IEC 62040-3 UPS Types and Methods Paper.)

What are the major benefits?

The major benefit to point out to your customers is that this technology has proven itself the most reliable UPS design and has been deployed for almost 40 years. Since the output voltage and frequency are independent of the input source and frequency conditions, the customer's critical applications are isolated from any utility disturbances. It is for this reason it has been selected and is supporting such critical customers and applications as NASA, FAA installations, E*Trade and Citibank.

What is the Enterprise Advantage?

The Powerware 9330, like other Powerware UPS systems before it, was designed as a cornerstone to providing our customers with the highest reliability and availability for their critical applications. By incorporating exclusive features and options like DC Expert™ Plus Built-in Battery Monitoring and Powerware Hot Sync the Powerware 9330 sets a new standard by which acceptable solutions will be judged.

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