Uninterruptible power system



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Not to be confused with an auxiliary or emergency power system, a UPS provides near instantaneous protection from input power outages via battery power [source: USAID].

From the power grid, a computer expects to get (in the United States) 120-volt AC power oscillating at 60 Hertz (see How Power Distribution Grids Work for more information). A computer can tolerate slight differences from this specification, but a significant deviation can cause the computer's power supply to fail.

When shopping for a UPS system, there are indeed a lot of options. There's the standby UPS, the line-interactive UPS, the double-conversion UPS and a wide variety of specialized variants. Choosing the right one entails a comprehensive understanding of your particular needs paired with a modest amount of UPS system knowledge.

A standby UPS runs the computer off of the normal utility power until it detects a problem. At that point, it very quickly (in 5 milliseconds or less) turns on a power inverter and runs the computer off of the UPS's battery (see How Batteries Work for more information).

This type boasts features like basic surge protection and battery backup functionality. Standby UPS systems are far more common for home or small-business use because they tend to cost about half as much as more industrial alternatives.

Line-interactive UPS systems are more sophisticated and are generally reserved for small- and medium-sized businesses. These essential devices are designed to deal with a wider range of power issues including voltage sags and surges, without having to switch to battery power.

The driving feature of a line-interactive UPS is its ability to correct minor power fluctuations through a multi-tap variable-voltage autotransformer. For many, they strike the perfect balance between cost and performance, and they tend to be more efficient on environments where power fluctuations happen frequently.

Often referred to as a continuous UPS, double-conversion UPS systems continuously converts incoming power in real time, ensuring a consistent, uninterrupted power supply regardless of fluctuations and failures.

The result is an environment that"s completely isolated from power anomalies, which is ideal in environments that manage highly sensitive data and critical equipment.

Popular use cases include data centers, medical facilities and telecommunications infrastructure, though they"re generally recommended for the operation of all sensitive equipment, like those used in industrial settings [source: Rigby].



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Uninterruptible power supply systems are indispensable tools, promising untold reliability and protecting the integrity of essential electrical equipment. Whether for home use, at the office, or in large-scale data centers, UPS systems provide a critical layer of protection for sensitive electronic equipment against unpredictable power supply anomalies.

Understanding the different types of UPS systems and their functions allows individuals and businesses to make informed decisions about their power protection strategies. With the advancements in technology, UPS systems continue to evolve, offering more efficient and reliable solutions to meet the ever-changing demands of modern electronic devices.

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