Choosing the Right UPS System

An Uninterruptible Power Supply (UPS) System is a device that supplies battery backup power to computers and peripherals during short power outages, and allows systems to safely shutdown during prolonged blackouts. UPS systems also correct brownouts and overvoltages, stop damaging power surges and filter disruptive line noise.

What Causes Power Problems?

Despite advances in technology, power grids across the country are struggling to supply reliable power to homes and businesses. The increasing occurrence of large natural disasters such as Hurricane Katrina, along with the growing demand for electricity, have put a significant strain on power grids and an increase in damaging power problems. If your home office or business has ever been disrupted by a power problem, it's not surprising. IBM estimates that 120 power problems hit the typical computer in a month—that works out to four per day! As a result, computer systems and electronics are under siege by more frequent blackouts, brownouts, overvoltages, surges and other power anomalies. Thanks to the aging of the nation's power-producing infrastructure, these power problems are likely to become more and more common in the coming years. Local sources can also generate blackouts, brownouts, overvoltages and surges. For example, if your neighbor starts up an electrical motor or the office on the floor below you blows a fuse, a blackout, brownout, overvoltage or surge could result.

Line noise is typically generated by turning on other power-drawing devices connected to the same electrical system. Turning on florescent lights, laser printers or appliances, working near a radio station, using a power generator or simply working during a lightning storm can all introduce line noise into connected equipment. Ever notice the "snow" on your TV when you use a blender or a hair dryer? That's line noise being sent back into your electrical system and into your TV.

What are the Effects of Power Problems?

Blackouts, brownouts, power surges and line noise can result in computer system downtime or lockups, data loss, lost productivity, audio static, video snow, slow electronic degradation and ultimately catastrophic equipment damage.

How Does a UPS System Work to Protect Against Power Problems?

An Uninterruptible Power Supply (UPS) System provides comprehensive protection against all power problems. To further understand how UPS Systems protect against power problems, consider the different types of UPS:

Standby UPS Systems

Power is fed through surge and noise suppression circuitry and on to your equipment. Meanwhile, a battery charger keeps an internal battery topped off and ready for use. During a blackout, brownout or overvoltage, an inverter converts battery power into a simulated sine wave output. When power returns, the UPS switches back to AC power and the battery is recharged. Sensing of a low voltage situation and switching to battery power happens so quickly that your equipment continues to operate flawlessly.

Line-Interactive UPS Systems

Power is fed through surge and noise suppression circuitry. Then built-in line conditioning circuitry regulates high or low voltages back to normal levels, and sends clean power on to your equipment, without using battery power. Meanwhile, a battery charger keeps an internal battery topped off and ready for use. During a blackout, an inverter switches on and converts battery power into a simulated sine wave output. When power returns, the inverter switches off and the battery is recharged. Because all switching happens within a few milliseconds, your equipment is unaffected.

On-Line UPS Systems

This is the highest level of battery backup protection available. Power is first broken down and then perfectly reconstructed by the inverter, which is "on-line" 100% of the time. There is absolutely no transfer switching time. This process completely eliminates incoming surge and line noise, adjusts high or low voltages, and produces perfect sine wave power.

Important UPS Features

There are a number of other factors important to UPS users beyond its standby, line-interactive or on-line design. Auto shutdown, battery runtime, number of outlets and phone line suppression could be critical factors in choosing a system for a particular application.

Unattended Shutdown Related Features:

Monitoring Ports (Standard vs. Smart Monitoring)—Many UPS systems can "talk" to a connected device and instruct it to shut down when power fails. Models with a monitoring port have this ability. Tripp Lite offers UPS products with two types of monitoring ports, Standard and Smart.

Standard Port (USB or DB9)—Able to send basic signals regarding "ON BATTERY", "LOW BATTERY" and "POWER RESTORED" conditions.

Smart "Enhanced" Monitoring Port (USB or DB9)—Same as standard interface with additional data regarding voltage, temperature, load level, and more can be transmitted to the connected computer. Many of the larger Smart products also have multiple monitoring ports so that a few connected computers or servers can be automatically shut down in the event of a power failure. This feature is especially valuable in data centers, computer rooms, and in cases where a single UPS will support several servers or workstations.

Free Monitoring Software—Many of the models that include a monitoring port also support free PowerAlert UPS monitoring and shutdown software via download. It interprets the signals coming from the DB9 monitoring port and instructs the UPS to take the appropriate action. When the UPS transmits a "power failure" message, the UPS waits a pre-configured period of time. If power isn't restored by the end of the "wait" time, PowerAlert saves all data and shuts down the connected computer or server so that no data is lost.

Runtime Related Features:

Expandable Battery Runtime—Most UPS systems for computer use are sized to run for about 5-10 minutes at full load. Certain applications, such as telephone and critical networking systems, often require much longer battery runtimes (from 30 minutes to over 8 hours). Several Tripp Lite models offer extended battery runtimes by allowing users to connect additional battery packs.

Fax Modem/Surge-Only Outlets—Most home and home office PCs are equipped with a modem and several peripherals. Generally UPS protection is required for a computer and monitor only and all remaining items, like printers, scanners and other accessories, are connected to a separate surge suppression strip. Modem lines connecting to computers should also be protected with a data line surge suppressor. Rather than requiring users to obtain each of these devices separately, adding to the cost and desktop wiring clutter, Tripp Lite offers a number of UPS products with 'surge suppression only' outlets and RJ11 modem/fax line surge suppression.

How Can I Compare and Choose the Level of Battery Backup Protection I Need?

UPS Systems are available in several cabinet designs, including low-profile, rackmount, tower and under-monitor. Tripp Lite offers a full range of models from 300VA to 160kVA. The best way to choose the perfect UPS system for your specific application is to visit our convenient online UPS Selector Guide. It will walk you step by step through the selection process.

Typical UPS System Applications

UPS Systems are designed to protect computers and all electronics from damaging blackouts, brownouts, overvoltages, surges and line noise. Visit our Solutions section for more specific application information.

Tripp Lite UPS Systems

- 120V UPS Systems
- 230V UPS Systems

Part Builder