Uninterruptible Power Systems (UPS) Technology

Which UPS Is Right For My Systems?

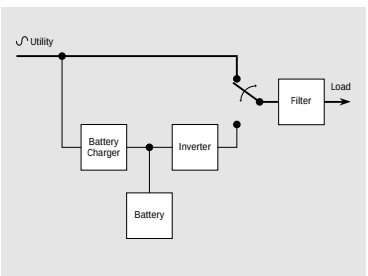
You can choose from a variety of power protection devices to shield critical data and equipment from power problems.
The most sophisticated of these devices are Uninterruptible Power Systems (UPS). There are three types of UPS: *Standby* or *Off-line*, *Line-interactive* and *On-line*. To choose the UPS that is right for you, first determine the level of power protection that you need. Then match those needs to the appropriate UPS.

Standby UPS Technology

Standby Power Systems or off-line UPS offer a low price solution to environments that require minimal power protection. Utility power is provided during normal operation. Utility voltage and frequency changes (see reverse) are not regulated by the standby UPS, and pass through to your equipment.

When voltage or frequency changes become too severe, the standby UPS inverter converts DC battery power to AC power to run your system.

OneUPS®, Exide Electronics' standby UPS, provides that minimum protection required by your electronic systems.

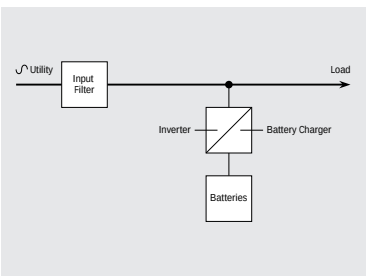


Line-interactive UPS Technology

Line-interactive UPS provide basic power protection at mid-range prices. This design offers low-grade voltage regulation by "bumping" the utility voltage up or down before passing it through to your electronic system. During the UPS voltage changes, the line-interactive UPS uses the battery for regulation.

Although line-interactive UPS provide more voltage regulation than standby, battery life is often sacrificed. The number of transfers to and from battery by the line-interactive design exceeds that of the on-line design by as much as 10 to 1 during brownouts, spikes and surges.

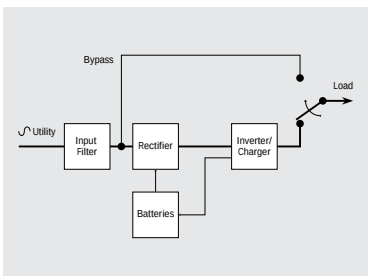
Line-interactive designs, like the Exide Electronics *NetUPS*™ UPS, offer more protection than a standby UPS at a competitive price.



On-line UPS Technology

On-line UPS are ideally suited for your critical equipment. Devices that are particularly sensitive to power fluctuations also need the added protection and reliability of on-line design. On-line UPS protect against all types of power problems and continuously use the inverter to create 100% new, clean, regulated AC power for your systems. Brownouts, spikes and surges are isolated from your equipment by the on-line double conversion design.

Battery conservation is an essential factor in your decision to purchase an on-line UPS. On-line designs, such as the Exide Electronics *Powerware*® *Prestige* UPS, use the battery less than any other UPS technology, increasing the life of your UPS.



1-800-554-3448 (US & Canada) World Headquarters, 8609 Six Forks Road, Raleigh, NC 27615 USA; Internet: http://www.exide.com/exide/
Telephone (US): 1-919-872-3020; Fax (US): 1-800-75-EXIDE; International Telephone: 1-919-870-3235; International Fax: 1-919-870-3300

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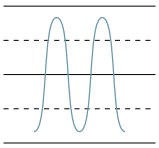
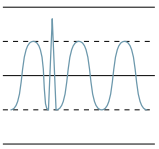
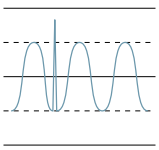
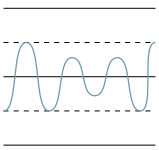
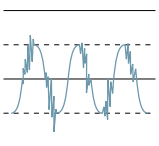
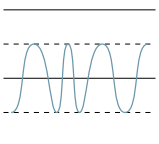
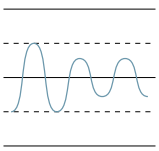
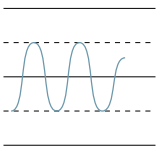
EXIDE ELECTRONICS
Strategic Power Management™

Power Problems and UPS Solutions

Power Problems	*Definition*	*Visual*	*Cause*	*Effect*	*UPS Solutions* ○ No protection ● Limited protection ● Unlimited protection
Power Surges	Voltage above 110% of rated RMS voltage (*range of usable voltage*) for one or more cycles.		Heavy electrical equipment being turned off.	Memory loss, data errors, flickering lights, equipment shutoff.	● Surge Protector → *Protection depends on components* ● Power Line Conditioner ○ Standby UPS ○ Line-interactive UPS ● On-line UPS
High Voltage Spikes	Rapid voltage peak up to 6,000 volts with a duration of 100mS (*mS = 1,000th of a second*) to 1/2 cycle.		Lightning strikes, switching operations, arcing faults, static discharge.	Memory loss, data errors, data loss, component stress, burned circuit boards.	● Surge Protector ● Power Line Conditioner ○ Standby UPS ● Line-interactive UPS ● On-line UPS
Switching Transients	Rapid voltage peak up to 20,000 volts with a duration of 10mS to 100mS.		Lightning strikes, switching operations, arcing faults, static discharge.	Memory loss, data errors, data loss, component stress, burned circuit boards.	● Surge Protector ● Power Line Conditioner ○ Standby UPS ○ Line-interactive UPS ● On-line UPS
Power Sags	Voltage below 80% to 85% of rated RMS voltage for one or more cycles.		Heavy equipment being turned on, starting large electrical motors, switching power mains (internal or utility).	Memory loss, data errors, flickering lights, equipment shutoff.	○ Surge Protector ● Power Line Conditioner → *Some up to 2 cycles* ● Standby UPS → *Only when inverter and battery are the power source* ● Line-interactive UPS → *Boost circuit (requires battery help)* ● On-line UPS
Electrical Line Noise	Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) and other frequency causes.		Electric motors, relays, motor control devices, broadcast transmissions, microwave radiation, distant electrical storms.	Data error, data loss, keyboard lockup, storage loss, system lockup.	○ Surge Protector ● Power Line Conditioner ● Standby UPS → *With filtering* ● Line-interactive UPS → *With filtering* ● On-line UPS
Frequency Variation	A change in frequency of more than 3 Hz.		Erratic operation of emergency power generators, unstable frequency power sources.	Disk crash, keyboard lockup, program failures, data corruption.	○ Surge Protector ○ Power Line Conditioner ● Standby UPS → *With filtering* ● Line-interactive UPS → *With filtering* ● On-line UPS
Brownout	A steady state of RMS voltage under nominal by a relatively constant percentage.		Heavy equipment being turned on, starting large electrical motors, switching power mains (internal and utility), overloaded circuits.	Premature hardware failure, data loss and corruption.	○ Surge Protector ● Power Line Conditioner → *Some up to 2 cycles* ● Standby UPS ● Line-interactive UPS → *Boost circuit (requires battery help)* ● On-line UPS
Power Failure	A zero-voltage condition lasting for more than two cycles.		Circuit breaker tripped, power distribution failure, utility power failure.	File corruption, hardware damage, data loss and corruption.	○ Surge Protector ○ Power Line Conditioner ● Standby UPS ● Line-interactive UPS ● On-line UPS