

DETERMINE THE RIGHT UNINTERRUPTIBLE POWER SUPPLY (UPS)

A step-by-step guide to help you identify the right UPS.

To help you determine the right Uninterruptible Power Supply (UPS) for your needs, we have created a step-by-step guide to help you identify the right UPS.



1. CALCULATE THE POWER REQUIREMENTS

- List all the devices (computers, servers, networking equipment, etc.) that you will need to connect to the UPS.
- Find the power consumption (in watts) of each device. This information can be found on the device's label or in its technical specifications.
- Add up the power requirements of all devices to get the total load.



2. DETERMINE RUNTIME NEEDS

- How long will you need the UPS to provide power in case of a power?
- Consider whether you need enough runtime to shut down connected systems gracefully or if you require longer runtime for critical operations.



3. CONSIDER FUTURE EXPANSION

- If you plan to add more devices in the future, account for their power requirements in your calculations.



4. SELECT UPS TOPOLOGY

It is important to understand the different UPS Topologies to determine which one fits your needs. The three topologies:

STANDBY

The most basic topology. When incoming power drops below or surges above safe voltage levels, a Standby UPS system switches to battery power, providing a bridge of power until utility power is restored.

- **Advantages:** Cost-effective and suitable for basic power protection of non-critical devices.
- **Disadvantages:** Provides less power protection and may have a slight delay when switching to power protection
- **Ideal for:** Home computers, modems and routers, point-of-sale systems, ATMs and kiosks, and workstations.

LINE-INTERACTIVE

Feature Automatic Voltage Regulation (AVR) functionality. AVR is a process that utilizes an autotransformer to regulate voltage levels without having to switch to battery power. This process results in clean, consistent AC power that preserves the battery power for when you need it, such as during significant power outages.

- **Advantages:** Better protection against voltage fluctuations, with a faster response time than Standby UPS systems.
- **Disadvantages:** May not provide as much automatic voltage regulation as an Online UPS system.
- **Ideal for:** Home offices, home theaters, gaming computers, servers, point-of-sale systems, casino gaming machines, A/V equipment, security systems, networking and storage devices, and VoIP/telecom systems.

ONLINE (DOUBLE-CONVERSION)

Converts incoming AC power to DC and then back to AC, providing consistent, clean, and near-perfect power, regardless of the condition of incoming power. UPS systems with this technology have a zero-transfer time. An Online UPS system is specifically designed to handle the “dirty power” produced by a generator, converting it into clean power with a smooth, consistent sine wave.

- **Advantages:** Offer the highest level of power protection against power disturbances, while providing consistent and high-quality power with zero transfer time. Online UPS systems offer the best voltage regulation and isolation from power issues.
- **Ideal for:** Enterprise, corporate, and department servers, network storage devices, edge closets, security closets, A/V equipment, and VoIP systems.

Choose the topology that suits your needs. While online UPS systems provide the highest level of protection, they are typically more expensive. These systems are preferred for mission-critical applications that require continuous, high-quality power. Line-interactive UPS is a good compromise for many business applications, providing a balance between protection and cost. Standby UPS is suitable for less critical applications or environments with relatively stable power supplies.



5. DETERMINE THE WAVEFORM

Beyond topology, the primary difference between types of UPS systems is which waveform each type utilizes to deliver power to connected equipment. The two types of waveforms are sine wave and simulated sine wave.

SIMULATED SINE WAVE

- Ideal for non-sensitive electronics, and found in both Standby and Line-Interactive topologies, a UPS system with a simulated sine wave output generates a stepped sine wave to supply cost-effective battery backup power.

SINE WAVE

- Common in Line-Interactive and Online UPS system topologies, sine wave output is clean with no power gaps, making it ideal for running sensitive electronics and computers using Active Power Factor Correction (PFC) power supplies.

Computers, workstations, and servers using switching power supplies with Active PFC may shut down unexpectedly when using UPS systems with simulated sine wave output, resulting in data loss or equipment damage. UPS systems with sine wave output reduce unnecessary shutdowns and the potential damage from a power event.

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**PRO
TIP**

Remember that it's generally better to oversize the UPS slightly to accommodate future growth and to provide a buffer for unexpected increases in power demand.



6. CHECK VOLTAGE AND OUTLET COMPATIBILITY

- Ensure that the UPS output voltage matches the requirements of your equipment.
- Check the type and number of outlets provided by the UPS to make sure they match your devices.



7. CONSIDER SPECIAL FEATURES:

- Evaluate if you need any additional features for your set-up. CyberPower offers UPS systems featuring: automatic voltage regulation, LCD displays, remote management, and energy-saving modes.

If you have additional questions, you can review our UPS Sizing Guide or contact:
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