

# UPS 101 – UNDERSTANDING THE FUNDAMENTALS

An Uninterruptible Power Supply (UPS) is used to protect electrical loads from blackouts, power spikes and voltage dips by utilising a battery. UPS solutions come in a range of sizes and technologies which can make selecting the correct model for your application challenging.

## What size UPS do I need?

The UPS must be large enough to support all of the equipment plugged into it, so your first task is to calculate the load.

The Load is the total amount of power draw in Watts of all the devices attached to the UPS. Once the load is known you can then select a UPS unit that has the appropriate capacity.

Capacity is how much power a UPS system can provide (measured in Watts). The higher the capacity, the more electronic equipment, and devices it can support.

A good rule of thumb is not to exceed the rated capacity of the UPS by more than 80% of the UPS. Be sure to allow for inrush currents of fans, capacitors and motors.

## What are the different types of UPS?

There are three main types of UPS – standby, line interactive and on-line.

A Standby UPS is an offline unit that can detect a mains power failure and switch to battery power automatically. In normal operation the load is fed directly by mains power.

A Line-interactive UPS conditions the mains power by regulating input utility voltage up or down in a buck-boost transformer, before allowing it to pass through to protected equipment/load. In the event of a mains power failure, battery power is provided automatically.

An on-line UPS converts power twice. First, an input rectifier converts AC power into DC and feeds it to an output inverter

The output inverter then converts the power back to AC before sending it on to the load. This double-conversion process insulates critical loads from dirty mains power completely to ensure that the connected load receives only clean, reliable electricity.

## How much time do you want the UPS to support the load?

Runtime is the number of minutes a UPS system can support the attached devices with electricity during a blackout. The minimum runtime is the time needed to complete proper equipment shutdown.

The smaller the wattage load connected, the longer the batteries will last. The larger the wattage load, the shorter the runtime will be. To determine runtime, begin with the number of minutes it will take to perform complete device shutdown and then build an acceptable range of runtimes. The broader the range, the more UPS you will need.

If a long runtime is required you could upsize the UPS unit so that the connected load is a smaller percentage of the UPS capacity. Some UPS units can have additional battery modules connected to provide the option extended runtime.

## What Form Factor does the UPS need to be?

The form factor of a UPS indicates the shape and size of its housing. The most common three types are – tower, rackmount and floor standing

When choosing the form factor, you'll need to consider the installation environment. A tower or mini-tower will can sit on a shelf or on top of a desk or table. A rackmount UPS works well in server rooms. Larger UPS are often floor standing, and these can require additional cooling.

## Still need a Hand?

Contact our sales engineers 24/7 to discuss your requirements and ensure your power is in the safest hands.