

Altech UPS products meet a wide variety of application requirements

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Occasional power outages are a fact of life, but when the power goes out, an uninterruptable power supply (UPS) from Altech can step in when the standard power source goes offline.

A UPS operates by storing energy during normal operation, then supplies backup power immediately following a shutdown. The length of time needed varies by application. In a hospital, the UPS power bridges the gap until backup generators come online; in a data center, it allows the system to execute an orderly shutdown; and a security monitoring system might operate solely on UPS power for a considerable time.

UPS technology overview

All UPS systems contain two essential blocks: an energy storage system and a means to switch between primary power and backup power when needed. The energy storage systems run off DC voltage, so an AC-to-DC power supply is required to connect to utility power. Both the energy storage and the power supply may be either internal or external depending on the design.

Two types of energy storage for UPS designs are batteries and ultracapacitors, and each one has different characteristics.

A battery-based system can store a large amount of energy to provide a prolonged backup time, but also requires a long time to recharge. Batteries are bulky and may require regular maintenance, so they are usually external to the UPS. Different battery chemistries are available, with different charging and discharging profiles.

Ultracapacitors provide an alternative to batteries for energy storage. An ultracapacitor stores energy in the form of electrical charge. In the event of a power interruption, the energy is released and power is supplied for a determined amount of time.

An ultracapacitor-based system can operate over a wide temperature range, requires less maintenance than a battery-based system and has an extremely long operating life of up to 15 years. An ultracapacitor-based UPS provides less runtime than a battery-based system, but it can recharge in seconds, making it ideal in cases where power outages are frequent but of short duration.

Features and advantages of Altech's product line

Alltech offers a large variety of both battery- and ultracapacitor-based UPS systems.

Battery-based UPS

The CBI family of All In One UPS power solutions combines the power supply, battery charger and battery care module into a single unit. This is particularly important in space-constrained applications. Many UPS systems require a separate power supply.

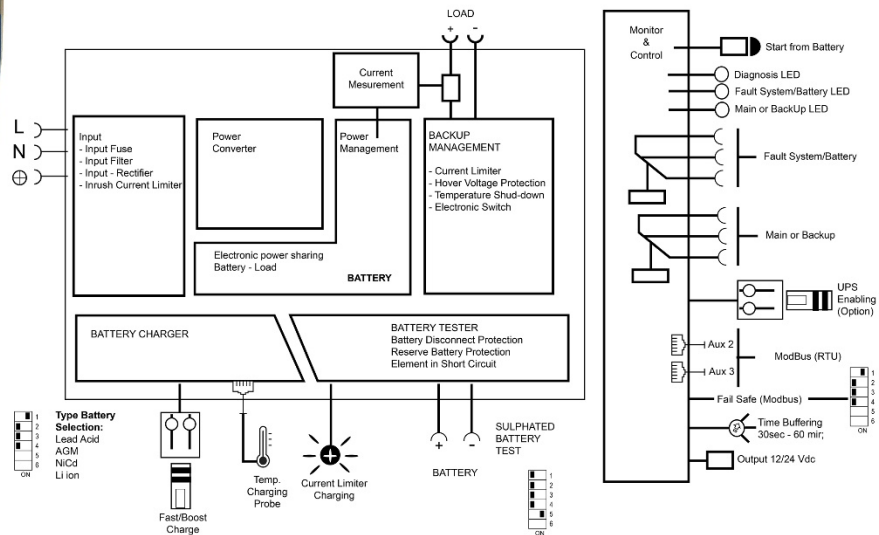


Figure 1: A CBI UPS combines multiple UPS functions into a single module. Source: Altech

Figure 1 shows the comprehensive feature set of the CBI family of products. The available power is automatically distributed among load and battery, with supplying power to the load as the first priority. If the device is disconnected from the main power source, the battery supplies the load until the battery voltage reaches 1.5 V per cell to prevent deep discharge of the battery. A microprocessor controls battery charging by determining the battery condition and selecting the appropriate charging mode. A real-time diagnostics system continuously monitors the charging process and flags potential faults such as short circuits, reverse polarity connection and disconnection of the battery.

All In One UPS power solutions are suitable for open/sealed lead acid-, lead gel-, lithium-ion and optionally Ni-Cd batteries. The battery-select-jumper allows the selection of predefined charging curves: recovery-, boost- and trickle-charge.

Here is a list of the main features of the All In One product family:

- Complete solution saves space: Power supply plus battery charger plus back-up module
- Universal input voltage range: 110 V AC to 500 V AC
- Wide temperature range: -30° C to 70° C
- Selectable output before installation
- Rugged metal case with DIN rail mount
- UL certification for all versions
- Selectable charging curves for a variety of battery chemistries

Ultracapacitor UPS

The DC back-ups from Altech utilize ultracapacitors to store energy within a compact design. In the event of a main power supply interruption, the energy stored in the ultracapacitors is

released. The load is energized from the buffer module until depleted. Compared with standard buffer modules, Altech ultracapacitor units are capable of prolonged back-up times (up to 55 minutes) and fast discharges.

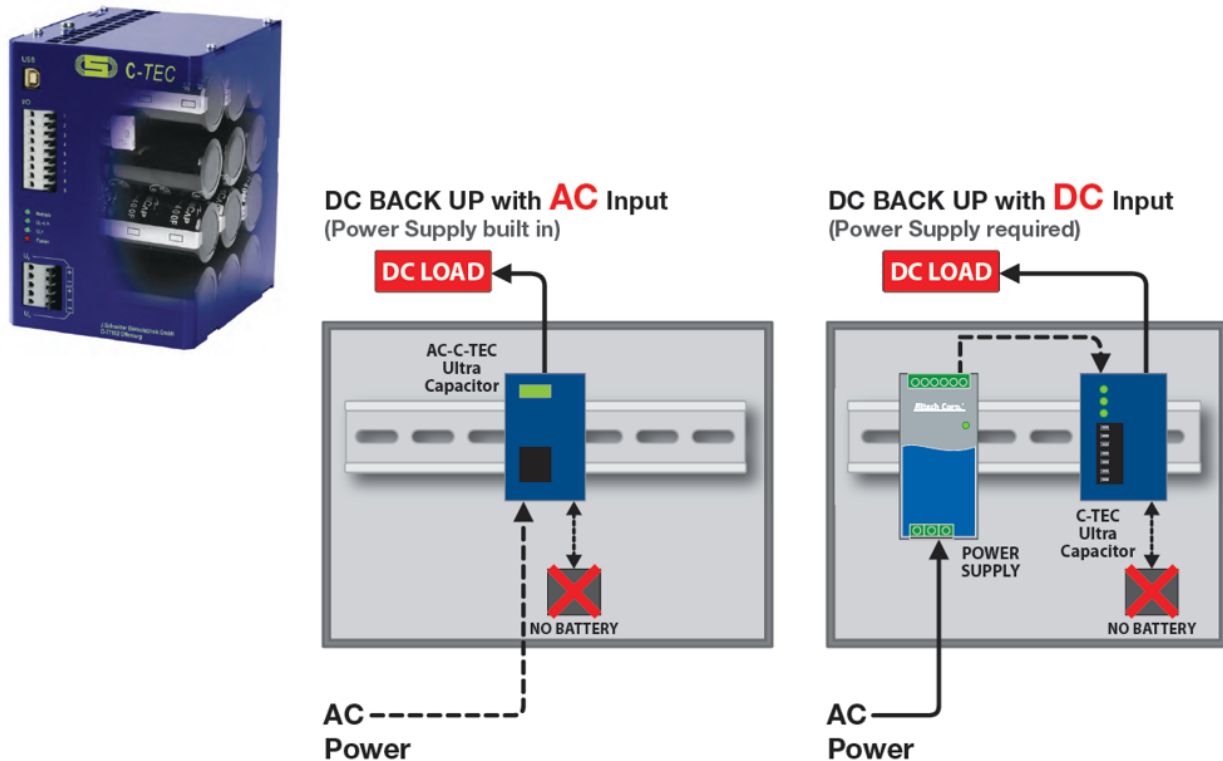


Figure 2: Altech offers ultracapacitor UPS systems with and without power supplies. Source: Altech

Altech features several product families. For instance, C-TEC products are connected between an external power supply and feature DC input and outputs, and AC-C-TEC products include a power supply for AC input and DC output. Altech also offers the CEM family of extension modules to boost the backup time of standard units.

The backup time for an ultracapacitor system depends on the energy storage capacity, expressed in kilojoules (kJ), and the required backup current. The recharge time depends on the energy storage capacity of the unit and the charging current available. For example, the C-TEC2420-8, with 8 kJ of energy storage, is a 24 V DC device. It can provide 24 V for 600 seconds at 500 mA and 15 seconds at 20 A. The recharge time ranges from 60 seconds with 5 A charging current available to 15 seconds with 20 A available.

The Altech support department can help customers pick the correct unit for a particular application; the product literature also provides selection tables.

Here is a summary of the features of Alltech's ultracapacitor DC/UPS product line:

- quick backup recharge
- DIN rail mount
- UL certification for all versions

- Virtually maintenance-free for 15-year operational life
- Large product selection

Example applications

Altech UPS features allow them to be used in many different applications. The combination of multiple functions in a single housing saves cost and space. The wide input voltage range allows one product to be installed worldwide. The wide operating temperature range supports operation in harsh environments. All products can be conformal-coated, an advantage in high-humidity environments. Altech UPS systems operate successfully in numerous fields, including:

- Video monitoring
- Telecom and building automation (IoT)
- National parks
- Water treatment
- Gas and water meters
- Factory automation
- Elevators
- Hospitals

About Altech

Since 1984, Alltech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, New Jersey, Altech has an experienced staff of technical experts available to answer technical questions and provide solutions to a wide range of automation and control needs. Give them a call or visit www.altechcorp.com.