

# AC6000 UPS

**Q:** Is the AC6000 a good choice for Edge Data Centers?

**A:** Yes. Lithium-ion UPS' (in general) and the AC6000 is a good choice for the edge. In an edge data center space is at a premium and the compact 2U form factor on the AC6000 will conserve valuable real estate for IT equipment. Li-ion batteries last significantly longer (than VRLA batteries) and can operate at up to 105 degrees without affecting the lifespan of the battery. By contrast, operating above 77 degrees can have a significant impact on VRLA battery performance. The AC6000 Li-ion UPS requires very little maintenance; dispatching staff to maintain equipment and replace batteries at remote edge data centers can be costly.

**Q:** What are some advantages of the AC6000 Li-ion UPS over a UPS with traditional VRLA batteries?

**A:** Li-ion batteries have a higher energy density, longer life, are low maintenance, and have a very low capacity to fade/self-discharge in comparison to VRLA batteries. This means you get more energy, longer runtime, and longer battery life in a much smaller footprint. The AC6000 has a 6kW power capacity with 6 minutes of run-time at full load, all in a compact 2U high footprint. This is up to 40% lighter and 60% smaller than a comparable VRLA UPS solution.

**Q:** The AC6000 is a Line-Interactive UPS. What does this mean?

**A:** Line-interactive refers to the topology of the UPS. The DC-to-AC power inverter in a line-interactive UPS is 'inline' with the UPS output. When the input power source is functioning normally, a transfer switch in the UPS is closed, the input voltage goes thru a voltage regulator to keep output voltage intolerance, and the batteries are being charged thru the AC-DC converter to keep them "at the ready". If the input power source fails, the transfer switch opens, and the batteries source the power through the DC-AC inverter to the IT load.

**Q:** How long does it take a Line-Interactive UPS to transfer from AC to battery back-up?

**A:** The load transfer time for a line-interactive UPS is nominally 4-8 milliseconds.

**Q:** Are Line-Interactive UPS' reliable?

**A:** Since line-interactive UPS' spend most of their time in standby (transfer switch is closed), there is less wear and tear on the components. Additionally, they are energy efficient and have lower operating temperatures which makes them highly reliable with a long operating life.

**Q:** I've heard that Li-ion batteries have a longer cycle life (or longer life cycle). What does that mean?

**A:** Cycle Life is the number of charge and discharge cycles over a battery's useful life. While cyclic life depends upon the depth of discharge, lithium-ion batteries can handle hundreds of charge and discharge cycles with minimal impact on battery capacity.

**Q:** Do Li-ion batteries have any memory effect?

**A:** No. Li-ion batteries have no memory effect. This means they do not have to be fully discharged before recharging.

**Q:** How much smaller are Li-Ion batteries in comparison to VRLA batteries of the same capacity?

**A:** Li-ion batteries have a very high energy density. By weight, they can store up to 6 times the energy (watt-hours) of VRLA batteries. Or in other words, for the same energy, Li-ion batteries take up a much smaller footprint and are much lighter than VRLA batteries.

**Q:** What is Peak Shave (or Peak Shaving) mode?

**A:** Peak Shave or Peak Shaving Mode allows the user to set the power threshold the AC6000 will draw from the AC grid, and allows the Li-ion batteries to provide additional or supplemental power consumed by your IT load. Read the [AC6000 Peak Shaving Application Note](#) to learn more.

**Q:** How does the peak shave feature help me in daily usage?

**A:** Peak shave can help in mainly two ways:

1) By limiting the amount of power drawn from the utility (AC Grid) during times when energy cost is highest. In this case, the user can 'cap' the amount of energy drawn from the utility and allow the batteries to provide any peak or additional power.

2) By using the batteries to provide additional power during a peak energy consumption event. In this case, the batteries can be used to supplement the AC Grid and provide the additional peak power consumed by the IT load. Please see the [AC6000 Peak Shaving Application Note](#) on the Enconnex website for more details on this topic.

**Q:** I have a single phase 16A cabinet, can I also use the AC6000 in that environment?

**A:** This is not a typical use case, but the AC6000 (ECX-UPS-AC6000-1, 32A EMEA version) can be used in a 16A environment. It is important to note that the input/output capacity and the internal overcurrent, overpower, and over-temp protection is based on a 32A circuit and 6kVA/6kW of power capacity. This means the user must use precaution and limit the power consumption from the input circuit to ensure it does not exceed 16A (~3600VA). Please keep in mind that you must allow for up to 1000W for charging the internal battery pack, therefore, the IT load on the output of the AC6000 should be limited to no more than 2200W in a single-phase 16A application.

**Q:** When the cabinets go on battery because of a power outage do we get any notice from AC6000 (alerts via a network, display, beep, etc.)?

**A:** While in the battery back-up or UPS mode (batteries providing the output power), there is both audio and graphical notification from the AC6000. Audio - the AC6000 beeps every 30 seconds while in UPS mode. Graphically - the front panel and Web-GUI have indicators that the AC6000 is in UPS mode and report the battery State of Charge and Run-time.

**Q:** Can we trigger a graceful shutdown of the servers inside the cabinet when the cabinet runs on the battery?

**A:** An SNMP Trap can be set up to trigger an alert (or notification) based on a user-defined threshold for the battery state of charge (SOC). For instance, the user can set up an alert when the AC6000 is in UPS mode and the battery state of charge hits 40%. At this point, action can be taken to start a graceful shutdown of servers.

**Q:** Can we see the power usage with the Web-GUI?

**A:** Yes. A full range of real-time information is available through the Web-GUI, including the Input and Output Voltage, Current, Power (VA), and Inverter Temperature. It also reports the Battery Voltage, Current, Temperature, State of Charge (SOC), State of Health (SOH), charge time, and run-time.

**Q:** Are there any trend reports in the Web-GUI?

**A:** The AC6000 does not presently have trend reports, but it does have event logging and a host of information on the Web-GUI (or via the front panel).

**Q:** Can we read the parameters externally from a monitoring system by using SNMP (does the AC6000 have a MIB)?

**A:** The AC6000 has a MIB. All parameters visible on the Web-GUI (input/output voltage, current, power, battery health, status, uptime, etc.) are available via the SNMP MIB.

**Q:** Do we need extra fire protection by using a Li-ion battery inside the cabinet?

**A:** The AC6000 has an advanced Battery Management System that monitors battery cell voltage, current, temperature, charging and discharging, etc., as well as a fused disconnect on the battery pack. It has been designed to prevent 'runaway' battery conditions and has undergone safety evaluations on both the battery pack and the unit. Extra fire protection is not a requirement; however, there are unforeseen events that could lead to a hazardous condition, so it is always a good practice to have fire protection/suppression nearby.

**Q:** Where is the AC6000 manufactured?

**A:** The AC6000 is manufactured in the Enconnex Reno, NV USA manufacturing facility. It is made in the USA and TAA compliant.