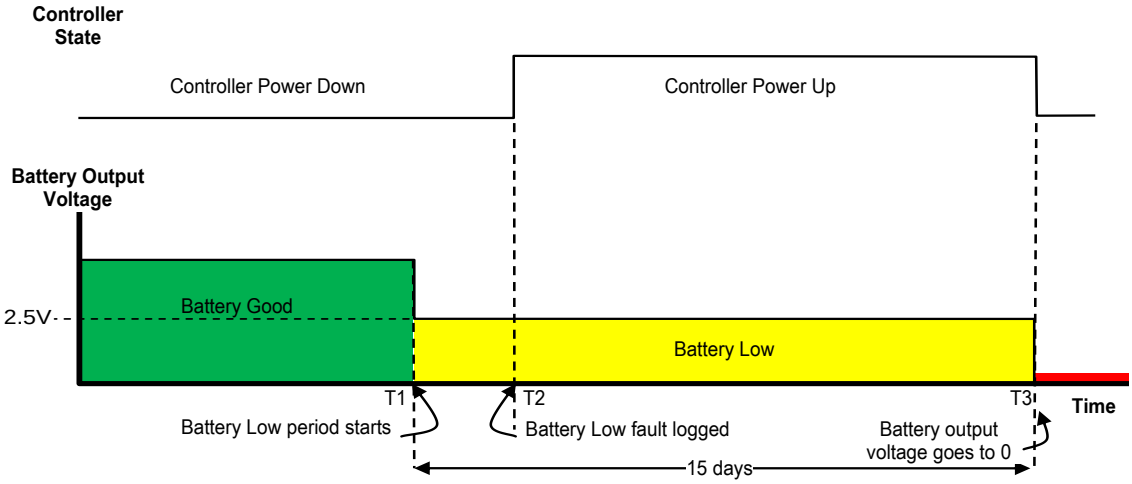
5. Smart Batteries

5.1 Smart Battery Operation

The battery output voltage is > 2.5 V when the battery is operating in its good state. At the end of the battery good period, the battery output drops to <2.5 V for the battery low state. The period for the battery low state is 15 days for all CPU models. Once battery output voltage drops to <2.5V, compatible PACSystems CPUs detect this as a battery low condition; a Low Battery fault is logged in the CPU fault table and the red Battery LED on the CPU starts blinking.

Once the low battery state is active, the user has 15 days of accumulative battery backed energy left for CPU RAM retention during power loss. Since the low battery period may start while the PLC is powered down and faults cannot be logged in this state, the low battery fault date is unlikely to indicate the starting point of the 15 day count down. System power downs should not exceed 15 days as the battery voltage may drop to 0V, resulting in the loss of CPU RAM memory contents.

Consider the following example:



The Battery Low period of 15 days starts at Point T1, but the low battery fault is logged at Point T2, when the controller is powered ON. The user should be aware that the Low Battery fault timestamp does not indicate the start of the 15 day Battery Low period.

5.2 IC695ACC302

The IC695ACC302 Auxiliary Smart Battery Module is an enhanced version of IC693ACC302. In addition to providing an extended backup time for volatile memory on PACSystems CPUs compared to the standard memory backup battery (IC698ACC701), the smart battery module has a battery monitoring circuit that enables the user to detect the low battery state before it is completely drained. Once an IC695ACC302 Auxiliary Smart Battery Module is connected to a CPU model, it must be used with only that specific CPU model for the remainder of its life to insure proper "Low Battery" indication. IC695ACC302 Auxiliary Smart Battery Modules should be replaced every 2 years or once a "Low Battery" fault is logged in the CPU, whichever occurs first.

5.2.1 Specifications

Parameter	Specification
Battery capacity	15.0 Amp-hours
Lithium content	5.1 grams (3 cells @ 1.7 grams/cell)
Physical dimensions	5.713" long x 2.559" wide x 1.571" high (145.1 x 65.0 x 39.9 mm)
Weight	224 grams
Case material	Black, flame-retardant ABS plastic
Connection	2' (50mm) twisted red/black 22 AWG cable with female two-pin connector compatible with the battery connector on PAC Systems CPUs.
Operating temperature range	0 to +60ºC
Nominal shelf life	7 years @ 20ºC without the enabling adapter cable attached

5.2.2 Battery Mounting

With power removed from the equipment, drill four #29 (0.136") holes in the panel mounting surface, and tap for #8-32 threads, according to the hole pattern shown in the following figure. Use care to keep metal chips from falling into other equipment. Securely attach the Auxiliary Battery Module to the panel mounting surface using four #8-32 x ½" flat head machine screws.