

Technote on Lentequip's Block battery Display

Why do the LED's not reach 100% when my charger tells me the charge cycle is complete?

This is one of the most often asked questions we receive. An explanation will follow to explain why and how to correct this phenomenon. Lentequip uses Texas Instruments' BQ2014H battery capacity calculator or gas gauge IC to evaluate the capacity of a given battery. This device calculates the amount of current entering the battery versus the amount that has been drawn from the battery and show the results with a 5 LED capacity indicator. The device is programmed by Lentequip for the approximate capacity of the battery. The exact capacity is learned over the next few charge and full (1V/cell!) discharge cycles. This is where most of the problems occur...

Due to the nature of the rental business, everybody is busy charging batteries. In our experience, once batteries are charged and put on the shelf they again are charged before going onto a rental and maybe even a few times again in between. The danger here is that the battery was not subjected to at least one proper discharge (in Lentequip blocks that would be 21.5V) cycle in as many charge cycles. This confuses the capacity indicator because it would like to learn the total capacity of the battery which is accomplished by making measurements until it "sees" the 21.5V threshold. You will appreciate that continuous charging will not allow the battery to reach this level, consequently the synchronization between the displayed capacity measurements and the actual capacity lose track of each other. More realistically however, the capacity of the battery can be adversely affected if a deep discharge (I emphasize deep-discharge is at 21.5V!) is not done at least once a month for a regularly used battery. I recently was at a customer's facility where just such a problem was a concern. After cycling the battery 4 times from full charge to 21.5V on a camera, I demonstrated that the display read 100% after previously only reading 60% after a full charge cycle. The capacity of the battery that is returned to the user is also greatly increased by such a deep discharge once in a while. If this is not done the reduced capacity is also shown on the display by means of a lower capacity.

Furthermore, if a display board is being replaced with one of the newly designed ones from Lentequip (the new ones are essentially the same as the old but have higher immunity to failures due to electrostatic discharges) then it is important to know that the LEDs may or may not come on until the display "sees" at charge current flowing to the battery. So, before discounting a bad board, make sure that you have plugged a charger into the battery. Always go through a complete discharge and then charge after replacing a display. The display needs once again to learn the lower threshold of the battery it is measuring. All display boards are tested at Lentequip before shipping. If you have any further questions please contact Lentequip (416)406-2442.

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