Spectro CA-12 DC Frequently Asked Questions (FAQ)

Q: What is a battery "Matrix"?

A: A battery matrix is a set of data that is developed in the Cadex battery lab specifically for one type of battery and is used by the CA-12 DC to determine the health and state of charge of the battery under test.

Q. Can I use a similar matrix on my battery if the actual matrix does not exist?

A: When testing a battery that does not have a dedicated matrix, the matrix for a similar battery model can be used with great caution. SoC accuracy is likely to be good, but the estimate Capacity will be a crude indicator at best. The matrix used must be for a battery with the same voltage, group size, chemistry and have a rated capacity within approximately 5%.

Q: The CA-12 DC is reporting a "Shorted" battery. What is a shorted battery?

A: A shorted battery is one that has an internal fault in one or more of the cells that causes it to self-discharge too rapidly. Specifically, upon charging to100% state of charge (SoC), the battery loses more than 10% of its charge within 24 hours while at rest (eg. no load).

Q: What problems will a shorted battery create?

A: The runtime of the equipment (eg. golf cart, scissor lift, floor cleaner) being operated is decreased**.** The battery with the shorted cell will discharge at a faster rate than the others in the set decreasing the total runtime of the equipment. Also, due to the imbalance caused by the shorted battery the charger may experience problems fully charging the set. The shorted battery will be at a lower voltage and state of charge than the others in the set. This means that the other batteries in the set will receive an overcharge while the charger attempts to bring the shorted battery voltage and total set voltage up to the maximum charge voltage, potentially damaging the good batteries.

Q: What should I do with a shorted battery?

A: Batteries with shorted cells should be replaced and removed from service.

Q: How does the Spectro CA-12 DC detect shorted batteries?

A: The underlying assumption used by the CA-12 DC is that a shorted battery will demonstrate a significant difference in state of charge (SoC) compared with batteries in the same set. To identify "shorted" batteries the CA-12 DC analyzes the calculated SoC for each battery in the equipment set. If the difference between the battery with the highest SoC and any other battery in the set is greater than the ***SoC_Range*** (default set point value is 15%) then that battery is classified as 'shorted'. Increasing the SoC_Range value reduces the possibility of shorted battery classifications. For this analysis to be meaningful batteries must be rested off charger (no charging or discharging) for at least 6 hours at a minimum, 24 hours is preferred.

Q: What does “Regroup” mean?

A: Sometime the equipment set will be classified ‘Regroup’. This is because the difference between the capacity of the best battery (RC_Max) and another battery exceeds the ***RC_Range*** set point, which will limit the run time of the equipment. The Regroup message informs the user that they should remove the specific battery classified as ‘Regroup’ and replace it with another battery that is similar in age and estimated capacity as the others remaining in set. This will maximize the run time of the equipment. Increasing the RC_Range setpoint value reduces the potential for regroup messages, as a larger capacity difference is required to trigger a Regroup message. The removed battery may be grouped with other similar capacity and age batteries if deemed still to have a useful capacity rating.

Q: What is a “Fair” battery?

A: The CA-12 DC is designed for maximum user flexibility. While often circumstances may require a simple good or bad classification, there are many times when a battery may still be useable but does not meet the criteria set for a “Good” battery. The set point menu allows the user to define a “Fair” classification for these batteries. Fair batteries fall below the Good threshold but above the Low threshold.

Q. Why does my new battery have a capacity lower than 100% when measured?

A. New batteries typically require a number of charge/discharge cycles to reach their rated capacity. During this early phase (sometimes called “formatting”) the plates within the battery become increasingly absorbent of the electrolyte, which has the impact of increasing capacity. A typical battery may be shipped from the manufacturer at 75% of rated capacity and reach its full capacity in 50-100 charging cycles.