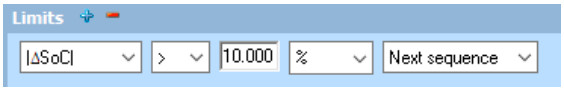
The |ΔSoC| limit

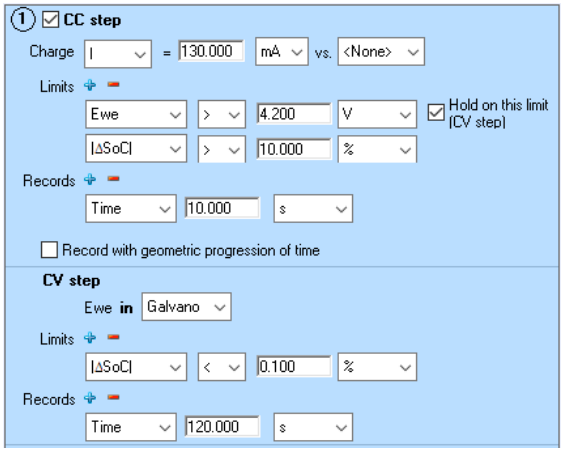
Since EC-Lab® 11.40 and BT-Lab® 1.73, it is possible for certain techniques, to set a limit in |ΔSoC|. This allows the user to perform partial charge/discharge on the battery and study the battery state at various SoCs (State of Charges).

Here is a list of the concerned techniques:

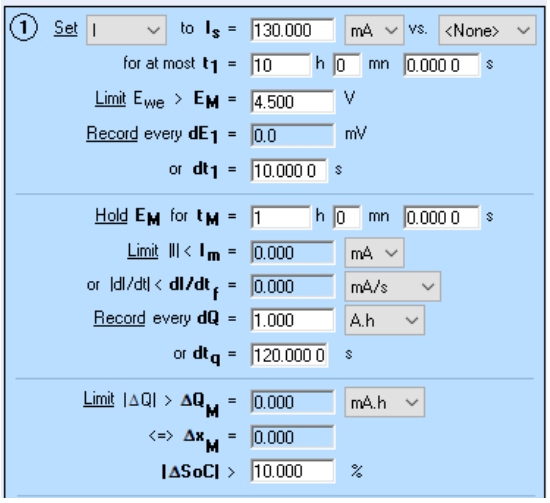
- ModuloBat (MB): the limit is available with all techniques within MB except EIS, Rest, Trigger, Loop and Internal resistance determination techniques.



- CCCV Cycling: the limit is available both in the CC and the CV steps.



- All GCPL techniques: the limit is available as a global limit on the whole technique (*ie* the Constant Current (CC) and (Constant Voltage) steps).



The formula for |ΔSoC| is the following:

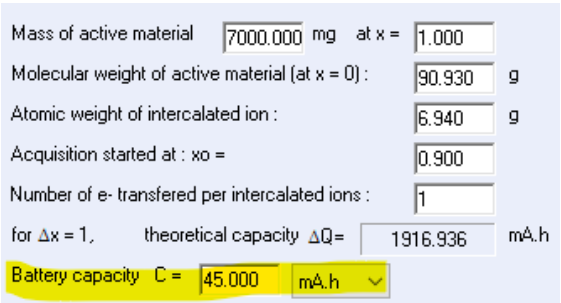
Equation 1

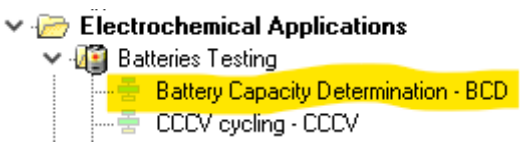
$$|\Delta SoC| = \frac{(Q - Q_0)}{C} \times 100$$

Where Q_0 is the initial charge (by default 0), C is the nominal or rated capacity, Q the charge of the sequence, all in mAh.

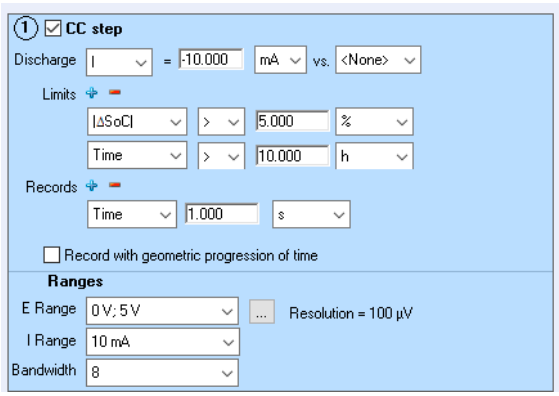
The variable Q is reset at each sequence.

The rated or nominal capacity of the battery C is user-defined in the **Cell Characteristics** or measured using the **BCD** technique in the case where a **BCD** technique is used before your technique of interest.





Using the **CCCV cycling** technique, we applied a small discharge current on an LIR 2032 coin cell, as described in the image below.



The rated capacity was set to be 45 mAh, which means that a |ΔSoC| of 5% corresponds, using Equation 1, to $(Q - Q_0) = 2.25\ \mathrm{mAh}$.

Since a negative current is applied the experiment will stop when $(Q - Q_0) = -2.25\ \mathrm{mAh}$ as can be seen below.