



Coulomb Counter CC75 CC150 CC500

USER'S MANUAL

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1. Product Overview

1.1. Introduction

CC 75/150/500 is a high precision coulomb counter (capacity tester) device that is designed to monitor voltage, capacity, power and energy of a battery. These information allow user to get a precise State of Charge (SoC) or Depth of Discharge (DoD) of the battery. It also calculates in real time remaining time before battery gets fully empty.

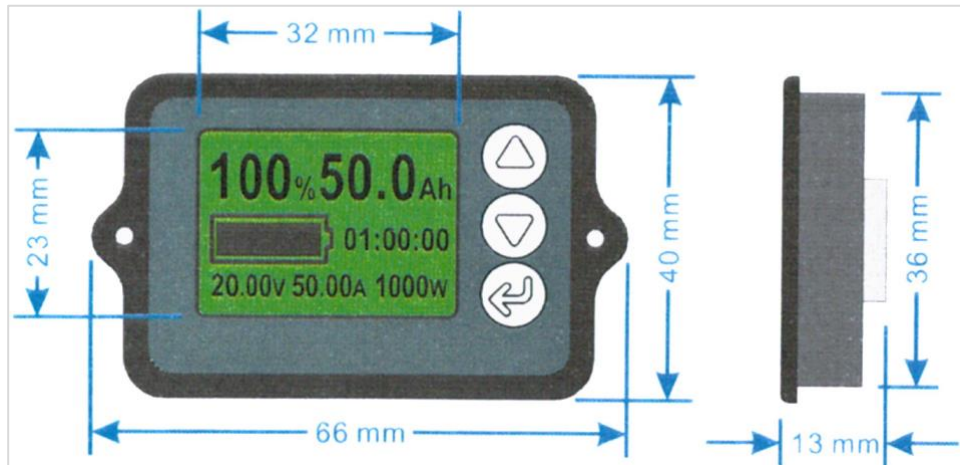
CC device has a memory feature to save SoC information when the device is powered off or accidentally disconnected.

CC 75/150/500 is suitable for lithium iron Phosphate (LiFePO₄), Lithium ion and Li-Polymer batteries, lead acid and nickel metal hybrid batteries with a working voltage from **8V to 80V DC**.

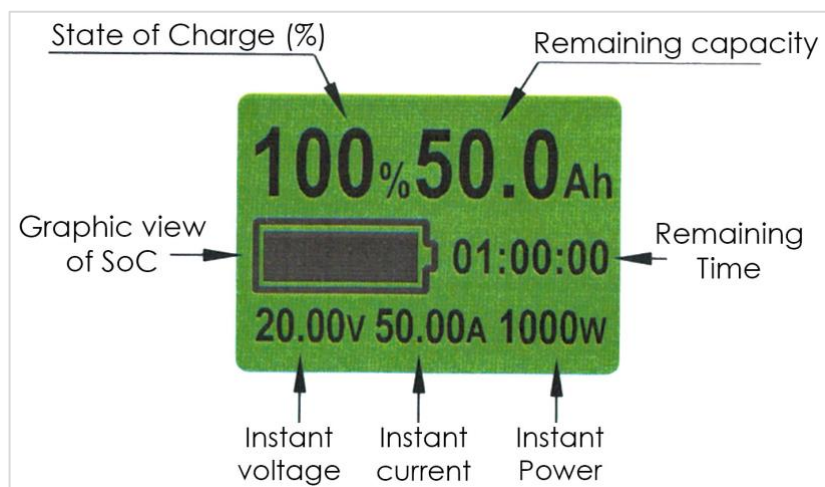
1.2. Main parameters

Parameter	Min	Nominal	Max	Unit
Working voltage	8.0	50.0	80.0	V
Working consumption (Backlight ON)		6.0		mA
Standby consumption (Backlight OFF)		0.7		mA
Voltage accuracy		± 1.0		%
Current accuracy		± 1.0		%
Capacity accuracy		± 1.0		%
Preset capacity value	0.1		999.9	Ah
CC75 measurement range	0.0	50.0	75.0	A
CC150 measurement range	0.0	100.0	150.0	A
CC500 measurement range	0.0	350.0	500.0	A
Display temperature range	-10°C	25	50	°C
Display Weight		20		g
Display dimensions		66 x 40 x 13		mm

1.3. Display dimensions



1.4. Interface description

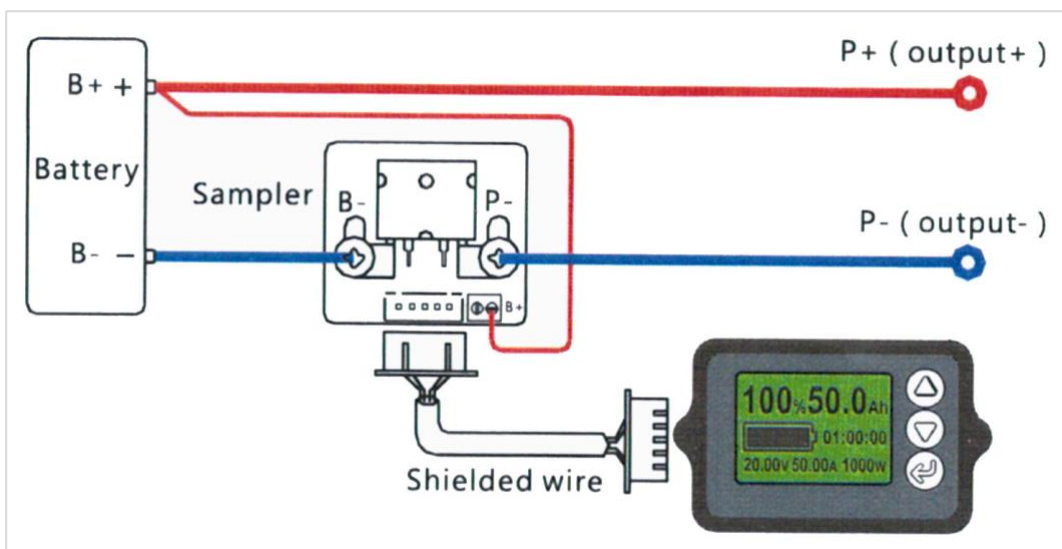


2. Installation

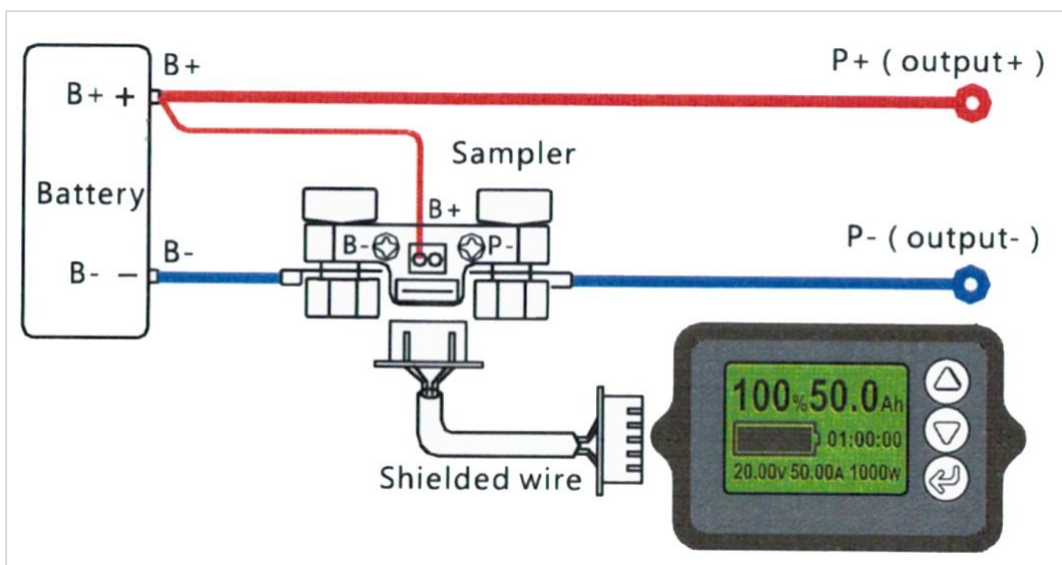
2.1. Connection

Connection is done by using 2 wires :

- Shield wire (provided) will connect display to the precision resistance (sampler). This wire will be plugged with 5 pole connectors on both sampler and display.
- Low power wire (0.3 – 0.75mm²) to connect sampler to battery positive pole (red). This wire will be connected on one of the 2 poles of the connector located on the sampler (marked B+). The other end of this wire needs to be connected on the battery positive pole.



Connection diagram for CC-75



Connection diagram for CC-150 or CC-500

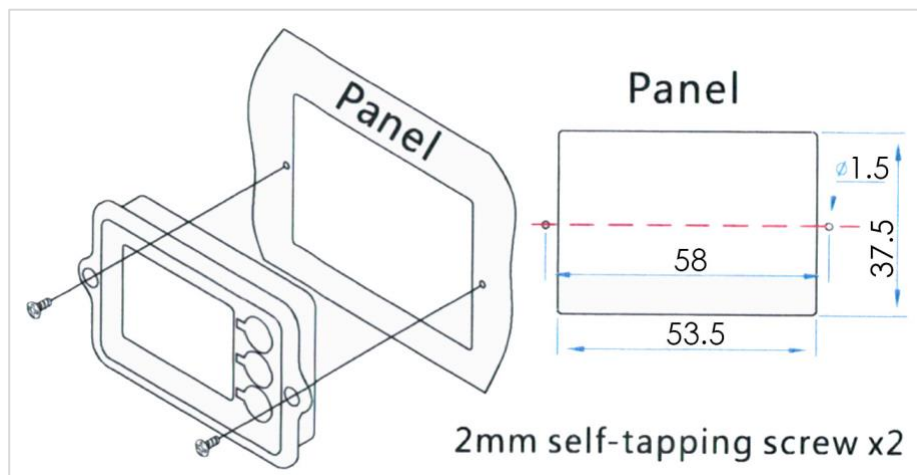
**ATTENTION :**

Please connect wires exactly as shown above. **The sampler must be connected to the negative pole only !**

Shielded wire can be extend with a 5 wires cable with same specification. **Be careful that shield is present along the entire length of the wire.**

2.2. Installation

As a first operation, open a rectangular hole and 2 screw holes on the panel of the equipment. Then install CC 75/150/500 display inside the aperture from the back of the display shell. Use two 2mm screw to maintain the display.



3. Operations

3.1. Connect and check current measurement

Complete installation as shown below. The device is now powered on. The screen should display battery voltage, current, State of Charge (SoC) and other information.

If the display is not showing information, please check the connection.

Then charge or discharge the battery and double check that the current displayed by CC device is consistent with the actual current. In case the deviation is important, please check the connection and read **chapter 3.4**.

3.2. Capacity measurement

For the first use, the capacity shown may not be the same as your battery. There is two ways to set-up capacity of the battery :

- you can directly set-up the battery capacity value in the display (**see chapter 3.5**)
- For a better accuracy, you can let the device measure the battery capacity as explained below :

- 1/ The first operation is to fully discharge the battery.
- 2/ Hold the "▽" key for 3 seconds to set the SoC to 0%.
- 3/ Fully charge the battery.
- 4/ Hold the "△" key for 3 seconds to set the SoC to 100%.

This operation needs to be achieved only once to monitor a specific battery model. In case battery is replaced by another model, this operation need to be done again.

3.3. Backlight feature

During a battery discharge, as soon the discharge current is greater than backlight working current, backlight will switch on. If backlight is blinking during discharge, this means the sampler is connected in the wrong direction, please check the connection **B-** and **P-** of the sampler.

In the same way, during battery charge, as soon charge current is greater than backlight working current, backlight will switch on and display will blink to confirm charge is running.

When battery is not used, CC device will go in "Stand By" mode and backlight will automatically switch off to save battery energy. Besides, CC device will save SoC value in memory.

3.4. Accuracy and sensibility

The coulomb counter CC75/150/500 relies on high precision measure of voltage across its sampler / precision shunt. In case of large electromagnetic radiation (for example high power motor or controller), the measure precision can be affected.


In case you face some instability in the measure displayed, try to move shielded wire away from power cables or other electromagnetic sources.

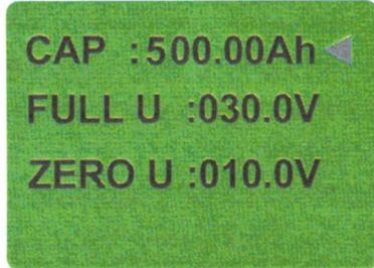
Besides, when the battery is not used at all, it may happen that coulomb counter displays a very small current in mA around 0. This value reflect self-consumption of the coulomb counter, but because this value is very close to zero, precision is not very reliable.

The real consumption of the coulomb counter with backlight ON and OFF is showed at **chapter 1.2**.

3.5. Capacity and Voltage threshold assignment

Battery capacity assignment :

- Press the “” key for 3 seconds in the main interface to enter settings menu













- Press “” or “” key to select item “**CAP**”
- Press the “” key
- Set up capacity of the battery. Each digit can be changed using “” or “”, then “” to change the next digit
- When capacity value is set up, press “” during 2 seconds to record the parameter
- Press “” **and** “” at the same time to exit settings menu

Battery Full (Full U) and Battery Empty (Zero U) voltage thresholds :

Battery Full defines voltage threshold where battery is considered as full during charge. This value is used to force State of Charge (SoC) value to 100%. This allow coulomb counter to be reset and recalibrated at each charge.

Battery Empty threshold is the opposite of Battery Full : it forces SoC to 0% as soon battery voltage is below this voltage

To change these parameters :

- Press the “” key for 3 seconds in the main interface to enter settings menu
- Press “” or “” key to select item “**FULL U**” or “**ZERO U**”
- Press the “” key
- Set up value. Each digit can be changed using “” or “”, then “” to change the next digit
- When value is set up, press “” during 2 seconds to record the parameter
- Press “” **and** “” at the same time to exit settings menu

Note : Battery Full and Empty voltage threshold are optional but we recommend to set it up according to your battery specifications.



As an example :

PowerBrick or PowerStart 12V should be set up as the following : Full U = 14.2V and Zero U = 11.0V

PowerBrick 48V should be set up as the following : Full U = 58.0V and Zero U = 44.0V

3.6. Force SoC value to 0% or 100%

When coulomb counter is installed on a new battery, the State of Charge (SoC) value recorded in memory must be set to 0 or 100%.

To achieve this operation, just press “” for 3 seconds to force SoC to 100%. Press “” for 3 second to set it to 0%.

4. Warranty

In order to keep LCD display operation for a long time :

- Do not expose CC75/150/500 display to **direct sun light** for a long time
- Do not use CC75/150/500 at low temperature (**<-20°C**) and high temperature (**>60°C**)