Lithium Battery Balance Charger

CB86-PLUS

User Manual

Adaptable to Lithium Iron Battery and High Voltage Lithium Battery

⚡ **Warning : High powered product ,please use it within sight !**

* Please be kindly noted that this manual will be updated regularly and please visit RadioLink official website to download the latest version.

Thank you for purchasing RadioLink balance charger CB86PLUS.

To fully enjoy the benefits of this product and ensure safety, please read the manual carefully and set up the device as instructed steps.

If any problems found during the operation process, either way listed below can be used as online tech support.

1. Send mails to after_service@radiolink.com.cn and we will answer your question at the earliest.

2. If the product is purchased from the local distributor, you can also ask them for support and repair as prefer.

All manuals and firmware are available on RadioLink official website www.radiolink.com and more tutorials are uploaded.

SAFETY PRECAUTIONS

1. Please read this Manual completely before using to make sure CB86PLUS is safely operated.

2. CB86PLUS input power supply cannot have great fluctuations, which may output over current, and even burn the charger or the batteries. E.g., setting the input protection current and voltage is necessary according to the specifications of the input power supply to avoid power overload. Some power overload protection will cause substantial fluctuations to the voltage.

3. Power on CB86PLUS first, setup charge voltage and current and then connect batteries, press start to begin charging (Do not connect batteries first).

4. Keep the charger always away from children and pets.

5. Keep the charger supervised when charging or discharging. If you have to leave, please disconnect the battery to prevent any unexpected dangers or damage.

6. Ensure the charger settings match the battery pack with correct charge voltage and charge current. Otherwise, the battery will be damaged and even cause a fire.

7. Do not let foreign matter or moisture into the charger.

8. Do not (dis)charge the battery if there's abnormality like leaking or deformed.

9. Do not mix batteries of different types, different capacities or from different manufacturers.

10. Do not refit or disassemble the charger.

11. Do not put the charger or any battery on a flammable surface or close to a combustible material while in use. Do not (dis)charge in an R/C model or inside a full-sized automobile.

12. Never block the air intake holes and never use in a confined space or high temperature environment, which may cause the internal temperature protection and result in abnormal (dis)charging.

13. Do not try to charge "non-rechargeable" dry cells.

14. Do not exceed the suggested maximum battery charge rates and carefully follow the recommendations and safety advice of battery manufacturer.

WARNING

This product is not a toy and is **NOT** suitable for children under the age of **18**. Adults should keep the product out of the reach of children and exercise caution when operating this product in the presence of children.

When connecting the ESC CL9030 to other parts, make sure the good insulation of wires and connection ends. Otherwise, short circuit may damage CL9030.

Before using ESC CL9030, carefully follow the instructions and check devices to ensure reasonable installation and avoid the overloading power.

Connect wires and make test with model car suspended in the consideration of safety.

When finish, make sure to disconnect the ESC from battery. If keep connecting, the power consumption continues even the ESC is off. Long period of power consumption will discharge the battery and ESC and

cause damages. RadioLink is NOT responsible for any damage caused by this.
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FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CONTENT

Chapter 1 CB86PLUS System

1.1 Specification

Input Voltage: Voltage range 10.5-15V

Note There will be warning if input power is over 15V or less than 10.5V. Fans will auto-start when the temperature is over 48C°.

Voice Indicator: ON/OFF

Time Setting: (DIS)Charging time can be set from 0 to 99 minutes and 59 second

Charging Mode: Cycle charge/Discharge/Storage

Charging Voltage: 0.00V-4.35V, setting precision 0.01V

Note: It's advised to set the cut-off voltage for LiPo battery as 4.2V per cell, lithium-ion battery as 3.6V per cell while that of the high voltage lithium battery as 4.35V per cell.

Discharging Voltage: 0.00-4.35V, setting precision 0.01V

Charging Current: 0.0-6.0A, setting precision 0.1A

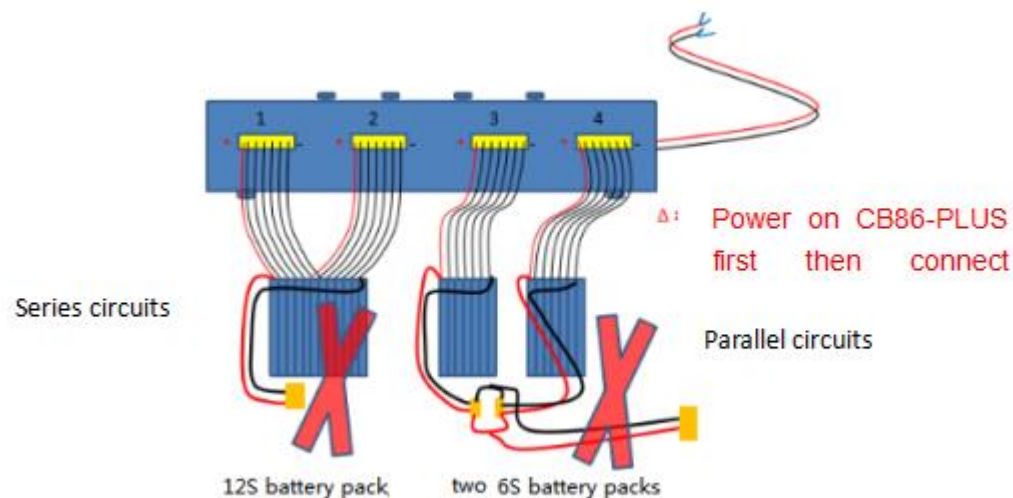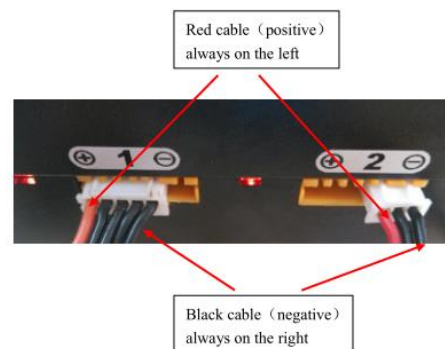Discharging Current: 1.05A(fixed)

1.2 Operation

1.2.1 Connect to Power Supply

Connect the charger with a DC power source of output voltage 10.5-15V and current more than 15A.

Note Make sure about the correct power polarity. If wrong, the charge won't get burnt or started.

1.2.2 Battery Connection

CB86S contains 8 balance ports, which allow connection of max 8 pieces 6 cells lithium battery at the same time. Make sure the correct polarity of batteries (black cable is negative and connects to the right side while the red is positive connecting to left side.)

Red cable（positive）always on the left

Black cable（negative）always on the right

Series circuits

12S battery pack   two 6S battery packs

△： Power on CB86-PLUS first then connect

Parallel circuits

CB86PLUS has eight charging ports, supporting max eight pieces batteries of six cells charged at one time.12 cells batteries NOT supported. To charge a 12-cell battery, it should be divided into two separate 6 cells to charge without any external electrical connection. Otherwise, the charger or batteries will get burnt.

WARNING It's NOT allowed to charge 4 pieces 6S batteries by series connection from port1 to port8 respectively.

Power off CB86PLUS immediately if it's found working abnormally.

There are six independent sources which allow max 6S lithium battery charged with each port respectively. When charging the non 6S battery, you can put 6 pieces of 1S OR 1 piece of 4S+1 piece of 2S OR 2 pieces of 3S OR 3 pieces of 2S OR one 6S battery to charge as preferred as picture shown below.

(1) 3 pieces of 2S

(2) 2 pieces of 3S

(3) 1 piece of 6S

(4) 1 piece of 4S + 1 piece of 2S

(5) 6 pieces of 1S

CB86-PLUS High Precision Balance Charger

Balance Wire for Charge

1S 3.7V LiPo Battery for F121 Pro

1.3 Functions

1.3.1 Home Screen

Press the key SET，set the working mode as CYCLE CHARGE or DISCHARGE or STORAGE.

Then press the key "+/▲" or "-/▼" to set (dis)charge voltage and current value.

The picture on right is the CYCLE CHARGE displays.

Charging voltage and current can be customized while standard lithium battery voltage is 4.2V per cell when fully charged.

Charging current depends on the battery capacity and it's generally set as 1C to protect the battery.
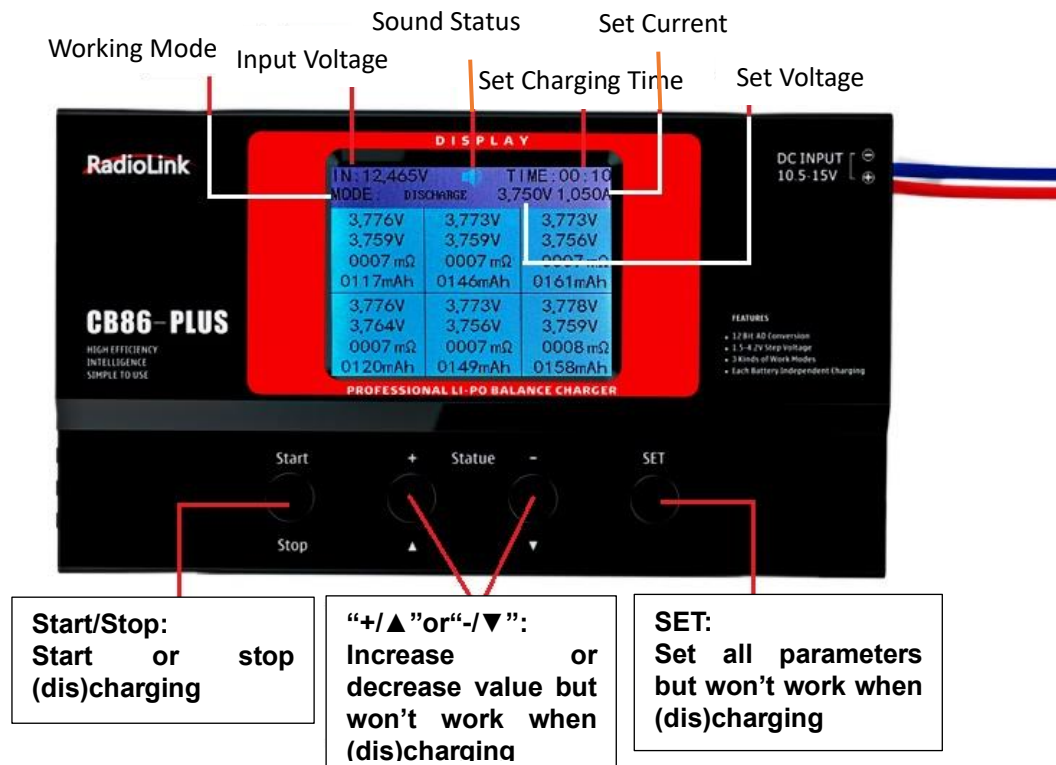
Discharging current is default 1.05A.

Take the below table as a reference for different battery capacities.

Battery Capacity	Charge Current	Charge Voltage	Charging Time Needed
500mAh	0.5A	4.2V	80 minutes
1000mAh	1.0A	4.2V	80 minutes
2200mAh	2.2A	4.2V	80 minutes

1.3.2 Buttons

Start/Stop:
Start or stop (dis)charging

"+/▲"or"-/▼":
Increase or decrease value but won't work when (dis)charging

SET:
Set all parameters but won't work when (dis)charging

START/STOP

To start or stop the current status, it is available at any time. So, it's important to finish all parameters (voltage and current) setting for charging or discharging before pressing this button.

SET

Only when the charger is not working, this button is enabled. Press SET to enter menu of setting SOUND, FUNCTION, CURRENT, VOLTAGE and BETTERY GROUP. When one of the options on the menu is highlighted, use the button key "+/▲" or "-/▼" to adjust the value.

Sound Indicator

When the charging stops, press SET to choose the option SOUND INDICATOR, and use "+/▲" or "-/▼" to set sound ON or OFF. Then press SET for next option.

Charging Port

When the charging stops, press SET to choose the option PORT, press "+/▲" or "-/▼" to choose the port (from

1 to 8) to work first. Then press SET for next option.

Working Mode Setup

When the charging stops, press SET to choose FUNCTION, press "+/▲" or "-/▼" to select preferred Mode: CYCLE CHARGE, DISCHARGE, STORAGE, and then press SET for next option.

Voltage and Current Setting

When the charging stops, press SET to choose the option VOLTAGE/ CURRENT, and then press "+/▲" or "-/▼" to set voltage and current, then press SET for next option.

Chapter 2 Working Mode

There are three working modes of CB86, that is CYCLE CHARGE/DISCHARGE/STORAGE.

2.1 CYCLE CHARGE

Charge all batteries one by one and both charge voltage and current can be personalized if CYCLE CHARGE mode is selected without first charging port assigned.

Press SET button till the cursor comes to WORKING MODE，then press the key "+/▲"or "-/▼" to select the working mode as CYCLE CHARGE.

Since there are six independent power supply integrated, you can setup the voltage and current for every single cell of the battery instead of battery packs, no matter it is 2S, 3S or 6S.
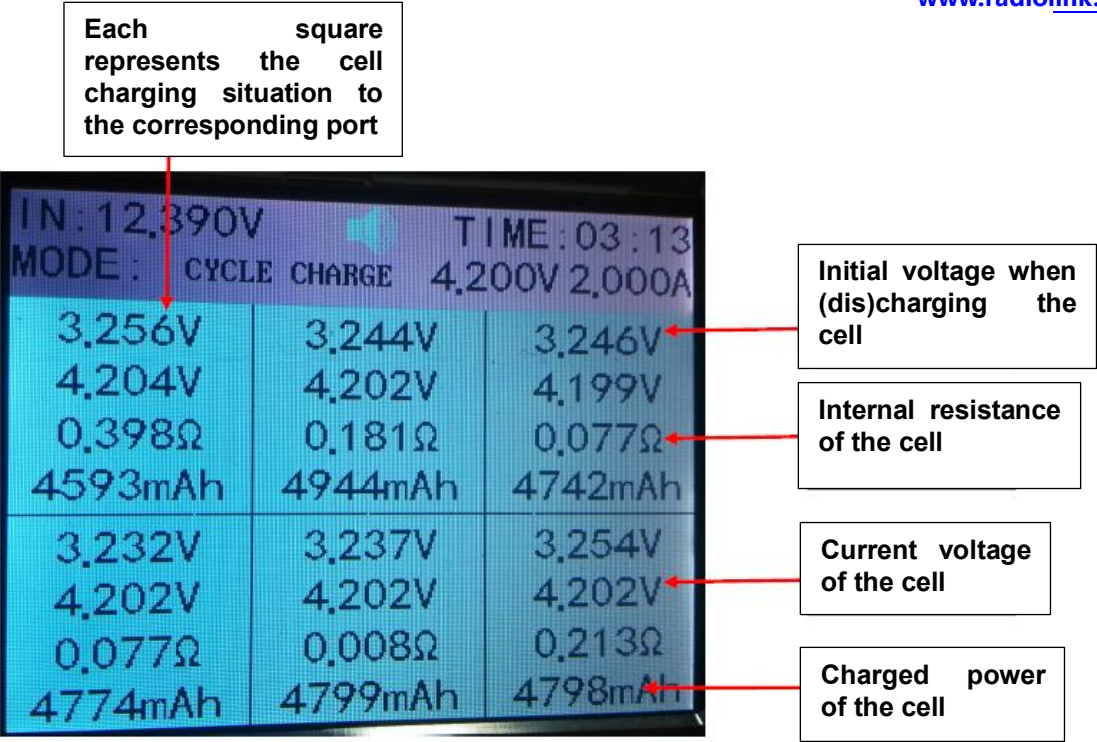
The max charging current of CB86PLUS is 6.0A because the EHR balance connector as charge cable is used. Do not set charging current over 6.00A otherwise it will be overloaded.

When charge voltage and current setting is done, press "START/STOP" button to start charging.

The red indicator next to the charging port will be on, meaning this port is charging. The voltage and current value show the present voltage and current of each cell.

To enter the interface of internal resistance, the cycle charging should be stopped first. Then press"+/▲"or"-/▼" to highlight the port with which the battery is charging. Press SET to enter.

Each square represents the cell charging situation to the corresponding port

IN:12.390V   TIME:03:13
MODE: CYCLE CHARGE 4.200V 2.000A

3.256V	3.244V	3.246V
4.204V	4.202V	4.199V
0.398Ω	0.181Ω	0.077Ω
4593mAh	4944mAh	4742mAh
3.232V	3.237V	3.254V
4.202V	4.202V	4.202V
0.077Ω	0.008Ω	0.213Ω
4774mAh	4799mAh	4798mAh

Initial voltage when (dis)charging the cell

Internal resistance of the cell

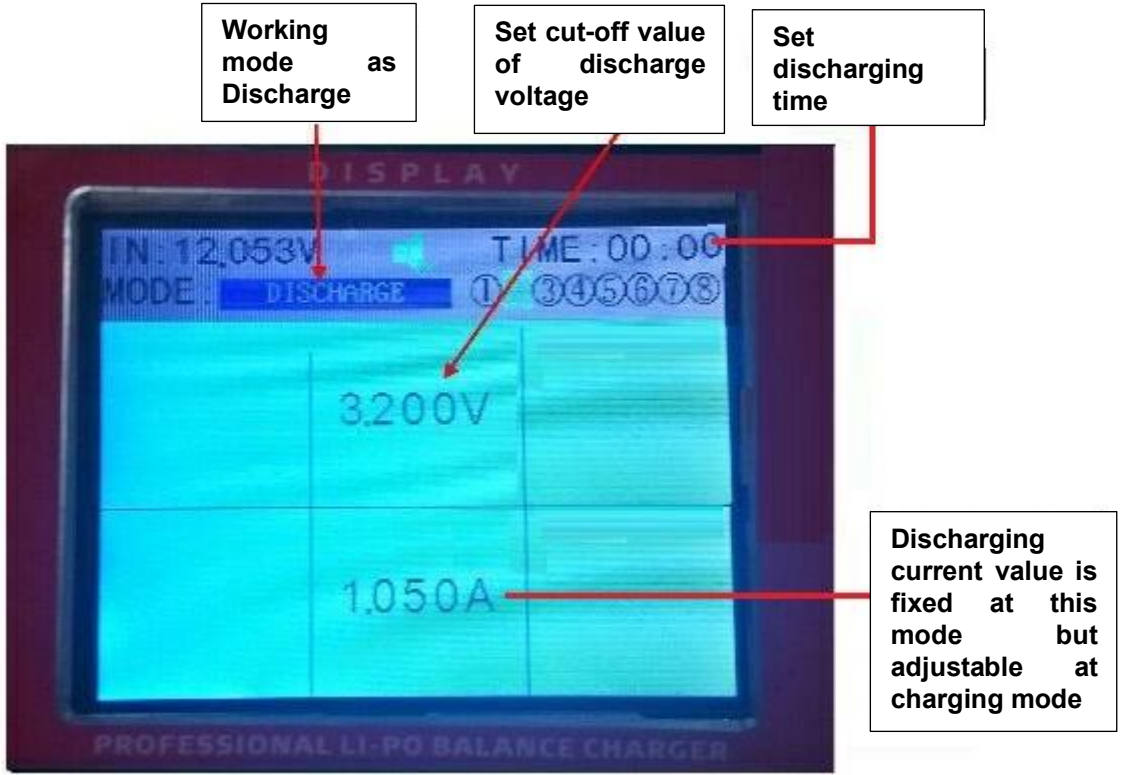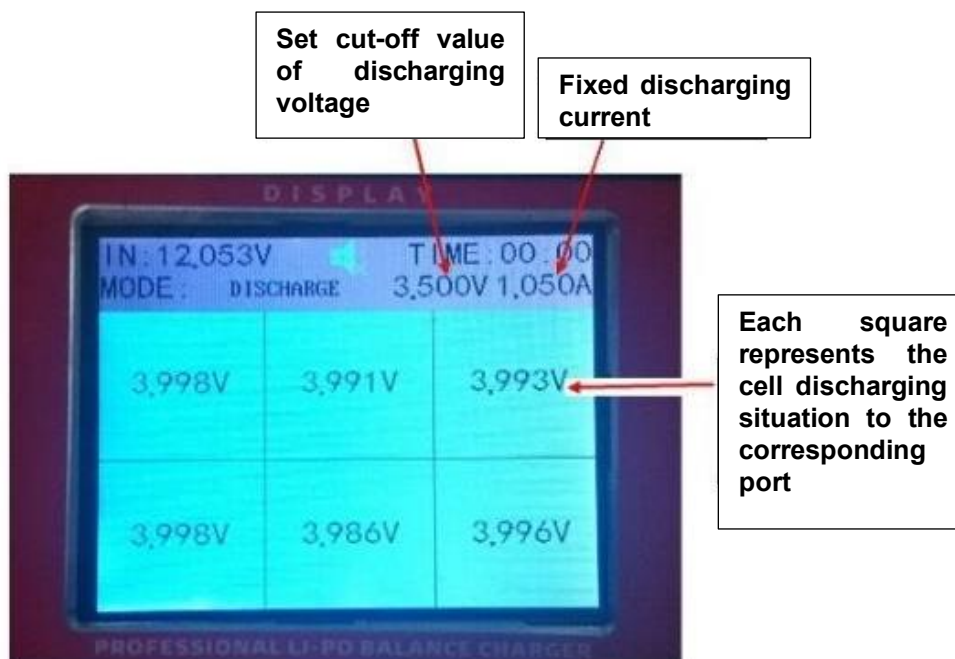Current voltage of the cell

Charged power of the cell

2.2 DISCHARGE

The discharged current of CB86PLUS is fixed as 1.05A. The voltage can be customized and the charger will discharge to the set voltage.

Make sure the set voltage is reasonable while over-discharging will damage the battery and shorten its life span.

The cooling fan will activate automatically in DISCHARGE MODE because of the heat radiation.

Working mode as Discharge

Set cut-off value of discharge voltage

Set discharging time

DISPLAY

IN:12.053V   TIME:00:00
MODE DISCHARGE ① ③④⑤⑥⑦⑧

3.200V

1.050A

Discharging current value is fixed at this mode but adjustable at charging mode

PROFESSIONAL LI-PO BALANCE CHARGER

Set cut-off value of discharging voltage

Fixed discharging current

**Each square represents the cell discharging situation to the corresponding port**

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2.3 STORAGE

Besides (dis)charge mode, STORAGE working mode is also available. If batteries are kept unused for a long time, this mode can be used to (dis)charge them to the best storage status. That is, 3.8V for standard 1S battery.
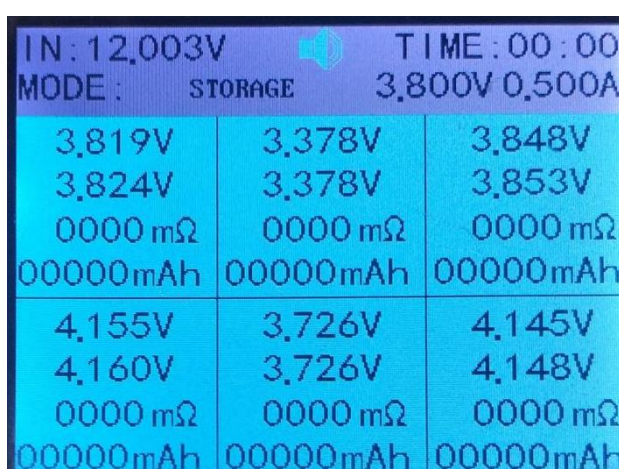
When this mode is enabled, CB86PLUS will charge or discharge automatically all batteries connected to 3.8V per cell one by one to make sure they are ready to be stored. Charging current can be set while discharging current is default fixed as 1.05A.

STORAGE Mode Displays
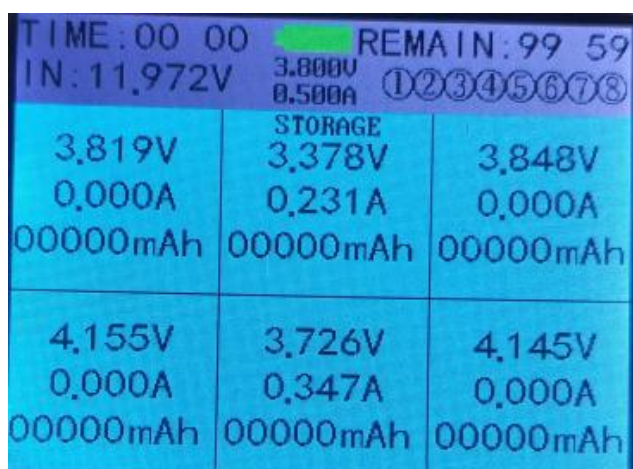
Internal Resistance Displays of STORAGE Mode

Thank you again for using our product,

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