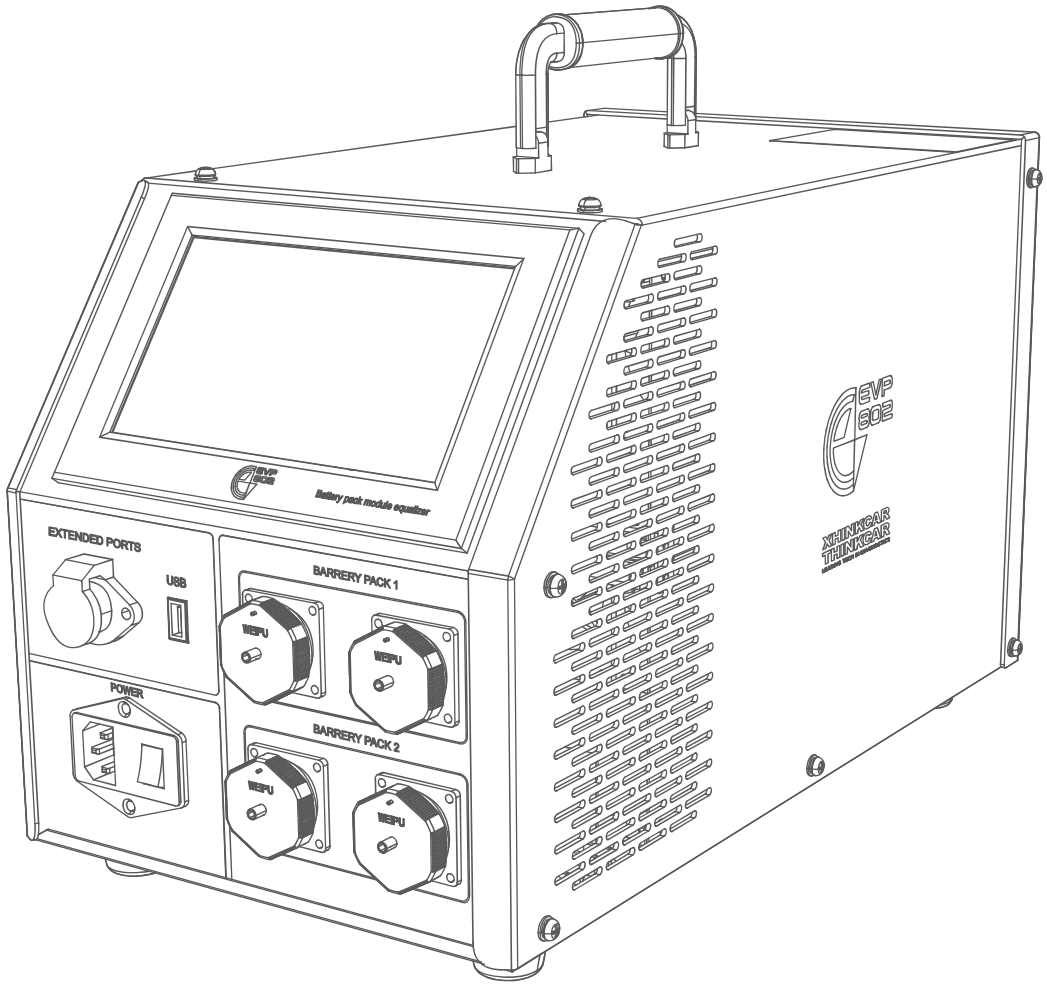
XHINKCAR
THINKCAR
LEADING TECH IN DIAGNOSTICS

# THINKCAR
# CE EVP802




User Manual

# Contents

# 1. Overview

## 1.1 Product Features

- Adopt the latest balanced maintenance test technology, which will not interfere with the BMS management system, and is suitable for daily discharge, charge and balanced maintenance of lithium battery packs.
- Balanced maintenance mode can be set to fully activate the lithium battery performance.
- Portable design: easy to carry and transport.
- With voltage and core temperature information monitoring, and test protection to prevent over-charging and over-discharging.
- Multiple discharge shutdown thresholds: Provide multiple discharge shutdown thresholds to avoid excessive charging and discharging.
- Balance maintenance function: balance maintenance preset function, you can customize the balance maintenance parameters.
- Use single-phase (220VAC) AC power supply.
- Equipped with intelligent equalization: detect and evenly charge the single cells in the battery pack. When charging the storage battery pack, it can ensure that each storage battery in the storage battery pack will not be overcharged or over-discharged.
- Alarms for abnormal voltage, current and battery temperature can be set to protect the safety of the battery and the machine.
- Equalization completion condition: the equalization procedure is completed with the same battery voltage as the end condition of the equalization.
- LCD display voltage/current data, with over-voltage, under-voltage, over-current, output short circuit, anti-reverse protection and overheating protection functions.
- 7-inch LCD touch screen: The super-large LCD screen quickly displays all real-time data and charts, and supports touch operation. The humanized input method and menu design simplify the operation process.
- With voltage and current calibration and correction function, the measured value of the instrument can be calibrated and corrected at any time to ensure the measurement accuracy.

### 1.2 Main purpose and scope of application

It is mainly used for charging and discharging test and balance maintenance of lithium battery box, and is suitable for the voltage level of lithium battery module.

### 1.3 System Composition

When the tester system is used on site, it consists of a host and balanced cables. The host consists of a touch screen, a data processing unit, an auxiliary power supply unit, a charging unit, and a discharging unit.

### 1.4 Environmental conditions for use

No corrosive, explosive and insulating gas and conductive dust.

### 1.5 Impact on the environment and energy

The discharge part of the device is a built-in small load discharge type, the chemical energy of the battery is converted into heat energy consumption, and the test area pays attention to heat dissipation and ventilation.

### 1.6 Security

This device has hardware and software protections such as reverse connection, overvoltage, overcurrent, overtemperature, and communication.

# 2. Precautions for safe use

### 2.1 Safe use period

The design service life of this equipment is 5 years, and the production date is shown in the factory inspection list.

### 2.2 General safe use method

Use this device in accordance with the operating manual.

### 2.3 Prone to wrong use or misoperation

1） The tools used for operation are not well insulated.

2） Failure to operate the equipment in accordance with the operation manual.

### 2.4 Possible injuries caused by misuse

1） The operating tools are not well insulated, and the positive and negative poles of the battery pack are close to each other, which may cause short circuit accidents.

2） Failure to follow the correct operation method will result in failure to start the charge and discharge test normally.

### 2.5 Emergency measures for abnormal situations

Disconnect the equipment's working power and test cables.

### 2.6 Precautions in special cases

If the operator fails to take insulation measures or causes a short circuit due to improper operation, the wiring harness should be pulled out in time.

### 2.7 Other Safety Precautions

Strictly abide by the safe operation regulations and correct instrument operation methods.

## 3. Technical parameters

| | |
|---|---|
| Power input | Single-phase AC90-264V, frequency range is 40-60Hz |
| Charge and discharge voltage range | 1.8-4.2V |
| Voltage detection accuracy | ±0.1%FS±2mV (maximum range 5V) |
| Charge and discharge current range | 0.1- 5A MAX |
| Current Detection Accuracy | ±1%FS±0.05A (maximum range 5A) |
| Battery temperature detection accuracy | ±2°C (-25°C - -85°C) The charge and discharge temperature range can be set |
| A single device can support the number of modules | Up to 2 groups, each group up to 12 batteries |
| Charge and discharge power | Max 600W |
| Battery interface | 16Pin, 24Pin |
| Host operation mode | 7 inch capacitive touch screen |
| PC data communication (extended function) | TCP/IP, USB-Device |

| | |
|---|---|
| Wireless communication | WIFI (external) |
| Data dump | U disk (USB-Host) |
| Data report | After the data is uploaded to the PC, the data report can be generated by the supporting software |
| Charge and discharge data query | Histogram, data table |
| Charge control | Constant current charging + constant voltage charging |
| Discharge working mode | Constant current discharge |
| Protective function | Input over-current protection, over-voltage protection;<br>output over-current protection, over-temperature protection |

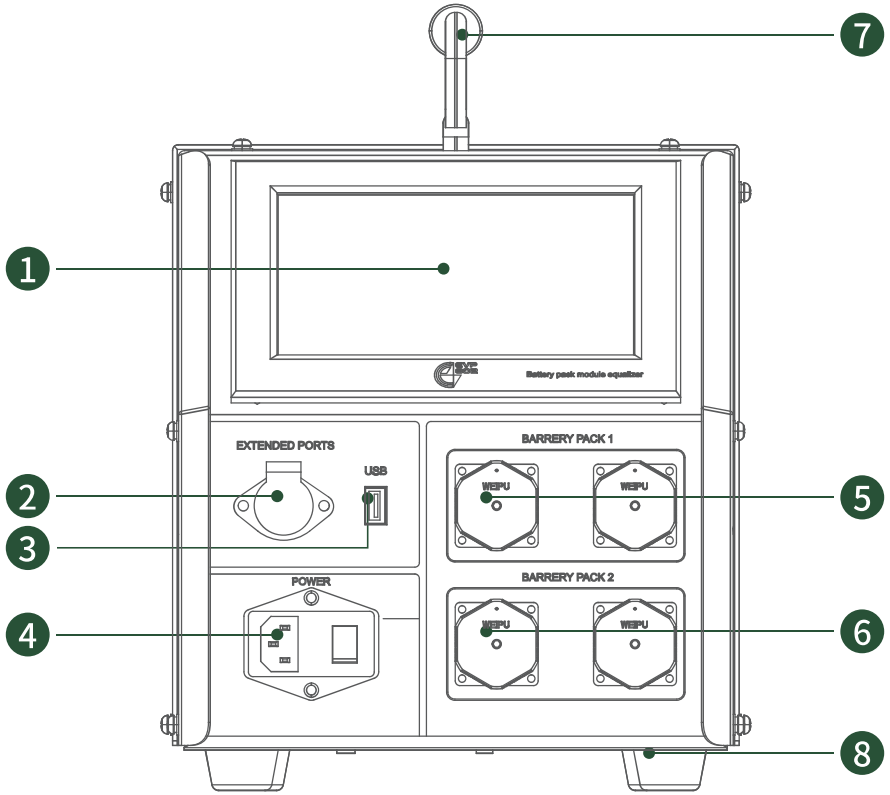
| | |
|---|---|
| **Safety test** | |
| Pressure test | AC input-chassis: 2200Vdc 1min，AC input-chassis |
| | DC input-output: 2200Vdc 1min, DC input-chassis |
| **Working environment** | |
| Heat dissipation | Forced air cooling |
| Temperature | Working temperature range: -5~40℃;Storage temperature: -20~70℃ |
| Humidity | Relative humidity 0~95% (40±2℃) |
| Altitude | Rated altitude 2000 meters |
| Size | 496x246x262 mm |
| Weight | 14kg |

# 4. Installation and commissioning

This device is a mobile portable device and does not require installation.

# 5. Use and operation

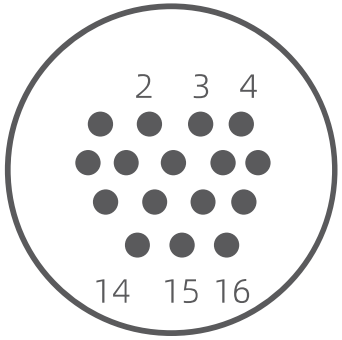
## 5.1 Device panel description



| serial number | name | Explain |
|---|---|---|
| ① | HD touch screen | 7 inches |
| ② | Communication Interface | It needs to be used with a dedicated communication line |
| ③ | USB interface | U disk copy transfer |
| ④ | AC input and host switch | Single-phase three-wire 220V input, maximum input 10A |
| ⑤ | Two unit test terminals | 16pin balanced interface, 24pin temperature sampling interface |
| ⑥ | A unit test terminal | 16pin balanced interface, 24pin temperature sampling interface |
| ⑦ | carrying handle | Portable non-slip handle |
| ⑧ | Anti-vibration mat | Wear-resistant and shock-resistant mats |

## 5.2 Interface pin definition

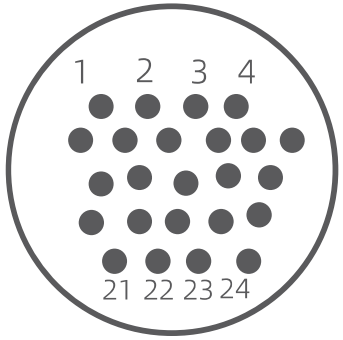
### 16PIN: for balanced test interface




16PIN

Pin1———B1
Pin2———B1+
Pin3———B2+
Pin4———B3+
Pin5———B4+
Pin6———B5+
Pin7———B6+
Pin8———B7+
Pin9———B8+
Pin10——B9+
Pin11——B10+
Pin12——B11+
Pin13——B12+
Pin14——Empty
Pin15——Empty
Pin16——Empty

### 24PIN: temperature sampling interface



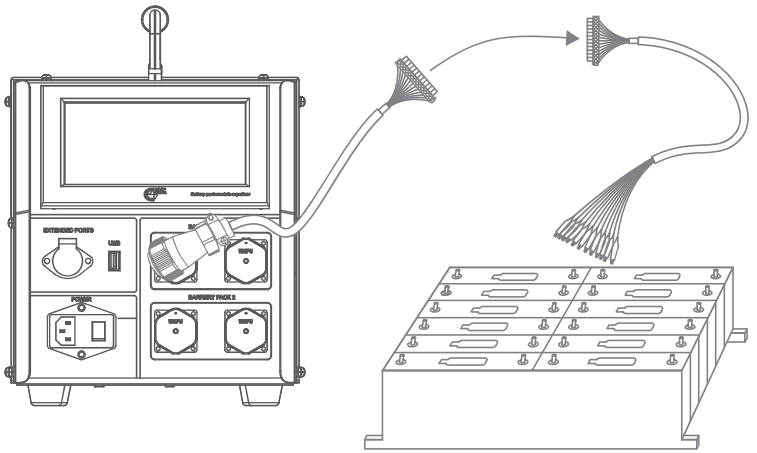

24PIN

Pin1———Empty
Pin2———Empty
Pin3———Empty
Pin4———Empty
Pin5———Empty
Pin6———Empty
Pin7———Empty
Pin8———Empty
Pin9———Empty
Pin10——Empty
Pin11——Empty
Pin12——Empty
Pin13——Empty
Pin14——Empty
Pin15——Empty
Pin16——Empty
Pins 17, 18 -- T1
Pins 19, 20 -- T2
Pins 21, 22 -- T3
Pins 23, 24 -- T4

## 5.3 Device connection

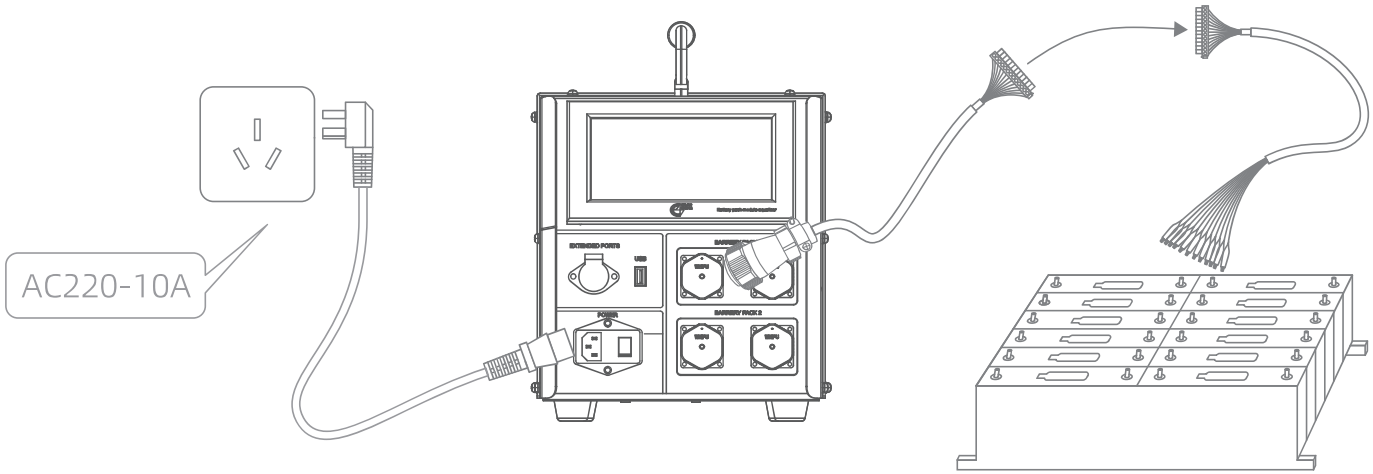
### 5.3.1 Cable connection to the battery pack

First, insert the lithium battery equalization wire and the quick wiring connector of the temperature/voltage acquisition wire into the corresponding terminal of the tester, and then connect the other end of the discharge wire to the end of the lithium battery box (note that the sequence is connected in sequence).



### 5.3.2 AC Power Input

Connect the AC input power cord equipped with the instrument to the corresponding interface, and pay attention to the load output connected to the power socket (single-phase three-wire 220V input, maximum input 10A).



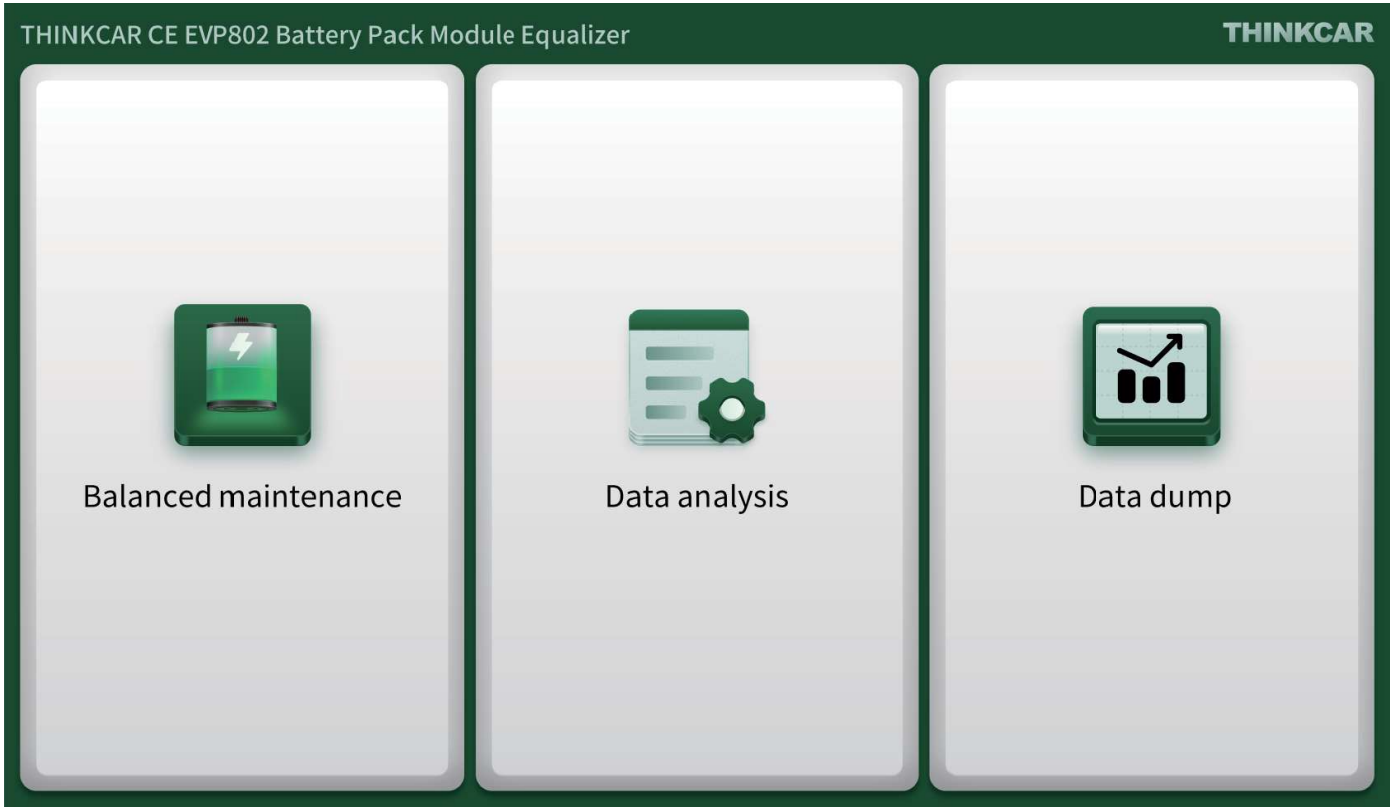
## 5.4 Equipment operation

### 5.4.1 Startup interface

Turn on the power switch, the boot interface LOGO will be displayed first after booting.

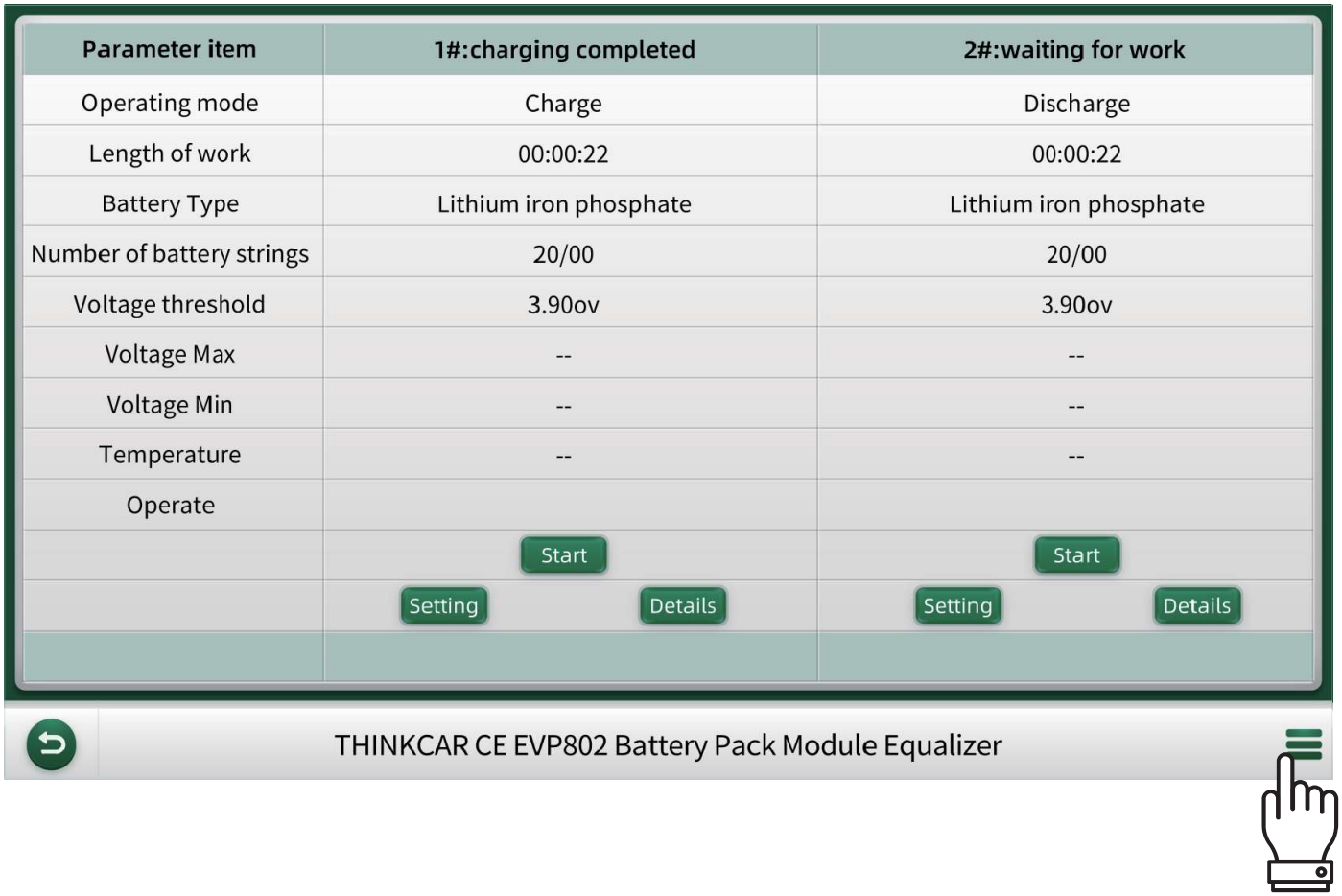
### 5.4.2 Function main menu

The function main menu is shown in the figure below, select the corresponding function item, and click to enter.



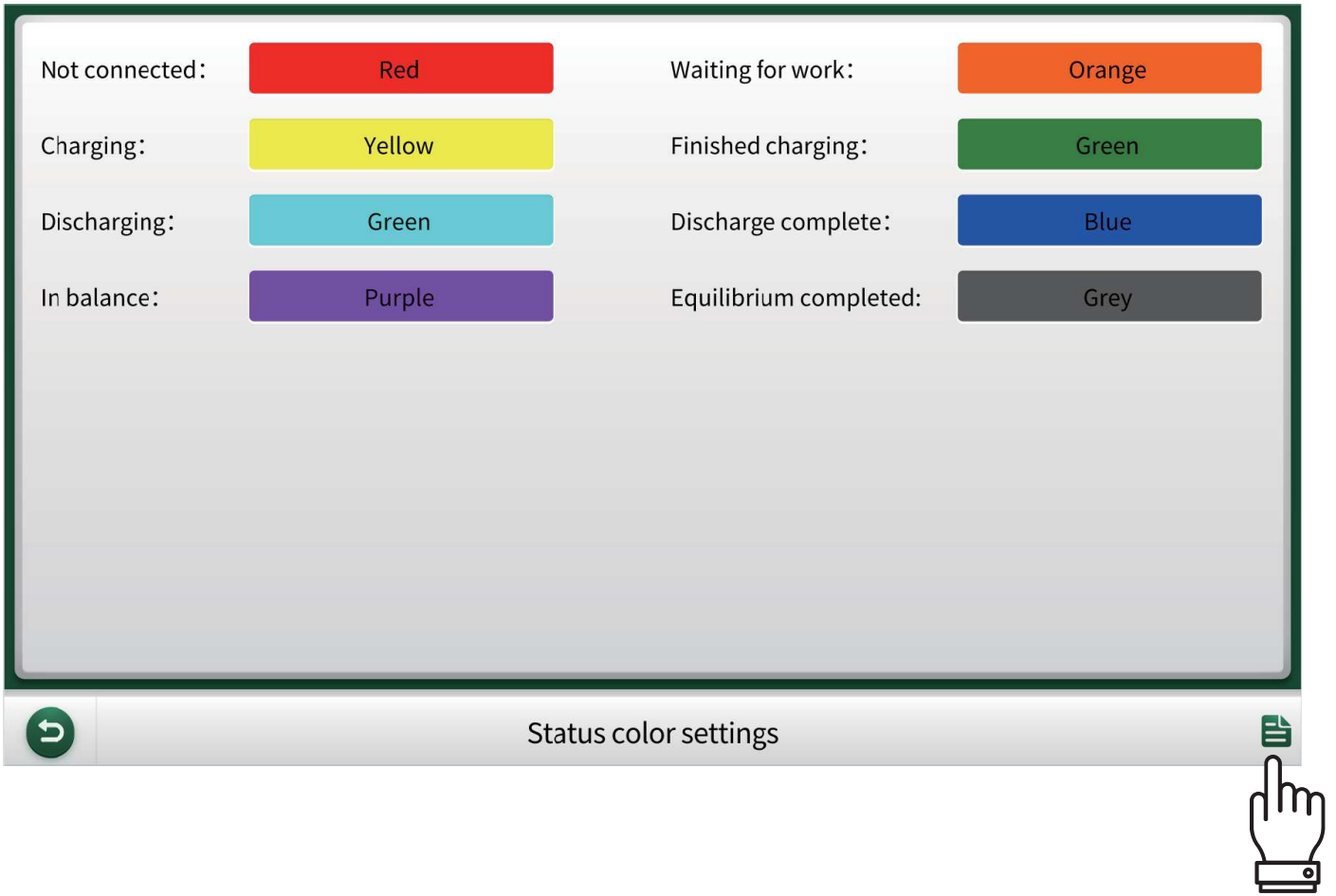
### 5.4.3 System Settings

In the main menu, select to enter the "Balanced Maintenance" interface, and the system setting entry is in the lower right corner, as shown in the figure below:



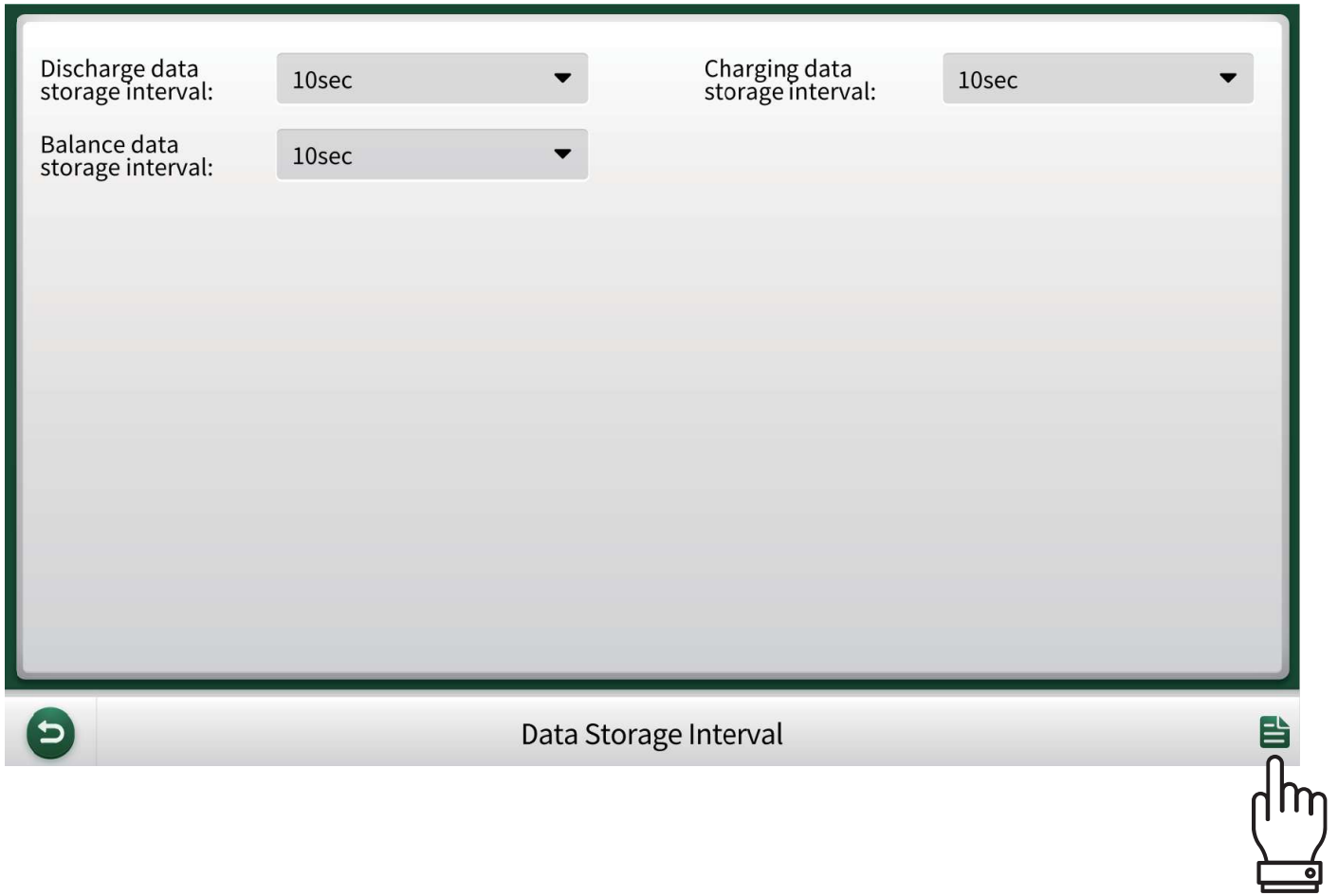
1) Status color setting

You can set the color display of the tester in various states. After setting, click the save icon in the lower right corner, as shown in Figure 3-1.



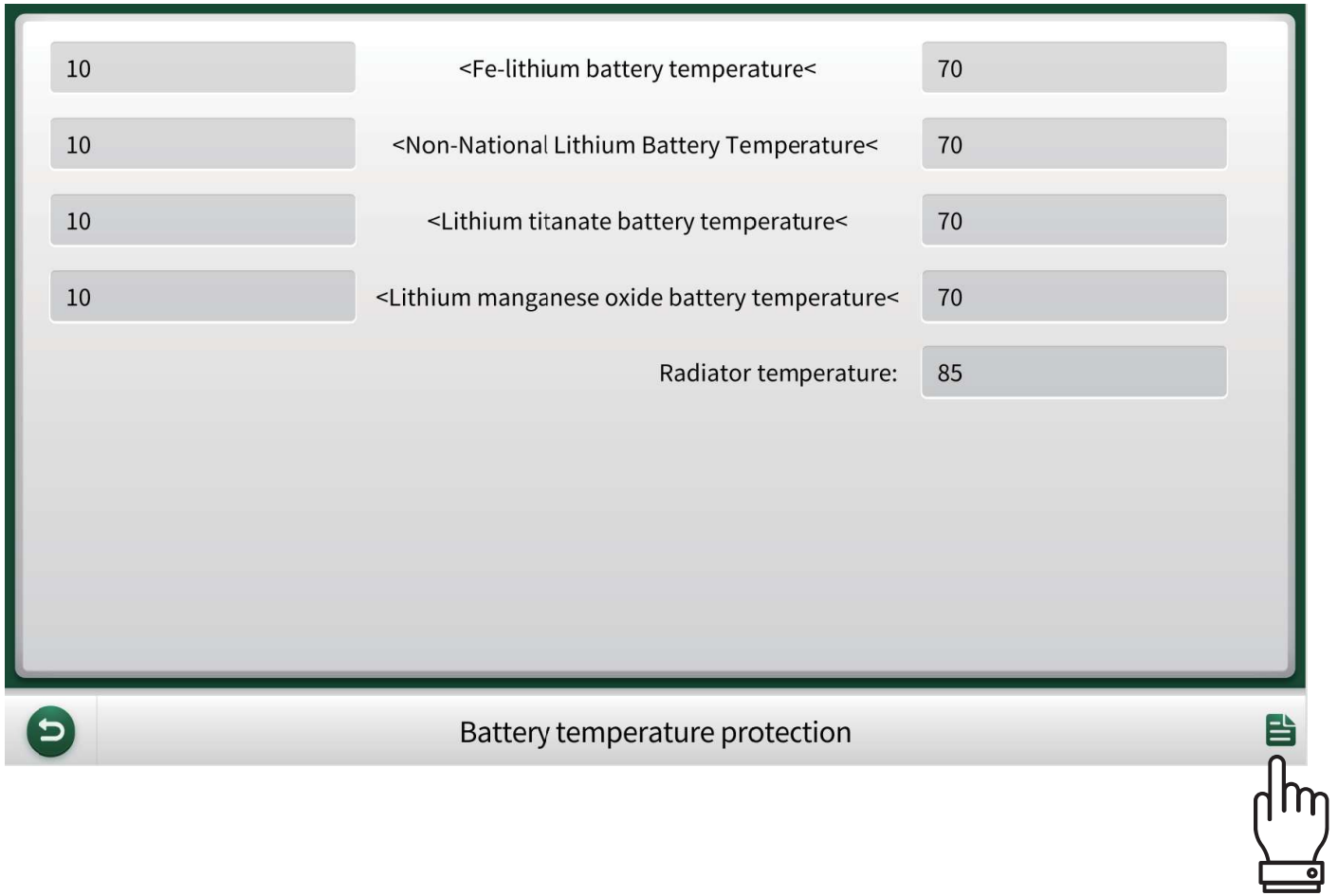
2) Data storage interval

You can set the storage interval of discharge data, charge data, and balance data. After setting, click the save icon in the lower right corner, as shown in Figure 3-2.



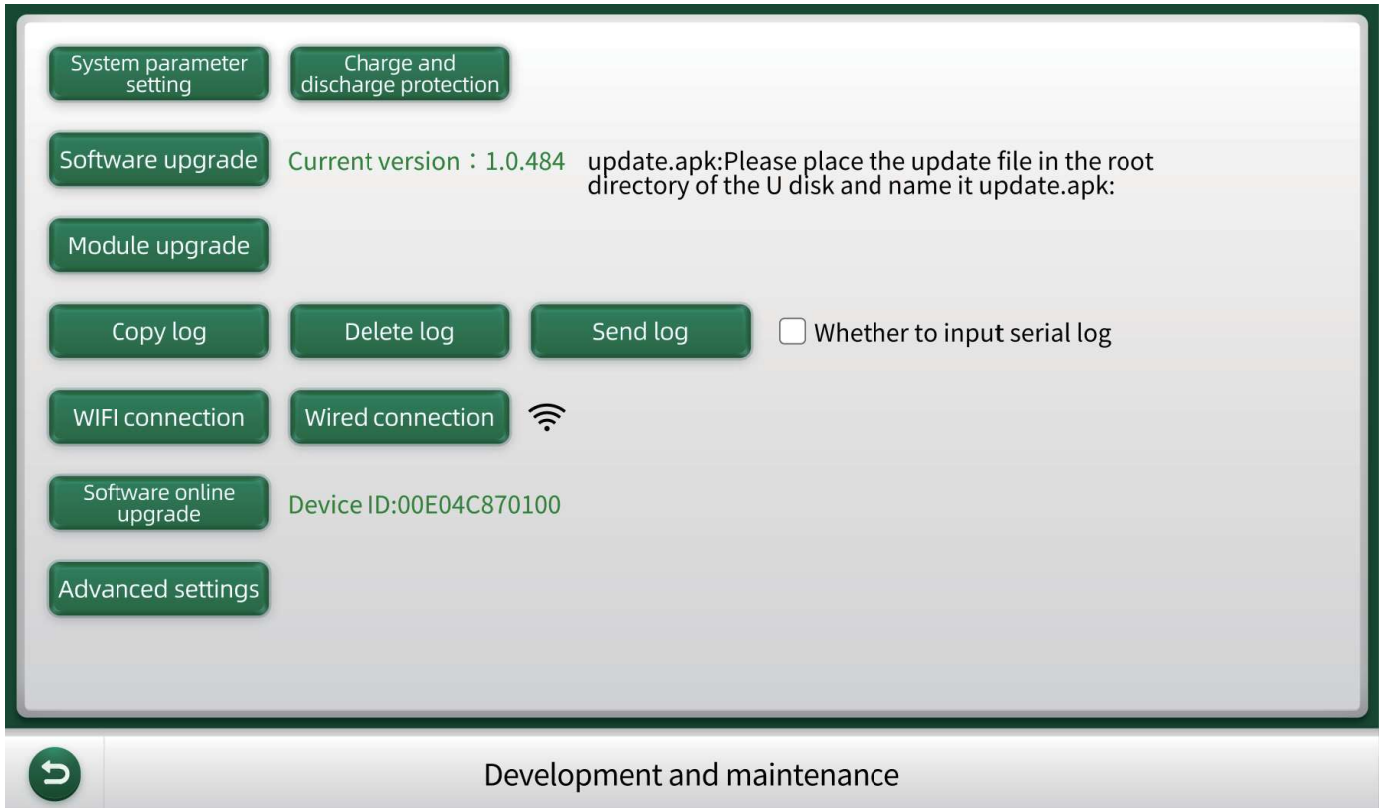
3) Battery temperature protection setting

Set the upper limit and lower limit of the temperature (marked with a red circle), after the setting is completed, click the save icon in the lower right corner, as shown in Figure 3-3.



4) Development and maintenance

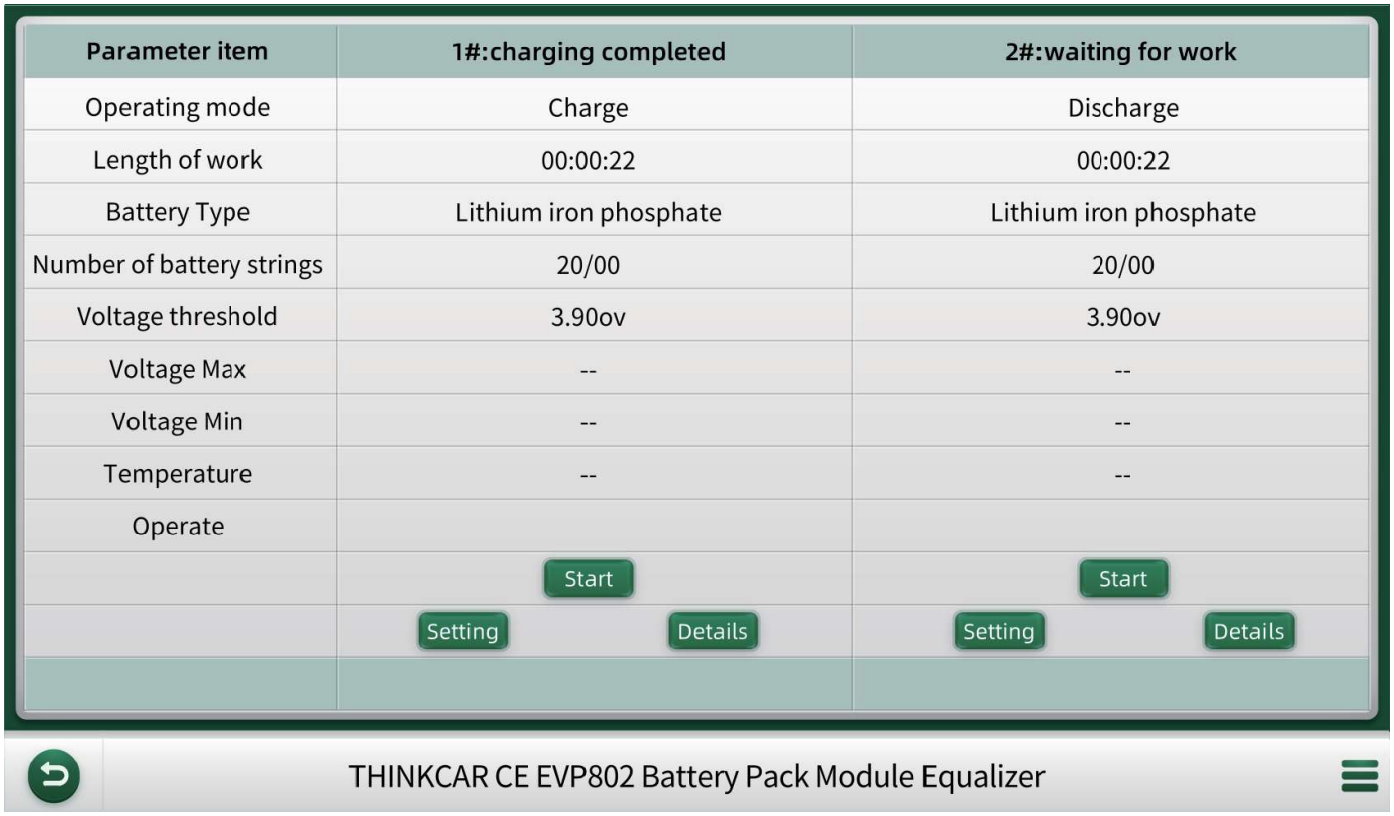
"Development and maintenance" mainly includes system parameter setting, charge and discharge protection, local software upgrade, module upgrade, copy log, delete log, send log, WIFI connection, software online upgrade, update boot animation.



### 5.4.4 Balanced maintenance

The “Balanced Maintenance” interface is shown in the figure below.

*Note: When starting up, if the lithium battery pack is connected correctly, the corresponding parameter items will be prompted, and the red circle mark will display "#waiting for work/#discharging completed/#charging completed/#balanced completed".*

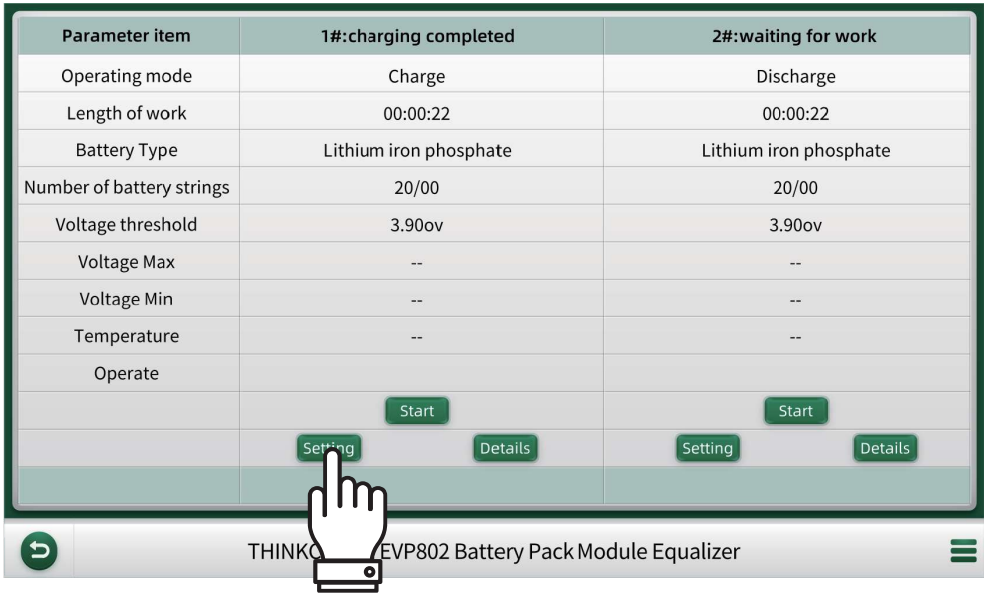


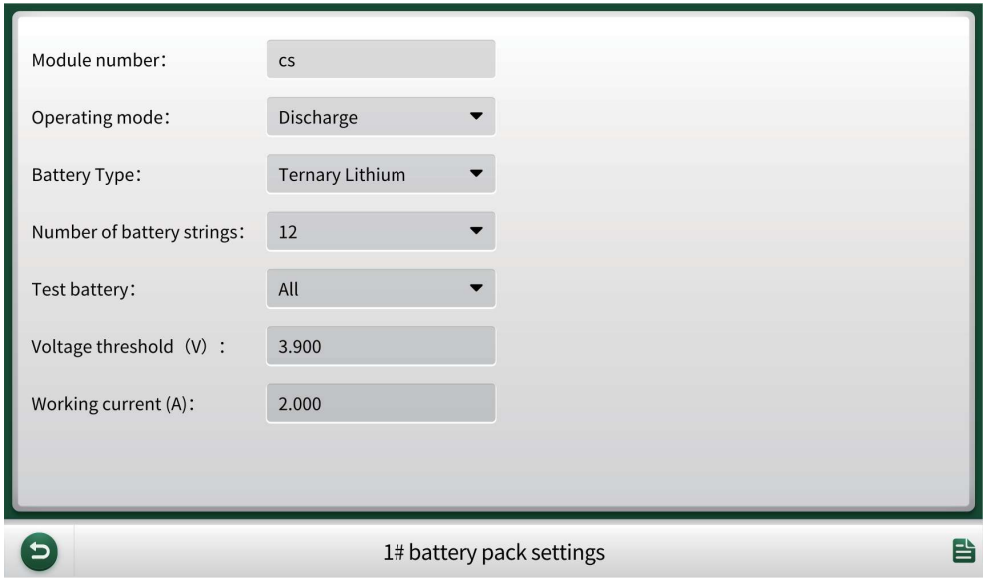
This equipment can maintain 2 groups at most in a balanced way, each group has 12 knots. It is subject to the number of corresponding lithium batteries connected.

1) Parameter item: number of test battery packs (#1, #2)
2) Working mode: choose "charge", "discharge" or "balance" mode
3) Working hours: test duration display
4) Battery type: "lithium iron phosphate", "ternary lithium", "lithium titanate", "lithium manganese oxide" and other battery types to choose from
5) Number of battery strings: corresponding to the number of lithium batteries
6) Single voltage threshold: target setting stop threshold
7) Voltage max: display the highest voltage of a single cell in the number of battery packs
8) Voltage min: the lowest voltage display of a single cell in the number of battery packs
9) Temperature: corresponding to the display of the highest temperature of the single cell in the lithium battery pack
10) Operation: start charging, discharging, and balance maintenance mode start switch

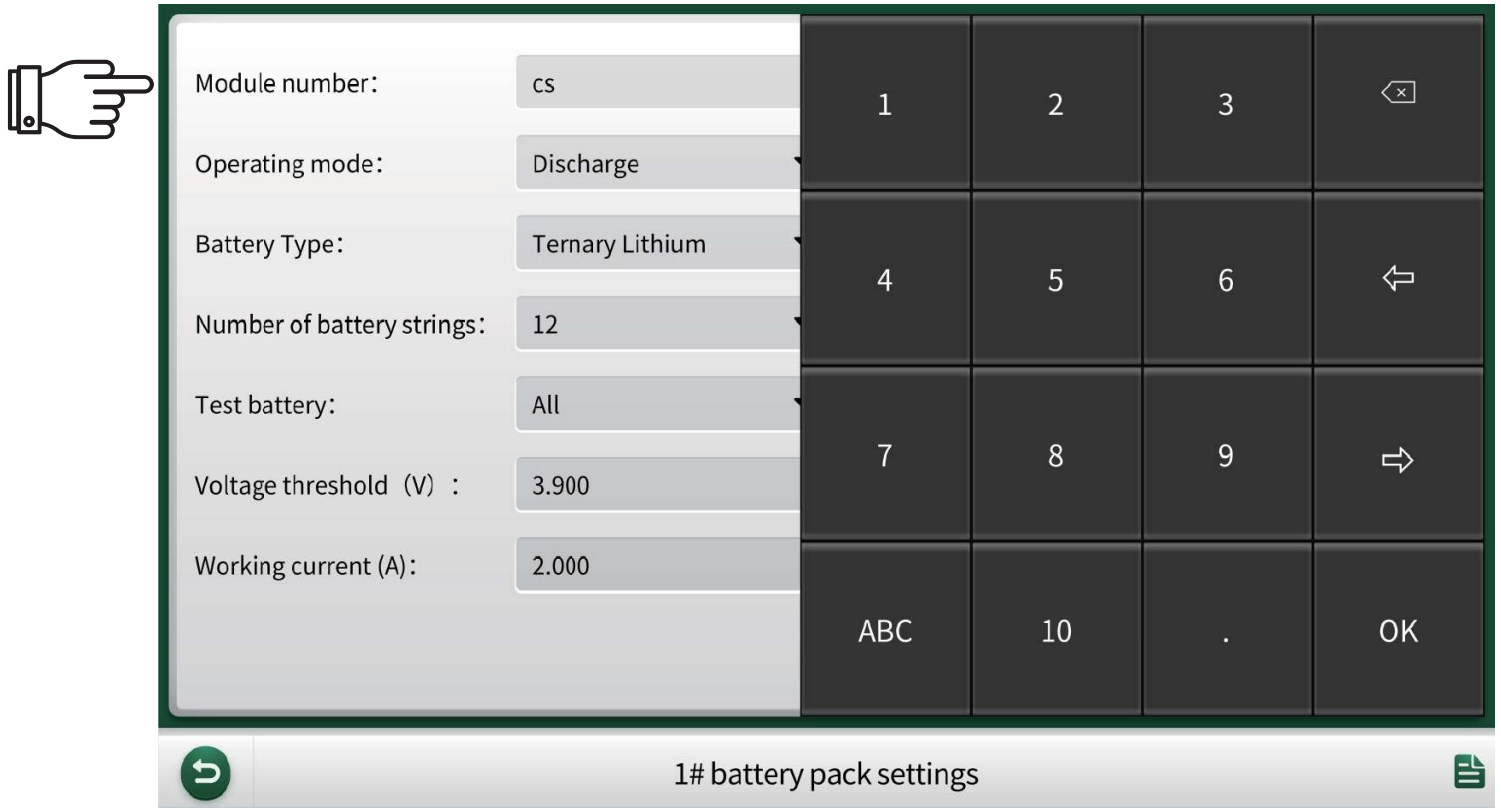
## 5.4.5 Battery Pack Settings

On the "Balance Maintenance" interface, click the "Settings" button to enter the battery pack setting interface for balance maintenance, as shown in the figure below.

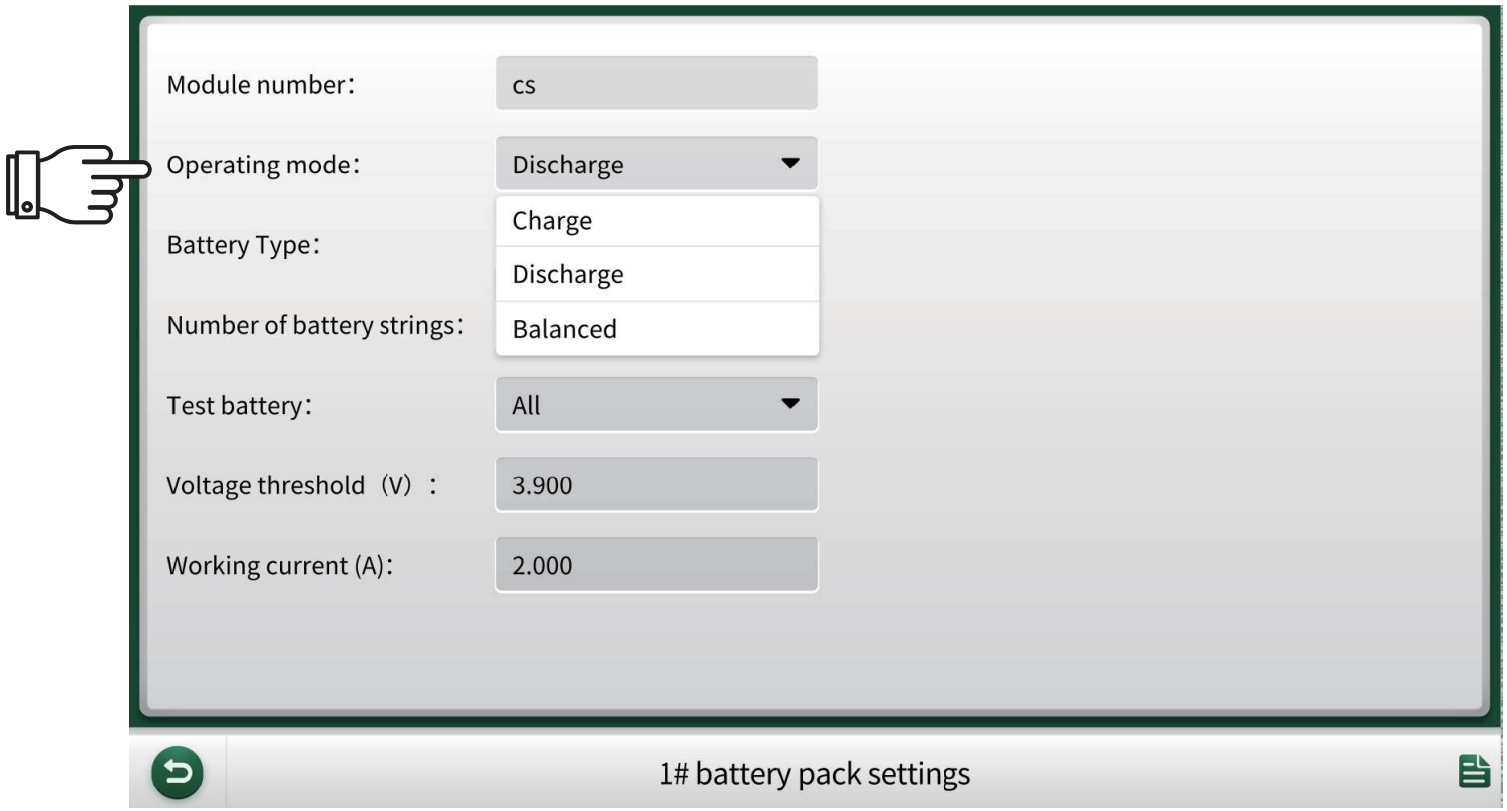


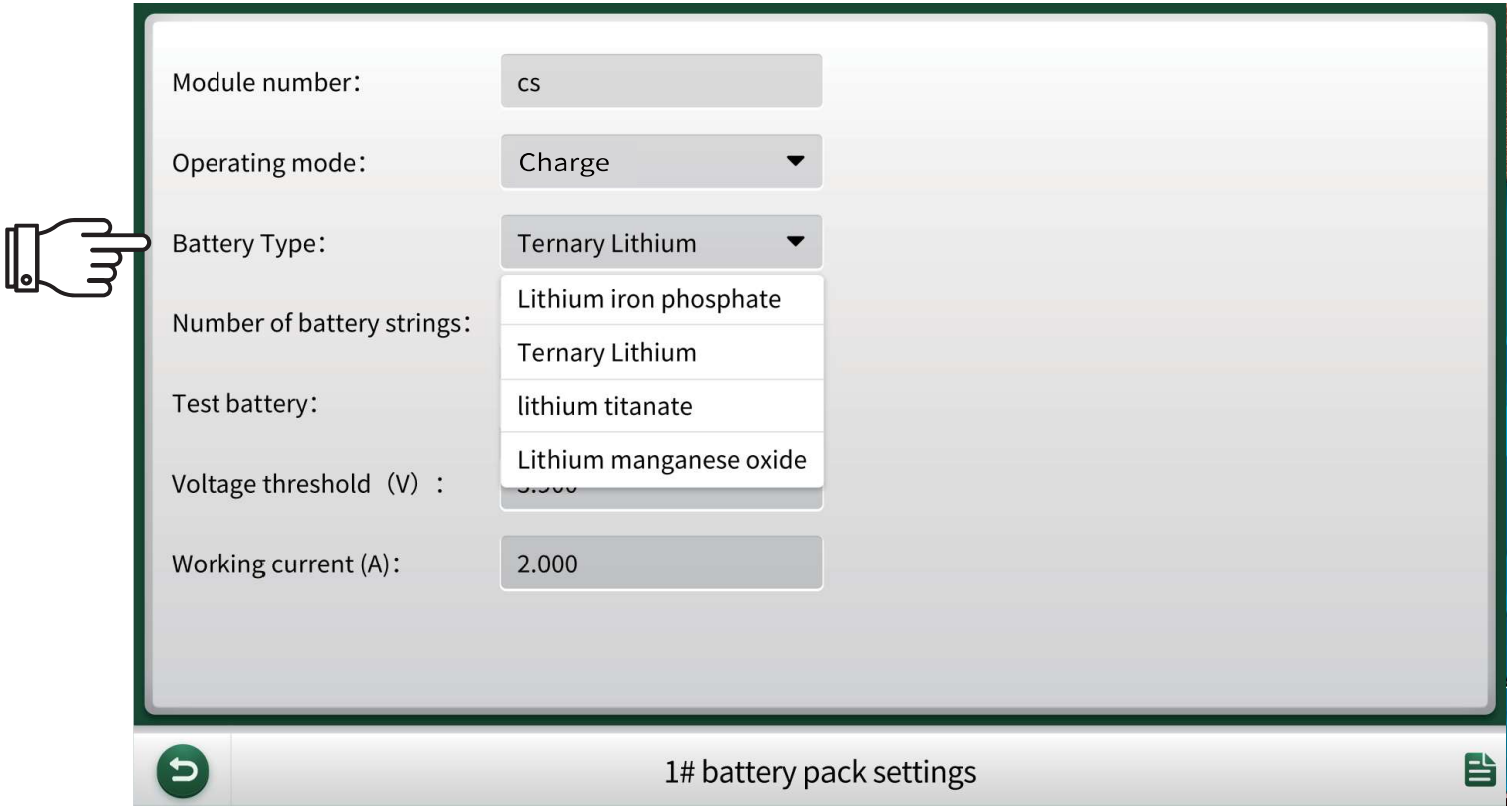
1）1) Module number: key in the number on the right keyboard, and name the battery box number or the corresponding information for testing, as shown in the figure below.



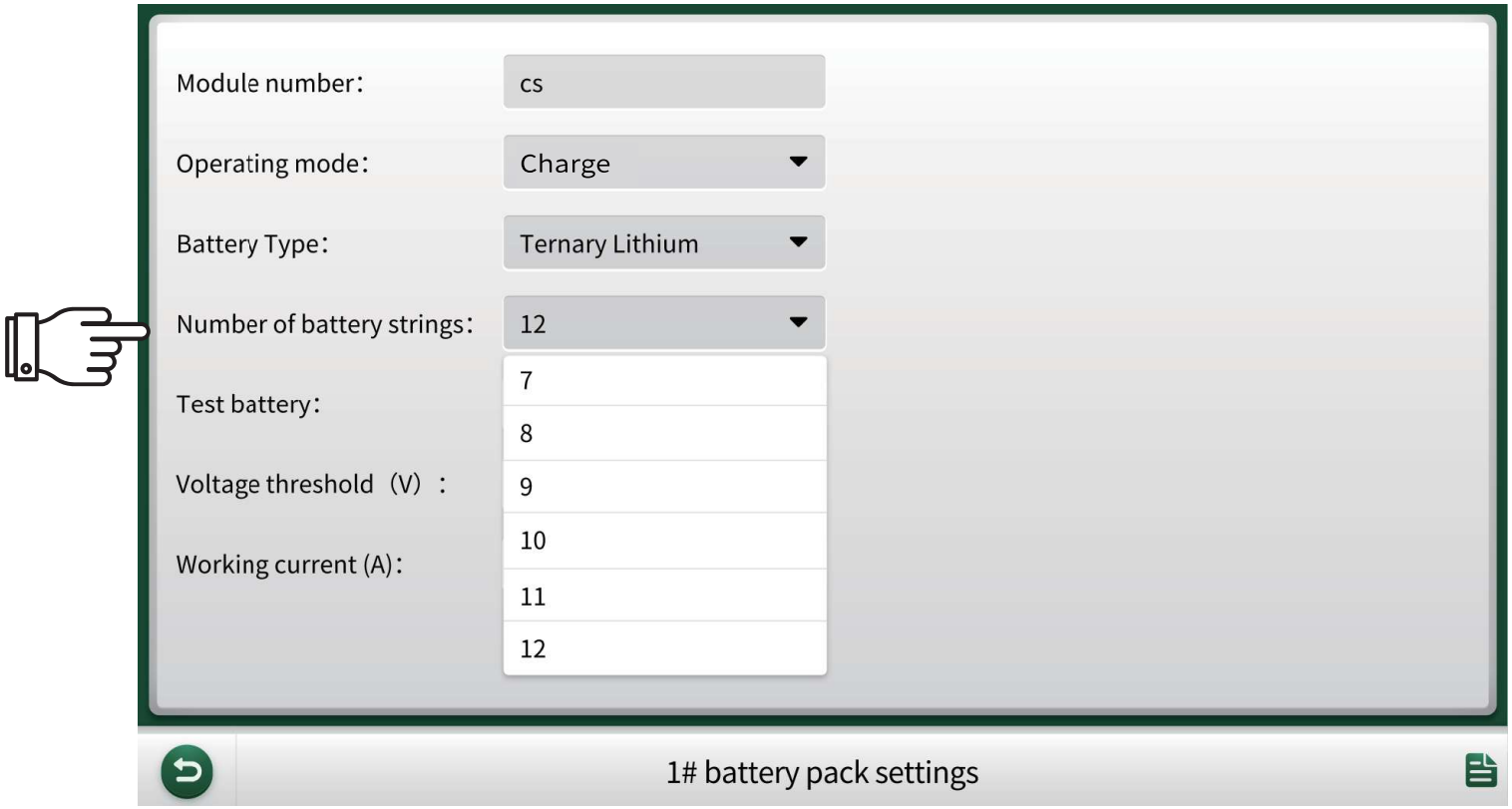
2）Working mode: There are three modes in the drop-down menu: charge, discharge, and balance, click to select, as shown in the figure below.



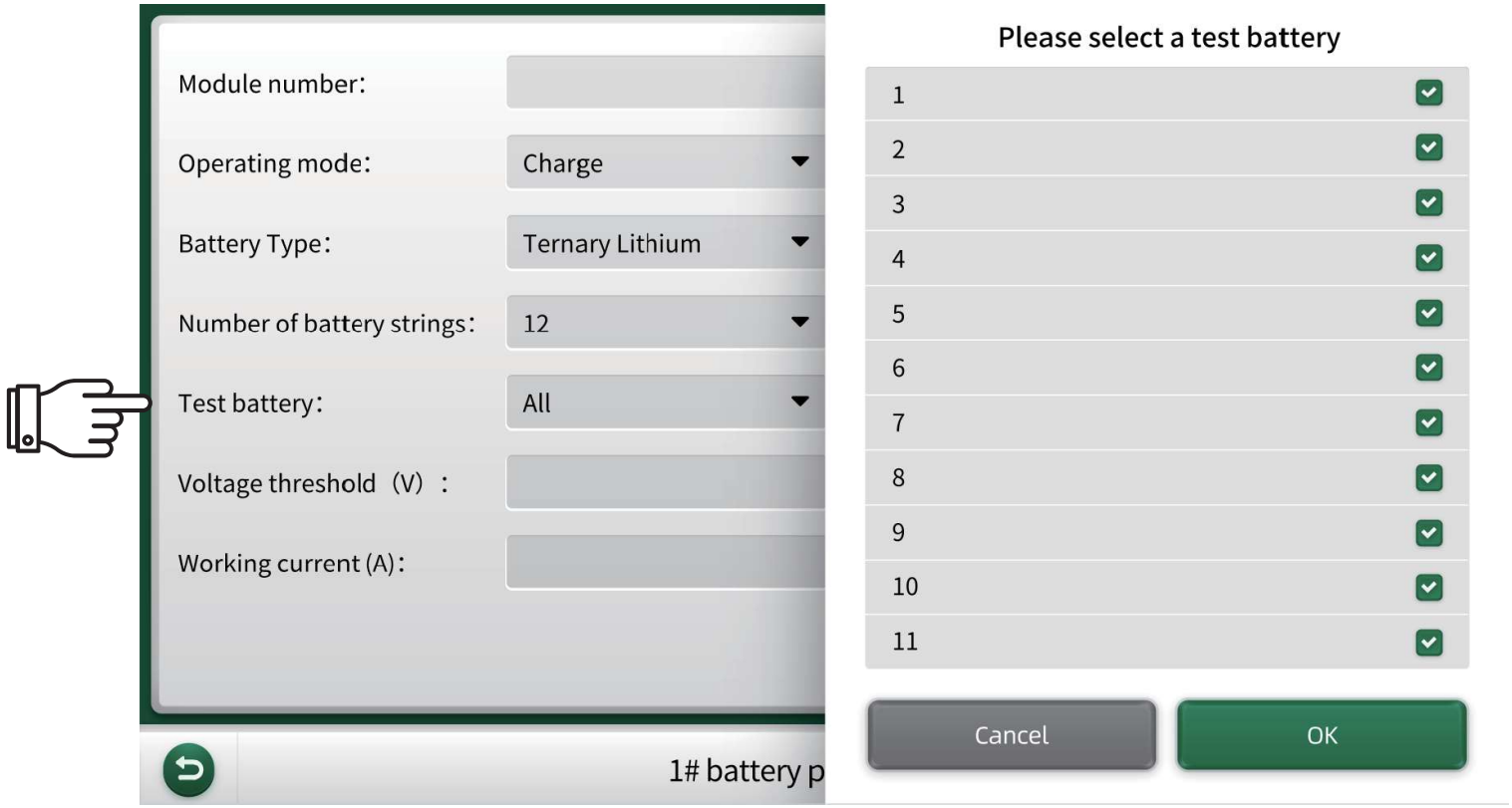
3）Battery type: Click the drop-down menu to select the corresponding battery type. As shown in the figure below.



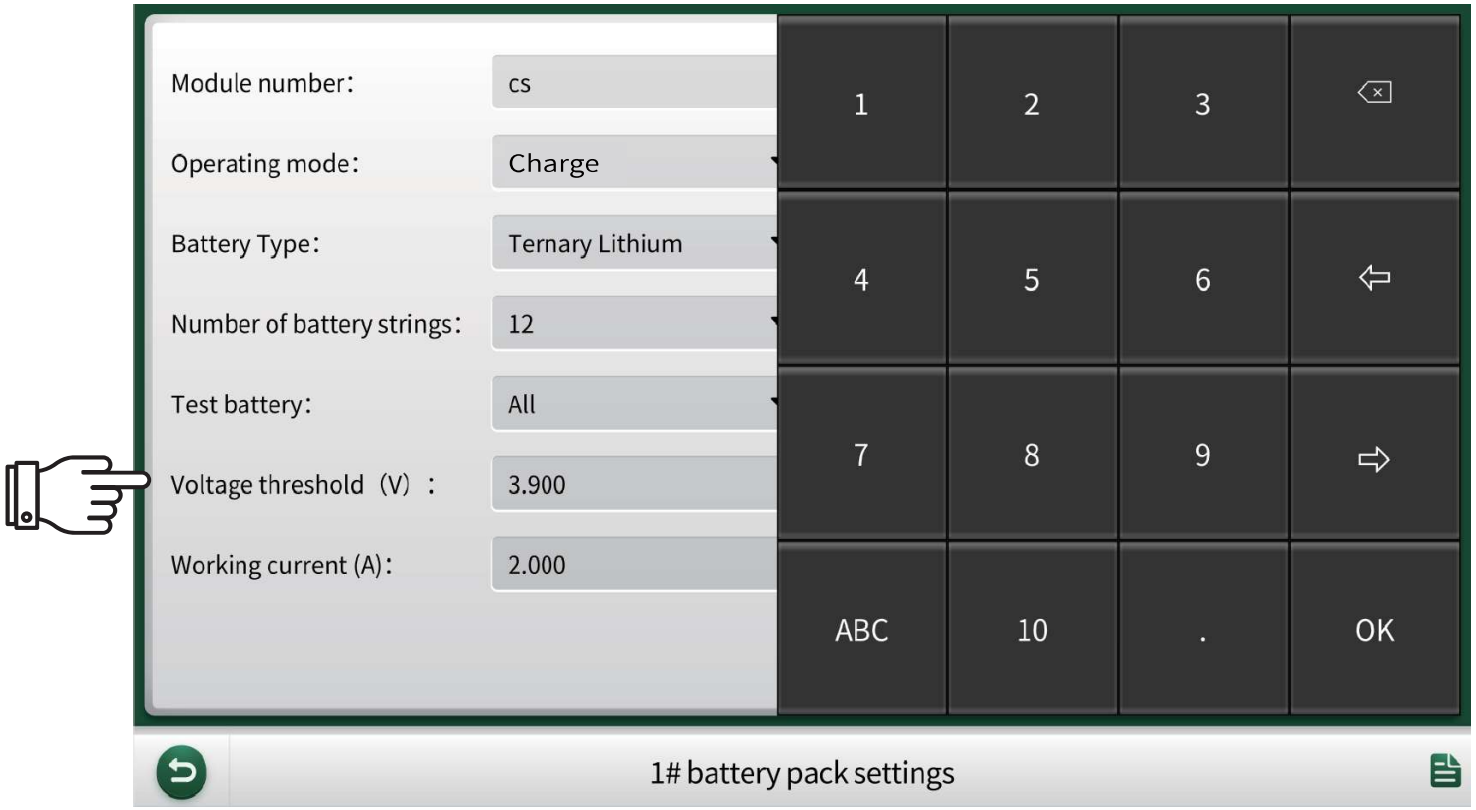
4）Number of battery strings: Select the number of battery strings corresponding to the test battery pack, as shown in the figure below.



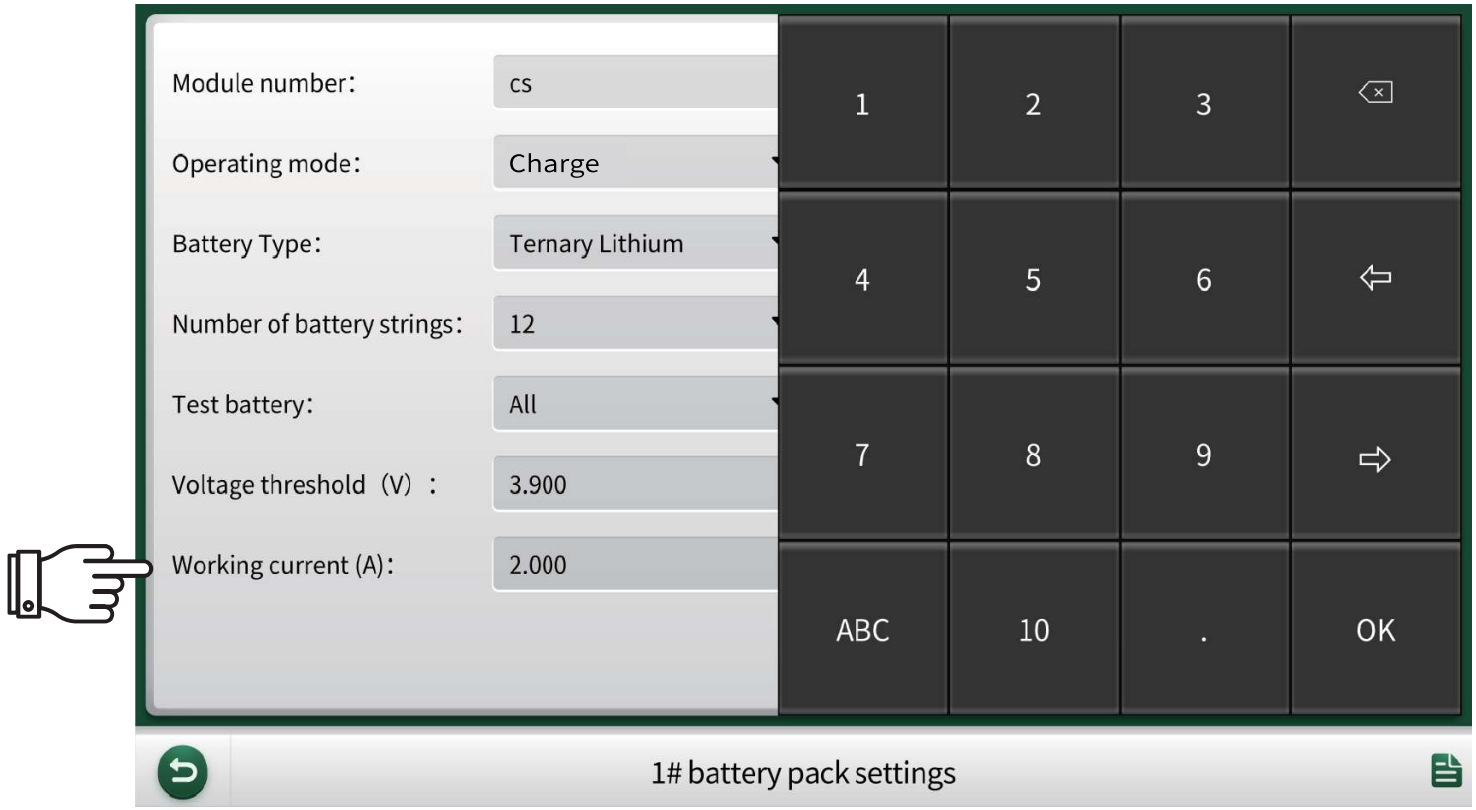
5) Test battery: Select the number of cells corresponding to the test battery pack, and click "OK", as shown in the figure below.



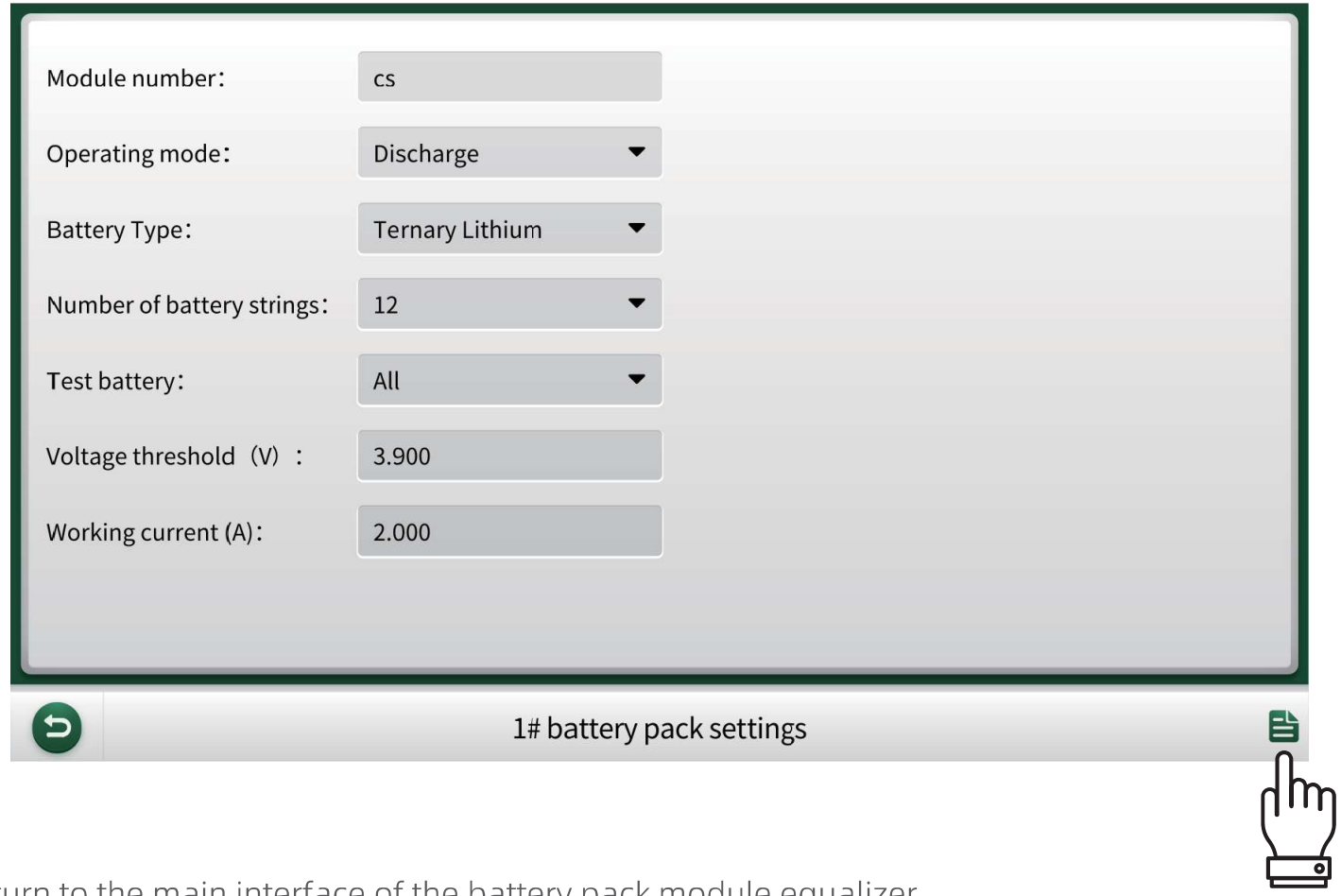
6）Voltage threshold: battery pack threshold setting, click on the voltage threshold, input it with the right keyboard when setting, and click "OK", as shown in the figure below.



7) Working current: set the test current of the corresponding working mode during the test, input it on the right keyboard, and click "OK", as shown in the figure below.



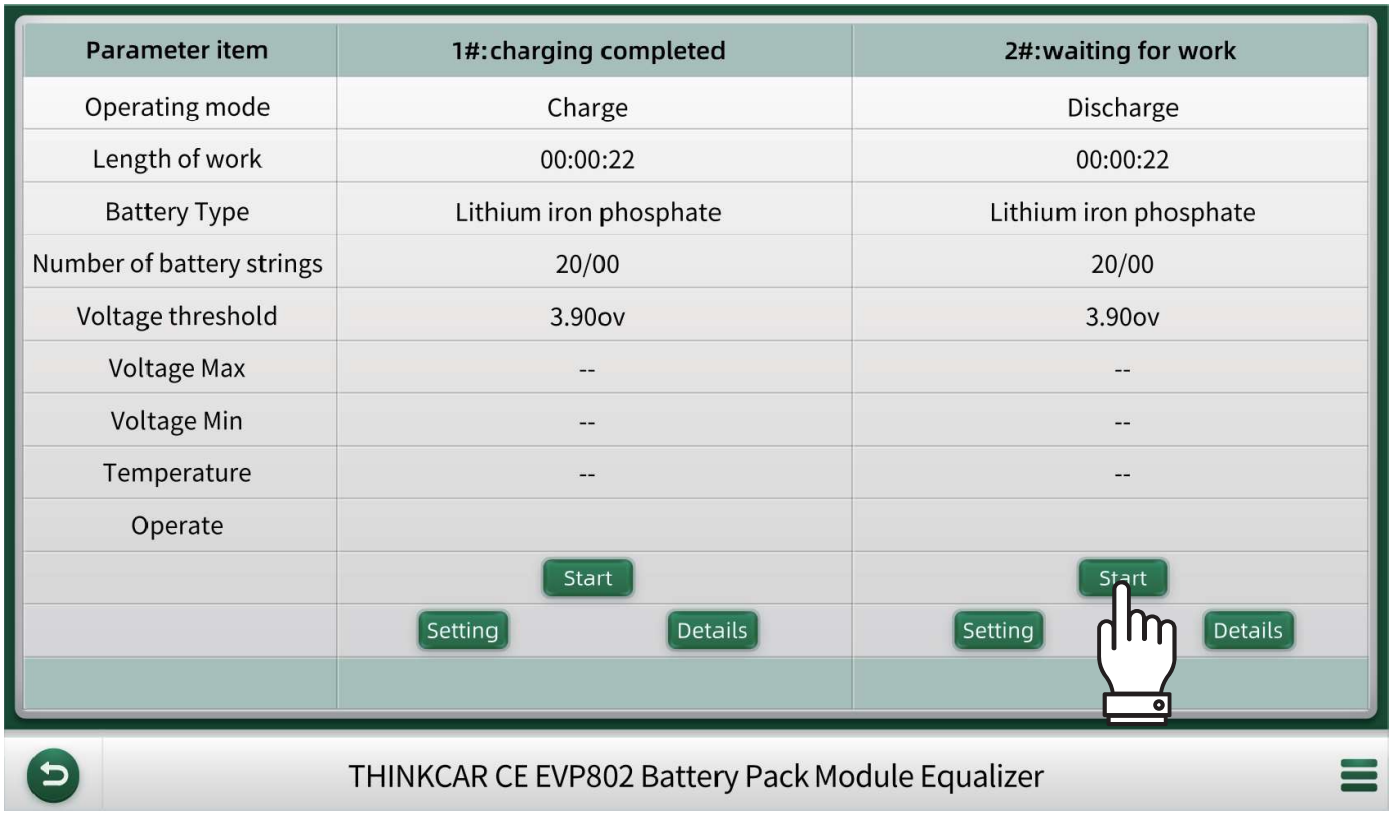
8) After setting all the parameters, click the "Save" button in the lower right corner to save the parameters.



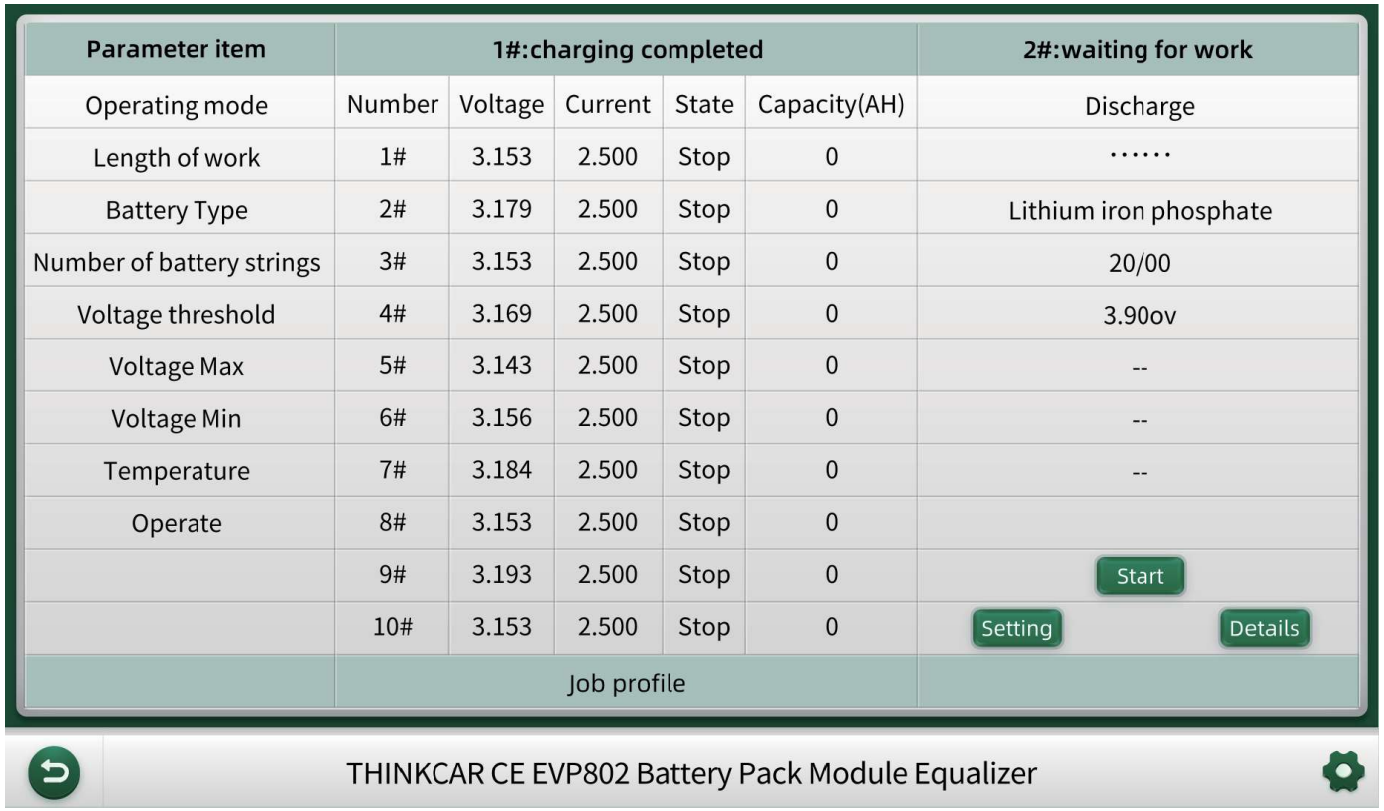

9）After saving, return to the main interface of the battery pack module equalizer.

5.4.6 Startup test

1） On the main interface of the battery pack module equalizer, click the "Start" button to start the test.



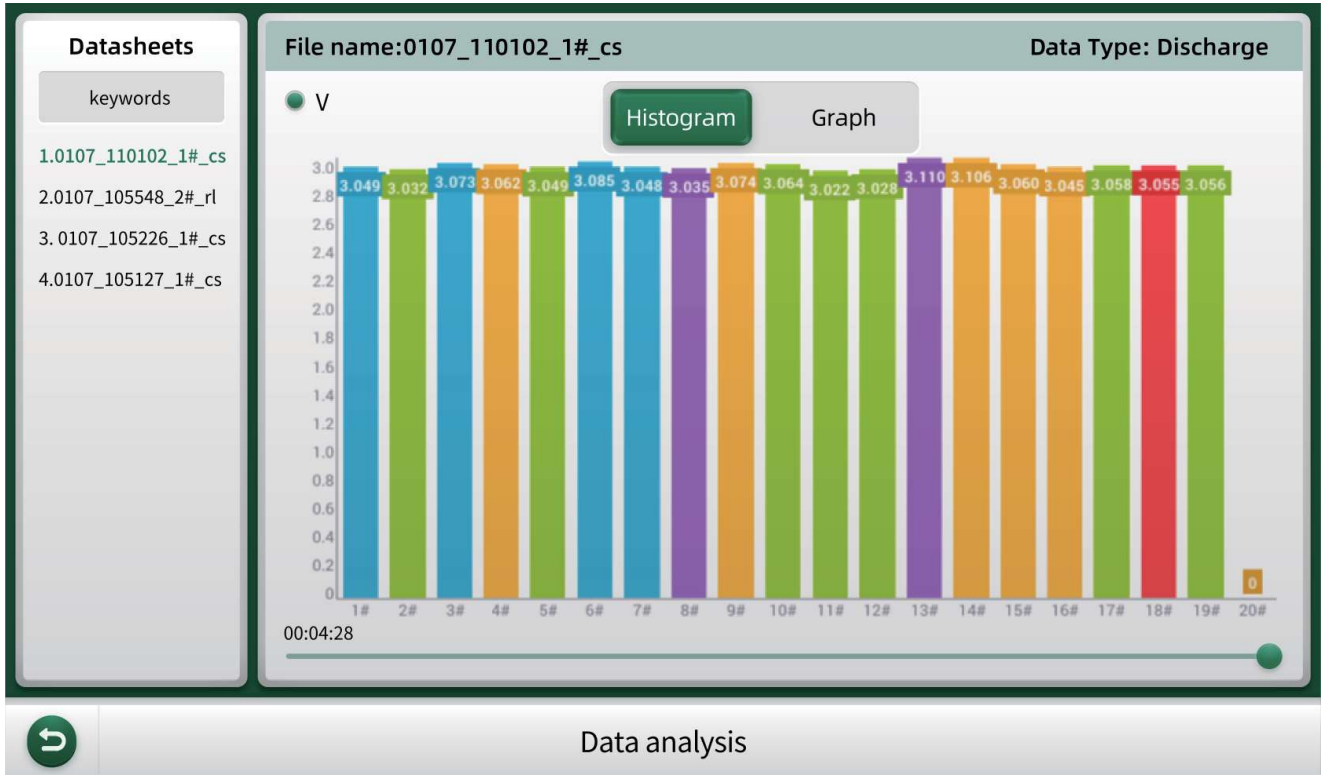
2）After the start-up test is successful, you can click "Details" to view the parameters of the corresponding test group such as cell voltage, working current, working status, test duration, capacity, etc., as shown in the figure below:



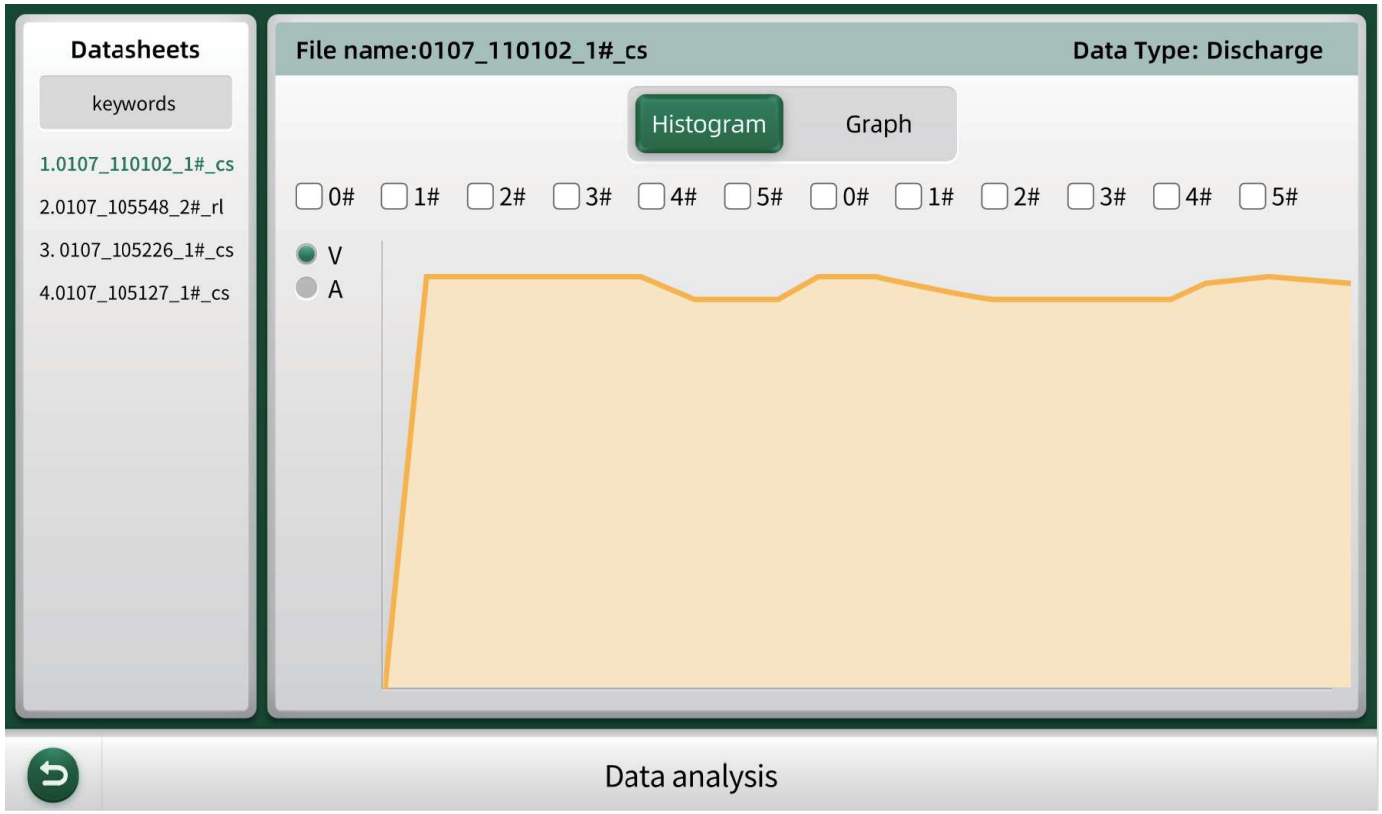
3）Equilibrium completion conditions:
a. When the voltage of the maintenance cell reaches the target value and the working current is less than 0.2A for more than 3 minutes, the status of the single cell will be displayed as "Complete".
b. When all the channels of working cells are "completed", the channels of the entire working unit are equalized and the work ends.

### 5.4.7 Data Analysis and Transfer

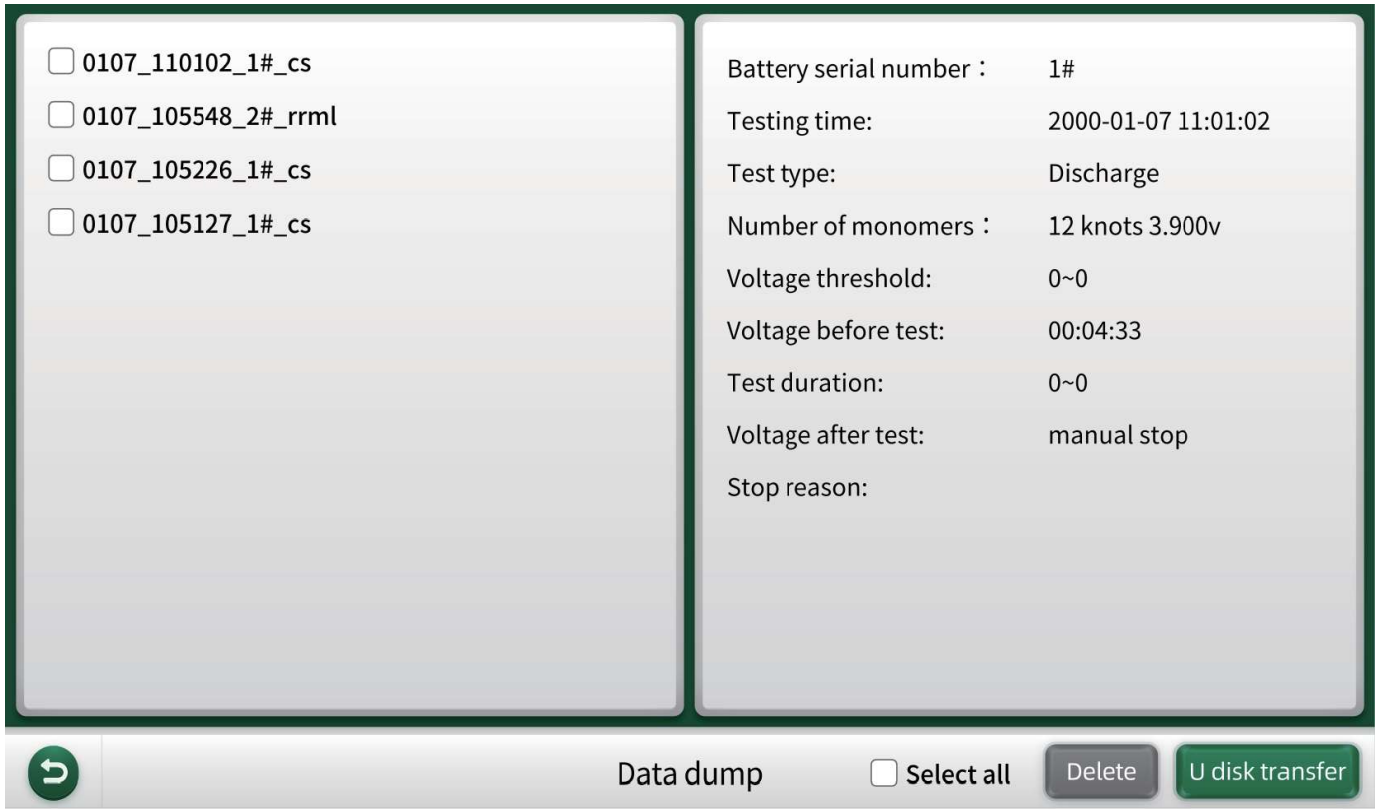
1）The test task is completed, and the test data is displayed in column chart/curve mode.
The test data voltage histogram shows:



Test data voltage and current curve display:



2）2) The test data can be transferred by U disk, enter the data transfer interface and click the data to be transferred, insert the U disk and click the U disk to transfer, and the data will be stored in the form of an Excel data table, as shown in the figure below.



# 6. Fault analysis and troubleshooting

| Serial number | Fault | Troubleshooting method |
|---|---|---|
| 1 | Host temperature is too high | Confirm the placement of the discharger, pay attention to ventilation and heat flow |
| 2 | not enough storage space | Periodically delete copied data files |
| 3 | USB failure | Confirm whether the U disk is too large, and confirm that the U disk cannot store too many other files |

# 7. Maintenance

1）The warranty of this equipment is one year, which can be extended.
2）This equipment is maintained for life.

# 8. Transportation and storage

1) This equipment is packed in a special equipment box and packed in a carton, which is anti-vibration and reliable in transportation.
2) Storage conditions: placed in a dry equipment storage room, temperature: -20~70℃, humidity: within 95%.

# 9. Packing list

| Serial numbe | Icon | Name | Quantity | Unit | Explanation |
|---|---|---|---|---|---|
| 1 |  | the host | 1 | tower | |
| 2 |  | Power cord (AC220-10A) | 1 | strip | |
| 3 |  | Balanced bus harness (1#, 2#) | 2 | strip | |
| 4 |  | balanced clip line | 2 | strip | |
| 5 |  | U disk | 1 | indivual | |
| 6 |  | Product certification | 1 | share | |
| 7 |  | Quick Start Guide | 1 | Book | |

# 10. Environmental Protection and Others

1) The outer carton used in this device is a recyclable material.
2) The host and other components are non-pollution sources.

## 11.Customer Services

If you encounter any problems during the operation of the equipment, please contact Thinkcar Tech Inc.

- Service Line：1-909-757-1959
- Service Email: support@thinkcar.com
- Official website: www.thinkcar.com

For tutorials on the use of the product and FAQ, please visit our official website.

**Thinkcar Tech Inc**

**Follow us on**

@thinkcar.official

@ObdThinkcar