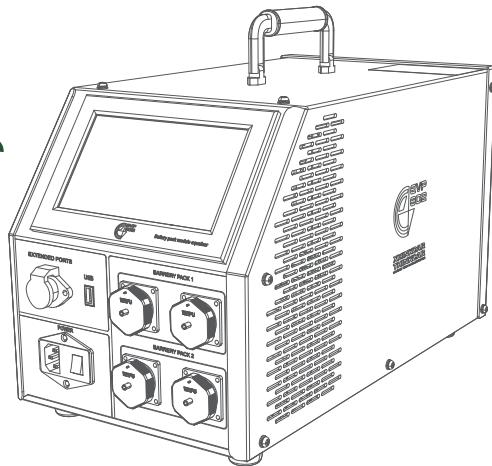


THINKCAR CE EVP802



User Manual

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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	$\pm 0.1\%FS \pm 2mV$ (maximum range 5V)
Charge and discharge current range	0.1- 5A MAX
Current Detection Accuracy	$\pm 1\%FS \pm 0.05A$ (maximum range 5A)
Battery temperature detection accuracy	$\pm 2^{\circ}C$ ($-25^{\circ}C$ - $-85^{\circ}C$) 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; 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

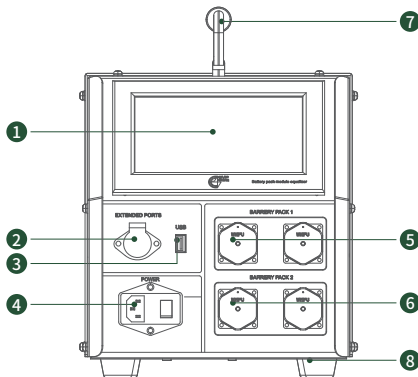
Heat dissipation	Forced air cooling
Temperature	Working temperature range: -5~40°C;Storage temperature: -20~70°C
Humidity	Relative humidity 0~95% (40±2°C)
Altitude	Rated altitude 2000 meters
Size	496x246x262 mm
Weight	14kg

4. Installation and commissioning

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

5. Use and operation

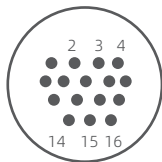
5.1 Device panel description



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

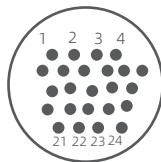
16PIN: for balanced test interface



16PIN

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

24PIN: temperature sampling interface



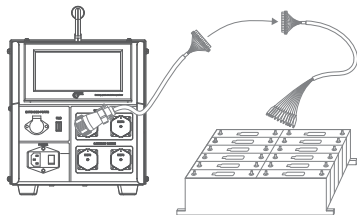
24PIN

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

5.3 Device connection

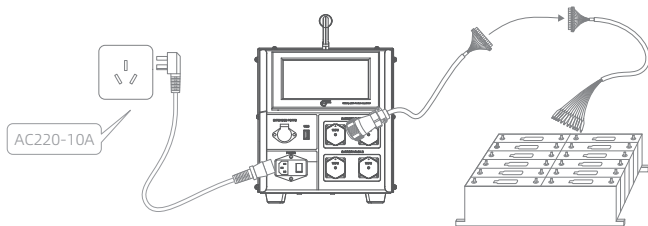
5.3.1 Cable connection to the battery pack

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

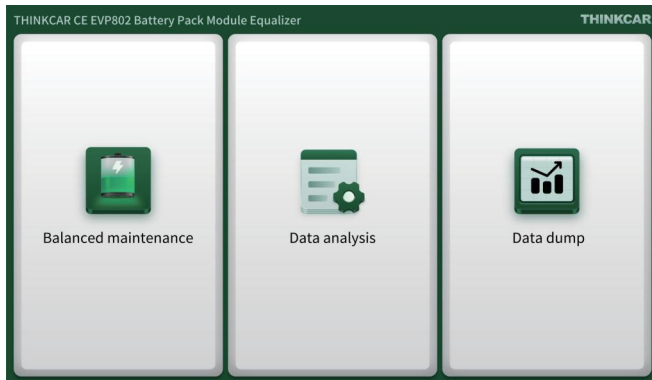
Turn on the power switch, the boot interface LOGO will be displayed first after booting.

A dark green rectangular background with the word "THINKCAR" in white, bold, sans-serif capital letters centered in the middle.

THINKCAR

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:

Parameter item	1#:charging completed	2#:waiting for work
Operating mode	Charge	Discharge
Length of work	00:00:22	00:00:22
Battery Type	Lithium iron phosphate	Lithium iron phosphate
Number of battery strings	20/00	20/00
Voltage threshold	3.90ov	3.90ov
Voltage Max	--	--
Voltage Min	--	--
Temperature	--	--
Operate		
	Start	Start
	Setting Details	Setting Details

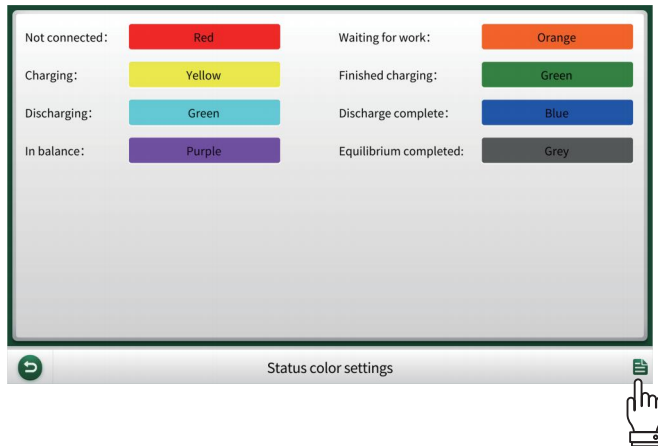
⏮

THINKCAR CE EVP802 Battery Pack Module Equalizer



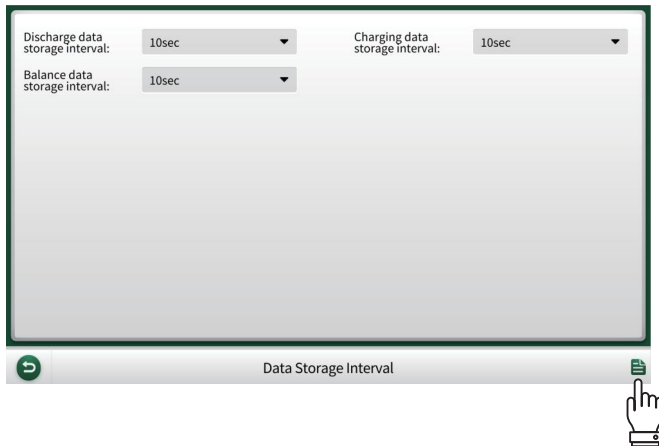
1) Status color setting

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.



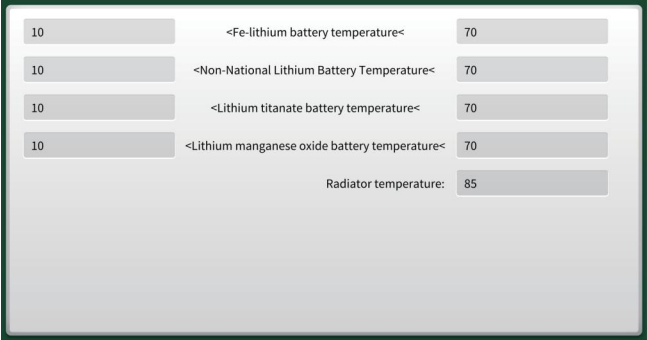
2) Data storage interval

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.



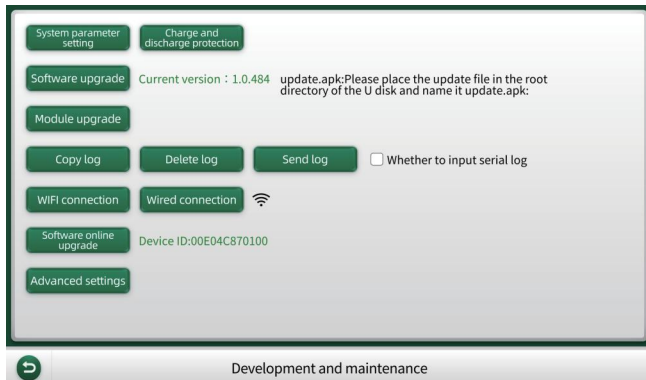
10	<Fe-lithium battery temperature<	70
10	<Non-National Lithium Battery Temperature<	70
10	<Lithium titanate battery temperature<	70
10	<Lithium manganese oxide battery temperature<	70
Radiator temperature:		85

 Battery temperature protection 



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".

Parameter item	1#:charging completed	2#:waiting for work
Operating mode	Charge	Discharge
Length of work	00:00:22	00:00:22
Battery Type	Lithium iron phosphate	Lithium iron phosphate
Number of battery strings	20/00	20/00
Voltage threshold	3.90ov	3.90ov
Voltage Max	--	--
Voltage Min	--	--
Temperature	--	--
Operate		
	Start	Start
	SettingDetails	SettingDetails

THINKCAR CE EVP802 Battery Pack Module Equalizer

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.

Parameter item	1#:charging completed	2#:waiting for work
Operating mode	Charge	Discharge
Length of work	00:00:22	00:00:22
Battery Type	Lithium iron phosphate	Lithium iron phosphate
Number of battery strings	20/00	20/00
Voltage threshold	3.90ov	3.90ov
Voltage Max	--	--
Voltage Min	--	--
Temperature	--	--
Operate		
		
	 	 

THINKO EVIP802 Battery Pack Module Equalizer

Module number: cs

Operating mode: Discharge ▼

Battery Type: Ternary Lithium ▼

Number of battery strings: 12 ▼

Test battery: All ▼

Voltage threshold (V) : 3.900

Working current (A): 2.000

1# battery pack settings

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.



Module number:	cs	1	2	3	⌫
Operating mode:	Discharge				
Battery Type:	Ternary Lithium	4	5	6	⬅
Number of battery strings:	12				
Test battery:	All	7	8	9	➡
Voltage threshold (V) :	3.900				
Working current (A):	2.000	ABC	10	.	OK



1# battery pack settings



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.



Module number: cs

Operating mode: Discharge ▼

Battery Type: Charge

Discharge

Number of battery strings: Balanced

Test battery: All ▼

Voltage threshold (V) : 3.900

Working current (A): 2.000

1# battery pack settings

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



Module number: cs

Operating mode: Charge ▼

Battery Type: Ternary Lithium ▼

Number of battery strings: Lithium iron phosphate
Ternary Lithium

Test battery: lithium titanate
Lithium manganese oxide

Voltage threshold (V) : 3.700

Working current (A): 2.000

1# battery pack settings

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



Module number: cs

Operating mode: Charge ▼

Battery Type: Ternary Lithium ▼

Number of battery strings: 12 ▼

Test battery:

Voltage threshold (V) :

Working current (A):

7
8
9
10
11
12

1# battery pack settings

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



Module number:

Operating mode:

Charge

Battery Type:

Ternary Lithium

Number of battery strings:

12

Test battery:

All

Voltage threshold (V) :

Working current (A):

1# battery p

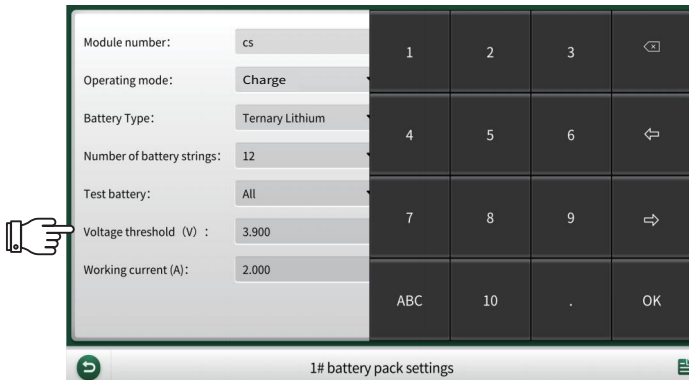
Please select a test battery

1	✓
2	✓
3	✓
4	✓
5	✓
6	✓
7	✓
8	✓
9	✓
10	✓
11	✓

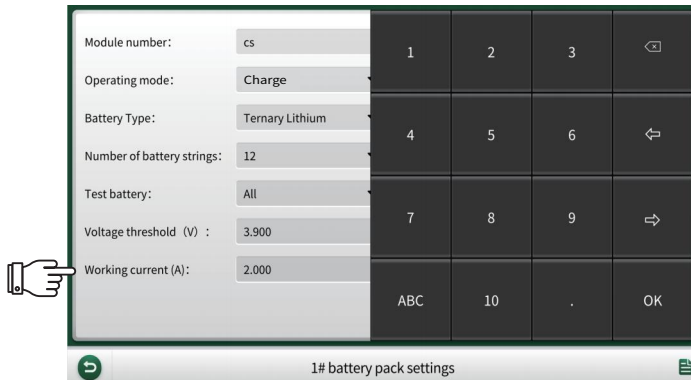
Cancel

OK

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.

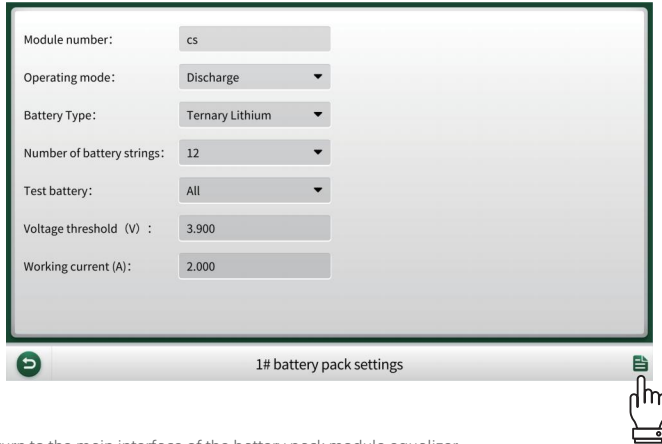


The screenshot shows a settings menu for a battery pack. On the left, there are several configuration options, each with a dropdown menu. A hand icon points to the 'Working current (A):' option, which is currently set to 2.000. To the right of these options is a numeric keypad with digits 1-9, 0, and a decimal point, along with navigation buttons (left arrow, right arrow, and a delete button 'x'). At the bottom right of the keypad is an 'OK' button. The bottom of the screen features a status bar with a back arrow, the text '1# battery pack settings', and a save icon.

Module number:	cs	1	2	3	⌫
Operating mode:	Charge				
Battery Type:	Ternary Lithium	4	5	6	⬅
Number of battery strings:	12				
Test battery:	All	7	8	9	➡
Voltage threshold (V) :	3.900				
Working current (A):	2.000	ABC	10	.	OK

1# battery pack settings

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



Module number: cs

Operating mode: Discharge ▼

Battery Type: Ternary Lithium ▼

Number of battery strings: 12 ▼

Test battery: All ▼

Voltage threshold (V) : 3.900

Working current (A): 2.000

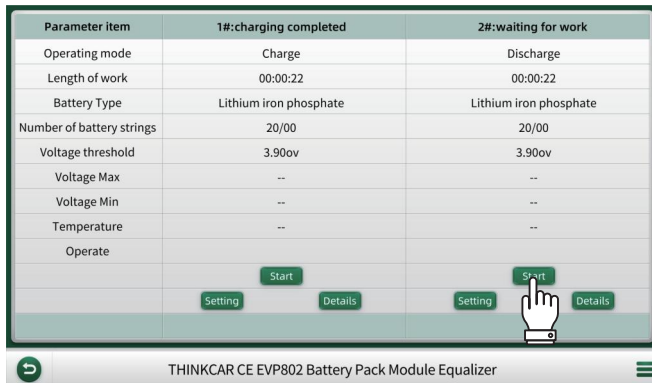
1# battery pack settings

Save button (hand icon)

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:

Parameter item	1#:charging completed					2#:waiting for work
Operating mode	Number	Voltage	Current	State	Capacity(AH)	Discharge
Length of work	1#	3.153	2.500	Stop	0	
Battery Type	2#	3.179	2.500	Stop	0	Lithium iron phosphate
Number of battery strings	3#	3.153	2.500	Stop	0	20/00
Voltage threshold	4#	3.169	2.500	Stop	0	3.90ov
Voltage Max	5#	3.143	2.500	Stop	0	--
Voltage Min	6#	3.156	2.500	Stop	0	--
Temperature	7#	3.184	2.500	Stop	0	--
Operate	8#	3.153	2.500	Stop	0	
	9#	3.193	2.500	Stop	0	Start
	10#	3.153	2.500	Stop	0	Setting Details
Job profile						


THINKCAR CE EVP802 Battery Pack Module Equalizer


3) Equilibrium completion conditions:

- 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".
- When all the channels of working cells are "completed", the channels of the entire working unit are equalized and the work ends.

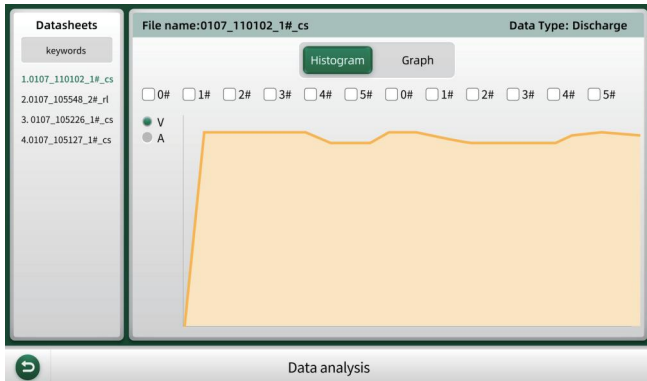
5.4.7 Data Analysis and Transfer

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.

☐ 0107_110102_1#_cs	Battery serial number :	1#
☐ 0107_105548_2#_rrml	Testing time:	2000-01-07 11:01:02
☐ 0107_105226_1#_cs	Test type:	Discharge
☐ 0107_105127_1#_cs	Number of monomers :	12 knots 3.900v
	Voltage threshold:	0~0
	Voltage before test:	00:04:33
	Test duration:	0~0
	Voltage after test:	manual stop
	Stop reason:	

 Data dump ☐ Select all

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°C, 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	indivudal	
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.

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