XHINKCAR
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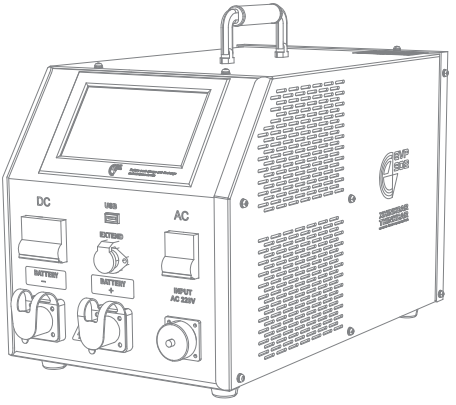
LEADING TECH IN DIAGNOSTICS

THINKCAR
CE EVP902



User Manual

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1.Overview

THINKCAR CE EVP902 battery pack charging and discharging equipment (hereinafter referred to as charging and discharging equipment) is the company's latest research and development of lithium battery pack intelligent charging and discharging integrated equipment, using the most advanced charging and discharging technology, according to the charging and discharging characteristics of lithium batteries, built-in A variety of test and maintenance modes, suitable for the discharge, charge, cycle charge and discharge tests of various lithium battery packs on the market. The device adopts an intelligent operating system, supports wireless data transmission, and connects the battery test to the Internet of Things, allowing users and managers to easily and scientifically maintain and manage the battery pack, thereby prolonging the service life of the battery pack.

1.1 Product Features

· Using the latest discharge and charge test technology, it will not interfere with the BMS management system, and is suitable for daily discharge and charge of lithium battery packs.
· Adopting a wide voltage design, it can be applied to the current lithium battery pack test of different voltage levels.
· Portable design: easy to carry and transport.
· With voltage and core temperature information monitoring, and test protection to prevent overcharge and overdischarge.
· Multiple discharge shutdown thresholds: Provide multiple discharge shutdown thresholds to avoid excessive charging and discharging.
· Single-phase (220VAC) AC power supply.
· Alarm settings for abnormal voltage, current, and battery temperature can be set to protect the safety of the battery and the machine.
· Charging completion conditions: the charging process can be completed by setting the total charging time, target voltage,

charging capacity, and charging current.

- Display voltage/current data, with overvoltage, undervoltage, overcurrent, output short circuit, anti-reverse protection and thermal protection functions.
- 7-inch LCD touch screen: the large LCD screen quickly displays all real-time data and charts, and supports touch operation, humanized input methods and menu design, simplifying the operation process.
- Built-in large internal memory: It supports automatic storage of multiple individual charging records without computer monitoring, and it is not easy to lose the internal memory even in the case of an accidental shutdown, ensuring data security. And provide data management operations such as verification, deletion, and USB interface download data.
- Multiple protections & alarms: provide sufficient electrical protection measures for various abnormal conditions during the discharge process, automatically terminate, LCD display prompts and buzzer warnings to assist users in proper handling.

1.2. Main purpose and scope of application

Mainly used for lithium battery box/module charge and discharge test, suitable for 2-260V voltage level.

1.3 System Composition

When the tester system is used on site, it consists of a host, BMS communication detection module and discharge cable. The host is composed of a color display screen, a data processing unit, a data acquisition unit, an auxiliary power supply unit, a discharge unit and a panel operation unit.

1.4 Environmental conditions for use

No corrosive, explosive and insulating gas and conductive dust.

1.5 Impact on the environment

The discharge part of the device is a built-in 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 protection functions 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 Safe usage

Use this device in accordance with the operating manual.

2.3 Prone to wrong use or misoperation

1) The operating tools 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 easily cause a short circuit accident.
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 cable should be pulled out in time.

2.7 Other Safety Precautions

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

3. Technical characteristics

Model	THINKCAR CE EVP902 battery pack charging and discharging equipment
Working power	Single-phase three-wire AC 220V,The frequency range is 40-60Hz
Host operation mode	touch screen
Display screen	7-inch TFT LCD screen, resolution 800*480
Data communication	CAN, RS485 (extended functions)
Data dump	U disk
Data report	Data reports can be generated by supporting software after the data is uploaded to the PC
Internal data storage	16G
Data search	Support in-memory data preview
Battery box data acquisition communication	CAN data bus (extended functionality)
Module data acquisition communication	Wire Harness Sampling
Group Terminal Voltage Accuracy	≤±0.5%FS+0.3V, resolution: 0.1V
Single voltage accuracy	≤±0.1%FS+5mV, resolution: 0.001V
Test current accuracy	≤±1%FS+0.2A, resolution: 0.1A
Charging voltage range	DC 2-260V
Discharge voltage range	DC 2-260V
Charging current range	Maximum current 100A, maximum power 4.4kW

Discharge current range	Maximum current 150A, maximum power 7.2kw
Charge control	Constant current charging + constant voltage charging
Discharge working mode	Constant current discharge, constant power discharge
Charge and discharge data collection	Internal active measurement + external CAN communication data acquisition
Battery charging and discharging protection	Protection against overcharge and overdischarge of battery strings and overheating of battery strings
Host protection	Over temperature, over current, current out of control trigger shutdown protection
Shutdown actuator	DC Air Break
Reverse polarity protection	Support
Exception protection	Power cord loss, main cable loss
Over temperature protection	The overtemperature of the resistance box is 85℃; the overtemperature of the radiator is 100℃
Alarm prompt	LCD display + buzzer

Safety test	
Pressure test	AC input-chassis: 2200Vdc 1min AC input-chassis DC input-output: 2200Vdc 1min DC input-chassis

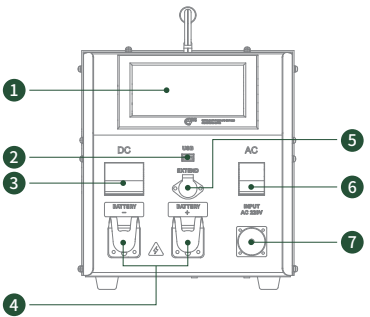
Working environment	
Cooling	Forced air cooling
Temperature	Working temperature range: -5~40℃; storage temperature: -20~70℃
Tumidity	Relative humidity 0~90% (40±2℃)
Altitude	Rated altitude 2000 meters
Size	512×295×339mm
Weight	28kg

4. Installation and commissioning

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

5. Operation and use

5.1 Device panel description



serial number	name	explanation
①	color touch screen	7 inches
②	USB interface	U disk copy transfer
③	DC circuit breaker	The positive and negative input closing switch of the battery pack must be closed before starting the test.
④	Cable positive and negative interface	Red positive and black negative, this interface is used to connect charging and discharging cables.
⑤	Communication interface (extended function)	This interface is used to connect CAN and RS485 data lines.
⑥	AC input circuit breaker	Device power-on switch, push up to power on, push down to power off.
⑦	AC input fast interface	This interface is used to connect single-phase AC. Note: During the charging test, please connect to a power source that meets the charging power requirements.

5.2 Device connection

5.2.1 Cable connection

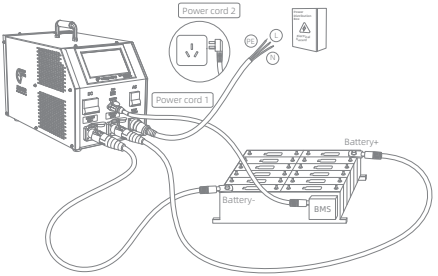
First, insert the quick connector of the discharge wire into the quick socket of the tester for docking (red positive and black negative), and then connect the other end of the discharge wire to both ends of the battery box (red positive, black negative).
Note: Connect the device end first, and then the battery end to prevent short circuit during wiring. When disassembling, proceed in reverse order and standardize the operation - the operating tool should be effectively insulated.

5.2.2 CAN communication connection (optional function)

Connect the dedicated CAN communication cable to the communication interface of the discharge instrument and the battery box respectively.

*This feature is supported by development

· CAN communication test

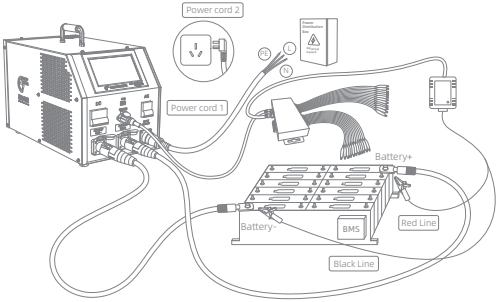


Note: Please close the AC circuit breaker when starting up, and close the DC circuit breaker before starting the test

5.2.3 Module cell voltage acquisition

Connect the 24L sampling box to the sampling harness and connect it to the module voltage sampling connector to collect the voltage. When entering the blind charge and discharge test battery, the group end acquisition module can be clamped into the positive and negative poles of the module to help increase the sampling accuracy.

· 24L physical sampling box for data integration test



Note: Please close the AC circuit breaker when starting up, and close the DC circuit breaker before starting the test

5.2.4 Working power connection

Connect the AC input power cord equipped with the equipment to the corresponding access interface, pay attention to the load output connected to the lighting power socket (single-phase three-wire 220V input, maximum input 10A) or the load of the distribution box to consider the 4.4KW power load, according to the AC input The load size sets the maximum charging current (see the parameter table for details) to prevent over-current.

5.3 Equipment operation

5.3.1 Startup interface

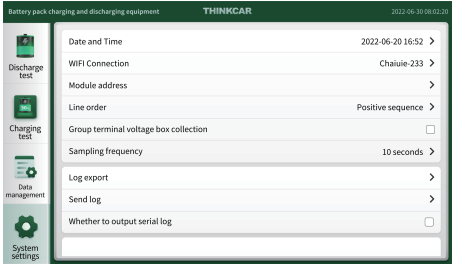
5.3.2 Function main menu

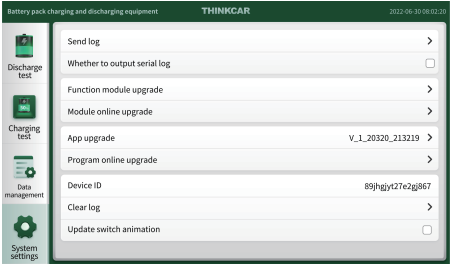
In the function main menu interface, select each function item and click to enter the corresponding function interface, as shown in Figure 5-3-2 function main menu.

5.3.3 System Settings

Select “System Settings” to enter the system setting interface, as shown in Figure.

5-3-3 System Settings.



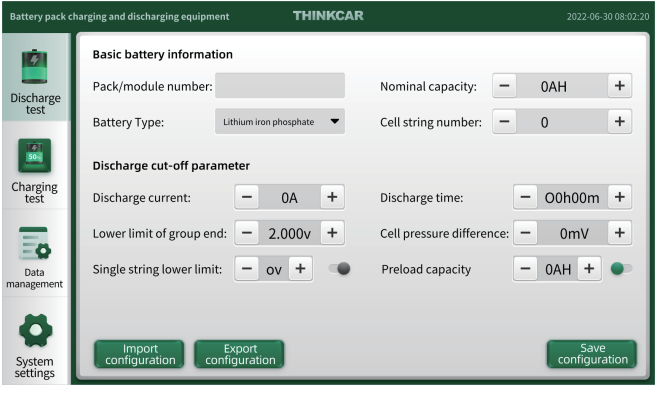


Parameter Description:

Date and time: After clicking, enter the date and time setting interface to set the date and time.
WIFI connection: select the corresponding WIFI network or hotspot to connect.
Single voltage collection method: default "24-channel collection box", if you need "CAN" method, you need to provide the corresponding protocol, and get the corresponding version after the upgrade program - with CAN communication test.
Whether 24 channels with temperature: default is not checked.
Set KB value: 24 channels with temperature box parameter setting, no need to set by default, it is used for NTC specification parameter setting.
Battery type: For example, there are three choices of "air-cooled", "water-cooled" and "other types", and choose the corresponding battery type. Support for new types of batteries was added.
Module address: The default address is "module 100". Up to three 24-channel acquisition boxes can be connected. If there is more than one 24-channel acquisition box, the module address needs to be set.
Wire sequence: When using a 24-channel sampling box, it is necessary to set "positive sequence" or "reverse sequence" according to the wiring.
Enable group terminal voltage box collection: When using 24-channel sampling box, this item needs to be checked.
Sampling frequency: data collection storage interval.
Log related parameters: including log export, send log, whether to output serial port log, whether to output CAN log, clear log, generally used by manufacturers, no need to set by default.
Function module upgrade: hardware upgrade, manufacturer use, please contact the manufacturer if necessary.
Module online upgrade: hardware upgrade, manufacturer's use, please contact the manufacturer if necessary.
Application upgrade: software upgrade locally, through U disk.
Program online upgrade: software remote upgrade, used by the manufacturer, please contact the manufacturer if necessary.
Device number: Display the number of this device.

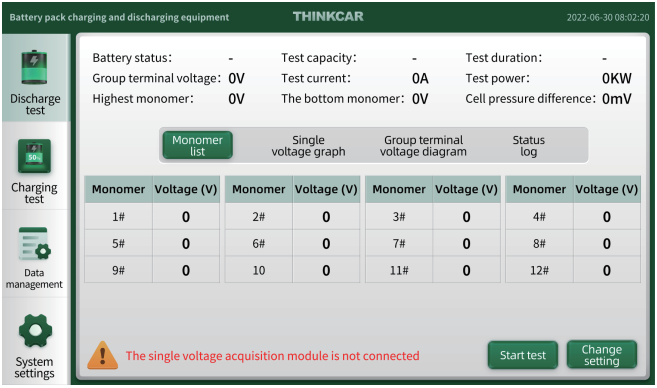
5.3.4 Discharge test

1) Select "Discharge Test", and the discharge test settings shown in Figure 5-3-4 will pop up. You can directly set the relevant parameters in the "Battery Basic Information", and then click "Save Configuration" in the lower right corner to enter the test interface; you can also select "Import Configuration" to import the set battery basic information; and then use "Export Configuration" to export The set battery basic test information is called out quickly, and then the test is performed.



Basic battery information description:
Pack/Module No.: Electric box or module serial number
Nominal capacity: the nominal capacity of the electrical box, according to the actual input, can be identified from the label
Battery Type: Select the battery type
Number of battery strings: fill in according to the actual number of strings
Cell pressure difference: pressure difference protection value, one of the shutdown conditions
Nominal group terminal voltage: input according to the actual group terminal voltage
Discharge current: discharge test current value
Discharge time: discharge test time setting, one of the shutdown conditions
Group terminal lower limit: group terminal voltage lower limit protection, one of the shutdown conditions
Pre-discharge capacity: discharge capacity AH, one of the shutdown conditions
Single string lower limit: single string lower limit voltage protection value, one of the shutdown conditions

2) Click "Save Configuration" to enter the test interface, close the DC switch, and click "Start Test" to start the test.
In the test interface, you can view the current state of the battery pack, the test current, the test duration, the current pack terminal voltage, and the information of the monomer, temperature, etc., as shown in Figure 5-3-4 The current state of the battery.
During testing, select Modify Configuration to make adjustments to settings.



3) During the threshold protection test, if any shutdown threshold is reached, it will automatically shut down. Stop condition type:

- Discharge time
- Lower limit of group end
- Pre-discharging capacity (with discharge capacity limit enabled)
- The lower limit of a single cell (when there is a limit on the discharge capacity)

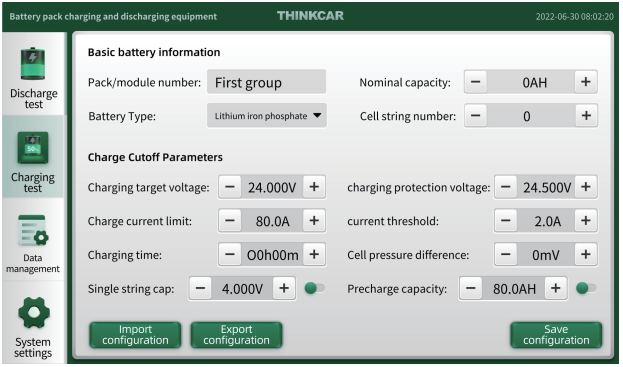
4) Abnormal shutdown protection In addition to the above shutdown threshold protection, it also has a number of hardware protections:

- The discharge module voltage is abnormal
- Discharge module current is abnormal
- The temperature of the discharge module is abnormal
- Short circuit protection
- Fan failure, etc.

5.3.5 Charging test

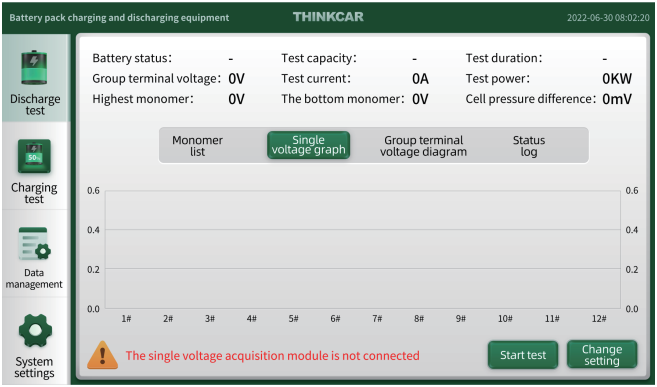
1）After selecting "Charging Test", the "2.2KW Socket" and "4.4KW Power Distribution Box" dialog boxes will pop up, and you need to select the corresponding input power mode to enter the charging test interface settings. The above power supply selection needs to be set correctly to prevent the actual power supply from overloading during the charging test. Cause the cable to heat up and burn out. There is no need to select load selection when entering the "discharge test" interface. You can set parameters for testing.

Remarks: The 2.2KW socket is only for discharge use. If charging is required, please connect the power supply to the 4.4KW distribution box.



Basic battery information description:
Pack/Module No.: Electric box or module serial number
Nominal capacity: the nominal capacity of the electrical box, according to the actual input, can be identified from the label
Battery Type: Select the battery type
Number of battery strings: fill in according to the actual number of strings
Cell pressure difference: pressure difference protection value, one of the shutdown conditions
Nominal group terminal voltage: input according to the actual group terminal voltage
Discharge current: discharge test current value
Discharge time: discharge test time setting, one of the shutdown conditions
Group terminal lower limit: group terminal voltage lower limit protection, one of the shutdown conditions
Pre-discharge capacity: discharge capacity AH, one of the shutdown conditions
Single string lower limit: single string lower limit voltage protection value, one of the shutdown conditions
Current threshold: when the voltage reaches, if the current is less than this value, it will stop, one of the shutdown conditions
Single string upper limit: single-core voltage upper limit protection value, one of the shutdown conditions

2）Click Start to save the configuration, enter the test interface, close the DC switch, and click "Start Test" to start the test.



In the test interface, you can view the current state of the battery pack, the test current, the test duration, the current pack terminal voltage, and the information of the cell, temperature, etc., as shown in Figure 5-3-5 The current state of the battery. During testing, select Modify Configuration to make adjustments to settings.

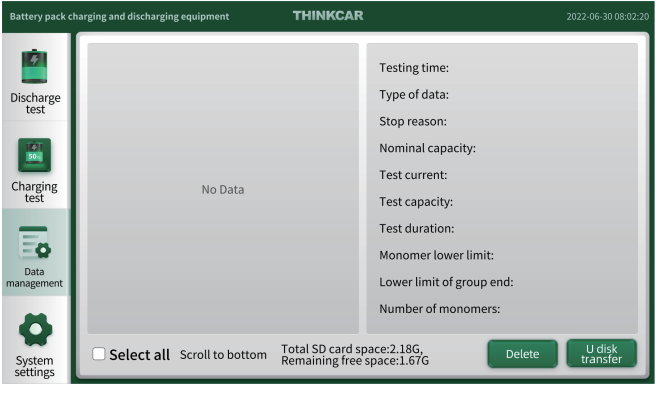
3) During the threshold protection test, if any shutdown threshold is reached, it will automatically shut down. Stop condition type:

- Charging time arrives
- Current threshold reached
- Single voltage upper limit
- Group terminal voltage upper limit

4) Abnormal protection shutdown In addition to shutdown threshold protection, the host also has multiple hardware protections:

- Charging module undervoltage protection
- Charging module overvoltage protection
- Charging module over temperature protection
- Charging module overcurrent protection
- Short circuit protection
- Fan failure

5.3.4 Data Management



Insert the U disk into the USB port on the panel, select the data to be saved, and click the "U disk transfer" button to transfer the corresponding discharge data and charging data to the U disk. Or select data.

6. Maintenance

1）The warranty of this equipment is one year, which can be extended.
2）This equipment is maintained for life.
3）General fault analysis and troubleshooting:

Serial number	Fault	Troubleshooting method
1	Communication failure	Check BMS communication CAN connection
2	Power-on discharge prompts cable connection error	The positive and negative poles of the discharge cable are connected to the reverse DC circuit breaker. The test input voltage is too high.
3	Abnormal current monitoring	Restart the machine
4	Host temperature is too high	Confirm the placement of the discharger, pay attention to ventilation and heat flow
5	Not enough storage space	Periodically delete copied data files
6	USB failure	Confirm whether the U disk is too large, and confirm that the U disk cannot store too many other files

7. 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 90%.

8. Packing list

Serial numbe	Icon	Name	Quantity	Unit	Explanation
1		The host	1	Tower	
2		Power cord (AC220-10A)	1	Strip	Discharge use only (charging limit within 2.2KW)
3		Power cord (AC220-20A)	1	Strip	Both discharge and charge can be used
4		Discharge cable	1	Root	one red, one black
5		24-channel acquisition module BTS-24L-T4	1	Set	Contains a 24-way acquisition module communication line

Serial numbe	Icon	Name	Quantity	Unit	Explanation
6		Physical Clip Line	2	Strip	Small head 3.81
7		Group end acquisition module	1	Set	Contains 1 group end acquisition module communication line and 1 positive and negative sampling line of the group terminal acquisition module
8		U disk	1	Indivual	
9		Product certification	1	Open	
10		Quick Start Guide	1	Book	

9. 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.

10.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

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