

Dear Client,

Thank you for Purchasing our HTFD-48V/200A Battery Discharge Tester. Please read the manual in detail prior to first use, which will help you use the equipment skillfully.



Our aim is to improve and perfect the company's products continually, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.



The input/output terminals and the test column may bring voltage, when you plug/draw the test wire or power outlet, they will cause electric spark. PLEASE CAUTION RISK OF ELECTRICAL SHOCK!

## ◆ **SERIOUS COMMITMENT**

All products of our company carry one year limited warranty from the date of shipment. If any such product proves defective during this warranty period we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

## ◆ **SAFETY REQUIREMENTS**

Please read the following safety precautions carefully to avoid body injury and prevent the product or other relevant subassembly damage. In order to avoid possible danger, this product can only be used within the prescribed scope.

*Only qualified technician can carry out maintenance or repair work.*

--To avoid fire and personal injury:

### **Use Proper Power Cord**

Only use the power wire supplied by the product or meet the specification of this produce.

### **Connect and Disconnect Correctly**

When the test wire is connected to the live terminal, please do not connect or disconnect the test wire.

### **Grounding**

The product is grounded through the power wire; besides, the

ground pole of the shell must be grounded. To prevent electric shock, the grounding conductor must be connected to the ground. Make sure the product has been grounded correctly before connecting with the input/output port.

### **Pay Attention to the Ratings of All Terminals**

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

### **Do Not Operate without Covers**

Do not operate this product when covers or panels removed.

### **Use Proper Fuse**

Only use the fuse with type and rating specified for the product.

### **Avoid Touching Bare Circuit and Charged Metal.**

Do not touch the bare connection points and parts of energized equipment.

### **Do Not Operate with Suspicious Failures**

If you encounter operating failure, do not continue. Please contact with our maintenance staff.

### **Do Not Operate in Wet/Damp Conditions.**

### **Do Not Operate in Explosive Atmospheres.**

### **Ensure Product Surfaces Clean and Dry**

## **—Security Terms**

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Warning: indicates that death or severe personal injury may result if proper precautions are not taken

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Caution: indicates that property damage may result if proper precautions are not taken.

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## 1、 summary

This product is designed according to the national DL T 1397.2-2014 power DC power system test equipment general technical conditions-Part 2: Battery capacity discharge tester related test and maintenance procedures requirements, the battery performance test of professional test equipment.

DL / T724-2000 power system with battery dc power supply device operation and maintenance technical procedures: long-term floating charging mode of acid battery, the plate surface will gradually produce lead sulfate crystals (commonly called "sulfide"), the pores of the plate, block electrolyte penetration, to increase the internal resistance of the battery, reduce the role of the active substances in the plate, capacity. The verification discharge can make the battery activated, the capacity is restored, the service life is extended, and ensure the safe operation of the power plant and substation. Verification discharge cycle of valve controlled battery: for newly installed or overhauled valve controlled battery group, full verification discharge test shall be carried out every 2-3 years; full verification discharge test shall be conducted every year after 6 years of operation. In 2014, the National Energy Administration issued 25 key requirements to prevent accidents in power production: the newly installed reading and control sealed battery group should carry out full verification discharge test. A verification discharge test was

conducted every other year thereafter. After the battery group has been running for 6 years, the verification discharge test should be done once a year.

This instrument and equipment is for the whole group of 48V battery group series test, different specifications and parameters and models of different requirements for the whole group, specific according to the actual purchase of the instrument shall prevail. A special instrument for testing the lead acid battery with a voltage of 1.2V-12V. The instrument adopts the current advanced test technology principle, the equipment discharge power, small volume, light weight, the upper computer data management software has complete functions, greatly reduce the workload of daily test and maintenance of the battery.

Product name: battery pack discharge tester, battery pack discharge monitor, battery pack capacity tester, battery pack capacity fast tester, battery pack load instrument, etc.

## **2、 Performance characteristics**

1 Large screen: the instrument adopts 7-inch HD 1024 \* 600 capacitive touch screen operation.

2 Storage: Data storage mode has internal storage 8GB and external U disk storage mode, and the storage interval can be self-determined.

3 Protection function: with overpressure, overcurrent, overheating, underpressure and other protection functions.

4. Online monitoring function: the battery pack is monitored in real time, and the single battery is under online discharging, uniform charging and floating charging.(Optional, model may change)

5 discharge test function: after the battery from the system using the false load for constant current or constant power discharge, set the current battery type, monomer type, overall number, capacity, discharge current, set the whole lower limit, lower limit, time, capacity parameters, tester will automatically perform discharge function, and real-time display real-time voltage, discharge real-time current, battery capacity, single battery voltage, discharge time and other data;

6 Real-time protection: during the test, when the whole group or single battery is abnormal or the tester is abnormal, the tester will automatically terminate the test to protect the battery.

7 Strong anti-interference ability: under the condition of serious interference, the last bit of the LCD screen data can be stable within the range of  $\pm 1$  word, stable reading, and good repeatability.

8 long service life: high precision PTC resistance is adopted to effectively eliminate the impact of ambient temperature on the measurement results.

9 Easy to carry: small size, light weight. Humanized operation



interface, simple operation, clear process.

10 The computer data management software is powerful, friendly interface, providing data management, printing, analysis, report statistics, automatic generation of test reports and other functions.

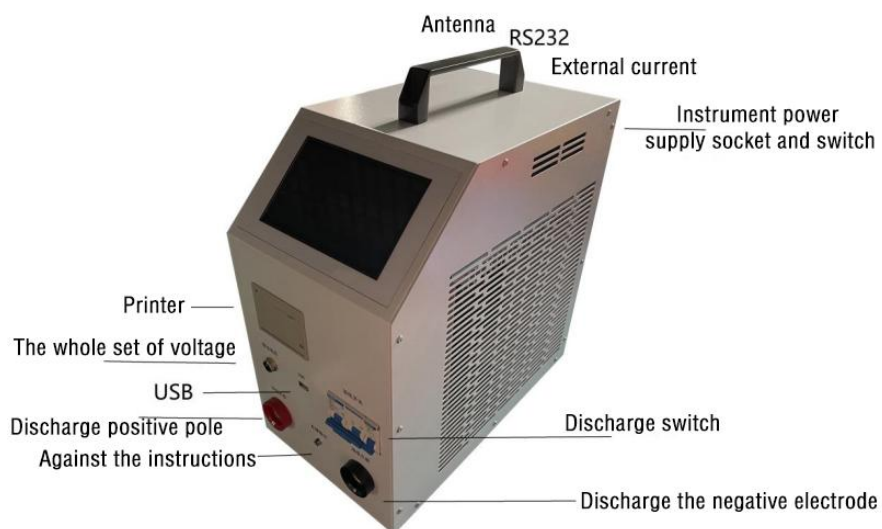
11 Advanced options: wireless mobile phone APP, PC control, micro printer (some specifications come with).

### 3、 Qualification

Applicable to battery string specifications	<b>48V/2000AH</b>
The whole range of voltage measurement	0 ~ 60V
Whole group voltage resolution	0.1V
Voltage test accuracy	0.5%
Constant current range	<b>DC35~60V: 0~200A</b>
Discharge current resolution	0.1A
Accuracy of current measurement	1%
Working voltage	AC 220V±15%, frequency :45 ~ 65Hz;
The cooling way	Forced air cooling
Communication methods	RS485
Display mode	Capacitive touch 7 "1024*600 HD resolution
storage	Input-enclosure: 2200Vdc 1min; Input-output:

	2200Vdc 1min; Output - Enclosure: 700Vdc 1min
Withstand voltage test	EN610950
security	14KG
Discharge current resolution	544x244x300mm
<b>Optional unit</b>	
Single-body voltage acquisition measurement type	2V/6V/12V Other types of batteries
Single-body voltage acquisition measurement range	0 ~ 20V
Wireless monomer acquisition box (Quantity configured on demand)	Using multi-band RF wireless module, the communication distance can reach more than 150 meters, 2V /3.2/3.7/6/ 12V single battery voltage monitoring, 1~30 groups of wireless monitoring modules, can monitor up to 360 batteries, a single wireless monitoring module can monitor 12 single batteries
The monomer voltage resolution	2V/6V12V Other types of batteries :0.001V

## 4、 Instrument appearance



Note: According to the applicable voltage size and current, the product appearance size layout is slightly different.

## 5、 Operation setup method

### 1 Connection safety

5.1.1 Find the total positive electrode of the field battery pack and close the battery pack output switch.

5.1.2 During the wiring before testing, the wiring shall be conducted in the order of "the first instrument, the battery", that is, the connection of the instrument end, and the connection of the battery end.

5.1.3 After the test, the user should remove the wire according to the order of "the battery first, the instrument later", that is, remove the connection of the battery end first, and then remove the instrument end connection later.

Note: Please check the open state of the equipment before wiring.

### 2 Connection of the instrument discharge cable

5.2.1 The discharge bright red black cable connects the "discharge

current interface" of the tester with the battery pack.

Note: "positive discharge current" (red) is connected to the positive electrode of the battery pack, and "negative discharge current" (black) is connected to the negative electrode of the battery pack. It is strictly prohibited to counter!(The reverse indicator will light on and the built-in buzzer will ring)

5.2.2 Use the whole set of voltage acquisition line to jointly connect the "whole set of voltage" of the tester with the total positive and total negative electrodes of the battery pack.

Note: The "positive" (red clip) of the whole voltage line is connected to the positive electrode of the battery pack, and the "negative" (the black clip connects to the negative electrode of the battery pack. It is strictly prohibited to counter!

5.2.3 Insert the AC220V power cable of the equipment and insert the antenna.

5.2.4 After checking, connect the power supply and turn the tester on

### 3. Wireless single collection box (optional function, skip if not)

5.3.1 The communication mode between single voltage collector and host is wireless communication; the module antenna is built in, and the instrument host shall be connected to 433 antenna.

5.3.2 The wireless acquisition box is divided into A according to the

number of monitored battery segments:

A, Section 12 wireless acquisition box.(Compatible with 2,6,12V lead-acid batteries, 1.2V,2.4V,3.2V,3.7V and other special batteries)

### 5.3.3 Quantity selection:

Example a: the number of battery pack nodes 108, the single wireless acquisition box module can monitor  $12,108/12=9$  division, so the number of modules to be used =9.

Example b: the number of battery pack is 18, the single wireless acquisition box module can monitor  $12,18/12=1.5$ , so the number of modules to be used =2.)

5.3.4Description of wireless acquisition box interface (take 48V24 batteries, wireless acquisition box as an example):



Indicator lamp DB15 wiring harness connector

### 5.3.5Wireless acquisition box connection steps:

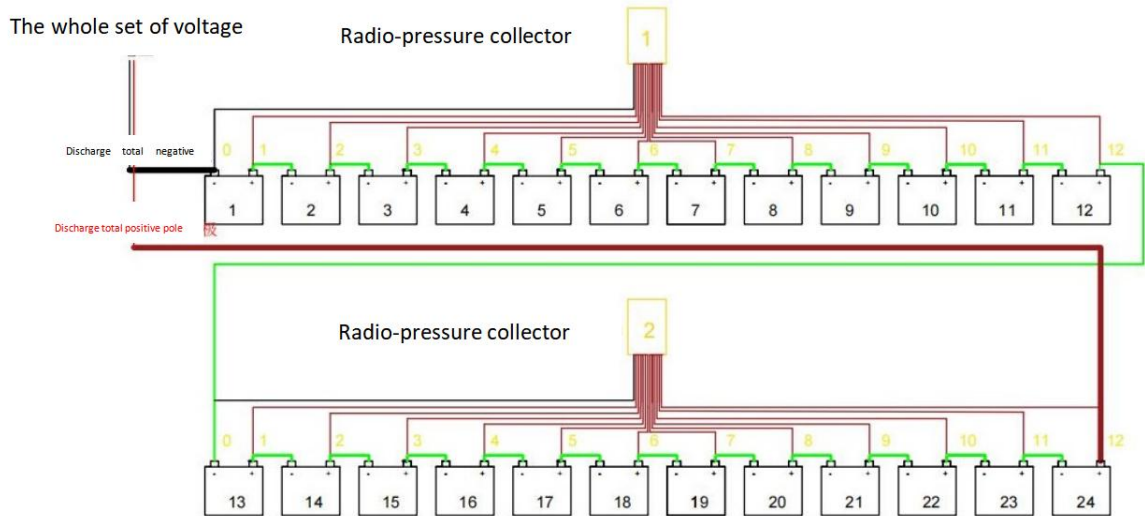
Wireless acquisition box starts from module 1, the wireless acquisition box is connected to the single battery, please order according to the corresponding number, DB15 wire harness has 13 lines, 0 black, remaining 1..... 12 is shown in red.0- -6 is a beam of lines from

long to short, 7-12 bits from short to long acquisition connection!

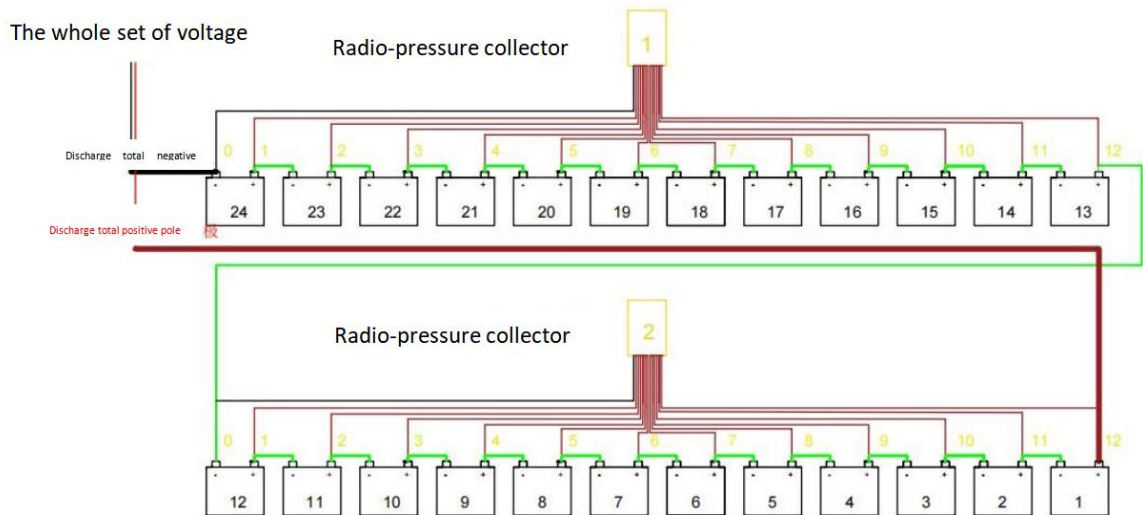
The wiring order of the voltage acquisition line and the battery is: the current total negative terminal of the battery pack is the starting terminal of the first wireless collector, and the total negative terminal of the battery pack is connected according to "black 00, red 01, red 02- - - -red 11 and red 12". No.2 wireless collector battery boot is connected to the current wiring of the 13th battery negative electrode connection black 00, red 01- - - -red 11, red 12 " wiring in turn. When using multiple wireless collection boxes, number the wireless collection box. From small to large, all the collection lines of the wireless collection box are connected, and the redundant collection lines of the last module are not connected.

After the wiring is completed, check whether the wiring is correct, and connect the DB15 interface with the wireless acquisition box. After the test, unout the DB15 interface harness, and then take the test clip.

For the power supply of the wireless collection box, the power supply voltage of the wireless collection box is "6V~60V". The power supply of the collection box automatically adopts the power supply mode without additional wiring (Line 0 and Line 4). After the wireless collection box is inserted, the single voltage indicator light flashes normally, and the interval of 30s-50s flicker indicates that the transmission is on.



When battery no. 1 is the total negative electrode, as shown above  
(default negative electrode of No.1 in the test interface)



When the battery no. 1 is the total positive electrode, as shown in  
the above picture (sorting correction electrode No.1 in the test interface)

Note: If the acquisition voltage of the field wireless unit is not normal, please check the multimeter first, or check whether the wiring is wrong. And the actual battery number (some factory battery pack standard number, not according to the actual series sequence number.)

4. Online monitoring function (interface with 48V battery pack as an example, optional function)

When the battery pack is in the state of discharge, uniform charging and floating charging, the battery is monitored and saves the process test data. When the time comes, the instrument automatically stops monitoring, and the monitoring can also be stopped artificially. Test the online monitoring for normal operation before the discharge.

#### 5.4.1 Preparation before the test

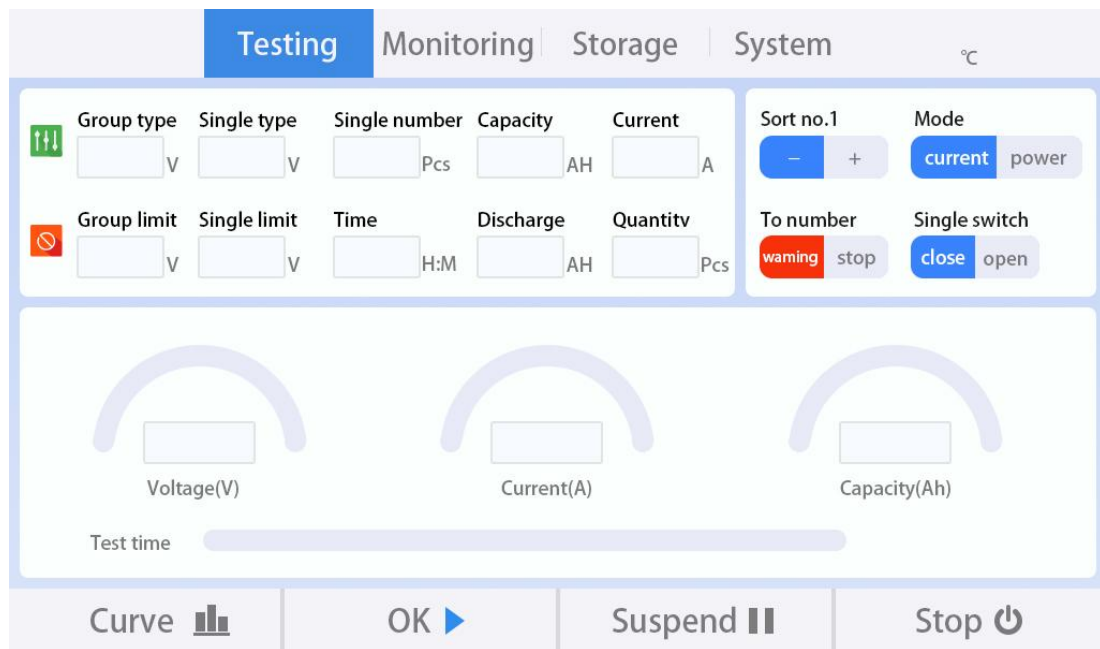
High current wiring: the wiring should be connected to the high current discharge line of the instrument, first negative (black) after positive (red), followed by the connection with the battery. (After the test, switch off the air switch. Remove the battery for measuring the high current line)

The whole set of voltage acquisition line: the wiring is first connected to the total positive and negative electrode of the field battery, and then connected to the total positive and negative electrode of the battery.

#### 5.4.2 parameter setting

The rear power button enters the main interface and enters the main setting interface





picture5.4.2 Main parameter setting interface

※Group type : Select according to the battery pack voltage.(Test instruments of various voltage types must be strictly selected according to the battery pack, generally for the standard voltage x section number, such as 24 section x2v, write 48V at this time)

※single type: Nominal voltage of a single cell.

※single number : Number of battery blocks to be tested.(Battery pack number x sections per group cannot be greater than 360)

※capacity: Nominal capacity of a single battery.

※current: It is generally one tenth of the AH value of a single battery, namely the discharge rate of C10 10 hours.

※Sort no.1 : The battery number 1 of the field battery pack is the total positive electrode, the positive electrode is written here, the negative electrode, the negative electrode is selected here.

※mode: The default is constant current discharge, constant power is voltage constant current variable generally not available.

※tomumber: This is the termination condition, which is linked with the number of sections on the left. For example, when the single acquisition switch is on, and the warning section number is set to 3 sections, the number of warning section triggers the equipment alarm or the device stops discharge.

Single unit collection: generally, if the collection box is not connected to the site, it is closed here. For data, connect all single batteries and turn the switch on.

**Terminate the settings- - - - -5 triggers※A group limit:**  
When the lower limit of battery voltage after discharge is generally 0.9 times the standard voltage value.

※**B time**: Monitoring time: time: min; 1 minute; usually 10 hours.

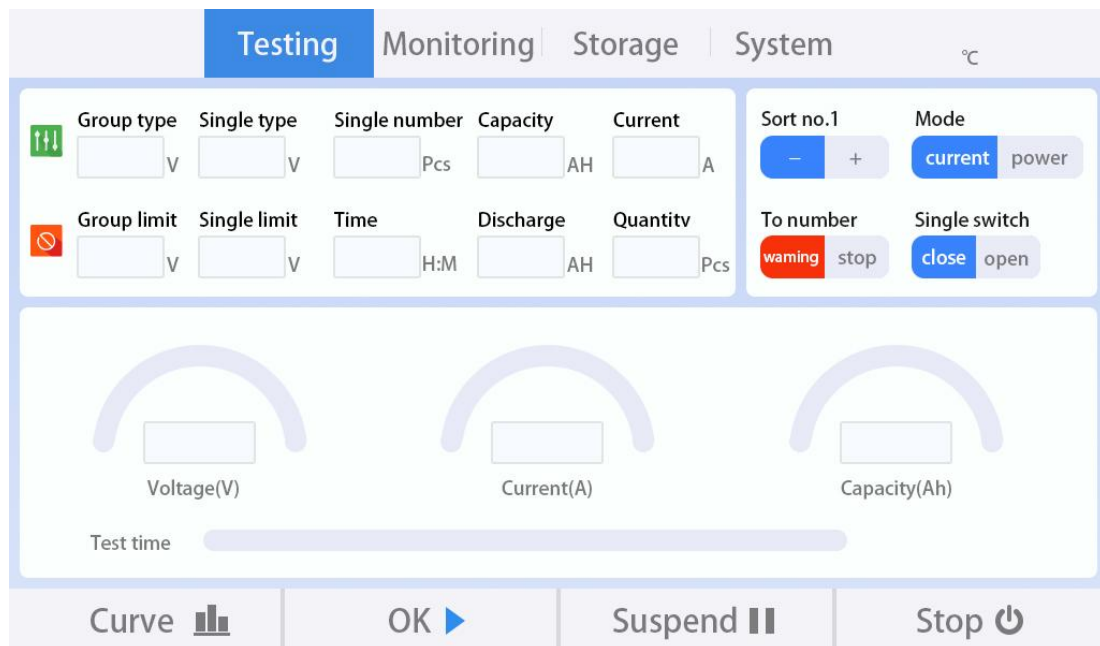
※**Cdischarge**: Battery pack capacity termination parameter.

※**Dquantiv** : When used with the wireless acquisition box, it is generally set to 3, and the alarm or the single voltage limit should be set to the number of sections. Lower single voltage: lower single voltage alarm / termination parameter, for joint on-line monitoring and collection. If there is no online monitoring, do not fill in.

※ **EManual stop, point end or air switch switch**

※curve: Equipment voltage curve diagram

### 5.4.3 Start testing the interface



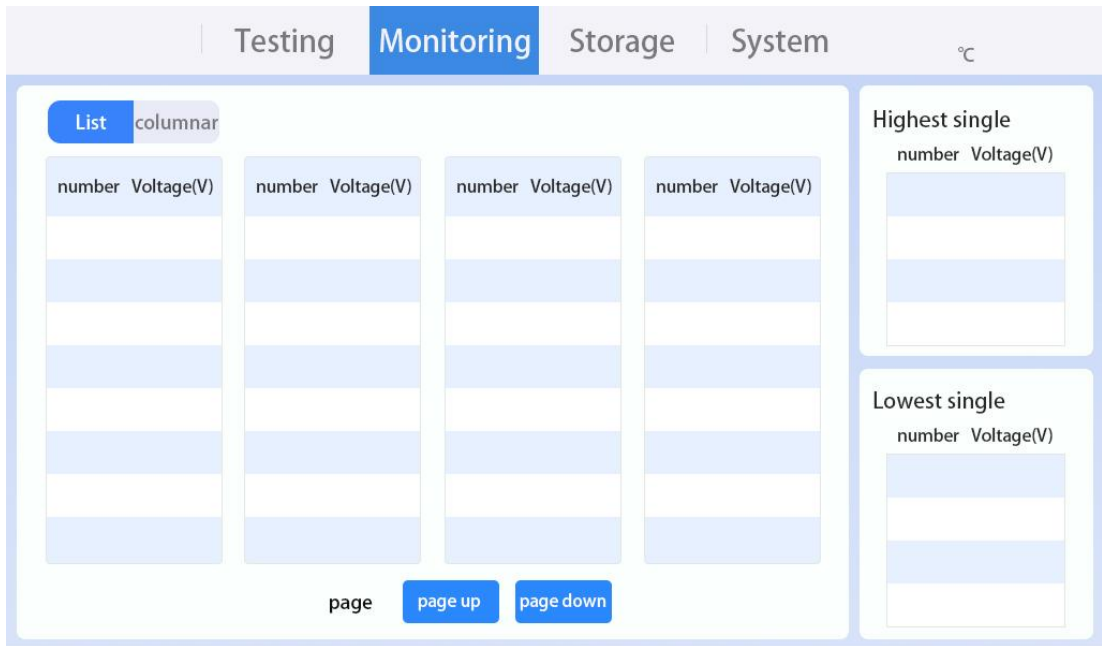
### 5.4.3 Prepare to start the trial data interface

When the field parameter information is set up, repeatedly check whether the wiring is completed. Close the air switch and click the Start button, and the internal cooling fan starts to run. At this point, the pause button can act, and the end button can move. Online monitoring can move, and real-time curves can be viewed.

When the whole set of lower limit value reaches the set value, the machine will automatically stop.

When the lower limit of the unit is lower than the set section number 3, it will alarm.

### 5.4.4 Monitor individual data information online

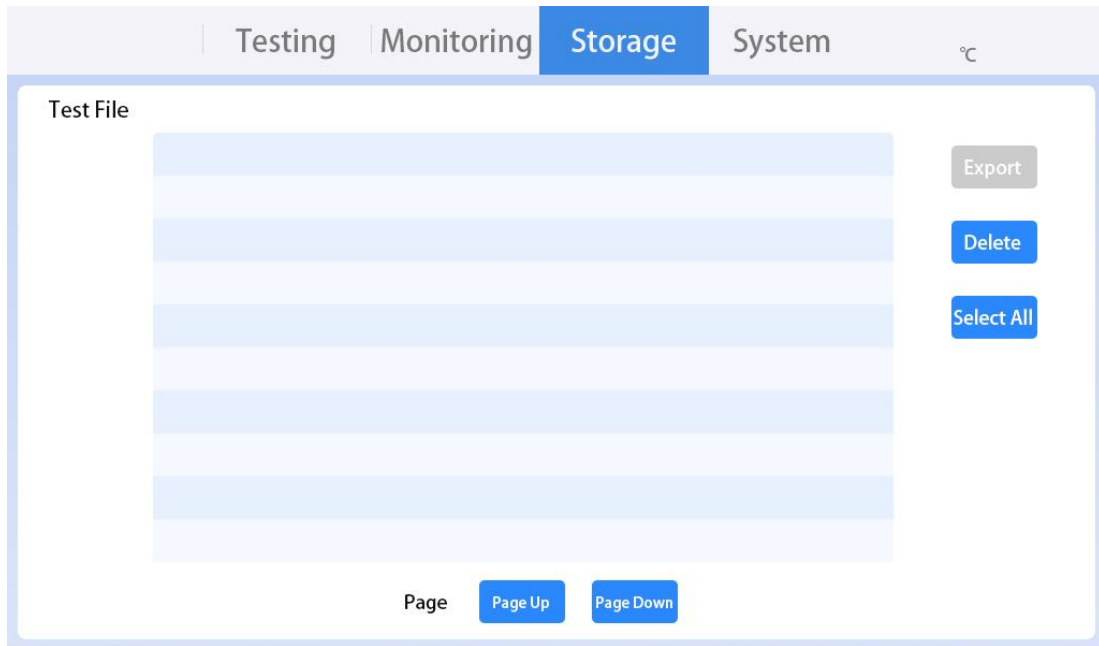


picture5.4.4 Monitor the monomer voltage data online

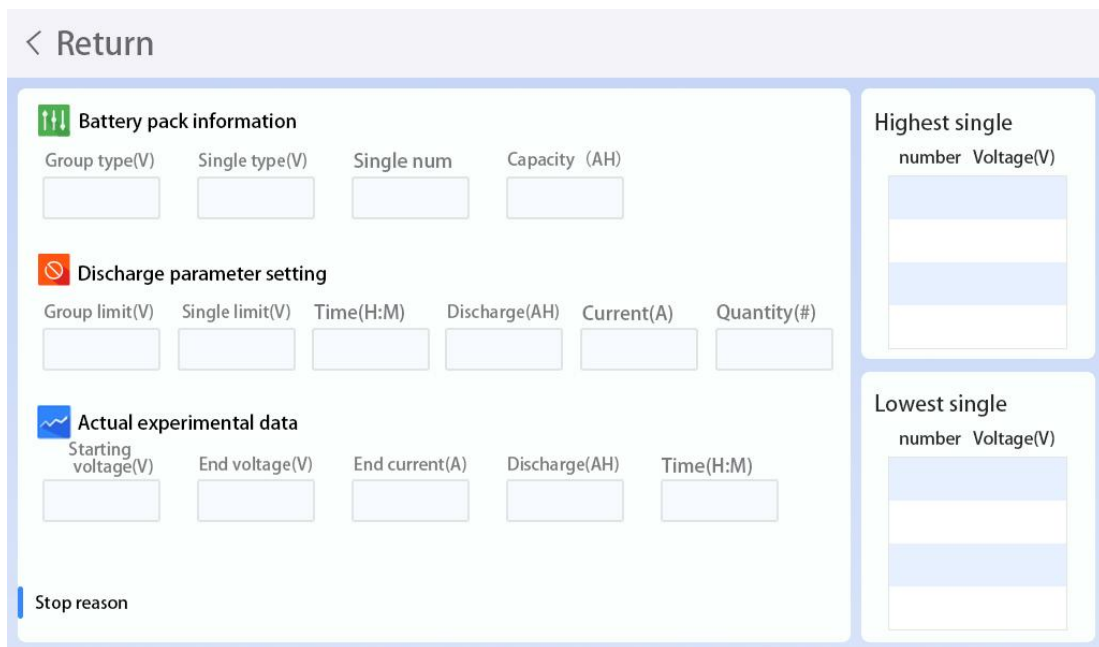
The highest monomer voltage and the lowest monomer voltage are shown on the right side Bar chart: battery pack graphic display Each page displays 32 pieces of data, view the other batteries, and select through the previous page, the next page.

#### 5.4.5 Stop discharge status

※ After artificial termination, section number or reaching the termination condition, the tester stops discharging (the instrument fan sinks for 20S, do not turn off the instrument power supply at this time to avoid damage to the instrument)! At the same time pop up view data and return interface.



picture5.45 Enter the view data interface



### 5.4.6 Remove the wiring

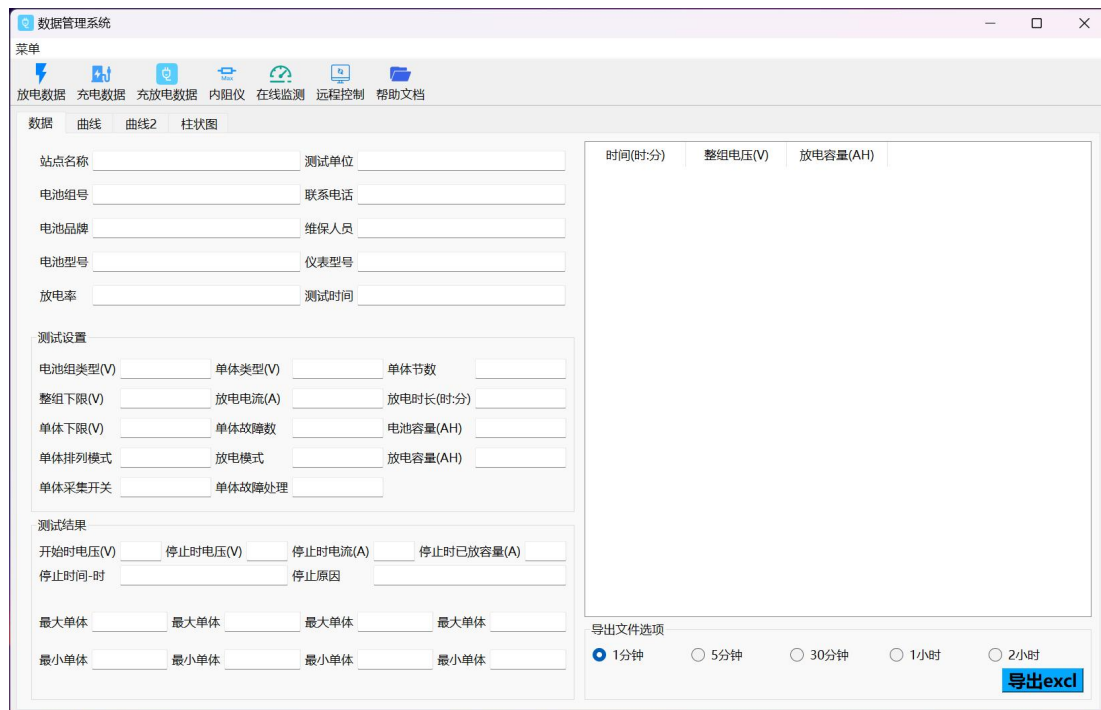
✘After the test, the first step is the air switch switch, close the host. Turn off the power supply of the tester and remove the wiring. Then remove the connection with the battery and the connection with the instrument.

Remove the collection box: disconnect the collection box first, and then take up the battery side fixture.

Field device recovery.

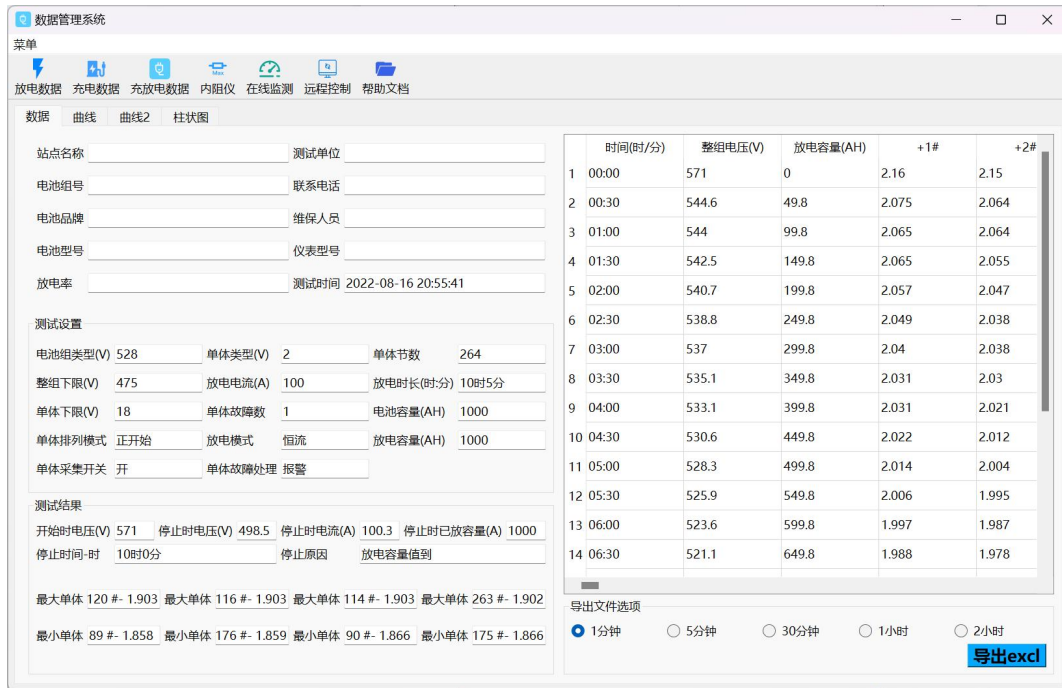
#### 5.4.7 Data export interface and desktop side software

Before the test is off, if the computer desktop software export report is required, insert the standard U disk, the U disk export icon is lit, and click the U disk export. Then insert the computer, the battery management software click open, then select the menu to open the file--select the test data folder in the U disk, select the file name to open, generally C202XXXXXXXXXXXX, is a time calibration file name. Select Export to do.



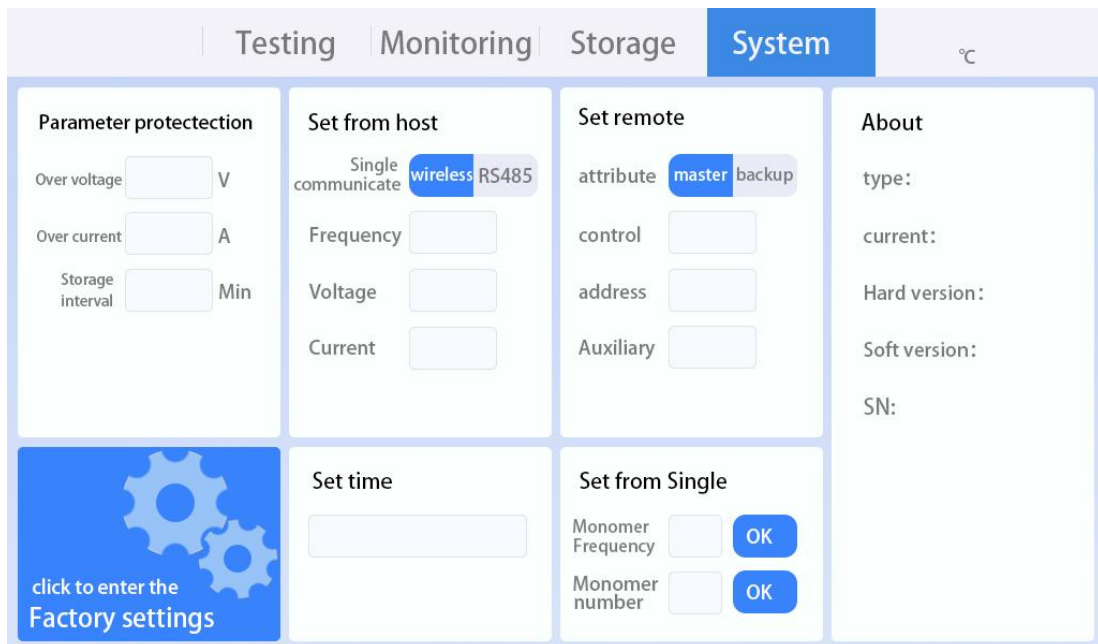
After import, display as shown in the figure, select the time interval.

Generally, if the 10 hour test suggests 1 hour interval, export excel



## 6、Introduction to the system management interface

### 6.1.The interface is shown in Fig



### 6.2.Parameter protection

Over voltage:By default, the device exceeds this voltage value.

Over current: Generally, the current stability limit of 10% above the internal sensor specification of the device.

Storage interval: The data saving interval of the real-time discharge of the device is generally 1 minute.

**6.3.Set from host:** When 2 or more machines are in use. The default setting is 1.

Single communicate: Currently wireless default

Frequency : The default is 0. Generally, multiple devices of our company are used in the same machine room at the same time. When the data transmission with wireless collection box, in order to distinguish their own data, it is necessary to change the frequency band. At this time, the collection box frequency band should also be changed.

Voltage: internal schema; internal model

Current: interior; inside; inward; indoor; bosom

#### **6.4 Set remote**

attribute: The default is master, and the others are optional.

control: The button control the adjustment acquisition box.

address: Default requires no modification

Auxiliary: Master from machine setting

**6.5 Set from Single (Wireless single voltage collector is special, optional accessories)**

Monomer frequency : Change to the wireless acquisition box



frequency band.(If the wireless monomer collection box is configured, it will be used in special circumstances, but not in normal circumstances)

Monomer number: In principle, there are spare collection boxes used here

*When there is a standby collection box or temporarily need to change a collection box to another collection box number: the instrument host is started, and the change line of the collection box is inserted into the external current hole, and the other end is connected to the collection box. In the instrument system management-monomer setting-monomer number, enter the replaced number point once, the red light flashing 3 times indicates that the change number is normal.*

#### **6.5.About the native:**

type: Voltage refers to a description of the machine available for voltage interval values.

current: Voltage refers to a description of the machine available for voltage interval values.

Hardware version: Device hardware version number

Hardware version: Device software version number

SN: Local machine factory code.

## **7、 Maintenance and after-sales service**

### **7.1Possible field failures**

Voltage alarm: after connecting the large current wire, the machine keeps alarms to check whether the positive and negative poles and the voltage range are within the rated voltage range of the nameplate.

During the discharge process, the "discharge current fault air switch is abnormal" is displayed. 1. Check whether the discharge switch has been closed.

The discharge current is normal during the discharge process, but the voltage does not drop. The battery pack may not leave the UPS charging system.

Discharge: the total voltage is not collected, the total voltage acquisition line is not connected, or the reverse, or the line in the middle of the collection line.

Optional: the single voltage on the site is not consistent with the site, please check whether the wiring harness of the wireless acquisition box is wrongly connected. Generally, the wrong cross connection will show abnormal voltage values such as 5V, 17V. The field wireless single collection voltage collection is not normal, please check the multimeter, or check whether the wiring is wrong. And the actual battery number (some factory battery pack standard number, not according to the actual series sequence number.)

## **7.2 after-sale service**

The company has a one-year warranty for the products sold (if the

contract is not guaranteed separately, the contract shall prevail). Please contact the after-sales service department for your customer maintenance.

2. Maintenance cost receivable for any of the following conditions during the warranty period:

1 Failure or damage caused by impact during user use or handling.

2 The user is not properly keep, resulting in water seepage, moisture, impact or fire, etc.

3 Fault or damage caused by maintenance by users or by other units.

4 Equipment is faulty or damaged due to wiring error.

5 such as force majeure (such as fire, flood, natural disaster, etc.).

6 Fault or damage caused by not connecting other equipment according to the requirements of the instructions.

7 No product warranty card and can not confirm that the instrument is in the warranty period of the fault products.

### **Statement**

**The company will timely improve and improve the technical performance of the tester. At the same time, this specification may change locally with the upgrading of the product. Subject to change without prior notice.**