640V2520AH

HIGH-VOLTAGE LITHIUM IRON PHOSPHATE BATTERY

USER MANUAL

Version 1.0

NEW ENERGY TECHNOLOGY -- LIFE CHANGING

CONTENTS

I Installation instruction

1.1 To carry or move

Lithium batteries in the carrying or movement process, should avoid inverted handling or side sleeping handling, should be handled with care and to avoid collision

1.2 Open-box inspection

Check the battery for damage during transportation. Check the packing list (to actual supply prevail)

N0.	Annex Name	Color/material/ specification	Quantity	Unit	Remarks
1	Battery power cable	Black	168	Piece	
2	Core acquisition cable	4 P through wall terminals	24	Piece	
3	Communication between battery modules	RJ 45 connector (network cable)	184	Piece	
4	Communication cable	CAN cable	1	Piece	
5	Grounding mark	φ5	Several	Piece	
6	Ground wire	Yellow green	Several	Piece	
7	Grounding screws	Stainless Steel Combination M 5*12	Several	Piece	
8	Front shade panel		48	Piece	
9	Front panel support		96	Piece	
10	Front fixing screws		Several	Piece	
11	Battery Module Fixer	Stainless Steel Combination M 5*12	Several	Piece	
12	Connector assembly (Orange)		184	Piece	
13	Connector assembly (Black)		184	Piece	

1.3 Installation

1.3.1 Confirm the installation environment and location

The battery needs to be installed in a ventilated and dry environment. Considering that the battery adopts natural air cooling, the battery should not be too close to the source of heat, so as to ensure the ambient temperature and maintenance space around the battery

It is forbidden to place batteries in any of the following environments.

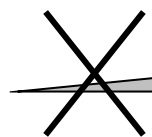High temperature   Rainfall   Source of fire   Corrosion   Slope

1.3.2 Installation

Put the battery rack in the specified position and fix it (pay attention to the direction of the battery rack), and put the battery module on the shelf according to the battery layout diagram, as shown below:
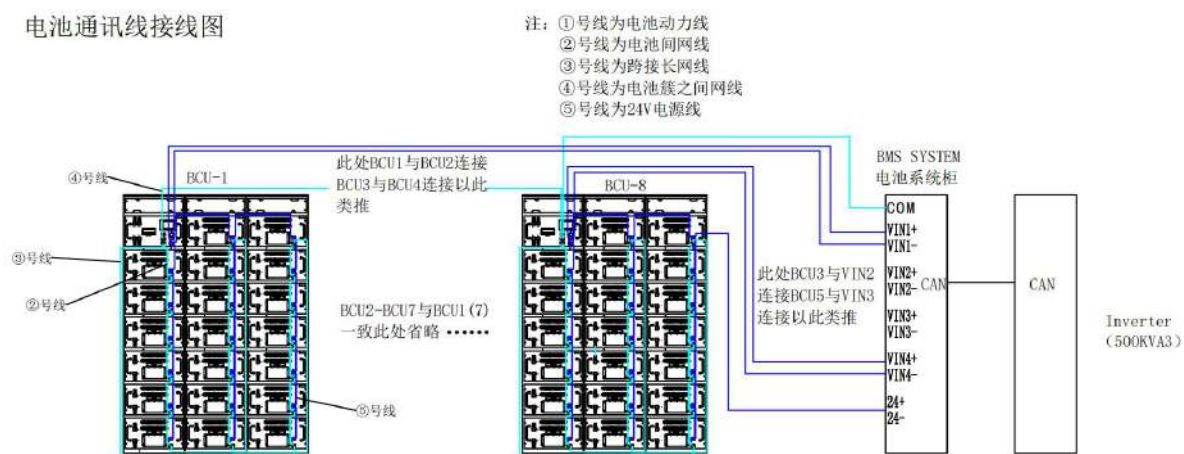

▲ **Partial drawing (module with label)**

电池动力线接线图

▲ **Battery module layout and power wiring connection drawing**

电池通讯线接线图

注：①号线为电池动力线
②号线为电池间网线
③号线为跨接长网线
④号线为电池簇之间网线
⑤号线为24V电源线

④号线
BCU-1

此处BCU1与BCU2连接
BCU3与BCU4连接以此
类推

BCU-8

BMS SYSTEM
电池系统柜

⑤号线

②号线

BCU2-BCU7与BCU1 (7)
一致此处省略······

此处BCU3与VIN2
连接BCU5与VIN3
连接以此类推

⑥号线

COM
VIN1+
VIN1-
VIN2+
VIN2- CAN
VIN3+
VIN3-
VIN4+
VIN4-
24+
24-

CAN

Inverter
（500KVA3）

▲ **Battery module layout and signal cable connection diagram**

▲ **Overall**

3

⚠️ **Battery modules must be placed in the specified order.**
Battery module is heavy, in order to reduce the risk of injury, please do a good job of protective measures.

After the battery module is arranged as required, connect each battery module according to the battery line connection diagram.

If the battery module is placed for too long time, check the appearance of each battery module for damage and deformation before wiring for safe operation and compliance.

Without the above situation, the voltage value of each battery module is measured by multimeter in turn. When the maximum and minimum voltage difference of the battery module exceeds 0.5 V, it can not be connected directly. The battery module needs to charge and discharge separately so that the voltage difference is within 0.5 V.

When the battery module is connected in series, use the battery connection we provide to ensure that the terminal positive (+) on the adjacent battery module is connected to the negative (-), negative (-) to the positive (+) and tighten the bolt.

⚠️ **All wiring must be done by professionals.**

1. Please follow the following steps to implement battery connection：

Remove orange and black connectors from battery module

Insert the connector into the connectors

After it is stuck on the connector base, tighten the bolts with an M 6 hex wrench. Use a multimeter to measure the B+ and B- of each battery module and the B+ and B- of the high-voltage package to see if the voltage of each module is basically the same and if the pressure normal

Connect the signal lines and power lines of each cluster of battery modules according to the CAD drawings

The power lines P+ and P- of each cluster are connected to the system cabinet according to the CAD drawings.

2. Please follow the steps below to implement the power-on process:

Check the power lines between the battery packs and whether the communication lines are properly connected and fastened.
Set the multimeter to the DC voltage position, the red test pen touches B+ of the battery cluster high voltage control box, and the black test pen touches B- of the battery cluster high voltage control box. Check whether the voltage of each battery cluster tends to be the same (the voltage difference is within 0.5V) and make sure it is the positive voltage.
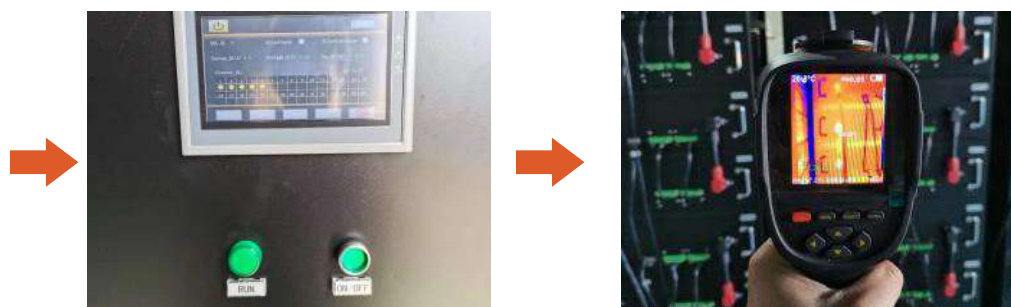

Set the multimeter to the electric blocking position, and the red and black test leads respectively touch the two poles of the debugging CAN port (regardless of positive and negative), and confirm whether the resistance value is about 60 Ω

Close the battery breaker BAT/SW of the fifth cluster, power on the system with weak current, and the display screen on the system cabinet starts to work, press the ON/OFF button switch on the system cabinet

Turn on the BAT/SW and RUN buttons of the battery circuit breakers of each cluster in turn, then BAU will check whether each BCU is online normally, and the system will self-check

The system self-check is correct, the high voltage power on, the system is running normally, the running indicator RUN on the system cabinet is always on, the battery information of each cluster is summarized on the system cabinet display, the charge and discharge relay is enabled, and the charging on the display (Allow Charge) The discharge (Allow Discharge) indicator light is always on, the battery can be charged and discharged normally, and the battery is powered on.

It is better to use a temperature measuring gun to test the temperature on the connector after powering on for a period of time to prevent the temperature of the wiring connection from rising due to the bolts being not tightened, which may cause safety hazards

When connecting a longer battery connection cable, when one end terminal is fixed, be sure to hold the other end of the battery connection to prevent danger from falling off against the same pole of other battery modules.

3. List of tools required for installation:

No.	Annex Name	Color/material/specification	Quantity	Unit	Remarks
1	Insulation gloves		Several	pair	
2	Protective gloves		Several	pair	
3	Flat head screwdrive	φ3	1	pcs	
4	Cross screwdriver	Routine	1	pcs	
5	Inner hexagonal wrench	M6	1	pcs	
6	Multimeter		1	pcs	
7	Insulation tape	Black	1	pcs	
8	Banding	Black	1	Bag	

II、Main control interface introduction

2.1 Main interface：

2.1.1 Key function：

The position of each button on the main interface is as shown in the figure below：

The specific function description of each serial number button：

(1)Restart the display control screen function, which can be used to solve the display control screen display data stuck screen.

(2)Chinese and English bilingual switching function.

(3)Cut into the main interface function.

(4)Cut into the alarm interface function.

(5)Cut into the single cluster information interface function.

(6)Cut into the battery cell information interface function.

(7)Switch into the single-cluster strong control interface function. (Non-our engineers please do not use)

2.1.2 Status display：

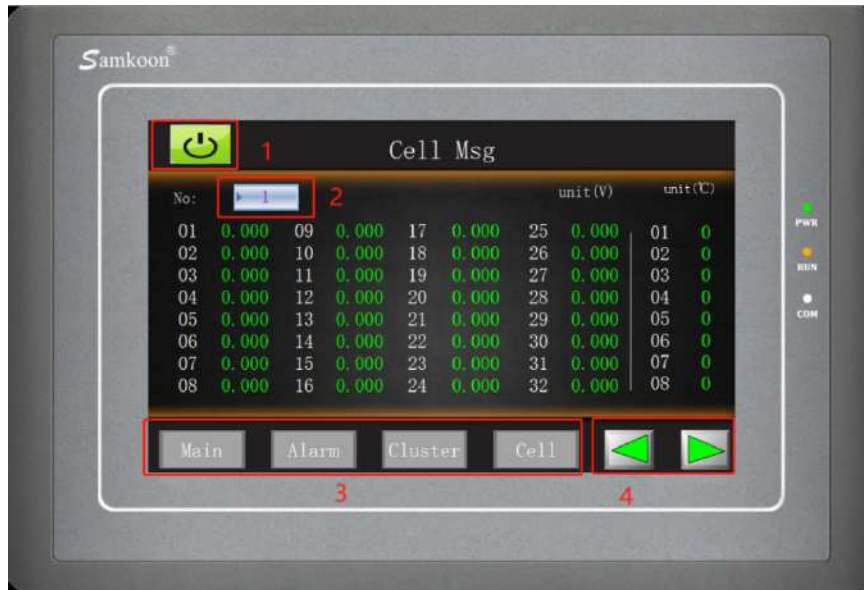The location of each display data on the main interface is as shown below：

Detailed description of each display data on the main interface：

(1)Overall general data: SOC, overall current, voltage, actual total capacity, dry contact signal of charge and discharge (green light indicates permission).

(2)The three data from left to right indicate in turn: the actual number of high-voltage access clusters, the actual number of clusters with normal communication, and the total number of clusters with full configuration.

(3)The last piece of data specifically shows: a gray light indicates that the cluster is not connected, a yellow light indicates that the cluster's CAN communication access is normal, and a green light indicates that the cluster's high-voltage access is normal.

2.2 Single information interface：

2.2.1 Key function：

The position of each button on the unit information interface is as follows：

Specific function description of each serial number button：

(1)Restart the display control screen function, which can be used to solve the display control screen display data stuck screen.

(2)Selection of cluster serial number to be queried: Select to query the individual information of the cluster, and enter the number selection by clicking the pop-up keyboard.

(3)Switching interface function: See the main interface button function introduction for details.

(4)Single information page turning function.

2.2.2 Data display：

The position of each display data in the unit information interface is as shown below：

Detailed description of each display data：

(1)Display the cell voltage information of the cluster.

(2)Display the collected temperature information of each temperature sensor of the cluster.

2.3 Single cluster information interface：

2.3.1 Key function：

For the location and function of each button on the single cluster information interface, see the description of the buttons on the single information interface

2.3.2 Data display：

The position of each display data in the unit information interface is as shown below：

Detailed description of each display data：

(1)Display the general information of the cluster: SOC, total voltage and current of the cluster.

(2)Display the highest and lowest voltage and location of the cluster, and display the highest and lowest temperature and location of the cluster.

2.4 Alarm Information Interface：

2.4.1 Key function：

For the location and function of each button on the alarm interface, see the description of the buttons on the single information interface

2.4.2 Data display：

　　The position of each data displayed on the alarm interface is as shown in the figure below：

　　This interface mainly displays the fault information of the cluster：

　　　Indicate normal

　　　Indicate first-level fault

　　　Indicate secondary-level fault

　　　Indicate three-level fault

　　The severity of the fault level is: 3> 2> 1.

2.5 Single cluster control interface：

　　Click the strong control button on the main interface and enter the corresponding password in the pop-up keyboard interface (the initial password is 8888) to enter the strong control interface.

　　This interface can force a designated single cluster to connect to high voltage and control its dry contact for charging and discharging. Please use it with caution while ensuring safety.

2.5.1 Key function：

The position of each button on the strong control interface is as shown in the figure below：

Specific function description of each serial number button：

(1)Restart the display control screen function, which can be used to solve the display control screen display data stuck screen.

(2)Forced control buttons, from left to right, are: cluster number to be strongly controlled, forced switch control button, charge dry contact enable, discharge dry contact enable, power-on self-test minimum allowable number of communications options.

(3)The specific steps for strong control are: select the cluster number to be controlled -> click the strong control switch button to turn it on, and if it succeeds, the corresponding cluster indicator in the lower display box will light up green -> click the dry contact of charge and discharge control charging and discharging——>Click the strong control switch button again after completion to turn off the strong control function. At this time, the BAU needs to be restarted and powered on for normal control.

(4)Switching interface function: see the main interface button function introduction for details.

III. Instructions for lithium battery charger (Optional)

This product is a non-standard customized product, specially designed for the charging of our company's lithium battery pack. It has a dedicated detection network port communication to prevent damage to the lithium battery from excessive charging voltage,

and is equipped with a display that can intuitively display the output voltage, current and protection functions , The detailed description is as follows:
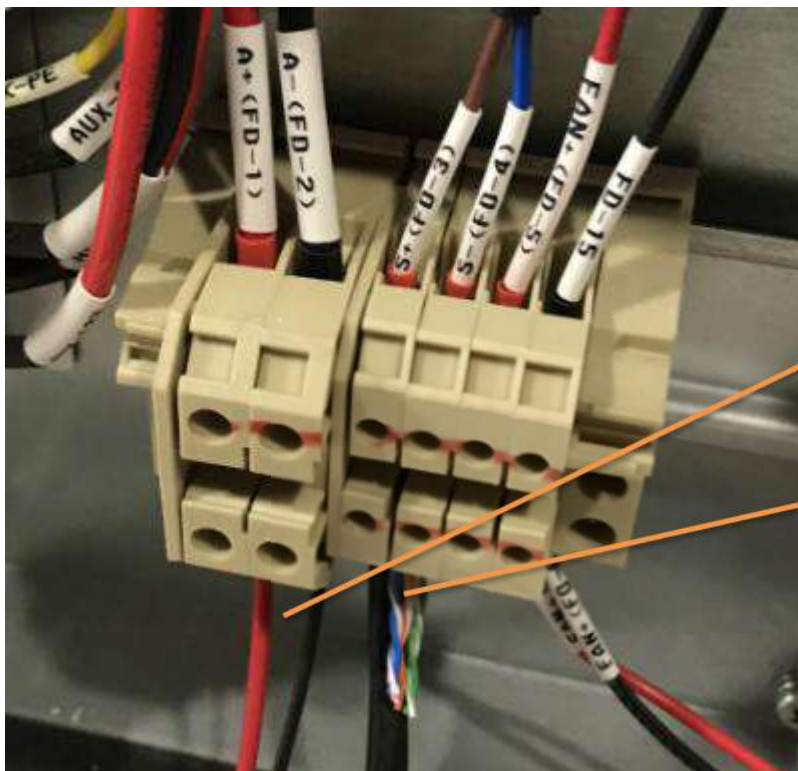
3.1 Electrical performance index

➢ Product model: APSP-LI-80V50A
➢ Input power: three-phase 380Vac 45--65HZ
➢ Input current: 10A
➢ Input power: 5KVA
➢ Output voltage range: 30--100V
➢ Output current range: 5--50A
➢ Rated power: 4KW
➢ Product size: 560*430*600 (mm)
➢ Weight: 50KG
➢ Production date: December 2020

3.2 Instructions for use

3.2.1 Wiring and switch instructions
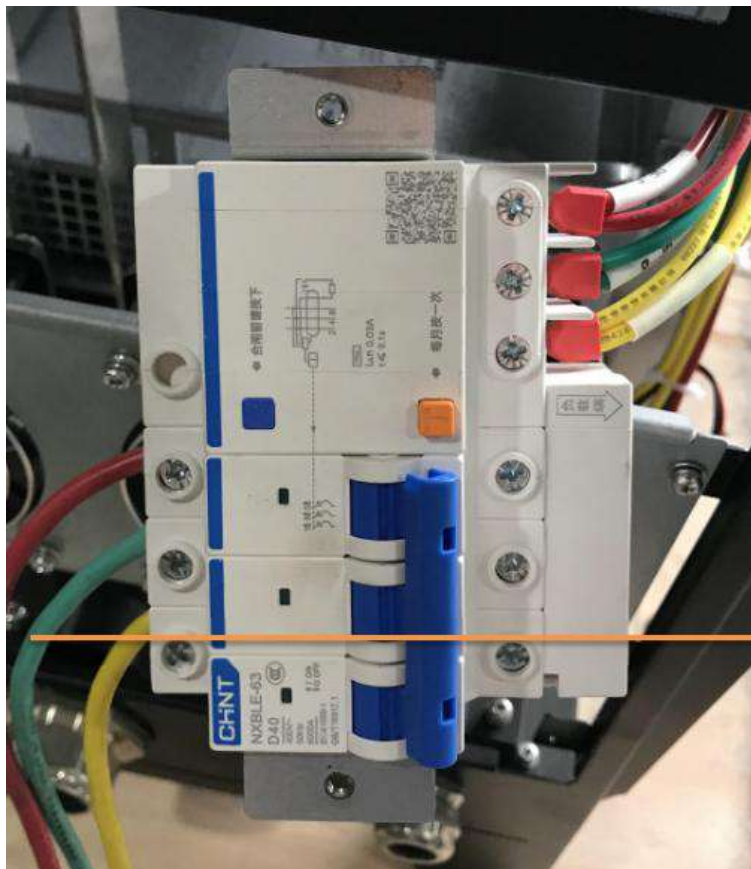
➢ Open the side panel of the machine

485 communication
..

cable

➢ As shown in the figure, connect to the communication lines separately

➢ Connect the positive and negative poles of the battery here
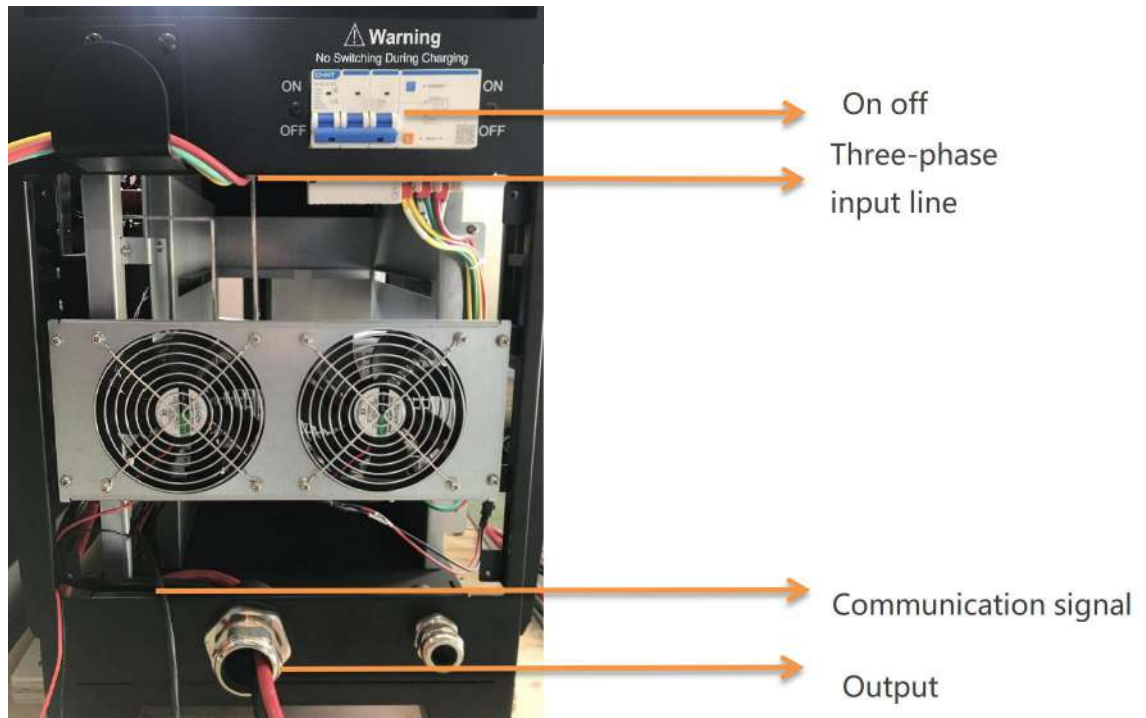
➢ Open the rear panel of the host

Three-phase input line

➢ After connecting the three-phase input line, fix the switch on the rear panel to complete the wiring

A. The input terminal (yellow, green and red) is connected to three-phase power,
B. The output terminal (red and black) is connected to the lithium battery pack,
C. The communication signals (network cable and RS485) are respectively connected to the panel of the lithium battery pack

As shown in the figure:

3.2.2 Display description

A. After booting, the panel will display the following

The main interface will display the basic information of the machine and fault information

B. On the main screen, click the upper left corner to enter the maintenance options as Follows

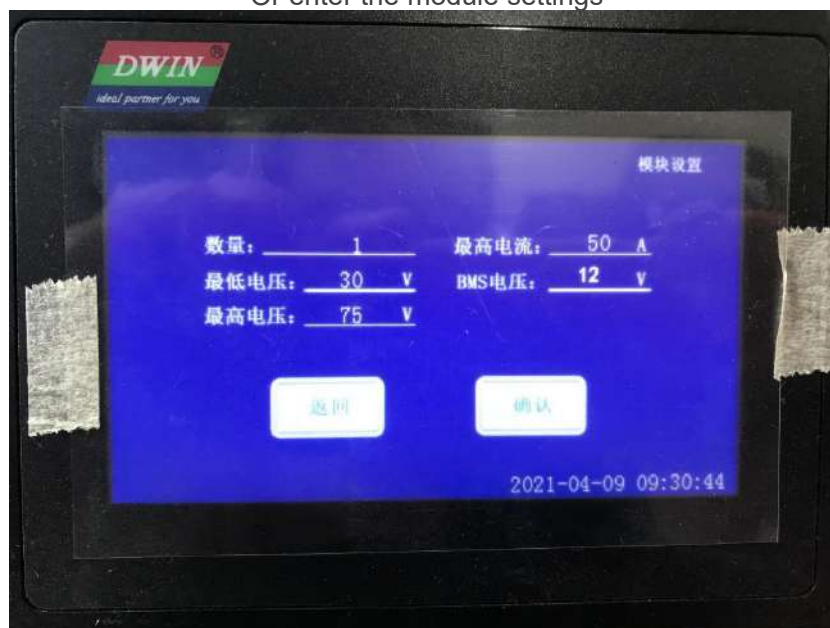Maintenance options include:

parameter settings

Enter the management password 123456 and enter the settings

Then enter the password setting, you can modify the password to ensure safety
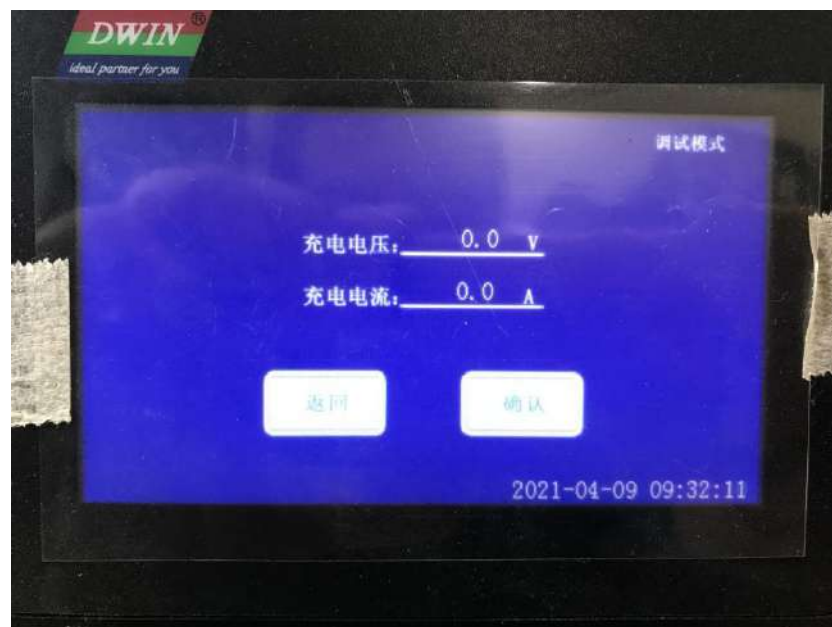
Or enter the module settings

You can set the system minimum voltage, maximum current, maximum voltage, and BMS voltage into the protection settings, which can limit the output over-voltage, output under-voltage, and output over-current settings of the machine
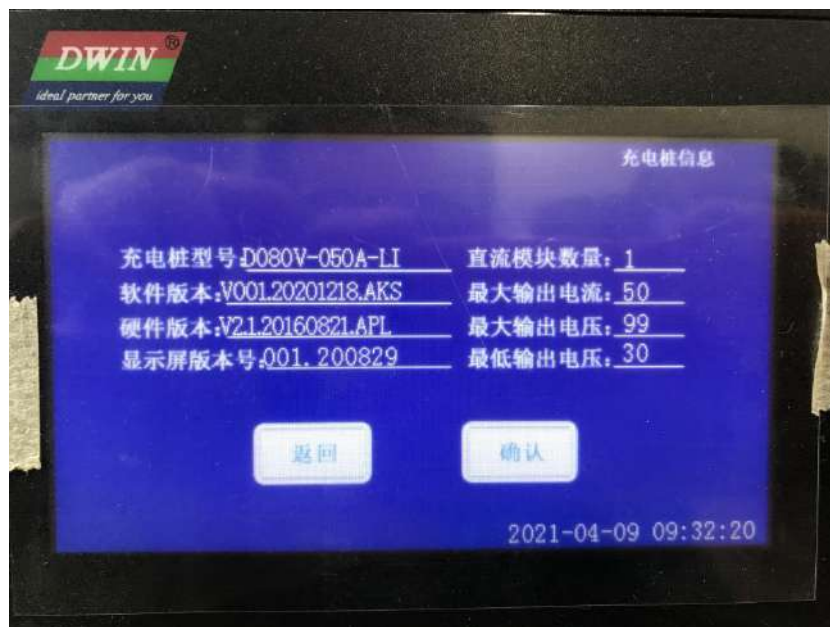
Time setting, you can calibrate the current system time

Debug mode

The charging voltage and charging current can be set

Pile information

Display the basic information of the machine
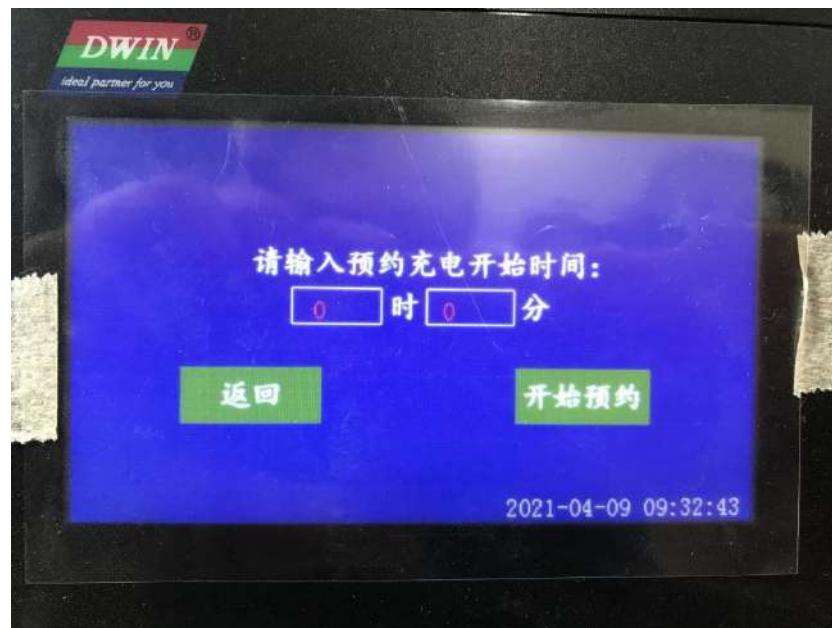
Alarm query

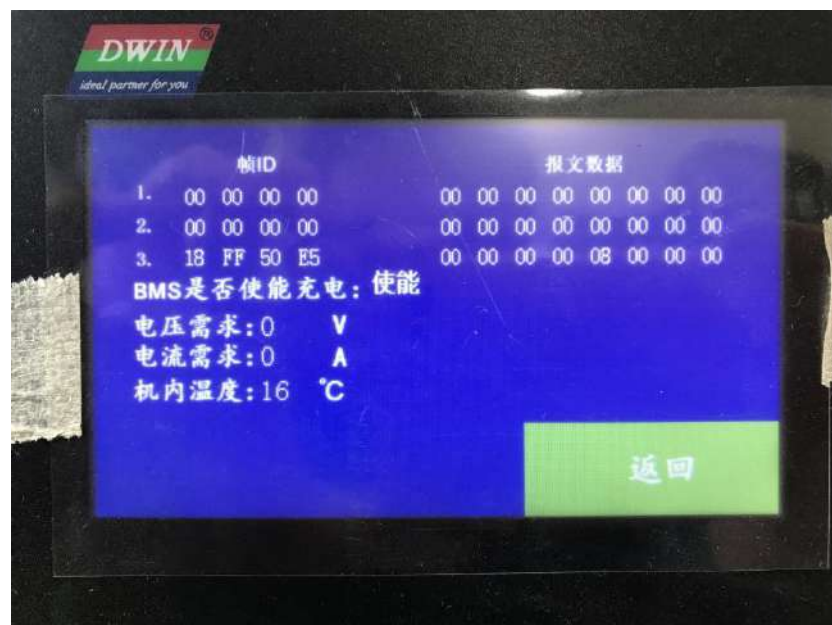You can directly see the record of the last failure inside, select other to see more historical failure records

Schedule charging electricty

You can set timed charging, more humane, and finally click back to return to the main interface

C. Click the battery directly to see the ID information, message data and the set voltage, current and temperature information

3.2.3 Button description
The machine is equipped with start and stop buttons, and the corresponding status will be prompted with the change of the light color
A. The red light is always on-the upper point is on standby
B. Green light is always on-charging
C. Green light flashes-stop charging
D. Yellow light is always on-fault alarm
E. Red light flashes-charging is complete
The machine will stop output after pressing the stop button for three seconds (as shown below)

IV、Product profile

This product is composed of high quality lithium iron phosphate core (series-parallel connection) and advanced BMS management system. It can be used as independent DC power supply or as "basic unit" to form a variety of energy storage lithium battery power supply systems. It has high reliability and long life. Products developed for applications such as power grid energy storage, industrial and commercial energy storage, home high voltage energy storage, high voltage UPS, and data room.

The product adopts modular design, higher integration, saving installation space; adopts high performance lithium iron phosphate cathode material, good core consistency, design service life of more than 10 years; one-key switch machine, front operation, front wiring, convenient installation and maintenance, easy operation; various functions, with single over-voltage / under-voltage, total voltage under-voltage / over-voltage, charge / discharge over-current, high temperature, low temperature, insulation and short circuit protection and recovery functions; strong compatibility, seamless docking with UPS 、photovoltaic power generation and other main equipment; communication interface forms, CAN/RS 485 and so on can be customized according to customer needs, convenient system remote monitoring and flexible use. High energy, low power lithium electric equipment, achieve higher energy supply, lower energy consumption, and reduce environmental pollution; adopt all-round, multi-level battery protection strategy and fault isolation measures to ensure the safe operation of the system.

- Small, maintenance-free
- Environmental protection non-polluting materials, no heavy metals, green environmental protection
- Standard cycle life over 5000 cycles
- Accurately estimate the charge state of the battery pack, that is, the remaining battery quantity, to ensure that the battery pack quantity is maintained within a reasonable range
- Built-in BMS management system with full protection and monitoring control

V、 Systemic Statements

5.1 System composition

Components	Function Description
BCU	Master-slave communication, external communication, state estimation, safety management, charge-discharge management, control output, control input, total voltage detection, insulation detection,
BMU	Master slave communication ,4~48 series single cell voltage acquisition ,4 channels/channel temperature acquisition
CSU	Current sampling, support Hall sensor and JDI shunt
Wire harness	Voltage detection, temperature detection, communication connection, power supply connection, sensor continuity, control connection
LCD	Data display, parameter configuration, fault alarm
DTU	Remote data upload, remote data download, mobile phone application

5.2 System Parameter

Parameters	Minimum value	Typical values	Maximum value	Unit	Note
Total voltage detection range	12	\	900	V	Default detection V 12~900
Total voltage detection accuracy	\	\	\	%	≤0.2%
Number of total voltage test paths	\	\	2	\	Two relay adhesion can be detected
Total number of batteries detected	4	\	240	S	BMU support up to 25
Single cell Voltage Detection Range	0	\	5	V	\
Single Voltage Detection Accuracy	\	\	0.5	%	≤0.2,±5 mV error
Current detection range	-600	\	600	A	
Current detection error	0	1	1%FSR	A	Typical value ± A 1

Number of channels for temperature detection	1	4:1	300	Piece	
Temperature detection range	-40		125	℃	\
Temperature detection accuracy	0	1	2	℃	NTC ,100KB3950
Insulating Resistance Detection Error	0	10KΩ	10%	KΩ	0~200 KΩ, error <15 KΩ; >200 KΩ, error ≤±15%
Equilibrium current	0	40	90	mA	\
Equilibrium opening minimum voltage difference	30	50	800	mV	
CAN number of channels	\	\	3	\	CAN2.0B
485 Communications	\	\	1	\	Support 1 channel
Number of relay output channels	\	\	4	\	active, lasting 1 A, instantaneous 5 A
Number of level input channels	\	\	2	\	High Level Effective
Main slave maximum cascades	0	\	25	\	Advice, system string <240, Temperature <200, total frame <200
SOC estimation error	0	3%	5%	\	≤5%
SOH estimation accuracy	0	5%	10%	\	

5.3 Technology Feature

Support 8 relay control;

Support 3 CAN communication functions; Support 1 RS485 communication function;

Support battery status data management, real-time drawing of battery cluster information, and realize the management and control of power battery after processing; independent total voltage collection, collection range 0~900V, to realize real-time detection of group terminal voltage;

Support SOC/SOH estimation, high-precision estimation of the SOC and SOH of single cells and battery packs; Support Bootloader, which can be used for online application upgrades through the CAN bus;

Support fault detection function, according to voltage, current, temperature, SOC, SOH and other threshold alarm functions, as well as limit alarm threshold circuit cut-off protection function;

Support data storage function, support local storage of system operating data and

power-down save function

5.4 Product Graphics and Technical Parameters

▲ **Battery module**

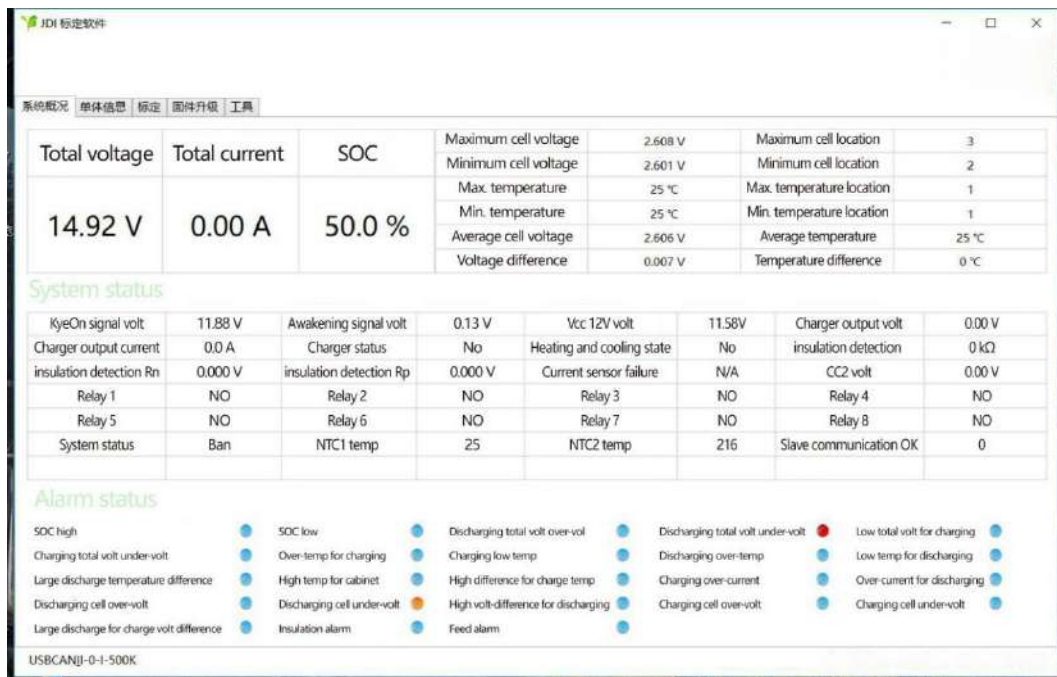▲ **Battery cluster/ Stack (only for sample showing)**

Product technical parameters：

Model	GBP 96100	GBP 96200	GBP 192100	GBP 192200	GBP 220100	GBP 220200	GBP 360100	GBP 360200	GBP 384100	GBP 384200
Cell type	Lithium iron phosphate									
Rated energy (KWH)	10	20	20	40	22	44	36	72	40	80
Nominal capacity (AH)	100	200	100	200	100	200	100	200	100	200
Nominal voltage (VDC)	96		192		220.8		358.4		384	
Operating voltage range (VDC)	78~112.5		156~225		179~259		391~420		312~450	
Recommended Charge Voltage (VDC)	104		207		238		387		410	
Recommended discharge cutoff voltage (VDC)	92		183		210		342		366	
Standard charging current (A)	40	80	40	80	40	80	40	80	40	80
Maximum continuous charge current (A)	100	200	100	200	100	200	100	200	100	200
Standard discharge current (A)	40	80	40	80	40	80	40	80	40	80
Maximum continuous discharge current (A)	100	200	100	200	100	200	100	200	100	200
Working temperature	-20~65℃									
Protection level	IP20									
Communication interface	RS485/CAN(two choose one)									
Reference Weight (Kg)	140	280	280	560	300	600	470	940	500	1000
Reference size (D*W*H mm)	530* 550* 760	625* 550* 970	530* 550* 1180	625* 550* 1600	530* 650* 1180	625* 550* 1810	530* 550* 1810	(625* 550* 2040)*2	530* 550* 2020	(625* 550* 1600)*2

Above data is for regular parameters, such as voltage, capacity can be customized according to requirements

Overview of Upper Computer Software

Main interface-mainly used as a visual display area for basic battery information, selection of upper computer function window, BMS basic information display, and battery failure prompt.

- Upper computer function area selection button: system overview / monomer information / calibration / firmware upgrade, click on the corresponding Chinese character area can be switched to the corresponding upper computer function window.

- VCC voltage is equal to Key ON or charge detection signal. If the difference is too large (more than 3V), please contact BMS manufacturer for support.

- Charger output voltage / charger output current, these two displays are the charging data sent by the charger to the BMS during charging, which should be consistent with the charger display.

- Charging state / heating refrigeration state / current sensor fault three are customized functions, can be ignored.

- Insulation testing / insulation Rn / insulation Rp represents insulation values tested by insulation testing (no insulation function negligible).

- CC 2 represents the CC 2 voltage detected BMS the national standard fast charge (non-national standard fast charge can be ignored).

- Battery pack health status, button blue/green represents normal, orange represents minor fault, and represents serious fault

Monomer Information Interface

Click on "monomer information" to enter the monomer information interface, which is mainly used as the visual display area of cell voltage and temperature information.

Calibration interface (password: jdi 123456)

Click "calibration" to enter the calibration interface-mainly as the function area of BMS parameter configuration, you can modify the parameters and simulate the fault

function selection area. Click the corresponding the Chinese character area to enter the corresponding functional parameters configuration interface.

VI. Maintenance and troubleshooting

6.1 Routine maintenance

A. Clean battery dust regularly (6 months) and check battery connection wire for loosening.

B. Long-term no power outage, it is recommended that the battery every 6 months artificial discharge.

C. Found that the battery is not good, the whole battery bag should be replaced in time.

D. Try to avoid battery deep discharge, and the recommended cutoff discharge voltage is 45V.

Note: when maintaining, take off the ring, watch and other metal items. Use tools with insulated handles.

6.2 Notes

A. The battery management system cannot be used in series

B. When using the battery management system, the charging and discharging cabinet above 100V cannot be used for charging and discharging cycles.

C. Pay attention to anti-static, moisture-proof and waterproof during use.

D. Please follow the design parameters and operating conditions during use, and should not exceed the values in this specification, otherwise the protection board may be damaged.

If you need to use the inverter and controller with other manufacturers, please communicate with our engineer in advance.

VII. Lithium battery management requirements

Because lithium is a metal that is particularly prone to chemical reactions and is easy to extend and burn, it may lead to serious accidents -------combustion and explosion if it is not

treated as prescribed in packaging, transportation and storage.

In order to prevent the daily treatment of lithium batteries caused casualties and property losses, the following requirements are made for lithium battery management:

1.Basic requirements for battery warehouse management

The high temperature and wet temperature will accelerate the self-discharge of the battery due to the characteristic problem of lithium battery. It is recommended that the battery that does not open the package should be stored in a clean, dry and ventilated warehouse with ambient temperature of -5℃~35℃ and relative humidity of not more than 90%. The warehouse should not contain corrosive gas.

Humidity requirements: effectively control warehouse humidity, avoid warehouse in extreme humidity for a long time (relative humidity above 90%).

The lithium battery warehouse shall be separated by brick wall entities, and the warehouse must be closed, explosion-proof or other corresponding safety electrical lighting equipment.

Storage of batteries should be equipped with a sufficient number of fire fighting equipment (carbon dioxide, dry powder fire extinguishers, fire hoses, fire sandboxes) and ensure that in good condition. It is recommended to install automatic rain sprinkler system under conditions. It can not be placed in the same warehouse with flammable materials (e.g. packing materials cartons, cartons, etc.), it is recommended to use a separate warehouse.

Where there are lithium batteries, there must be no smoking and other prohibited regulations.

Battery pack should be away from the source of fire and heat, not in the storage room, near the site may cause fire operations.

2.Good battery storage requirements

Batteries should be stored in well-ventilated, dry and cool places where high temperatures and humidity may impair battery performance or corrode battery surfaces.

Battery cartons should not be stacked above the arrival height of incoming materials, otherwise the batteries in the underlying cartons may be deformed and may leak.

Batteries should be avoided from storage or display in direct sunlight or rain. When the battery is drenched, the insulation resistance will decrease, and self-discharge and rust may occur. The rising temperature may damage the battery.

Store and display batteries in original packaging to avoid stacking batteries after removing packaging, which can easily cause battery short circuit and damage.

For contact with each other easy to cause combustion, explosion and fire extinguishing methods of different items, should be isolated storage. After production, when the excess battery is returned, it is necessary to restore the original packing state (insulation) and store it.

3.Storage requirements for defective batteries

The following measures must be taken in order to deal with the serious defects such as leakage, bumping and breakage, short circuit and so on, such as the bad core and module which are returned from production:

A.   The cell and module bad goods storehouse should be set up separately, the warehouse should be separated by brick wall entity, and should be equipped with fire fighting equipment and alarm facilities with sufficient variety.

B.   After technical and quality determination of the fire risk of the bad cell and module, immediately buried in the sandbox and moved to the outdoor open, to prevent fire, and subsequent notification of professional qualifications of the disposal of dangerous waste units. At the same time do a good job of waste procedures.

For general poor performance of the cell and module (size, capacity, appearance, etc), adopt the following measures:

A.   after technical and quality judgment is only a general failure of the cell and battery:

If the incoming materials are bad, timely notify the purchasing department to return the goods quickly. If the work is bad, it is determined that it can not be repaired.

After the completion of the waste application, timely notification of professional qualifications of the disposal unit.

B.   for the bad battery in the storage period, it is necessary to do a good job in the battery insulation protection (to prevent accidental short circuit), as far as possible to restore to the original factory packaging, to ensure that the battery is safe and good protection.

4.Other requirements

The warehouse manager should check the goods information every day, if it is found that the storage is not correct, the account is not in conformity, the quality problem is timely feedback and handled, the work is over or off duty, the fire prevention inspection should be carried out, and the power supply should be cut off.

Keep safe passage in warehouse, prevent accumulation, ensure personnel safety and rapid transfer of goods. The planning area in the warehouse should be clearly marked, in which the material placement area should be classified and stored in sub-cell (to avoid spreading to the maximum extent when the fire occurs) and clearly marked.

Clean and tidy the warehouse area every day, clean up the dirt and sundries on the ground in time, and arrange the materials in the warehouse into the designated area to meet the requirements of neatness, neatness, cleanliness, hygiene and reasonable arrangement.

Follow the "first in, first out" principle to avoid battery performance degradation due to long-term inventory and accidental occurrence.

VIII. Warranty services

Under the guidance of our company, customers return our products so that we can provide maintenance services or replace products of equal value. The customer needs to pay the necessary freight and other related expenses.

Any replacement or maintenance of the product will cover the remaining warranty period of the product. During the warranty period, if any part of the product or product is replaced by our company, all rights and interests of the replaced product or component shall be owned by the factory.

Product warranty services do not include damage due to:

- Damage to equipment during transportation (except for transportation by the factory)
- Damage caused by improper installation or debugging
- Damage caused by non-compliance with operating manuals, installation manuals or maintenance instructions
- Damage caused by modification, modification or repair of products
- Damage caused by improper use or operation
- Damage caused by inadequate ventilation of equipment
- Damage caused by non-compliance with applicable safety standards or related regulations
- Damage or force majeure caused by natural disasters (floods, lightning, storm snow, fire, etc.)

In addition, normal wear or any other failure will not affect the basic operation of the product. Any external scratches, stains or natural mechanical wear do not represent defects in the product.

High- Voltage Lithium

Iron Phosphate Battery