

# **CF480100U**

## **LFP Battery System**

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### **User Manual**

V230412W

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## Contents

1 Safety Precautions .....	2
2 Product introduction .....	1
3 Product features .....	1
3.1 Small size and light weight .....	1
3.2 Good high temperature performance .....	1
3.3 Long cycle life .....	1
3.4 Flexible configuration .....	1
3.5 Intelligent battery management system. ....	1
4 Environment .....	2
5 System introduction .....	2
6 Control box and battery module .....	3
6.1 Control box .....	3
6.1.1 Appearance .....	3
6.2 Battery Module .....	6
7 Working principle and parameters of the system .....	8
7.1 System working principle .....	8
7.2 Specification .....	9
7.3 System protection function and parameters .....	12
8 System installation, operation and maintenance .....	14
8.1 Unpacking examination .....	14
8.2 Product installation .....	14
8.3 System wiring .....	17
9 System operation .....	20
9.1 System Power on .....	20
9.2 System Power on .....	20
9.3 System Power off .....	21
9.4 LCD instruction .....	21
10. Product maintenance .....	22
10.1 Routine maintenance .....	22
10.2 Regular maintenance .....	22
10.3 Battery module replacement .....	22
11. Packaging, transportation and storage .....	23
12 Safety precautions .....	23

## 1 Safety Precautions




Please read the local safety regulations and relevant operation regulations carefully

## COSPOWERS BATTERY

before equipment operation, otherwise personal injury or equipment damage may be caused. The safety precautions mentioned in the manual are only supplementary to local safety regulations.

Refer to Table 1-1 for safety precautions

Table 1-1 safety precautions

Category	Safety precautions
 <p><b>Installation !</b></p>	<ul style="list-style-type: none"> <li>✧ Turn off the power between the main device and the battery before installing the battery.</li> <li>✧ It is forbidden to wear watch, bracelet, bracelet, ring or other conductive objects during operation.</li> <li>✧ Do not connect the positive and negative electrodes of the battery in reverse</li> <li>✧ It is forbidden to place tools or metal objects on the battery. Tools with insulated handle are allowed to use.</li> <li>✧ Do not use metal objects (such as wires) to connect the positive and negative terminal of the battery directly.</li> <li>✧ Small sparks appear might be happened at the connector when connection work, which will not damage people and equipment.</li> </ul>
 <p><b>Storage !</b></p>	<ul style="list-style-type: none"> <li>✧ Please do not strike the battery, such as needling, hammering or trampling.</li> <li>✧ Do not store the battery in a high temperature environment, such as putting the battery into the fire or heating the battery.</li> <li>✧ Do not place the battery in a humid environment, such as putting the battery in water.</li> <li>✧ Please do not disassemble the battery or change the battery structure.</li> </ul>
 <p><b>Charge and discharge !</b></p>	<ul style="list-style-type: none"> <li>✧ Do not use unqualified equipment for charging and discharging, please follow the correct instructions.</li> <li>✧ Please do not charge or discharge the hot, deformed or leaking batteries in the equipment.</li> <li>✧ Do not discharge the battery continuously in case of low capacity.</li> </ul>

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- ✧ Do not mix use different batteries, such as batteries from different manufacturers, types, models or service life.
- ✧ A supplementary recharge work shall be conducted if storage period is more than 3 months; a capacity verification test must be carried out if storage period is more than 6 months; the battery should be re inspected and can be used only after they are qualified if a storage period is more than 1 year
- ✧ Install and use the battery according to the correct operation procedures.
- ✧ It is forbidden to connect the power supply or loads that do not meet the power level to the battery.
- ✧ The system still has power even if the EB is off, Avoid electric shock or short circuit when using

## 2 Product introduction

CF48050U4PC series LFP battery backup power system is a high-tech product independently developed by Harbin Coslight New Energy Co., Ltd. the system has the advantages of high reliability, long service life, small occupation area and simple operation and maintenance compared with the traditional lead-acid battery.

## 3 Product features

### 3.1 Small size and light weight

It is easy to install, especially suitable for small space applications.

### 3.2 Good high temperature performance

The cycle life of lithium battery at 45 °C is 13 times higher than that of lead-acid battery 45 °C which can be used in the environment without air conditioning.

### 3.3 Long cycle life

The life of lithium battery is 17 times longer than that of lead-acid battery at 25°C. It is especially suitable for class 3, 4 power supply area, solar energy, wind power or no EB power, machine power supply, etc.

### 3.4 Flexible configuration

It can realize the parallel operation of multiple batteries to extend the backup time of the system.

### 3.5 Intelligent battery management system.

- (1) The battery system adopts advanced BMS unit with functions of overcharge, over discharge, over current, temperature alarm and protection;
- (2) BMS protect the battery safety when discharging and charging;
- (3) The system has two-level protection function, system provide the warning information when the battery voltage is lower than the warning value, it will provide automatic protection if any cell or battery system voltage is low.
- (4) System has good electromagnetic compatibility;

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(5) High intelligence: it can communicate with upper computer through universal serial bus.

(6) High reliability: the perfect combination of power control technology and computer technology which can monitor system parameters and states.

### 4 Environment

(1) Ambient temperature: - 20 °C ~ + 55 °C

(2) Storage temperature: - 40 ~ + 65 °C;




(3) Relative humidity: 5% - 95% RH;

(4) Altitude: no more than 2000m;


(5) Place without conductive dust and corrosive gas.

### 5 System introduction

The system adopts 3.2V/100 Ah LFP cell with rated voltage of  $\pm 240V$  and rated capacity of 100ah, which is suitable for the application of 480 V electric power supply application. The system consists of 8 rack, 8 control box and 80 1P15S battery module .The composition of the battery system is as follows:

NO.	Item	Picture	Rated voltage (V)	Rated capacity (ah)	Energy (KWH)	Remarks
1	Cell		3.2	100	0.32	LFP cell
2	Battery module (including BMU)		48	100	4.8	battery module is composed of a 15 series cells
3	Battery cluster (including BCU)		$\pm 240V$	100	48	10battery module and one control box are connected in series to form a battery cluster

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4	Battery system (including BAU)		480	800	384	Three clusters form a battery system
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## 6 Control box and battery module

### 6.1 Control box

#### 6.1.1 Appearance



Figure 6.1-1 control box appearance diagram

#### 6.1.2 Interface definition

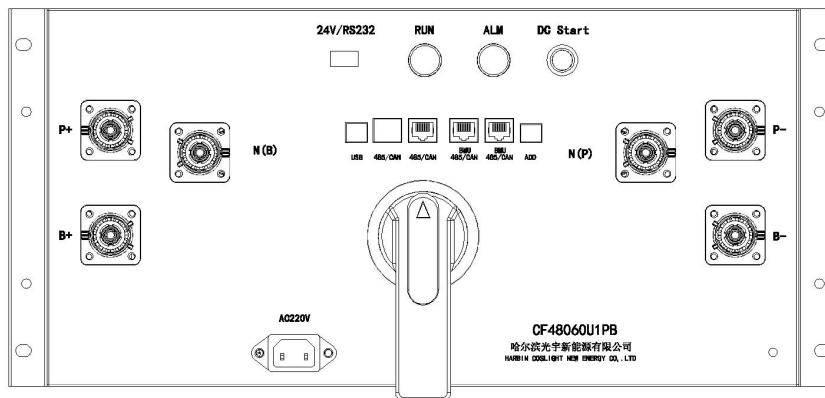


Figure 6.1-2 Control box interface definition

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- USB: For reading SD card storage information
- RS485/CAN: Group Communication interface and UPS communication port

RJ45 interface definition	
J4-1	RS485-A isolation
J4-2	RS485-B isolation
J4-3	RS485-GND isolation
J4-4	NC
J4-5	NC
J4-6	NC
J4-7	CAN - L isolation
J4-8	CAN- H isolation

- RS485/CAN: Group Communication interface and UPS communication port

RJ45 interface definition	
J3-1	RS485-A isolation
J3-2	RS485-B isolation
J3-3	RS485-GND isolation
J3-4	NC
J3-5	NC
J3-6	NC
J3-7	CAN - L isolation
J3-8	CAN- H isolation

- BMU: BMU Communication port, non-isolated RS485/CAN;

RJ45 interface definition	
J2-1	TO BMU RS485-A non-isolated
J2-2	TO BMU RS485-B non-isolated
J2-3	TO BMU GND
J2-4	TO BMU 5V



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J2-5	TO BMU GND
J2-6	TO BMU 5V
J2-7	TO BMU CAN - L non-isolated
J2-8	TO BMU CAN - H non-isolated

- BMU: BMU Communication port, non-isolated RS485/CAN;

RJ45 interface definition	
J1-1	TO BMU RS485-A non-isolated
J1-2	TO BMU RS485-B non-isolated
J1-3	TO BMU GND
J1-4	TO BMU 5V
J1-5	TO BMU GND
J1-6	TO BMU 5V
J1-7	TO BMU CAN - L non-isolated
J1-8	TO BMU CAN - H non-isolated

- TO HMI:

NO.	Function	Description
1	+	LCD Power supply +
2	-	LCD Power supply -
3	RXD	
4	TXD	
5	GND	

- Add: Address dial switch which is used for communication address setting;  
 Definition of address dip switch: the ON for dial switch is the high position, which represents the binary 1 according to the RS485 communication address of each battery system from 1 to 16, the allocation mode of dial switch from left to right is as follows:

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Address number	ADD 1	ADD 2	ADD 3	ADD 4
#0	0	0	0	0
#1	0	0	0	1
#2	0	0	1	0
#3	0	0	1	1
#4	0	1	0	0
#5	0	1	0	1
#6	0	1	1	0
#7	0	1	1	1
#8	1	0	0	0
#9	1	0	0	1
#10	1	0	1	0
#11	1	0	1	1
#12	1	1	0	0
#13	1	1	0	1
#14	1	1	1	0
#15	1	1	1	1

Remark: the default dial switch position is address 0, which means address is 0.

- Run: Running which shows system running status;
- ALM: Alarm indicator which system alarm status;
- DC Start: Manual start button for activation of battery system;
- LCD: 4.3 inch touch screen, used for battery system data display, historical record query, parameter setting, etc;
- MCB: circuit breaker which is used for connecting or cutting off the main circuit
- PE: Battery grounding terminal;
- B +: Battery system positive terminal
- B -: Battery system negative terminal;
- P +: DC bus positive terminal;
- P -: DC bus negative terminal;
- N(P): DC bus tap center
- N(B): Battery system tap center

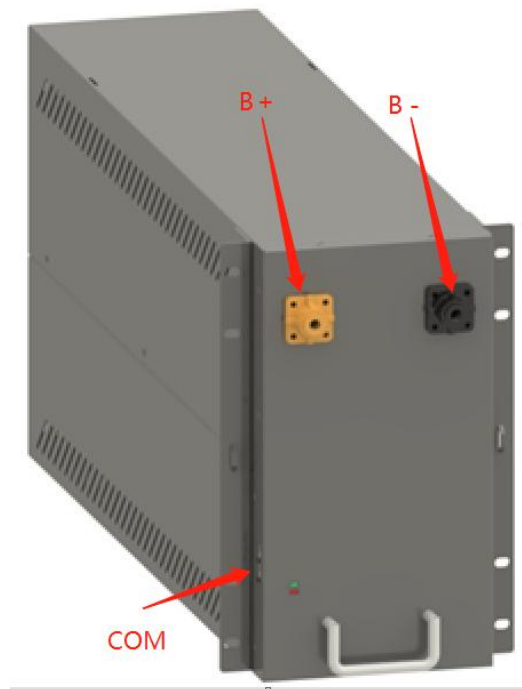
## 6.2 Battery Module

### 6.2.1 Appearance



Figure 6.2-1 Battery module appearance

### 6.2.1 Battery module interface definition



COM: CAN communication port of battery module (connected with control box BMU port or Battery CAN communication port COM);

B +: battery module positive connection terminal;

B -: battery module negative connection terminal.

### 6.3 Battery Rack

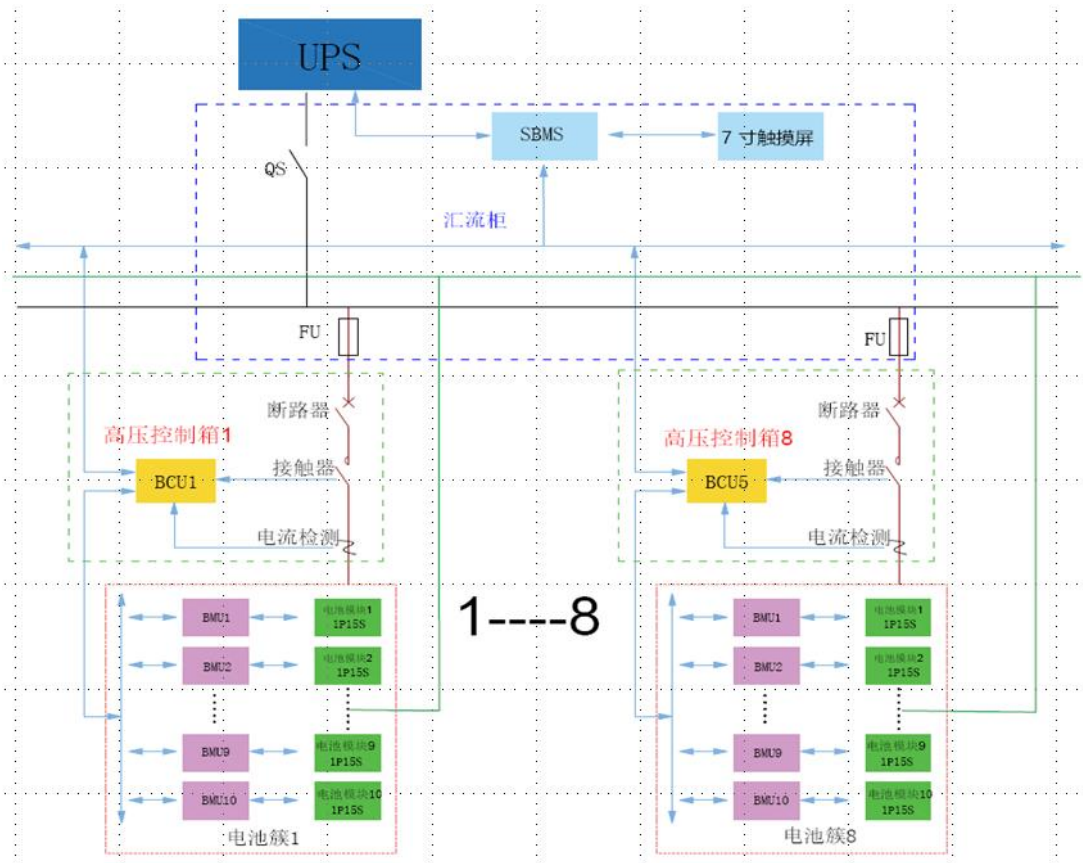


## 7 Working principle and parameters of the system

### 7.1 System working principle

The 480 V / 800 ah series iron lithium battery system will discharge to the load when the power grid is off to ensure the normal operation of the DC power supply system and realize the uninterrupted power supply. The battery system has automatic charging and discharging management and 2 level protection functions which can extend the service life of iron lithium battery system.

The schematic diagram of the system is shown below



## 7.2 Specification

### 7.2.1 Cell

3.2V/100Ah LFP cells are used for this system and the specifications and parameters are shown below.

Item	Specification
Material	LFP
Nominal capacity	100Ah
Nominal voltage	3.2V
Voltage range	2.5V~3.65V
Standard charging current	25A
Maximum charging current	50A
Standard discharge current	50A
Maximum continuous discharge current	≤100A
Operating temperature range	Charging: 0 °C ~ 45 °C Discharge: - 20 °C ~ 55 °C
Battery size(T * W * H)	32*136*255.7mm
Battery weight	2.26kg

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### 7.2.2 Battery module

Each battery module consists of 15 pieces of 3.2V/100Ah cells and 1 piece of BMU ,

The specification is shown below.

Item	Specification
Battery module configuration	1P15S
Rated voltage / capacity	48V/100Ah
Operating voltage range	42V~52.5V
Standard discharge current	50A
Maximum continuous discharge current	≤100A
Operating temperature range	Charging: 0 °C ~ 45 °C
	Discharge: - 20 °C ~ 55 °C
Communication mode	CAN
BMU function	Voltage and temperature sampling, equalization function
Battery module weight	About 26.4kg
Dimension	165*630*280mm

### 7.2.3 BCU Control box

The BCU control box includes circuit breaker, charge and discharge contactor, pre-charge resistor, Hall sensor, DC power supply, BCU PCB, LCD etc.

Item	Value
<b>Model</b>	CB5-100D12
<b>Maximum Current</b>	100A
<b>USB Port</b>	Available
<b>Communication Port</b>	CAN
	RS485
Ethernet	Available
<b>Insulation detection</b>	Available
<b>Current detection</b>	Hall sensor
<b>Dimension</b>	440mm*600mm*220mm (W*D*H)

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### 7.2.4 Battery cluster

The system consists of 1 BCU control box and 10 1P15S battery modules. The specifications are shown below.

Item	Specification parameters
Rated voltage	480V
Rated capacity	100Ah
Charging mode	CC / CV
Operating voltage range	420V~525V
Standard discharge current	50A
Maximum continuous discharge current	≤100A
Operating temperature range	Charging: 0 °C ~ 45 °C
	Discharge: - 20 °C ~ 55 °C
Communication mode	CAN/RS485
BMS function	Voltage, current, temperature sampling, overcharge / over discharge / over temperature / short circuit protection, etc
Dimension and weight	600*800*2000 -582kg

### 7.2.5 Battery system

The system consists of Four clusters of batteries. The specifications are shown below.

Item	Specification parameters
Rated voltage	480V
Rated capacity	800Ah
Charging mode	CC / CV
Operating voltage range	420V~525V
Standard discharge current	400A
Maximum continuous discharge current	≤640A
Operating temperature range	Charging: 0 °C ~ 45 °C
	Discharge: - 20 °C ~ 55 °C
Communication mode	CAN/RS485
Cell	3.2V/100Ah
Module	48V/100Ah(1P15S)
Battery duster	480V/100Ah(1P150S)
System	480V/800Ah(1P150S*8P)

### 7.3 System protection function and parameters

This product has powerful protection and alarm function, system can check the fault by itself, and take corresponding action for different faults to prevent the expansion of the accident.

#### 7.3.1 Fault alarm

The alarm function will start and the alarm indicator will be on to remind the user to check the fault point in time when the external use environment and internal problems happened, and the battery system can still work normally when alarm happened.

#### 7.3.2 Protection level 1

The battery system will cut off the charge or discharge contactor automatically when the external environment or internal problems become more serious and reach protection level 1 value, and then the battery system will stop running. The system will resume to operation when the system parameter reach to the recovery point.

#### 7.3.3 Protection Level 2

The circuit breaker will trip and the circuit will be disconnected when the external environment or internal problems reach the protection level 2 value of the system .and manual operation is required to switch on the system.

#### 7.6.4 Battery duster parameter setting

The parameter setting is shown in the below table below. System parameter should be set strictly accordance with the following parameters.

NO.	Item	Alarm/Protection	Unit	Default	Settable	Delay(S)
1	Cell over voltage	Alarm	V	3.7	Yes	5
2		Recovery	V	3.5	Yes	
3		Protection level 1	V	3.8	Yes	5
4		Recovery	V	3.5	Yes	
5		Protection level 2	V	4	Yes	3



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6	Cell under voltage	Alarm	V	2.8	Yes	5
7		Recovery	V	3.2	Yes	
8		Protection level 1	V	2.7	Yes	5
9		Recovery	V	3.2	Yes	
10		Protection level 2	V	2.5	Yes	3
11	Charge cell high Temperature	Alarm	°C	50	Yes	4
12		Recovery	°C	45	Yes	
13		Protection level 1	°C	55	Yes	4
14		Recovery	°C	48	Yes	
15		Protection level 2	°C	60	Yes	4
16	Charge cell low Temperature	Alarm	°C	5	Yes	4
17		Recovery	°C	8	Yes	
18		Protection level 1	°C	0	Yes	4
19		Recovery	°C	8	Yes	
20		Protection level 2	°C	-10	Yes	4
21	Discharge cell high Temperature	Alarm	°C	55	Yes	4
22		Recovery	°C	50	Yes	
23		Protection level 1	°C	60	Yes	4
24		Recovery	°C	53	Yes	
25		Protection level 2	°C	75	Yes	4
26	Discharge cell Low Temperature	Alarm	°C	-15	Yes	4
27		Recovery	°C	-10	Yes	
28		Protection level 1	°C	-20	Yes	4
29		Recovery	°C	-12	Yes	
30		Protection level 2	°C	-25	Yes	4
31	Cell consistency	Alarm	V	0.5	Yes	5
32		Recovery	V	0.3	Yes	
33	Ambient temperature	OT alarm	°C	45	Yes	4
34		Recovery	°C	40	Yes	
35		UT alarm	°C	0	Yes	4
36		Recovery	°C	5	Yes	
37	Battery system over voltage	Alarm	V	540	Yes	5
38		Recovery	V	525	Yes	
39		Protection level 1	V	547	Yes	5
40		Recovery	V	525	Yes	
41		Protection level 2	V	555	Yes	3
42	Battery system under voltage	Alarm	V	435	Yes	5
43		Recovery	V	480	Yes	5
44		Protection level 1	V	405	Yes	5
45		Recovery	V	480	Yes	
46		Protection level 2	V	375	Yes	3
47	Battery system over charge	Alarm	A	53	Yes	20
48		Recovery	A	44	Yes	

## COSPOWERS BATTERY

49		Protection level 1	A	56	Yes	15
50		Recovery	A	44	Yes	
51		Protection level 2	A	65	Yes	80
52	Battery system over discharge	Alarm	A	210	Yes	20
53		Recovery	A	180	Yes	
54		Protection level 1	A	220	Yes	15
55		Recovery	A	205	Yes	
56		Protection level 2	A	250	Yes	80

## 8 System installation, operation and maintenance

### 8.1 Unpacking examination

**Note: Please take out and place the battery module and control box carton from the wooden box horizontally according to the label of the carton after unpacking the wooden case, and handle it with care. Do not tilt or stand upright.**



8.1.1 Check all the items which shown at the packing list after open the package of the system

8.1.2 Check whether the machine is damaged during transportation. In case of damage or item missing, please do not switch on the system and inform the manufacture and dealer.

8.1.3 Check whether the system specification comply to customer requirement .model number can be confirmed by the printing on the front panel

### 8.2 Product installation

#### 8.2.1 Inspection before installation

The installation personnel shall conduct a comprehensive inspection at the control box and battery module before installation.

## COSPOWERS BATTERY

- 1) The voltage meter is used to detect the polarity correctness of the battery module;
- 2) Insulation resistance tester is used to detect the insulation resistance of the control box and battery module to ensure safety. The test parts should include between the positive pole of the control box or battery module and the external exposed conductive part, and between the negative pole of the control box or battery module and the external exposed conductive part. The insulation resistance between positive or negative pole and external exposed conductive part shall not be less than  $1000 \Omega / v$ .

### 8.2.2 Installation of control box and battery module

- 1) Placement of control box and battery module

Place the control box and battery module on the correct position of the rack as below

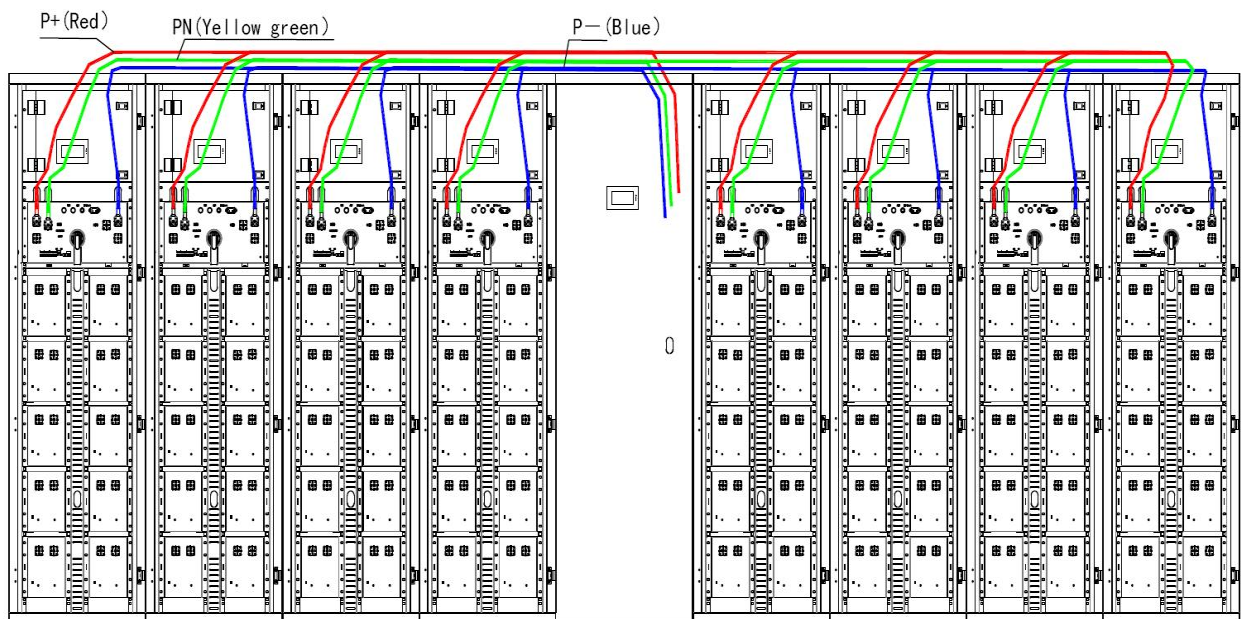


Figure 8.2-1 layout of control box and battery module

- 2) Fixing of control box and battery module

The control box and battery module are fixed on the battery rack with M6 bolts to the rack. There are at least 4 fixing holes on each mounting flange. Take the battery

module as an example, the installation fixing position is shown in the below:



Fig. 8.2-2 fixing holes of control box and battery module

8.3 System wiring

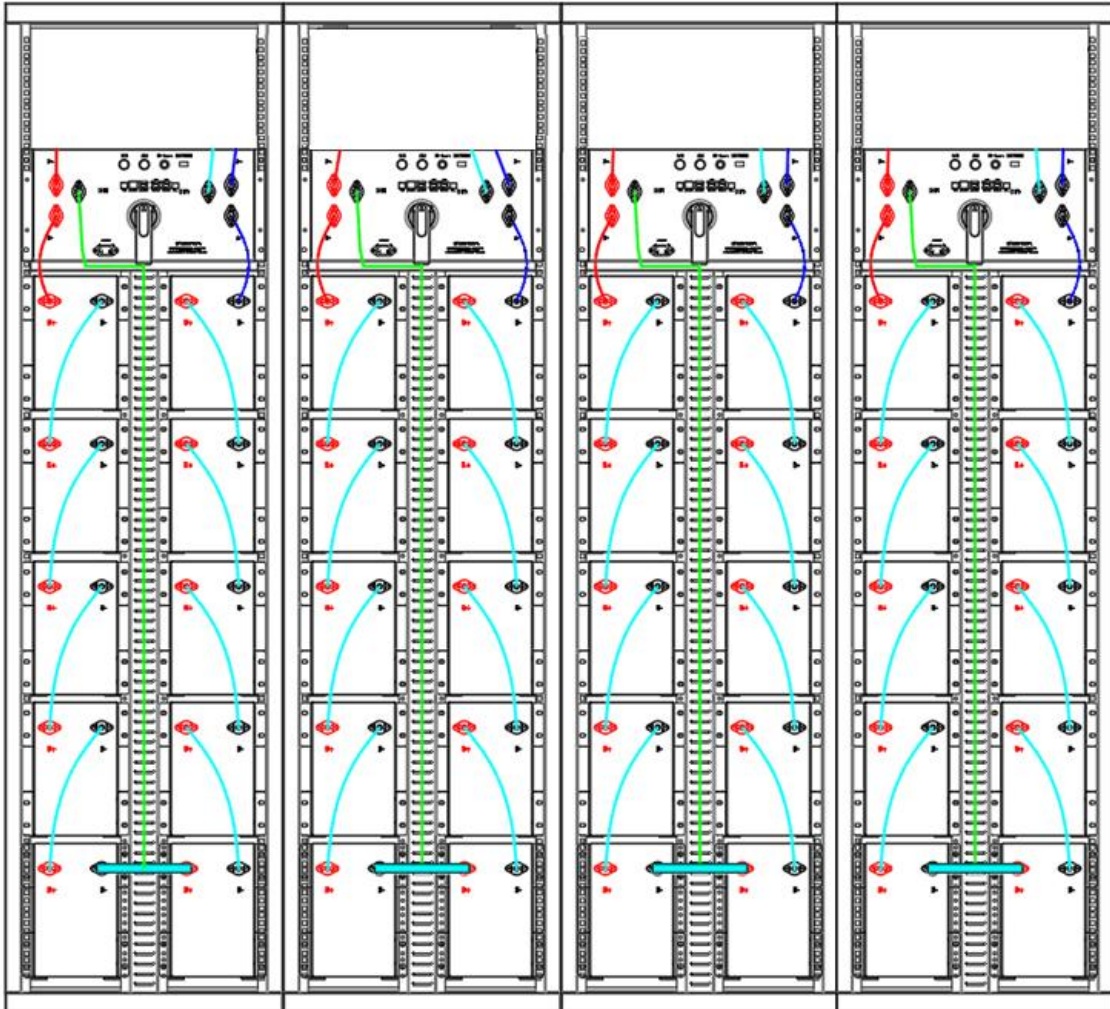


Figure 8.3-1 power line connection



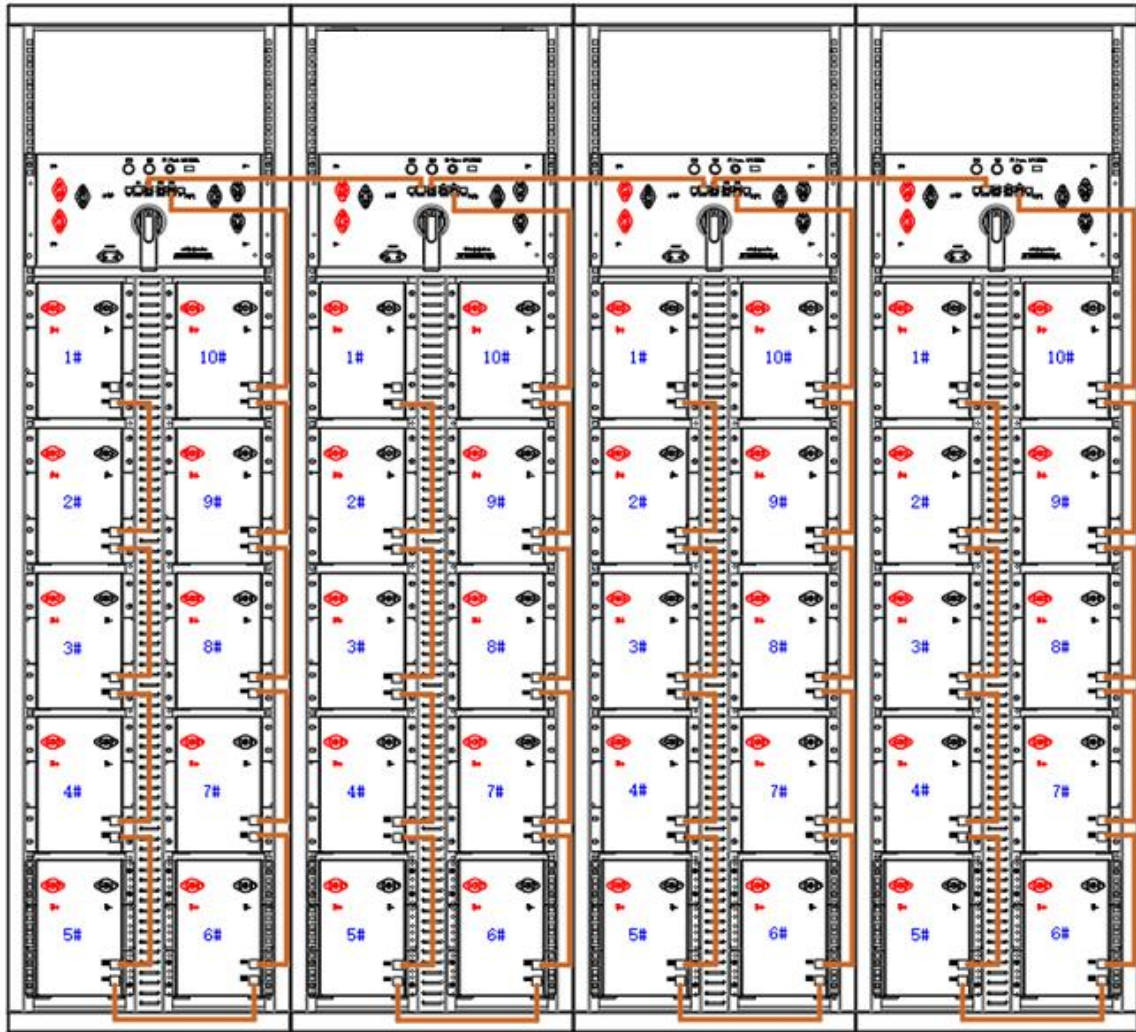


Figure 8.3-2 communication line connection

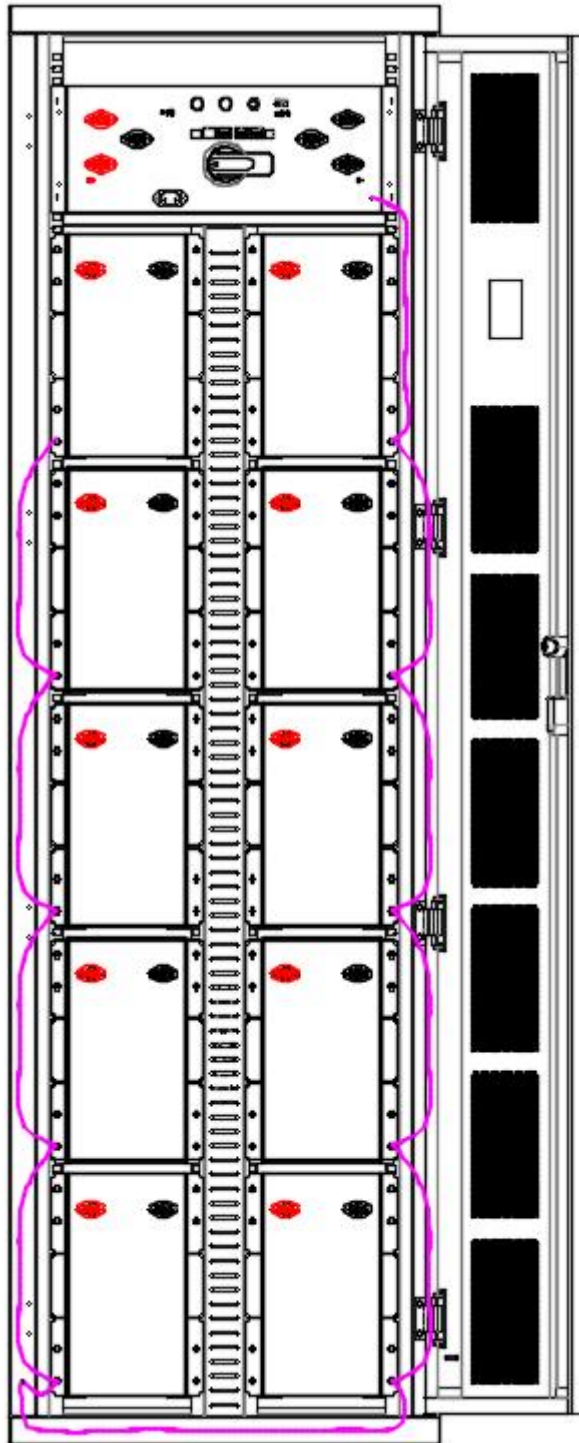


Figure 8.3-3 ground wire connection

- The control box, battery module and battery rack are reliably grounded according to the grounding sign, and the grounding resistance is  $\leq 4 \Omega$ ;
- The above wiring shall be checked strictly to ensure the correct connection is correction and all the plugs are reliably connected and the bolts shall be

fastening tightly.

### 9 System operation

The SOC is 65% when product delivery, the charge activities are required if the storage period is more than 3 month.

#### 9.1 System Power on

If the battery needs to be used as cold start the UPS/PCS, **the switch on the UPS/PCS side must be closed before starting the battery.** If the battery is turned on first, then switch on the UPS/PCS side, it is easy to cause ablation or adhesion of the contactor, and contact resistance increases, then the heat will damage contactor which make the contractor cannot be disconnected to trigger secondary protection.

Normally there is a large capacitance at the DC side of UPS/PCS, The closing instantaneous capacitance is equivalent to a short circuit. At this time, the current charged by the battery to the capacitor is much higher than contactor rating which will damage the contactor.

The circuit breaker is disconnected by the BMS after the secondary protection is triggered. The system must be powered off to remove the fault. And the power can be turned on again after at least 1 minute. Otherwise, the circuit breaker coil heat cannot be dissipated which will damage the breaker.

#### 9.2 System Power on

The starting steps of the battery system are as follows:

- Close the circuit breaker on the front panel of the control box then connect the primary circuit;
- Manual activation and startup: press the DC start button on the front panel at the control box for 5 seconds, then the system be powered on ,the relevant indicator lights will be on.



- Power on by input AC220V : The battery system can be power on automatically if system connect 220V AC input to control box.

### 9.3 System Power off

The power off step of the battery system is as follows:

- Turn off the handle on the front panel of the control box to disconnect the circuit breaker and the primary circuit.
- Disconnect the AC220V input when system is on, the battery system will be power off automatically.

### 9.4 Battery system parallel connection

**9.4.1 The parallel connection if the voltage difference of battery cluster is less than 2%U<sub>n</sub>. The battery system will work automatically and properly. The pre-charge contactor and charge/discharge contactor will be connected, and the battery cluster with lower voltage will be connected first..**

**9.4.2 The parallel connection if the voltage difference of battery cluster is more than 2%U<sub>n</sub>. The lower voltage cluster will be on first automatically, and its pre-charge and main contactor will be connected. The system voltage will be increase; the second system will be on after the battery cluster voltage difference is less than 2%U<sub>n</sub>.**

**Note: the second system will not be on if there is no charging current from the UPS/PCS to the lower voltage battery cluster. the second battery will be on only the voltage difference is less than 2%U<sub>n</sub> .**

### 9.5 LCD instruction

The system is equipped with a 4.3-inch touch screen LCD which can be used for data display, historical record, and parameter setting, please refer to Appendix 1: LCD.

Instructions

### 10. Product maintenance

#### 10.1 Routine maintenance

The 480V50Ah LFP battery system has data storage function which can store at least 5000 data information. It can be read directly by monitor software or read through USB interface.

Check whether the data is abnormal daily and whether alarm information are recorded, Deal with problems in time.

#### 10.2 Regular maintenance

The system shall be inspected regularly every 6 months. The inspection contents are as follows:

- a) Keep the site clean;
- b) Measure and record the ambient temperature of the site
- c) Check for rodents, insects, floods and other disasters;
- d) Clean the battery, check if the terminal has heating trace, and whether the shell is damaged or overheated;
- e) Measure and record the total voltage and cell voltage
- f) Check the all connecting parts and pole bolts to ensure connection tightly

#### 10.3 Battery module replacement

10.3.1 Switch off the breaker at the control box front panel then disconnect the primary circuit;

10.3.2 Disconnect the communication cable of the faulty battery module.

10.3.3 Remove all the fixing bolts on the lug;

10.3.4 Remove the faulty battery module from the battery rack, ensure the battery do not touch the system bus bar during the operation.

10.3.5 Put the new module at the same position, ensure the battery do not touch the

system bus bar during the operation.

10.3.6 Start the system and check the status of the indicator. The system can be used if there is no alarm

## **11. Packaging, transportation and storage**

### **11.1 Packing**

The package of the product has the functions of moisture-proof and anti-vibration which can meet the requirements of GB 3873-83. The system adopts integrated packaging to ensure that the product will not be damaged by any harmful gas, chemical pollution, static electricity, moisture and mechanical damage during transportation and storage. The packing box has been marked with: product name, model, production date, and quantity and batch number.

### **11.2 Transportation**

Operation should be carried out strictly accordance with the marks on the packing box in the process of transportation, and the goods should be handled with care to avoid violent vibration or collision.

### **11.3 Storage**

The product should be stored in a dry environment, avoid exposed to the sun and rain. The product need be recharged If the storage period is more than 6 months. the capacity test should be carried out If the storage period is more than 1 year.

## **12 Safety precautions**

(1) It is forbidden to immerse the battery in water. It should be stock in a cool and dry

## COSPOWERS BATTERY

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environment if the system is not in used.

(2) It is forbidden to put or use the battery near the high temperature source

(3) System parameter setting should be specified in this manual;

(4) It is forbidden to connect the battery to the AC power socket directly;

(5) Do not leave the battery in the fire or heater;

(6) It is forbidden to disassemble batteries and components;

(7) Do not knock, throw or step on the battery;

(8) The output terminals of the system still has voltage output even if the mains power is cut off, electric shock or short circuit should be avoid.

## Annexure 1: LCD operation instructions

### 1. Scope of application

This document is applicable to 4.3 inch LCD display of the management system of high voltage lithium battery produced by Harbin Coslight new energy Co., Ltd

### 2. Product overview

The HMI supports the display of system operation status, cell data, real-time and historical alarm records, and supports the setting and viewing of relevant parameters as a part of the system.

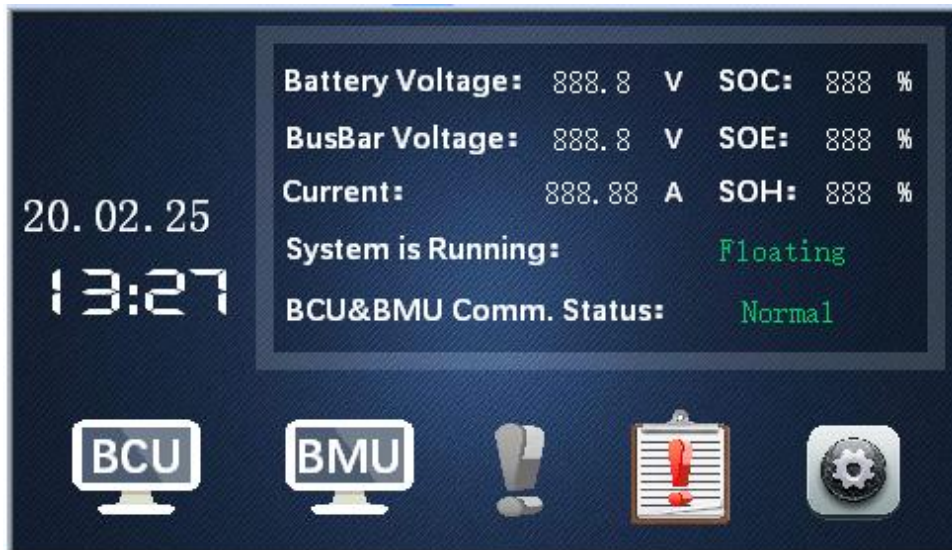
### 3. Wiring

Identification	Instruction
24VDC +	24V Power supply +
24VDC -	24V Power supply -
RXD	2-RXD signal
TXD	3-TXD signal
GND	5-GND signal

### 4. Operation Interface

The main interface of the system is displayed as below, the battery voltage, current, temperature, SOC, SOE, SOH, etc. can be viewed in real time according to the customer requirement.

The main interface of the system is divided into two parts: function button and data display area



#### 4.1 Battery module information view

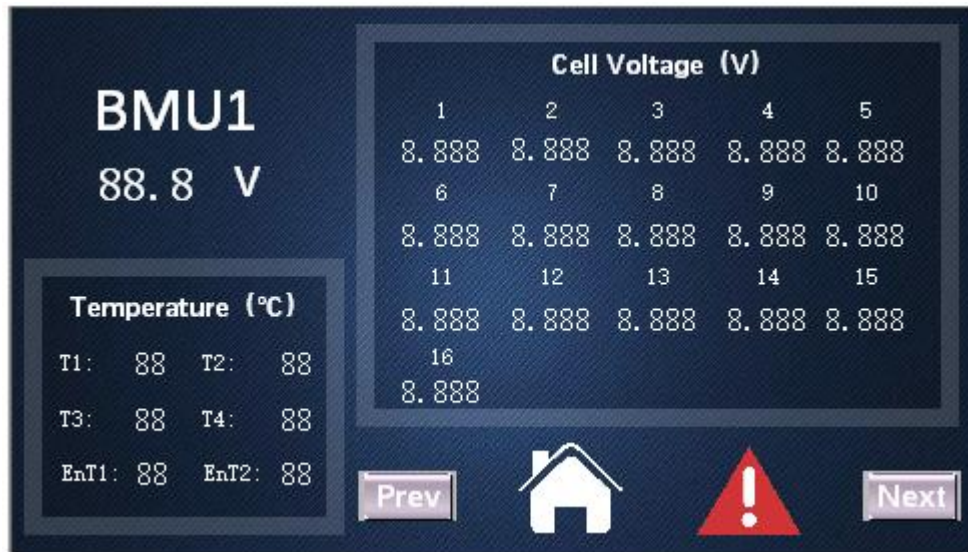
1) Click the BMU icon as below:



The below page will be shown, and click the battery module number which need to be checked.




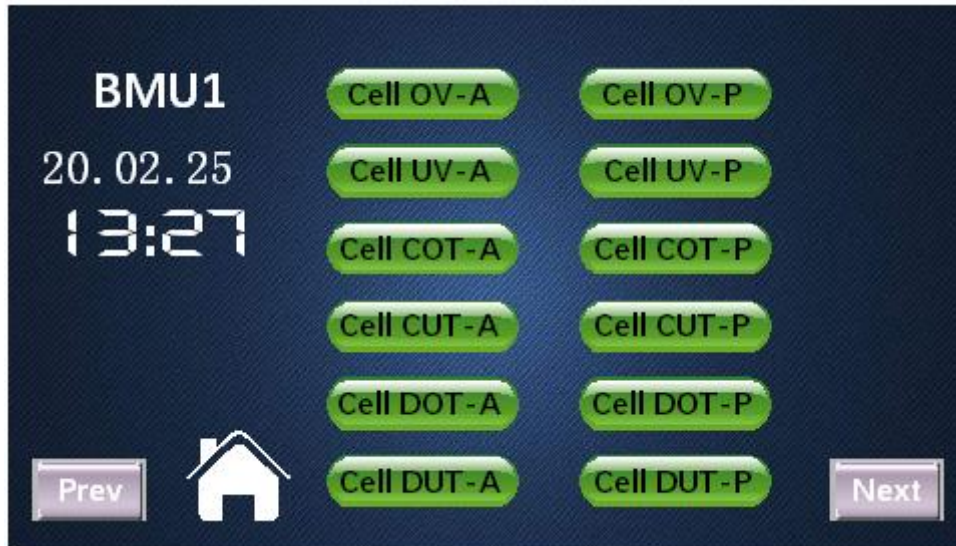
2) The voltage and temperature information of the battery module will be shown after selecting the battery module number as below.



3) Click the "Next" icon, the next battery module information will be shown.

#### 4.2 Check the alarm status of BMU

Click  icon, The below page will be shown:



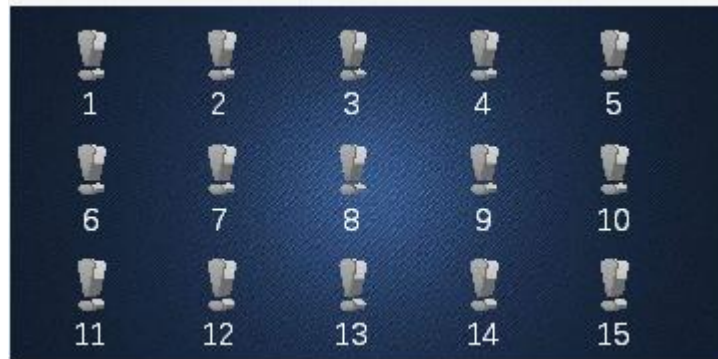
This page displays the real-time alarm and protection status of the system. The corresponding alarm or protection information icon will be changed from green to red if an alarm or protection is triggered,

Click the "Next" icon, the next BMU alarm or protection information will be shown.

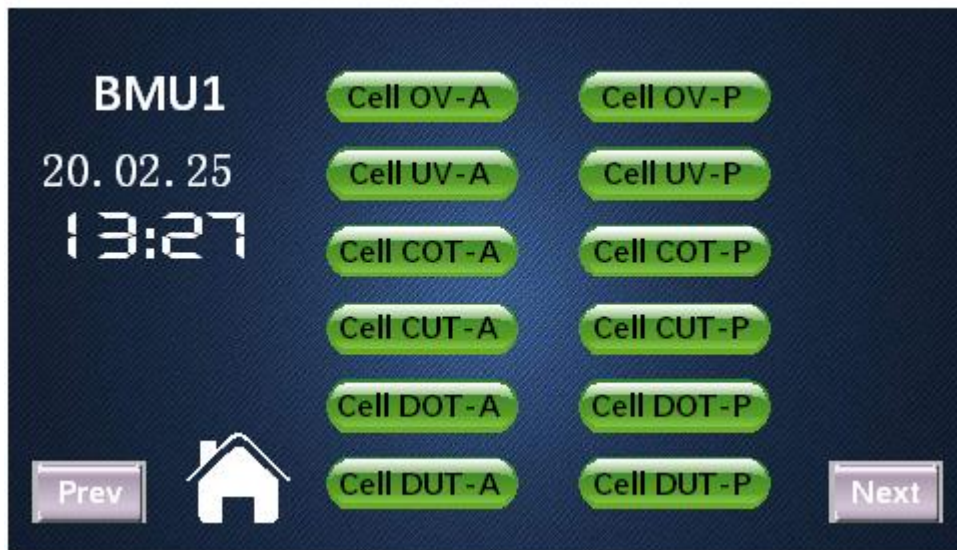




The below page will be shown after Click the “ ” icon.



The battery module information can be shown as below after selecting the battery module number which need to be checked.



#### 4.3 System running status view

Click "BCU" icon as below:



#### 4.3.1 System running status

This page displays the cell maximum and minimum voltage, maximum and minimum temperature, BCU temperature, battery average voltage, positive insulation resistance and negative insulation resistance.





Click the "Next" icon, the below will be shown:



This page displays the current system rated capacity / residual capacity / residual energy / cumulative charging capacity / cumulative discharge capacity / cumulative charging energy / cumulative discharge energy / running time / residual discharge time

#### 4.3.2 System real time alarm and protection

Click the "Next" icon as below



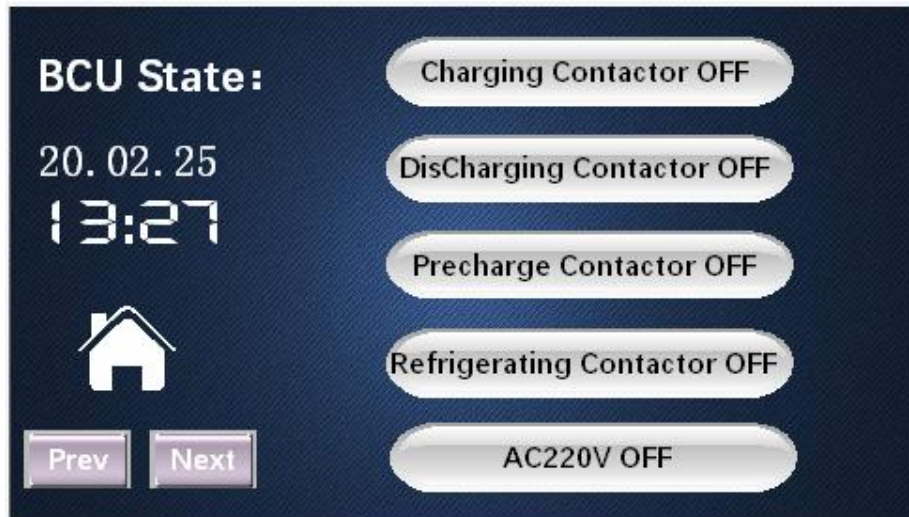
This page displays the system real-time alarm and protection status, the corresponding alarm or protection information icon will be changed from green to red if alarm or protection is triggered.

Click the "Next" Icon as below



This page displays the system insulation low alarm, pre charge failure alarm and contactor failure alarm. The corresponding alarm or protection information icon will be changed from green to red if alarm or protection is triggered.


Click the "Next" icon as below



This page shows the status of charging contactor, discharge contactor, pre charge contactor, refrigeration contactor and AC contactor.

#### 4.4 Alarm and protection records checking




Click the  icon to check the historical alarm and protection records as below

20.02.25		13:27		Clear	
Date	Time	Message			

#### 4.5 LCD parameter setting

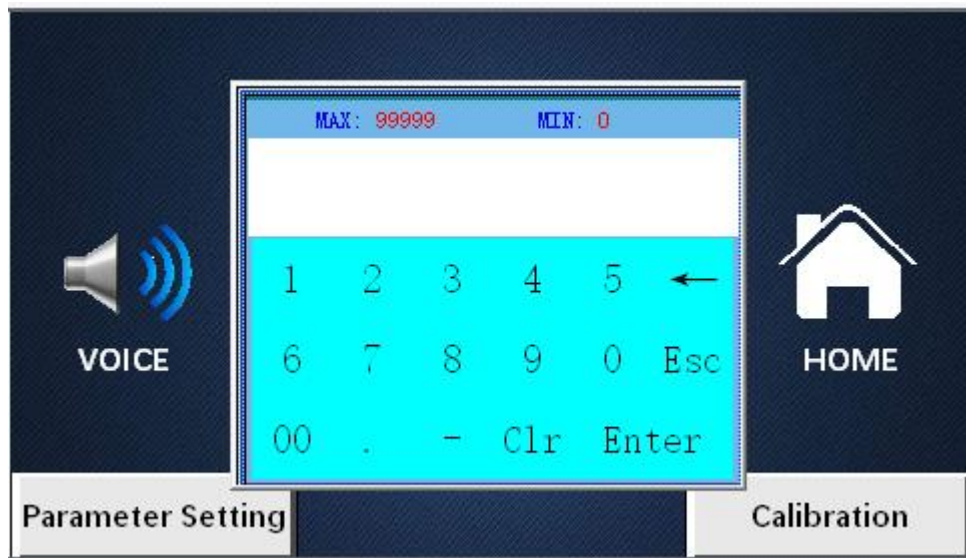


Click the  icon, the below pack will be shown:

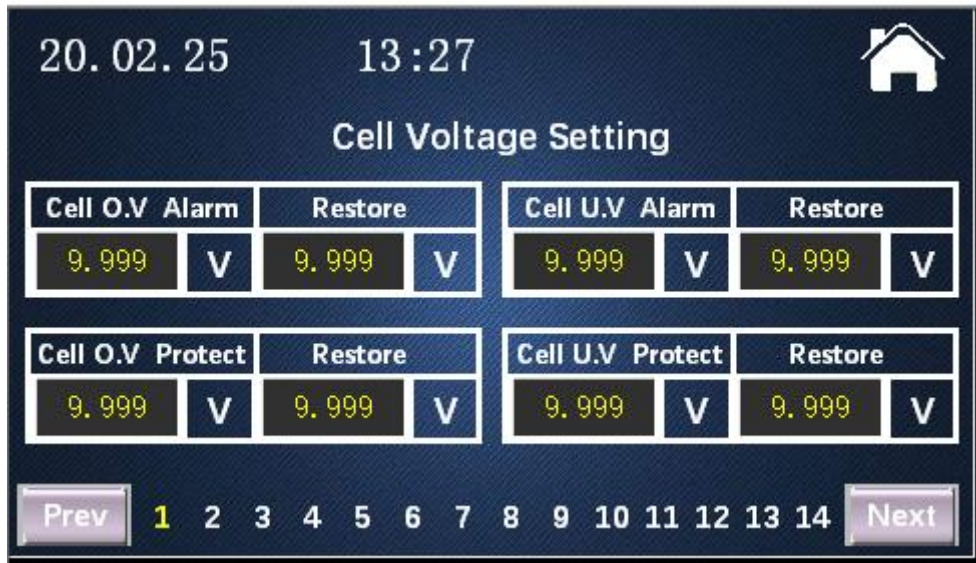




Click **Parameter Setting**, the below pack will be shown:

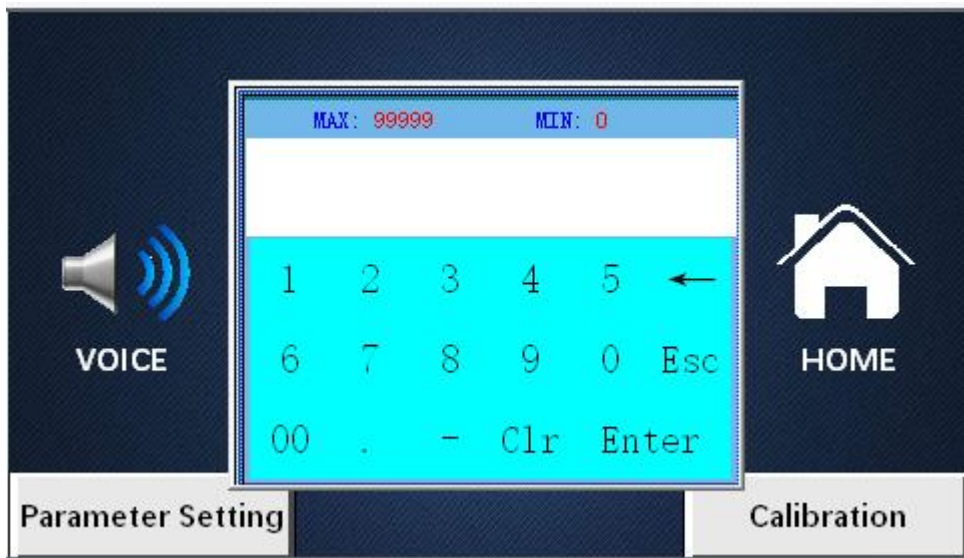


The Password is 66666




Click "Next" for other parameter setting

Click , the below pack will be shown:



The Password is 66666

20.02.25 13:27 Calibration 

Charging Current:			
Sensor 1:	99999	Sensor 2:	99999

DisCharging Current:			
Sensor 1:	99999	Sensor 2:	99999

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