02

PART TWO

BAT SYSTEM TRAINING

BAT SYSTEM

1、 Batteries System Introduce

2、 Batteries System Installation
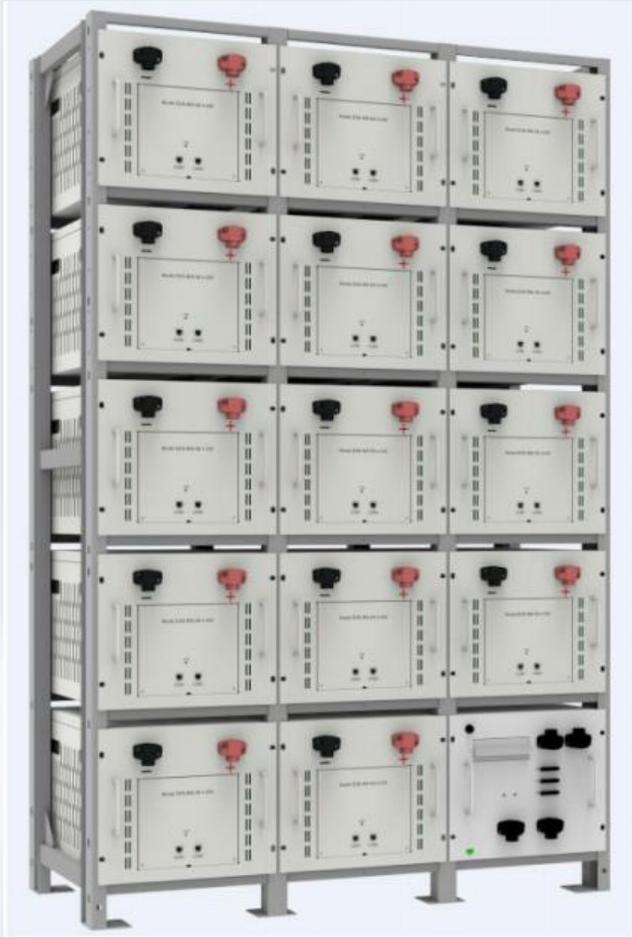
3、 Batteries System Commissioning

4、 Batteries System Troubleshooting

5、 Batteries System Tools

PPT & SPEAKER: FELIX

1、Batteries System Introduce --- Common Battery Type

BRXXX PengHui Battery

BRXXXT TuoBang Battery

BRXXXR RuiPu Battery

1、 Batteries System Introduce --- Common Battery Type

PengHui battery and TuoBang battery have 2 different types: 100Ah and 200Ah. The discharge capacity of 38.4V 200Ah type and 76.8V 100Ah is different, but the total discharge power is equal.

RuiPu battery only has one type, 51.2V 280Ah, capacity 14.336kWh.

Type of Battery	Battery Module
Type One (BC/BR-T)	38.4V, 200Ah/76.8V 100Ah, capacity 7.68kWh
Type Two (BR-R)	51.2V 280Ah, capacity 14.336kWh

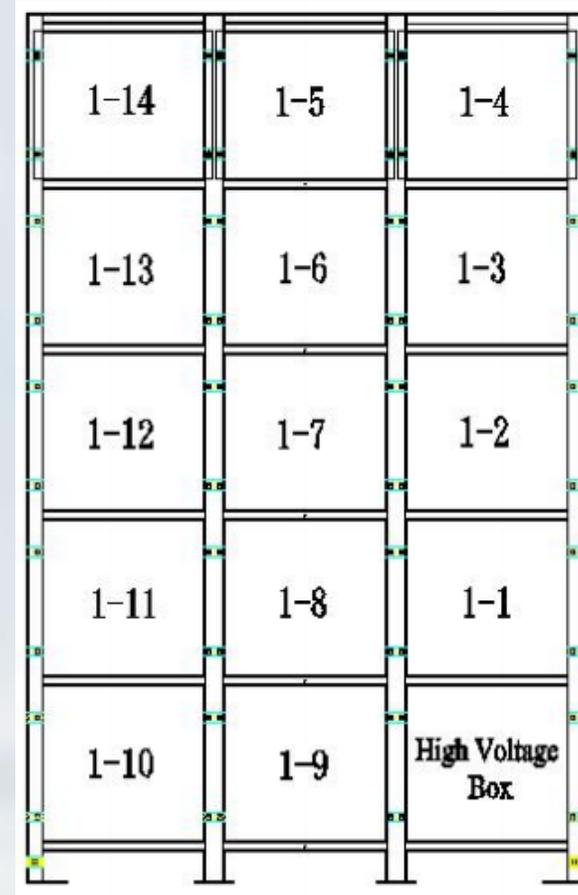## 2、 Batteries System Installation --- PengHui Battery

S/N DZE01002P12S214801010101

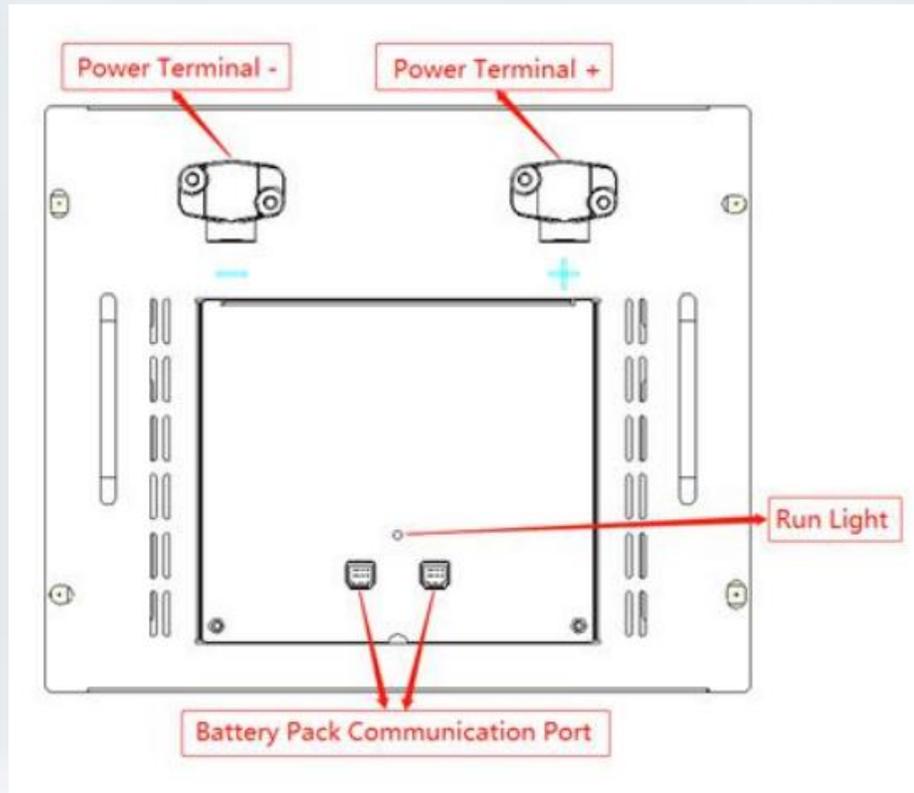| DZE0	1002P12S	2148	01	01	01	01
Battery machine code	battery modules	Year and cycle	Battery Unit Number	Number of parallel batteries	Battery rack Number	Battery pack Number.

S/N label

The customer only needs to see the last four digits of S/N to install the battery pack in the corresponding position of the battery rack.
For example, 1-1 indicates the installation position of the first battery box of the first battery rack. This corresponds to the last four digits 0101 of the S/N on the battery box.

1-14	1-5	1-4
1-13	1-6	1-3
1-12	1-7	1-2
1-11	1-8	1-1
1-10	1-9	High Voltage Box

2、 Batteries System Installation --- PengHui Battery

Battery pack front interface

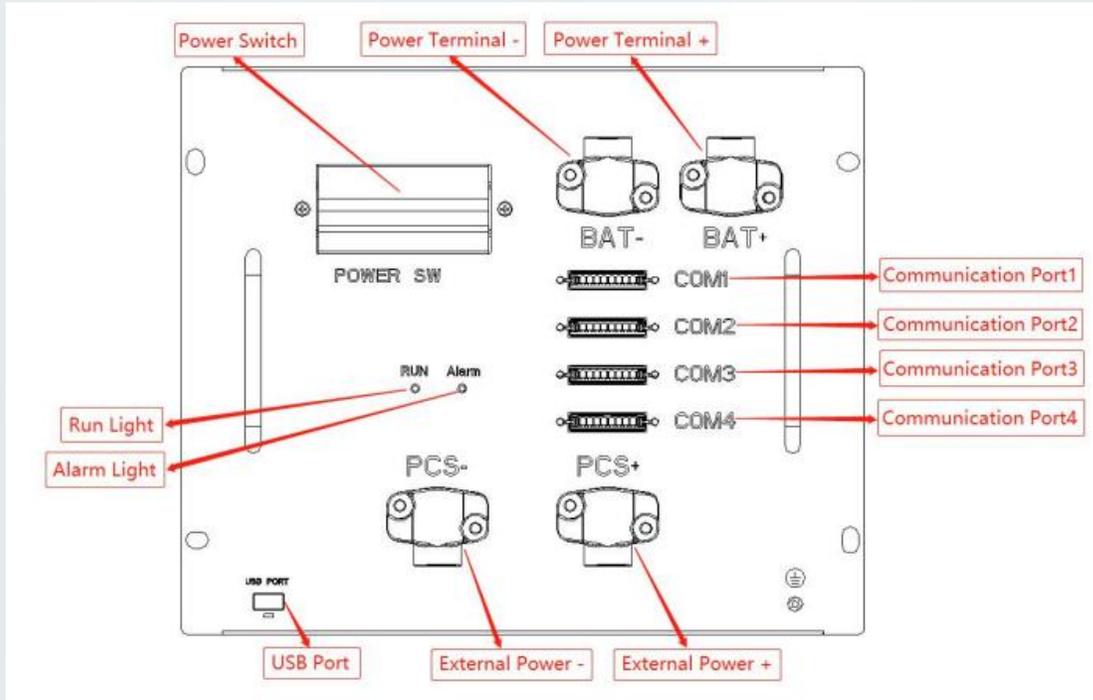Power Terminal +/-
To connect battery series power cables.

Battery Pack Communication Port
To connect battery series communication lines.

Run Light
Indicates the running status of the battery pack.

2、Batteries System Installation --- PengHui Battery

High voltage box front interface

Communication Port 1
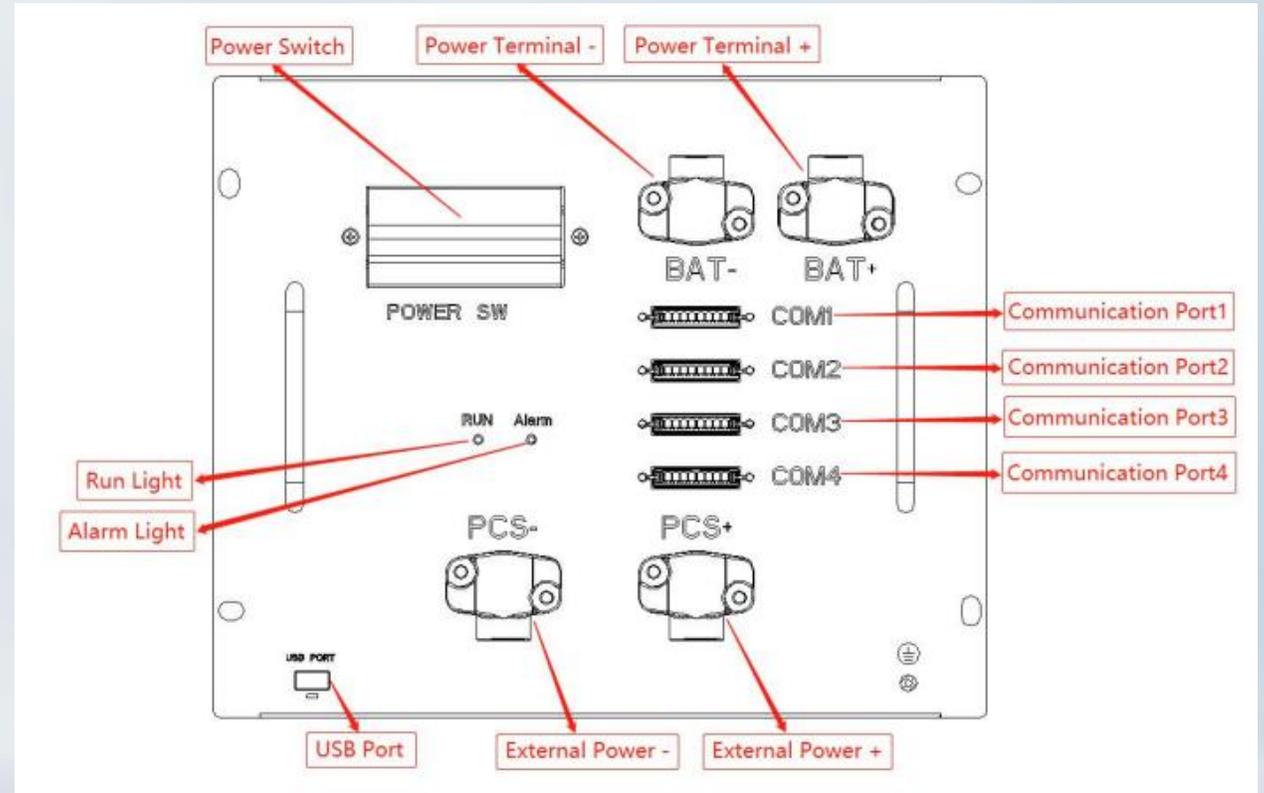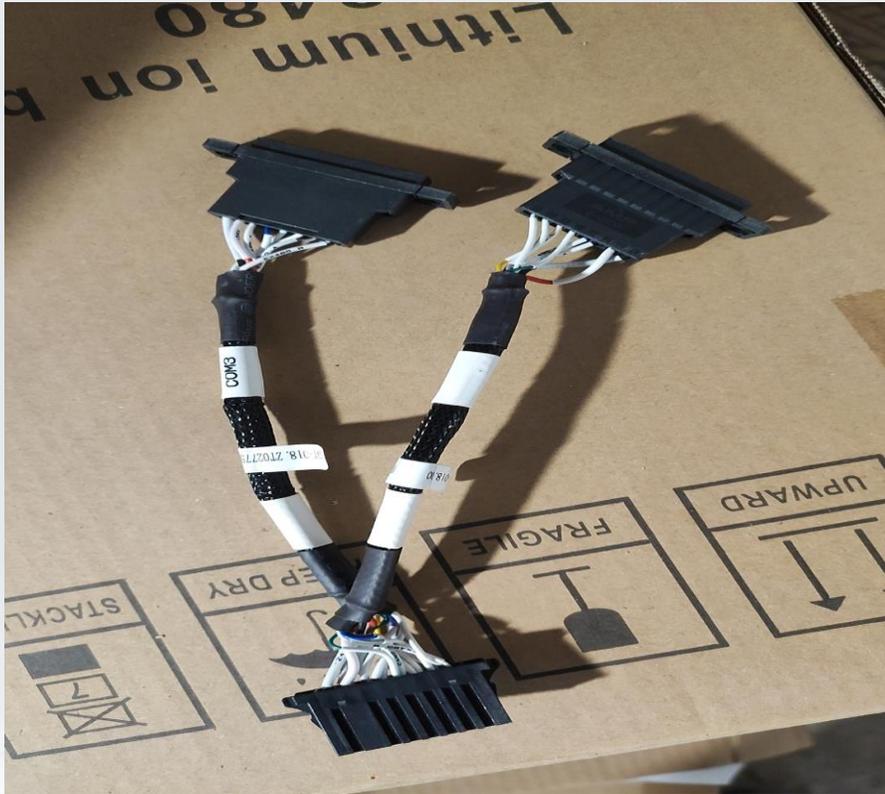To connect the first battery in series communication lines.

Communication Port 2
To connect high voltage box series communication lines
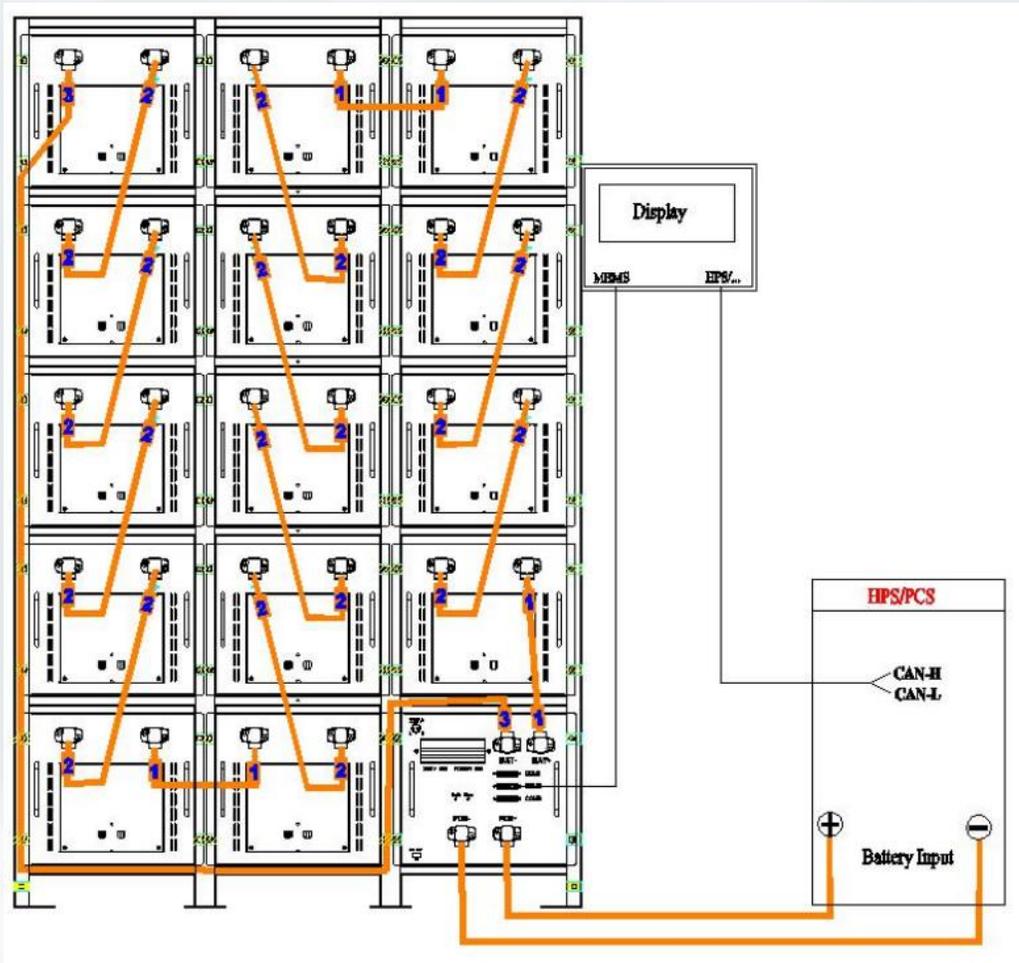
Communication Port 3
Usually for data logger communication

2、 Batteries System Installation --- PengHui Battery

This wire is used for COM2 connections between multiple high voltage boxes

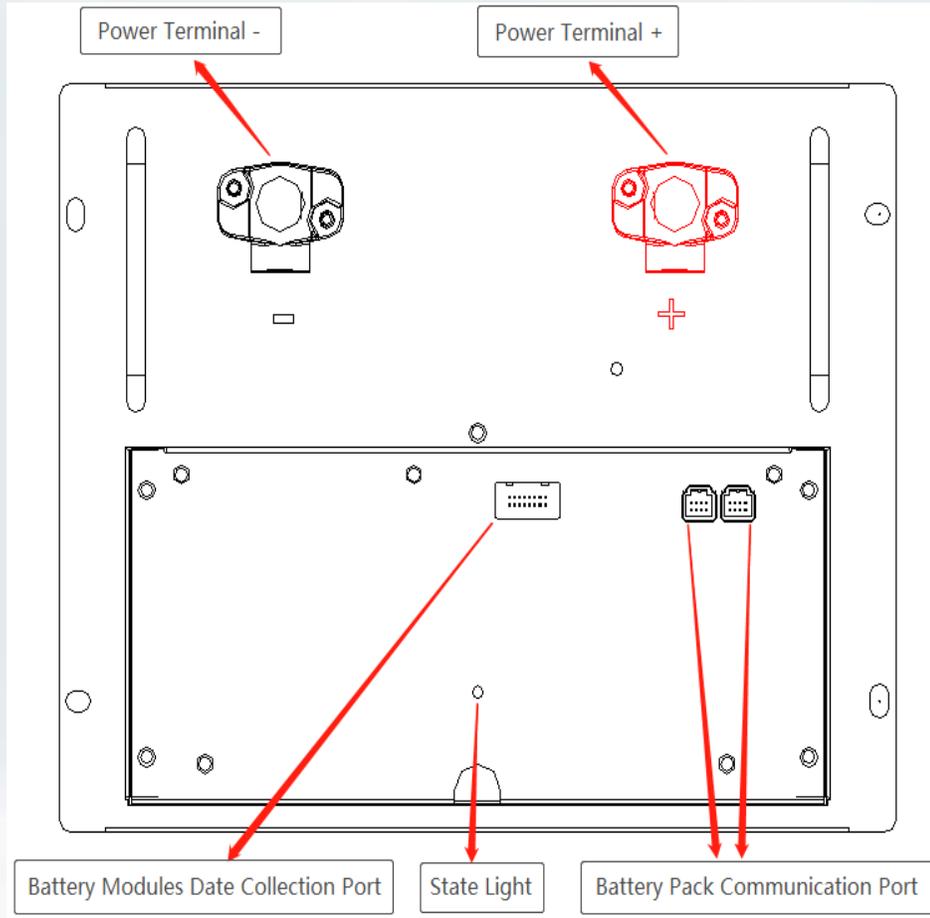# 2、 Batteries System Installation --- PengHui Battery
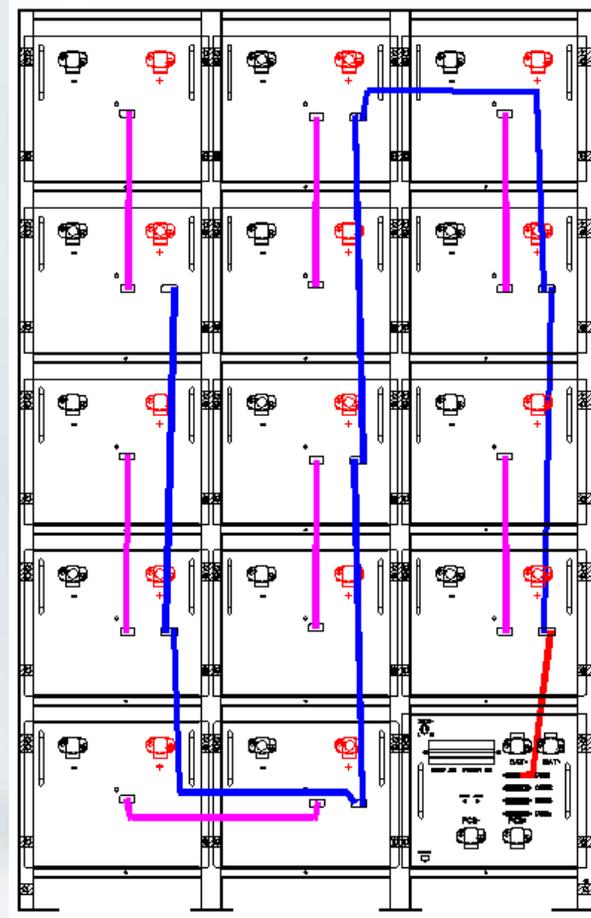

Wiring diagram of energy storage system

BR100 Battery Rack communication line installation diagram

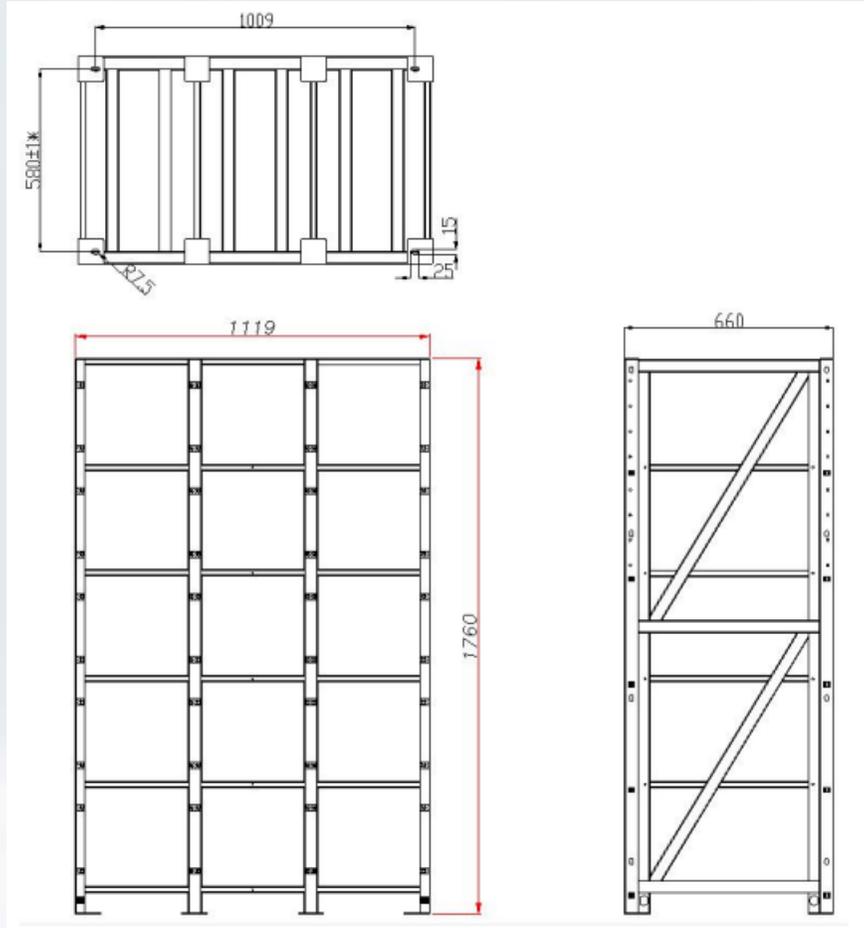## 2、 Batteries System Installation --- TuoBang Battery
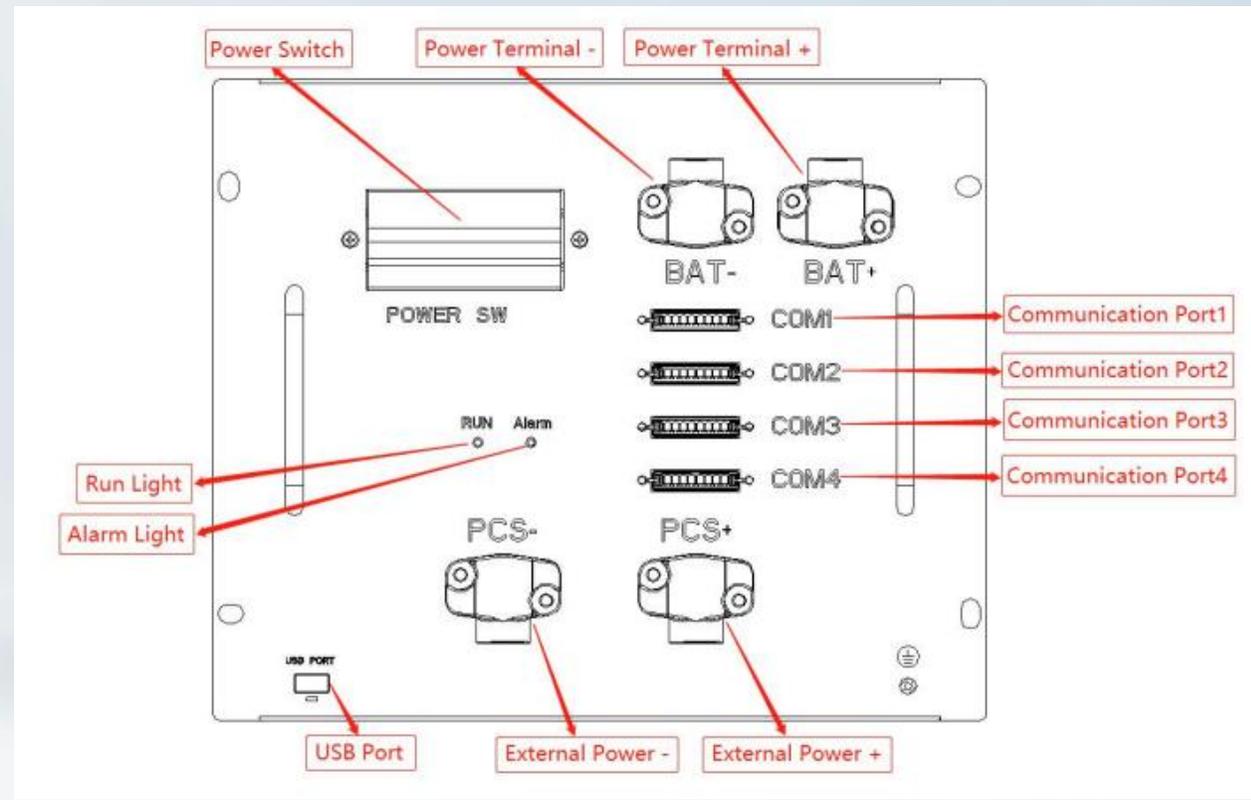

Battery pack front interface

Battery pack communication line installation diagram

2、 Batteries System Installation --- TuoBang Battery

TuoBang battery rack and high voltage box are the same as PengHui.

Battery rack size and internal schematic
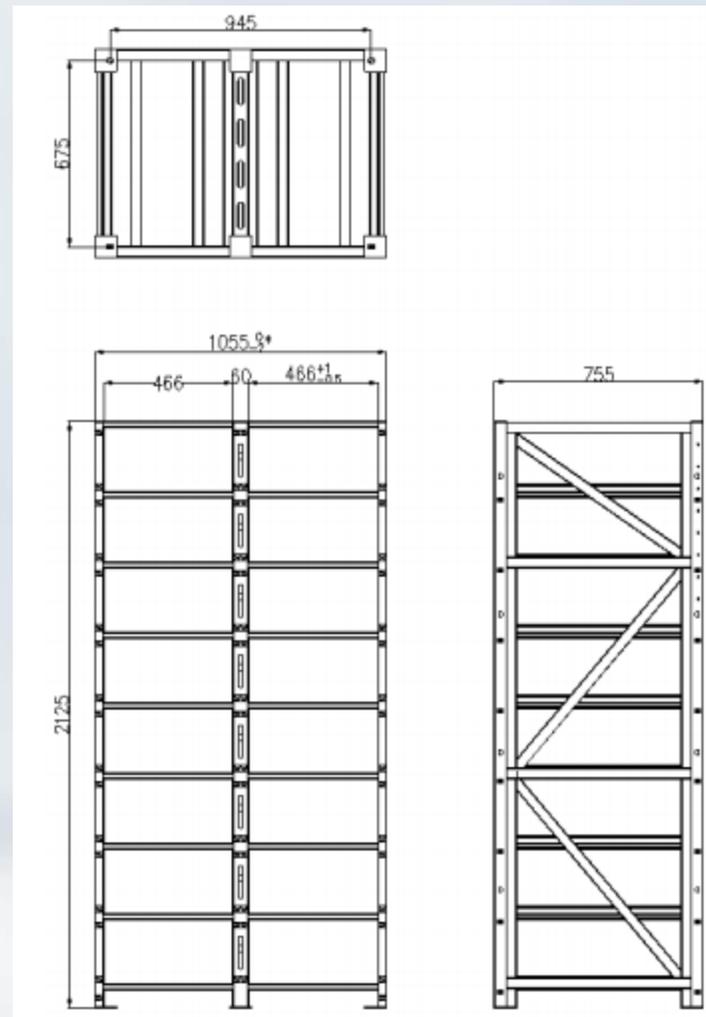
2、 Batteries System Installation --- RuiPu Battery

Parameter\nType	Rated voltage of PACK	Rated capacity of PACK	Quantity of PACK	Rated voltage of the system	Rated capacity of the system	Rated energy of the system
BR114R	51.2 V	280Ah	8	409.6V	280Ah	114.6KWh
BR129R	51.2V	280Ah	9	460.8V	280Ah	129.0KWh
BR143R	51.2V	280Ah	10	512.0V	280Ah	143.3KWh
BR157R	51.2V	280Ah	11	563.2V	280Ah	157.6KWh
BR172R	51.2V	280Ah	12	614.4V	280Ah	172.0KWh
BR186R	51.2V	280Ah	13	665.6V	280Ah	186.3KWh
BR200R	51.2V	280Ah	14	716.8V	280Ah	200.7KWh
BR215R	51.2V	280Ah	15	768.0V	280Ah	215.0KWh

Battery System Specifications

With the monomer 280Ah/3.2V LFP battery cell, through the reasonable configuration and box aging of the battery cell, the effective management and full utilization of the battery cell is realized; the DC input voltage requirement of the inverter is achieved by the serial connection method.

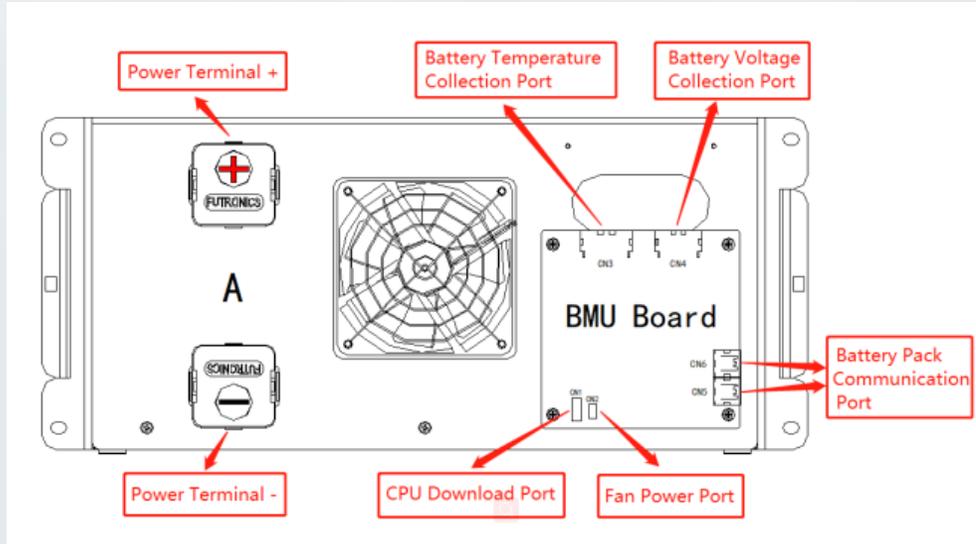# 2、 Batteries System Installation --- RuiPu Battery
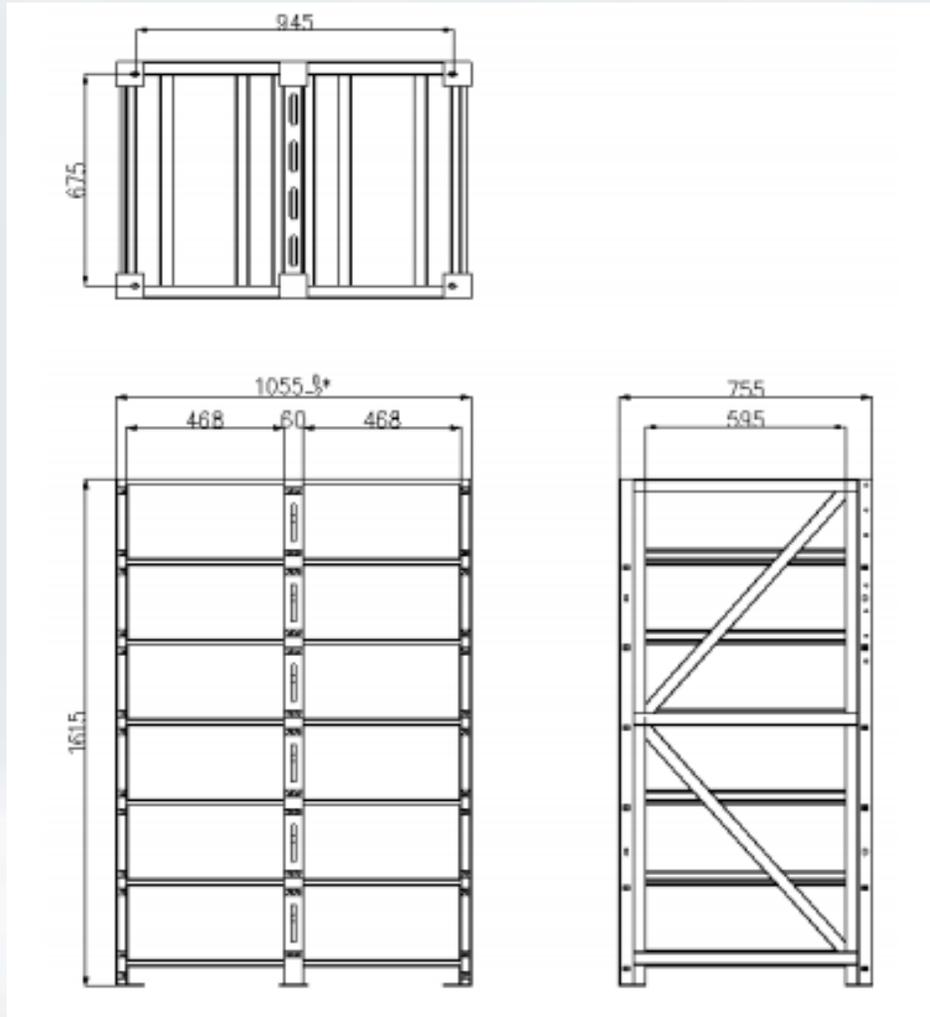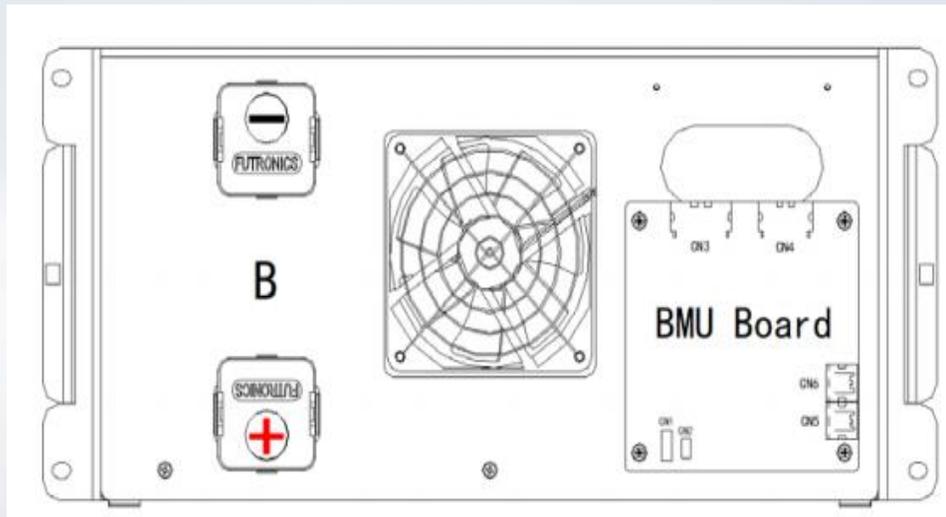

6 layers 2 columns battery rack size drawing

8 layers 2 columns battery rack size drawing

2、 Batteries System Installation --- RuiPu Battery

Battery pack front interface

Battery Pack Communication Port
To connect battery series communication lines.

Battery Temperature Collection Port
Port for collecting the temperature of the battery cell in the battery pack.

Battery Voltage Collection Port
The voltage and total voltage of each cell in the battery box are collected.

CPU Download Port
Used to download or update CPU programs.

Fan Power Port
Battery box fan driver input port.

Note: The difference between battery pack-A and battery pack-B is that the positive and negative ports are opposite.

2、 Batteries System Installation --- RuiPu Battery
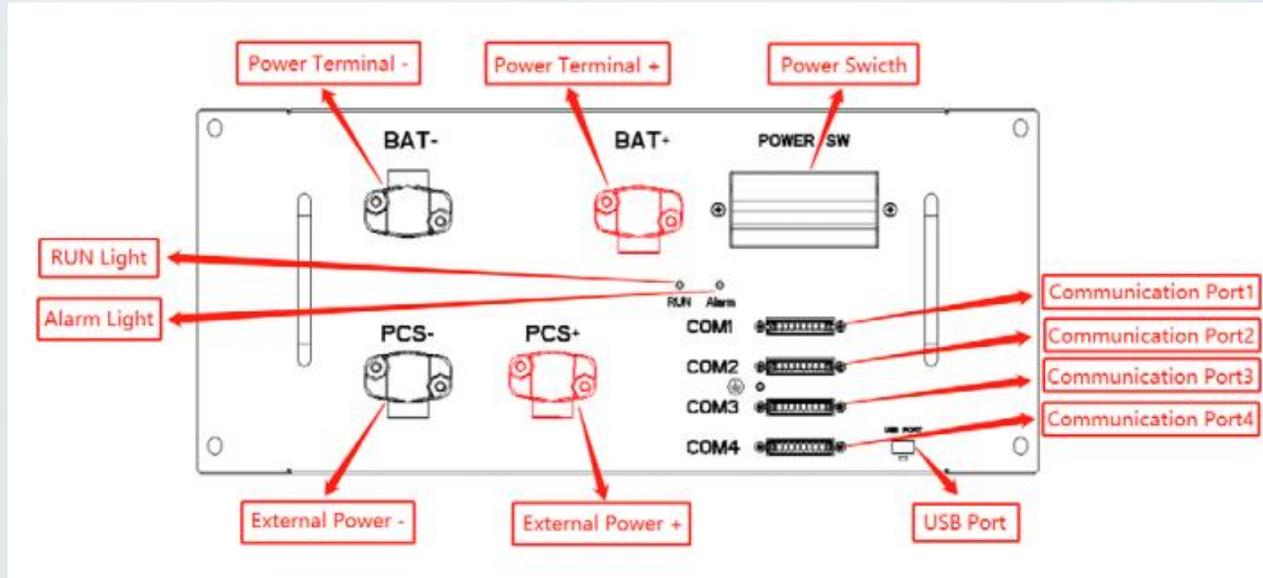
High voltage box front interface

Communication Port 1
To connect the first battery in series communication lines.

Communication Port 2/3
To connect high voltage box series communication lines.

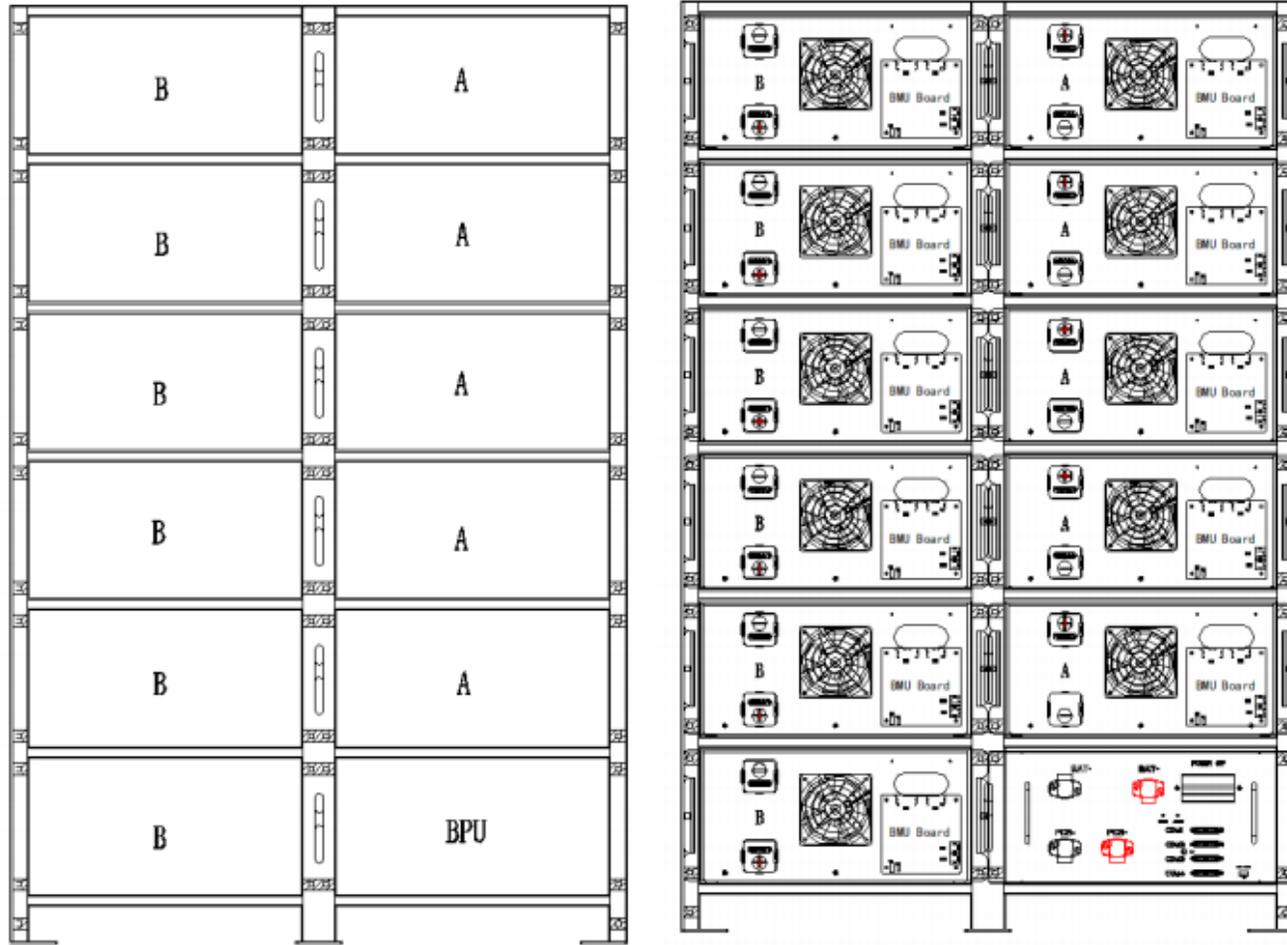Communication Port 4
This is the system debugging port.

External Power +/-
To connect HPS/PCS or DC Cabinet.

USB Port
Used to upgrade the BCU board code.

2、 Batteries System Installation --- RuiPu Battery

Sample Pictures: BR157R installation, Battery pack and high voltage box (BPU) installation effect diagram

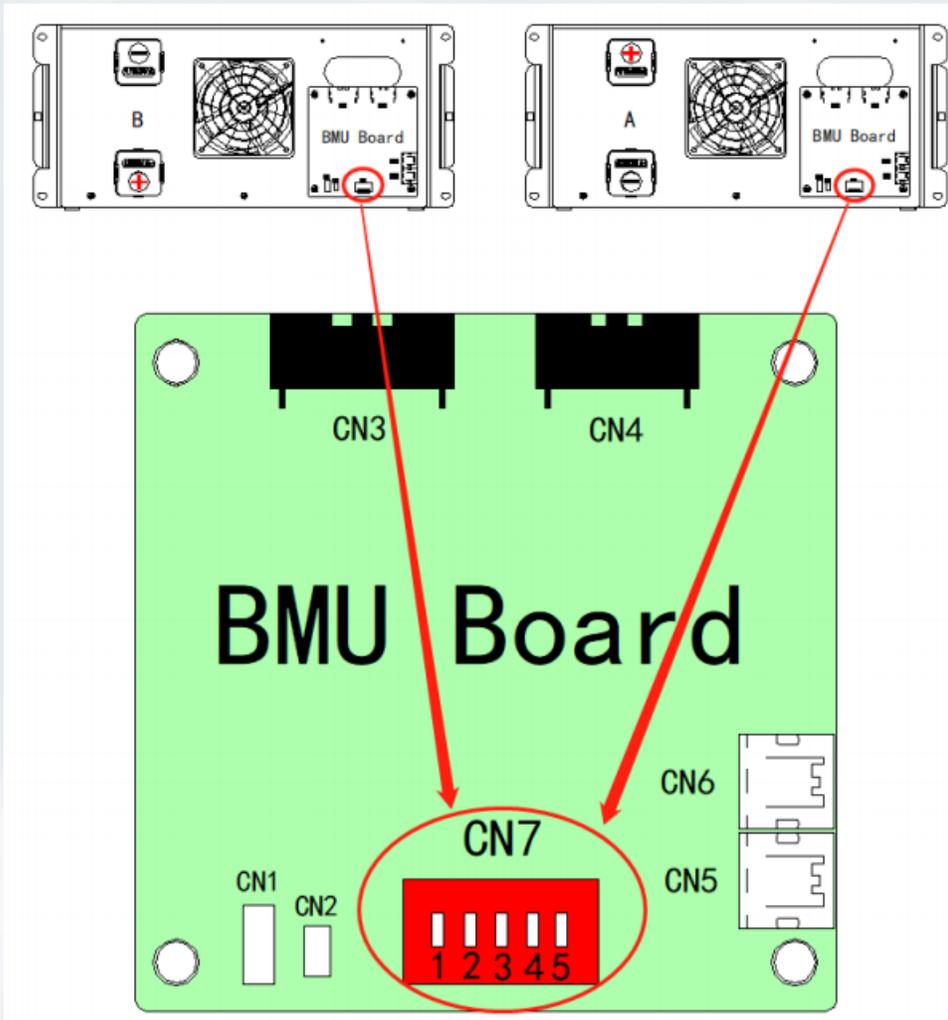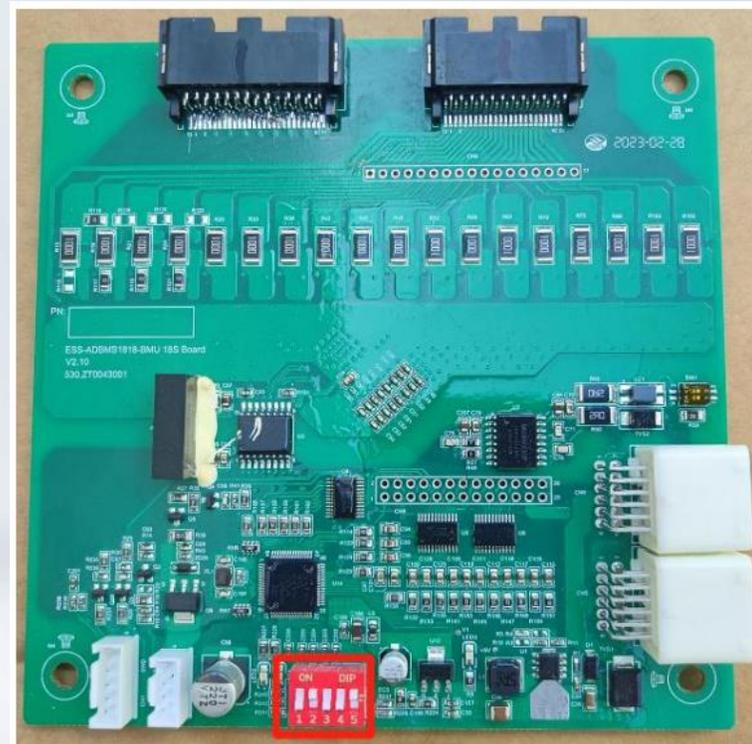## 2、 Batteries System Installation --- RuiPu Battery

Battery Rack Layout.
In the layout diagram, indicates no device, A/B indicates battery pack-A/B, and BPU indicates high voltage box.

2、Batteries System Installation --- RuiPu Battery

Battery pack address setting switch

Setting the battery pack address: As shown in the picture, a binary DIP switch CN7, from 1 to 5 indicates the high to low binary number. For example, only turn on the first switch, turn off switches 2 to 5, and set address 16.

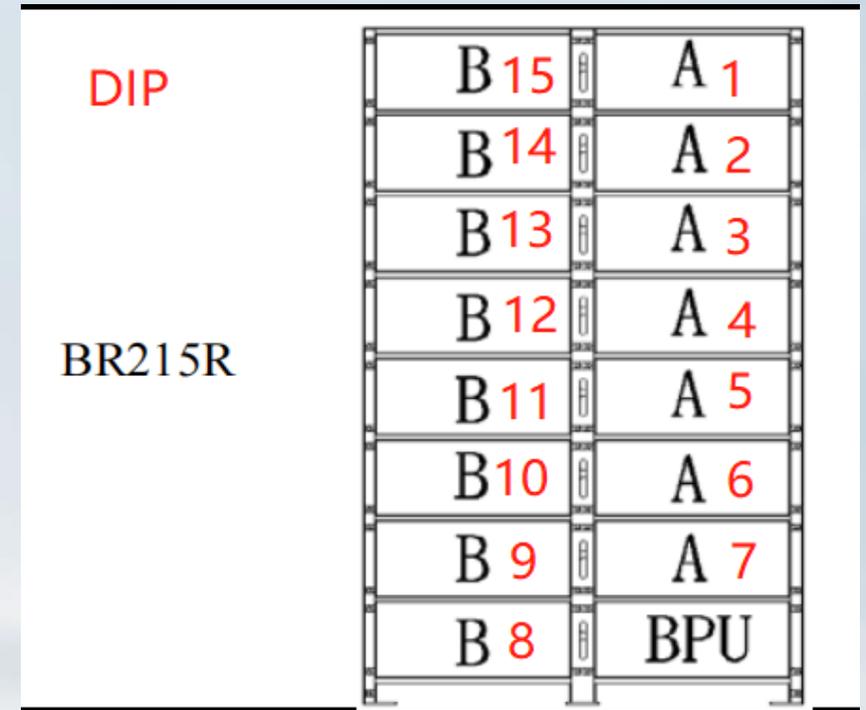# 2、 Batteries System Installation --- RuiPu Battery

Battery pack address setting DIP example

Separate DIP address settings for different groups

2、 Batteries System Installation --- RuiPu Battery

Address	Address setting switch				
	1	2	3	4	5
1	×	×	×	×	ON
2	×	×	×	ON	×
3	×	×	×	ON	ON
4	×	×	ON	×	×
5	×	×	ON	×	ON
6	×	×	ON	ON	×
7	×	×	ON	ON	ON
8	×	ON	×	×	×
9	×	ON	×	×	ON
10	×	ON	×	ON	×
11	×	ON	×	ON	ON
12	×	ON	ON	×	×
13	×	ON	ON	×	ON
14	×	ON	ON	ON	×
15	×	ON	ON	ON	ON

Our current largest battery rack is BR215R, which requires a maximum of 15 dip dials.

DIP

BR215R

B 15   A 1
B 14   A 2
B 13   A 3
B 12   A 4
B 11   A 5
B 10   A 6
B 9   A 7
B 8   BPU

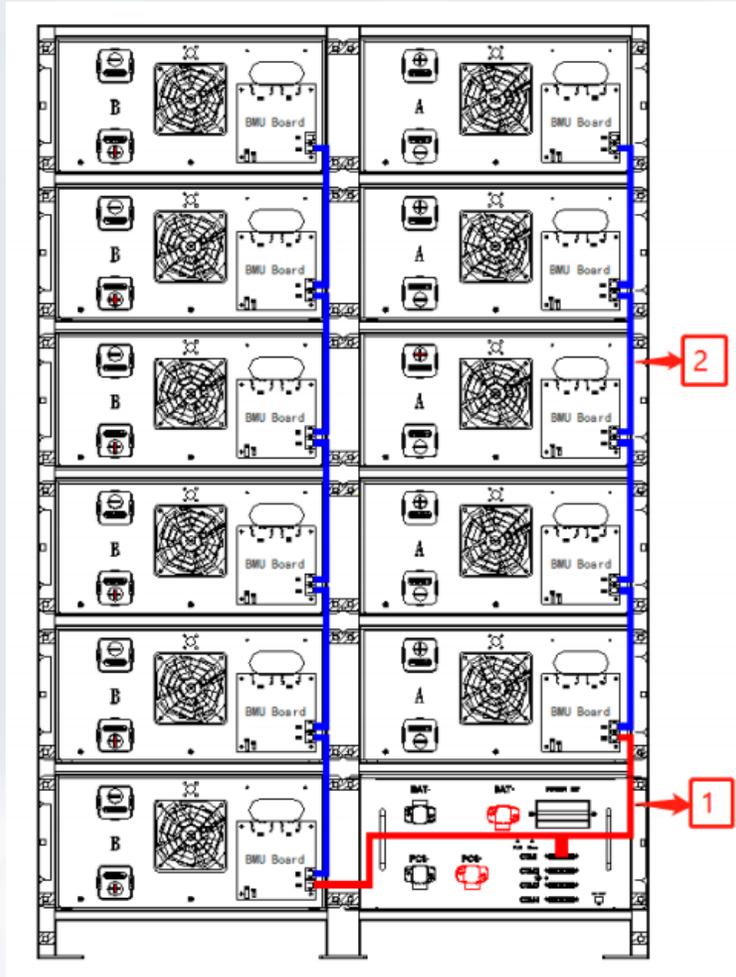## 2、 Batteries System Installation --- RuiPu Battery
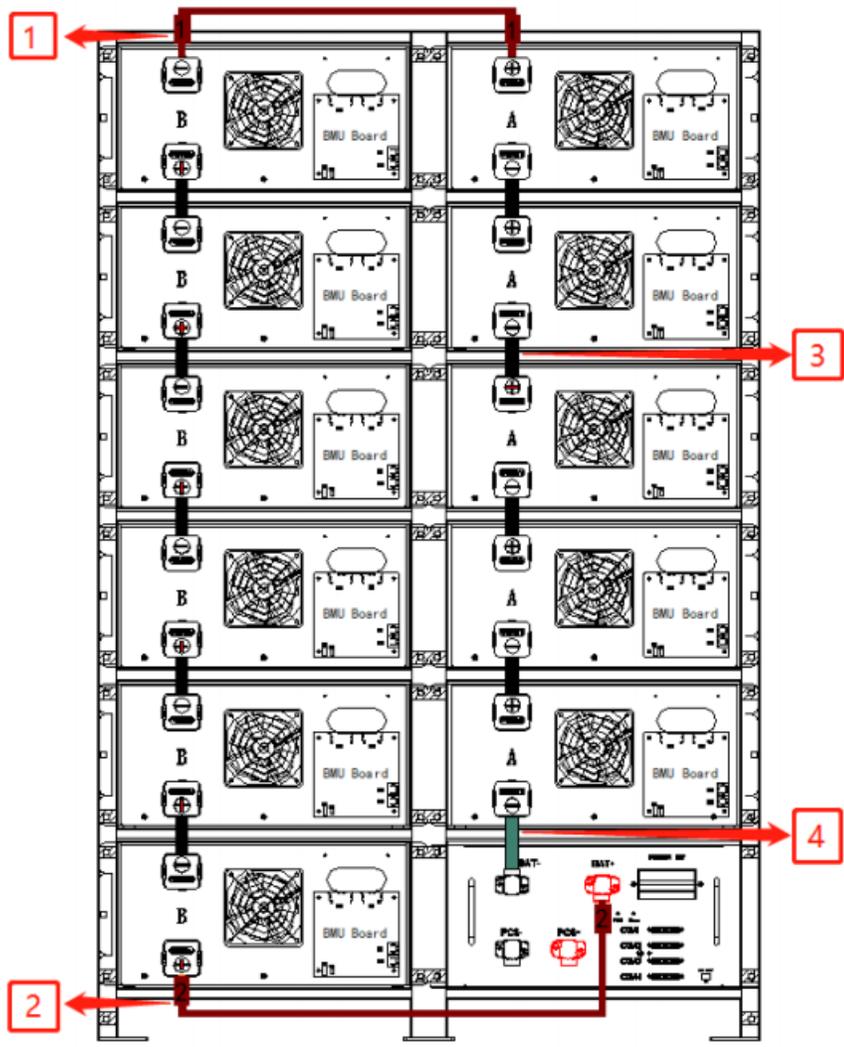

Battery pack DC cable/copper bar connection diagram

For example, the BR157R DC cable/copper bar connection diagram is shown in the picture, connect the No. 3 series copper bar to each cluster first, then connect the No. 1 serial DC cable, then connect the No. 4 serial copper bar, and finally connect the No.2 cable.

Note: Connect from bottom to top during wiring to prevent misconnection and shorting.

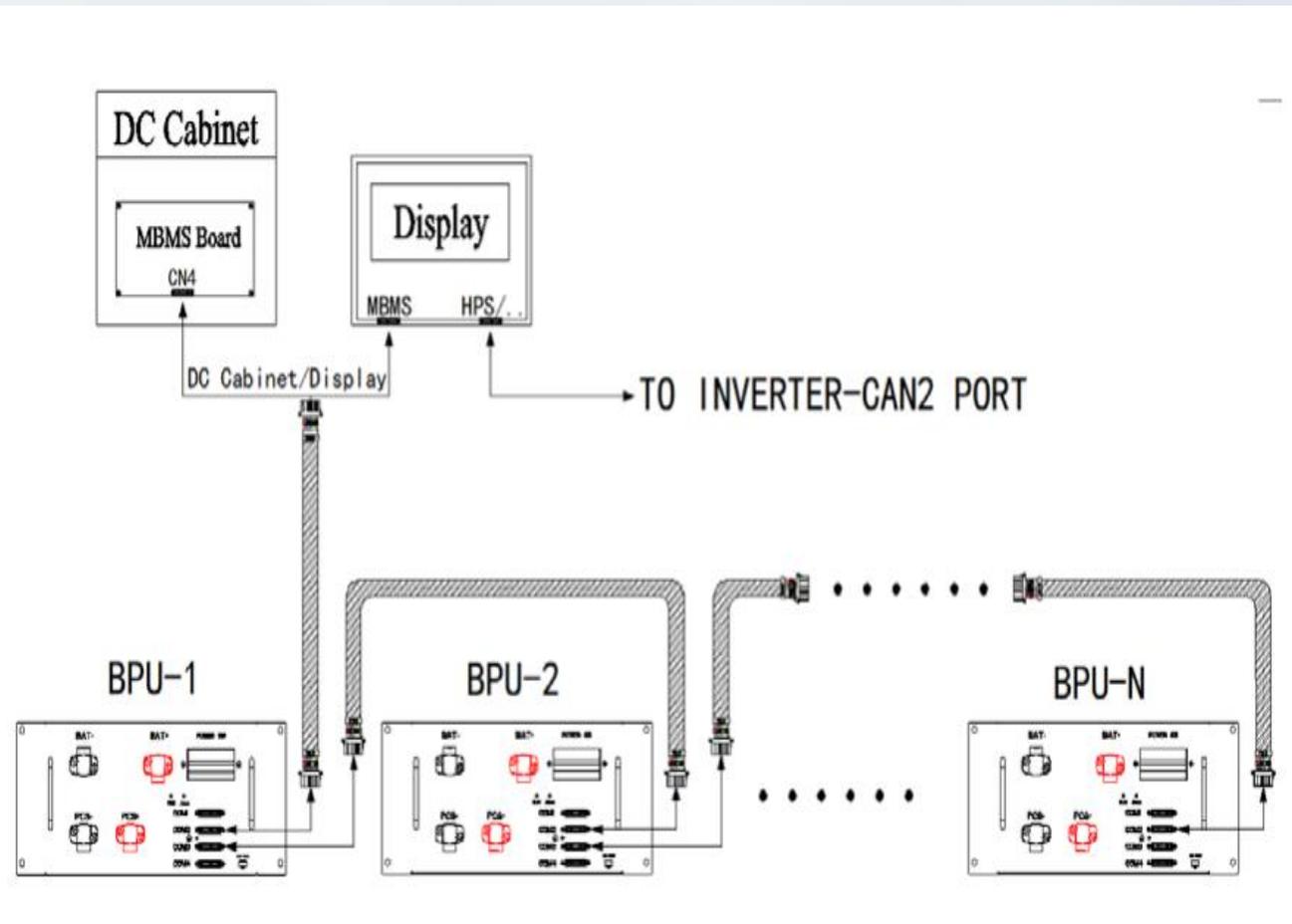## 2、 Batteries System Installation --- RuiPu Battery

Battery pack communication line installation diagram
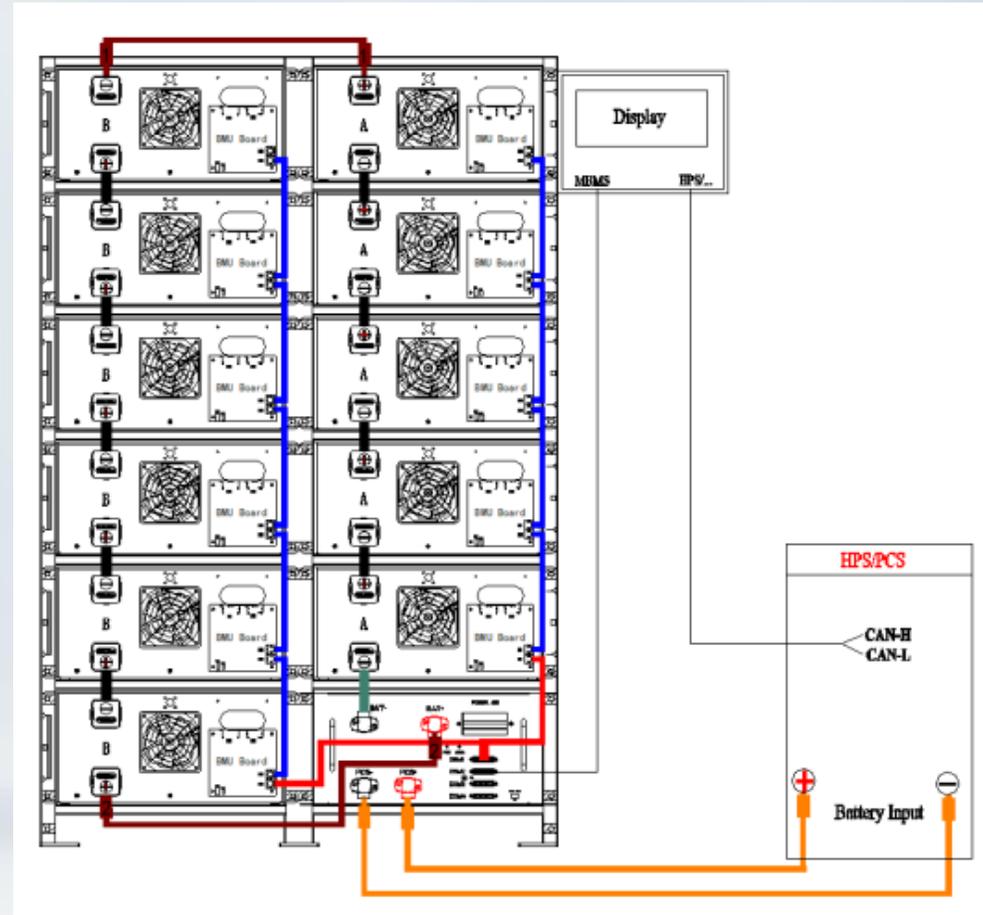
Battery energy storage system BPU wiring diagram

2、Batteries System Installation --- RuiPu Battery
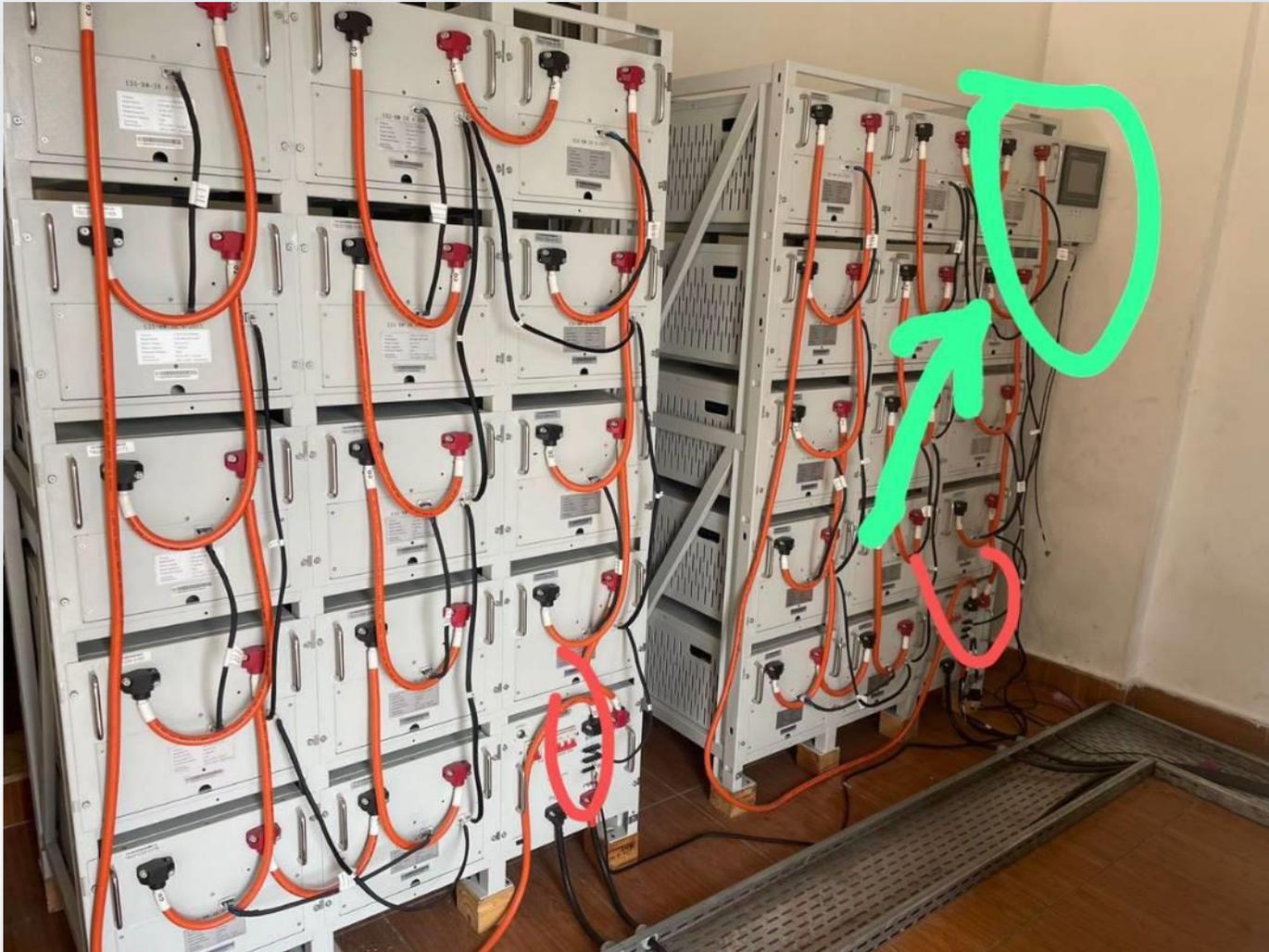

Wiring diagram for multiple BPUs

If the energy storage system is two-parallel systems, the COM2 port of the BPU-1 is connected to the display screen on the battery rack.

If it's 3 or greater parallel systems, the COM2 port of the BPU-1 is connected to the DC cabinet.

2、 Batteries System Installation --- Display Screen

If the project does not have a DC cabinet, the display screen also needs to be installed. We can guide customers to install the display on the battery rack or on the wall.

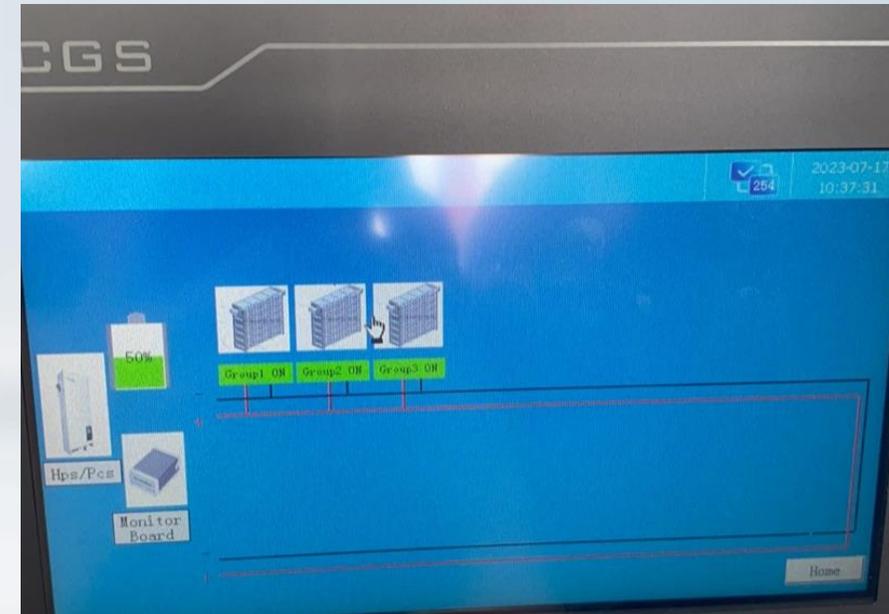# 3、 Batteries System Commissioning

For a new battery system, all parameters have been set before leaving the factory. The parameters have also been photographed and kept on files. The followings are some basic steps for commissioning.

Step 1: Confirm that the power cables and communication cables between the batteries and between the batteries and the inverter are connected correctly.

Step 2: Turn on the batteries system and check the display screen. If page1 has data and only shows the yellow warning 1, while the connected battery packs are all green on page 2, that means the battery system works.

page 1

page 2

3、 Batteries System Commissioning

Warning 1 is a first-level warning, which may be caused by factors such as temperature, and will not affect the normal operation of the system.

Warning 2 is a second-level alarm, which will cause the inverter to stop.

Warning 3 is a third-level alarm, the whole battery system will shut down for protection.

3、Batteries System Commissioning

Step 3: After confirming that there is no problem on the battery side, check if the battery SOC on the inverter display is the same as the battery screen. If so, the battery system commissioning is completed. If any problem occurs in the above steps, we need to do some troubleshooting.
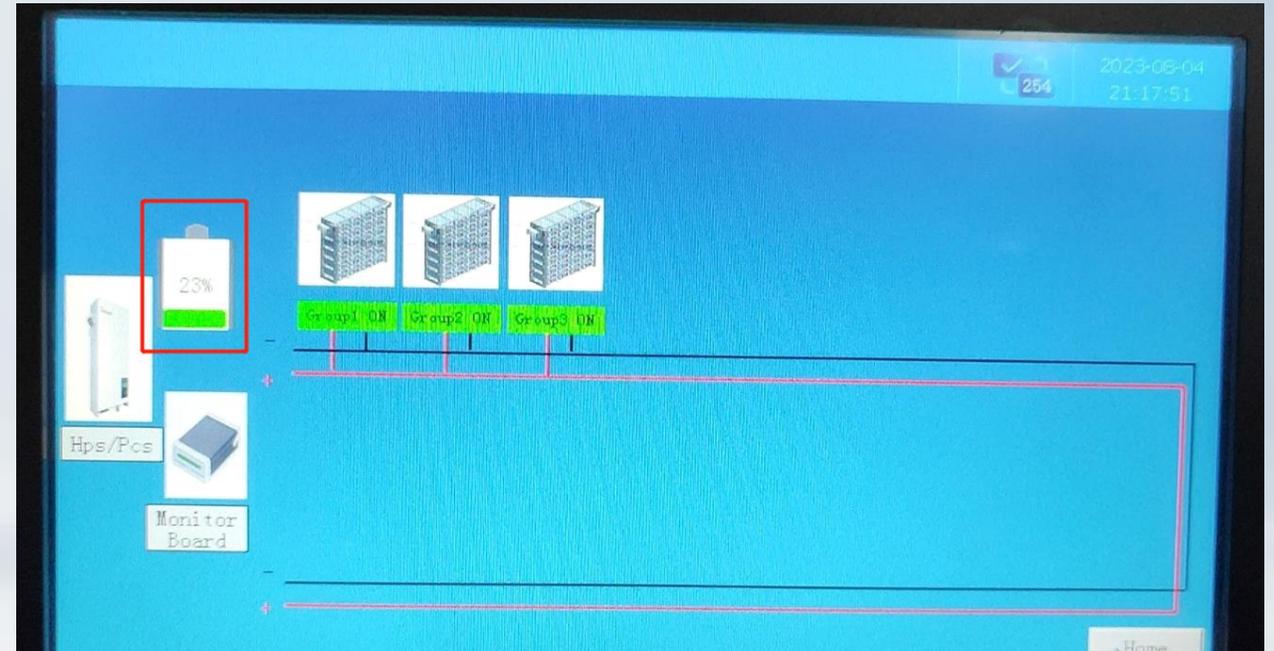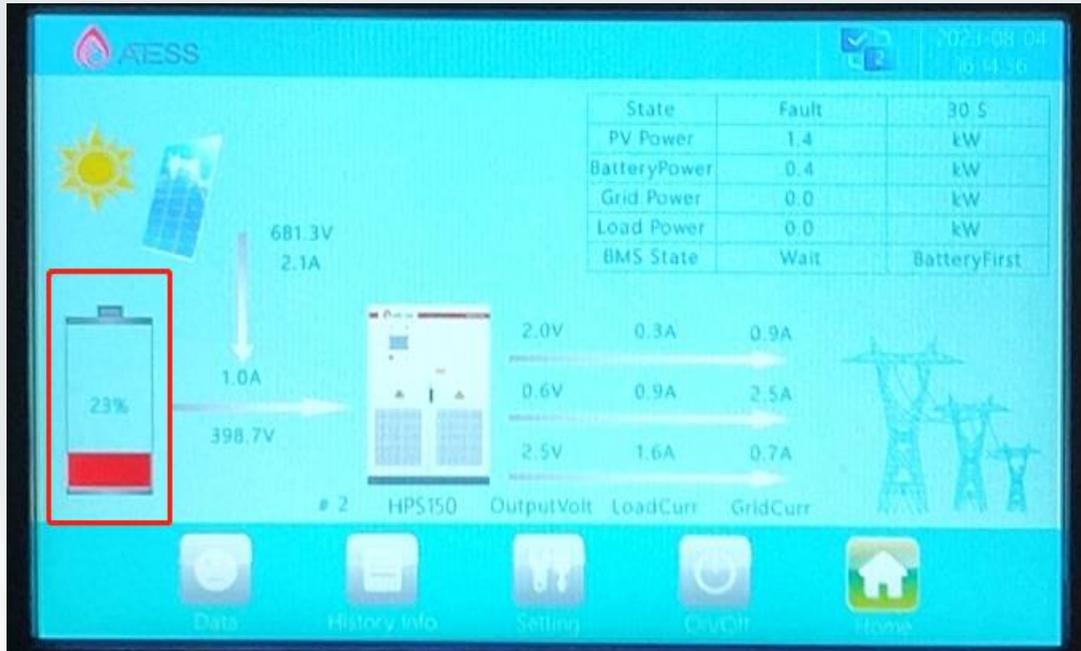
4、 Batteries System Troubleshooting

Judging whether it is a hardware problem or a software problem according to the on-site situation.

Common hardware problems: fuse burnt out, board burnt out, board damaged by moisture.
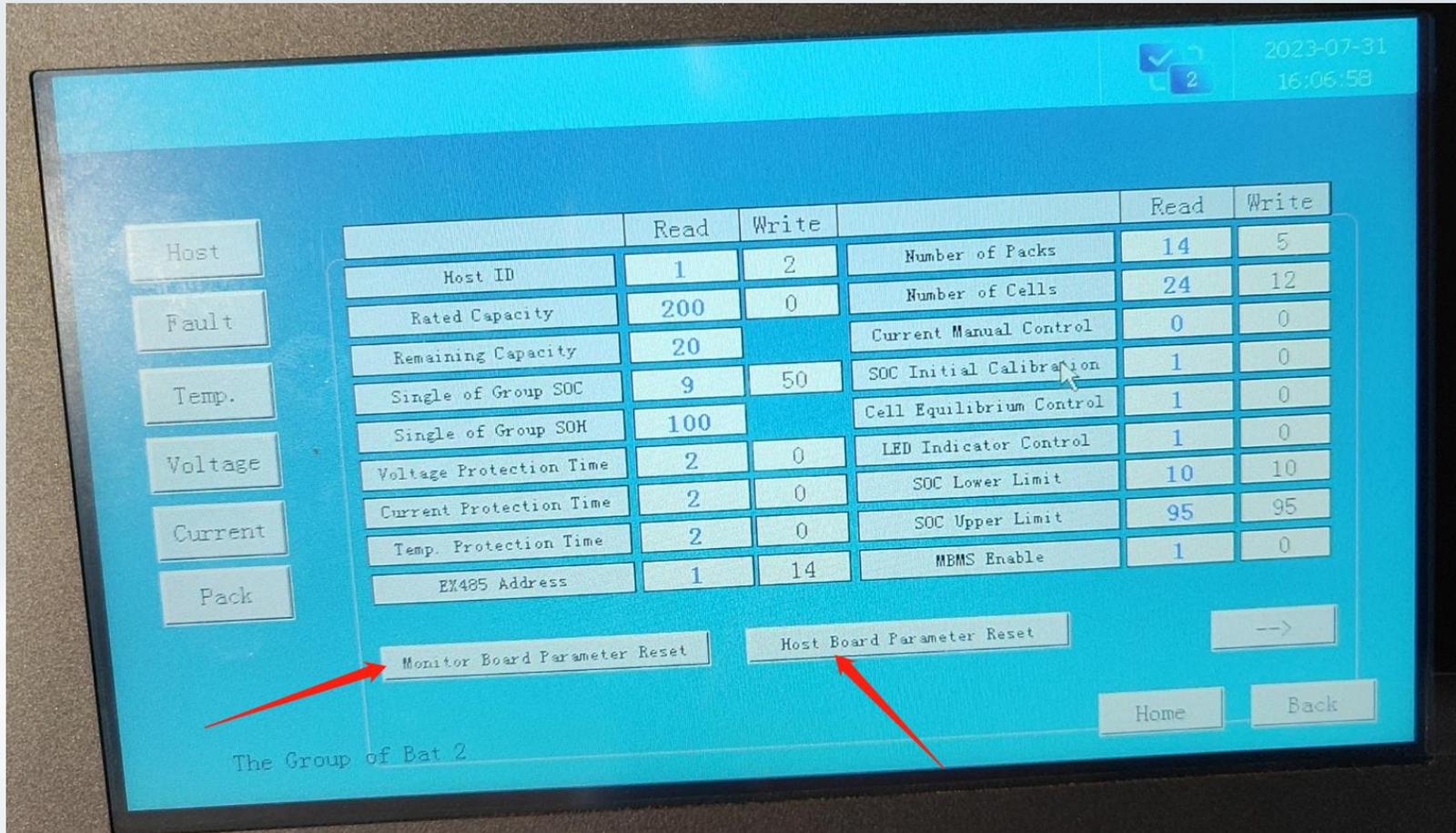
4、 Batteries System Troubleshooting

Solution: Ask the customer to provide a clear photo of the damaged part, the photo needs to include the appearance and barcode. The order number provided by the customer will also be helpful for on-site situation analysis.

For hardware problems, replace the damaged hardware before doing the next step of diagnosis.

4、Batteries System Troubleshooting

Common software problems: The customer modified various parameters in the battery display screen by himself, or clicked the reset button, causing the entire battery system to fail.
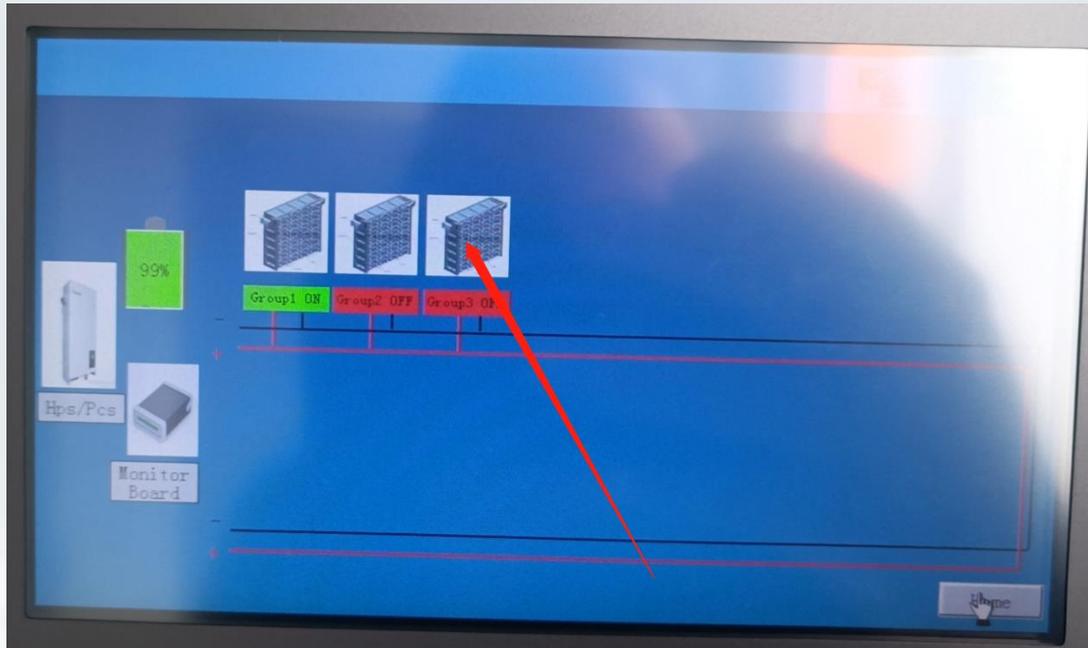
4、 Batteries System Troubleshooting

Solutions:

Check whether the host ID address of the battery pack is set correctly. This is the first step.

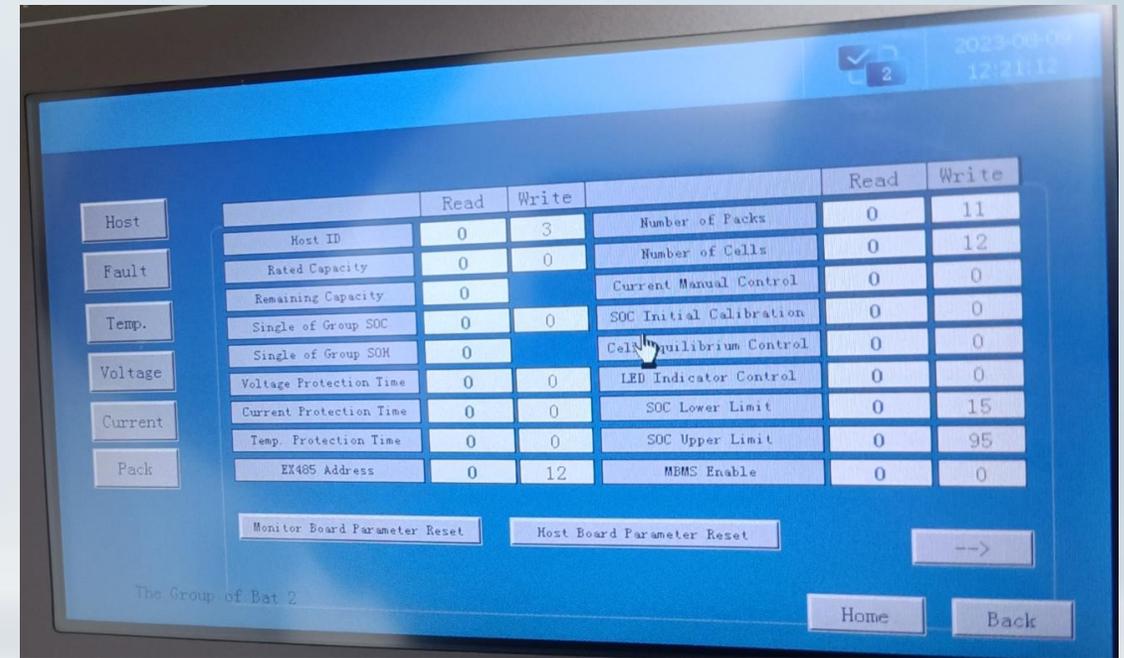For example: in group 3, these two values are the same, it means the address is correct.

4、 Batteries System Troubleshooting
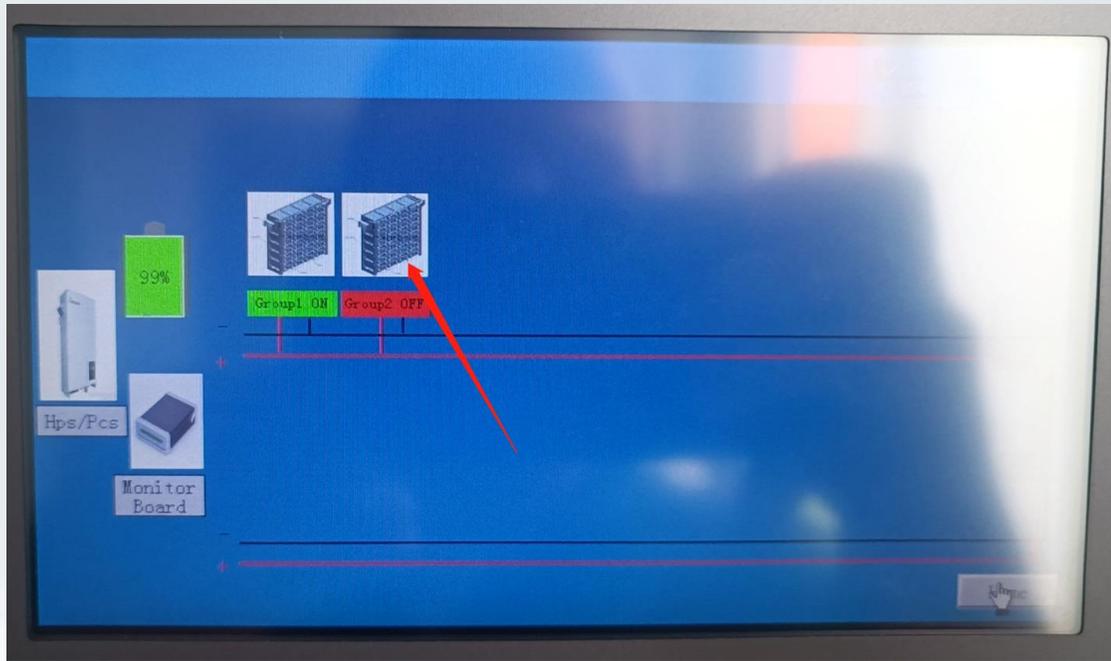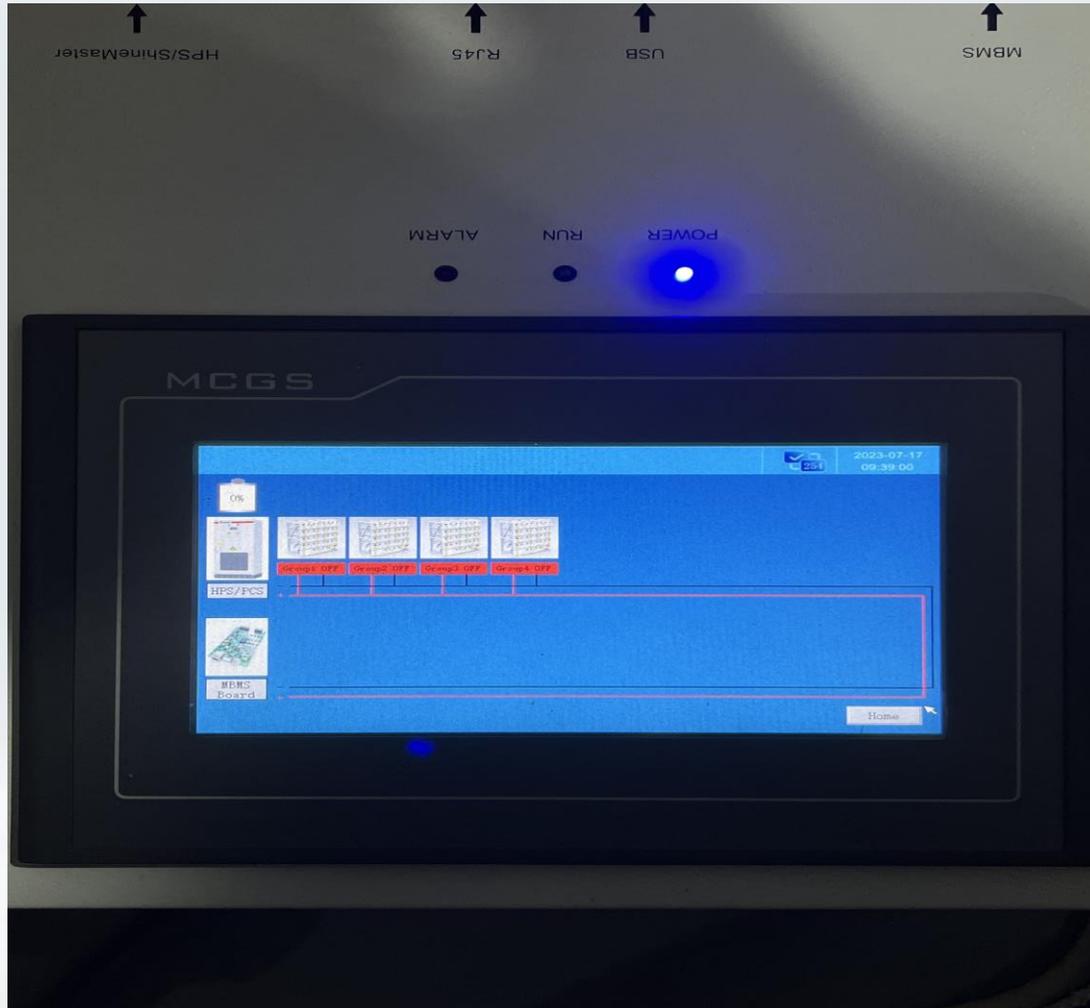
If we can't find the hose ID address of some battery packs, We need to reburn BCU, MBMS, screen program to reset the hose ID address. The burning guide file is in the part 5.

4、 Batteries System Troubleshooting

After reburn all the programs, the address of each high-voltage box is "1" by default, and the address needs to be set one by one. The following is the setting method (take resetting the address of 3 high voltage boxes as an example)
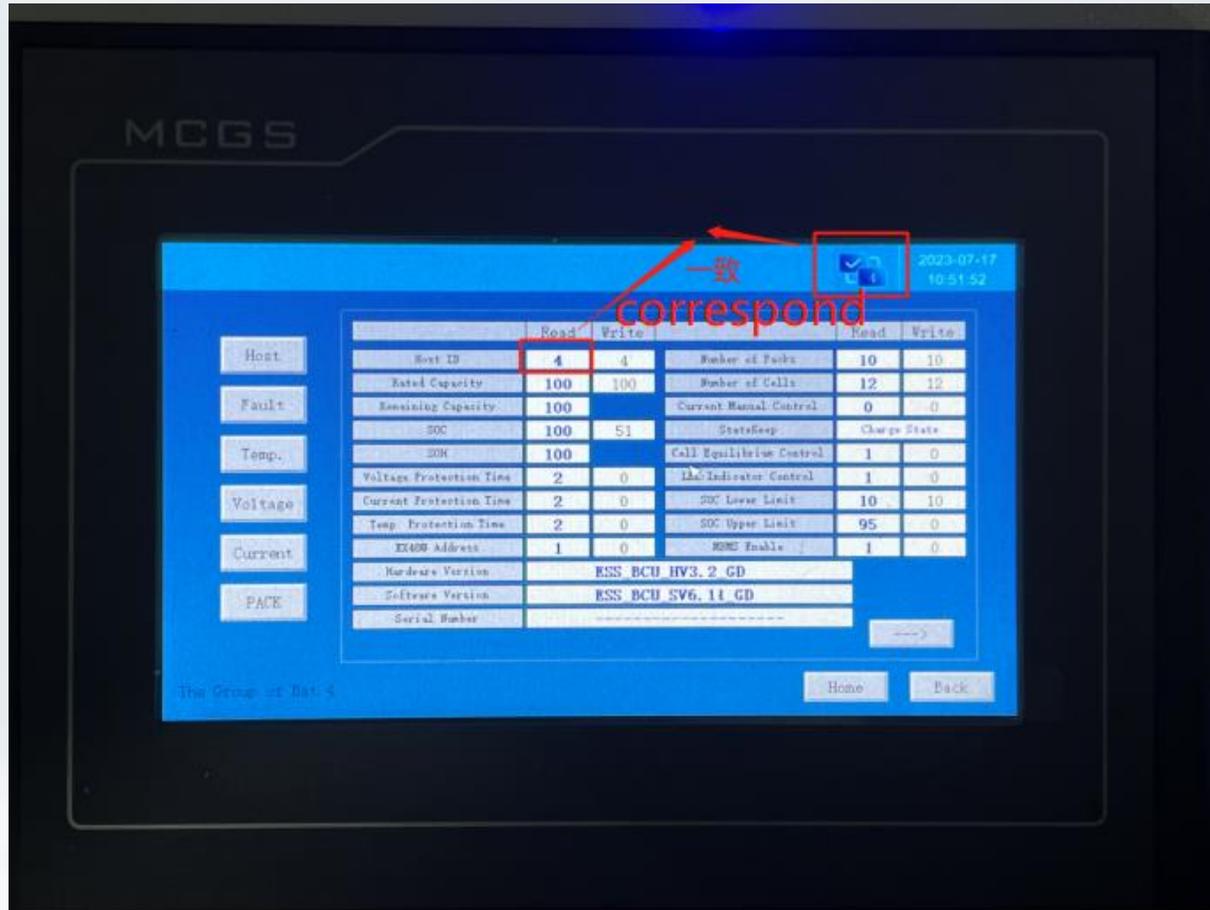
Step 1: Open the high-voltage box that supplies power to the screen, enter the MBMS settings, and set the number of battery packs to "4"

4、 Batteries System Troubleshooting

Step 2: Because the default address is "1", we only turn on one group of batteries at this time, so group 1 is the group we turned on at this time, and set its address to "4".

Step 3: Click "write" to change 1 to 4. Note that we cannot check whether the modification is successful on the group 1 page, but click into group 4 to check whether the upper right corner is It is consistent with the "read ", if it is consistent, the modification is successful.

At this point, group 4 already corresponds to the first high-voltage box we opened.
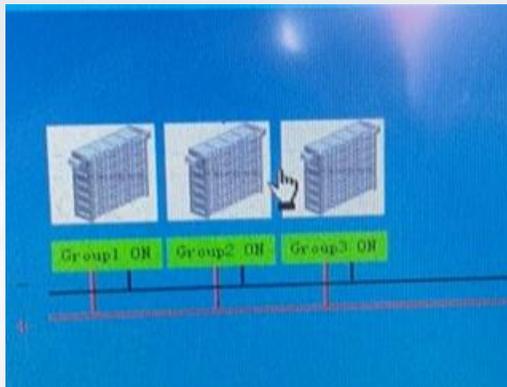
4、 Batteries System Troubleshooting

Step 4: Open the second high-voltage box, change the address of group 1 to 2, and click to enter 2 to view; the third high-voltage box changes group 1 to 3, and so on.
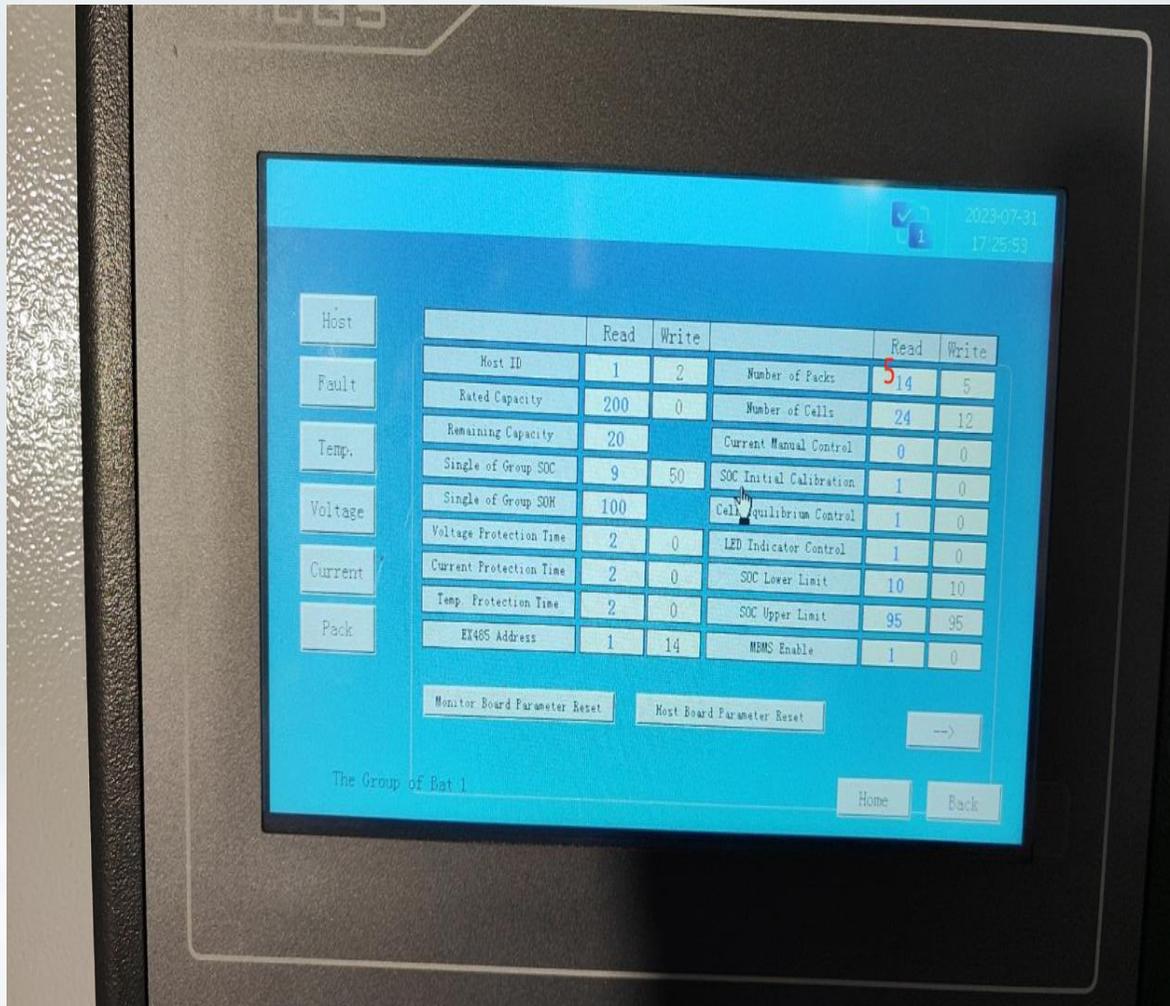
Step 5: After all the high-voltage boxes are set, enter group 4 to change the address to 1, and enter group 1 to check whether the modification is successful.

Step 6: Go to MBMS settings and change the number of groups from 4 back to 3.

Step 7: Restart all high-voltage boxes, check whether they are closed and display green on the screen.

4、 Batteries System Troubleshooting

After finishing the host ID setting, set other parameters back to the factory state. Headquarters can get photos of factory parameter settings.
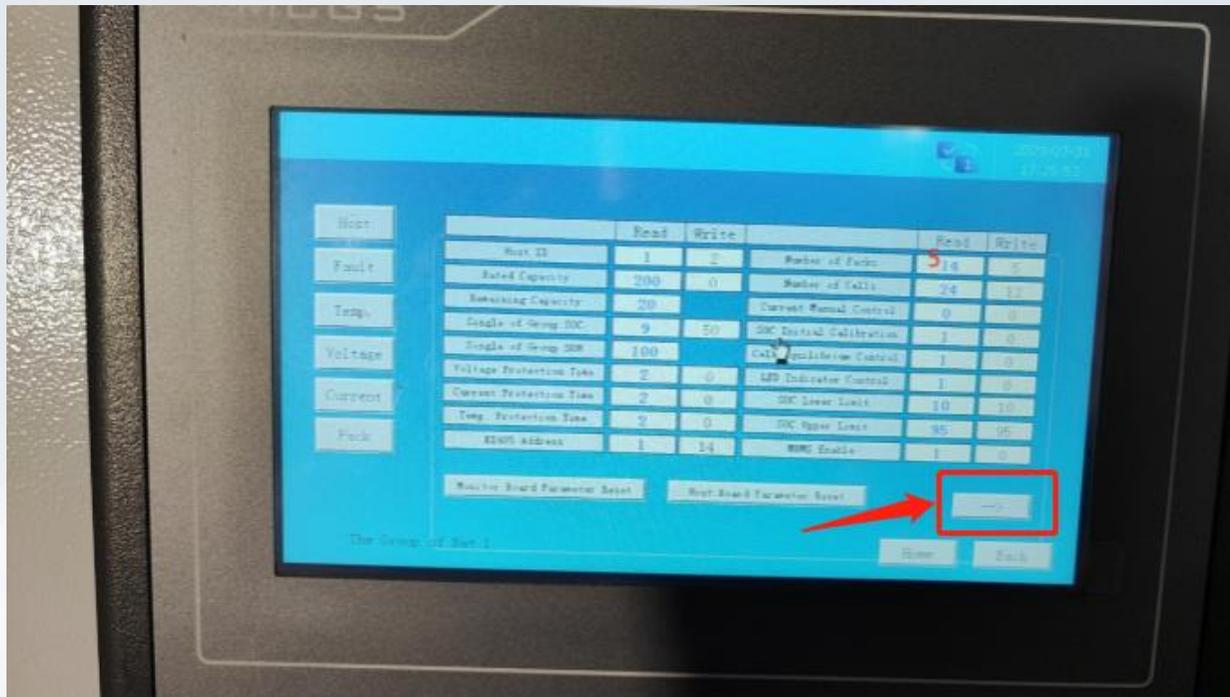
Points to note when setting parameters:

1. When setting battery pack and cell, you need to write the number of cells first, and then write the number of packs. Even if the number of cells does not need to be modified, as long as you modify the pack, you must first write the number of cells.

4、Batteries System Troubleshooting

Points to note when setting parameters:

2. When we enter a parameter in "WRITE", it may not appear in "READ" immediately, We can click the next page, and then return to the previous page to check.

4、Batteries System Troubleshooting

Points to note when setting parameters:

3.If this parameter is not 241, the communication between the BMS and the inverter will fail. At this time, you need to burn the screen back to an old version, because the old version can only modify this parameter, and the new version cannot

📁 1.0.2（可以改241的旧版本，old version for 241）

📁 1.0.3（新版本, new version）

5、Batteries System Tools

Upgrade guidance files:

MBMS board upgrade guidance.pdf

BCU upgrade guidance.pdf

battery screen upgrade guidance.pdf

Upgrade video guidance:

https://www.youtube.com/watch?v=pmP6G_QmwXo

5、 Batteries System Tools

Tools you may need for battery system maintenance and troubleshooting:

electrical tape

clip-on ammeter

multimeter

USB drive

computer

insulating gloves

Jlink

Can box

screw socket kit

Thanks for watching!

welcome to ask questions

ATESS Power