

# 用户手册

# Instruction Manual

**48V/9.6kWh Battery System**

**Model Number: B09ULF**

**Version: V1.3**



Darfon Electronics Corp. Ltd.

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## Overview

Thank you for choosing the 48V/9.6KWh lithium battery system. The system has innovative design and perfect quality management. It is safe, stable, reliable and has a long service life. At the same time, the product is easy to operate, easy to use, and has a series of perfect protection functions.

This manual focuses on the safe operation of the system. Please read this manual carefully before proceeding. If you encounter any problems during the operation of the device, please consult the corresponding instructions to solve most problems in the installation and operation. Contact your dealer or supplier if necessary.

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## Safety Precautions

Unpacking Test	 Attention
	<ul style="list-style-type: none"> <li>● If the product is found to be damaged or missing parts, it cannot be installed, otherwise it may malfunction. If the packing list does not match the physical name, please do not install and contact the dealer in time.</li> </ul>
Install	 Danger
	<ul style="list-style-type: none"> <li>● Wiring work must be performed by electrical engineers, otherwise there is danger of electric shock or damage to the system.</li> <li>● Before wiring, make sure that the power is off, otherwise there is danger of electric shock or fire.</li> <li>● The installed cable must meet the requirements, and the power distribution part must comply with the safety regulations.</li> <li>● Installation must be carried out in strict accordance with the following installation steps, otherwise it will cause product damage.</li> </ul>
	 Attention
	<ul style="list-style-type: none"> <li>● When handling and installing, please lift it gently to avoid injury to the foot or damage to the product.</li> <li>● Keep the system away from flammable objects and away from heat sources.</li> <li>● Do not drop debris into the system when installing this system, otherwise it may cause system failure.</li> </ul>
Work Run	 Danger
	<ul style="list-style-type: none"> <li>● During normal operation, it is strictly forbidden to directly touch the terminals such as output and input to avoid electric shock hazard.</li> <li>● Do not open the casing of the machine directly during normal operation, otherwise it may cause electric shock.</li> </ul>
	 Attention
	<ul style="list-style-type: none"> <li>● Before running, please ensure that the product is used within the allowable working range, otherwise it will cause damage to the product.</li> <li>● When the product is not used for a long time, the battery should be discharged to between 45% and 60% of the battery, and the battery output should be disconnected to avoid the battery being emptied.</li> </ul>











Maintain, Overhaul	 Danger
	<ul style="list-style-type: none"> <li>● When removing the outer casing, be sure to disconnect the input and output circuits, otherwise there is danger of electric shock.</li> <li>● Even if the casing is disassembled, there is still residual power inside the machine. Do not touch the bare part of the line directly to avoid electric shock.</li> <li>● Maintenance and overhaul must be performed by professional maintenance personnel. Users should not disassemble the machine to avoid electric shock and product damage.</li> </ul>
Carry	 Danger
	<ul style="list-style-type: none"> <li>● During the carry process, avoid strong vibration, falling, bumping, and prohibit the box from being inverted. Do not lose the accessories and user manual, warranty card, etc. when unpacking.</li> </ul>
	 Attention
Others	<ul style="list-style-type: none"> <li>● Be careful when handling, so as not to hurt your body.</li> </ul>
	 Danger
Others	<ul style="list-style-type: none"> <li>● It is forbidden to modify the system by itself to avoid serious accidents.</li> <li>● When an abnormality occurs inside the machine, immediately disconnect the power supply and load.</li> </ul>

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## Identification

When installing, using, and servicing this product, please read the manual carefully and follow the safety precautions required in the manual. The safety precautions mentioned in this manual are only intended to supplement local safety regulations.

Any injury or loss caused by illegal operation is irrelevant to the company.

Symbol	Definition
	Note! Due to the danger of not operating as required, it may result in moderate or minor injury to the person and damage to the product!
	Danger: High voltage danger, be careful of electric shock!
	No smoking!
	Do not step on!
	The product outlet is hot and carefully touched!
	Wait 5 minutes after power off to ensure the machine is fully discharged!
	Recyclable!
	This product must not be disposed of with other household waste and must be sent to an appropriate facility for recycling and recycling!
	This face should not be tilted upside down!
	Please read manual carefully before use!

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# 1. Product Introduction

## 1.1 Overview

The battery system is based on a lithium iron phosphate battery and adopts a modular parallel design lithium battery system.

- Mainly consists of one cabinet and multiple battery modules.
- The single cabinet supports up to four 48V/50Ah battery modules in parallel.
- Supports up to four cabinets in parallel and can be expanded to 38.4KWh.
- Customized battery management system (BMS), real-time data acquisition, status monitoring and control to ensure safe and reliable operation of the system.

The system has flexible configuration and high reliability, which can be widely applied to household energy storage scenarios.

## 1.2 Physical dimension



Cabinet size (mm): Height 1150, Width 570, Depth 285

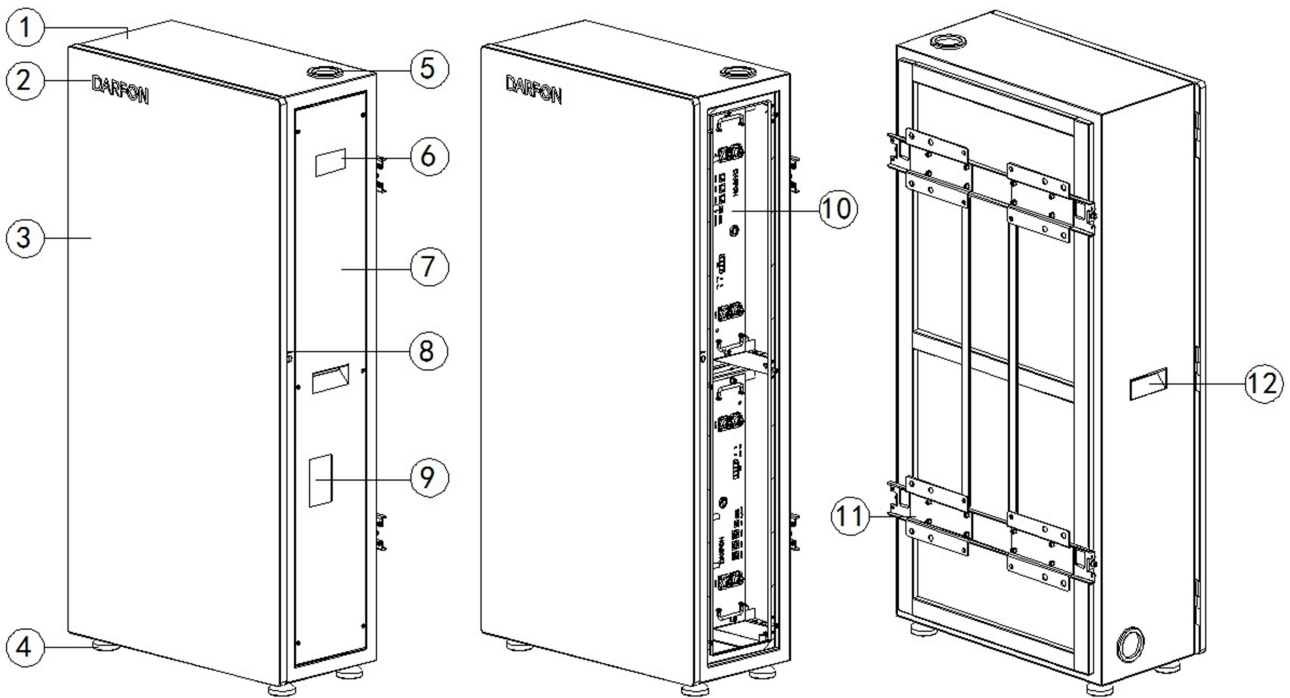
Cabinet color: Silver: Pantone 7544U

White cabinet front door color code: Pantone 705(Equivalent to Apple white)

Black cabinet front door color code: Pantone Black 6

Logo color: PT 877C

### 1.3 Product composition



① Cabinet ② LOGO ③ Front door ④ Machine foot ⑤ Inlet and outlet ⑥ Nameplate ⑦ Side door

⑧ Switch button ⑨ SOC Inspection window ⑩ Battery module ⑪ Mounting brackets ⑫ Cabinet buckle

### 1.4 System technical parameters

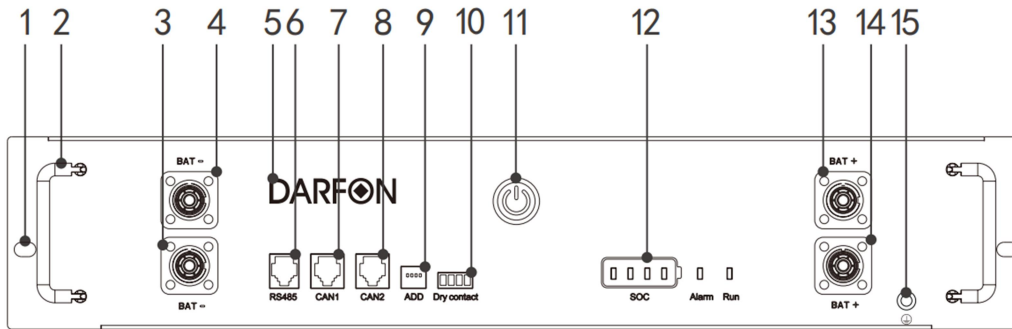
NO.	Item	Specification parameter	Remark
1	System energy	9.6kWh	
2	System capacity	200Ah	
3	Number of parallel	4 in parallel	4850 battery module in parallel
4	DOD	80%DOD	
5	Rated voltage	48V	
6	Voltage range	42V~52V	
7	Rated current	Charge 75A Discharge 90A	
8	Maximum current	Charge 100A Discharge 120A	
9	System efficiency	>96%	



10	Operating temperature	Charge-10°C~45°C Discharge-10°C~45°C		Suggest25°C
11	Storage ambient temperature	-20°C~20°C	12 months	The SOC before storage is kept in the range of 40% to 60%.
		-20°C~45°C	3 months	
		-20°C~50°C	1month	
12	Environment humidity	≤90%RH		No condensation
13	Altitude	≤2000m		
14	System noise	<40dB		
16	Protection level	IP55		
17	Pollution level	Class 2		
18	External communication interface	RS485		
19	Guideline	UN38.3, UL1973		
20	Equipment size	1150mm*570mm*285mm		W*H*D
21	Equipment weight	150±2kg		
22	Installation method	Floor/Wall mount		Two installation methods
23	Cabinet front door color	White/Black		Two colors
24	Cabinet color	Silver		One color
25	Charge and discharge cycle	6000 Times @25°C 80%DOD (0.5C Charge & Discharge )		

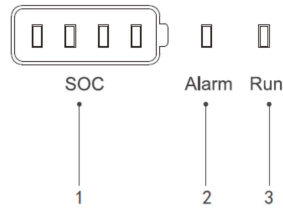
## 1.5 Module introduction

### 1.5.1 Panel description



NO.	Description	Function	Remark
1	Mounting holes	Battery box and cabinet fixing hole	
2	handle	Battery box handle	
3,4	Input and output negative	Battery box power output negative interface	
5	logo	Manufacturer description information	
6	RS485	RS485 communication interface	RJ11-6P
7,8	CAN	CAN communication interface	RJ45-8P
9	ADD	Battery box dial switch	
10	Dry node	Multiple battery boxes in parallel with one button to start the interface	
11	button	Battery box start/stop button	
12	Status display	Power and operation fault display	
13,14	Input and output positive	Battery box power output positive interface	
15	Grounding hole	Used to connect the earth	

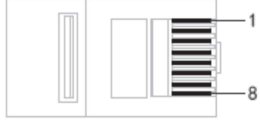

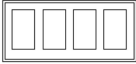
### 1.5.2 Status display description



NO.	Description	Function
1	SOC	battery power
2	Alarm	Fault indicator
3	Run	Running light

### 1.5.3 Port description

Name	Port	SN	Explain	Description
RS485 communication interface	 RJ11-6P6C	1	RS485B	RS485 communication line B
		2	RS485A	RS485 communication line A
		3	RS485BR	RS485 communication line B (inside set 120Ω resistor matching)
		4-5	NC	Hanging
		6	GND	RS485 communication signal ground
CAN communication	 RJ45-8P8C	1	CANL	CAN communication line L
		2	CANH	CAN communication line H
		3	CANLR	CAN communication line L (built-in 120Ω resistor matching)
		4-5	NC	Hanging
		6	GND	CAN communication signal ground
		7-8	NC	Hanging

<p>Parallel machine CAN communication supplementary instructions</p>	 <p>RJ45-8P8C</p>	<p>2-3</p>	<p>Press a 120 ohm resistor in 2-3 pins for parallel CAN communication matching resistors</p>	<p>When multiple battery boxes are combined for CAN communication, an 8PIN crystal head with an internal voltage of 120 ohms is inserted in the first and last CAN communication interfaces for parallel CAN communication matching resistors. (The crystal head with an internal pressure of 120 ohms is attached as an accessory at the time of shipment)</p>
<p>DIP switch</p>		<p>1-4</p>	<p>The first 3 digits set the battery address and the 4th digit sets the operating mode. The "ON" side indicates "1" and the other side indicates "0"</p> <ul style="list-style-type: none"> <li>★ When the system is configured with a battery, the 4th bit is set to "0" and the first 3 bits are set to "000".</li> <li>★ When the system is configured with multiple battery packs, the 4th digit is set to "0", and the first 3 digits are set to "000, 001, 010, 011, 100, 101, 110, 111" to indicate "Address 0~Address 7".</li> <li>★ For detailed description of the DIP switch, refer to Section 3.2.3.</li> </ul>	
<p>Dry contact</p>	 <p>Dry contact</p>	<p>1-4</p>	<p>Short the 1st and 3rd or 2nd and 4th feet, you can boot the battery pack.</p>	

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## 2. Product Installation

### Attention:

1. The contents of this document may be updated from time to time due to product version upgrades or other reasons. Unless otherwise agreed, this document is provided as a guide only, and all statements, information, and recommendations in this document are not warranties of any kind, express or implied.
2. Please read the User Manual carefully before installing the device for product information and safety precautions.
3. Please install and use the device according to the contents of this document and the user manual. Otherwise, the device may be damaged. Insulation tools must be used when installing the device.

### 2.1 Device list

Before installation, please check whether the equipment is in good condition and check whether the parts of the accessory package are consistent with the list.

Device list

NO.	Material Name	Specification Model	QTY.	Unit	Remark
1	Cabinet + Black or White cabinet front door + Mounting brackets(Support 24 inches)	1150mm*570mm*285mm	1	PCS	Black or white
2	Battery module	H4850M-P02 48V/50Ah	4	PCS	
3	Hexagonal expansion bolt	M10X70	8	PCS	
4	Plastic plug	M10	4	PCS	Black or gray
5	Combination screw	M6*12	10	PCS	
6	Cable tie	Length150mm, width1.8mm, white	20	PCS	Used to bind cable fixing cables.
7	Boot line with Connector	UL2464 22AWG300V brown/black	1	PCS	Used to boot the system

8	Cable	24AWG cable gray 150mm	2	PCS	For CAN communication between two battery modules
9	Cable	24AWG cable gray 800mm	1	PCS	For CAN communication between two battery modules
10	Power line	UL10269 3AWG 600V orange 218mm (label: 5619100023331)	3	PCS	Used for positive connection between two battery modules
11	Power line	UL10269 3AWG600V black 218mm (black: 5619100023341)	2	PCS	Used for negative connection between two battery modules
12	Power line	UL10269 3AWG 600V Black1400mm (label: 5619100023351)	1	PCS	Used for negative connection between two battery modules
13	Power line	UL10269 3AWG 600V black 2150mm, one end with M8 OT terminal (label: 5619100023601)	1	PCS	Used for connection between the positive electrode of the battery module and the positive side of the battery side of the inverter
14	Power line	UL10269 3AWG 600V orange 2650mm, one end with M8 OT terminal (label: 5619100023611)	1	PCS	Used to connect the battery module negative terminal to the inverter battery side negative electrode
15	Cable	24AWG 8-core cable gray 2650mm, one end with RJ11 crystal head, one end with PLTB1.5-02-B-3.81 connector	1	PCS	Used for RS485 communication connection between battery module and inverter
16	Ground line	UL10269 10AWG yellow-green 150mm	2	PCS	Used to connect the battery module grounding point to the grounding point on the cabinet bracket
	Ground line	UL10269 10AWG yellow-green 250mm	2	PCS	Used to connect the battery module grounding point to the grounding point on the cabinet bracket
17	Ground line	UL10269 6AWG yellow-green 2100mm	1	PCS	Used to connect the cabinet chassis grounding point to the inverter chassis grounding point
18	Matching resistance	RJ45 terminal with 120Ω	2	PCS	Improve communication reliability



Component schematic

## 2.2 Before installation

This manual contains important information for the installation and safe operation of this product. Please follow the instructions below before starting the installation:

a. Check whether the ambient temperature of the installation site is within the specified range of -10 °C to +45 °C; if the product is working in the environment below 0 °C for a long time, the battery life will be reduced;

b. The area where the product is placed needs to be well ventilated, away from dangerous substances such as water, flammable gases and corrosive agents; it is forbidden to install and operate in salt spray environment;

c. The product is prohibited from tilting or side-discharging, and the ventilation on both sides is good, leaving a heat dissipation space of  $\geq 300\text{mm}$ . The installation of the ground

and the wall surface must meet the load-bearing requirements of the battery system;

d. the product installation location should avoid sun, rain, snow, etc.;









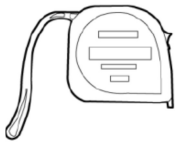

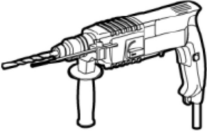

e. need to be installed by professionals;

f. If the product is disassembled or used under low temperature or high humidity, there may be condensation of water droplets. It must be installed after the product is completely dry, otherwise there is danger of electric shock;

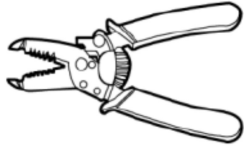
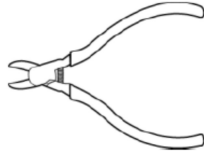


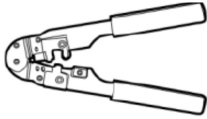
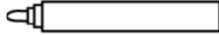
g. In any emergency, please stop charging and discharging immediately, and disconnect the circuit breaker;

h. All power outlets should be connected to the PGND cable.

## 2.3 Tool preparation

Lifting equipment	Phillips screwdriver	Slotted screwdriver	Insulated adjustable wrench
			
Multimeter	Insulating protective shoes	Insulating tape	Insulated gloves
			
Steel tape	Complete socket wrench	Impact drill	Rubber hammer
			
Wire stripper	Diagonal pliers	Utility knife	Crimping tool

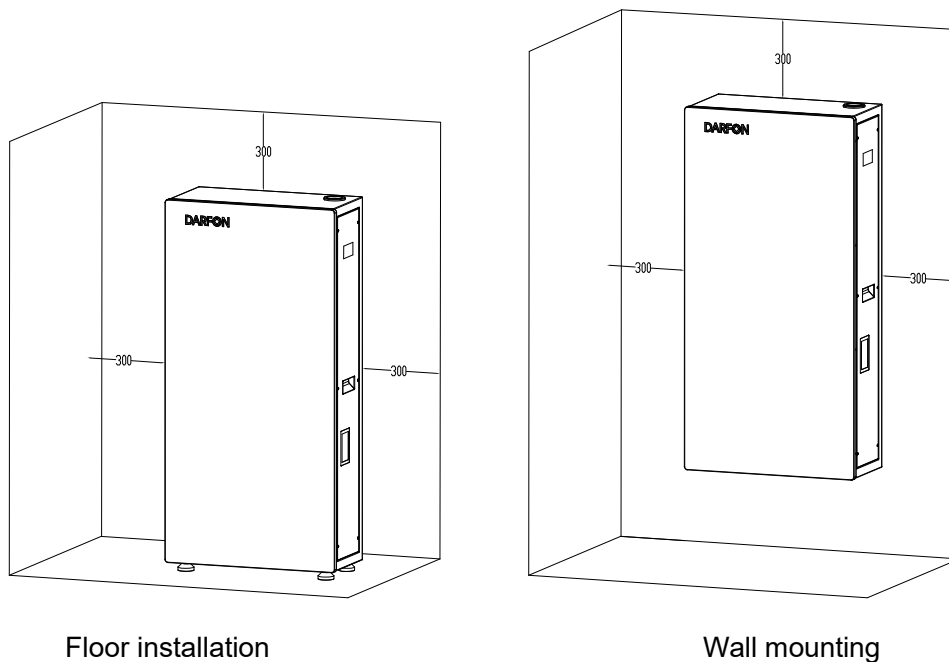


			
Crystal head crimping pliers	Marker		
			

## 2.4 System installation

### 2.4.1 Installation clearance

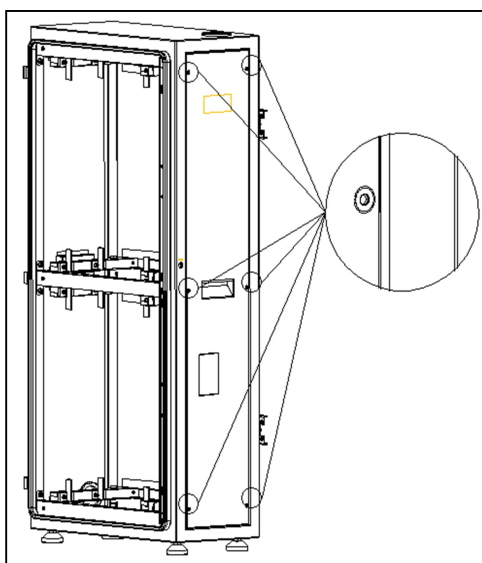
The battery system cabinet can be installed on the floor and wall mount. The system adopts the natural heat dissipation method. The recommended installation height of the wall mount mode is about 1-1.2 meters. The bottom of the fixed installation bracket is used as the standard. The left and right sides of the cabinet should be left and installed 300mm cooling space



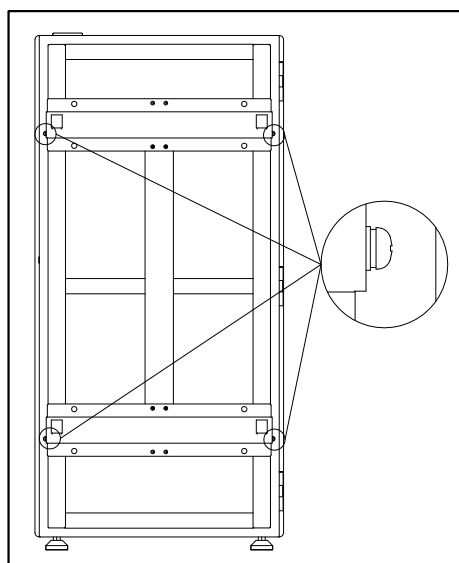
## 2.4.2 Installation steps

Move the battery cabinet to the installation site to ensure that the floor and wall can withstand the total weight of the battery system. After the preparation is completed, follow the steps below to install it.

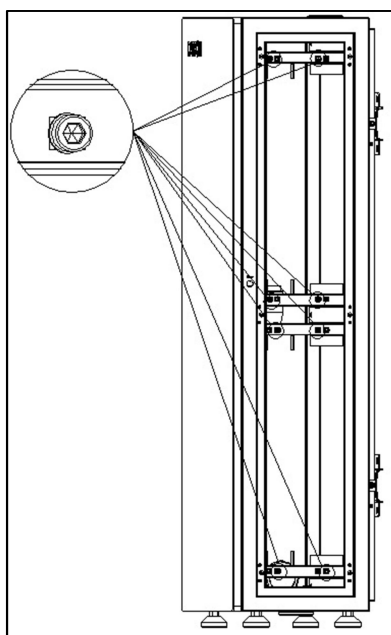
(1) Remove the side door: Use a screwdriver to unscrew the 6 screws that secure the side door and remove the side door panel.



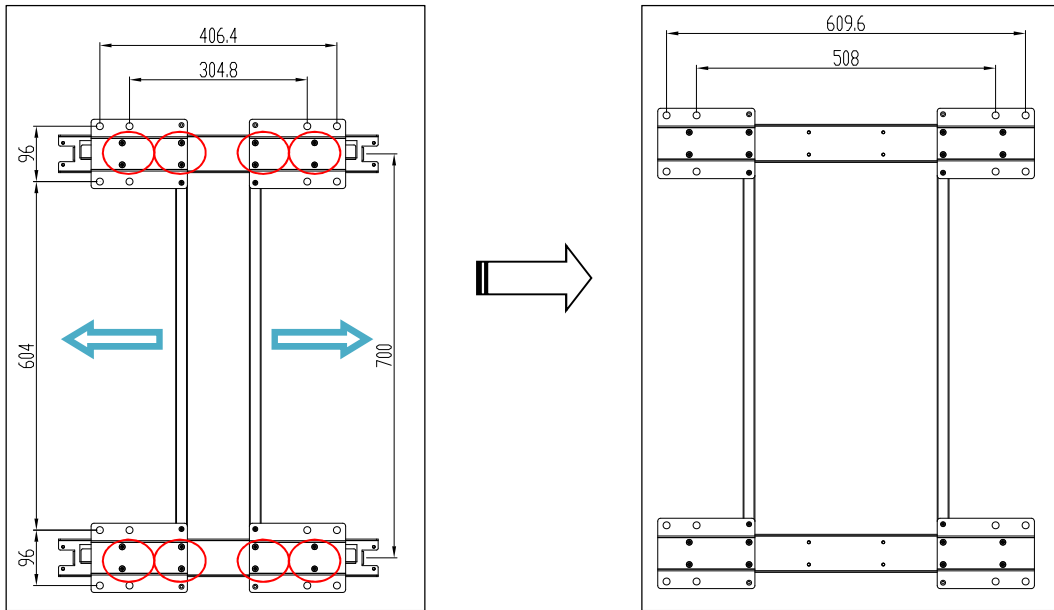
(2) Remove the mounting bracket: Use a screwdriver to remove the 4 fixing screws on both sides of the mounting bracket and take off the



(3) Remove the battery fixing screw in the position shown.

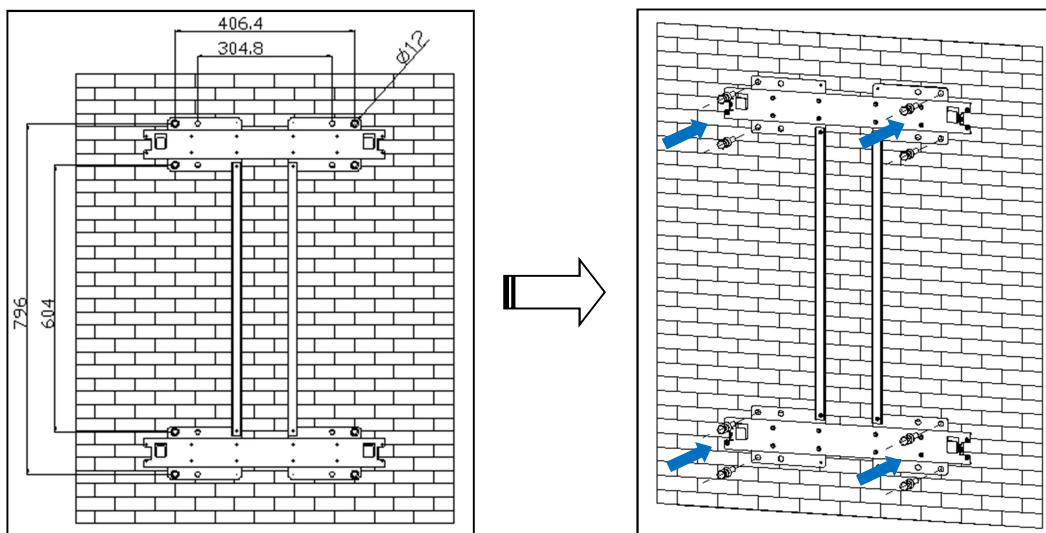


#### (4) Adjusting the mounting bracket

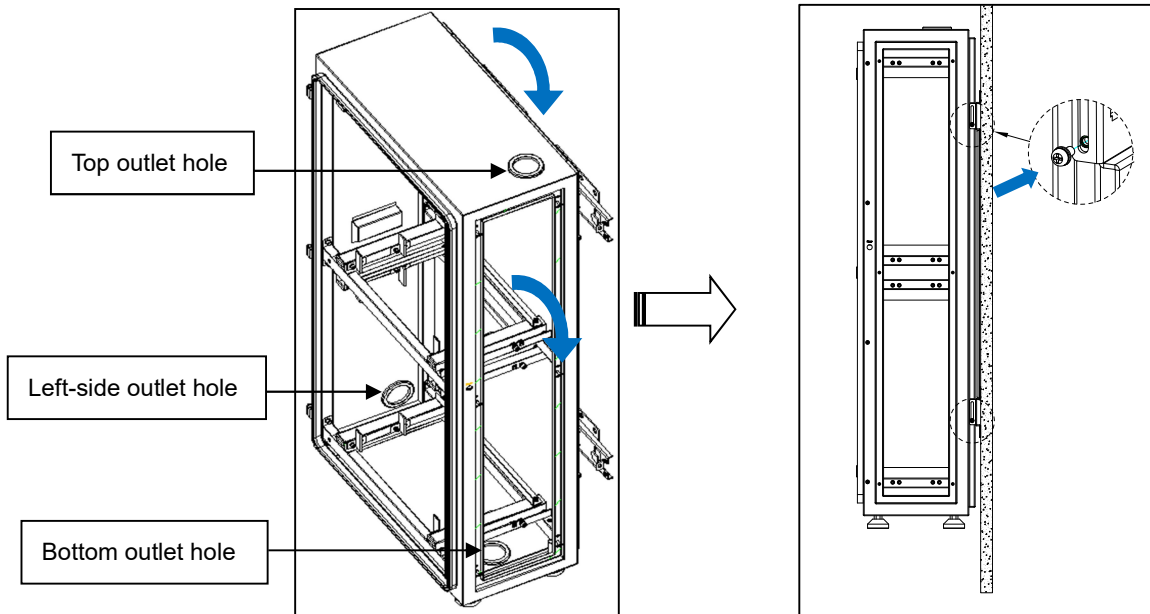



The original mounting bracket is suitable for 12, 16 inch installation space. If it is to be applied to a 20 or 24 inch installation, remove the screws in the red circle in the above figure and move the removed parts to the left and right by a screw hole in the direction indicated by the arrow to fix the screws. The adjusted bracket is suitable for 20, 24 inch installation space.

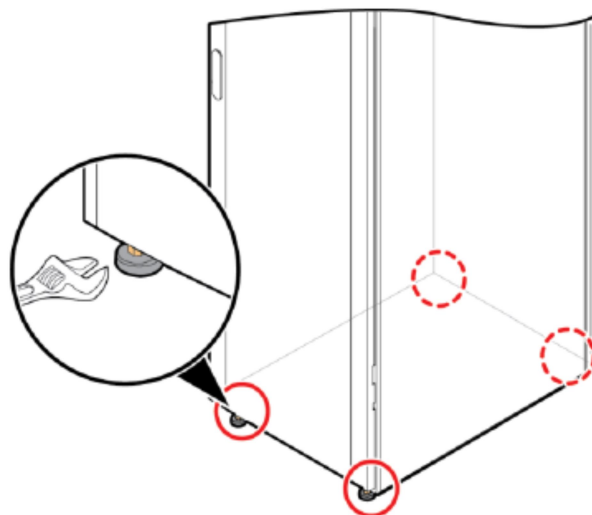
(5) Fixed mounting bracket: Place the mounting bracket on the appropriate position on the wall (recommended installation height is about 1-1.2 meters, which is calculated based on the bottom of the fixed mounting bracket). Adjust the mounting bracket according to the width of the mounting wall, draw with the pen at the mounting hole. Mark the hole with a hole diameter of  $\phi 14$  at the mark 70mm; insert the expansion screw seat into the hole and knock it to the end; after unscrewing the screw, fix the mounting bracket to the wall and tighten the screw with a wrench.



(6) Install the cabinet: Hang the cabinet on the mounting bracket and fix it on both sides with the screws removed in step 2. There are three outlet holes on the cabinet (as shown below), and one hole is selected as the cable in and out according to the needs of the site.

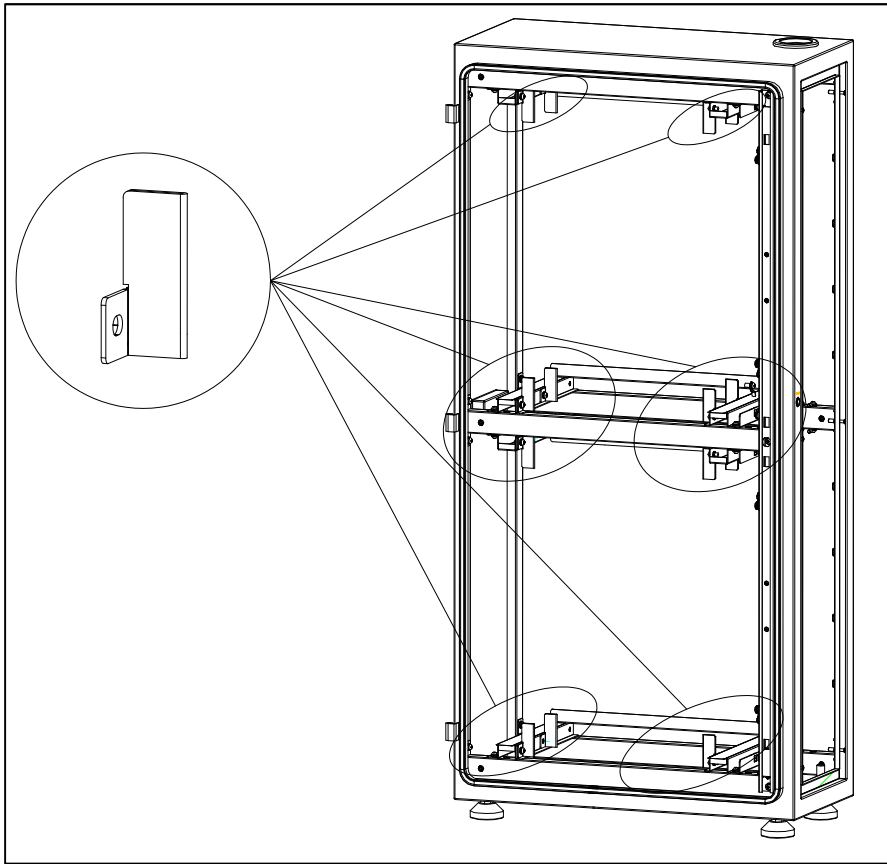


 Note: When installing on the floor, the wall drilling height should ensure that the cabinet feet can touch the ground, and then adjust the foot support with a wrench.

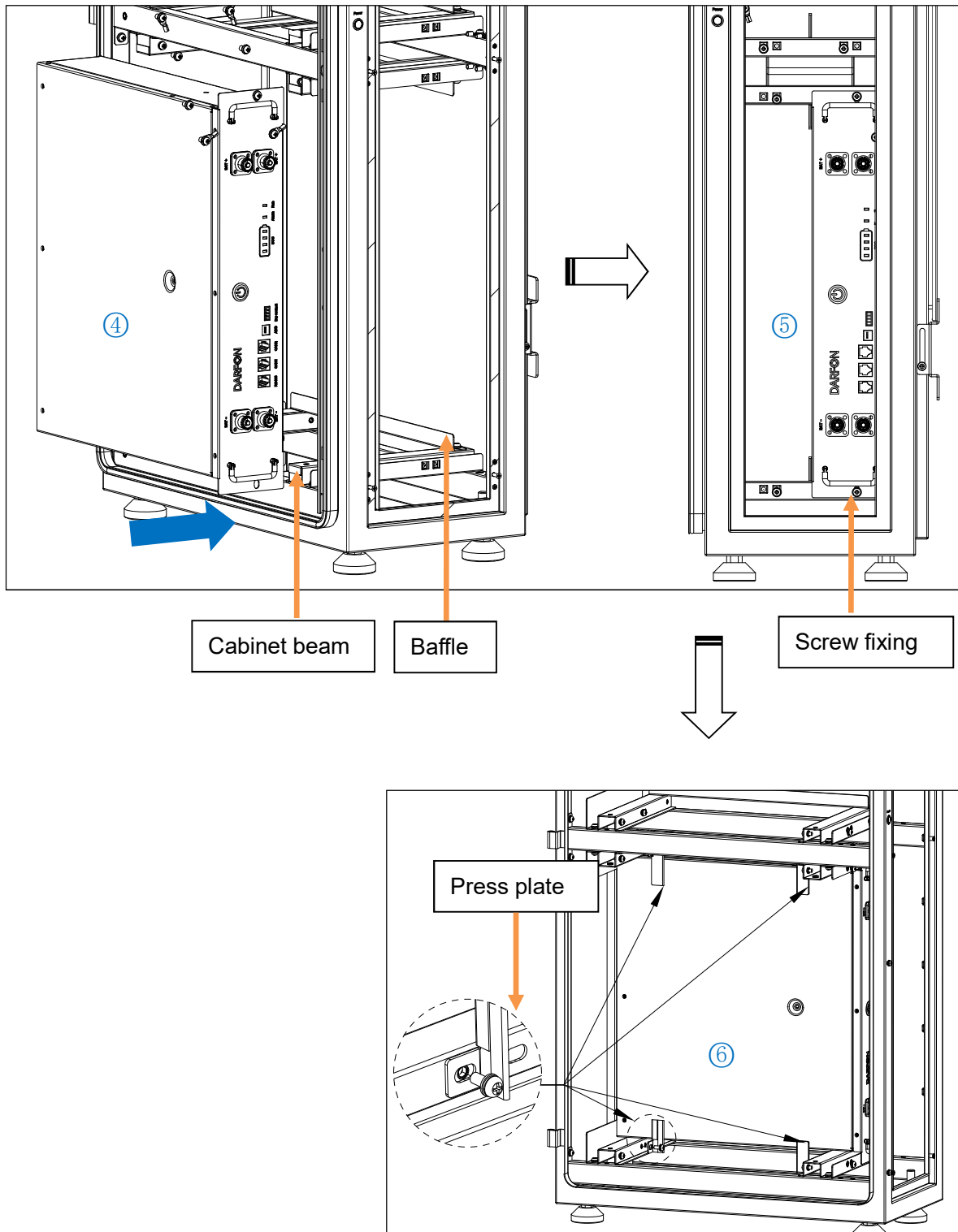



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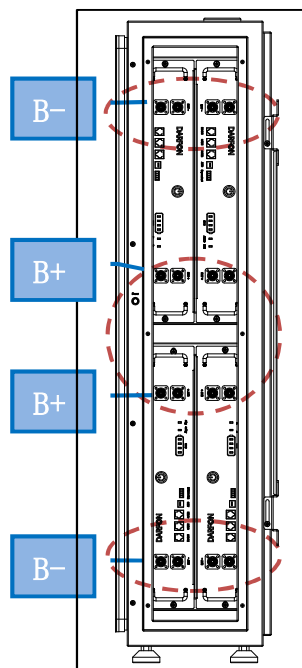
(7) Decompression plate: Screw off the screw with a screwdriver at the position shown, remove the bead and reserve a total of 16.



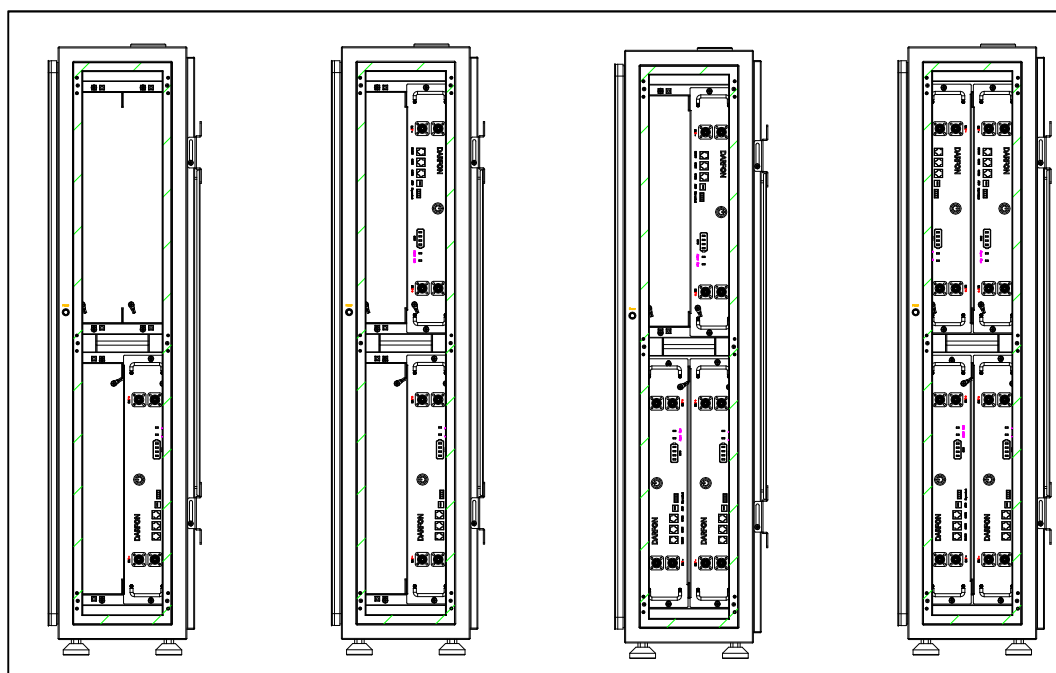
(8) Install the first battery module: As shown in the figure, place the battery module on the battery cabinet beam, push it in parallel as shown in the figure ④ below, and fasten the battery module cover, using the screws removed in step 7. The side-mounted battery module is shown as ⑤ Fix the four battery press plates to press the battery module as shown in ⑥ on the front of the cabinet.



 Note: When placing the battery module, pay attention to the position of B- (black terminal) and B+ (red terminal), B+ is in the middle of the cabinet, and B- is in the upper and lower ends of the cabinet.



(9) According to the first battery pack installation procedure, the second, third, and fourth battery packs are sequentially installed, and the second battery compartment is fastened to the upper battery compartment baffle; the third and fourth battery compartments are respectively fastened to the first, the second battery box; (note the placement of B+ and B-) as shown above:



(10) Battery module grounding: Please refer to section 3.2

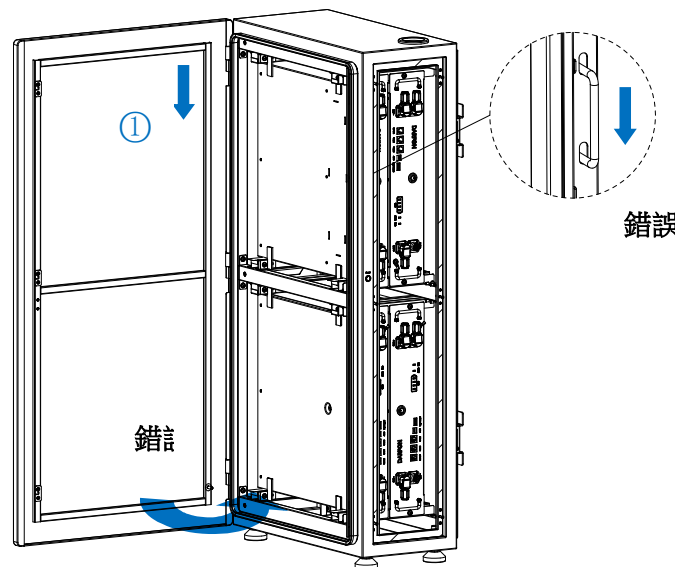
(11) System grounding: Please refer to section 3.3

(12) System wiring: Please refer to section 3.4

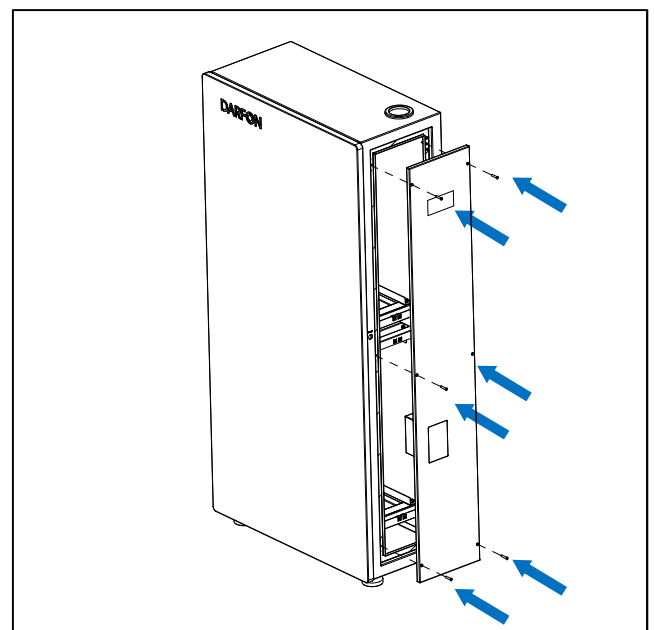
(13) DIP switch settings: Please refer to section 3.5

(14) Matching resistor installation: Please refer to section 3.6

(15) Install the front door: Align the front door hinge with the hole on the door and press the front door as shown in ①. Rotate the front door clockwise to firmly press the front door and the cabinet, push the handle down from the inside of the cabinet as shown in ②, and lock the front door as shown in ③.



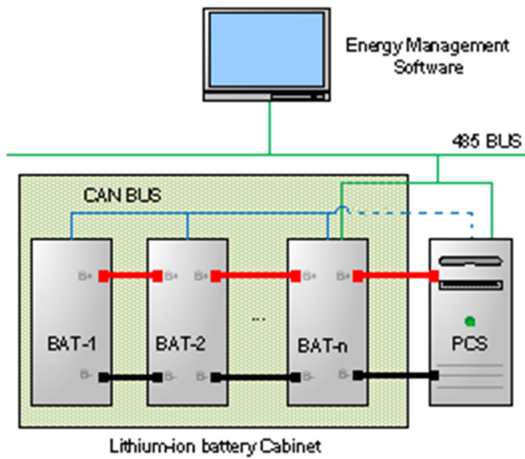
(16) Install the side door: After attaching the side door to the position, use a screwdriver to lock the 6 screws on the side door.





### 3. Electrical Connection

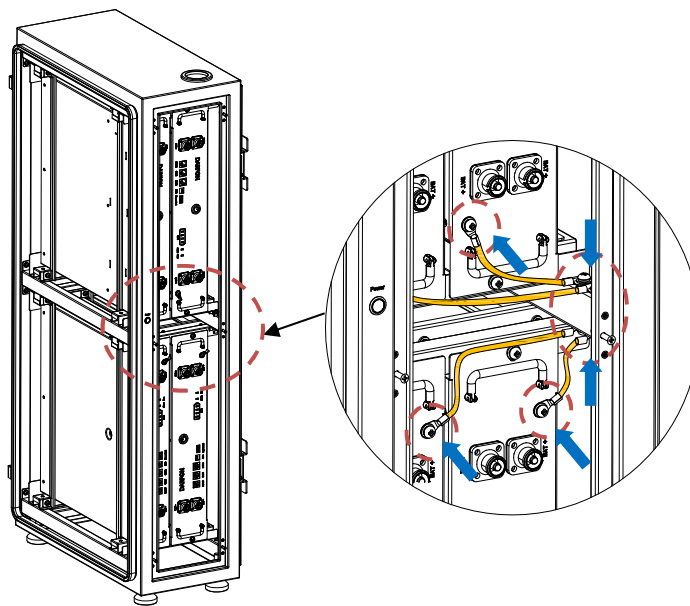
#### 3.1 System working principle diagram



\* 1 battery cabinet when  $N \leq 4$ ;  
 $4 < N \leq 16$  when four battery cabinets are combined  
(-----Dotted line means optional)

#### 3.2 Battery module ground

Connect the grounding point of the battery module to the casing panel. Fix one end of the yellow-green grounding wire (labeled BAT/GND) to the grounding point of the chassis panel with the screw, and connect the other end to the grounding point of the fixed chassis. Screw the screwdriver with a screwdriver. Tighten



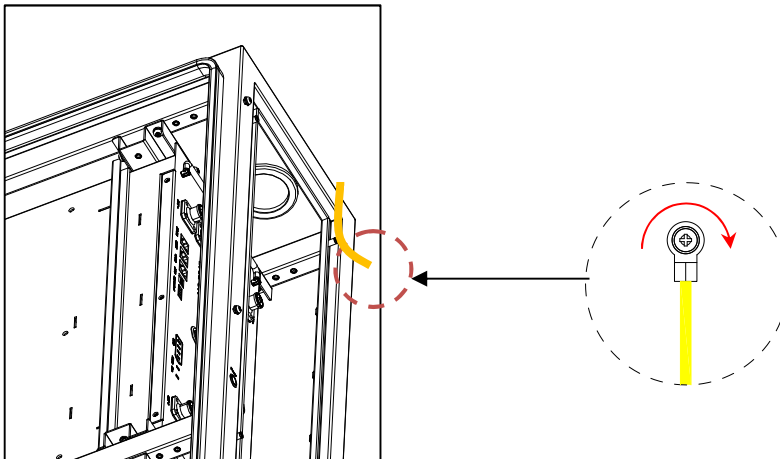
---

### 3.3 System ground

For system safety, the housing of the battery system can be grounded or equipotential connected. When the original protective conductor fails, it prevents the ground current from touching the current, causing personal injury.

The system grounding cable steps are as follows:

- (1) Confirm that the battery system is turned off and there is no input.
- (2) Connect the ring terminal at one end of the yellow-green ground wire (labeled CABINET/GND) to the grounding point of the top beam of the cabinet.
- (3) The other end passes through the waterproof joint of the cabinet and is connected to the grounding point of the outer casing of the inverter.

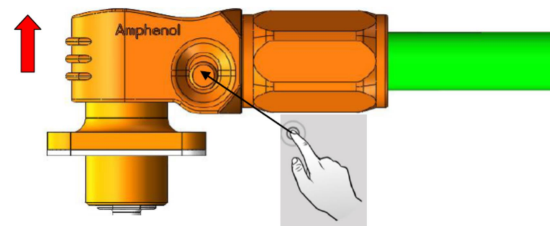
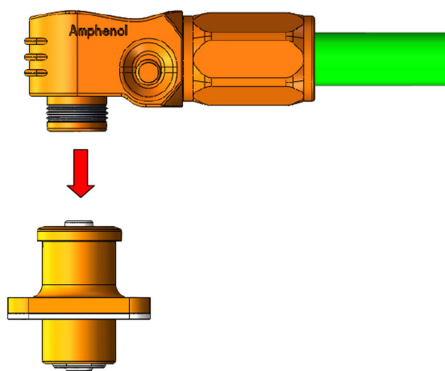
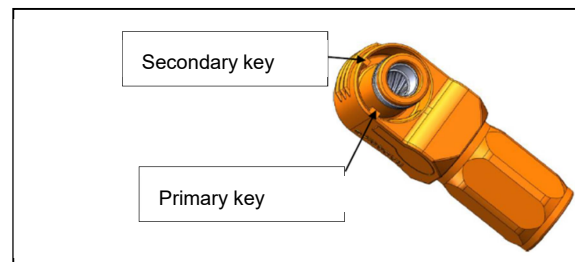
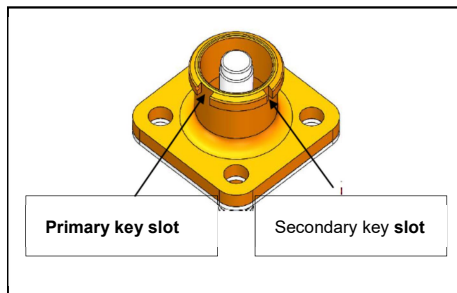


### 3.4 System wiring

**⚠** Note: In order to ensure that the lithium battery system can safely and reliably disconnect from the grid, install a separate single-pole or two-stage circuit breaker as a protection device (according to local electrical codes) before the grid is connected to the lithium battery system; Before you need to ensure that the battery module is in the off state; all external connection cables are routed from the top of the cabinet through the hole

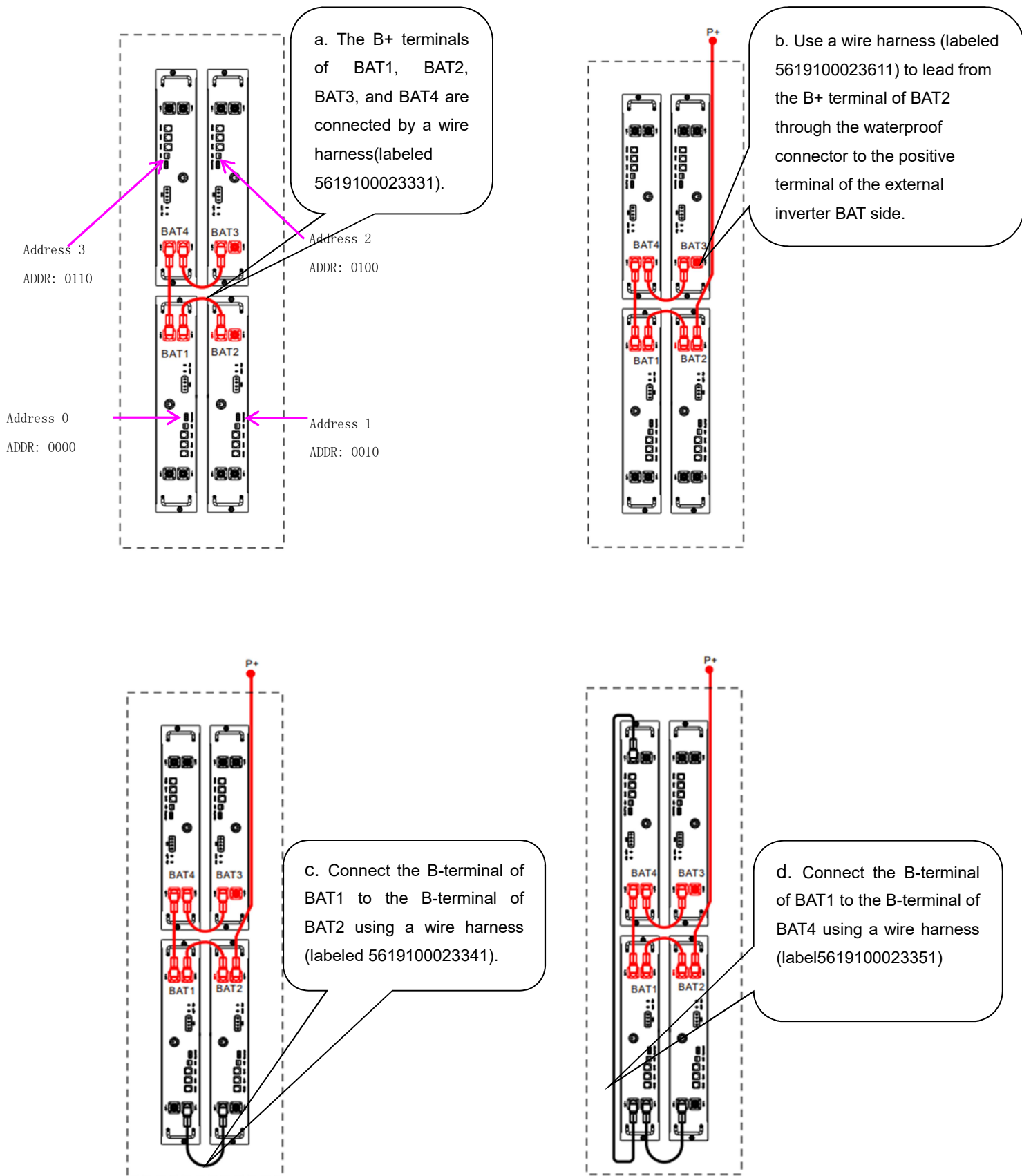
### 3.4.1 Connector description

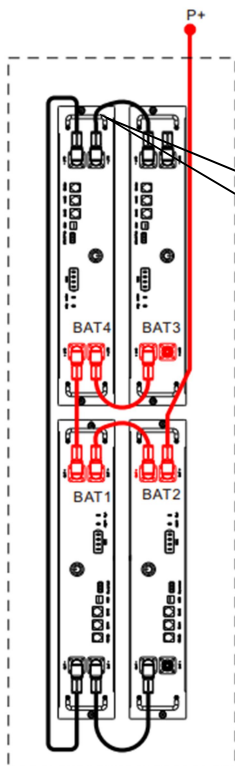
The battery box B+ and B- adopt anti-reverse plug connector, the battery box B+ adopts orange connector socket and plug, and the angle between the main key and the sub key is 180°. B-The black connector is used, and the angle between the main key of the socket and the plug and the sub-key is 90°. As shown below:



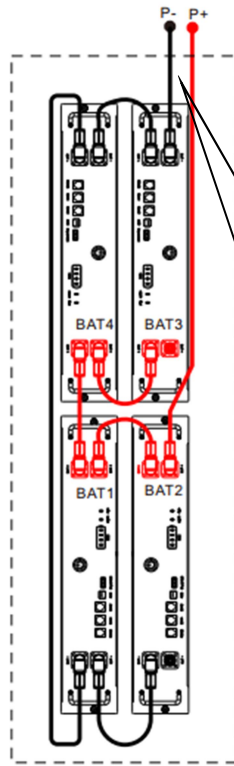
When plugged in, the plug key is aligned with the socket key, then aligned and inserted, and a "tick" sound is heard to insert it into place. When pulling out, press and hold the button shown above, then pull out.

### 3.4.2 Single cabinet wiring

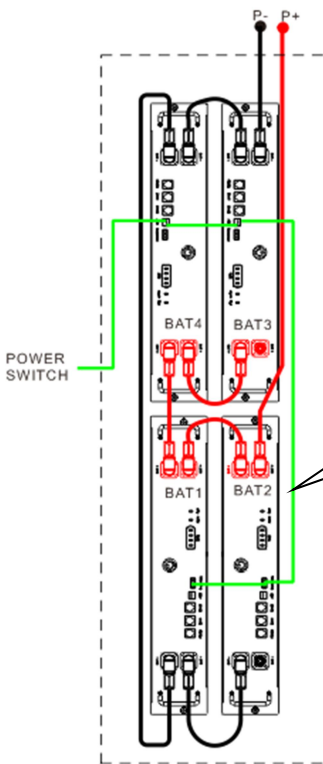




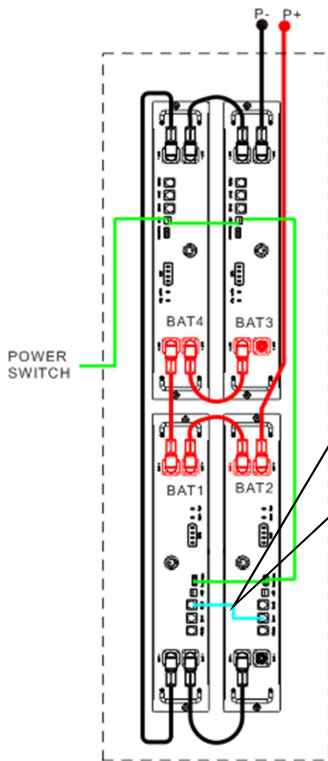
e. Connect the B- of BAT3 to the B-terminal of BAT4 using a wire harness (label 5619100023341)



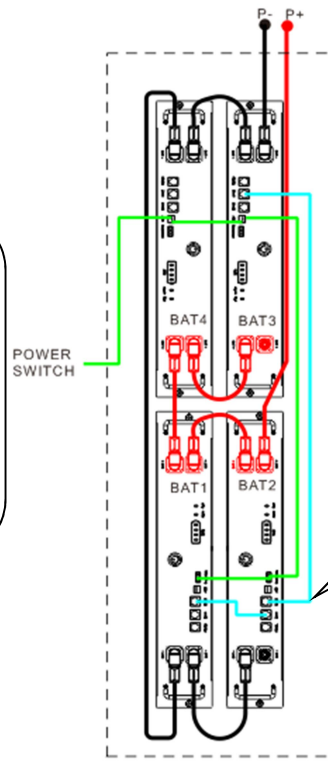
f. Use a wire harness (labeled 5619100023601) to pull the B- terminal from BAT3 through the waterproof connector to the negative terminal of the external inverter BAT side.



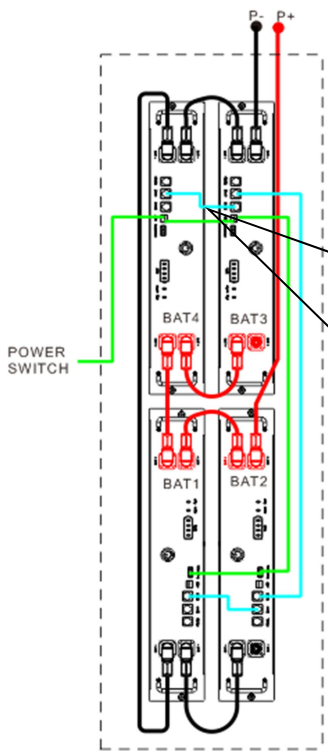
g. After removing the boot harness (labeled with DRY1) attached to the cabinet, the power button is already installed on the cabinet, and the online terminal is inserted into the BAT4 Dry contact interface and the BAT3 Dry contact interface according to the direction of the gap. , Dry contact interface of BAT2, Dry contact interface of BAT1.



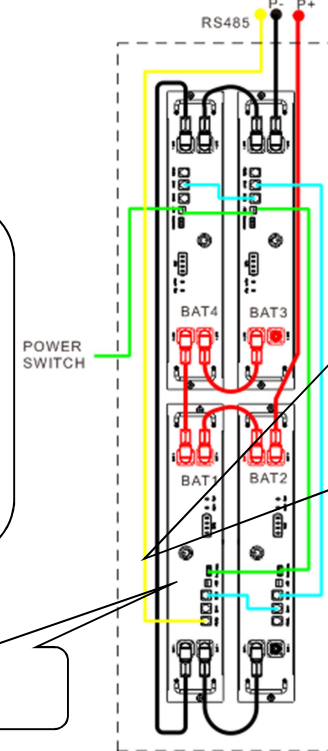
h. Use the wire harness (label with CAN1, length 150mm) to connect the CAN2 communication interface of BAT1 to the CAN1 communication interface of BAT2



i. Use the wire harness (label with CAN1, length 800mm) to connect the CAN2 communication interface of BAT2 to the CAN1 communication interface of BAT3.



j. Use the wire harness (label with CAN1, length 150mm) to connect the CAN2 communication interface of BAT3 to the CAN1 communication interface of BAT4

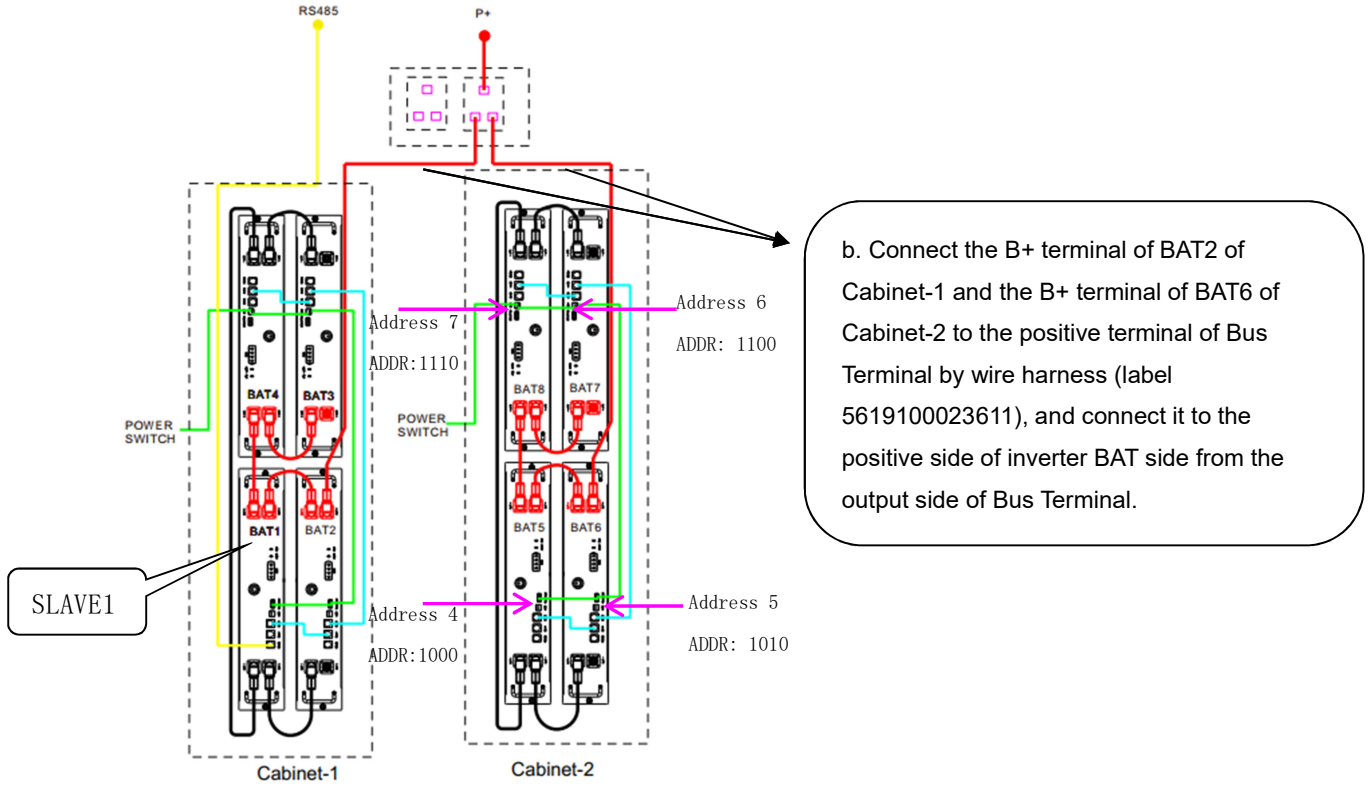


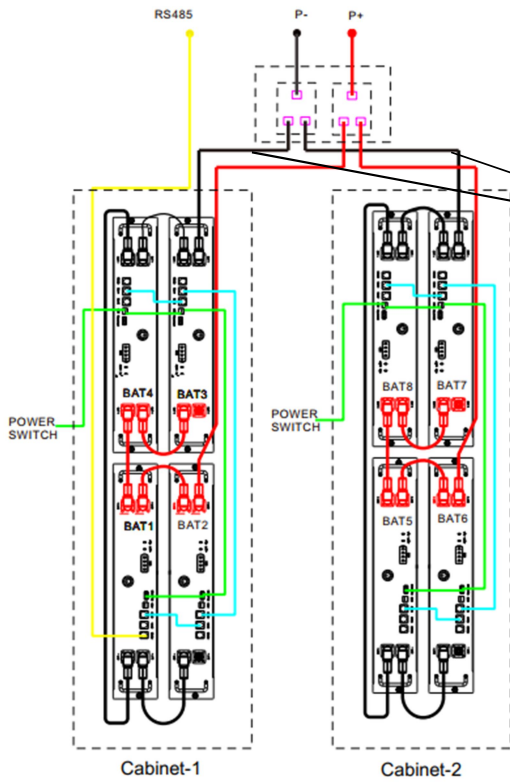
k. Use a wire harness (labeled with RS485, length 2300mm) to be taken from the RS485 interface of the master BAT2 through the cabinet waterproof connector to the external monitoring device (inverter, etc.)

Master

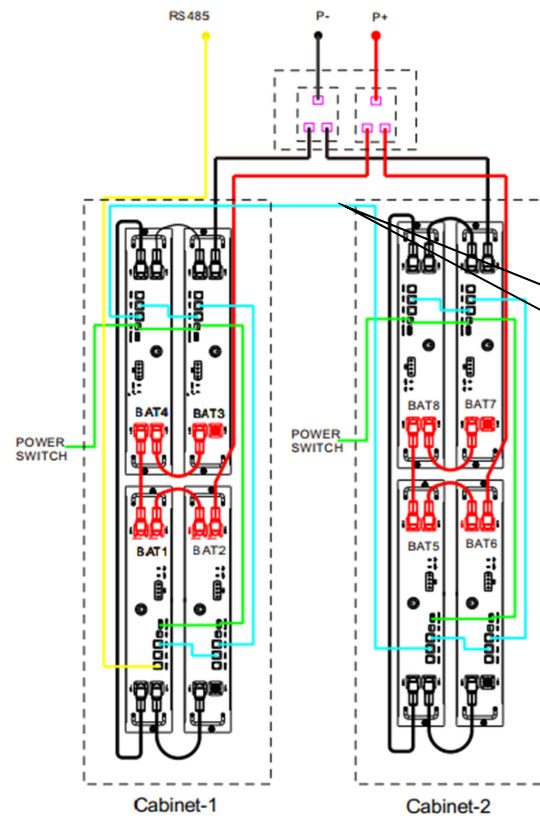
### 3.4.3 Two parallel cabinet wiring

a. Cabinet-1 and Cabinet-2 internal wiring reference 3.4.2 single cabinet wiring steps.





c. Connect the B-terminal of BAT4 of Cabinet-1 and the B1 terminal of BAT7 of Cabinet-2 to the negative terminal of Bus Terminal by wire harness (label 5619100023601), and connect it to the negative side of inverter BAT side from the output side of Bus Terminal.

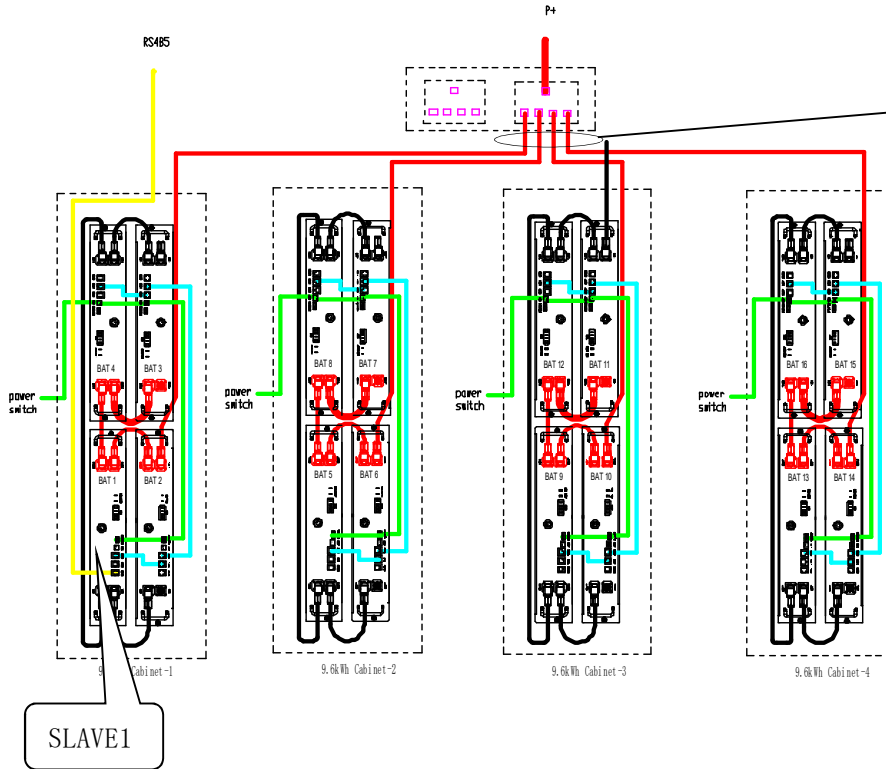


d. Use the wire harness (label with CAN1, length 4000mm) to connect the CAN2 communication interface of Cabinet-1 BAT4 to the CAN1 communication interface of BAT5 of Cabinet-2

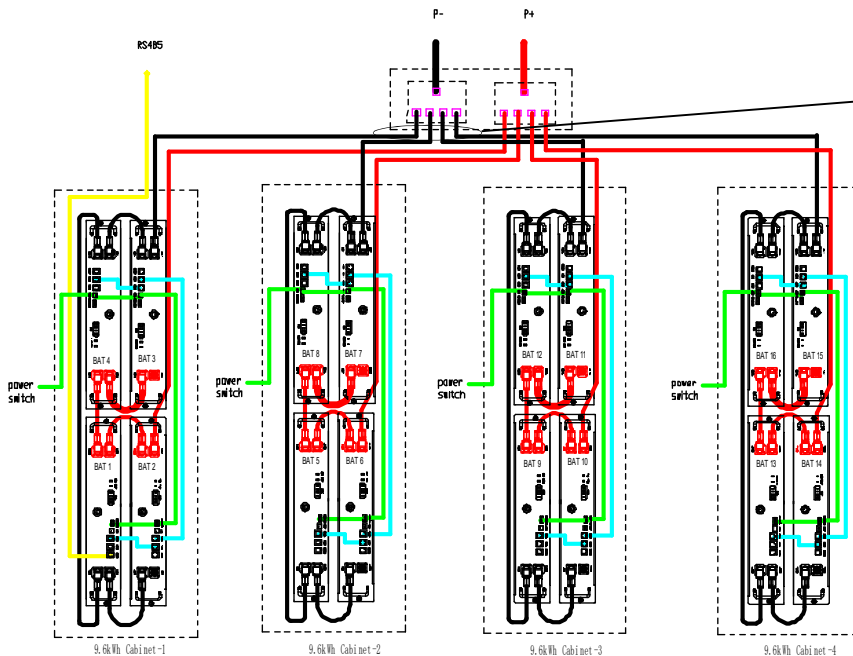


### 3.4.4 Four parallel cabinet wiring

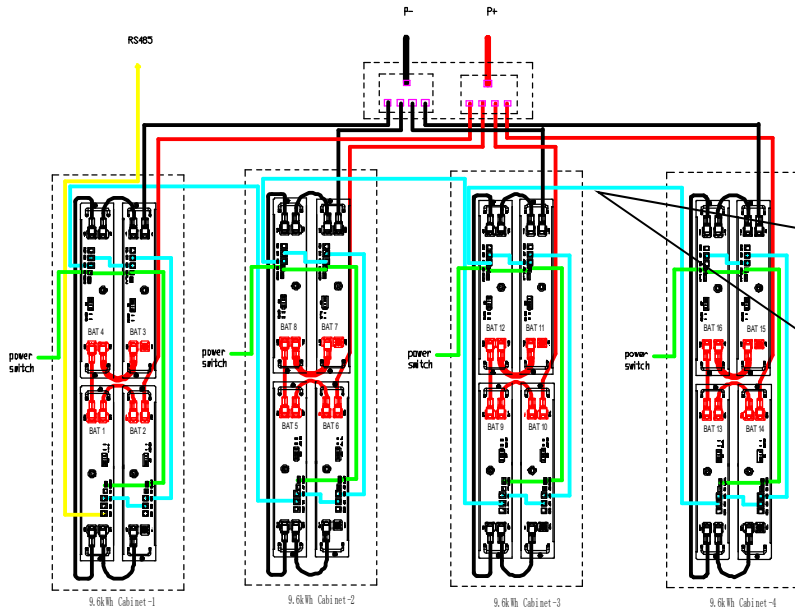
a. Cabinet-1/2/3/4 internal wiring reference 3.4.2 single cabinet wiring steps.



b. Connect the B+ terminal of BAT2 of Cabinet-1, BAT6 of Cabinet-2, BAT10 of Cabinet-3, and BAT14 of Cabinet-4 to the positive terminal of Bus Terminal by wire harness, and connect it to the positive side of inverter BAT side from the output side of Bus Terminal.

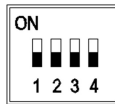


c. Connect the B-terminal of BAT3 of Cabinet-1, BAT7 of Cabinet-2, BAT11 of Cabinet-3, and BAT15 of Cabinet-4 to the negative terminal of Bus Terminal by wire harness (label 5619100023601), and connect it to the negative side of inverter BAT side from the output side of Bus Terminal.

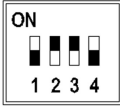











d. Use the wire harness (label with CAN1, length 4000mm) to connect from CAN2 of BAT4 of cabinet-1 to CAN1 of BAT5 of cabinet-2, from CAN2 of BAT8 of cabinet-2 to CAN1 of BAT9 of cabinet-3, from CAN2 of BAT12 of cabinet-3 to CAN1 of BAT13 of cabinet-4

### 3.5 DIP switch settings



Address	Dial switch position				Explain	schematic diagram
	#1	#2	#3	#4		
0	OFF	OFF	OFF	OFF	SLAVE1/MASTER	
1	OFF	OFF	OFF	ON	SLAVE2	
2	OFF	OFF	ON	OFF	SLAVE3	
3	OFF	OFF	ON	ON	SLAVE4	
4	OFF	ON	OFF	OFF	SLAVE5	
5	OFF	ON	OFF	ON	SLAVE6	

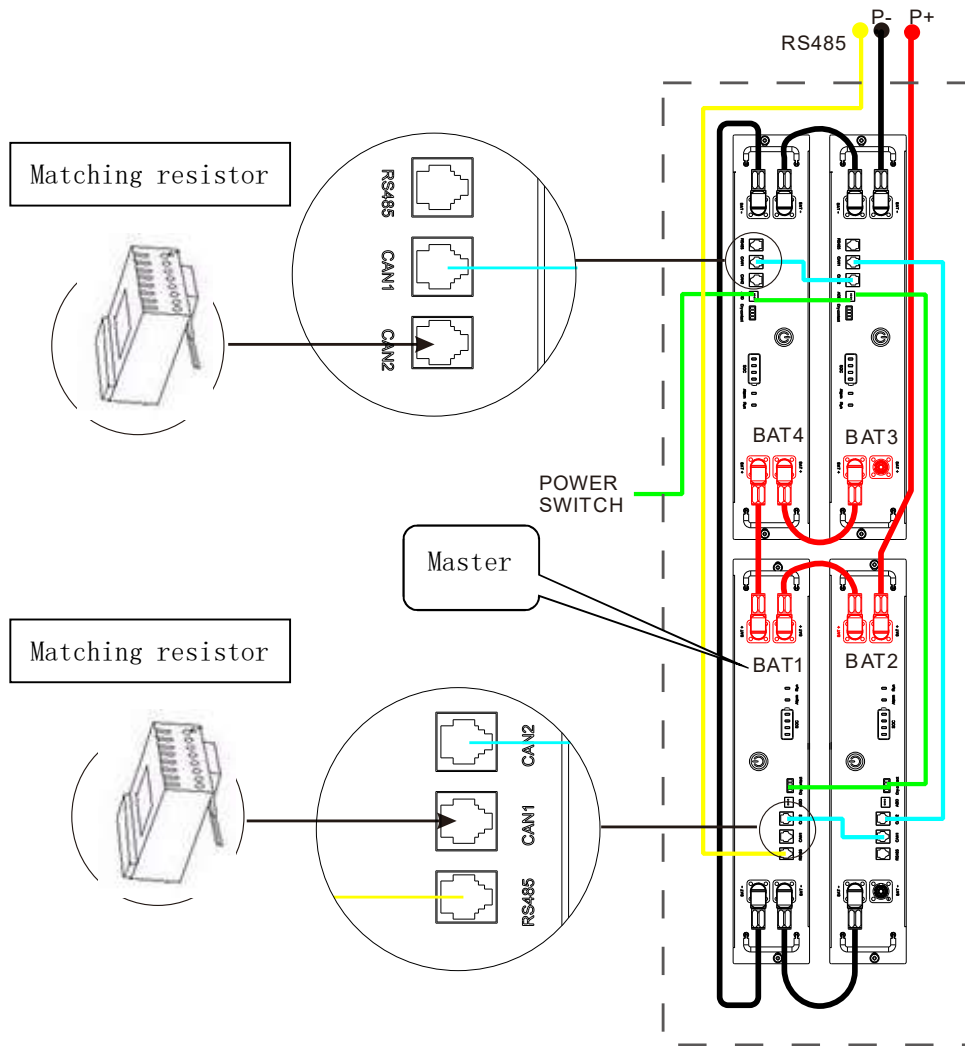
6	OFF	ON	ON	OFF	SLAVE7	
7	OFF	ON	ON	ON	SLAVE8	
8	ON	OFF	OFF	OFF	SLAVE9	
9	ON	OFF	OFF	ON	SLAVE10	
10	ON	OFF	ON	OFF	SLAVE11	
11	ON	OFF	ON	ON	SLAVE12	
12	ON	ON	OFF	OFF	SLAVE13	
13	ON	ON	OFF	ON	SLAVE14	
14	ON	ON	ON	OFF	SLAVE15	
15	ON	ON	ON	ON	SLAVE16	

### 3.6 Matching resistor installation

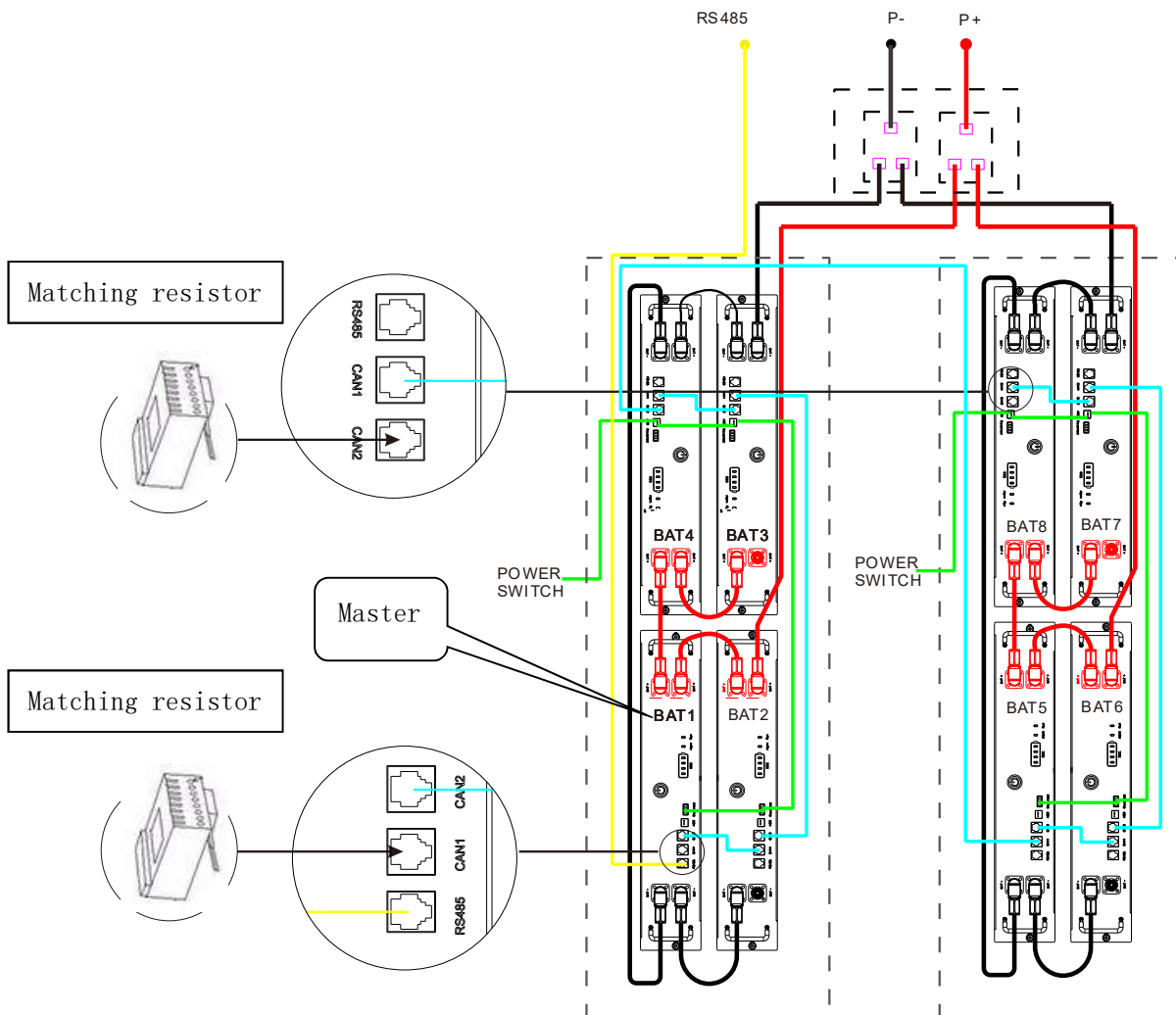
As shown in the figure, a single cabinet connects a matching resistor to the CAN1 communication interface of BAT1, and a matching resistor is connected to the CAN2 communication interface of BAT4. When two cabinet are in parallel, a matching resistor is connected to the CAN1 communication interface of BAT1 in Cabinet-1. A matching resistor is connected to the CAN2 communication interface of BAT8 in Cabinet-2. When four cabinets are connected, a matching resistor is connected to the CAN1 communication

interface of BAT1 in Cabinet-1. A matching resistor is connected to the CAN2 communication interface of BAT16 in Cabinet-4.

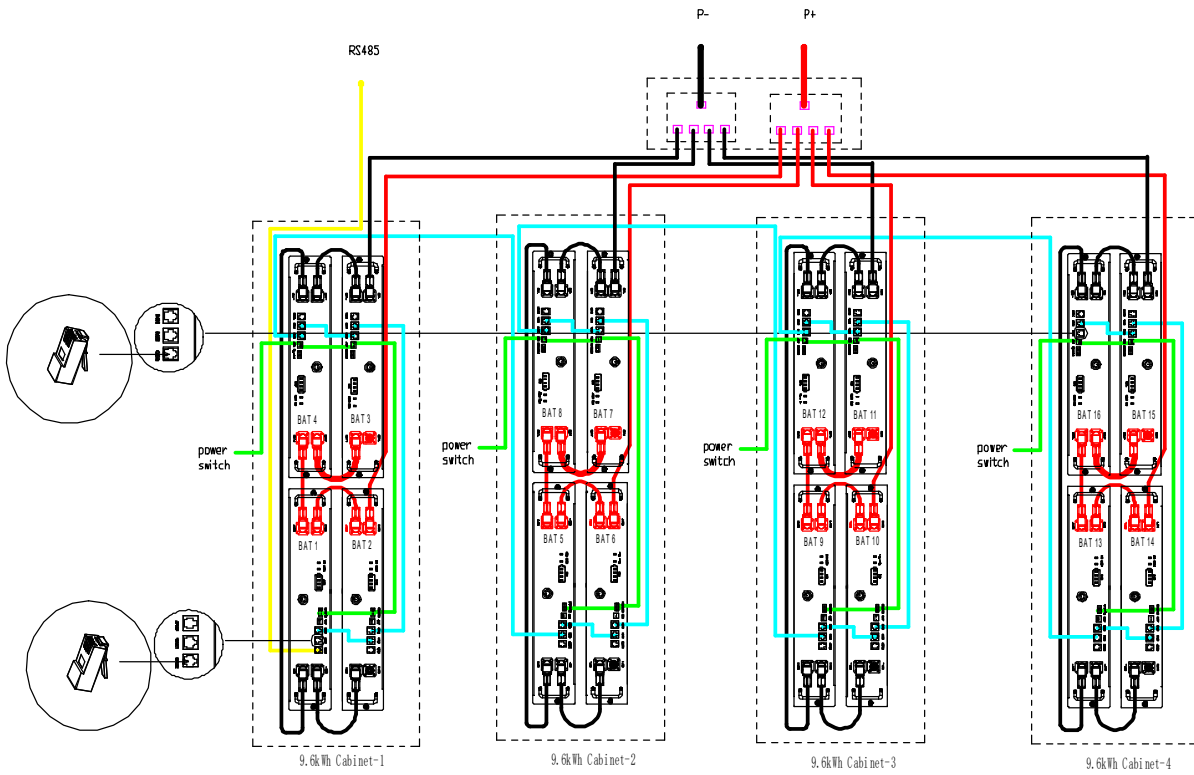
### 3.6.1 Single cabinet connection for matching resistor



### 3.6.2 Two parallel cabinet connection for matching resistor

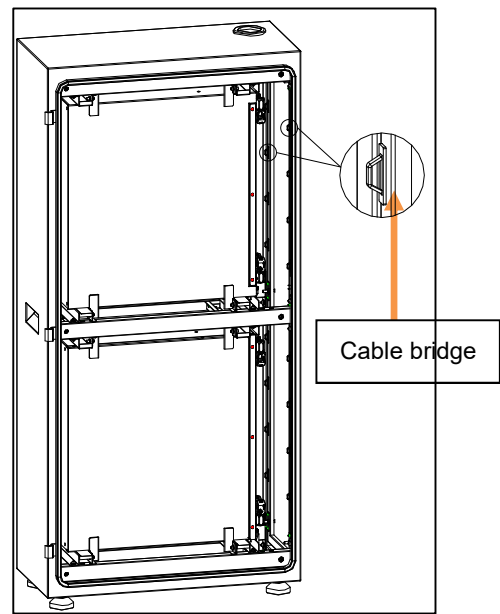


### 3.6.3 Four parallel cabinet connection for matching resistor



### 3.6.4 Finishing harness

After the cable is connected, bundle the cables on both sides of the side door with the cable tie in the accessory. There are cable ties on both sides of the cabinet side door (there are 16 lanyard bridges on both sides of the cabinet side door, the right side shows the top position), as shown on the left:



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## 4. Operation Guide

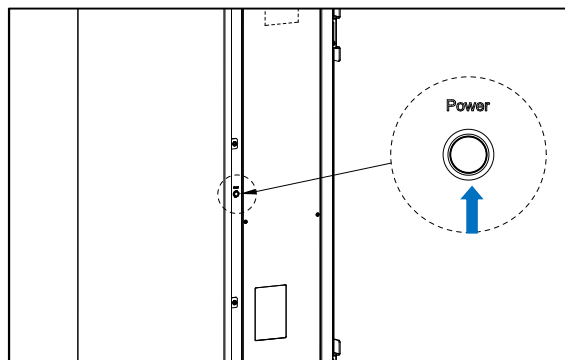
### 4.1 Operational statement

- Please read this chapter carefully before operation.
- Make sure the system wiring is correct.
- Make sure the terminals are securely fastened.
- Ensure that the parameters of the external access device match the system.
- It is recommended to turn off the device when not used for a long time.

### 4.2 Switching machine operation

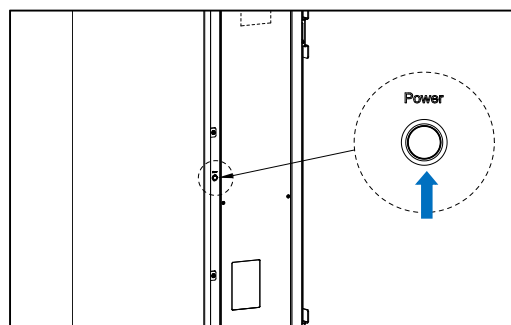
#### 4.2 .1 Power on

Press the switch button, the battery box indicator lights up, and the system is turned on.



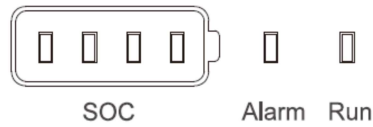
#### 4.2.1 Power off

Press the switch button in the running state, the button pops up, the battery module indicator goes out, and the system is shut down.



### 4.3 Display state

The system status indicator is as shown below, sorted from bottom to top as LED1-LED6.



**Description of requirements: The battery has 6 LED indicators, including protection, operation, power display (4), the function description is shown in the table below.**

States description		Capacity LED (Low to high)				ALM	RUN	Remarks
Shut down mode								All LED's off
Charging	SOC 0%-25%	★	★	★	★		●	Battery LED (1^4) from low to high for the status of the water lamp
	SOC 26%-50%	●	★	★	★		●	Battery LED (2^4) from low to high for the status of the water lamp
	SOC 51%-75%	●	●	★	★		●	Battery LED (3^4) from low to high for the status of the water lamp
	SOC 76%-99%	●	●	●	★		●	Battery LED 4 flash
	SOC 100%	●	●	●	●		●	Charge cutoff
Discharging	SOC 1%--25%	●					●	
	SOC 26%--50%	●	●				●	
	SOC 51%--75%	●	●	●			●	
	SOC 76%--100%	●	●	●	●		●	
	SOC 3%	★					●	
Protection	Low-voltage protect	●				●	●	Including cell low-voltage and the module low-voltage
	Overvoltage protect				●	●	●	Including cell overvoltage and the module overvoltage
	Overcurrent (discharging)			●		●	●	
	Low-temp. protect (Charging)	●	●			●	●	
	High-temp. protect (Charging)	●		●		●	●	
	Low-temp. protect (Discharging)	●			●	●	●	



	High-temp. protect (Discharging)		●	●		●	●	
	High-temp. protect (MOSFET)		●		●	●	●	
	Short circuit protect (Discharging)	●	●		●	●	●	
Errors & Dysfunctions	MOSFET Charging error	●				●		
	MOSFET discharging error		●			●		
	Voltage front end sampling error			●		●		
	Voltage front end disconnect				●	●		
	Temp. front end sampling error	●	●			●		
	Cells seriously imbalanced		●	●		●		
	Parameter configuration error		●		●	●		
	Equipment parallel failure			●	●	●		
	Short circuit protection lock	●		●		●		
	Front-end chip initialization failed	●			●	●		
	Front-end chip failure	●	●	●		●		

Remark: ●Refers to light on, ★Refers to blinking, the flashing frequency of the indicator light is 1Hz

## 4.4 Host computer description

Port Setting

Connect Cancel Setting

Communication port type: COM

Port: COM17

Data Bits: 8

Parity: NONE

Stop Bits: 1

Baud Rate: 9600

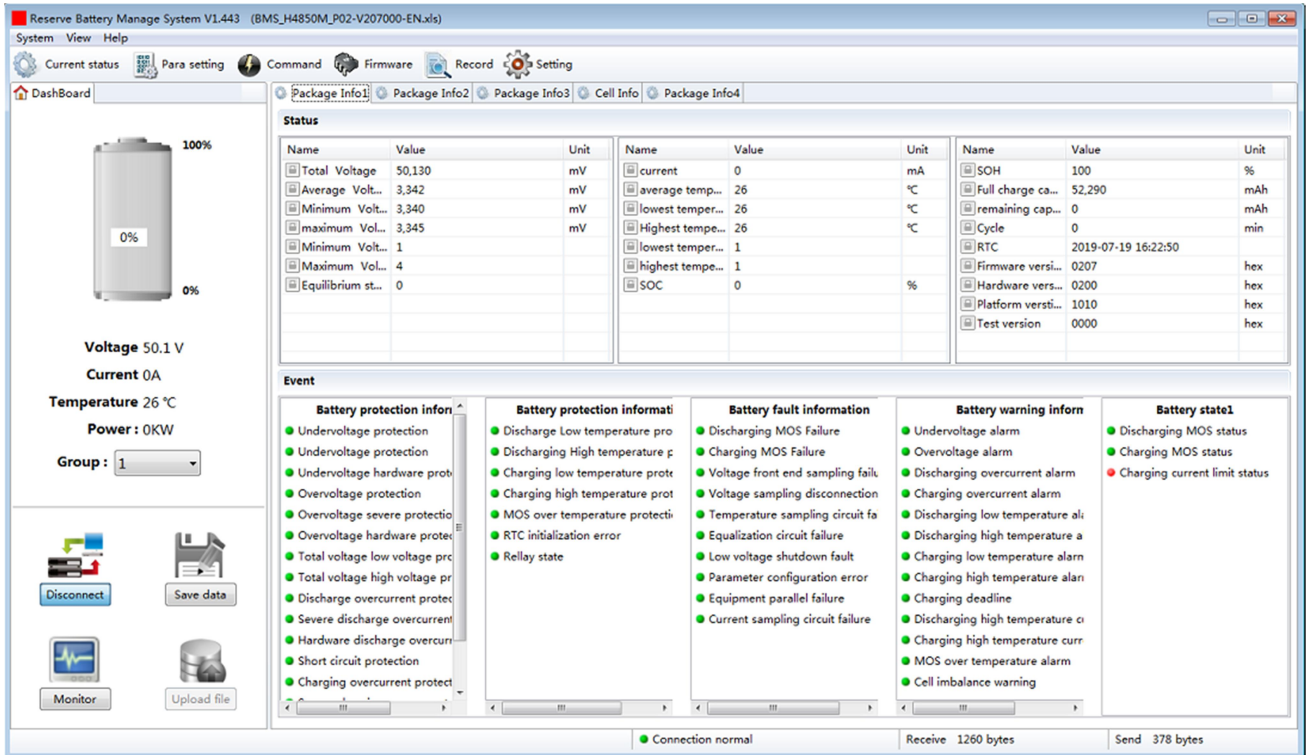
Protocol: Communication Box

Slave Addr: 144

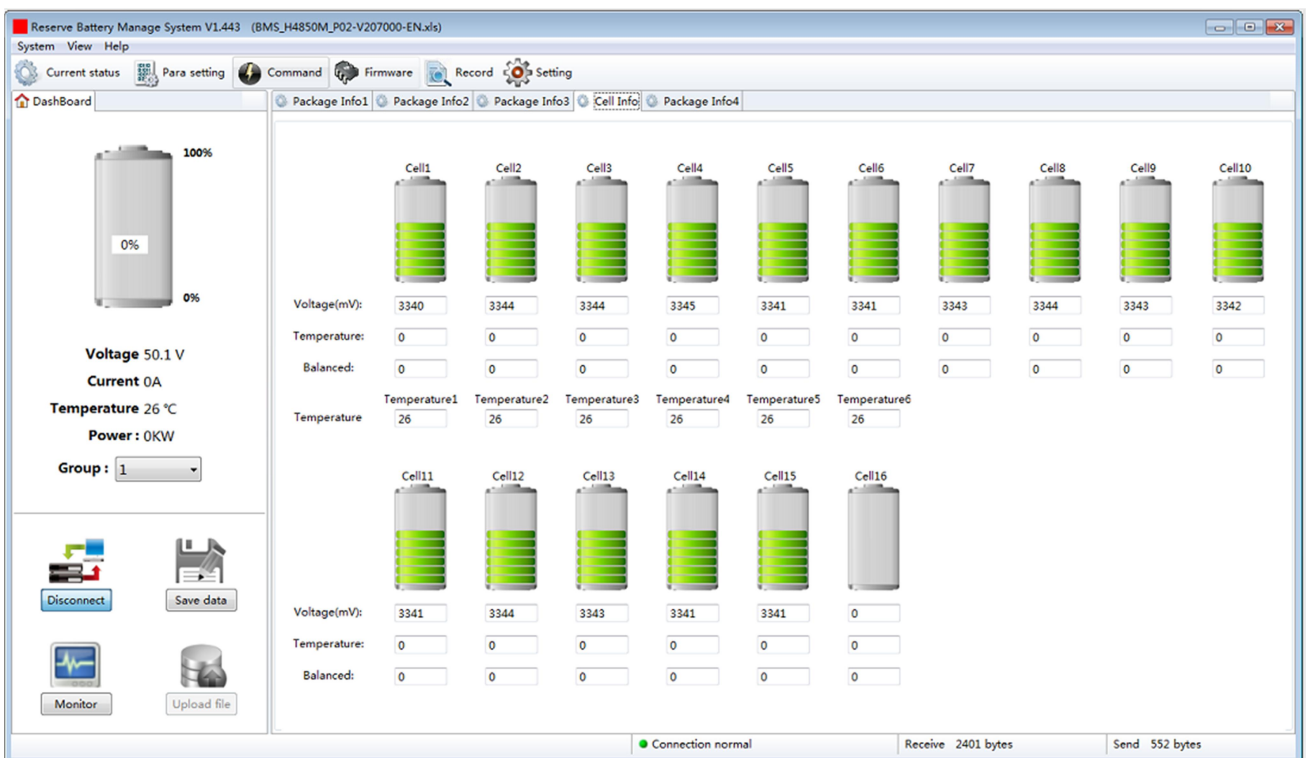
Confirm Cancel

Communication setting parameter table

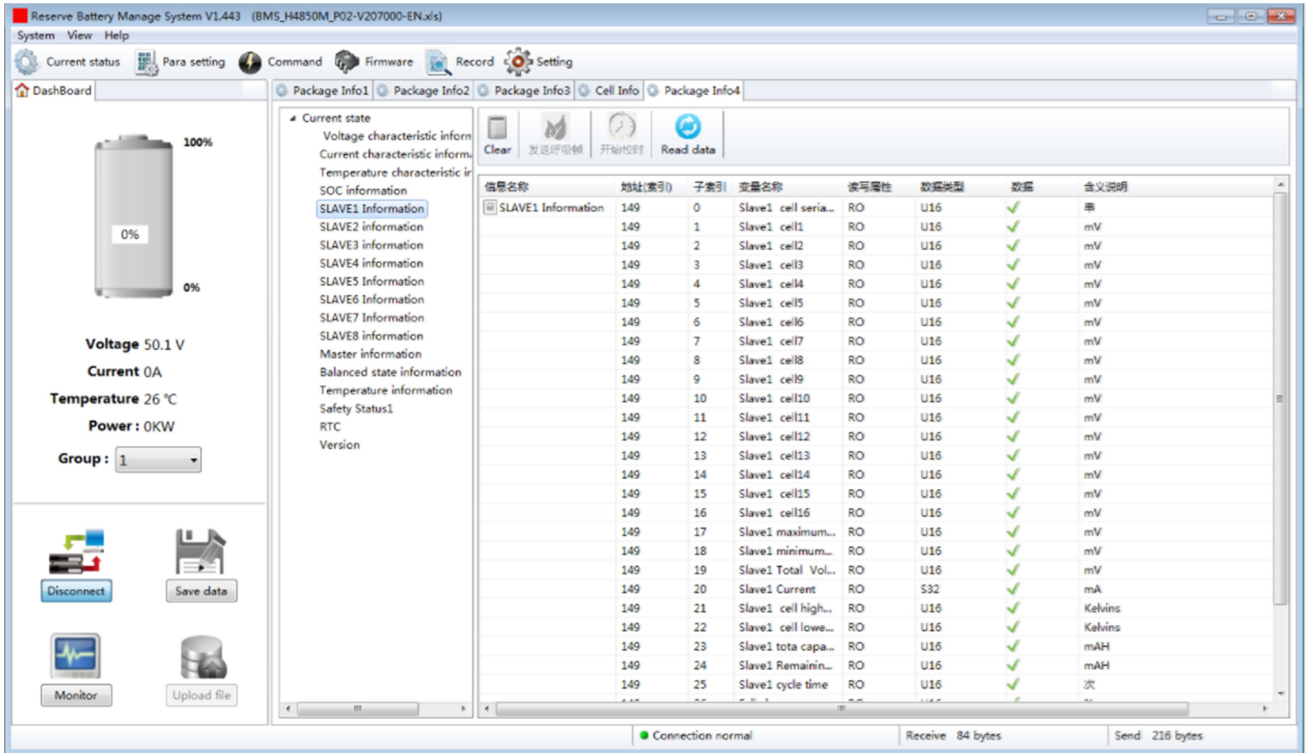
After the cabinets are connected in parallel, insert the RS485 communication interface into the RS485 interface on the front panel of the MASTER (address 0000) battery box, communicate with the computer through the 485 communication box with the transfer interface, enter the system host computer, enter the communication settings, and the communication port settings For the actual COM port, the different COM ports have different serial numbers.



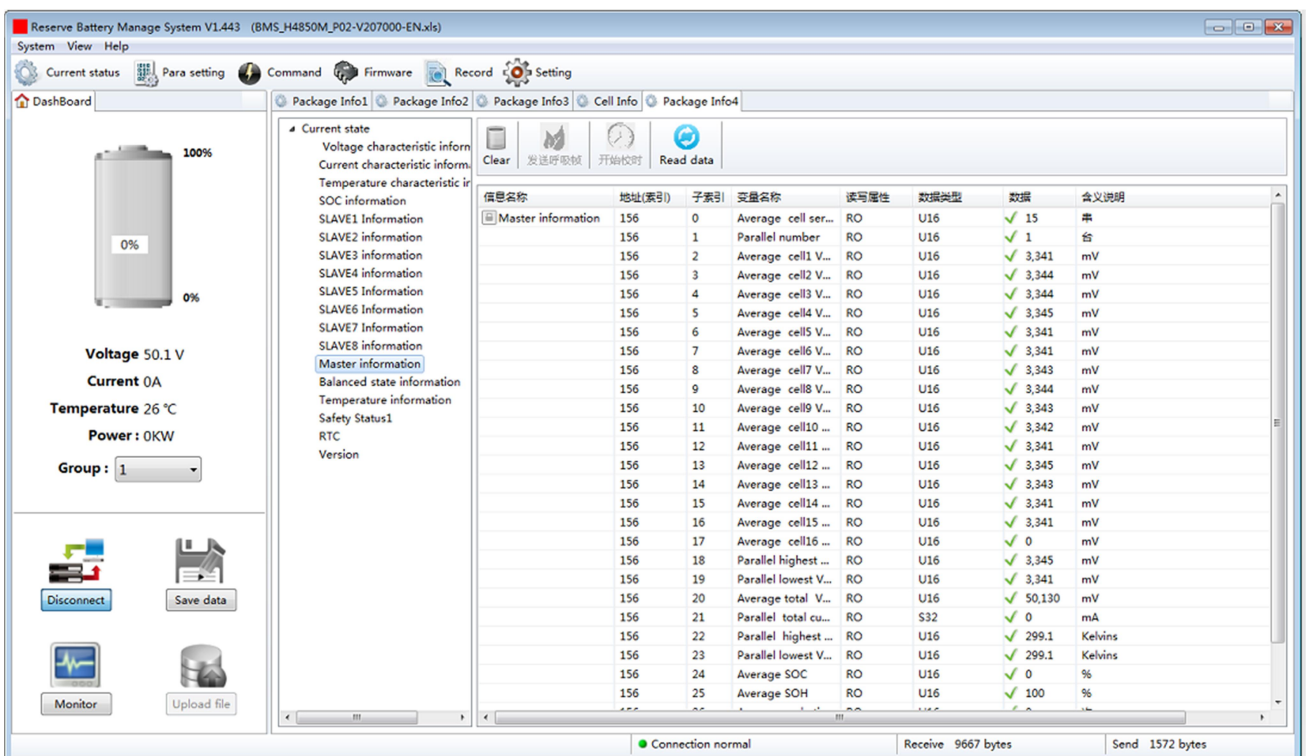
Host machine interface



Parallel summary of module information



Enter the battery pack information 4, click the current state, you can see the parallel battery pack SLAVE1-8 information and parallel summary information



Parallel summary information

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## 5. Maintenance and Common Troubleshooting

When you use the product, if it does not work properly, please do not rush to determine that the product is faulty, please refer to the table 《Common Troubleshooting Table》 to find the cause of the fault. At the same time, pay attention to check whether it is caused by the external environment, such as temperature, humidity does not meet the requirements or load overload

### 5.1 Daily maintenance

1. The system starts from the factory and needs to charge the system once every 6 months.

2. During system storage, the system should be checked regularly by professionals to check whether the line is loose or falling off, or to clean the surface and interior of the system; if any defects are found, please contact the dealer in time.

### 5.2 Common troubleshooting table:

Fault phenomenon	Reason	Solution
No response by switch	Internal failure	Please contact the supplier
	Button start wire is damaged or poorly installed	Check the button start wire and installation situation
Short battery discharge time	Low battery	Keep the product charged for more than 4 hours to fully charge the battery
	Product overload	Check load status and remove non-critical products
	Battery aging, capacity decline	To replace the battery, please contact the supplier to get the battery and its components
Unable to charge and discharge	Internal failure	Please contact the supplier
	Battery over temperature	Allow to stand at room temperature for more than 3 hours

Abnormal battery input	Communication disconnection, high voltage, low voltage, high temperature, low temperature and overcurrent alarm or fault protection	Check if the battery communication is normal, check the event record for alarm or fault protection.
Fault prompt	other	According to the prompted fault information, check the indicator function status table to find the corresponding fault cause, and eliminate them one by one.

If the problem still cannot be solved, please contact the supplier or manufacturer as soon as possible. Note: Do not disassemble the product yourself!

When you need to report the fault to the dealer's customer service staff, please record and inform the following information:

- ① Product model (Model)
- ② Product batch number (Serial No.)
- ③ Fault occurrence date, complete problem description (including fault code, grid condition, load capacity, etc.)

## 6. Packaging, Transportation, and Storage

### 6.1 System packaging

- The system cabinet and battery pack are packed in carton, and the internal PE packaging bag is moisture-proof and waterproof.
- Use EPE pearl cotton foam pad in the middle to prevent damage to the system during handling and transportation.

### 6.2 System handling and transportation

- Transportation must comply with UN3481's dangerous goods transportation and local laws and regulations.
- The system is heavy and must be transported by mechanical means.

- 
- The equipment and packaging cannot be drenched, so it cannot be transported in the open air.

### 6.3 System storage

- Storage temperature: -20°C ~ 25°C, 12 months  
-20°C ~ 45°C, 3 months  
-20°C ~ 60°C, 1 month;

(The SOC before storage is kept in the range of 40% to 60 %.)

- Storage humidity: 10%~80%RH
- Storage rooms need to be kept ventilated.
- The room is clean and dry, and it is protected from dust and moisture.
- Room ground bearing >1200KG/m<sup>2</sup>
- The storage time can be up to 6 months. It is recommended to charge and discharge the system after the time is exceeded.
- Storage room sunlight cannot be directly on the system.
- The storage room should have a window for periodic inspection and record related environmental data and storage time.