



Installation Guidance

Battery BOX Product B-BOX2.5~10.0

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1 Preface

Thank you for choosing BYD products. We will provide you good quality as well as reliable after service.

To protect using staffs and product, please kindly read this manual carefully which provide detailed information for products' features, structures, operate standard, maintenance and troubleshooting.

Special announcement

This manual can't be taken as basis of requirement for BYD.

BYD hold the final explanation right of this manual.

2 Information in this Guidance

2.1 About this guidance

This is the installation guidance for the BYD battery box series products- B-Box 2.5~B-Box 10.0. Users of this device must refer to the installation guidance to installation and using correctly.

2.2 Target Group

This installation guidance applies only to the BYD battery box series products-B-Box2.5 ~B-Box10.0.

2.3 Additional Information

Specification of the product can be change without any notice to customers for the system improvement.

2.4 Symbols Used

Symbols meanings:

**CAUTION:**

CAUTION represents hazardous situations which can cause light injuries if not avoided.

**NOTICE:**

NOTICE represents the situations which can cause damage to property if not avoided.

**INFORMATION:**

INFORMATION provides tips that are valuable for optimum installation and operation of the product.

3 Safety

3.1 Warnings and Notification

BYD battery box series products- B-Box 2.5~B-Box 10.0 are defined in user manual.

Installation Application Suitable for Safety

BYD battery box series product is designed to be suitable for household purposes.

For B-Box 2.5~B-Box 10.0 equipment recommended by the installation company must be used. For installation, it must be installed in a location complying with the IP20. Installation in a location that does not comply with the IP20 may cause failure and the product will not be guaranteed for any related accident or damage.

3.2 Safety Guidelines

**CAUTION:**

Li-Ion battery (energy storage unit) inside. During assembling the system, do not intentionally make a short condition between the positive (+) and negative (-) terminals of the battery box with a metallic object.

All work on the B-Box and electrical connections must be carried out by qualified personnel only. B-Box provides a safe source of electrical energy when operated as intended and designed.

Potentially hazardous circumstances such as excessive heat or electrolyte mist may occur under improper operating conditions, damage, misuse and/or abuse. The following safety precautions and the warning messages described in this section must be observed. If any of the following precautions are not

fully understood, or if you have any questions, contact After service for guidance. The Safety Section may not include all regulations for your locale; personnel working with B-Box must review applicable federal, state and local regulations as well as the industry standards regarding this product.

 **CAUTION:**

When transport the B-Box, remove the battery from the B-Box system, repacking the battery and cabinet separately and then transport.

4 Product Overview

4.1 Product Introduction

BYD battery box series products B-Box2.5~B-Box10.0 as the energy storage parts can be used in off-grid & on-grid energy storage system.

It is recommended not to use this device for other than the purpose described in this guidance. The substitute use of this product, random change, and use of components other than sold or recommended by BYD will nullify the product guarantee. It also support parallel connection between B-Box with maximum number is 8, the total capacity can reaches to 80Kwh.

The system is easy for installation and maintenance.



4.2 Identifying the Product

The Type Label describe the product identity and attached on the product. For safe usage, the user must be well-informed of the contents in the Type Label. The Type Label includes:

Product Name:

Product Type (Model) :

Serial Number (Serial No.) :

Device-specific characteristics :

Certification marks :

5 System Installation

5.1 Installation notice

- a) Before installation, check the battery open circuit voltage.
- b) Battery installation location should be away from heat and avoid produce spark. The safety distance should be above than 0.5m.
- c) Battery installing connecting cables should be as short as possible, to prevent excessive line pressure drop.
- d) Batteries with different capacity, different P/N or different manufactures are not allowed for connection.
- e) Before conducting the battery, the battery positive and negative poles need to be carefully checked as well to ensure correct installation.
- f) The mounting floor should be horizontal.

5.2 Package information and system configuration list

The cabinet and battery are packaged separately with cartons, the components are taken along with the cabinet or battery packing , before installation, installer should read the system configuration list.



Cabinet



B-Plus2.5 (U3A1-50P-A)

5.2.1 Configuration list

Please install B-BOX2.5~B-BOX 10 according to table1.

Table 1 Basic configuration list

	B-BOX 2.5	B-BOX 2.5		B-BOX 2.5	B-BOX 2.5
System Capacity	2.5Kwh	2.5Kwh		2.5Kwh	2.5Kwh
System cabinet	1	1		1	1
B-Plus2.5	1	2		3	4
universal wheels	2	2		2	2
Locating wheels	2	2		2	
User manual	1	1		1	1
Positive cable	2	2		2	2
Negative cable	2	2		2	2
Communicate cable	3	3		3	3
Grounded cable	3	3		3	3

If install more than 1 cabinets, please install according to table2.

Notice: When check configuration list, please pay attention to the cabinet label, system cabinet is different from battery cabinet, the table is only used for extend battery.

Table 2 Extend configuration list

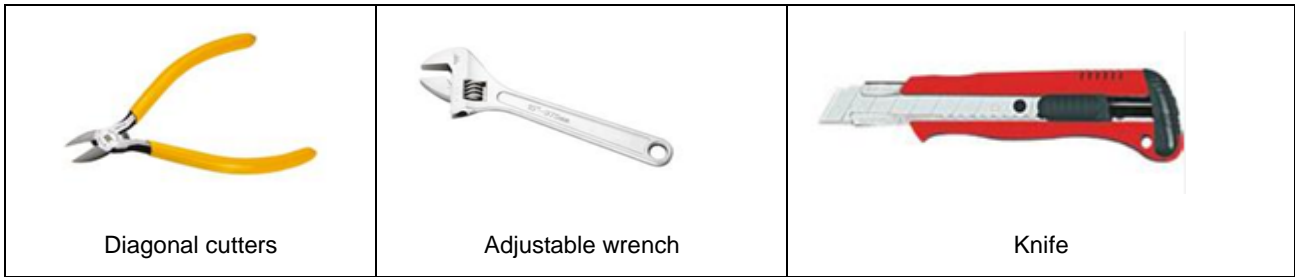
No.	System Capacity	System cabinet Quantity	Battery cabinet quantity	B-Plus2.5 quantity
1	12.5Kwh	1	1	5
2	15.0Kwh	1	1	6
3	17.5Kwh	1	1	7
4	20.0Kwh	1	1	8
5	22.5Kwh	1	2	9
6	25.0Kwh	1	2	10
7	27.5Kwh	1	2	11
8	30.0Kwh	1	2	12
9	32.5Kwh	1	3	13

10	35.0Kwh	1	3	14
11	37.5Kwh	1	3	15
12	40.0Kwh	1	3	16
13	42.5Kwh	1	4	17
14	45.0Kwh	1	4	18
15	47.5Kwh	1	4	19
16	50.0Kwh	1	4	20
17	52.5Kwh	1	5	21
18	55.0Kwh	1	5	22
19	57.5Kwh	1	5	23
20	60.0Kwh	1	5	24
21	62.5Kwh	1	6	25
22	65.0Kwh	1	6	26
23	67.5Kwh	1	6	27
24	70.0Kwh	1	6	28
25	72.5Kwh	1	7	29
26	75.0Kwh	1	7	30
27	77.5Kwh	1	7	31
28	80.0Kwh	1	7	32

5.2.2 Installation Tools

Table 3 Installation tools list







 <p>Cross screwdriver M3~M6</p>	 <p>Flat tip screwdriver M3~M6</p>	 <p>Sockets spanner</p>
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5.2.3 Part list

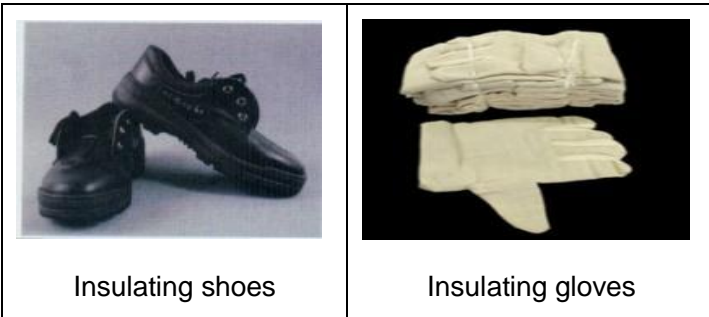
Remark: This part list is only for one system cabinet.

Table 4 Part list

No.	Item Description	Qty	Purpose	Picture
1	Locating wheels	2	Make cabinet moveable	
2	Universal wheels	2	Make cabinet moveable	
3	Screw M6	16	Fixed wheels with screw	
4	Positive cable	1	Connection battery P+	
5	Negative cable	1	Connection battery P-	
6	GND	3	Connect Battery grounded terminal	

7	Communication cable	3	Connection battery COM	
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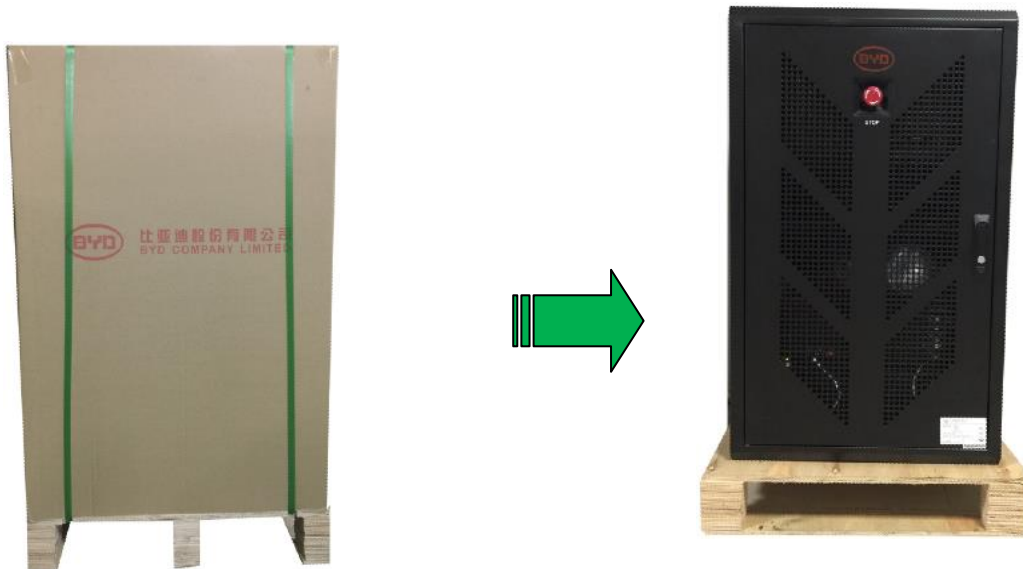
5.2.4 Personal protective equipment

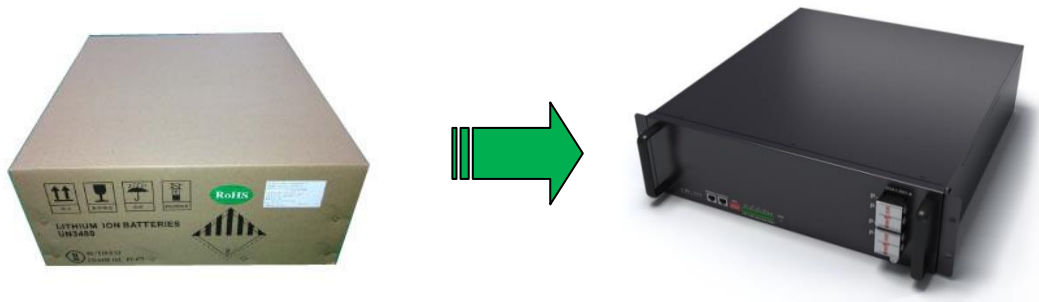


5.3 Installation

5.3.1 Open the package

Tools using: Knife

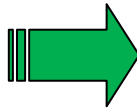




5.3.2 Disassemble the pallet

- a) Lay down the cabinet, in order to prevent scratches cabinets, please do protection on the ground.
- b) Take away the four screws which installed on the root of the pallet.
- c) Take away the pallet.

Tools using: Adjustable Spanner

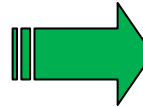
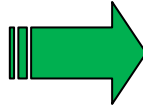


Spanner

5.3.3 Wheels installation

Install the 2pcs universal wheels near to the door, Install the 2pcs locating wheels near to the back panel.

Tools using: M8 socket screwdriver.



5.3.4 Battery installation

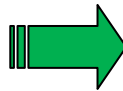
Tools using: Cross screwdriver

- a) Move the cabinet to the installation place, prepare to install battery.
- b) Before installation, please lock the wheels, because cabinet move will affect the installation.



Press the "OFF" side down.

c) Open the door, take away the screws of the battery storey and front panel.

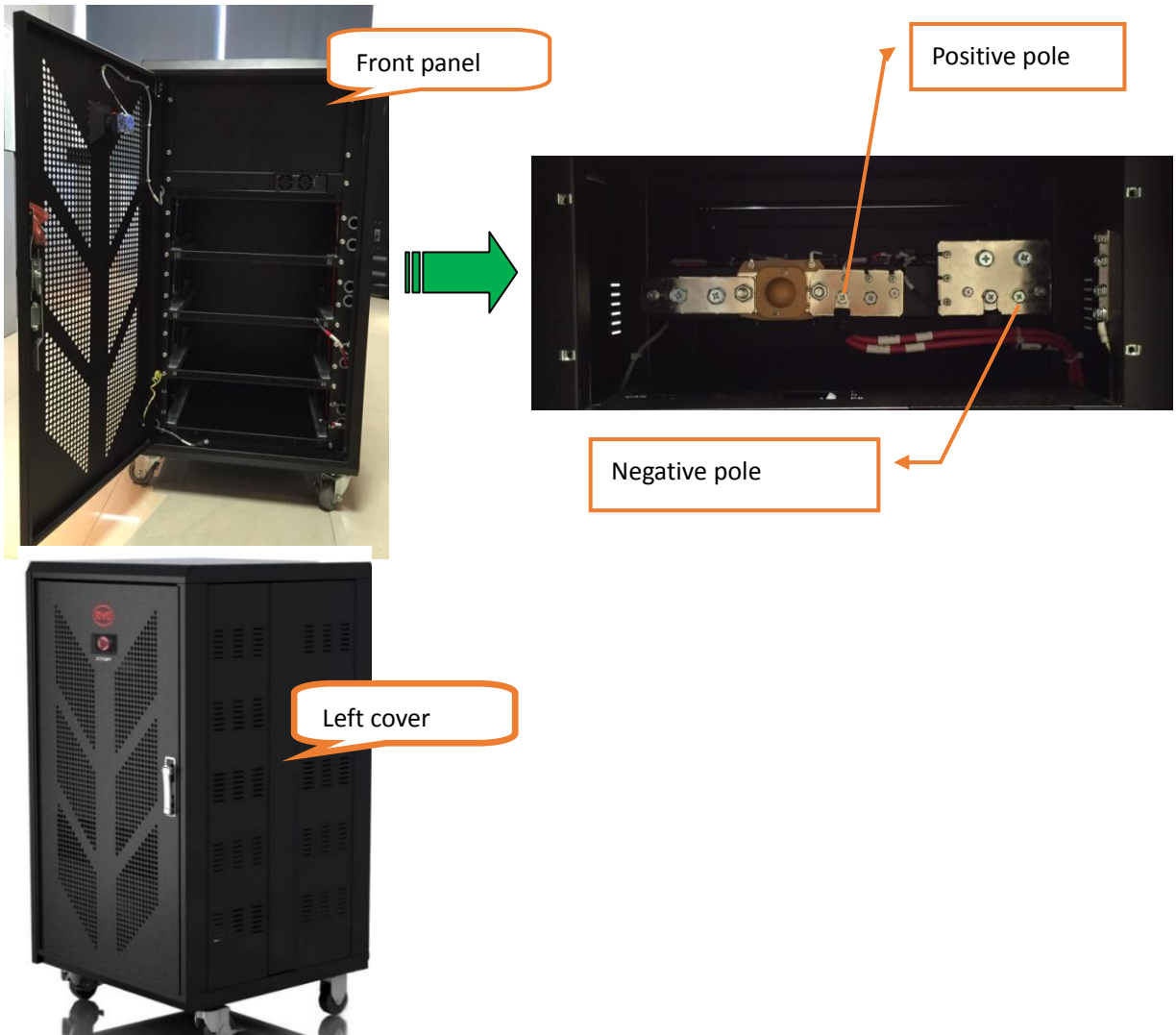


Take off all the screws.

d) Take off the screws of left cover which used to fix the cover with cabinet.



e) Take off front cover and left panel.

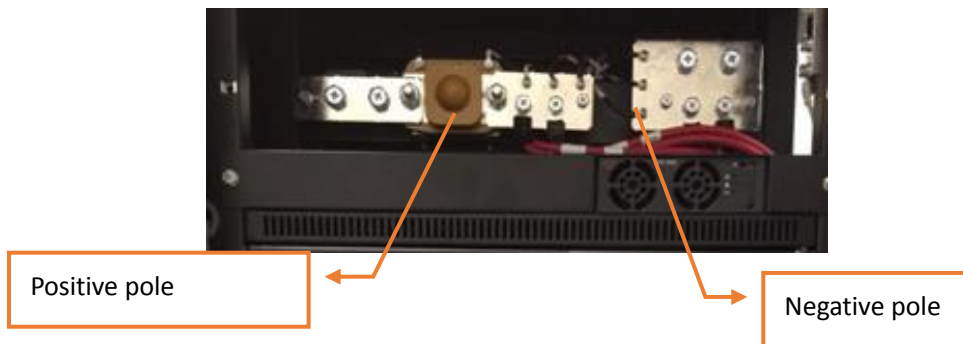


Before shipment, manufacturer had finished B-BOX 5.0 system power cables connection, if user need to

add battery, please connect cables with another positive and negative pole.

Note:

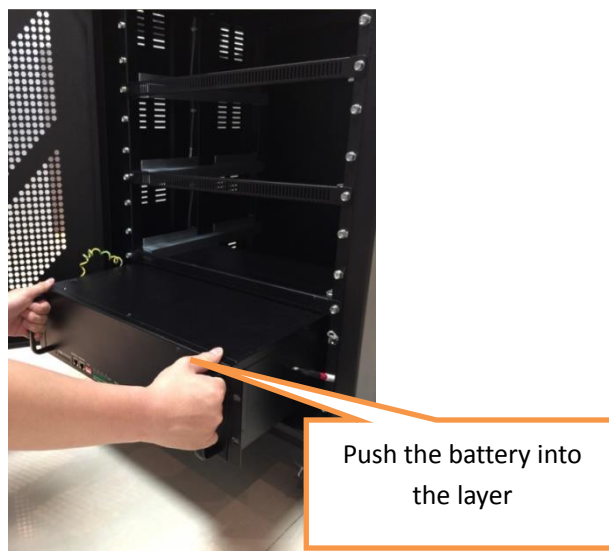
- ✧ B-BOX 7.5: Connect 1pcs positive cable to the positive pole, and 1pcs negative cable to the negative pole.
- ✧ B-BOX 10.0: Connect 2pcs positive cable to the positive pole, and 2pcs negative cable to the negative pole.



f) Push the battery into the cabinet in correct number according configuration list.

Note:

Each layer only can install one battery. Installer should install the battery from the bottom layer to the top layer.



Operator should install batteries according to table5:

Table 5 : Contrast list of battery

No.	Type	Quantity of B-PLUS 2.5
-----	------	------------------------

1	B-BOX 2.5	1 pcs
2	B-BOX 5.0	2 pcs
3	B-BOX 7.5	3 pcs
4	B-BOX 10.0	4 pcs

Below pictures show battery installation and cable tracing appearance of the B-BOX 10.0.

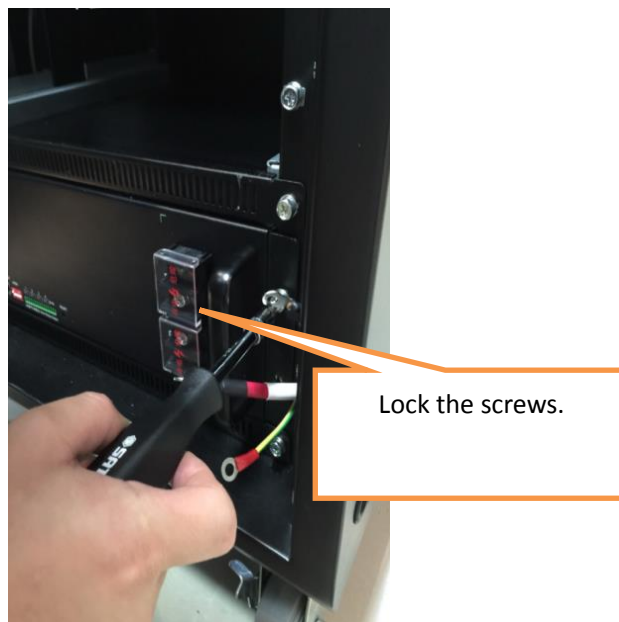


Battery installation



Cable tracing

g) Lock the screws again.



5.3.5 Battery connection

Tools using: Cross screwdriver.



Attention: The battery can only in parallel connection.



Warning: Do not short connect, reverse polarity connect or connect in series

Take care of insulation.

- a) Connect the negative cable (Black cable from cabinet) to the “P-“ of battery.



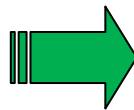
- b) Connect the positive cable (Red cable from cabinet) to the “P+“ of battery.



- c) Connect the grounded cable (Yellow cable from cabinet) to the GND pole of battery.



d) Connect the communication cable (Gray cable from cabinet) to the RS485 pole of battery.



Repeat the above steps of positive and negative cables if install more batteries.

When install more than 1pcs battery, should using communication cables do connections between batteries, as shown in below picture:



Communication cable connection

5.3.6 Battery address set up

After install battery, installer should setup battery address by “ADDR” switch.

“ADDR” switch introduction:

Function: Communicate between battery and BMU, BMU will communication with external equipments when using CAN communication.

Each DIP switch definition:

There are 6 bit switches, keep the switch on down side means”0”, turn up the switch to “ON” means “1”.



Address: 000000



Address:100000

For example: when two battery in using, “ADDR” setting:



No.1 battery address:100000



No.2 battery address:010000

Address setting please according to the configuration list in **Appendix1**.

5.3.7 Connect to external equipment

Open the front cover, there are total input and output bus-bar, CAN communication terminal, grounded bus-bar and AC input terminal.

Grounded bar: connect battery grounded cable to grounded bus-bar.

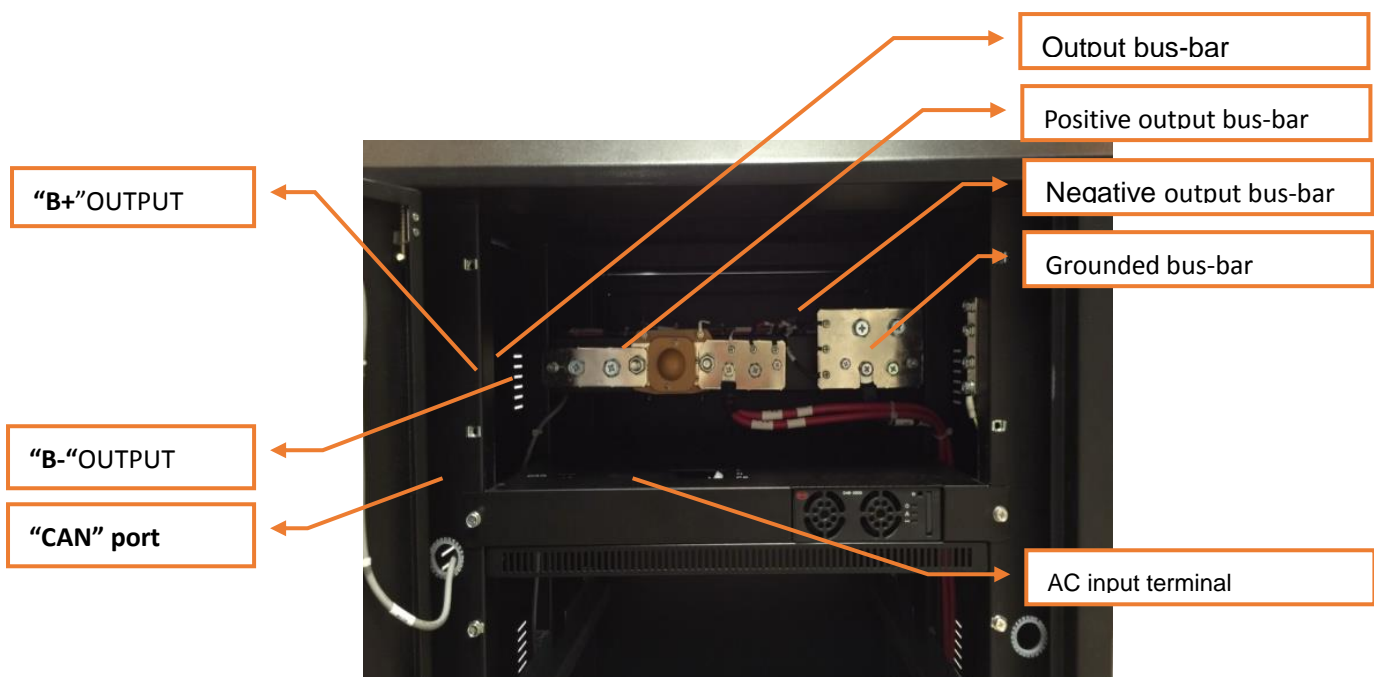
Positive output bus-bar: connect all of the battery positive cables.

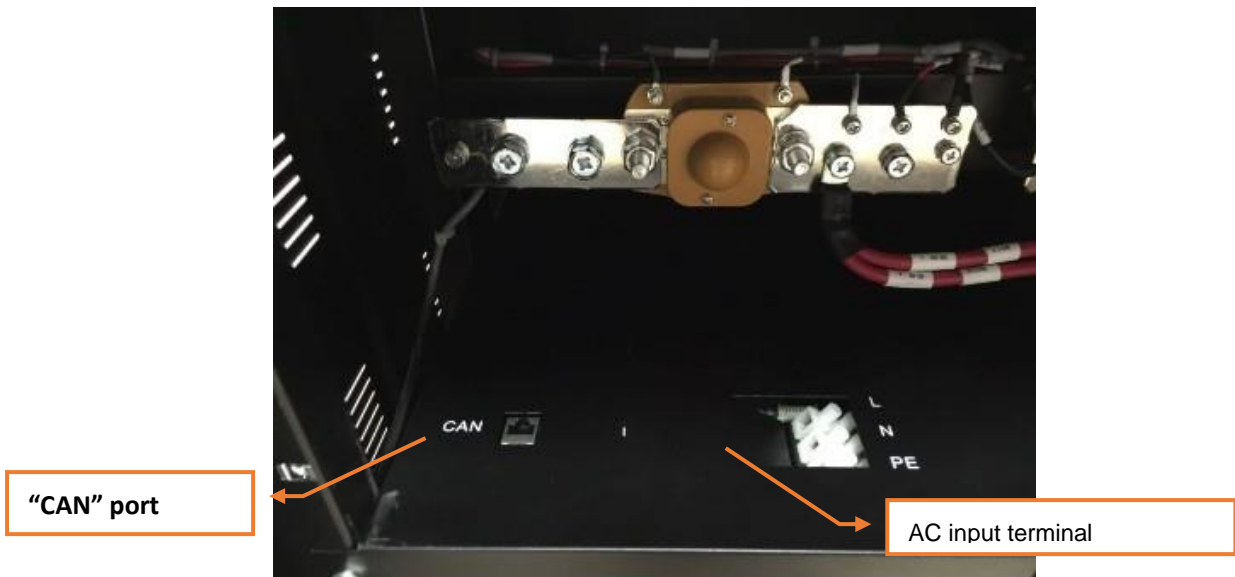
Negative output bus-bar: connect all of the battery Negative cables.

Output bus-bar: Connect with DC input cable.

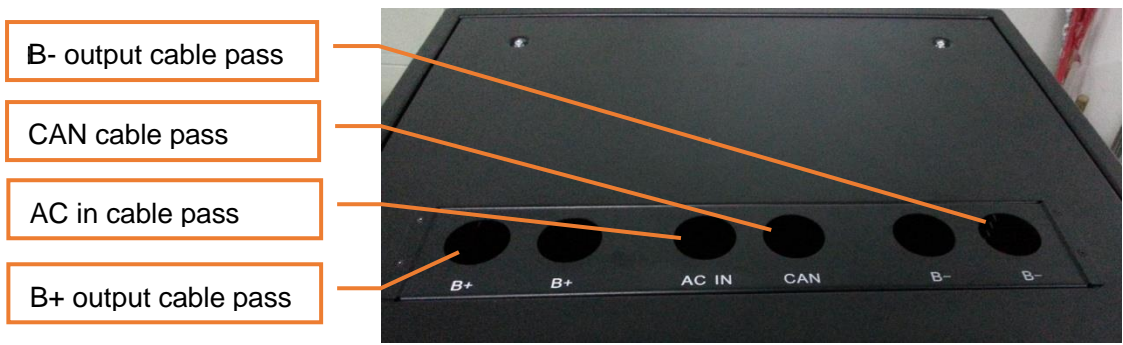
“CAN” port: connect with external equipment when using “CAN” communication.

AC input terminal: Connect with AC input cable.





Top cover introduction:



6. Environment parameters

Operating environment parameters

No.	Item	Requirement			Unit	Remark
		Min.	Typical	Max.		
1	Discharging temperature	-20	25	60	°C	
2	Charging temperature	-10	25	60	°C	
3	Relative humidity	5		95	%	

4	Absolute humidity	0.26		25	g/m^3	
5	Elevation	-	2000	-	m	
7	IP level	20				
8	Storage and Temperature(shutdown mode)	When storage temperature is 25°C, should charge-discharge battery at least one cycle every 12 months or charge battery according to the “ NEXT CHARGE ” label in package.				
		When storage temperature is 35°C, should charge-discharge battery at least one cycle every 6 months.				
		When storage temperature is 45°C, should charge-discharge battery at least one cycle every 3 months.				
9	Normal Maintenance(shutdown mode)	Stored at room temperature, should charge-discharge battery at least one cycle every 12 months.				
10	Low voltage maintenance	When storage temperature is 25°C, battery exit the system automatic cause by low voltage protection, need to charge the battery within 30days.				
		When storage temperature is 45°C, battery exit the system automatic cause by low voltage protection, need to charge the battery within 7days.				

7. Power ON

7.1 Activity the system

There two type operations can activity the system:

Notice :

- a) Operator should make sure of the emergency switch does not on “PUSH INTO” status.
- b) When finished the installation, operator should check the cable connection strictly till make sure of the cable connection is hard then can activity the system.

Grid activity:

The system will run automatically when external power input.

Handle activity:

Press the “RESET” on front panel, then the system will running.

Once the system activity, the LED lights will be in different status according battery status as below:

Table 13 Alarm information and solution

Item	Status	Indicate
1	Charging	Green light is blink, Red light is OFF
2	Charge protection	Green light is ON, Red light is blink
3	Fully charged	Green light is ON, Red light is OFF. ALL SOC lights are ON
4	Failure mode	Green light is OFF, Red light is ON. ALL SOC lights are OFF

7.2 Battery status indicate(LED display)

The LEDs on panel could display different case when battery is in different working status, please refer to table 10.

Table 10 LED display explaining

No.	RUN	ALARM	ERROR	Indication
1	OFF	OFF	OFF	Battery module is on unactivated status(Shutdown)
2	Slow flash			Battery module is on charging status and don't have any warning.
3	Fast Flash			Battery module is on discharging status and don't have any warning
4	On			Battery module is fully charged or on idle status and don't have any warning.
5	OFF	ON		Battery module is on protection status.
6	OFF	Slow flash		Battery module is trying to power off.
7	ON	ON		Battery module need to be calibrated.
8	OFF	OFF	ON	Battery module is on failure status

Remark:

Sparkle: Indicator light is on and off every 1s (0.5Hz).

Flash: indicator light is on and off every 0.25s(2HZ)

Capacity LED indicator light (the current capacity light) only sparkles with 0.5HZ when it's being charged, and other condition is normally on.

Table 11 SOC status and indicate

Item	Status	Indicate
1	four lights are all normally on	Capacity is 100%-75% (including)
2	the last three lights are normally on	Capacity is 74%-50% (including)
3	the last two lights are normally on	Capacity is 49%-25% (including)
4	the last one light is normally on	Capacity is 24%-0% (including)

7.3 Alarm information and solution

If there are issues exist, such as over-voltage protection or over-current protection, the installer could realize the problems through below suggestions, please refer to table 10:

Table 10 Alarm information and solution

Status	Alarm info.	LED display
Charging	Pack over-voltage	ALM LED on
	Over-current	ALM LED on
	Over-temp.	ALM LED on
Discharging	Over-current	ALM LED on
	Over-temp.	ALM LED on
	Batteries over-discharge	ALM LED on
	Cell over-discharge	ALM LED on

When under voltage warning happens on battery, ALM LED will be on, and battery will exit system 1 minute later.

7.4 Communication failure

If there is a failure on RS485 communication, it could be solved by below steps:

Check the communication circuit (include cables);

Reset address switch;

Exchange the address;

7.5 Other failure

If the battery could charge or discharge due to other failures, should contact with the after service center.

Caution: Only authorized professional engineer could repair the battery.

Appendix 1 :

Address setting configuration list (from 1-32 batteries):

Battery No.	Address	Battery No.	Address	Battery No.	Address	Battery No.	Address
1	100000	2	010000	3	110000	4	001000
5	101000	6	011000	7	111000	8	000100
9	100100	10	010100	11	110100	12	001100
13	101100	14	011100	15	111100	16	000010
17	100010	18	010010	19	110010	20	001010
21	101010	22	011010	23	111010	24	000110
25	100110	26	010110	27	110110	28	001110
29	101110	30	011110	31	111110	2	000001