



GUANGZHOU SANJING ELECTRIC CO., LTD

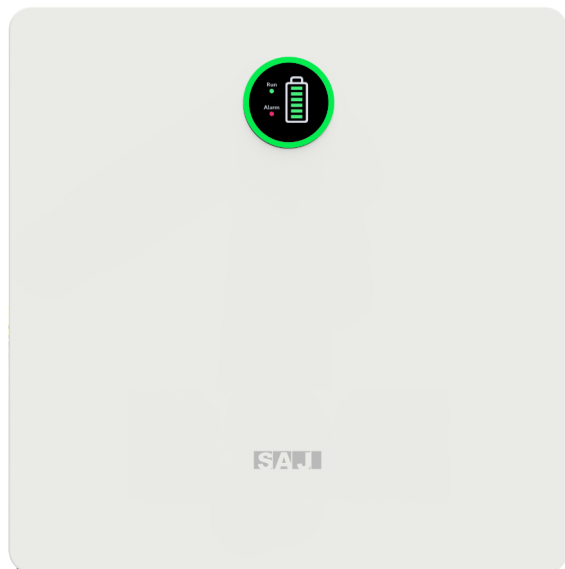


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V2.0



B3-5.0-LV



B3-5.0-LV Operation Manual

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TECHNICAL DATA

NOTE

Operating current derating according to cell voltage and battery temperature.



Performance	
Nominal Voltage	51.2 Vdc
Nominal Capacity	100Ah
Battery Energy	5120 Wh
Operating Voltage	44.8-56.16Vdc
Nominal Charge/ Discharge Current	50A
Nominal Charge/ Discharge Power	2560W
Max Charge/ Discharge Current	100A
Max Charge/ Discharge Power	5120W
Short Circuit Current	350A/5mS
Communication	
Display	SOC status indicator, LED indicator
Communication	RS232, RS485, CAN
General Specification	
Dimension(W×D×Hmm)	494X500X145mm
Weight (Kg)	43kg±2
Installation	Floor stand or Wall mounted
Charging Temperature Range	0°C to +55°C
Discharge Temperature Range	-20°C to +60°C
Operating humidity	≤95%RH
Max Operating Altitude	≤2000m
IP Rating	IP21
Cell Technology	6000 Cycles
Scalability	Max 15 batteries in parallel
Certification	
IEC 61000, IEC62619, UN38.3	

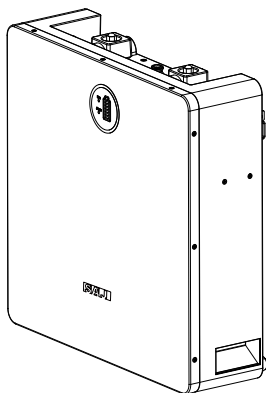
1. Test conditions: 80% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C.

2. Charge/discharge derating occurs when the operating temperature from -10°C to 5°C & 45°C to 55°C.

3. Condition apply. Refer to B3-5.0-LV Warranty Letter.

PRODUCT OVERVIEW

2.1 Brief Introduction



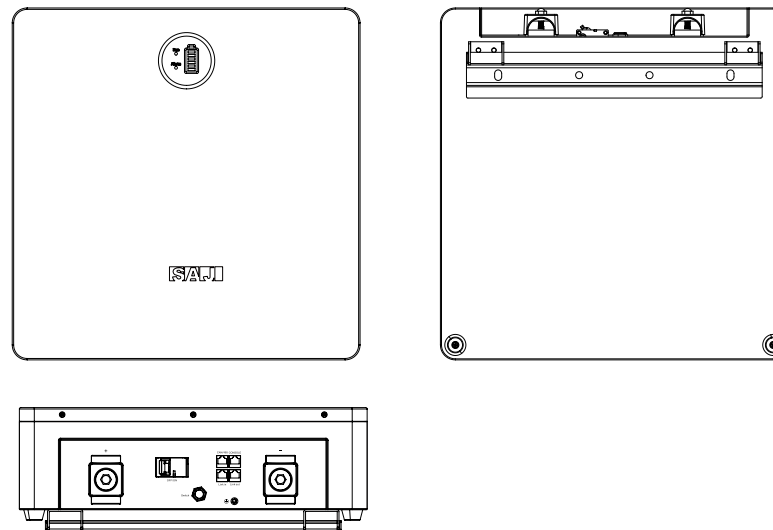
PRODUCT OVERVIEW

B3-5.0-LV is a lithium battery with an operating voltage range between 44.8-56.16V . It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **B3-5.0-LV is not suitable for supporting life-sustaining medical devices.**

B3-5.0-LV has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. Besides that, BMS can balance cells charging to extend cycle life. BMS has protection functions including over-discharge, over-charge, over-current and high/low temperature; the system can automatically manage charge state, discharge state and balance state.

Multiple B3-5.0-LV can be connected in parallel to expand capacity and power, B3-5.0-LV can be connected in parallel at most.

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1. Switch ON

Turn on a single B3-5.0-LV ,turn on the air switch, then press the circular weak current switch (more than 3 seconds) on / off button, the LED flashes and the battery works normally. L1 to L6 display the battery SOC,L7/L8 to indicate the battery status.

For multiple B3-5.0-LVin parallel, switch ON circular weak current switch on all batteries, long press (more than 3 seconds) ON/OFF button of MASTER battery, LED will flash. battery system will automatically encode and assign ID to each slave battery, then battery system will operate normally.

2. Switch OFF

Press the Circular weak current switch of the master pack for more than 3 seconds and then release the button. When all slave pack are closed, the master pack will be closed (sleep mode). For a single B3-5.0-LV, turn off the Circular weak current switch. For multiple B3-5.0-LV in parallel, turn off the Circular weak current switch on the main battery first. Then turn off the Circular weak current switch on all subordinate batteries

2.2.2 LED Indicator Definition

Note:

flash 1 - 0.25s light / 3.75s off

flash 2 - 0.5s light / 0.5s off

flash 3 - 0.5s light / 1.5s off

LED Indicators Instructions

Status		RUN	ALM	Battery Level Indicator						Descriptions
		L8	L7	L6	L5	L4	L3	L2	L1	
Shut down		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby		Flash 1	OFF	According to the battery level						Indicates Standby
Charging	Normal	Light	OFF	According to the battery level						The highest capacity indicator LED flashes(flash 2) others lighting
	Full Charged	Light	OFF	Light	Light	Light	Light	Light	Light	Turn to standby status when charger off
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Flash 3	OFF	According to the battery level						
	UVP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Fault		OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and Discharging

Charging Battery Level Indicators Instructions

Status		Charging							
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
									
Battery Level (%)	0 ~ 17%	Light	OFF	OFF	OFF	OFF	OFF	OFF	Flash 2
	18 ~33%			OFF	OFF	OFF	OFF	Flash 2	Light
	34 ~50%			OFF	OFF	OFF	Flash 2	Light	Light
	51 ~66%			OFF	OFF	Flash 2	Light	Light	Light
	67 ~83%			OFF	Flash 2	Light	Light	Light	Light
	84 ~100%			Flash 2	Light	Light	Light	Light	Light
	Full Charged			Light	Light	Light	Light	Light	Light

Discharging Battery Level Indicators Instructions

Status		Discharge							
Battery Level Indicator		L8	L7	L6	L5	L4	L3	L2	L1
Battery Level (%)	0 ~ 17%	Flash 3	OFF	OFF	OFF	OFF	OFF	OFF	Light
	18 ~ 33%			OFF	OFF	OFF	OFF	Light	Light
	34 ~ 50%			OFF	OFF	OFF	Light	Light	Light
	51 ~ 66%			OFF	OFF	Light	Light	Light	Light
	67 ~ 83%			OFF	Light	Light	Light	Light	Light
	84 ~ 100%			Light	Light	Light	Light	Light	Light

2.2.3 CAN / RS485 Port

CAN / RS485 Communication Terminal (RJ45 port), connect to inverter, follow CAN / RS485 protocol.

PIN	Definition
Pin 1、Pin 8	RS485-B (to PCS, reserved)
Pin 2、Pin 7	RS485-A (to PCS, reserved)
Pin 3	NC
Pin 4	CANH (to PCS)
Pin 5	CANL (to PCS)
Pin 6	GND

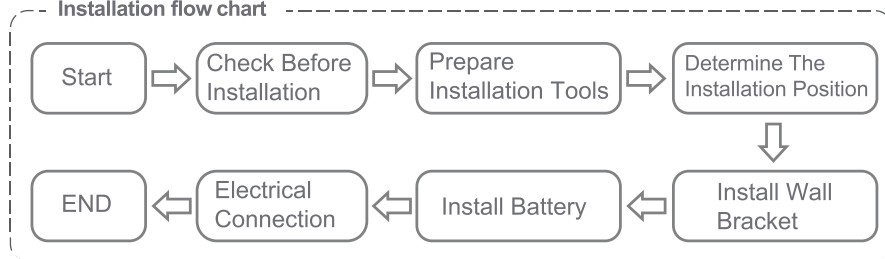
2.2.4 RS232 Port

RS232 Communication Terminal (RJ45 port) follow RS232 protocol, for manufacturer or professional engineer to debug or service.

PIN	Definition
Pin 1、Pin 8	GND
Pin 2、Pin 7	RS232_TX
Pin 3、Pin 6	RS232_RX
Pin 4、Pin 5	NC

INSTALLATION GUIDE

Installation flow chart



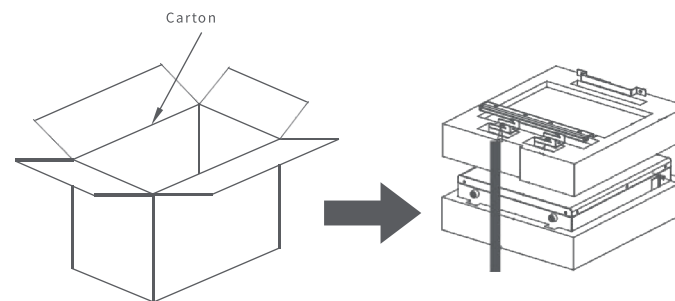
3.1 Checking Before Installation

3.1.1 Checking Outer Packing Materials

Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the battery. Checking the surface of packing materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the dealer as soon as possible. You are advised to remove the packing materials within 24 hours before installing the battery.

3.1.2 Checking Deliverables

After unpacking the battery, check whether deliverables are intact and complete. If any damage is found or any component is missed, contact the dealer. The below table shows the components and mechanical parts that should be delivered.



No.	Pictures of accessories	2V800J01	Uses	No.	Pictures of accessories	2V800J01	Uses
1		1	Battery box	8		2	Foot pads
2		1	Wall mounting bracket	9		4	RJ45 Crystal head
3		2	Hanging bracket	10		2	Communication network cable
4		8	Fixed box	11		2	Desiccant
5		4	Lock Wall Pendant	12		1	User manual
6		1	Grounding screw	13		1	Outgoing Inspection Report
7		2	Foot cushion screws	14		1	Power wire, one end SC25-8, AWG4#PVC wire 3512, L=1500mm, black;
				15		1	Power wire, one end SC25-8, AWG4#PVC wire 3512, L=1500mm, red;

3.2 Tools

Tools			
Installation	Knife 	Measuring tape 	Socket wrench (10/16mm) 
	Rubber mallet 	Cross Screwdriver 	Hammer drill (10mm) 
Protection	ESD gloves 	Safety goggles 	Anti-dust respirator 
	Safety shoes 		

3.3 Installation requirements

3.3.1 Installation environment requirements

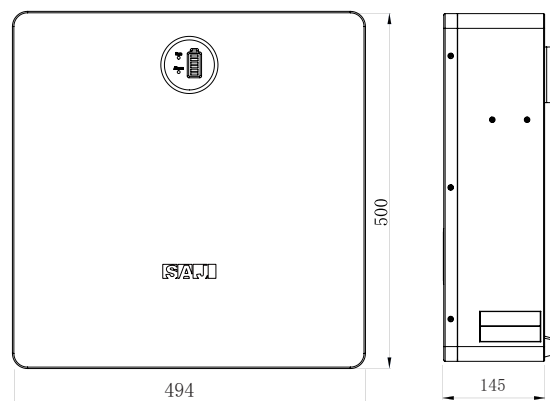
- Install the battery in the indoor environment.
- Place battery in secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Do not expose the battery to direct sunlight.

3.3.2 Installation carrier requirements

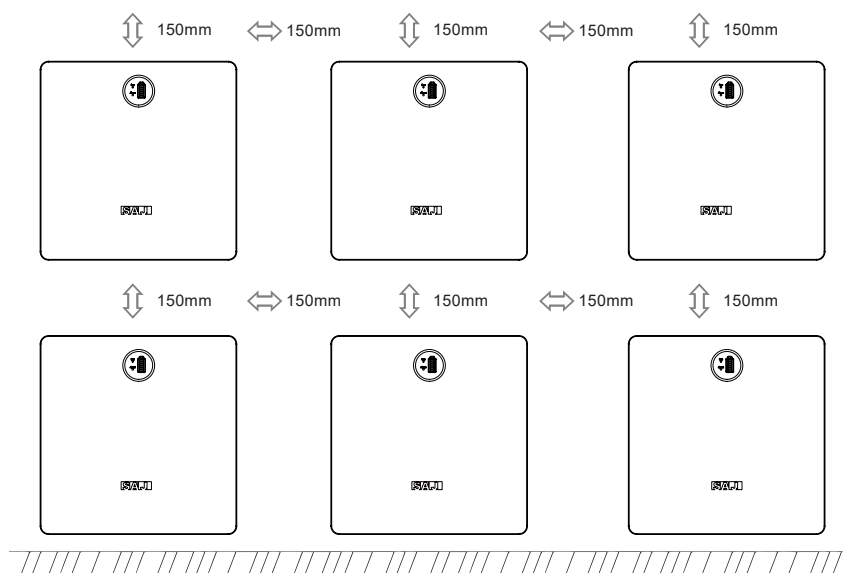
- Only mount battery on fire resistant building. Do not install batteries on flammable buildings.
- Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

3.4 Installation Instructions

3.4.1 Dimensions



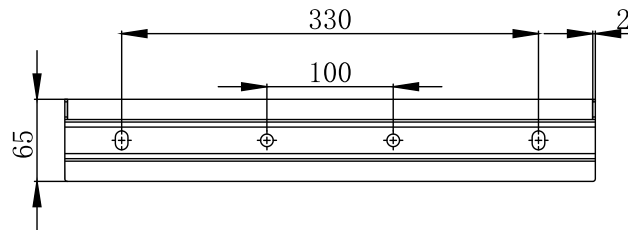
Minimum mounting distance between battery pack and equipment:



3.4.2 Installation Procedure

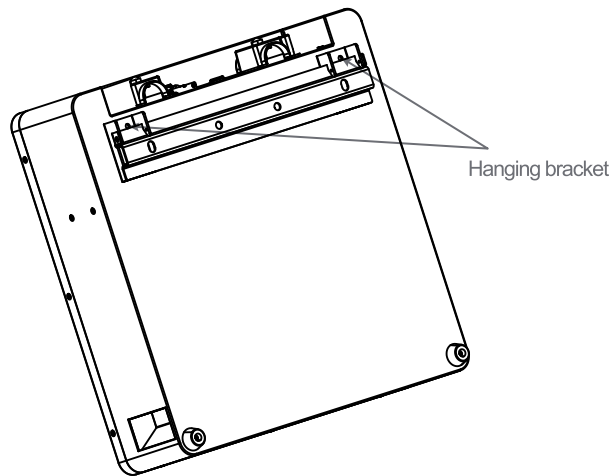
STEP 1

Drill the hole with an 10mm drill bit as follows and fix the wall bracket to the wall.



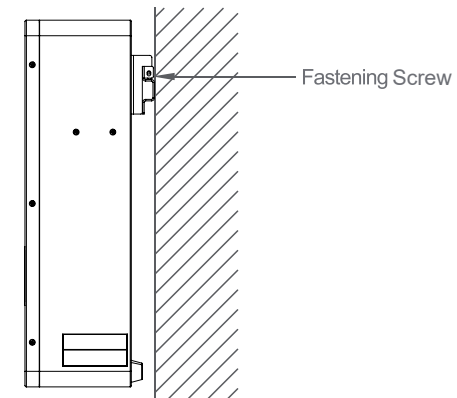
STEP 2

Install the hanging bracket.



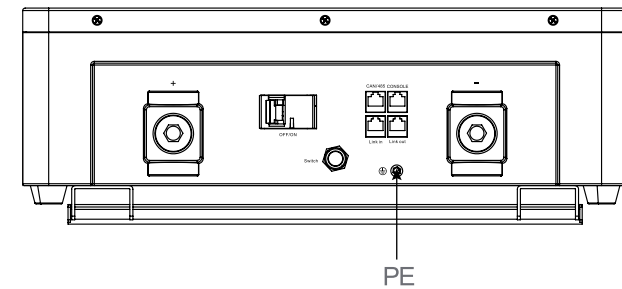
STEP 3

Hang B3-5.0-LV on the wall bracket and tighten it.



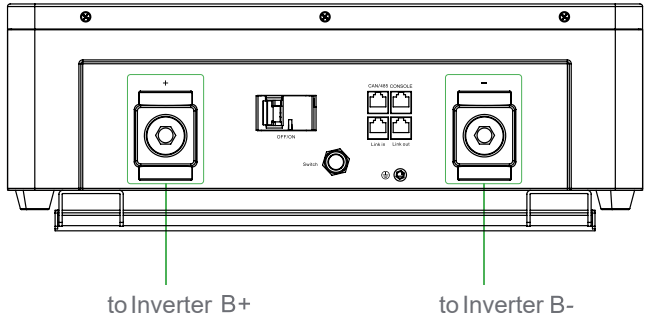
STEP 4

Connect to ground.



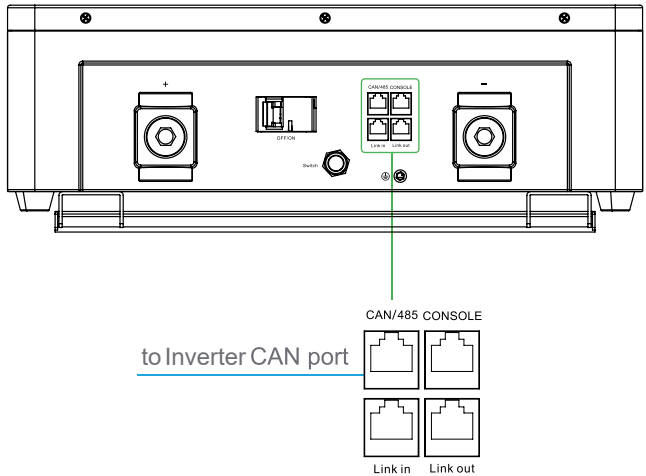
STEP 5

Connect power cable



STEP 6

Connect communication cable.

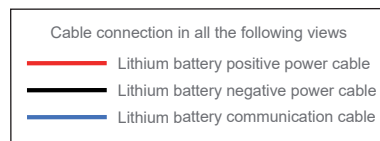
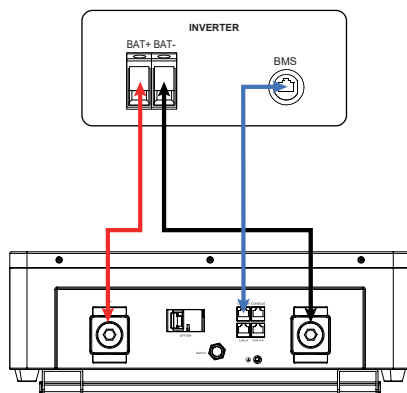


STEP 7

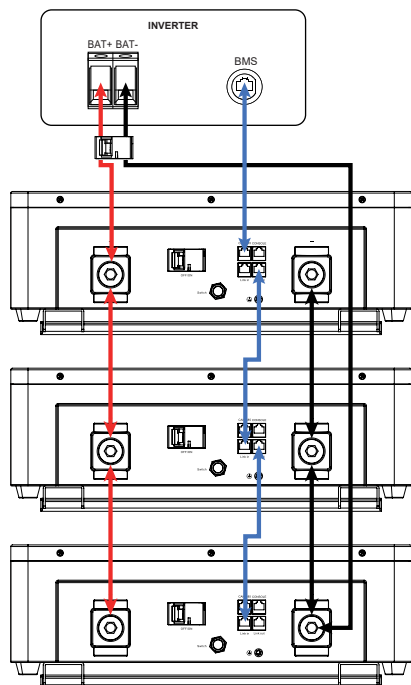
1. Load power exceeding 5kW requires at least 2 units Parallel operation.
2. The maximum number of Number of parallel machines is 15. The power of the inverter selected for the battery module must be less than the maximum output power of the battery module.

Parallel operation	Load power	Connection mode
1unit	Below 5kW	7.1
2-15units	Below 5kW	7.2
2-15units	Over 5kW	7.3

 Danger	Ensure power cables are installed with the correct polarity. A dangerous situation may arise if the polarities are reversed.
 Danger	Do not create a short circuit between the positive and negative terminals of the battery. Ensure the polarity is correct during installation.
 Warning	Incorrect communication cable connection will cause the battery system to operate in unexpected ways which may lead to system failure.

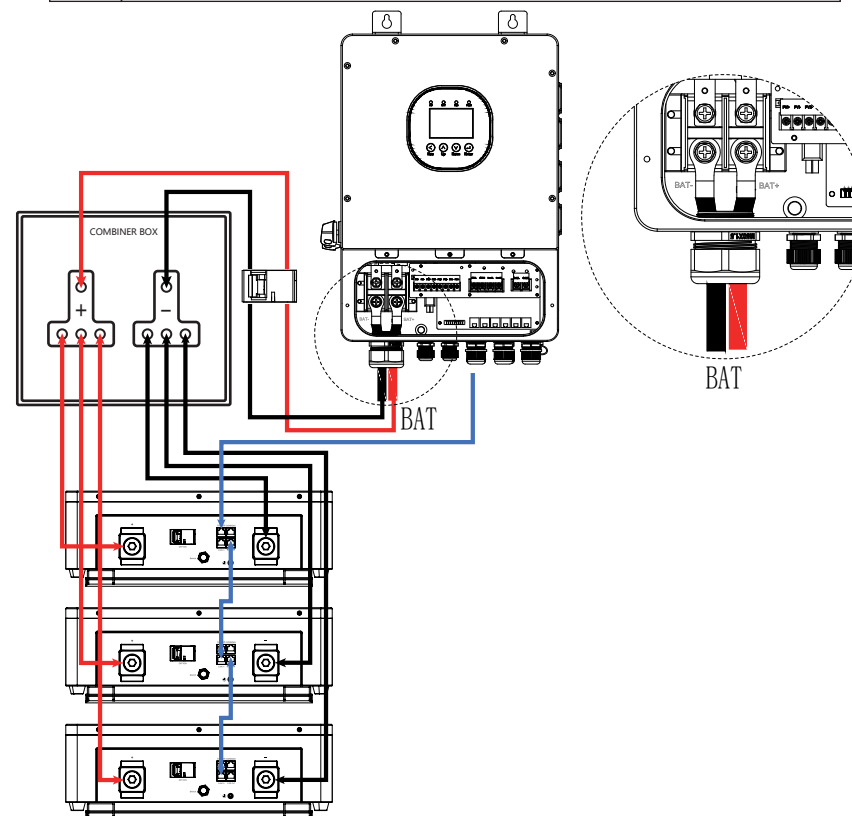


7.1 **Warning**
Wiring method of 1 unit module with power below 5kW



7.2 **Warning**
For a 2-unit to 15-unit layer module with power below 5 kW.
(The number of units in the middle of the diagram is omitted. The lengths of the two positive and negative pole connecting lines must be the same.
Recommendation:
To ensure overcurrent protection, a 125A-rated circuit breaker shall be installed in the power cable harness between the battery pack and the inverter. For systems utilizing SAJ's 10kW inverter in this parallel configuration, the charge/discharge current must be explicitly limited to ≤100A within the inverter's battery parameter settings.

7.3 **Warning**
When using an inverter of 10kW or above, the positive and negative ports of each battery must be connected to the combiner cabinet in the wiring method shown in the figure below.
For 2 units -15 units is Over 10kW.
(The number of units in the middle of the diagram is omitted. In order to ensure equal current flow, the length of the positive and negative poles connecting lines must be the same.)
For this parallel connection configuration, when using SAJ's 10kW inverter for battery charging/discharging:
Cable Requirements: The power cable harness between the combiner box and inverter shall use copper cables with: Current-carrying capacity ≥240A, Conductor size ≥2/0 AWG
Protection Requirement: A 250A-rated circuit breaker must be installed to provide overcurrent protection.



04

MAINTENANCE

4.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with temperature range between -10°C ~+45°C, and maintained regularly according to following table with 0.5C (50A) current till 40% SOC after long storage time.

Recharge Conditions When In Storage

Storage Environment Temperature	Relative Humidity of Storage Environment	Storage Time	SOC
Below -10°C	/	prohibit	/
-10~25°C	5%~70%	≤12 months	30%≤SOC≤60%
25~35°C	5%~70%	≤6 months	30%≤SOC≤60%
35~45°C	5%~70%	≤3 months	30%≤SOC≤60%
Above 45°C	/	prohibit	/

4.2 Recharge Requirements When Over Discharged

Over discharged (90% DOD) battery should be recharged according to following table, otherwise over discharged battery will be damaged.

Recharge conditions when battery is over discharged

Storage Environment Temperature	Storage Time	Note
-10~25°C	≤15 days	Battery Pack disconnected from to Inverter
25~35°C	≤7 days	
35~45°C	<12 hours	Battery Pack connected to Inverter