USER MANUAL

BSB-ESS-51.2V-100Ah-HV-Premium

contents

Product system overview

This product is suitable for supporting up to 192 strings of lithium battery packs, and can provide complete overcharge protection, overdischarge protection, overcurrent protection, over-temperature protection, low temperature protection and multi-level alarm mechanism for lithium battery packs, and can communicate with the master controller in real time to upload battery-related data, with battery status and data storage functions. It has RS485 and CAN isolation communication functions

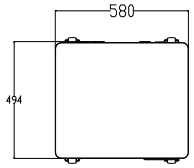
01

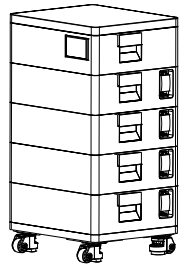
TECHNICAL DATA

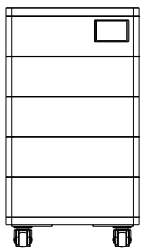
1.1 Product parameters

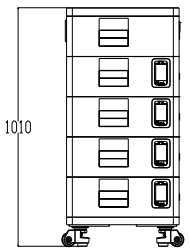
Operating current derating according to cell

Voltage and battery temperature





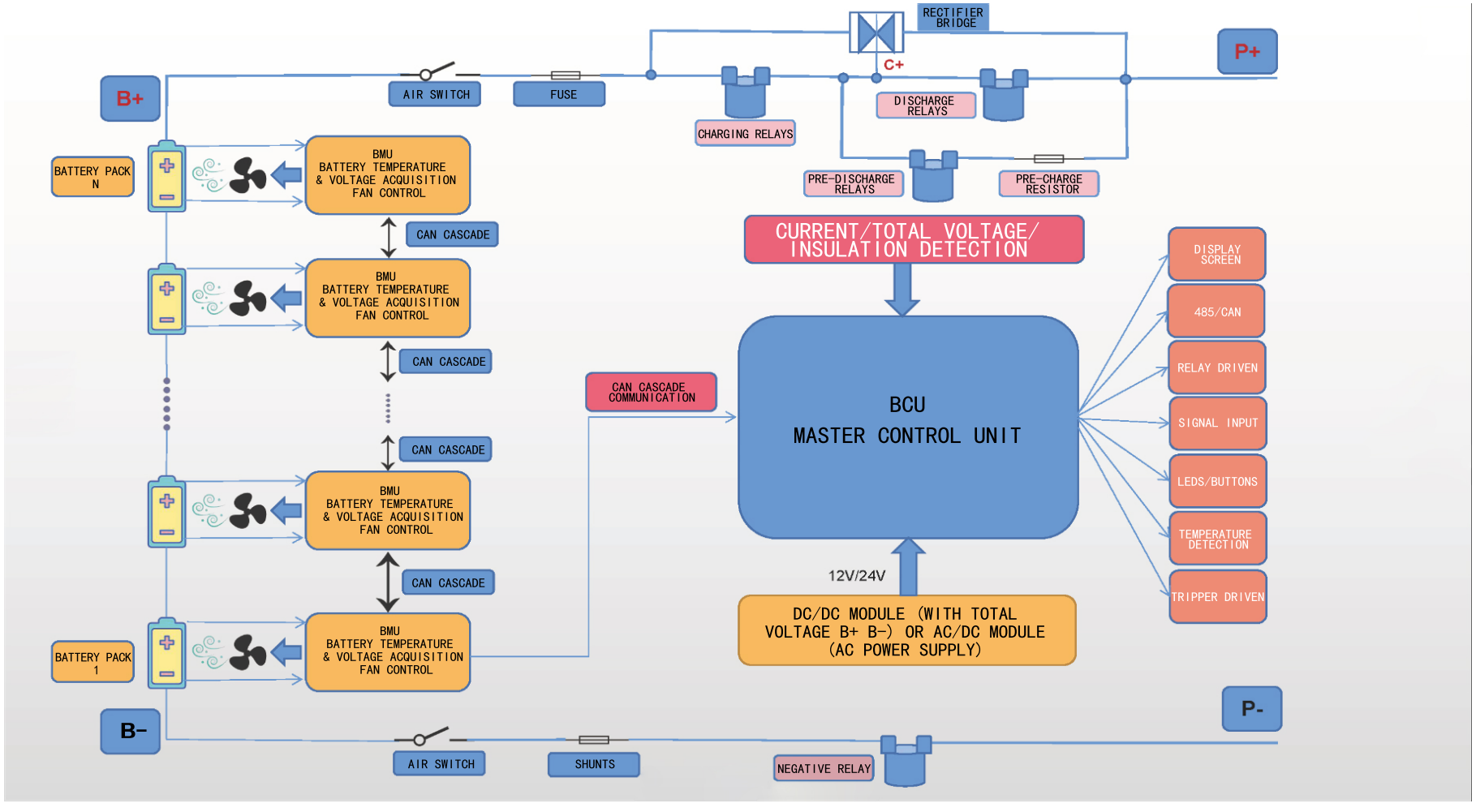




Power supply model	BSB-ESS-51.2V-100Ah-HV-Premium Sing Bsttery Pack	BSB-ESS-51.2V-100Ah-HV-Premium Assembly
Nominal voltage	51.2V	204.8V
Nominal capacity	100Ah/5.12kWh	100Ah/20.48kWh
Charging protection voltage	56.8V	227.2V
Discharge protection voltage	46.4V	185.6V
Recommended charging current	≤50A	≤50A
Maximum charging current	60A	60A
Recommended discharge current	≤50A	≤50A
Maximum discharge current	60A	60A
Battery cycle life	≥6000（25℃±2℃，0.5C charge-discharge，DOD ≥80%)	≥6000（25℃±2℃，0.5C charge-discharge，DOD ≥80%)
Communication mode	RS485/RS232/CAN	RS485/RS232/CAN
Charging temperature	0~55℃	0~55℃
Operating temperature	-20~55℃	-20~55℃
Battery weight	≈56Kg	≈247Kg
Battery size	580*492*200mm (可调整 adjustable)	580*494*1010mm (可调整 adjustable)
certification	MSDS、UN38.8	MSDS、UN38.8
Adaptable inverter (can customized)	**CAN:** **1:ATESS 时代能创2:SOFAR 首航3:INVT_BD 英威腾4:PYLON 派能5:GROWATT 古瑞瓦特6:MEGAREVO 迈格瑞能7:KOYOE_科曜8:G00DWE_固德威9:AFORE_艾伏**	

*可根据需求定制，本产品最终解释权归本公司所有， 如有更改恕不另行通知

1.2 System schematic



1.3 Main control of the main technical parameters

Technical parameters			
Applicable Platforms	614.4V hereinafter		
Supply voltage	12-30V（default24V）		
power consumption	Rated power consumption	Less than 3W	
Total pressure sampling	Sampling range	50~1650V	
	Sampling accuracy	±0.3%FSR	
Current sampling	Sampling range	Within 300A (Default shunt) / Over 300A (Hall)	
	Sampling accuracy	0.5%	
	Sampling period	20ms	
Temperature sampling	Sampling range	-40~125℃	
	Sampling accuracy	±2℃	
	Sampling period	200ms	
	Number of sampling channels	5-way	
Insulation testing	range	0~10MΩ	
	precision	10% above 100K, 15% below 100K, 10K min	
Status estimates	SOC	≤5%	
	SOH	≤10%	
Communication interfaces	CAN-1	Slave cascade (125k~1000kbps), default baud rate: 250K	
	CAN-2	Cluster merging machine (125k ~1000kbps), default baud rate: 500K	
	CAN-3	Connect PCS, baud rate according to the protocol provided by the customer	
	RS485-1	Upper computer (9600~115200bps), default baud rate: 57600	
	RS485-2	Display (9600~115200bps), default baud rate: 9600	
	RS485-3	obligate	
Relay adhesion detection	Fault judgment	CAN matching resistor	exterior
DOH	3 pcs	Auto-encoding	Support/with coded cables

1.4 Set the basic parameters of the main control

serial number	Indicator items			Factory default parameters	yes or no	remark
1	Single high-voltage protection	Level	The first-level alarm voltage of the single overvoltage	3600mV	Yes	Level 1, Level 2 only Do alarms, don't cut Off charge, three levels Cut off the charge
			The first-level alarm delay of the single overvoltage	3.0S	Yes	
			The cell overvoltage level 1 alarm recovery voltage	3500mV	Yes	
			The recovery time of the first-level alarm of the single overvoltage is delayed	2.0S	Yes	
		Level 2	The cell overvoltage level 2 alarm voltage	3650mV	Yes	
			The second-level alarm delay of the single overvoltage	2.0S	Yes	
			The overvoltage of the unit is restored to the voltage of the second-level alarm	3550mV	Yes	
			The recovery delay of the second-level alarm of the single overvoltage	2.0S	Yes	
		Level 3	Three-level protection voltage for single overvoltage	3700mV	Yes	
			Three-level protection delay for single overvoltage	3.0S	Yes	
			The three-level protection of the single overvoltage releases the voltage	3380mV	Yes	
			The three-level protection of the single overvoltage is released from the delay	3.0S	Yes	
	The high-voltage protection of the monomer is released		Discharge discharged	Discharge current >5.0A	The duration is greater than 3S	

2	Single low-voltage protection	Level	The first-level alarm voltage of the single low-voltage	3000mV	Yes	
			The first-level alarm delay of the single low-voltage is delayed	3.0S	Yes	
			The unit low-voltage first-level alarm recovery voltage	3100mV	Yes	
			The recovery time of the cell low-voltage first-level alarm is delayed	2.0S	Yes	
		Level 2	The single low-voltage two-stage alarm voltage	2900mV	Yes	
			The second-level alarm delay of the single low-voltage is delayed	2.0S	Yes	
			The low-voltage secondary alarm recovery voltage of the single unit	3000mV	Yes	
			The recovery time of the second-level alarm of the single low-voltage is delayed	2.0S	Yes	
		Level 3	Single low-voltage three-level protection voltage	2800mV	Yes	
			Single-body low-voltage three-level protection delay	3.0S	Yes	
			The single low-voltage three-level protection release voltage	3000mV	Yes	
			The three-level protection of the single low-voltage is released from the time delay	3.0S	Yes	
	The monomer low-voltage protection is released		I cancel it when there is a charge	Charging current >5.0A	The duration is greater than 3S	
3	Overall high-voltage protection	Level	The overall overvoltage level 1 alarm voltage	(3.6*N)V	Set: (3.6*N)V	
			The overall overvoltage level 1 alarm delay	3.0S	Yes	
			The overall overvoltage level 1 alarm recovery voltage	(3.5*N)V	Set: (3.5*N)V	
			Overvoltage Level 1 alarm recovery delay is delayed	2.0S	Yes	
		Level 2	The overall overvoltage level 2 alarm voltage	(3.65*N)V	Set：(3.65*N)V	
			The overall overvoltage level 2 alarm delay	2.0S	Yes	
			The overall overvoltage level 2 alarm recovery voltage	(3.55*N)V	Set：(3.55*N)V	
			Overvoltage Level 2 alarm recovery delay is delayed	2.0S	Yes	
		Level 3	Overall overvoltage three-level protection voltage	(3.7*N)V	Set：(3.7*N) V	
			Overall overvoltage three-level protection delay	3.0S	Yes	
			The overall overcharge is protected from the three-level protection release voltage	(3.38*N)V	Set：(3.38*N) V	
			Overcharge three-level protection release delay overcharge	3.0S	Yes	
	Overall overvoltage protection is lifted		Discharge discharged	Discharge current >5.0A	The duration is greater than 3S	
4	Total low voltage protection	Level	The overall over-discharge level alarm voltage	(3*N)V	Set：(3*N) V	
			Over-discharge level 1 alarm delay	3.0S	Yes	
			The overall over-discharge level alarm recovery voltage	(3.1*N) V	Set： (3.1*N) V	
			Over-discharge Level 1 alarm recovery delay is overcharged	2.0S	Yes	
		Level 2	The overall overdischarge level 2 alarm voltage	(2.9*N)V	Set：(2.9*N) V	
			Over-discharge Level 2 alarm delay overall	2.0S	Yes	
			Over-discharge Level 2 alarm recovery voltage	(3*N) V	Set： (3*N) V	
			Over-discharge Level 2 alarm recovery delay is overheard	2.0S	Yes	
		Level 3	The overall over-discharge three-level protection voltage	(2.8*N)V	Set：(2.8*N) V	
			Over-discharge three-level protection delay overall	3.0S	Yes	

			The overall over-discharge three-level protection release voltage	(3*N) V	Set: (3*N)V	
			Over-discharge three-level protection is released from the delay	3.0S	Yes	
	The overall over-discharge protection is lifted		I cancel it when there is a charge	Charging current >5.0A	The duration is greater than 3S	
5	Charging overcurrent protection	Level	Overcurrent protection current for the first stage of charging	105A	Yes	1. Appears 10 times in a row The state will be locked, no Then it will be automatically lifted
			Overcurrent protection delay for charging level	2.0S	Yes	
			The overcurrent protection of the charging stage restores the current	100A	Yes	
			The overcurrent protection recovery delay of the first level of charging	2.0S	Yes	
		Level 2	Charge the secondary overcurrent protection current	130A	Yes	
			Charging level 2 overcurrent protection delay	2.0S	Yes	
		Level 3	Charge three-stage overcurrent protection current	150A	Yes	
			Three-level overcurrent protection delay for charging	1.0S	Yes	
	Charging overcurrent protection is released		Automatically dismissed	It will be automatically lifted after 1 minute	Yes	
			Discharge discharged	Discharge current >5.0A	The duration is greater than 3S	
6	Discharge overcurrent protection	Level	Discharge level 1 overcurrent protection current	-105A	Yes	1. Appears 10 times in a row The state will be locked, no Then it will be automatically lifted
			Discharge level 1 overcurrent protection delay	2.0S	Yes	
			The discharge level of overcurrent protection recovers the current	-100A	Yes	
			The overcurrent protection recovery delay of the first level of discharge	2.0S	Yes	
		Level 2	Discharge secondary overcurrent protection current	-130A	Yes	
			Discharge level 2 overcurrent protection delay	2.0S	Yes	
		Level 3	Discharge three-stage overcurrent protection current	-150A	Yes	
			Discharge three-level overcurrent protection delay	1.0S	Yes	
	Discharge overcurrent protection is lifted		Automatically dismissed	It will be automatically lifted after 1 minute	Yes	
			Charge off	Charging current >5.0A	The duration is greater than 3S	
7	Charging at high temperatures Cell temperature protection	Level	The high temperature alarm temperature of the first level of charging	40℃	Yes	
			The charging level is delayed by a high temperature alarm	3.0S	Yes	
			The first level of charging is a high-temperature alarm to restore the temperature	37℃	Yes	
			Charging level 1 high temperature alarm recovery delay	3.0S	Yes	

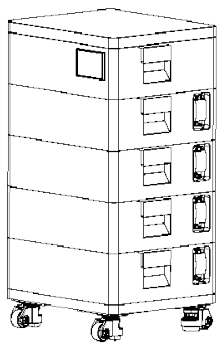
		Level 2	Charge the second high temperature alarm temperature	45℃	Yes	
			Charging Level 2 high temperature alarm delay	2.0S	Yes	
			The charging level 2 high temperature alarm restores the temperature	42℃	Yes	
			Charging Level 2 high temperature alarm recovery delay	2.0S	Yes	
		Level 3	Charging three-level high temperature protection temperature	50℃	Yes	
			Charging three-level high temperature protection delay	3.0S	Yes	
			Charge three levels of high temperature protection to restore the temperature	47℃	Yes	
			Charging three-level high temperature protection recovery delay	3.0S	Yes	
	Discharge high temperatu re cell temperatu re protection	Level	The alarm temperature of the first level of discharge	45℃	Yes	
			The first-level discharge high temperature alarm is delayed	3.0S	Yes	

			The temperature of the first level of discharge is restored by the high temperature alarm	42℃	Yes	
			The recovery time of the first-level discharge high temperature alarm	3.0S	Yes	
		Level 2	Discharge secondary high temperature alarm temperature	50℃	Yes	
			The discharge level 2 high temperature alarm is delayed	2.0S	Yes	
			The discharge level 2 high temperature alarm restores the temperature	47℃	Yes	
			The recovery time of the second-level discharge high temperature alarm	2.0S	Yes	
		Level 3	Discharge level 3 high temperature protection temperature	55℃	Yes	
			Discharge three-level high temperature protection delay	3.0S	Yes	
			Discharge three-level high temperature protection temperature recovery temperature	52℃	Yes	
			Discharge three-level high temperature protection temperature recovery delay	3.0S	Yes	
	Charge at low temperatures Cell temperature protection	Level	Charge the first level of low temperature alarm temperature	5℃	Yes	
			The low temperature alarm delay of the first level of charging	3.0S	Yes	
			The temperature is restored by the low-temperature alarm on the first level of charging	8℃	Yes	
			The recovery time of the low-temperature alarm in the first stage of charging	3.0S	Yes	
		Level 2	Charge the secondary cryogenic alarm temperature	2℃	Yes	
			The charging level 2 low temperature alarm is delayed	2.0S	Yes	
			The second-level low temperature alarm of the charging restores the temperature	5℃	Yes	
			Charging Level 2 Low Temperature Alarm Recovery Delay	2.0S	Yes	
		Level 3	Three-level low-temperature protection for charging	0℃	Yes	
			Charging three-level low-temperature protection delay	3.0S	Yes	
			Charge three-level cryogenic protection to restore temperature	3℃	Yes	
			Charging three-level low temperature protection recovery delay	3.0S	Yes	
	Discharge at low temperatures Cell temperature	Level	The alarm temperature of the first level of discharge	-5℃	Yes	
			The first level of discharge is delayed by low temperature alarm	3.0S	Yes	
			The temperature of the first-level low temperature alarm of the discharge is restored	-2℃	Yes	
			The recovery time of the first-level low temperature alarm of the discharge is delayed	3.0S	Yes	
		Level 2	Discharge secondary cryogenic alarm temperature	-10℃	Yes	
			Discharge level 2 low temperature alarm delay	2.0S	Yes	
			The temperature of the second-level discharge cryogenic alarm is restored	-7℃	Yes	
			The recovery time of the second-level discharge cryogenic alarm is delayed	2.0S	Yes	
		Level 3	Discharge three-level low temperature protection	-15℃	Yes	
			Three-level low temperature protection delay for discharge	3.0S	Yes	
			Discharge three-level cryogenic protection to restore temperature	-5℃	Yes	
			Discharge three-level low temperature protection recovery delay	3.0S	Yes	
			The alarm temperature of the first level of the environment	55℃	Yes	

02

PRODUCT OVERVIEW

2.1 Brief introduction

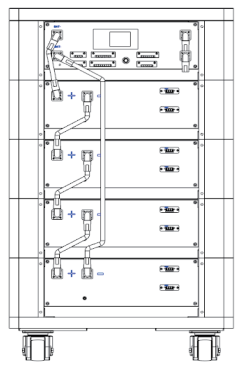


Product overview

This product is made of Iron(III) phosphate lithium battery cells in series，It is an advanced environmentally friendly household energy storage system，Fashionable design with high energy。long service life，Easy to install and expand。

With rich battery management experience and advanced Energy storage，BSB-ESS-51.2V-100Ah-HV-Premium Equipped with advanced intelligent Battery management system，The system adopts a modular design，ntegrating functions such as collection, monitoring, management, and communication，Achieved high-precision single voltage（10mv）/ Current collection，Can simultaneously monitor the environment，Temperature changes of battery cells and main heating devices。Extending the lifespan of battery cells and devices，Simultaneously equipped with intelligent charging balance，SOC，Power estimation，Data storage, charging current limiting protection module，LED color light bar display，Pre charging, RS232 communication, CAN communication, RS485 communication and

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1.SWITCH ON

When used，Connect the load or inverter end wires to the output end of the battery pack first B+/B-，After confirming the wiring is completed，Turn on the power switch of the battery pack，The battery pack begins to supply power to the load for use。

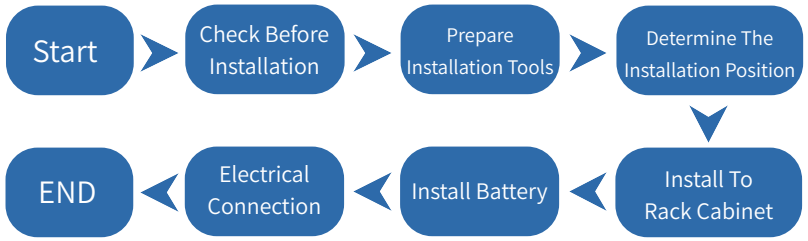
2.SWITCH OFF

After use，Turn off the load and inverter switches first，Then turn off the battery pack switch

03

INSTALLATION GUIDE

-In stallation 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 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 Cheeking 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	Picture	Quan ty	Descrip on
1		1PCS	Main control box
2		4PCS	Battery
3		1PCS	Top cover and base
4		1PCS	Shipment report
5		1PCS	Manual
6		1PCS	485 Communica on cable
7		1PCS	Cer ficate
8		1PCS	Label

3.2 Tools

Model	Tools		
Installation	 Knife	 Measuring tape	 Socket wrench (10/16mm)
	 Rubber mallet	 Cross Screwdriver	 Percussion drill (12mm)
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.

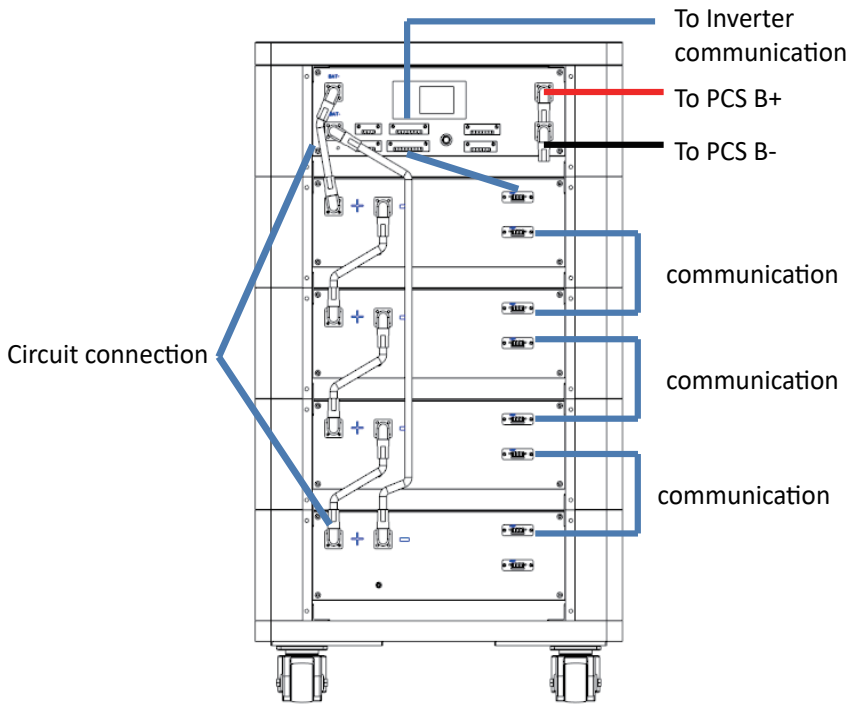
*Do not expose the battery to direct sunlight.

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.

Product Connection operation



04

MAINTENANCE

4.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with temperature range between -10℃~+45℃,and maintained regularly according to following table with 0.5C(25A) current till 40% SOC after long storage time.

Recharge Requirements During Normal Storage

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

Storage Environment Temperature	Storage Time	Note
-10~25℃	≤15 days	Battery Pack disconnected from PCS
-25~35℃	≤7 days	
-35~45℃	≤12 hours	Battery Pack connected to PCS