

A0-20240920



STE-BSW-5120



STE-BSW-5120 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 ^[1]
Battery Energy	5120 Wh ^[1]
Charging Cut-off Voltage	56.16Vdc
Discharge Cut-off Voltage	44.8 Vdc
Nominal Charge/Discharge Current	50A
Nominal Charge/Discharge Power	2560W
Max Charge / Discharge Current	100A ^[2]
Max Charge / Discharge Power	5120W ^[2]
Short Circuit Current	350A/3ms
Communication	
Display	SOC status indicator, LED indicator
Communication	RS232、RS485、CAN
General Specification	
Dimension(WxDxHmm)	500X494X145mm
Weight (Kg)	47.2kg
Installation	Floor stand or Wall mounted
Charging Temperature Range	0°C ~ 55°C
Discharge Temperature Range	-20°C ~ 60°C
Operating /Storage /humidity	≤95%RH
Max Operating Altitude	≤2000m
IP Rating	IP20
Cell Technology	LiFePO ₄ , Lithium Iron Phosphate
Scalability	Max 15 batteries in parallel

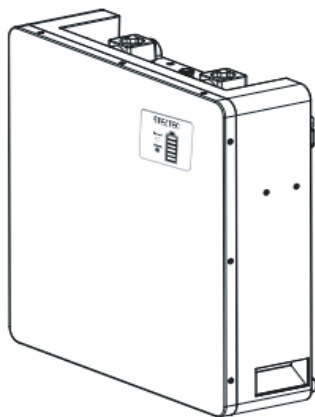
1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C.

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

02

PRODUCT OVERVIEW

2.1 Brief Introduction



PRODUCT OVERVIEW

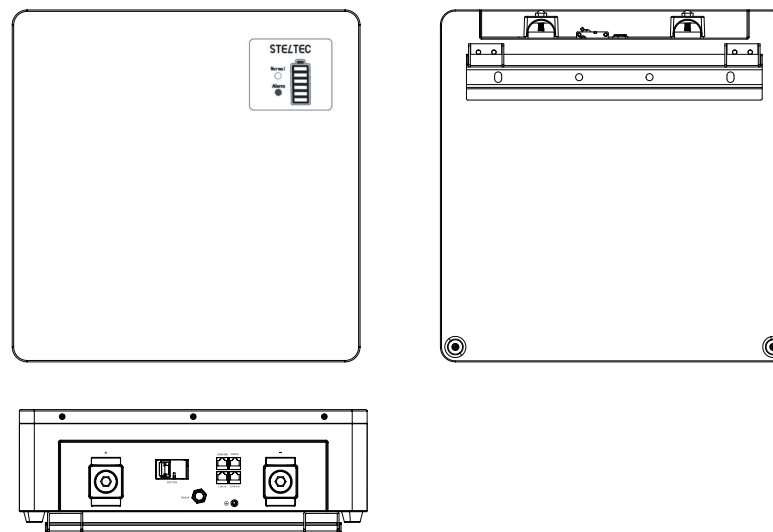
STE-BSW-5120 is a lithium battery with an operating voltage range between 44.8~56.1V. It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **STE-BSW-5120 is not suitable for supporting life-sustaining medical devices.**

STE-BSW-5120 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 STE-BSW-5120 can be connected in parallel to expand capacity and power, 15 STE-BSW-5120 can be connected in parallel at most.

Note: For multiple batteries in parallel, only the Master battery SOC LED will be on to show the whole system SOC level, slave battery SOC LEDs are off, but the Normal&Alarm LED will show normally.

2.2 Interface Introduction



2.2.1 Switch ON/OFF

1. Switch ON

For single Battery Module, turn on the air switch, Long press (more than 3 seconds) Switch button, Normal LED will be lighted in the front panel then battery will operate normally. L1 to L6 shows battery SOC, L7/L8 shows battery status.

For multiple Battery Modules in parallel, turn on the air switch of all batteries, long press (more than 3 seconds) Switch button of master battery (Which connect with inverter), normal LED will be lighted, battery system will automatically encode and assign ID to each slave battery, then battery system will operate normally.

2. Switch OFF

For multiple Battery Modules in parallel, turn off the air switch of all batteries, press Switch button of master battery (which connect with inverter) more than 3s, and then release the button, LED will flash in the front panel, the master battery will shut down after all slave batteries shut down (Sleep mode).

For single Battery Module, turn off the air switch, Long press (more than 3 seconds) Switch button, and then release the button, LED will flash in the front panel, the battery will shut down.

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	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	Light	Turn to standby status when charger off
	Protection	Flash 3	OFF	OFF	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	OFF	Stop charging
Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Fault	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and Discharging

Charging Battery Level Indicators Instructions

Status	Charging								
	L8	L7	L6	L5	L4	L3	L2	L1	
Battery Level Indicator									
Battery Level (%)	0 ~ 17%	Light	OFF	OFF	OFF	OFF	OFF	Flash 2	
	18 ~ 33%			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							
	L8	L7	L6	L5	L4	L3	L2	L1
Battery Level Indicator								
Battery Level (%)	Flash 3	OFF	OFF	OFF	OFF	OFF	OFF	Light
			OFF	OFF	OFF	OFF	Light	Light
			OFF	OFF	OFF	Light	Light	Light
			OFF	Light	Light	Light	Light	Light
			Light	Light	Light	Light	Light	Light
			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

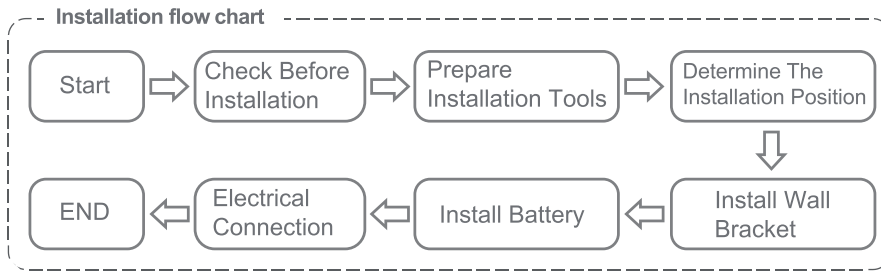
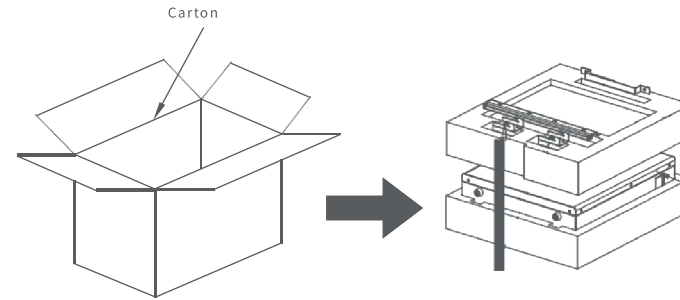
2.2.4 RS232 Port

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

03

INSTALLATION GUIDE



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.	Part name/size	Quantity	Photo	Used for	No.	Part name/size	Quantity	Photo	Used for
1	Battery box	1		Battery Box	11	V1.0_RJ45 crystal plug_ Black Super Class 5 Unshielded_ Customized wire sequence 4 on 4_ 5 on 5_ Line length 2000mm_ RJ45 crystal plug	1		Communication cable between master pack and inverter(Deye, Growatt, Megarevo, Solis, Hoymiles, LUXPOWER inverter)
2	Wall mounting bracket	1		Wall mounting bracket	12	V1.1_RJ45 crystal plug_ Black Super Class 5 Unshielded_ Customized wire sequence 4-to-8_ 5 on 7_ Line length 2000mm_ RJ45 crystal plug	1		Communication cable between master pack and inverter(STELTEC or Senergy Inverter)
3	Hanging bracket	2		Hanging bracket	13	2g moisture-proof desiccant	2		Moisture-proof
4	Cold pressure terminal	6		Accessory terminals	14	User manual	1		User manual
5	Expansion screw	4		Lock Wall Pendant	15	Outgoing Inspection Report	1		Outgoing Inspection Report
6	Grounding screw	1		Grounding screw	16	Foot pads	2		Foot pads
7	Foot cushion screws	2		Foot cushion screws	17	Power cord, SC50-8 at one end, SC50-10 at the other end, AWG# PVC cord 11627, L=1500mm, red color	1		Power cable +
8	Fixed box	8		Fixed box	18	Power cord, SC50-8 at one end, SC50-10 at the other end, AWG#PVC cord 11627, L=1500mm, Black	1		Power cable -
9	RJ45 crystal head	4		RJ45 Crystal head	19	Red Nylon Tube Terminal_VE50-25_Purple Copper with Tin Plating	1		Accessory terminals
10	V1.0_RJ45 crystal plug_ Black Super Class 5 Unshielded_ TS68B color line sequence_ Line length 2000mm_ RJ45 crystal plug	1		Communication cable for parallel of multiple packs	20	Black Nylon Tube Terminal_VE50-25_Purple Copper with Tin Plating	1		Accessory terminals
					21	Flat gasket M8 * 20 * 1.5mm_ 3.8 grade 304 stainless steel	2		Accessory gasket

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

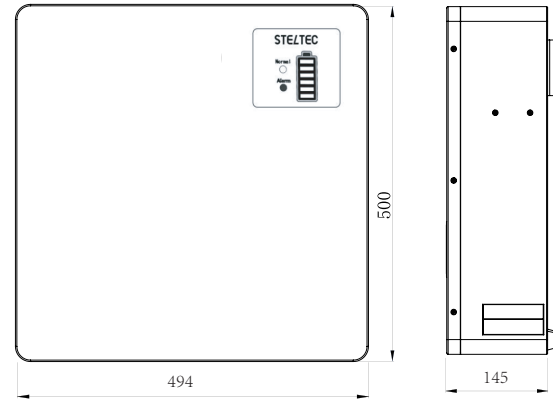
- Install the battery in the indoor environment.
- Place battery in secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Do not expose the battery to direct sunlight.

3.3.2 Installation carrier requirements

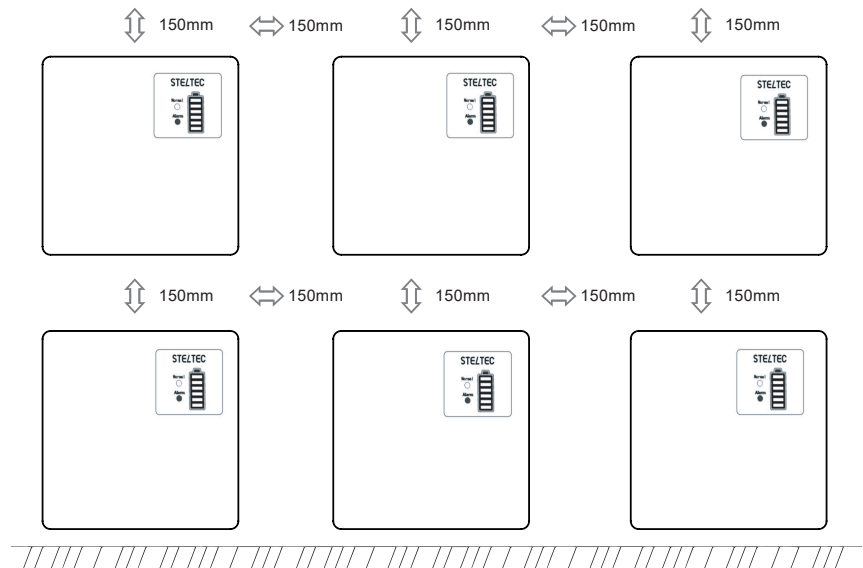
- Only mount battery on fire resistant building. Do not install batteries on flammable buildings.
- Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

3.4 Installation Instructions

3.4.1 Dimensions



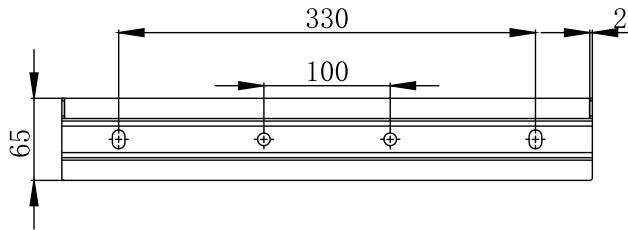
Minimum mounting distance between battery pack and equipment:



3.4.2 Installation Procedure

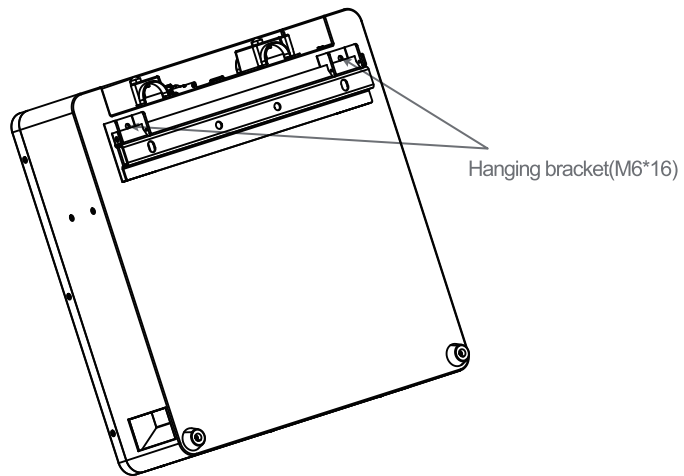
STEP 1

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



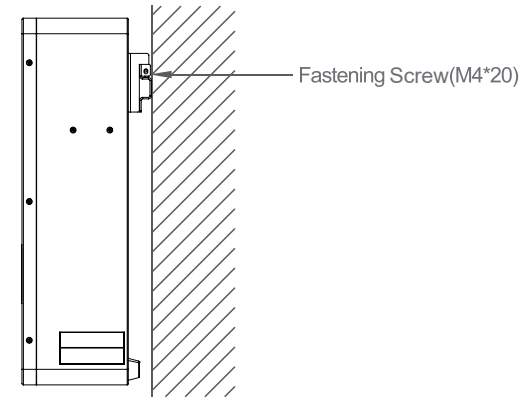
STEP 2

Install the hanging bracket.



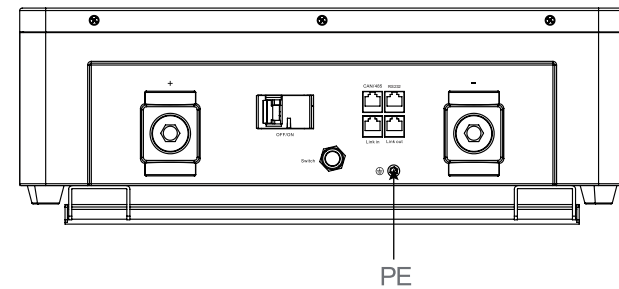
STEP 3

Hang STE-BSW-5120 on the wall bracket and tighten it.



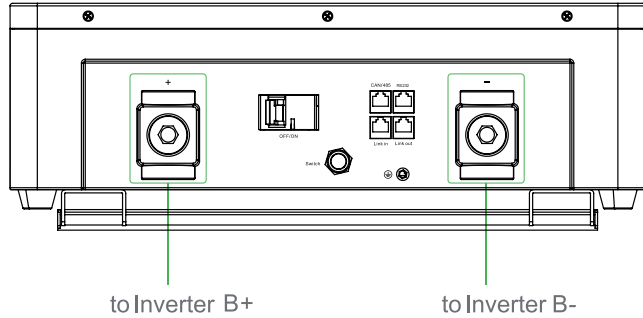
STEP 4

Connect to ground.



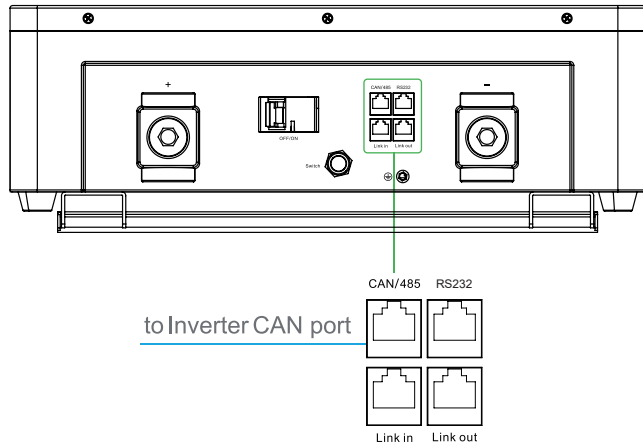
STEP 5

Connect power cable



STEP 6

Connect communication cable.

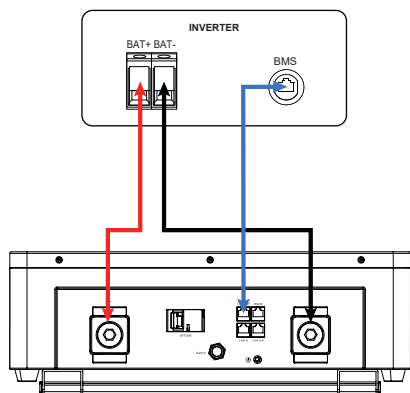


STEP 7

1. Load power exceeding 10kW 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
1units	Below 10kW	7.1
2-15units	12kW or Below	7.2
2-15units	Over 12kW	7.3

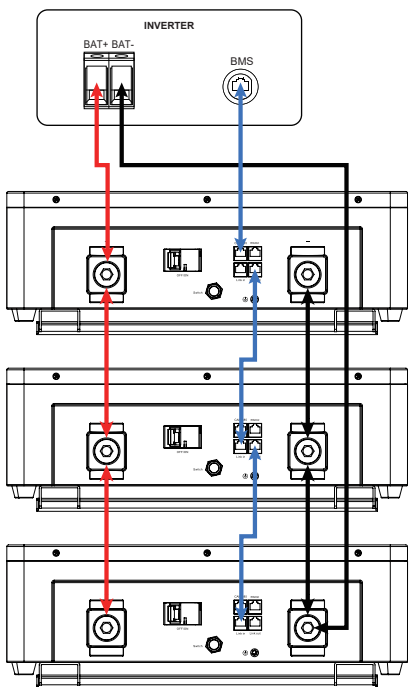
 Danger	Ensure power cables are installed with the correct polarity. A dangerous situation may arise if the polarities are reversed.
 Danger	Do not create a short circuit between the positive and negative terminals of the battery. Ensure the polarity is correct during installation.
 Warning	Incorrect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



Cable connection in all the following views

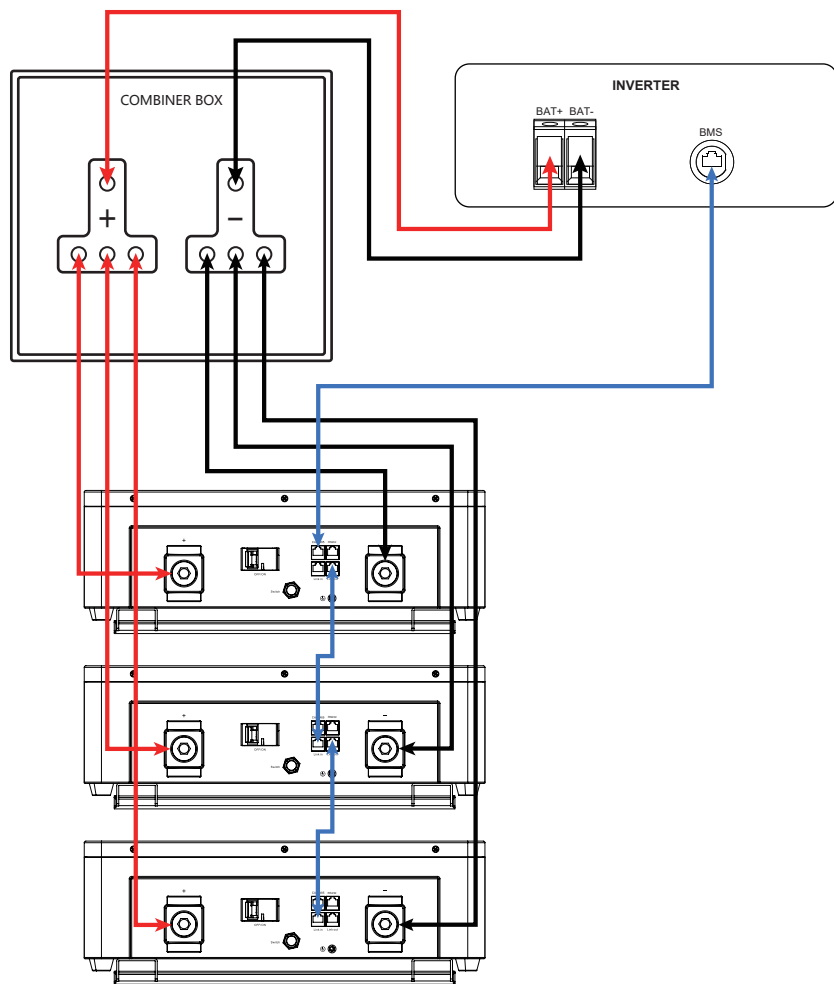
- Lithium battery positive power cable
- Lithium battery negative power cable
- Lithium battery communication cable

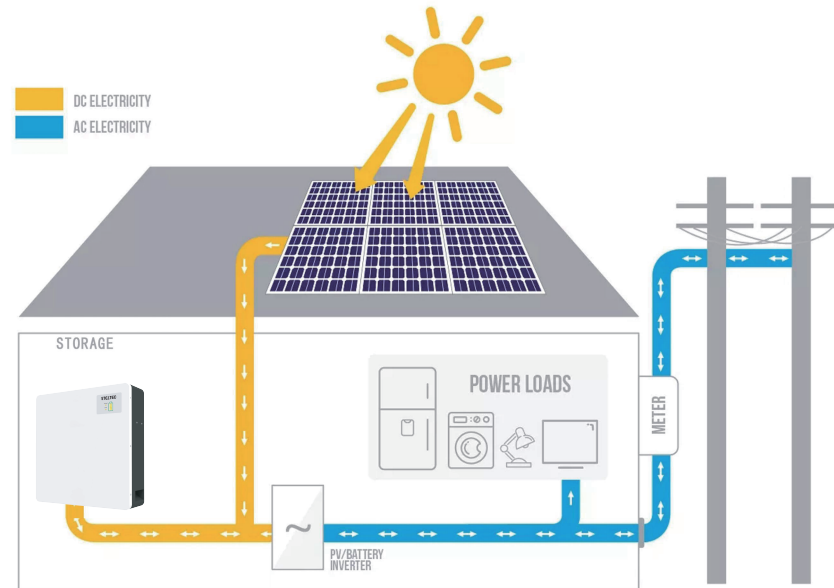
7.1 **Warning**
Wiring method of 1 units module with power below 5kW



7.2 **Warning**
For 2 units -15 units is-layer module with power 12kW or Below.
(The number of units in the middle of the diagram is omitted, the length of the two positive and negative poles connecting lines must be the same.)

7.3 **Warning**
When using an inverter of above 12kW, 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 12kW.
(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.)





04

Commissioning Procedure

After all the cable (power and communication) connections are completed, please ensure the following:

- Ensure the DC switch on the inverter is OFF
- Ensure the AC switch that is connected to the grid and EPS output (if used) of the inverter is OFF
- Ensure the DC switch is OFF

For commissioning we recommend the following steps:

- Refer to section 2.2.1 Start for turning on the battery
- Wait until the LED's on
- Wait until the inverter LED's on
- Turn the DC switch on the inverter ON
- Turn the AC switch that is connected to the grid and EPS output of the inverter ON
- Set-up the battery and the inverter using the App

05

MAINTENANCE

5.1 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 (50 A) current till 50% 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	/

5.2 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	
-10~45°C	≤12 hours	Battery Pack connected to Inverter