

**Long Lasting Backup
With the BEST
Inverter Battery!!**



USER MANUAL

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1. Product overview

1.1 Introduction:

The model LiFePO₄ battery pack is designed specifically for energy storage systems, with higher efficiency and higher reliability. With the intelligent battery management system, the intelligent battery detection system. This model of LiFePO₄ battery pack is ideal for off-grid and hybrid utilization, providing a long-term built solution, and has the ability to deploy and use in a variety of scenarios, such as homes, farms, factories, data rooms, hotels, etc.

1.2 Features:

- ★ LiFePO₄ chemicals give batteries a safer performance, longer life and energy density
- ★ The fully intelligent battery management system (BMS) protects the battery pack and the battery from over-discharge, over-charge, over-current, and high/low temperature
- ★ The intelligent monitoring system, which can monitor and download the data to the computer in real time
- ★ The battery comes with a balance function that greatly extends the service life of the battery
- ★ The battery has no memory effect, and can deeply charge and release the battery
- ★ The self-discharge consumption is very small, more than 24 hours without the battery will automatically enter the low power mode
- ★ Environmentally friendly, free of heavy metals and harmful substances, and meets the ROHS requirements
- ★ The battery can be used in parallel for any scenario requiring a large power backup
- ★ Batteries do not require active maintenance, one-time purchase guarantees life (assuming you use the right battery and follow the guidelines)
- ★ Cell meets IEC62619, CE standards, and ROHS requirements

1.3 Specification and Performance:

1.3.1 Parameters

Project	Conventional Parameters
Battery Type	LiFePO ₄
Model	CSE-ESS(P):51.2V 314Ah
Compound Mode	1P16S
Rated Capacity	314Ah
Nominal Voltage	51.2V
Energy	16kWh
Operation Voltage Range	40~58.4V
Maximum charging persistent current	314A
Maximum discharge persistent current	314A
Recommend Charge Current	100A
Operating Temperature Range	Charge: 0~55°C, Discharge: -20~55°C
Storage Temperature Range	-10~55°C
Dimension (W*D*H)	480*235*865mm
Weight	120±3%KG
Live Capacity Of Products Shipped	40% -60% Electricity delivery
Packaging Material	Carton+wooden pallet
Communication	RS485 / CAN

1.3.2 Interface Definition

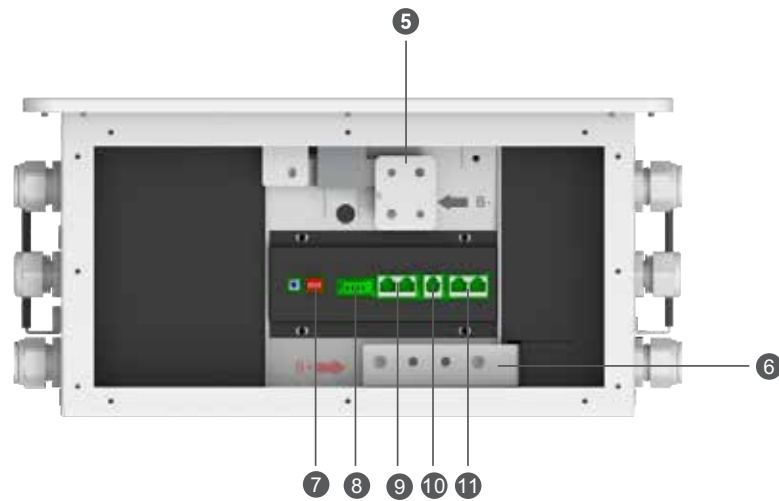
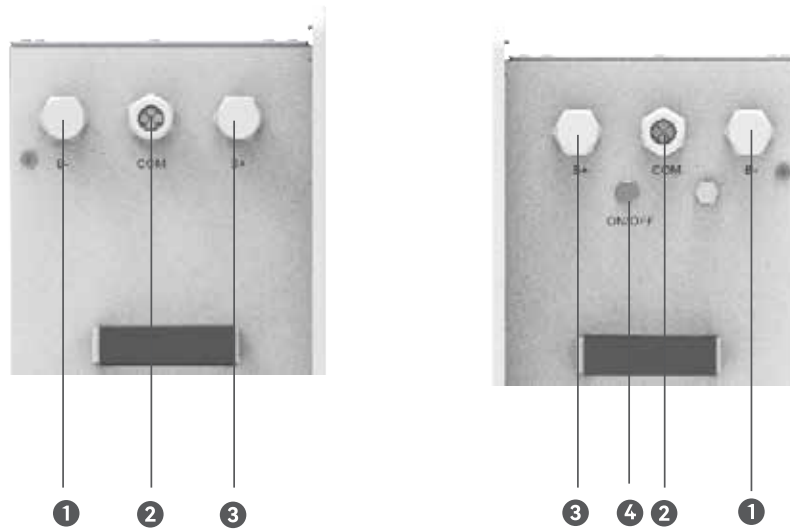
A) Battery Appearance



B) Battery Size

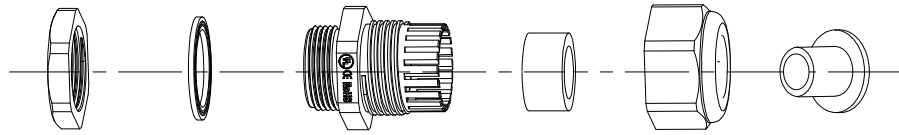


C) Panel Interface Refer To The Following Figure



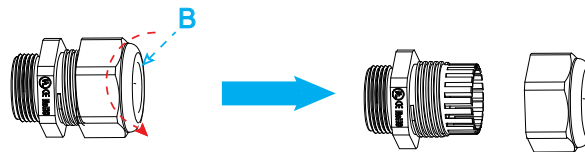
Number	Project	Description
1	Negative connector	The waterproof glander.A pair of connector with the same function, Used for through the Power cable .one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.
2	Communication connector	The waterproof glander.A pair of connector with the same function, Used for through the network cable .one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the communication function with the inverter.
3	Positive connector	The waterproof glander.A pair of connector with the same function, Used for through the Power cable .one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.
4	Power Wake Button	long press this button to start the battery
5	Positive busbar	Can realize the charge and discharge function,one connected device is expanded in paeallel with other batteries
6	Negative busbar	Can realize the charge and discharge function,one connected device is expanded in paeallel with other batteries
7	Dial Key	When multiple modules are connected in parallel, different address codes can be specified for each battery module, up to 15
8	Dry Contact Point	1/ 2 Open, close when fault protection; 3 / 4 open, low battery power alarm
9	RS485/CAN	RJ45 interface, the interface connected to the inverter
10	RS232	RJ11 interface, used for battery status monitoring
11	Parallel operation RS485	RJ45 interface, used for parallel communication or battery status monitoring, manufacturer commissioning, and service

1.3.3 Power cable installation instructions

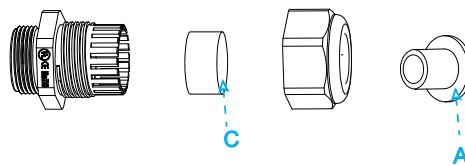


F:lock nut E:flat washer D:main part C:clamping ring B:lock nut A:plug head

step1:rotate counterclockwise to remove B

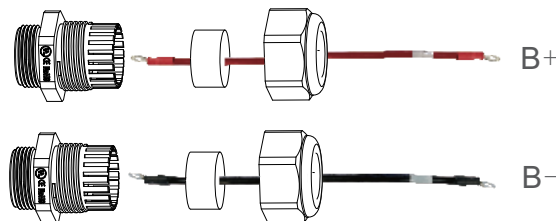


step2:Remove C and A in the direction of the arrow

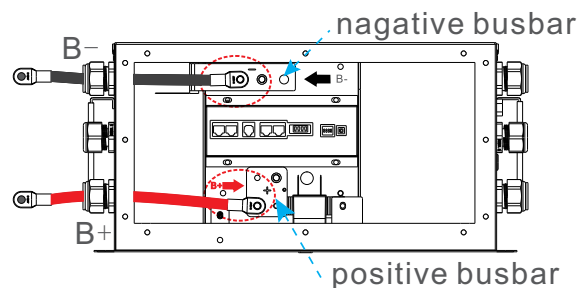


step3:Thread the power cable through B and C in sequence and install C onto the connector

B+ positive connector uses red power cable
B- negative connector uses black power cable

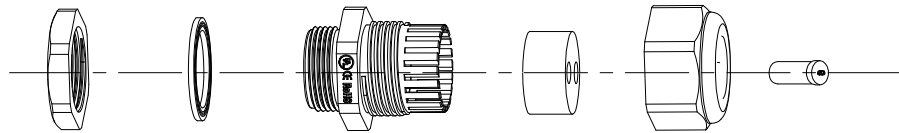


step4:Connect positive terminal cable to the positive busbar with M8X16 combination, Connect negative terminal cable to the negative busbar with M8X16 combination.(locking torque:6N.M)



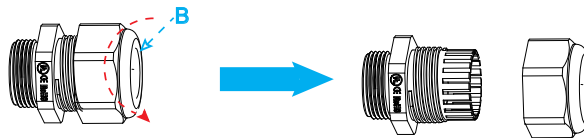
step5:Clockwise lock:B (locking torque:6.75N.M)

1.3.4 Network cable installation instructions

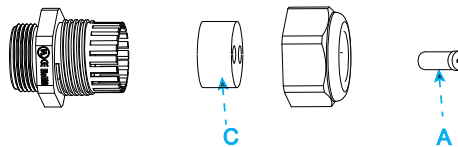


F:lock nut E:flat washer D:main part C:clamping ring B:lock nut A:plug head

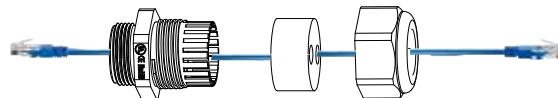
step1:rotate counterclockwise to remove B



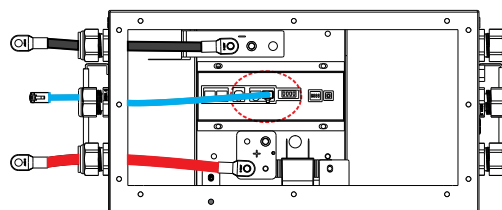
step2:Remove C and A in the direction of the arrow



step3:Thread the network cable through B and C in sequence and install C onto the connector

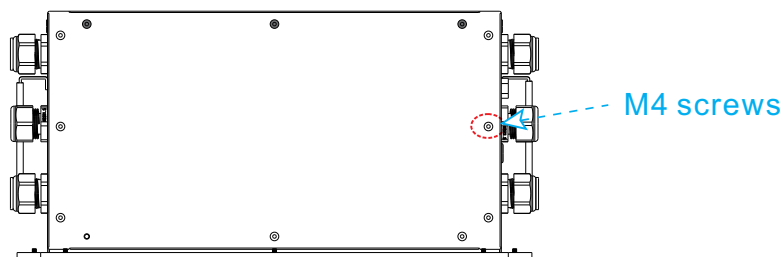


step4:Insert the network cable into the device

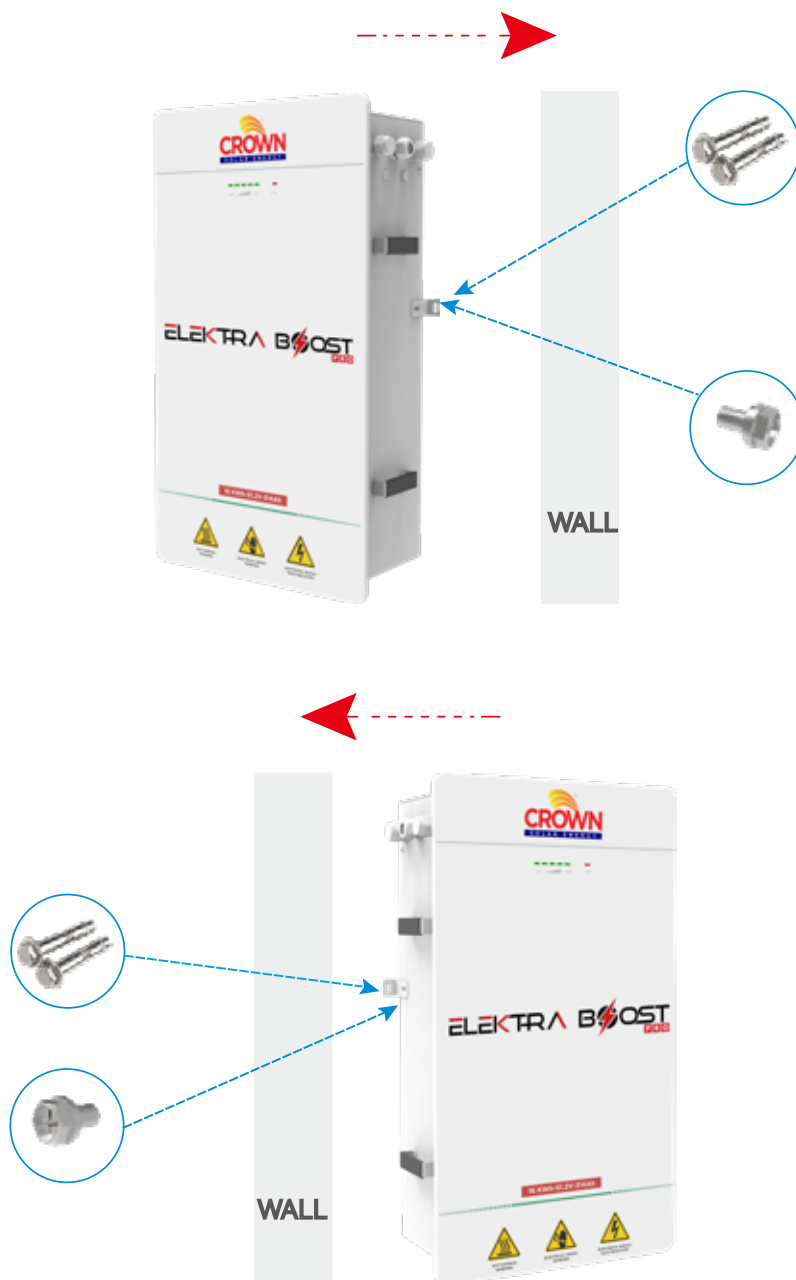


step6:Clockwise lock:B (locking torque:6.75N.M)

step7:Fix the top cover with M4 screws.(locking torque:1.5N.M)

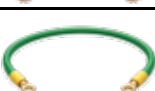


1.3.5 Floor-type installation instructions



Step1 : Lock the joint between battery and wall bracket with M6 combination screw and expansion bolts M6*70 (Torque: 5 N·m)

1.3.6 Packing list

No.	Project	Description
1		Main Unit*1
2		User Manual*1 Size:A4 210*295mm
3		SC50-8*4
4		SC6-6*2
5		RJ45 Connector*2
6		M6*70 Expansion Screw*2
7		M6 Combination Screw*4
8		M8 Combination Screw*4
9		Fixed Plate*2
10		Crown Battery Warranty Policy (English-Urdu) Size: A4 210*295mm
11		Elektra Boost Product Certificate Card Size:80*130mm
12		Elektra Boost Warranty Card Size:95*130mm
13		CSE-Posters Size:A5 148*210mm
14		Battery Power Cable(positive)1 Size:50mm ² Length:1.2m
15		Battery Power Cable(negative)1 Size:50mm ² Length:1.2m
16		Groud Wire1 Size:10AWG Length:1m
17		Battery Communication Cable1 Length:1.5m
18		Battery Parallel Communication Cable*1 Length:1m

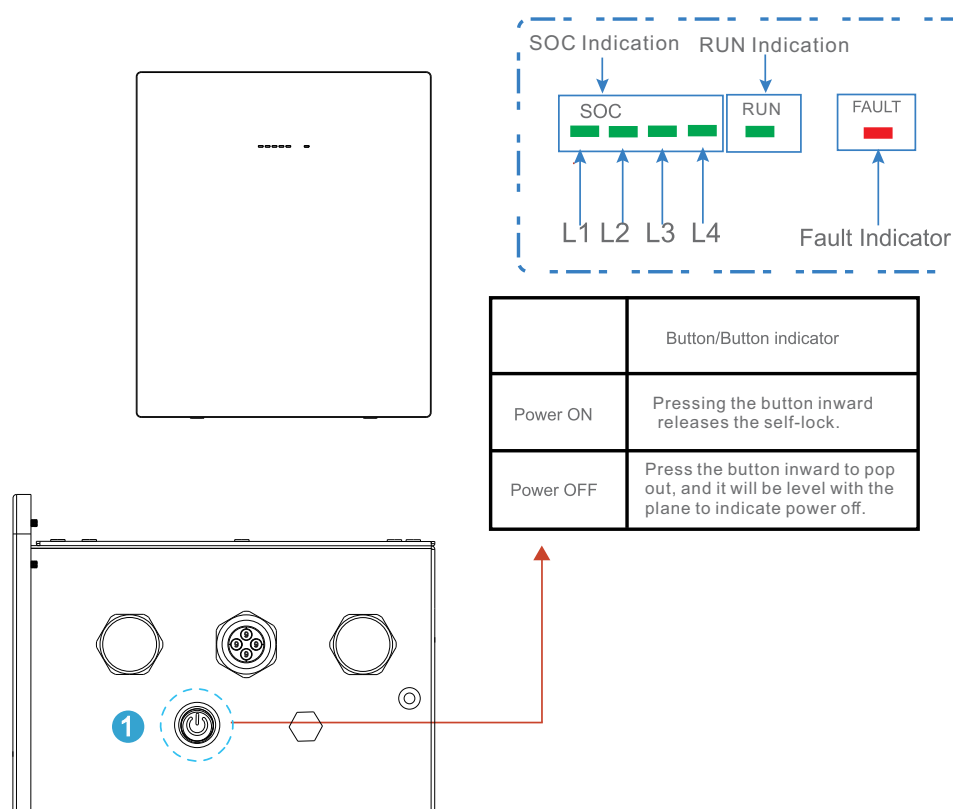
2. Battery management system

Check the following items before power on to avoid the battery system being damaged.

Table 2.1: Check Item before Power On

NO.	Check Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE cable, power cable, communication cable, and terminal resistor are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	Unused ports and terminals are sealed.

2.1 Battery System ON and OFF



2.2 Description of the LED indicator light

State	Normal /Report an emergency /protect	Battery Indicator LED				RUN	ALM	illustrate
		L1	L2	L3	L4			
								
Shutdown Status	Resting State	OFF	OFF	OFF	OFF	OFF	OFF	ALL OFF
Stand By	Normal	According to the electricity instruction				Flashing 1	OFF	position in readiness
	Report an emergency					Flashing 1	Flashing 3	Module Low Voltage
Charge	Normal	According to the electricity instruction (Top indicator LED flashing 2)				ON	OFF	Maximum battery LED flashing (flashing 2), ALM does not flash when overcharging alarm occurs
	Report an emergency					ON	Flashing 3	
	overcharge protection	ON	ON	ON	ON	ON	OFF	If there is no urban electricity, The indicator light is in standby mode
	Over current Protection	OFF	OFF	OFF	OFF	OFF	ON	Stop Charging
Discharge	Normal	According to the electricity instruction				Flashing 3	OFF	
	Report an emergency					Flashing 3	Flashing 3	
	Undervoltage Protection	OFF	OFF	OFF	OFF	OFF	OFF	Stop Discharge
	Over current Protection	OFF	OFF	OFF	OFF	OFF	ON	Stop Discharge
Lose Efficacy		OFF	OFF	OFF	OFF	OFF	ON	Stop Charging And Discharging

2.3 Status indication

Stand By		Charging				Discharge			
Capacity indicator light		L1 	L2 	L3 	L4 	L1 	L2 	L3 	L4 
Quantity of electricity	0% ~ 25%	Flashing2	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	25% ~ 50%	ON	Flashing2	OFF	OFF	ON	OFF	OFF	OFF
	50% ~ 75%	ON	ON	Flashing2	OFF	ON	ON	ON	OFF
	75% ~ 100%	ON	ON	ON	ON	ON	ON	ON	ON
Run The Indicator light, the 		ON				Flashing 3			

2.4 The LED Indicator Light Flashing Description

Flashing Mode	ON	OFF
Flashing1	0.25S	3.75S
Flashing2	0.5S	0.5S
Flashing3	0.5S	1.5S

3. Communication

3.1 Communication instructions

3.1.1 Parallel RS232

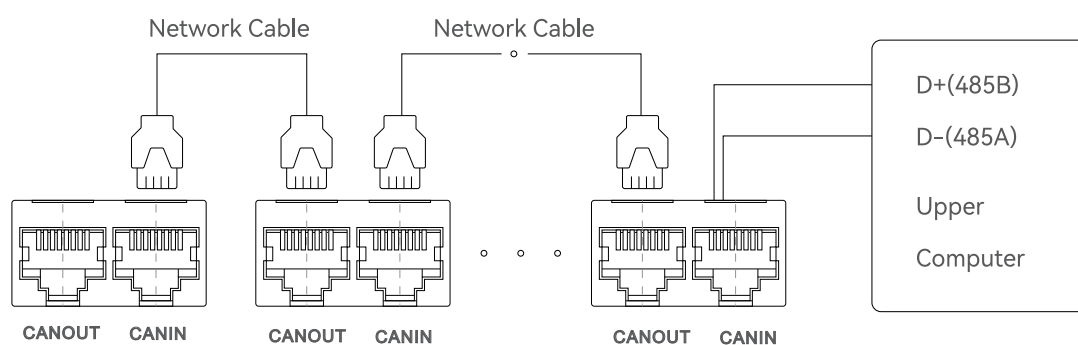
Equipped with dual RS232 interfaces, Can view battery information, The default baud rate is 9600bps. To communicate with monitoring equipment through RS232, Monitoring equipment as host, Polling data based on address, Address setting range is 2-15.

3.1.2 Independent CAN

Independent Can interface, This interface is used for communication with inverters, When this battery is the main unit, Can summarize slave data and communicate with inverters.

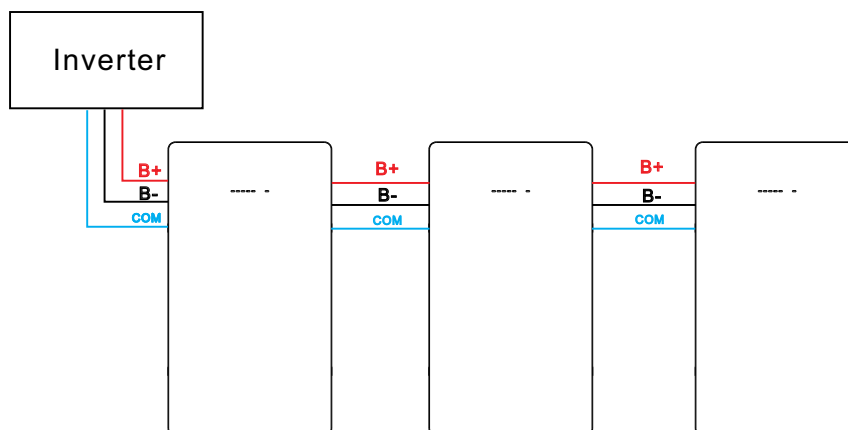
3.2 Parallel wiring method

3.2.1 Parallel communication connection method



3.2.2 Positive and negative wire connection method

1



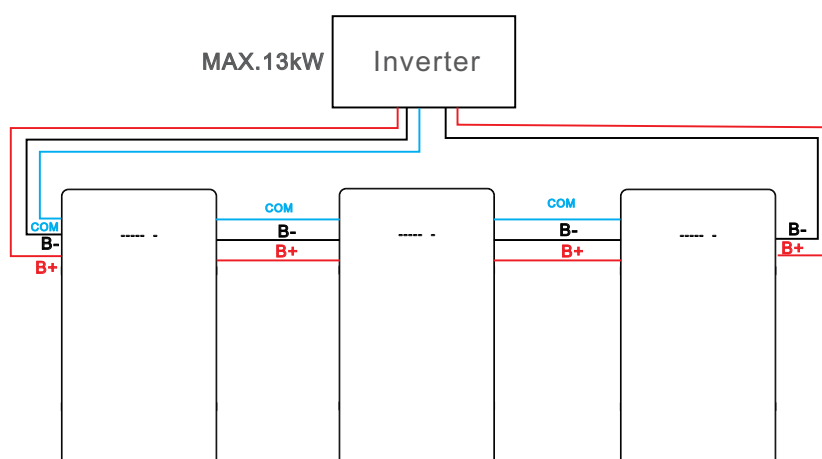
Using the parallel mode 1 shown above, you can choose either 50mm² or 70mm² cables. Select the inverter power and set the maximum operating current according to the table below.

Wire gauge	Maximum current capacity of the cable	Maximum power
50mm ² (standard accessories included with the shipment)	200A	10kW
70mm ²	250A	12kW

Based on the actual inverter power selected and the chosen cable gauge, the maximum charge and discharge current limits should be set in the inverter's current limitation options, ensuring they are below the cable's maximum current capacity.

It is important to ensure that the system's operating current does not exceed the maximum current carrying capacity of the cable. Exceeding this limit may cause heating inside the battery and the cable, which could lead to fire hazards in severe cases.

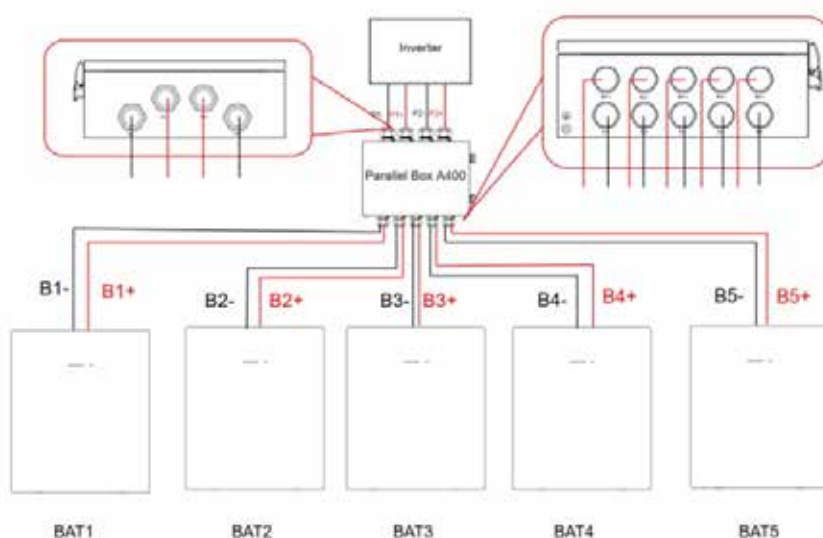
2



In the parallel mode 2 shown in the diagram above, it is important to note that the system's maximum current is 280A, and the inverter power should not exceed 13kW. Based on the actual inverter power selected, you should set the maximum charge and discharge current limits in the inverter's current limitation options to be below 280A.

It is crucial to ensure that the system's operating current does not exceed the maximum current carrying capacity of the cable. Exceeding 280A may trigger overcurrent protection in a battery or cause heating inside the battery and the cable, which could lead to fire hazards in severe cases.

3



In the parallel mode 3 shown in the diagram above (suitable for scenarios with inverter power > 15kW), for high-power system battery parallel connections, the inverter current should be set to $\leq 160A \times \text{number of batteries}$. The maximum combined limit current for the system should be 400A.

Note: The battery system has a non-resettable function to stop operation. If the voltage, current, temperature and other information reach the system lock threshold, the system will enter the system lock state. In this state, the system cannot be restored by restarting the system or any other operation. Please contact the professional operating system of this product and then ask them to exit the system lock state.

3.3 Dial switch settings

When batteries are used in parallel, Different batteries can be distinguished by setting the address through the dial switch on the BMS, Refer to the table below for the definition of BMS dial switch:

The default dialing address is '1' for the host, '2-15' is the slave machine;

Host Battery "RS232" communication interface and inverter connection;

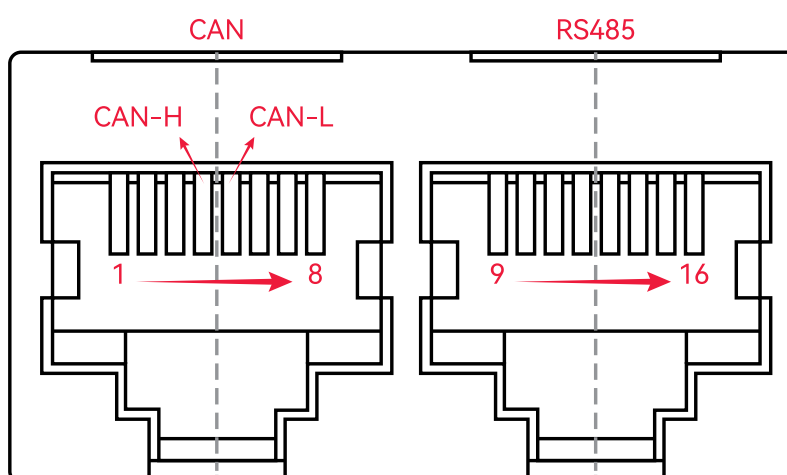
Parallel operation of two or more battery packs, Dial switch reference address "1+2", "1+2+3", By analogy with this method...



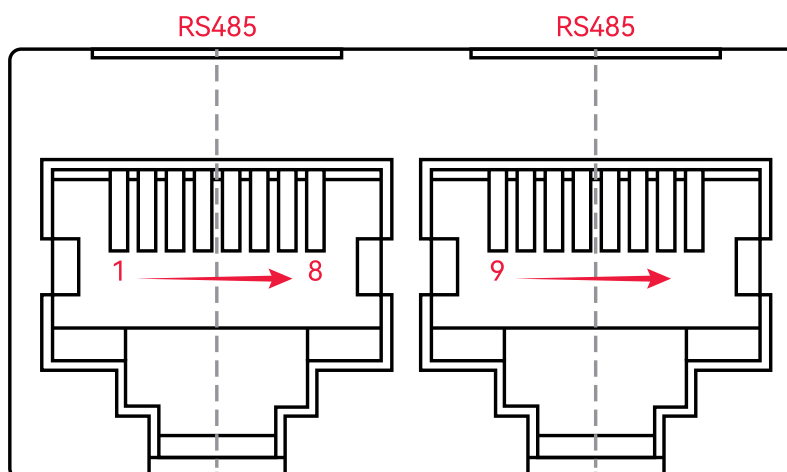
0		4		8		12	
1		5		9		13	
2		6		10		14	
3		7		11		15	

3.4 Interface definition

(1) Interface diagram



CAN and RS485 interfaces



Parallel communication port

RS485--Adopting 8P8C vertical RJ45 socket	
RJ45 pin	Definition Description
9, 16	RS485-B1
10, 15	RS485-A1
11, 14	GND
12, 13	NC

RS485 interface

RS485--Adopting 8P8C vertical RJ45 socket	
RJ45 pin	Definition Description
1, 8	RS485-B
2, 7	RS485-A
3, 6	GND
4, 5	NC
9, 16	RS485-B1
10, 15	RS485-A1
11, 14	GND
12, 13	NC

Parallel communication port

4. Battery Use Instructions

4.1 Charging

- ★ Charging current: cannot exceed the maximum charging current specified in this specification
- ★ Charging voltage: shall not exceed the maximum charging voltage specified in this specification
- ★ Charging temperature: The battery must be charged within the ambient temperature range specified in this specification
- ★ The battery adopts constant current and constant pressure charging mode, and forbids reverse charging. If the positive electrode of the battery meets the negative electrode in the opposite, it will damage the battery

4.2 Discharge

- ★ Discharge Current: the discharge current shall not exceed the maximum discharge current specified in this instruction. Excessive current discharge will reduce the battery capacity and cause the battery to heat up.
- ★ If the battery enters over discharge protection, it should be charged within 3 days. If it could not be charged in a timely manner, all connections on the battery must be disconnected.

4. 3 Discharge Temperature

★ Battery discharge must be within the temperature range specified in this specification. Immediately charging after a short time of excessive discharge will not affect the use, but a long time of excessive discharge will lead to the loss of battery performance and battery function.

If the battery is not used for a long time, it may be in a certain discharge state due to its self-power consumption characteristics. In order to prevent the occurrence of over discharge, the battery should maintain a certain amount of electricity.

5. Notes For Product Use

5.1 Warnings

- ★ Do Not Put The Battery Into The Water Or Wet It.
- ★ Forbids Charging And Using The Battery Outside Our Specified Temperature Range; Do Not Store, Charge, And Use The Product Near The Fire Sources Or Heat Sources.
- ★ When The Battery Pack Emits An Odor Or Leakage, It Should Immediately Stop Using Or Stop Charging, And Move To The Open And Ventilated Place, Stay Away From The Fire Source, And Contact Us In Time.
- ★ The Optimal Service Temperature Of Products Is $25 \pm 5^{\circ}\text{C}$, If The Product Is Not In This Temperature Range During Use.
- ★ Load Use, Do Not Connect Positive And Negative Poles.
- ★ Do Not Short-circuit The Positive And Negative Electrodes Of The Battery Pack With A

Metal Conductor.

- ★ Do Not Fire The Battery Pack Or Heat It.
- ★ It Is Strictly Prohibited To Dissect The Battery Pack, Puncture The Battery Pack With Nails Or Sharp Objects, Use Hammers Or Other External Forces, And Trample Or Fall The Battery Pack.
- ★ Strictly Prohibited Putting Battery Packs In A Microwave Or Pressure Vessel.

5.2 Charging and Discharge

- ★ The Battery Must Be Charged Using An Appropriate Charger.
- ★ Do Not Use A Modified Or Damaged Charger.
- ★ During Charging And Use, Please Stop Charging And Using It Immediately.

5.3 Storage

- ★ Store The Battery In A Cool, Dry, And Well-ventilated Place. If More Than Three Months Of Long Storage, It Is Recommended That You Should Charge The Battery Extra.

5.4 Processing

- ★ Different Countries Have Different Regulations, Please Handle According To The Local Regulations.

If There Is Any Fault Or Abnormality During Use, Please Contact Us And Do Not Remove The Battery Pack Without Permission.



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