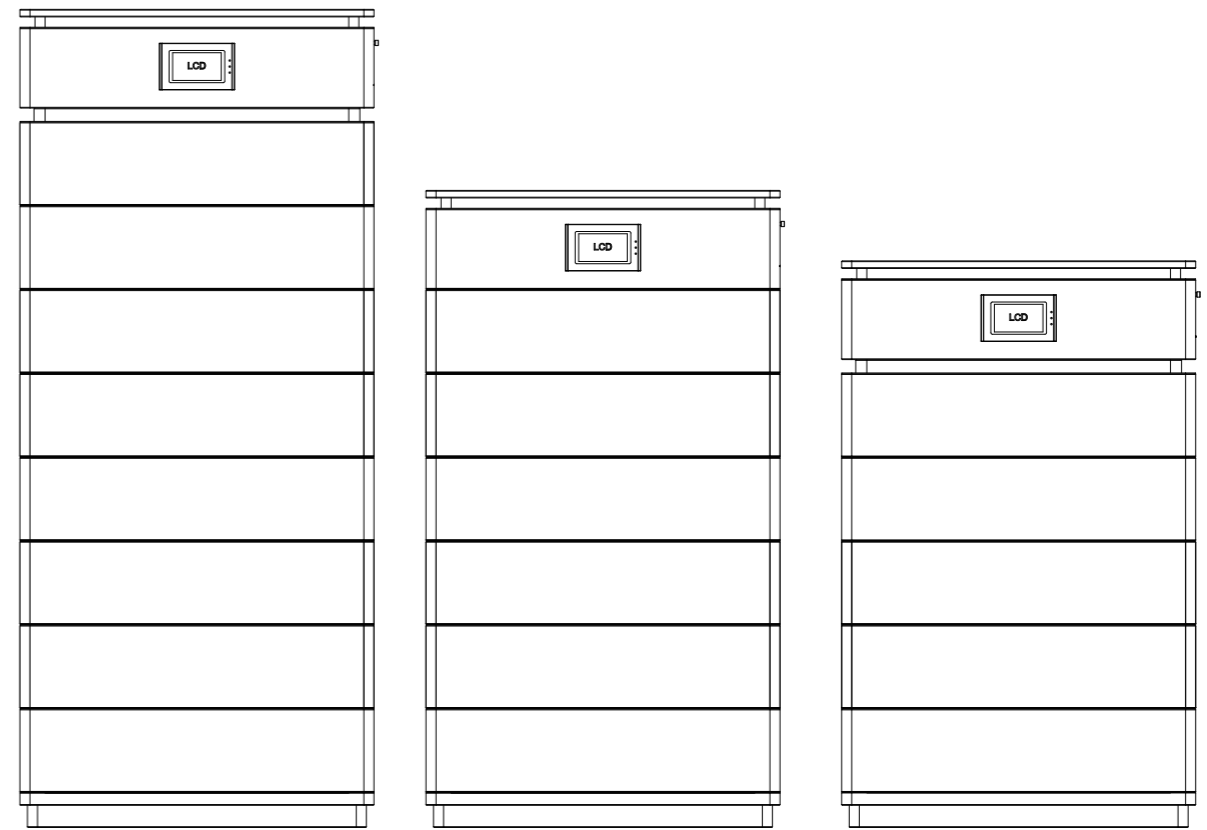


High Voltage Lithium Battery

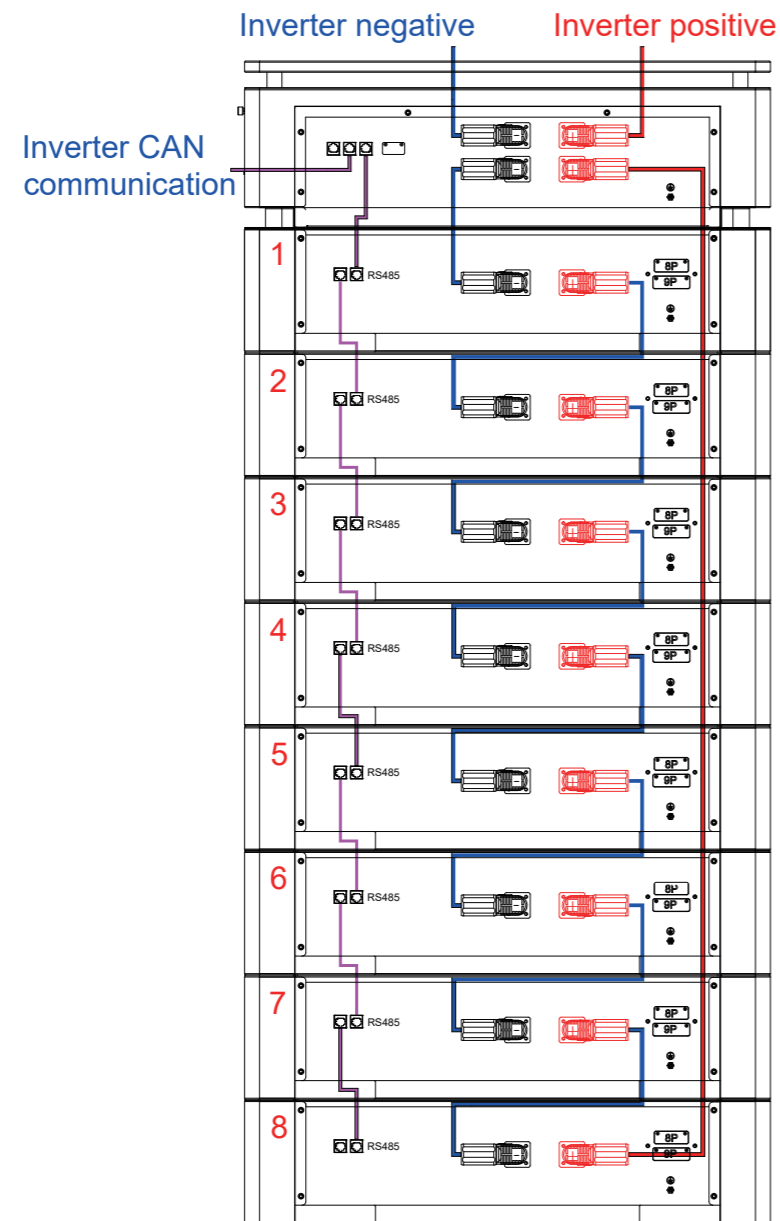
Intelligent Energy Storage System



Product Manual

NO:510-035000-033 V1.1

8 battery pack systems



This manual describes the operation of high-voltage lithium battery storage system. Please read this manual carefully before operation, and follow up the instruction installation. If any questions, please contact local dealers immediately.

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4.2 System power on steps

Step 1: Check the total voltage of the system. The voltage range of the 5 battery pack is 224~292Vdc, the voltage range of the 6 battery pack is 268.8~350.4Vdc, the voltage range of the 8 battery pack is 358.4~467.2Vdc.

Step 2: Check the communication cables between battery packs are correct connected.

Step 3: Turn on the circuit breaker of the High voltage BMS controller.

Step 4: Long press 3 second and the BMS controller is working, the touch screen is lighting.

4.3 System power off steps

Step 1: Turn off the inverter, then disconnect the inverter from the battery.

Step 2: Turn off the circuit breaker of the High voltage BMS controller.

1. Safety precautions

Attention

- 1) It is very important and necessary to read this user manual attached carefully before installation and operation the battery, otherwise may result in electric shock, serious injury or death, or may damage the battery .
- 2) If the battery is stored for a long time, need be charged every six months, and make sure the SOC of the battery is not less than 90% .
- 3) The battery should be recharged within 12 hours after fully discharge .
- 4) Do not expose the cable outside .
- 5) Make sure disconnect all battery connection for maintenance .
- 6) If any abnormality, contact the supplier within 24 hours .
- 7) Do not use cleaning solvent to clean the battery .
- 8) Do not expose the battery to flammable or irritating chemicals or vapors .
- 9) The paint is not all to touch any part of the battery, including internal and external side .
- 10) Do not connect the battery directly to the positive/negative poles of solar panel .
- 11) All direct or indirect loss caused by improper operation shown above is not covered by warranty policy .
- 12) Do not insert any foreign matter into any part of the battery .

Warning

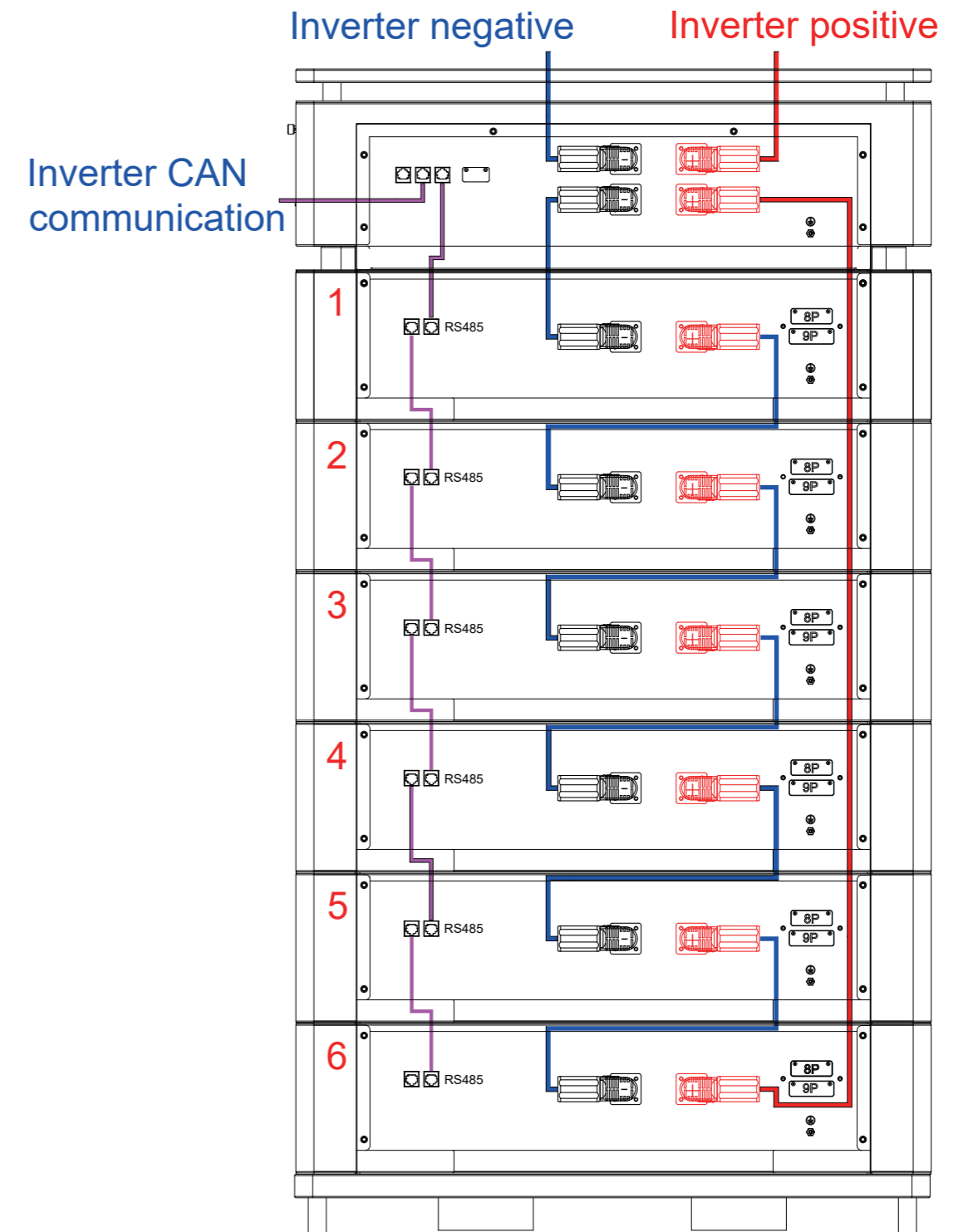
1.1 Before Connecting

- 1) After unpacking, please check the product and packing list first. If there is any damage or missing parts, please contact the local retailer .
- 2) Before installation, make sure the grid power is disconnected, and ensure the battery is shut down .
- 3) The wiring must be correct, positive and negative cables shall not be wrong connected, be sure the battery and external devices are not short circuit .
- 4) Do not connect the battery directly to the AC power supply .
- 5) As BMS built inside, series connection is not allowed without technician's confirmation .
- 6) The battery system must be well grounded and its resistance is less than 1Ω .
- 7) Make sure the battery system parameters are compatible with the related equipment .
- 8) Keeps the battery away from water and fire .

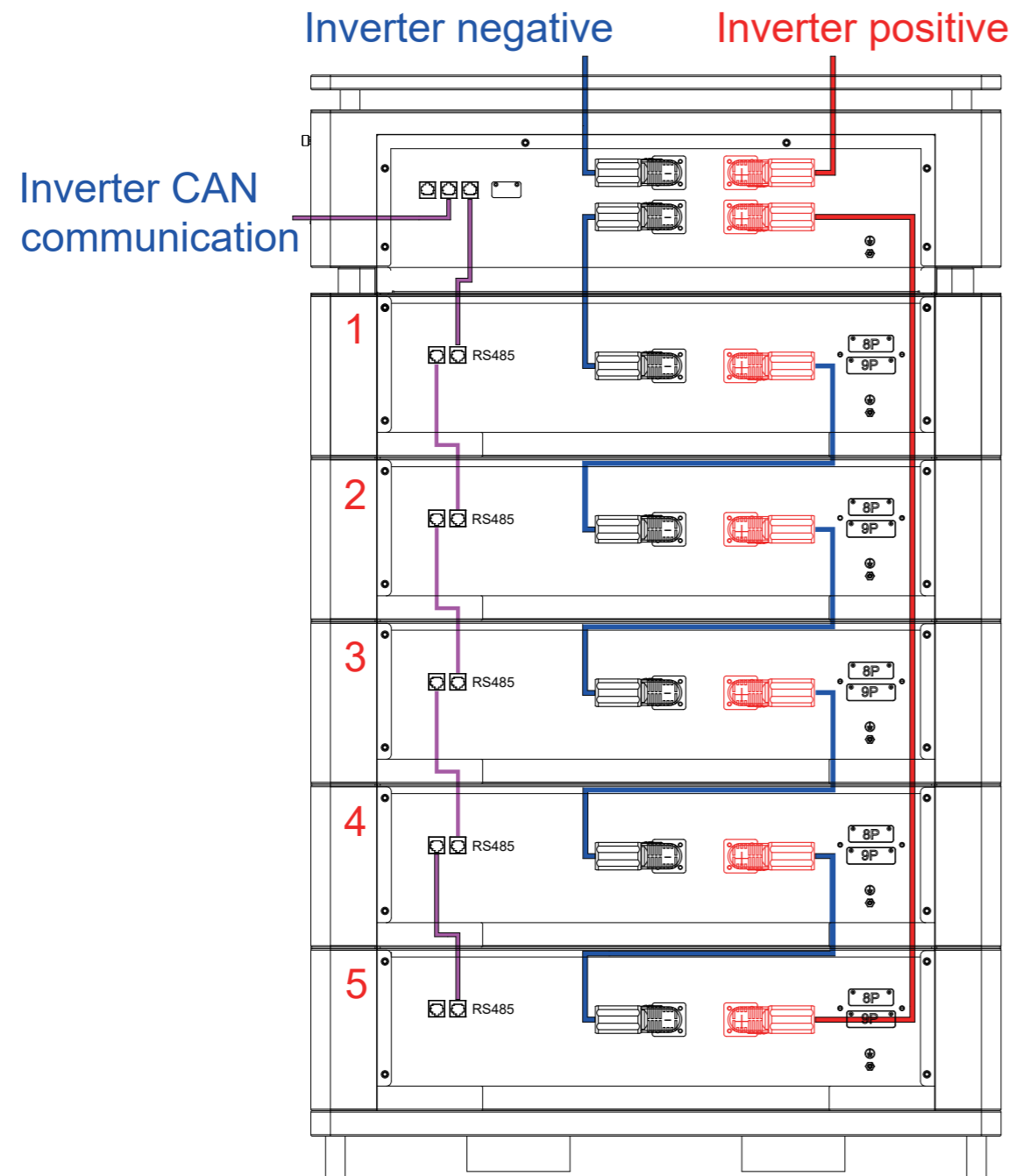
1.2 During Operation

- 1) If the battery system needs to be moved or repaired, must cut off the power supply, disconnect the battery, and keep it completely shut down .
- 2) Do not connect the battery with different models .
- 3) Do not connect the battery with a faulty or incompatible inverter .
- 4) Do not disassemble the battery (QC label is torn off or damaged) .
- 5) In case of fire, only dry powder fire extinguishers can be used, while liquid fire extinguishers are prohibited .
- 6) Except factory staff or authorized persons, do not open, repair or disassemble the battery .
Factory is not liable for any consequences or related liability arising from any breach of safety operation or violation of design, production and equipment safety standards .

6 battery pack systems



5 battery pack systems



2. Product introduction

Intelligent Energy Storage System is one of the new energy storage products newly developed in recent years. It is used to offer reliable power to various types of equipment especially suitable for high power system with limited installation space, limited load bearing and long cycle life .

The high voltage lithium battery has built-in BMS battery management system, which can manage and monitor the battery. Meanwhile, BMS can also achieve balanced charge and discharge of the battery and extend the cycle life. Multiple batteries can be used in parallel for greater capacity and power, which can meet the requirements of higher capacity and longer back time .

2.1 Product Features

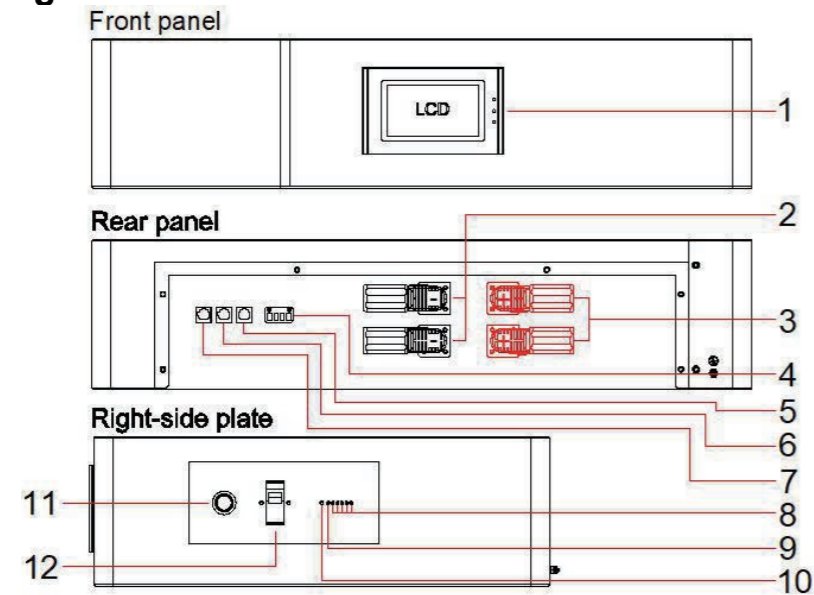
- ◆ The whole module is non-toxic, pollution-free and environmentally friendly .
- ◆ Cathode material is LiFePO₄, excellent safety performance and long cycle life .
- ◆ Battery management system (BMS) with all around protection function such as over discharge, over discharge, over current, high/low temperature .
- ◆ Flexible configuration: Multiple battery modules can be paralleled to expand the capacity .
- ◆ System voltage can be adjusted according to customer demand, 144Vdc~480Vdc is available .
- ◆ Equipped with automotive high voltage switching system, when the battery pack overcharge or over discharge, can disconnect the battery pack timely .
- ◆ Adopt self-cooling mode to reduce the overall noise of the system quickly .
- ◆ Less self-discharge, up to 6 months no charge, no memory effect, with good charge and discharge performance .
- ◆ Operating temperature range : -10°C ~ 50°C, (charging 0°C ~ 50°C, discharge -10°C ~ 50°C)
- ◆ Excellent discharge performance and cycle life .
- ◆ 4.3 inch touch screen, convenient for real-time data check and parameter setting .

2.2 Technical Specification

Model	51.2V100Ah * N
Battery cell type	LiFePO ₄
Battery Module	51.2V100Ah
Number of Module	3 ~ 10 set
Voltage window	134.4 ~ 584.0 Vdc
Dimension	830*445*192mm (1 set)
Weight	54.0Kg (1 set)
Charge current	100A
Discharge current	100A
LED display	Lithium battery pack status indicator
Touch screen display	Energy storage system lithium battery pack status
Communication	RS485, CAN, RS232 (Select-able)
Dry point function	charging protection , discharging protection
Protection function	Over charge, Over discharge, Over temperature, over current, short circuit
Working temperature	-10°C ~ +50°C
Storage temperature	-20°C ~ +60°C
Certification standards	IEC62619, EN61000, EN62619, UN38.3

2.3 Interface introduction

2.3.1 High voltage BMS controller



1. Touchscreen Display

4.3 Inch Touchscreen Display: With functions of working status check, error checking .

2. -Battery terminal

There are one pair of terminals, Black is battery negative pole .

3. +Battery terminal

There are one pair of terminals, Orange is battery positive pole .

4. Dry point

Dry point 1: Pin1 to Pin2 normal operation is open circuit, over-charge protection is short circuit .

Dry point 2: Pin3 to Pin4 normal operation is open circuit, over-discharge protection is short circuit .

5. RS485: Communication interface

RS485: Modbus485 communication bus between battery packs .

6. CAN: Communication interface

CAN: CAN communication bus between BMS controller and Inverter .

7. RS232: Communication interface

RS232: RS232 communication bus between BMS controller and Upper-computer software .

8. SOC status indicator

Green LEDS to show the battery's current capacity 25% 50% 75% 100% .

9. Alarm status indicator

Red LED flashing to show the battery has alarm .

10. Program reset button

After pressing with the thimble, the program forces a reset and restart .

11. Start up switch

Long press 3 second and the BMS controller is working .

12. Circuit breaker

Power switch circuit breaker .

3.2 Installation tools

Before installation, prepare following tools



Wire cutter



Crimping Modular Plier



Screw Driver

Note: Please use tools with insulation skin to prevent accidental electric shock or short circuit.

3.3 Safety Device

When connecting the battery, wear the following safety protective devices.



Insulated



Safety goggles



Safety shoes

4. System Installation Guide

4.1 Lithium battery pack connection steps

Step 1: Install the base for the bottom battery;

Step 2: If there are 5 battery packs in series, the largest number 5 is installed at the bottom.
If there are 8 battery packs in series, the largest number 8 is installed at the bottom.

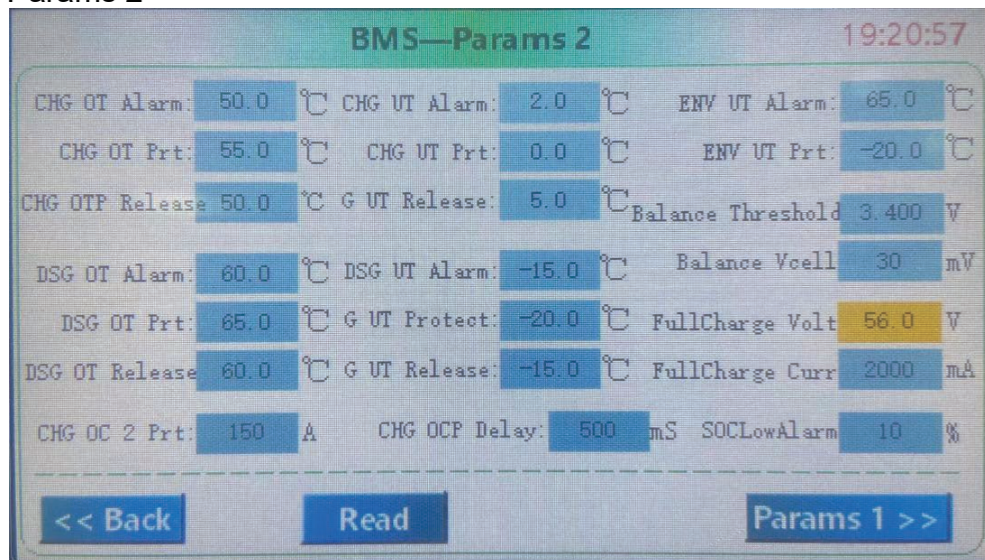
Step 3: Then install them according to serial number 4,3,2,1 or 7,6,5,4,3,2,1 .

Step 4: Install the High voltage BMS controller for the top .

Step 5: Then connect the battery cable and RS485 communication cable according to the drawing .

Step 6: Then connect the Inverter cable and CAN communication cable according to the drawing .

7.BMS-Params 2

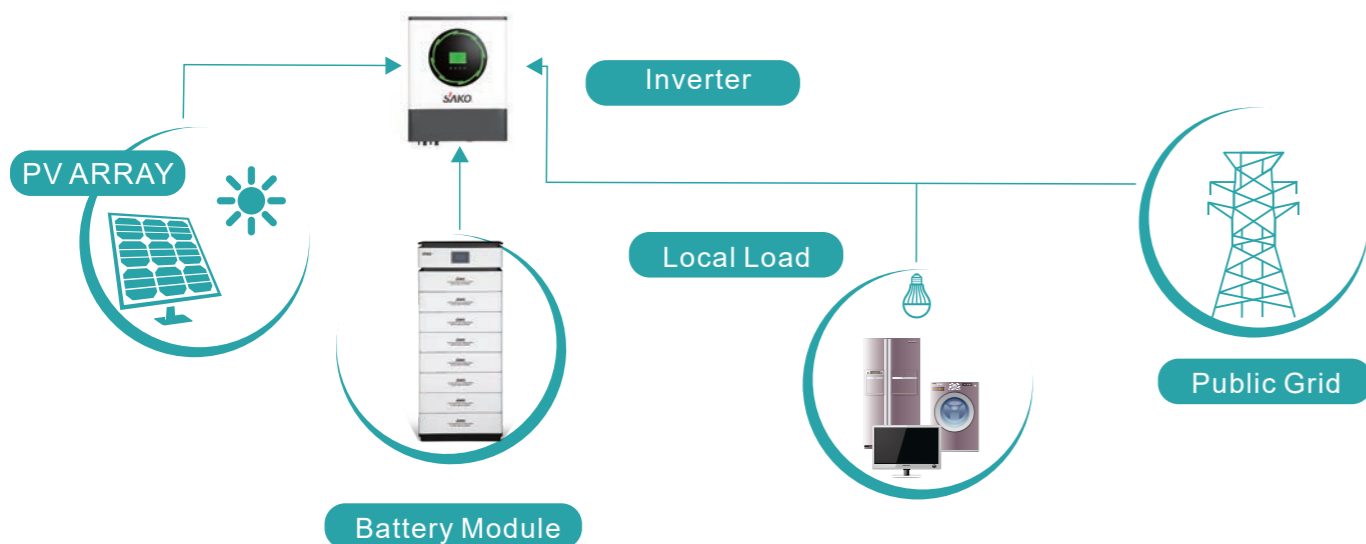


8.BMS-Params 2

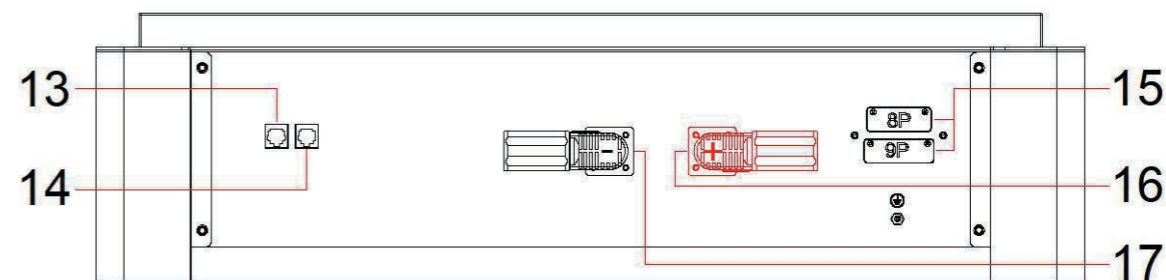


3. The safety instructions of lithium battery

3.1 System solution diagram



2.3.2 Single Lithium Battery Bank



13. Upper Battery Communication interface

Modbus485 communication bus connect to upper battery packs .

14. Lower Battery Communication interface

Modbus485 communication bus connect to lower battery packs .

15. Active balancing external interfaces

Connect the external equalizer .

16. +Battery terminal

There are one pair of terminals, Orange is battery positive pole .

17. -Battery terminal

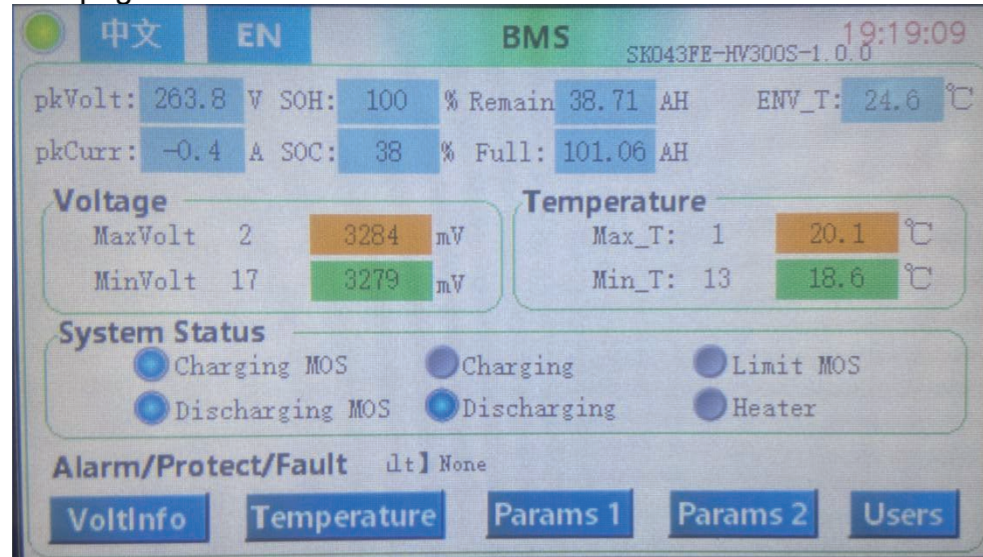
There are one pair of terminals, Black is battery negative pole .

LED Indicator Status description

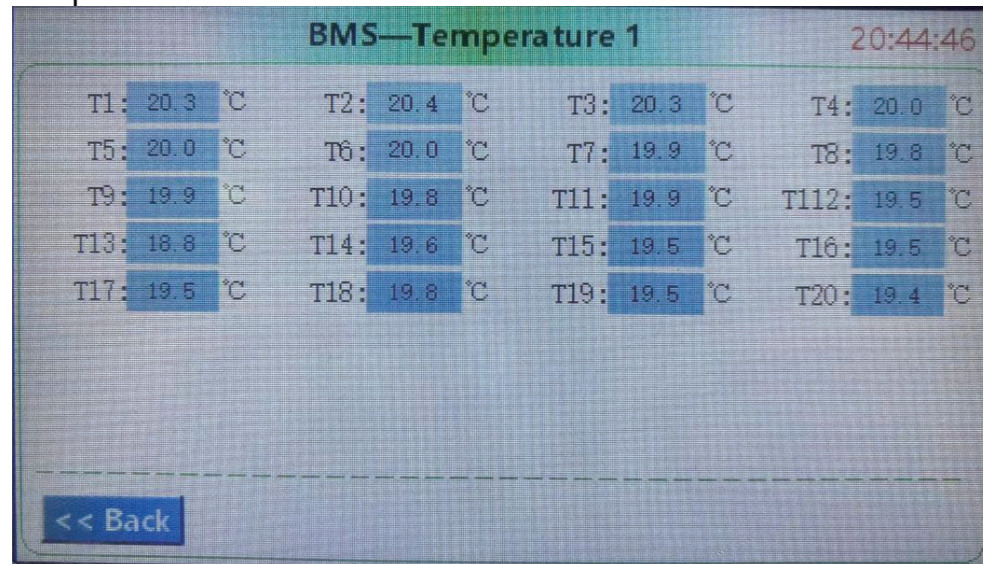
Status	Rated/Alarm/Protection	Warning	SOC indicator					Description	
			●	●	●	●	●		
Shut down	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	All indicators are off	
Standby	Rated	OFF	Remaining Battery Capacity					Standby	
	Alarm	Flash 3	Remaining Battery Capacity					Low battery voltage	
Charging	Rated	OFF	Remaining Battery Capacity					The indicator of the highest remaining battery capacity is blinking	
	Alarm	Flash 3	Remaining Battery Capacity						
	Overcharge	OFF	ON	ON	ON	ON	ON	Stop charging	
Over-current, Over-temperature	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging	
Discharging	Rated	OFF	Remaining Battery Capacity						
	Alarm	Flash 3	Remaining Battery Capacity						
	Over-discharge	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Over-current, Over-temperature	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Failure		ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and discharging

2.3.3 Touch screen interface

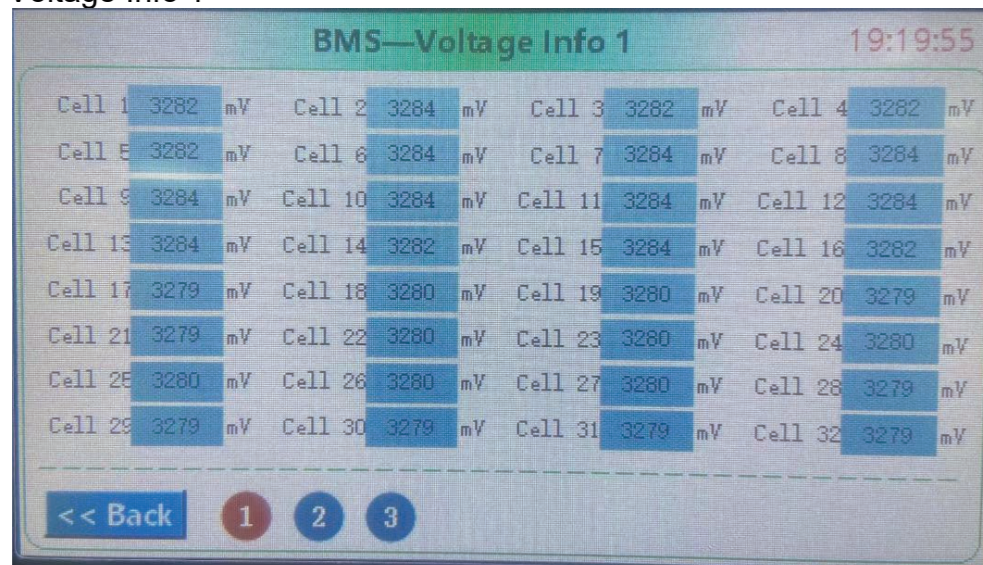
1. Main BMS page



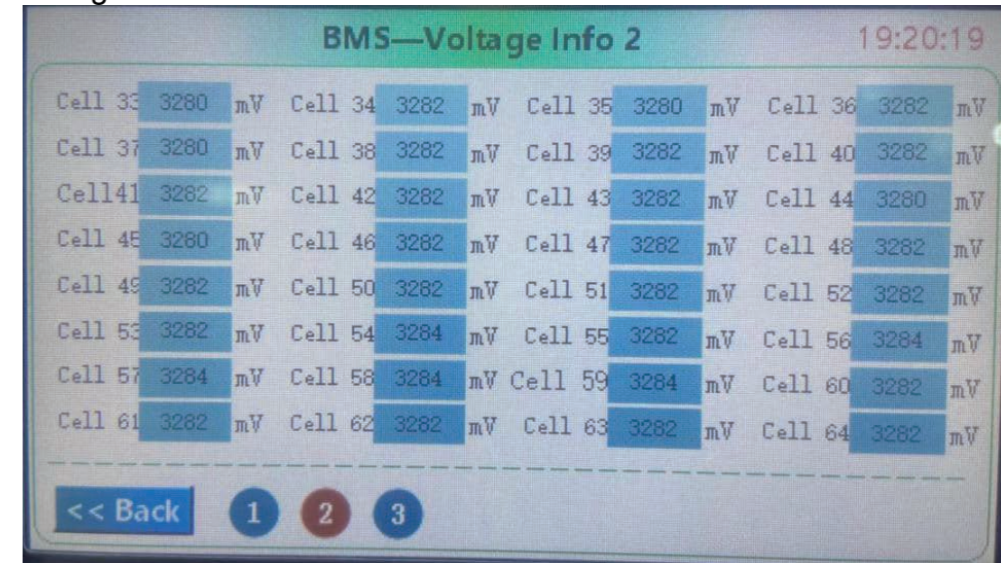
2. BMS Temperature 1



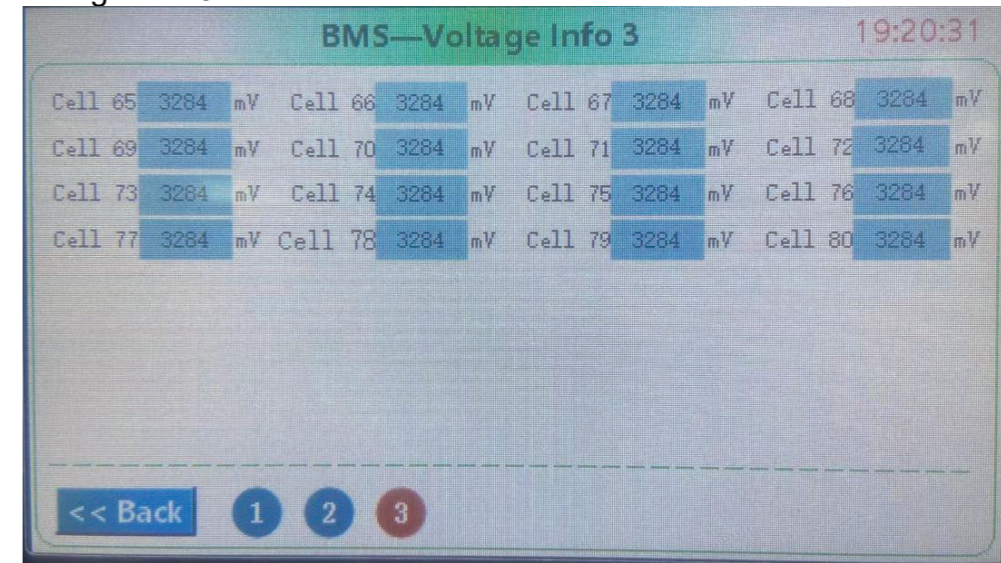
3. BMS Voltage Info 1



4. BMS Voltage Info 2



5. BMS Voltage Info 3



6. BMS-Params 1

