Product specification document

Product name: NILE 200AH　Lithium-ion battery system

project name	configure
External switch function	have
Flow restriction function	have
display screen	have
memory function	have
Pre-charging function	have
Communication function	CAN
Secondary protection	not have

update log

edition	description	date	state
A	First edition release	2024.06.06	controlled

catalogue

1. brief introduction

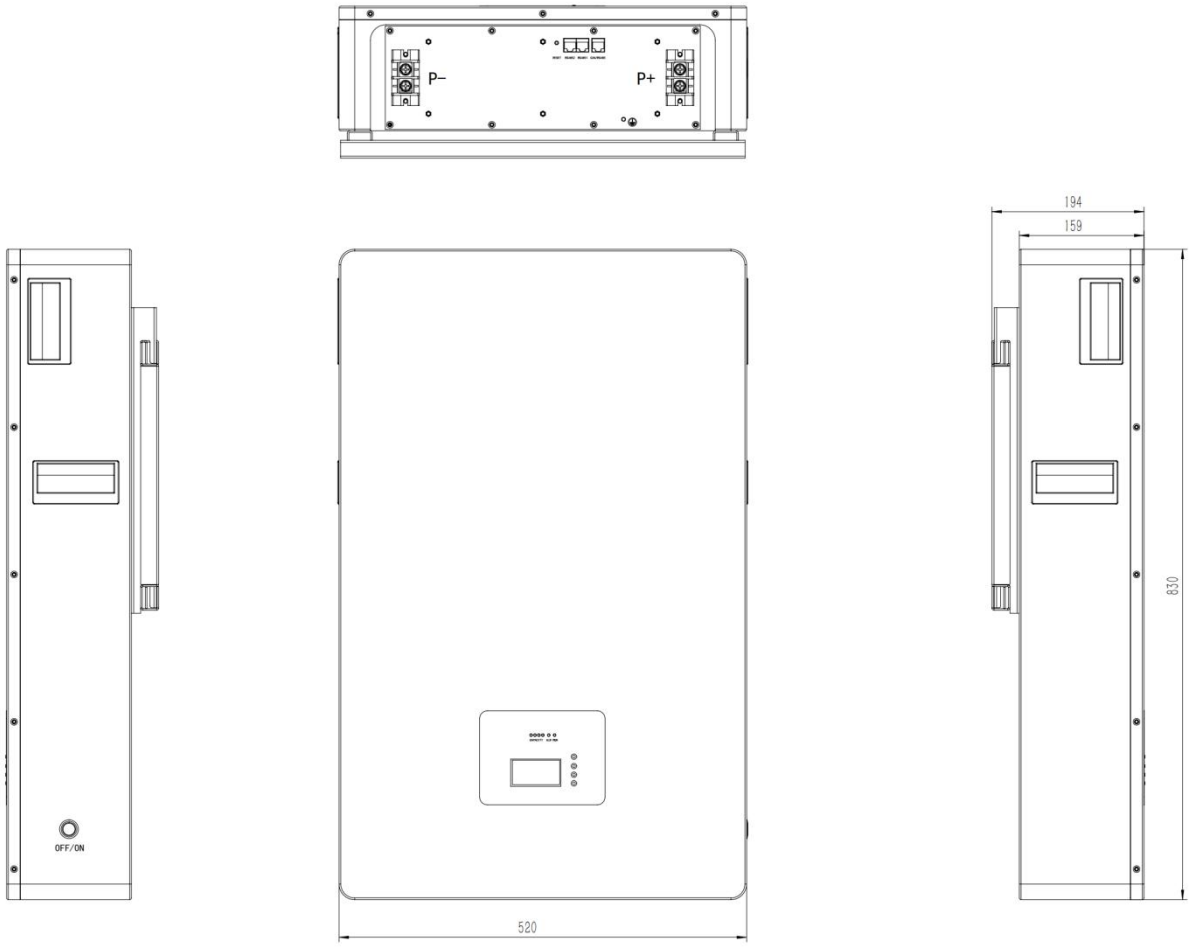
The battery system is suitable for home energy storage, small and medium-sized commercial storage battery system. 3.2V 100AH lithium cells constitute 2 and 16 battery modules and intelligent BMS. The system supports up to 16 batteries in parallel. The system is not allowed to be used in series and mixed with other batteries of the same brand and model.

2. function Introduction

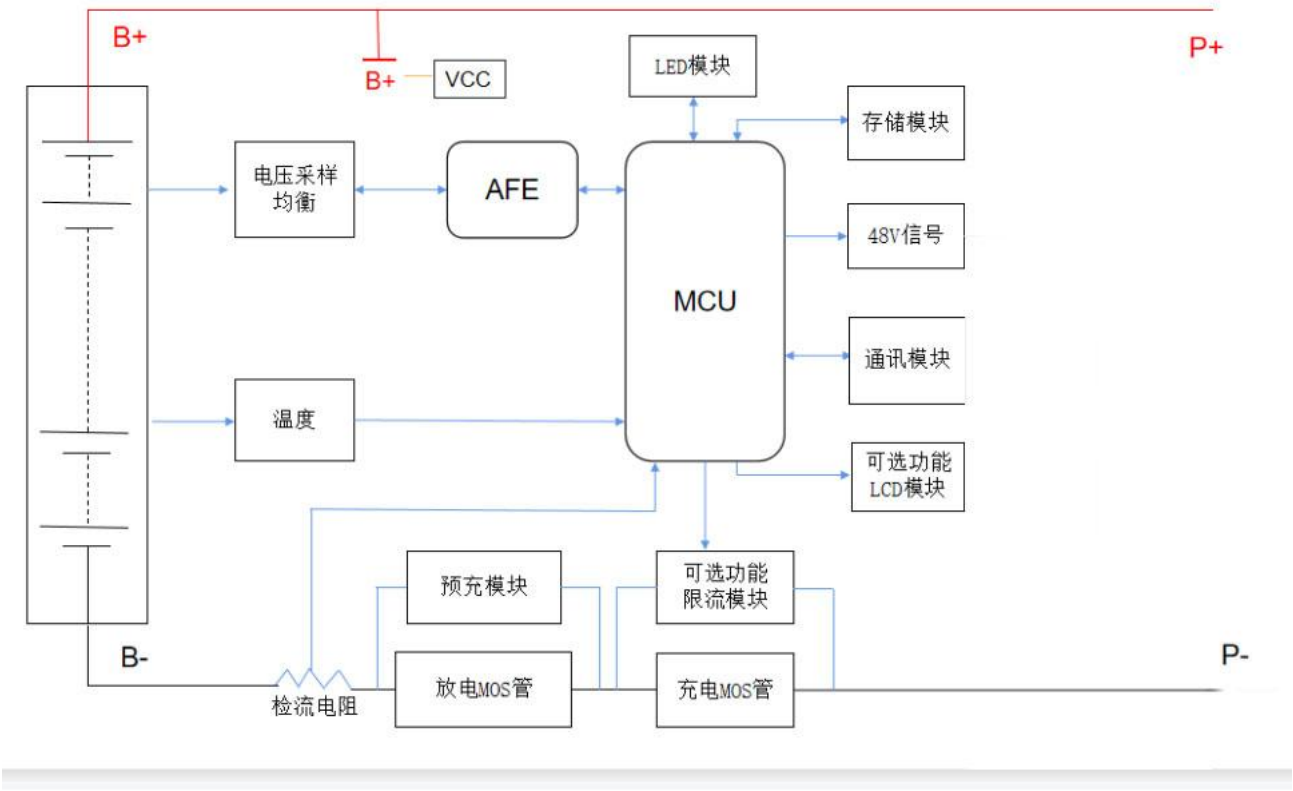
- Battery voltage calculation: 8 battery voltage sampling test, deviation ± 20 mV.
- Battery and ambient temperature detection: 2 battery temperature sensors, 1 ambient temperature sensor, 1 MOS temperature sensor, deviation ± 2℃.
- Battery capacity and cycle times: Complete a complete charge / discharge cycle to set the actual capacity. The remaining capacity of the battery was monitored with capacity estimation accuracy within 5% deviation. In addition, charge and discharge cycle times and complete charge and discharge cycle times can be configured.
- Intelligent cell balance: the charging and static balance strategy can be set flexibly to effectively prolong the service life.
- Communication interface: PC or intelligent front-end can monitor the battery pack data, control the operation and set the parameters through telemetry, remote communication, remote control, remote control and other commands. The communication protocol meets the requirements of YD / T 1363.3 and realizes cascade communication.
- Historical data record, save and read: when the battery is abnormal, record and save the real-time battery status and alarm information.5 Currently can store up to 500 historical fault data.
- Parameters of battery management system: battery management system parameters, including overvoltage / undervoltage of cell battery, overvoltage / overvoltage of total voltage, charge and discharge overcurrent, battery high / low temperature, battery capacity, working mode, charge and discharge limit current, etc., can be set in the battery monitoring system.
- Working mode: working modes such as charge and discharge current limit, fixed voltage output and direct output can be set in the monitoring system.
- Multiple protection functions: hardware protection, battery protection, high and low temperature protection, output short-circuit protection, etc.

3. Product details

3.1 Schematic diagram of the external dimension and interface



3.2 Electrical schematic diagram



3.3 Battery performance parameters

order number	project	specifications
1	Battery configuration	2P 16S
2	rated voltage	51.2V
3	Operating voltage range	43.2V~58.4V
4	rated capacity	200Ah
5	specified	10.24KWh
6	Standard charge / discharge current	50A @25±2℃
7	Maximum charging current	100A@25±2℃
8	Maximum discharge current	100A @25±2℃
9	operating ambient temperature	0～40℃(Charge)
		-20～40℃(Discharge)
10	Store temperature and humidity	-10℃ ~35℃ (within one month of storage) 25±2℃ (Storage time within three months)
11	Dimensions (L x W x H)	(830)×(520)×(159)mm
12	weight	98.0K g±3kg
13	cycle life	3000 cycles @25℃ 50A charge and discharge current of 80% DOD
18	IP grade	IP 2X
19	communication mode	Of either the CAN or the RS485
20	above sea level	0-3000m
21	Humidity range	5~80%

3.4 Battery protection parameters

Function name	Function Settings	List of projects	Set the value	Set the range
Single voltage alarm	open	Single high pressure alarm	3500mV	Single monomer high pressure recovery to the monomer overvoltage protection
		Single high pressure recovery	3400mV	3000 mV ~ monomer high voltage voltage
	open	Single low voltage alarm	2900mV	monomer under voltage protection ~ monomer low pressure recovery
		Single low pressure recovery	3000mV	Single low pressure alarm ~ 3300 mV
Single overpressure protection	open	Single overpressure protection	3650mV	Single high pressure alarm ~ 4500 mV
		The excess pressure of the monomer is restored	3400mV	Single high voltage recovery ~ single overvoltage voltage
		Overpressure recovery conditions	1. The monomer voltage drops to the overvoltage recovery point 2. The remaining capacity is 96% lower than the intermittent power supplement capacity Two conditions must be met to recover	
			The battery was detected with a discharge current> 1A	
Single under-pressure protection	open	Under pressure protection voltage	2700mV	1500 mV ~ monomer undervoltage recovery

		Overpressure recovery voltage	2900mV	Single body undervoltage protection ~ single body low pressure alarm
		Single undervoltage shutdown	Turn off and maintain communication for 1 minute	
		Reinstatement condition of underpressure	Charging current was detected (> 1A)	
Total battery pressure alarm	open	Total pressure high pressure alarm	56.0V	Total pressure and high pressure recovery ~ total pressure overvoltage protection
		Total pressure and high pressure recovery	54.0V	53.0V ~ Total voltage and high voltage voltage
	open	Always low pressure alarm	46.4V	Total pressure underpressure protection ~ total low pressure recovery
		Always lower pressure recovery	48.0V	Total low pressure alarm ~55.0V
Total pressure overpressure protection	open	Total pressure overpressure protection	57.6V	Total pressure high pressure alarm ~60.0V
		Total overpressure was recovered	54.0V	Total voltage high voltage recovery ~ total voltage overvoltage voltage

		Overpressure recovery conditions	1. The monomer voltage drops to the overvoltage recovery point 2. The remaining capacity is 96% lower than the intermittent power supplement capacity Two conditions must be met to recover	
			The battery was detected with a discharge current> 1A	
Total pressure underpressure protection	open	Total pressure underpressure protection	43.2V	36.0V ~ Total pressure and underpressure recovery
		Total pressure owed pressure recovery	46.4V	Total pressure underpressure protection ~ total low pressure alarm
		Total pressure undervoltage shutdown	Turn off and maintain communication for 1 minute	
		Reinstatement condition of underpressure	Charging current was detected (> 1A)	
The battery temperature is not charged	open	Charging high temperature alarm	50℃	Charging with high-temperature recovery ~ charging with over-temperature protection
		Charging high temperature recovery	47℃	35℃ ~ charging high temperature alarm
		Charge overtemperature protection	55℃	Charging for the over-temperature recovery of ~80℃
		Charging over temperature recovery	50℃	Charging with high-temperature recovery ~ charging with over-temperature protection

		Charging low temperature alarm	2℃	Charging undertemperature protection ~ charging low temperature recovery
		Charging low temperature recovery	5℃	Charging low temperature alarm ~10℃
		Charging undertemperature protection	-10℃	-20℃ ~ Charging undertemperature recovery
		Charging undertemperature recovery	0℃	Charging undertemperature protection ~ charging low temperature recovery
The temperature of the cell is banned	open	Discharge high temperature alarm	52℃	Discharge high temperature recovery ~ discharge overtemperature protection
		Discharge high temperature recovery	47℃	35℃ ~ discharge high temperature alarm
		Overtemperature protection of discharge	55℃	The charge overtemperature recovered ~80℃
		Overtemperature recovery of discharge	50℃	Discharge high temperature recovery ~ discharge overtemperature protection
		Discharge low temperature alarm	-10℃	Discharge undertemperature protection ~ discharge low temperature recovery

		Discharge low temperature recovery	3℃	Discharge low temperature alarm ~10℃
		Discharge insufficient temperature protection	-15℃	-30℃ ~ discharge undertemperature recovery
		The discharge undertemperature is restored	0℃	Discharge undertemperature protection ~ discharge low temperature recovery
Environmental temperature protection	open	Environmental high temperature alarm	50℃	Environmental high temperature recovery ~ environmental overtemperature protection
		Environmental high temperature recovery	47℃	-20℃ ~ ambient high temperature alarm
		Environmental overtemperature protection	60℃	Environmental overtemperature recovery of ~80℃
		The environment is restored over temperature	55℃	Ambient heat recovery ~ Environmental overtemperature protection
		Environmental low temperature alarm	0℃	Undertemperature protection ~ Low temperature recovery of the environment
		Low temperature recovery of the environment	3℃	Ambient low-temperature alarm is ~60℃

		Environmental undertemperature protection	-10℃	-30℃~ The low temperature of the environment is restored
		The low temperature of the environment is restored	0℃	Environmental undertemperature protection ~ environmental low temperature recovery
Power temperature protection	open	Power high temperature alarm	90℃	Power high-temperature recovery ~ power over-temperature protection
		Power high temperature recovery	85℃	60℃ ~ power high temperature alarm
		Power overtemperature protection	100℃	Power high temperature alarm ~120℃
		Power over temperature recovery	85℃	Power high-temperature recovery ~ power over-temperature protection
Charging limit	close	Active flow limit	10A	Charger current is greater than 10A, open current limiting
	open	Passive flow limit		The charger current is greater than the charging overcurrent alarm (the value can be set), open the current limit

		Charging limit time delay	5 Minutes	After the flow restriction is opened, re-test whether it is opened after 5 minutes
Charge excessive alarm	open	Charge excessive alarm	100A	Charge overcurrent recovery ~ charge overcurrent protection
		Charging over-flow recovery	95A	0A~ Charge the overcurrent alarm
Charging over-current protection	open	Charging over-current protection	110A	0A~150A
		Charge over time delay	10S	Can set
		Overflow recovery conditions	The discharge resumes immediately, or automatically after 60S	
Effective charging current	Charging into current		1000mA	
	Charging exit current		700mA	
Discharge overflow alarm	open	Discharge overflow alarm	-105A	Discharge overcurrent protection ~ to overflow recovery
		Put it in the past and restore it	-103A	Discharge overflow alarm ~0A
Discharge overcurrent protection	open	Discharge overcurrent protection	-110A	Transient overcurrent protection of ~0A
		Discharge over-flow delay	10S	Can set

		Overflow recovery conditions	Charge back immediately, or automatically after 60S	
Transient over-current protection	open	Transient over-current protection	-220A	Discharge overcurrent protection value to 300A
		Transient over-flow delay	30mS	Can set
		Transient over-flow recovery	Charge back immediately, or automatically after 60S	
	close	Transient overflow locking	Continuous secondary overcurrent, exceeding the number of overcurrent locks	
		Overflow lock times	Five times	
		Transient locking is lifted	Connect the charger	
Output short circuit protection	open (Close settings are not supported)	Short-circuit protection current and time delay	Write program (not allowed)	
		Short circuit protection recovery	Charge back immediately, or automatically after 60S	
	open	Short circuit protection lock	Continuous output short circuit, exceeds the number of overcurrent lock	
		Short circuit lock times	Five times	
		The short circuit lock is lifted	Connect the charger	
Effective discharge current	Discharge into current		-1000mA	
	Discharge exit current		-700mA	

Balanced function of cell	open	Standby equilibrium	No charge or discharge state is on equilibrium	
		Standby equilibrium time	10 Hours	Can set
	open	Charging equilibrium	Charging state and floating charging state to open the equilibrium	
	Turn on voltage conditions	Balanced turn on voltage	3350mV	Can set
		Balanced open pressure difference	30mV	
		Balanced end pressure difference	20mV	
	open	Equilibrium temperature limit	Equalize off temperature range by (ambient alarm temperature)	
		Balanced high temperature is prohibited	50℃	Can set
		Balanced low temperature is prohibited	0℃	
The cell fails to alarm	open	Power cell failure pressure difference	500mV	Can set
		The cell recovers the pressure difference	300mV	
Battery capacity setting	Battery rated capacity		200Ah	5Ah to 200Ah
	Battery residual capacity		Based on the cell voltage estimate	Can set
	Cycle cumulative capacity		20%	Cyops (available)
	open	Remaining capacity alarm	15%	

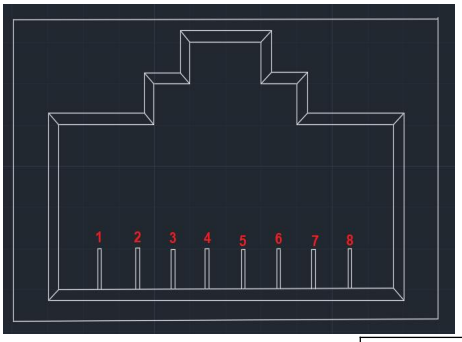
	open	Remaining capacity protection	8%	Close the output
Reset the button	Boot / Activation		When BMS is in dormant state, press the 1S reset button, BMS is activated, LED indicator is on in turn, turn to normal working state;	
	Shut off / sleep		BMS is in standby or working state (except charging), press the 3S reset button, BMS is dormant, LED indicator will turn into the dormant state;	
Pre-charging function	2000ms	0~5000ms can be set	BMS boot instantly start the precharge function	
The BMS power consumption management	open	Maximum standby time	48h (no charger and no effective discharge current)	
The cell is heated at low temperature	close	The cell is heated at low temperature	0℃	Can set
		The heating of the cell is restored	10℃	
external switch	close	The BMS is in the standby state, and can operate the external switch to close and open the BMS		
LCD hold	open	Simple monitoring software, you can view the cell, temperature, current and other data		
Manual charging activation	open	1 Points	After underpressure protection, the BMS is turned off, and manually press the key to remove the forced output of underpressure protection	Can set
compensating impedance	Connect fault impedance	10mΩ	To default between 8 and 9	Battery connection line impedance compensation
	Compensation point 1	0mΩ	9	Can set
	Compensation point 2	0mΩ	13	

4. Communication instructions

.14 The CAN communication

BMS has the battery pack upload CAN communication function, and the port rate is 500K. The CAN communication interface adopts the 8P8C network cable interface. You can communicate with the inverter or the CAN TEST through the CAN interface. When the battery pack is connected, the RS485 communication is connected, and finally the battery pack data, status and information are uploaded to PCS through CAN communication.

CAN communication interface definition:

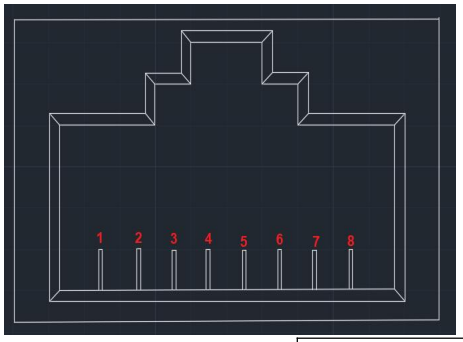


1、2、7、8	NC
4	CAN-L
5	CAN-H
3、6	the earth

.24 RS485 communication

BMS has RS485 communication with battery pack connection and a port rate of 19,200 bps. The RS485 communication interface adopts the 8P8C network cable interface.

RS485 Communication Interface definition:

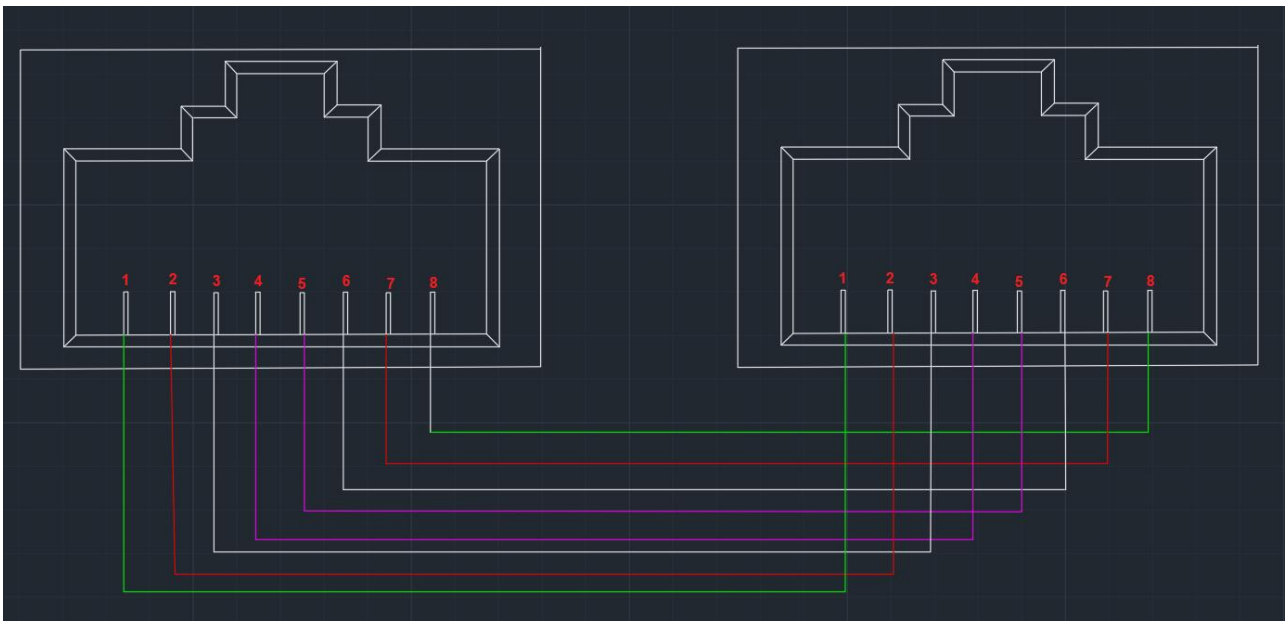


pin	defined declaration
1、8	RS485-B
2、7	RS485-A

3、6	the earth
4、5	NC(hang in the air)

.34 And machine communication

RS485 interface serves as the parallel communication interface and CAN interface as the connected communication interface. The terminal device can read the sum of the battery data of all parallel PACK through the CAN interface. For multiple machines in parallel, the RS485 interface connection is shown in the following figure:



5. Basic working mode

5.1 Charging mode

When the BMS detects the charger connection and the external charging voltage is more than 0.5V than the internal battery voltage, open the charging MOSFET for charging. When the charging current reaches the effective charging flow, enter the charging mode. In charging mode, both charging and discharge MOSFET are closed.

5.2 Discharge mode

The BMS enters the discharge mode when a load connection is detected and the discharge current reaches an effective discharge current.

5.3 Standby mode

When the above two modes are not satisfied, enter the standby mode.

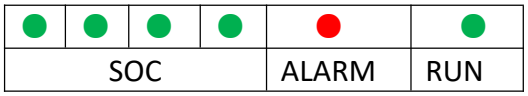
5.4 Shutdown mode

Normal standby for 48 hours, battery trigger undervoltage protection, execute button shutdown or external switch shutdown, BMS into shutdown mode.
Wake up conditions of shutdown mode: 1. Charging activation; 2.48V voltage activation; 3. Key boot.

6.1 LED light instructions

6.2.1 LED lamp sequence

1 running light, 1 alarm light and 4 capacity indicator lights



6.1.2 Capacity indication

state		charge				discharge			
Capacity indicator light		L4●	L3●	L2●	L1●	L4●	L3●	L2●	L1●
	0～25%	go out	go out	go out	twinkle	go out	go out	go out	Often bright

									t
	25～50%	go out	go out	twin kle	Ofte n brigh t	go out	go out	Ofte n brigh t	Ofte n brigh t
	50～75%	go out	twin kle	Ofte n brigh t	Ofte n brigh t	go out	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t
	⩾75%	twin kle	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t	Ofte n brigh t
Run the indicator light, ●		Long bright				twinkle			

6.1.3. Flash instructions

Flash mode	bright	go out
Flash 1	0.25s	3.75s
Flash 2	0.5s	0.5s
Flash 3	0.5s	1.5s

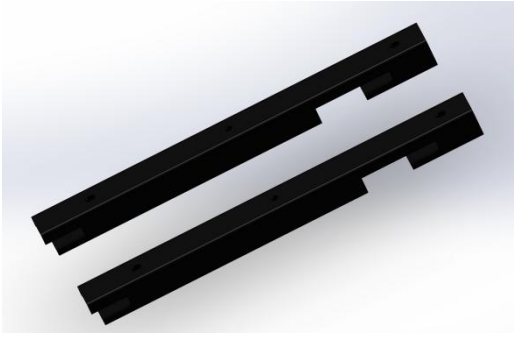
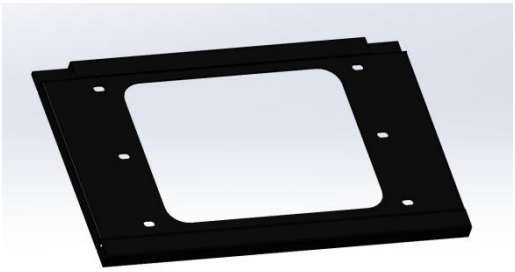
6.2. Status indication

system mode	running state	RUN	ALM	SOC				explain
		🟢	🔴	🟢	🟢	🟢	🟢	
shut down	dormancy	go out	go out	go out	go out	go out	go out	All out
await the opportune moment	normal	twinkle	go out	go out	go out	go out	go out	stand by
charge	normal	Often bright	go out	According to the electricity instruction				Maximum LED flash of 2
	Overflow alarm	Often bright	Flash 2	According to the electricity instruction				Maximum LED flash of 2
	overvoltage crowbar	Flash 1	go out	go out	go out	go out	go out	
	Temperature, overcurrent protection	Flash 1	go out	go out	go out	go out	go out	
discharge	normal	Flash 3	go out	According to the electricity instruction				According to the power quantity of constant lighting indication
	report an emergency	Flash 3	Flash 3					

	Temperature, overcurrent, short circuit, etc	go out	Often bright	go out	go out	go out	go out	The discharge was stopped, and the dormancy was forced without action after 48h
	undervoltage protection	go out	go out	go out	go out	go out	go out	Stop discharge

7. Installation and commissioning

7.1 List of goods

order number	name	quantity	picture
1.	battery	1 PCS	
2.	Wall hanging plug-in	2 PCS	
3.	Wall socket	1 PCS	
4.	Expansion screw	6 PCS	
5.	1.5m power wire harness (positive / negative pair)	1pcs	
6.	1.5m super six-class network cable	1 Article	

7.2 Installation instructions

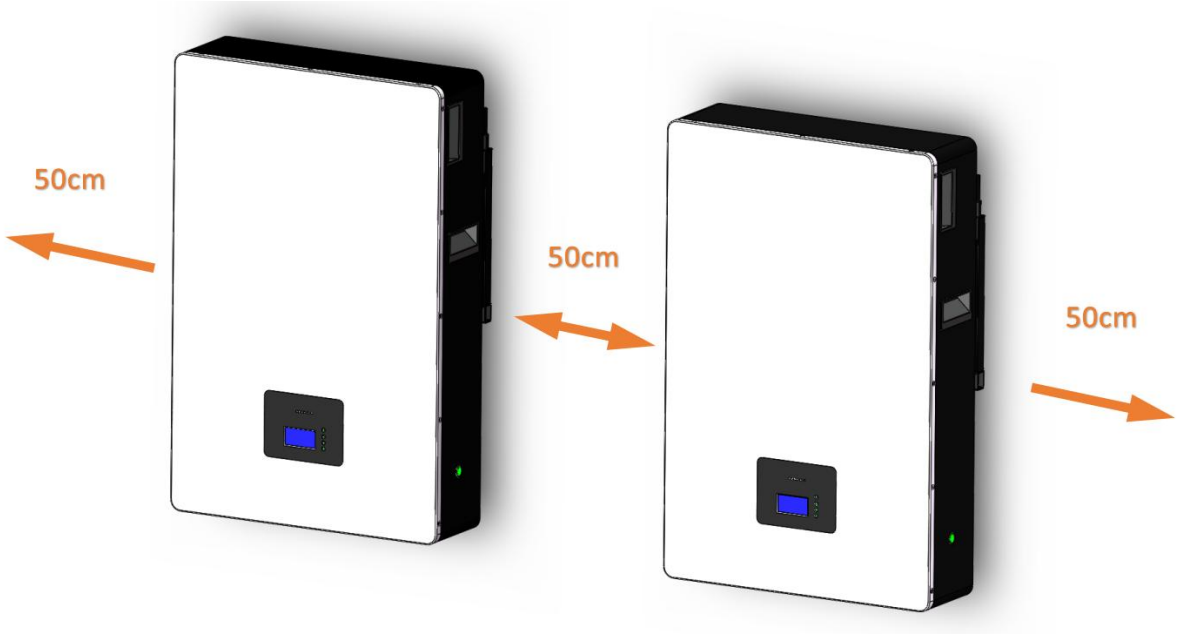
7.2.1 Check the battery status before installation

1. The battery has no obvious deformation and warping
2. No alarm information for battery startup

(If there is any abnormality, please contact the after-sales service)

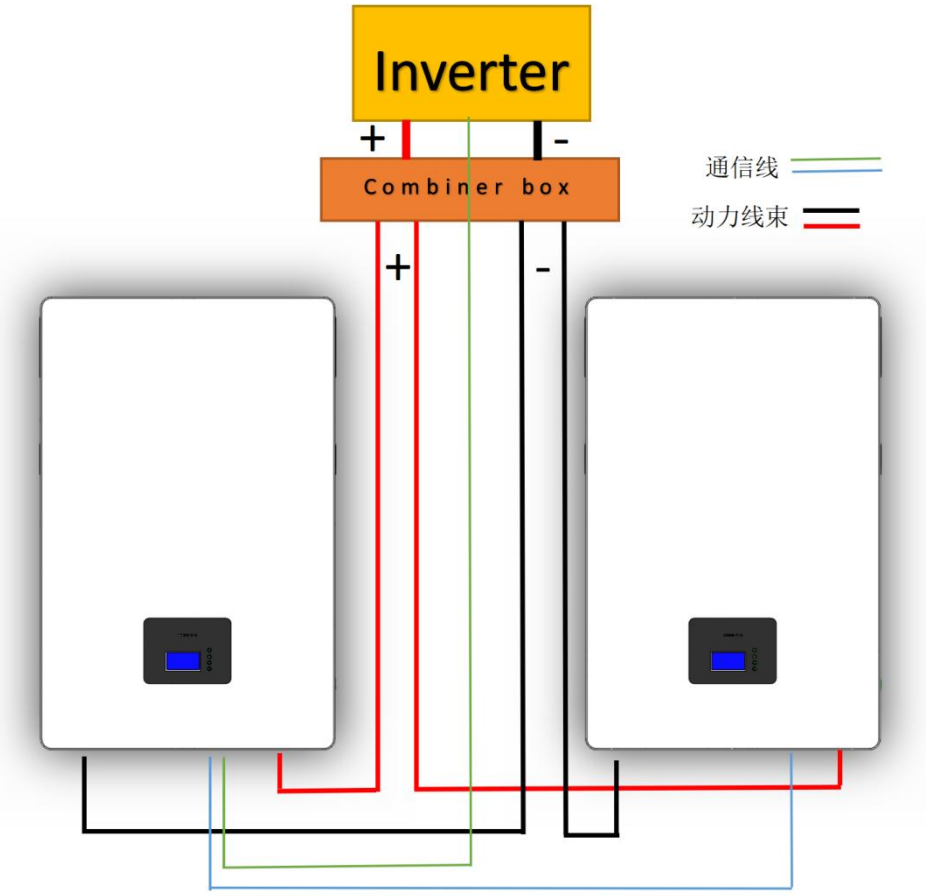
7.2.2 Select the appropriate installation location

- Do not install batteries on flammable building materials
- The installation place should be ventilated, and the ground wall or wall wall is dry best
- The temperature shall be between 10℃ and 30℃ to maintain optimal operation.
- There should be some free space around the battery for heat dissipation (as shown below) suitable for mounting on concrete surfaces or other non-flammable surfaces
- The expansion screw hole shall be 10° upward to prevent the expansion screw from falling off.



7.2.3 Harness connection

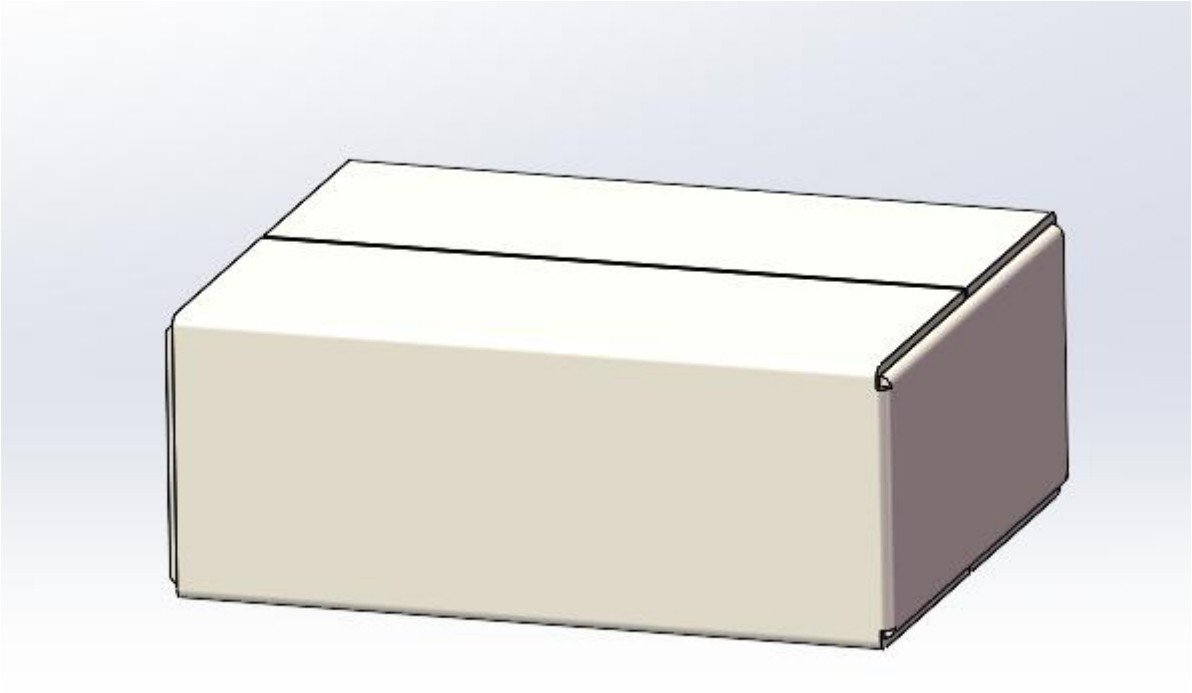
The battery should be turned off before the connection.



8. Packaging

Carton packaging: packaging in the packaging box with dry, dust and moisture proof. Package the products in plastic film / EPE and package them in cartons.

Specification: L 91.0cm * W 60.0cm * H 26.0cm, packaging quantity: 1 weight: 102kg ± 3 KG



9. Precautions

- Do not use the battery for its obvious impact and deformation
- Do not stack the battery
- Note the polarity of the power supply and access terminals.
- Protect equipment insulation and use tools and instruments correctly.
- The battery installation place should be kept away from the fire source and flammable objects, and the installation place should be kept ventilated and dry
- Absolutely prohibit the plug-in during product operation.
- No non-professional technical personnel to open the functional modules, the consequences.
- Charge the battery with a special charger before using a new battery or for a long time.
- Do not remove, open, squeeze, bend, deform, puncture, or break the products.
- Do not modify or insert the battery into any external objects. Do not immerse or expose the product to water or other liquids such as fresh water, seawater or beverages (coffee, fruit juice, etc.). And stay away from fire sources, explosive substances or other hazards.
- Do not short circuit the battery and do not allow metal or other conductors to contact the battery terminals.
- Do not drop the battery. If it does occur (especially on hard surfaces), please contact the service center.
- Do not expose the battery to the skin or eyes if an electrolyte leaks. If it does happen, wash the contact area with plenty of water or seek help from a doctor.
- Do not remove the battery cell under any circumstances. This can cause an internal short circuit and even a fire or other problems.
- Under no circumstances should you burn the battery or put it into the fire. Otherwise, the battery may lead to burn up