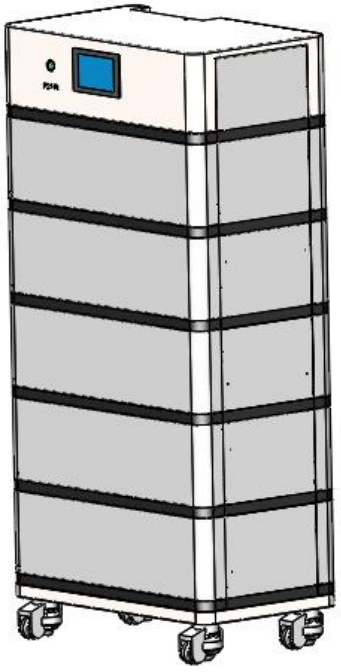
SEPLOS HITEN 50AH LITHIUM ION

BATTERY PACK SPECIFICATION



DONGGUAN SEPLOS TECHNOLOGY CO., LTD

CONTENT

1. Introduction

This battery pack System, is applicable both for residential and commercial energy storage system, which is assembled with 3.2V 50Ah lithium iron phosphate cell in 1P32S configuration, and accompany with SEPLOS Smart BMS. Each pack support 5 packs in parallel to easily expand capacity. The pack can not connected in series. And do not mix parallel the battery packs of different brands or models.

2. Functions

2.1 Reliable charge-discharge

With high reliability and long cycle life by high efficiency in charge and discharge.

2.2 Self-protection

Working in perfect protection, precise data sampling and rapid response.

2.3 Over voltage and low voltage protection of battery pack or individual cell.

2.4 Over current protecting during charge/discharge

2.5 Over temperature protecting during charge/discharge

2.6 Short circuit protection

2.7 Resetting protection

The voltage and current will be back to initial value if the battery pack or individual is over charge or over current.

2.8 Equalization

Equalized control each battery according to its voltage and passive discharge.

2.9 Operating events recording

2.10 PC software monitor

Can reset the parameter including the protected parameter of over charge, over discharge, over current, high or low temperature and the parameter of capacity, working mode, equalization and storage etc by PC software.

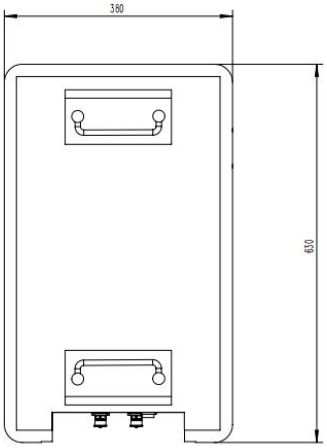
2.11 RS485 and RS232 communication with LCD screen monitor display.

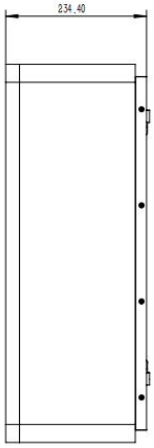
2.12 CAN communication

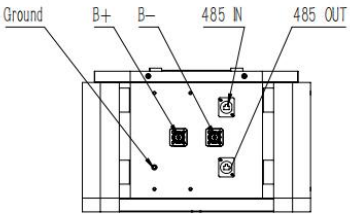
Isolated Communication adopting, and will support address coding or address dial automatically.

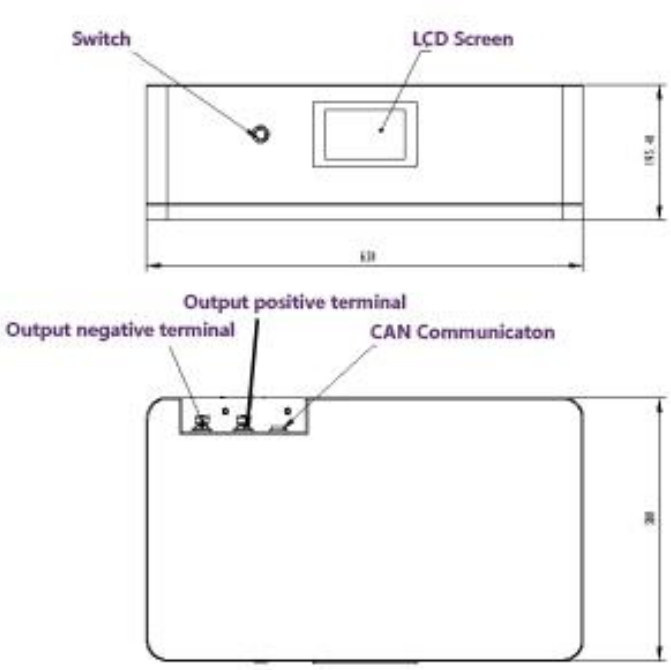
3. Specifications

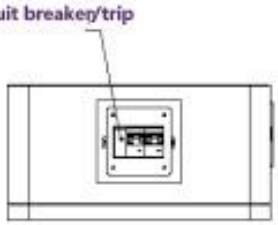
3.1 Appearance and interface

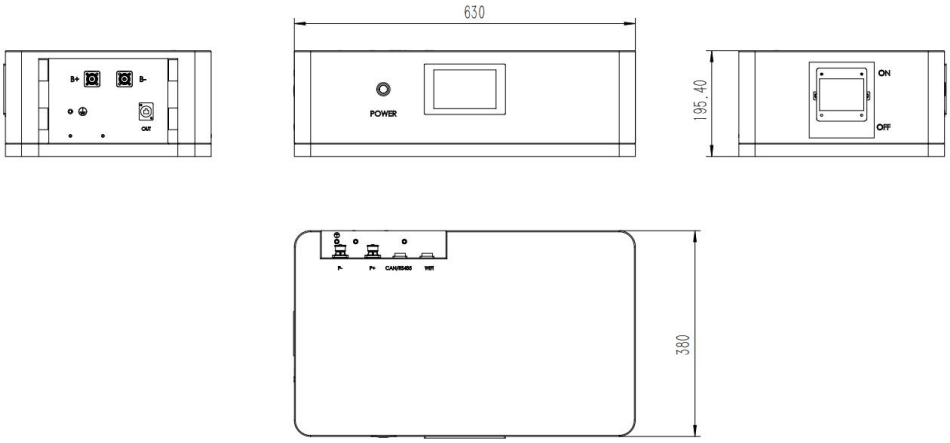




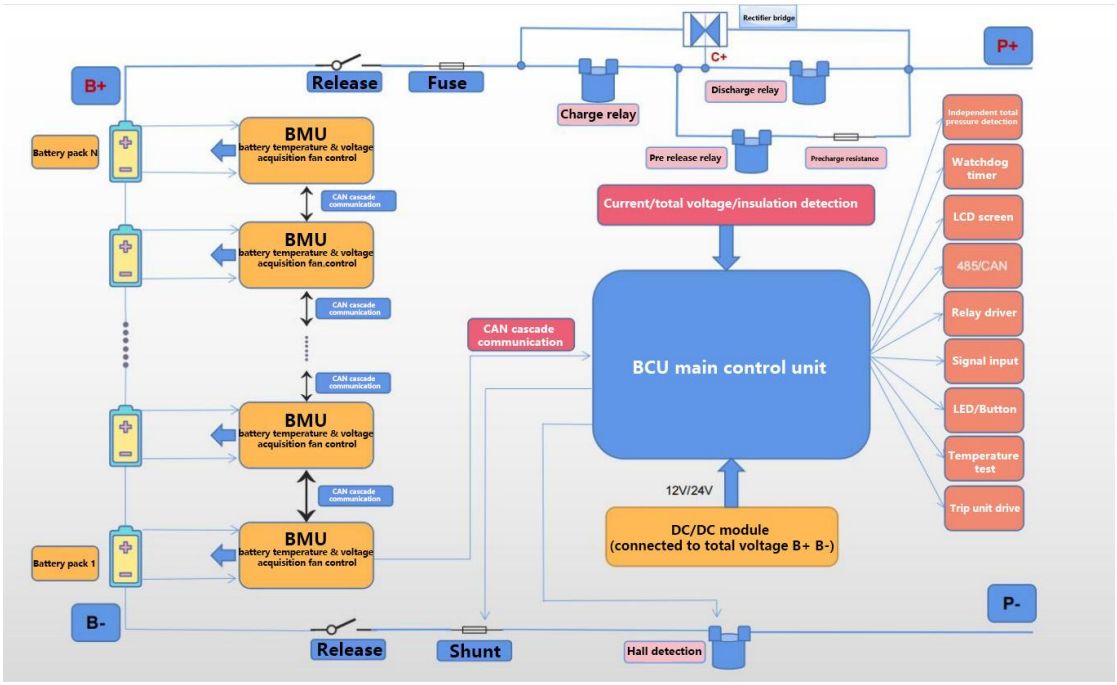







630
POWER
195.40
ON
OFF
380

3.2 Diagram


B+
Release
Fuse
Rectifier bridge
C+
P+
Charge relay
Discharge relay
Pre release relay
Precharge resistance
Current/total voltage/insulation detection
Battery pack N
BMU
battery temperature & voltage acquisition fan control
CAN cascade communication
BMU
battery temperature & voltage acquisition fan control
CAN cascade communication
BMU
battery temperature & voltage acquisition fan control
CAN cascade communication
BMU
battery temperature & voltage acquisition fan control
Battery pack 1
CAN cascade communication
BCU main control unit
12V/24V
DC/DC module
(connected to total voltage B+ B-)
Independent total pressure detection
Watchdog timer
LCD screen
485/CAN
Relay driver
Signal input
LED/Button
Temperature test
Trip unit drive
B-
Release
Shunt
Hall detection
P-

3.3 Parameters

Items	HV-AC-S2	HV-AC-S3	HV-AC-S4	HV-AC-S5
Rated energy(kWh)	10.24KWh	18.3KWh	20.4KWh	25.6KWh
Configuration	2*32S1P	3*32S1P	4*32S1P	5*32S1P
Nominal Voltage(V)	204.8V	307.2V	409.6V	512V
Working Voltage(V)	172.8V-233.6V	259.2-350.4V	345.6-467.2V	432-584V
Rated charge/ discharge power(KW)	10.24KW	15.36KW	20.48KW	25.6KW
Cell chemistry	Lithium Iron Phosphate			
Nominal Capacity(Ah)	50Ah			
Rated charge/ discharge Current(A)	50A			
Communication Interface	CAN/ RS485			
Cycle life	5000 cycles			
Working Temperature	- 15-45(°C)			
Humidity(%)	5%-65%			
Altitude Limited(m)	2000m			
Weight(Kg)	121±4KG	169± 6KG	217±8KG	265± 10KG
Dimension(mm)	630*380*720 mm	630*380*920 mm	630*380*1120 mm	630*380*1320 mm

3.4 Protection parameters

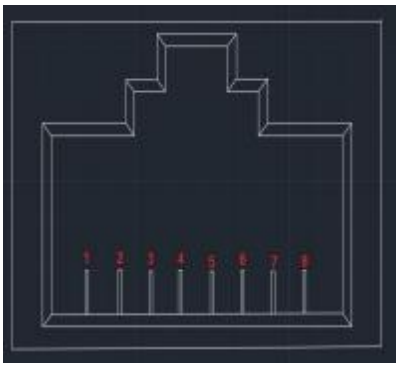
NO.	Items		Initial	Settable	Remark
1	Individual over charge protection	Warning voltage	3550mV	Yes	
		Protecting voltage	3600mV	Yes	
		Delaying time	1.0S	Yes	
	Recovery	Recovery voltage	3380mV	Yes	
		Recovery capacity	SOC < 96%	Yes	
		Discharge recovery	Discharge current >1.0A		
2	Individual over discharge protection	Warning voltage	2800mV	Yes	System will power off when over discharge protection over 30 seconds without recovery.
		Protecting voltage	2500mV	Yes	
		Delaying time	1.0S	Yes	
	Recovery	Recovery voltage	2900mV	Yes	
		Recovery when charging	With charger connecting		
3	Total over charge protection	Warning voltage	112V	Yes: cell*(total number in series)	
		Protecting voltage	115.2V	Yes: cell*(total number in series)	
		Delaying time	1.0S	Yes	
	Recovery	Recovery voltage	108.16V	Yes: cell*(total number in series)	
		Recovery capacity	SOC < 96%	Yes	
		Discharge recovery	Discharge current >1.0A		
4	Total over discharge protection	Warning voltage	89.6V	Yes: cell*(total number in series)	System will power off when over discharge protection over 30 seconds without recovery.
		Protecting voltage	86.4V	Yes: cell*(total number in series)	
		Delaying time	1.0S	Yes	
	Recovery	Recovery voltage	92.8V	Yes	
		Recovery when charging	With charger connecting		
5	Over current protection	Warning current	52A		No self- recovery
		Protecting current	55A		

	(charging)	Delaying time	5.0S		if this status had been locked with continuously occurrence in 10 times.
	Recovery	Self- recovery	Self- recovery after 1 min		
		Discharge recovery	Discharge current >1.0A		
7	First grade over current protection(discharging)	Warning current	52A		No self- recovery if this status had been locked with continuously occurrence in 10 times.
		Protecting current	55A		
		Delaying time	5.0S		
	Recovery	Self- recovery	Self- recovery after 1 min		
		Discharge recovery	Charge current >1.0A		
8	Second grade over current protection(discharging)	Protecting current	≥90A		No self- recovery if this status had been locked with continuously occurrence in 10 times.
		Delaying time	500mS		
	Recovery	Self- recovery	Self- recovery after 1 min		
		Discharge recovery	Charge current >1.0A		
9	Cell temperature protection	Low temperature warning(charging)	2℃		
		Low temperature protecting(charging)	0℃		
		Low temperature protecting recovery(charging)	5℃	Yes	
		High temperature warning(charging)	50℃	Yes	
		High temperature protecting(charging)	55℃	Yes	
		High temperature protecting recovery(charging)	50℃	Yes	
		Low temperature warning(discharging)	-15℃	Yes	

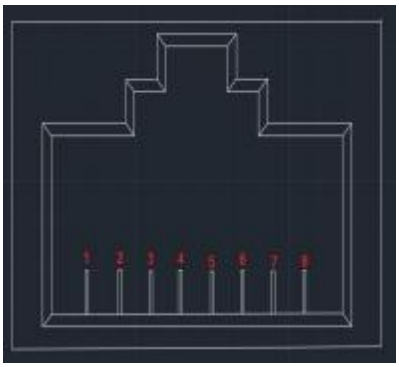
		Low temperature protecting(discharging)	-20℃	Yes	
		Low temperature protecting recovery(discharging)	-15℃	Yes	
		High temperature warning(discharging)	55℃	Yes	
		High temperature protecting(discharging)	60℃	Yes	
		High temperature protecting recovery(discharging)	55℃	Yes	
10	Ambient temperature warning	Low temperature	-20℃	Yes	
		High temperature	65℃	Yes	
11	Power consumption	Working current	≤ 50mA (Relay current not included)		
		Power off	\		
12	Fan control	On	NC		
		Off	NC		
13	Equalization	Threshold voltage	3400mV	Yes	
		Voltage difference	30mV	Yes	
14	Capacity setting	Low power warning	SOC < 5%	Yes	No warning when charging
15	Cell failure protection	Voltage difference	> 1V	NO	charge- discharge disable
16	Full charge identify	Voltage	> 560V	Yes: 3.5V*(total number in series)	Stop charging when both conditions is satisfied and refresh the SOC to 100%
		Cutoff current	< 1A	Yes	

4. Communication

4.1 Interface definition

	1	**RS485A**
	2	**RS485B**
	3	**CAN_L**
	4	**PGND**
	5	**V0**
	6	**CAN_H**
	7	**NC**
	8	**coding**

IN port： connect to master control or upper slave control

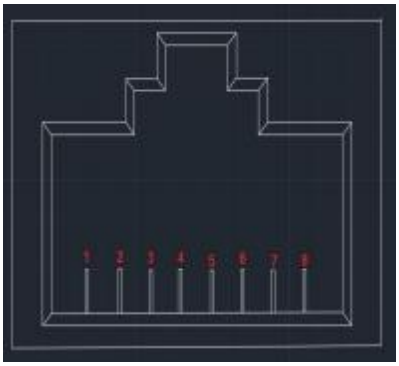
	1	**RS485A**
	2	**RS485B**
	3	**CAN_L**
	4	**PGND**
	5	**V0**
	6	**CAN_H**
	7	**NC**
	8	**coding**

OUT port： connect to lower slave control

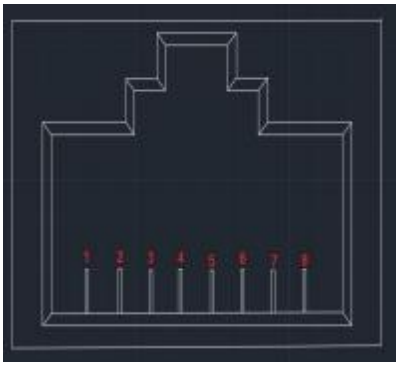
4.2 Interface definition

The battery pack supports CAN communication with inverters at the baud rate of 500K. The CAN communication interface applied 8C8P Ethernet port. The battery pack can transmit information with inverter or CAN TEST equipment through the CAN interface. The paralleled packs

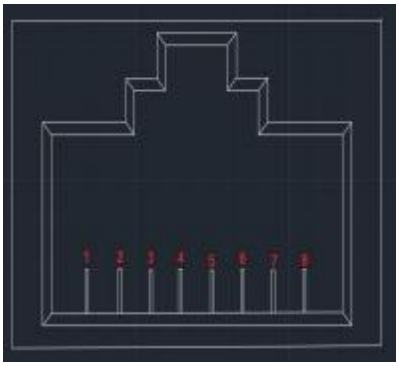
transmit information through RS485 interface, and then, the master pack gathering the system information, and transmit to inverter and PCS through CAN communication.

	1	**RS485A**
	2	**RS485B**
	3	**CAN_L**
	4	**PGND**
	5	**V0**
	6	**CAN_H**
	7	**NC**
	8	**coding**

OUT Interface： connect to lower slave control

	1	**RS4851A**	**Local communication**
	2	**RS4851B**	
	3	**GND-A1**	
	4	**RS4853A**	**reserve**
	5	**RS4853B**	
	6	**GND-A3**	**Inverter communication**
	7	**CAN-H3**	
	8	**CAN-L3**	

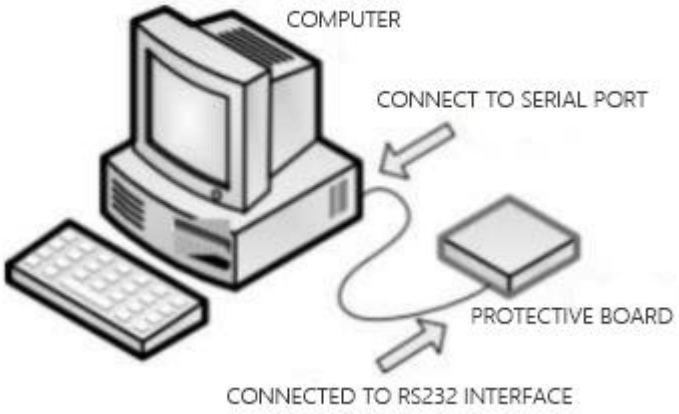
Communication port 1： connect to upper inverter or PC

	1	**Addr_IN**	Parallel CAN coding
	2	**AddR_out**	
	3	**CAN-H2**	Local CAN communication
	4	**CAN-L2**	
	5	**CAN_GND2**	
	6	**NC**	NC
	7	**24V+**	reserve
	8	**24V-**	

Communication port 2：connect to upper inverter or PC

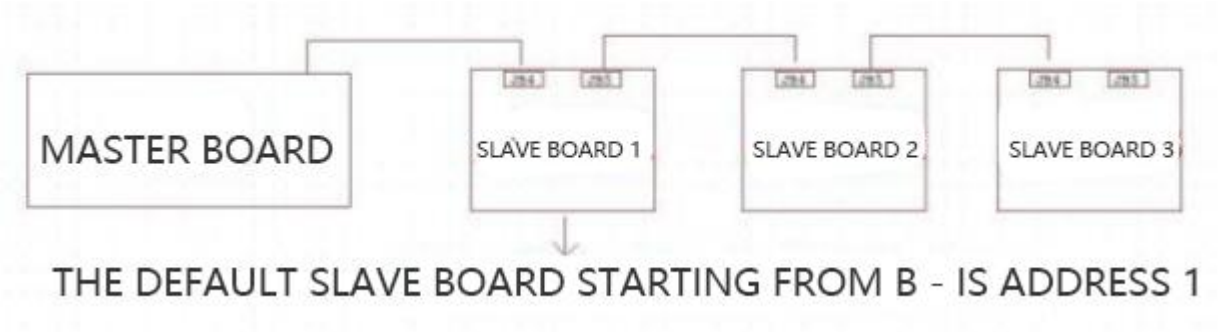
4.3 RS232 communication

BMS can connect to PC through RS232 interface,which can browse all the information of the battery including voltage, current, temperature, status, SOC, SOH and manufacture in PC software at the default baud rate of 9600bps, same as RS485 interface.



4.4 Coding

The system will be coding automatically when battery module in series with slave communicating or in parallel with host communicating. The slave code can coded by software according to order of connection, the way to the host, show as below:



5. Working mode

5.1 Charging mode

When a charger was detected, and the charger voltage is 0.5V+ more than the battery voltage, BMS will turn on the charging MOSFET. And when the charging current reaches the effective charging current value, enters charging mode.

5.2 Discharging mode

When a loads was detected, and the discharging current reaches the effective discharging current value, BMS enters discharging mode.

5.3 Standby mode

When the BMS not in charging mode, nor discharging mode, it enters standby mode.

5.4 Power off mode

5.4.1 Power off

When meet any condition as below, the system will be power off(without charger only)

1） Individual or entirety battery remain over discharge protecting mode within 30 seconds.

2） Press the button in 3 seconds. (make sure no charger connected, otherwise it will not enter low power mode.)

5.4.2 Awaken

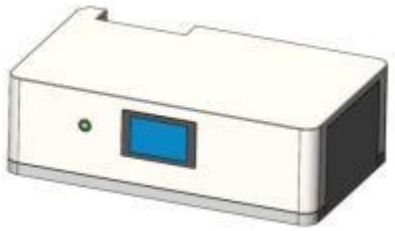
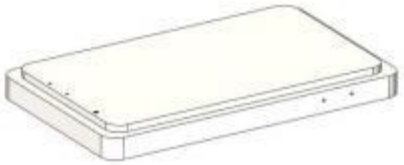
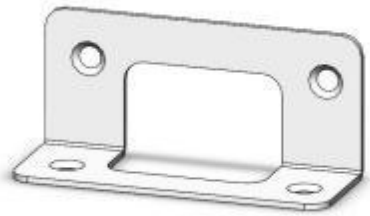
When meet any condition as below, the system will be enter working mode

1） Connect the charger and the voltage need reach more than 300V.

2） Press the power button in 3 seconds to start the system.

6. Installation

6.1 Package list

NO.	Item	Quantity	Photo
1	Battery Box	1 PCS	
2	Base	1pcs	
3	Bracket-B	1pcs	
4	Bracket-C	1pcs	

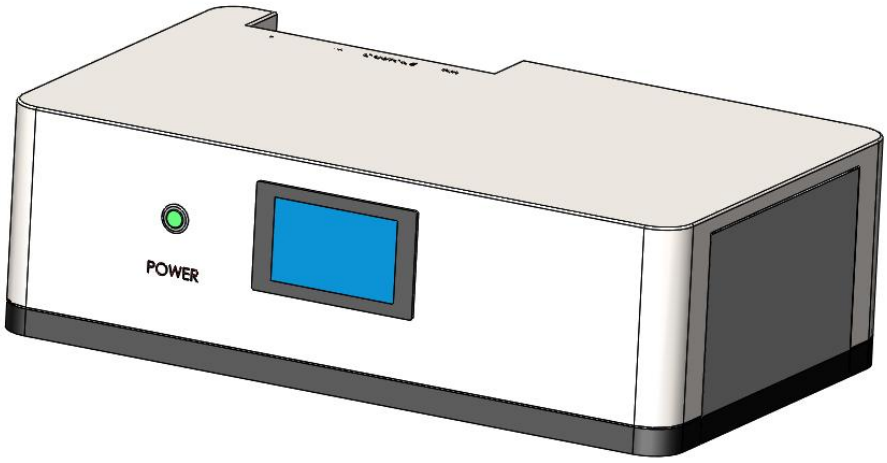
6.2 Accessories list

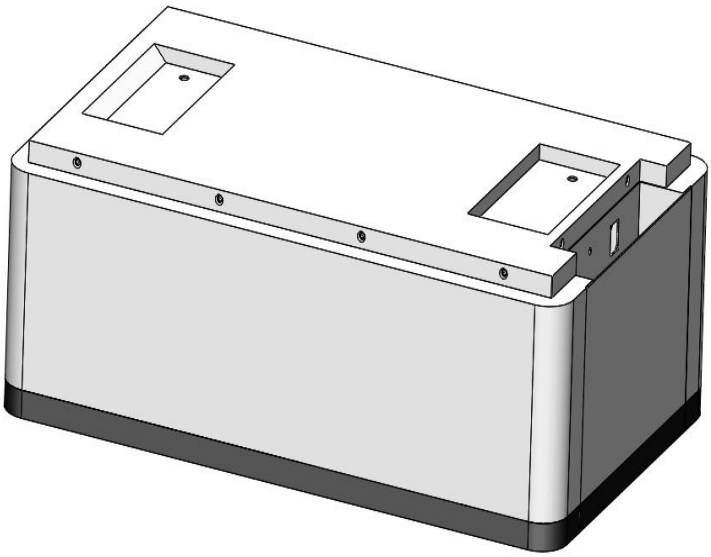
NO.	Item	Quantity	Photo
1	Truckle	4PCS	
2	Battery cable (Battery to battery)	Depend on quantity of battery box	
3	Ground lead	Depend on quantity of battery box	
4	RJ45 cable, yellow 300mm		
5	1.5m Battery cable (Battery to inverter)	1pcs	
6	1.5m Network wire	1pcs	
7	Expansion screw	2pcs	

6.3 Installation

6.3.1 Check the battery status before installation

Confirm it is good shape and perfect port of the item

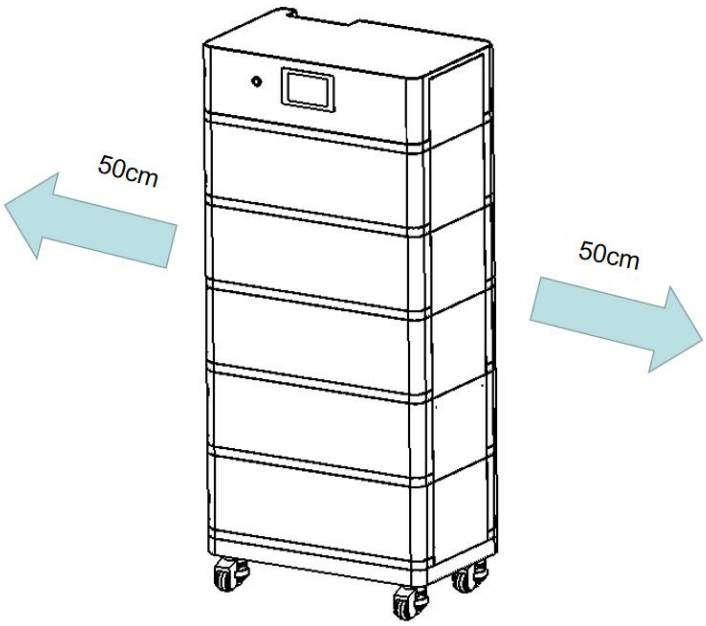




6.3.2 Choose a suitable installation location.

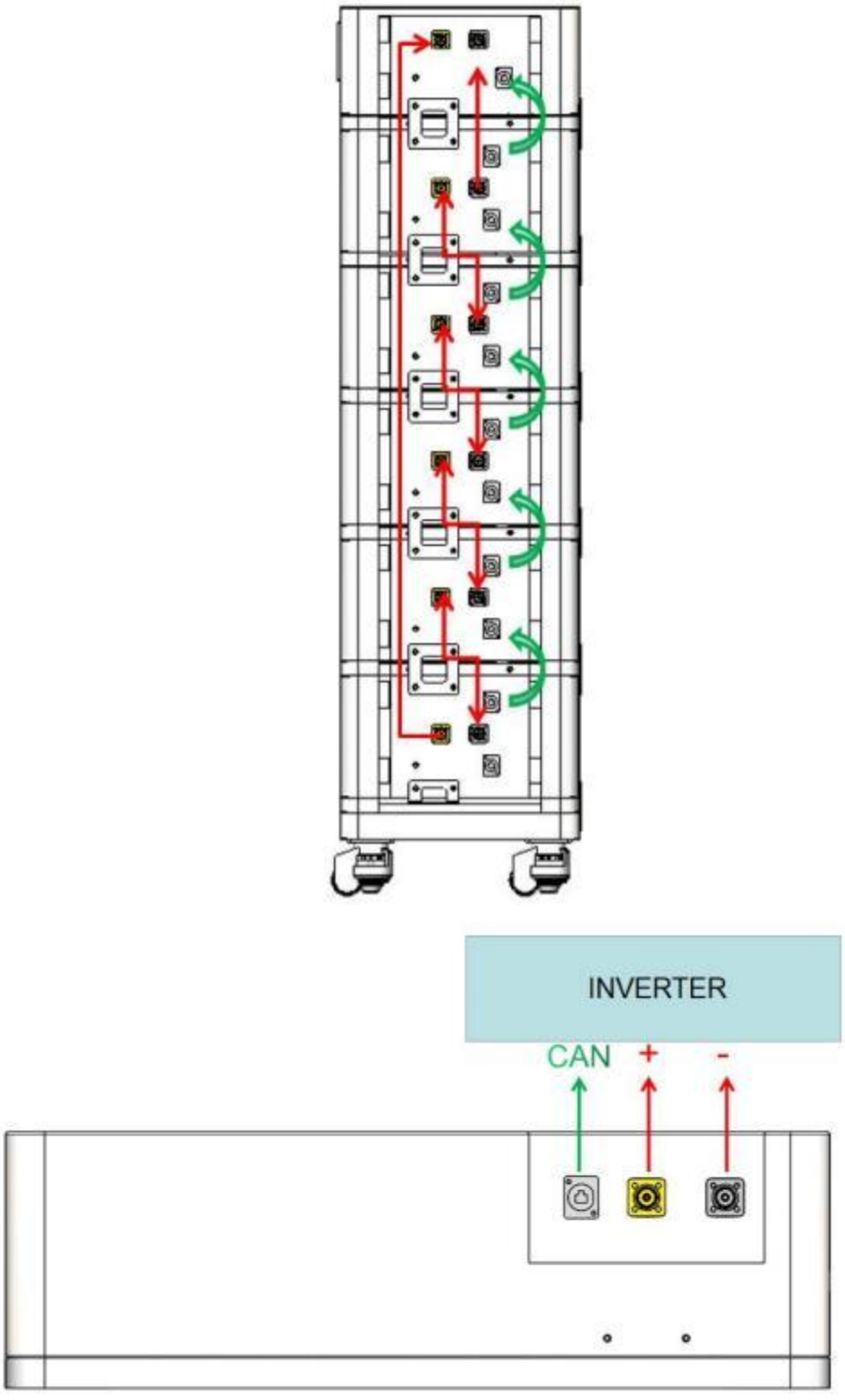
- Do not install the battery near flammable building materials.
- Do not install the battery in an area where there is a risk of water leakage or rain leakage, and the installation location should be kept dry and ventilated
- The temperature should be between 10°C and 30°C to maintain the best operating condition.
- There should be some free space around the battery for heat dissipation (as shown in the picture below)

1. Choose a flat ground for installation, and the ground slope is less than 3°;
2. Assemble the base, stack the battery and the main control box. Push the battery system to the installation area, pre-locate the mounting holes of the connecting bracket B, drill the holes and install 2pcs expansion screws, and pre-lock the connecting bracket B on the wall.
3. Push the battery system to the installation position and adjust the caster pads so that the plane of the base is horizontal to less than 1°, then lock and connect the bracket B and the battery system.

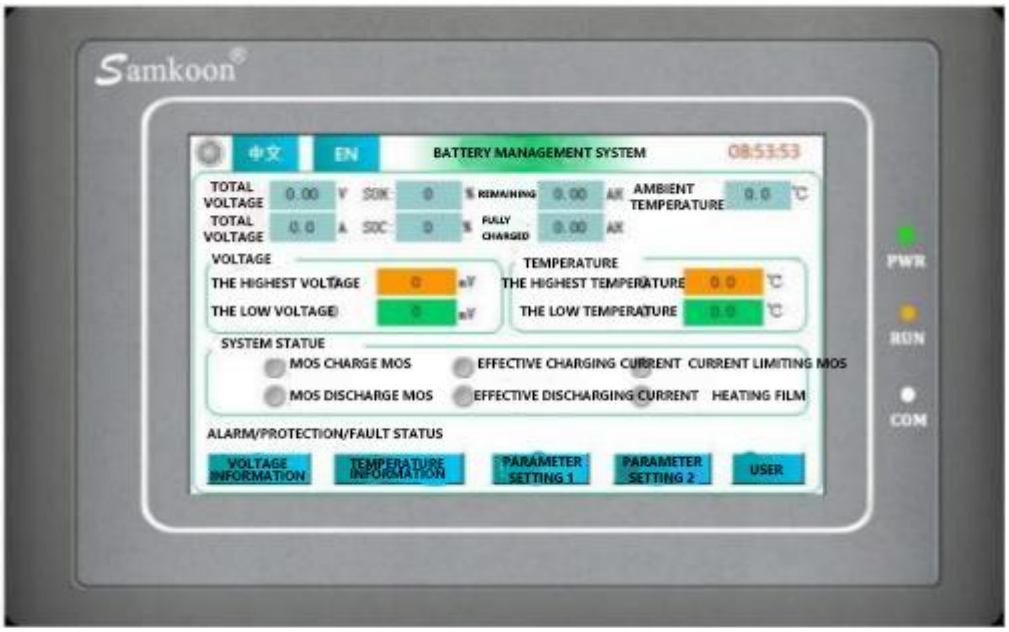


6.3.3 connection

1) Before connecting , the battery should be powered off and keep the circuit breaker at 'OFF' status.



2) Power on, check if the battery is normal on the detecting screen



3) Select the corresponding battery and the protocol

4) Turn on the circuit breaker

7. Package

Packed in a dry, dustproof, moisture-proof packing box. Pack the products with plastic film/EPE, and pack them in cartons.

Battery box size: L 0.7m*W0.45m*H 0.31m Weight: 52kg

Management box size: L 0.7m*W0.45m*H 0.31m Weight: 25kg

Accessory box size: L 0.4m*W0.45m*H 0.31m Weight: 10kg

8. Safety precautions

- Do not use the pack if there' s any deformation.
- Do not stack up the battery.
- Please be notice the polarity of the battery and port.
- Make sure the insulation of equipment, use the tool and instrument correctly.
- The installation site should stay away from fire and Inflammable, keep ventilating and dry.
- Do not disconnect the battery terminals when its running.
- Not allow non-technology staff to open all of function module.
- Please fully charge a new battery pack, or a long-time-no-use battery pack with a designed charger.
- Do not uninstall,open, extrude, bend, impale or break the battery.
- Do not refit the battery or connect to other object, do not immerse the battery into any water, sea water, or drinks and other liquids.stay away from fire, explosive material or other dangerous item.
- Do not allow the battery short circuit, do not any metal or conductor contact the terminal.
- Do not let the battery fall. if does, especially on the solid surface, please contact the service center.
- If there is any signs of Electrolyte leakage, do not let it get any direct contact with your bare skin or eyes. If it happened, use plenty of

water to clean up or ask doctor for help.

- Do not uninstall the battery cell, or there will cause internal short even fire disaster or other issue.
- Do not burn the battery or throw it to the fire, otherwise, there will be cause the fire of the battery.