



CTECHi

>>>>> **Installation Guide** <<<<<<

1. About this manual

1.1 Purpose

This manual describes the assembly, installation, operation, and troubleshooting of this product. Before installation and operation, Please read this manual carefully.

1.2 Scope

This manual provides safe installation guidelines and wiring instructions for home storage products.

2 Safety Instructions

WARNING: This manual contains important safety and operating instructions. Read and save this manual for future reference.

2.1 Installation and placement

2.1.1 Environmental requirements:

1. Avoid direct sunlight, high temperature ($>40^{\circ}\text{C}$) or low temperature ($<-10^{\circ}\text{C}$) environment, keep dry.
2. Keep away from water, fire, flammable materials and corrosive gases.
2. Ensure good ventilation, Leave $>30\text{cm}$ of heat dissipation space on all sides.

2.1.2 Installation and Fixing:

1. It must be installed by professionals to avoid tilting or inversion. The wall/ bracket must bear a load > 1.5 times the weight of the equipment.

2.1.3 Safety in use

1. Non-professionals are prohibited from disassembling or modifying batteries or circuits;
2. Do not touch the power interface or plug or unplug cables with wet hands, cover the device or block the heat dissipation holes.
3. Do not hit/crush or pierce the battery pack with nails
4. The device must be placed out of the reach of children.

2.1.4 Charge and discharge management

It needs to be fully charged before first use. When not in use for a long time, charge and discharge once every 3 months (keep the battery at 30%~60% SOC) to avoid over-discharge (battery $<10\%$) or overcharge storage ($>95\%$). During normal use, the charge and discharge capacity supports 0%-100%. If it is kept at 10-98% (shallow charge and discharge), the battery life can be extended.

3 Products and accessories

3.1 Product: 51.2V100AH (5 kWh) / 51.2V200AH(10kWh) / 51.2V304AH (15 kWh)



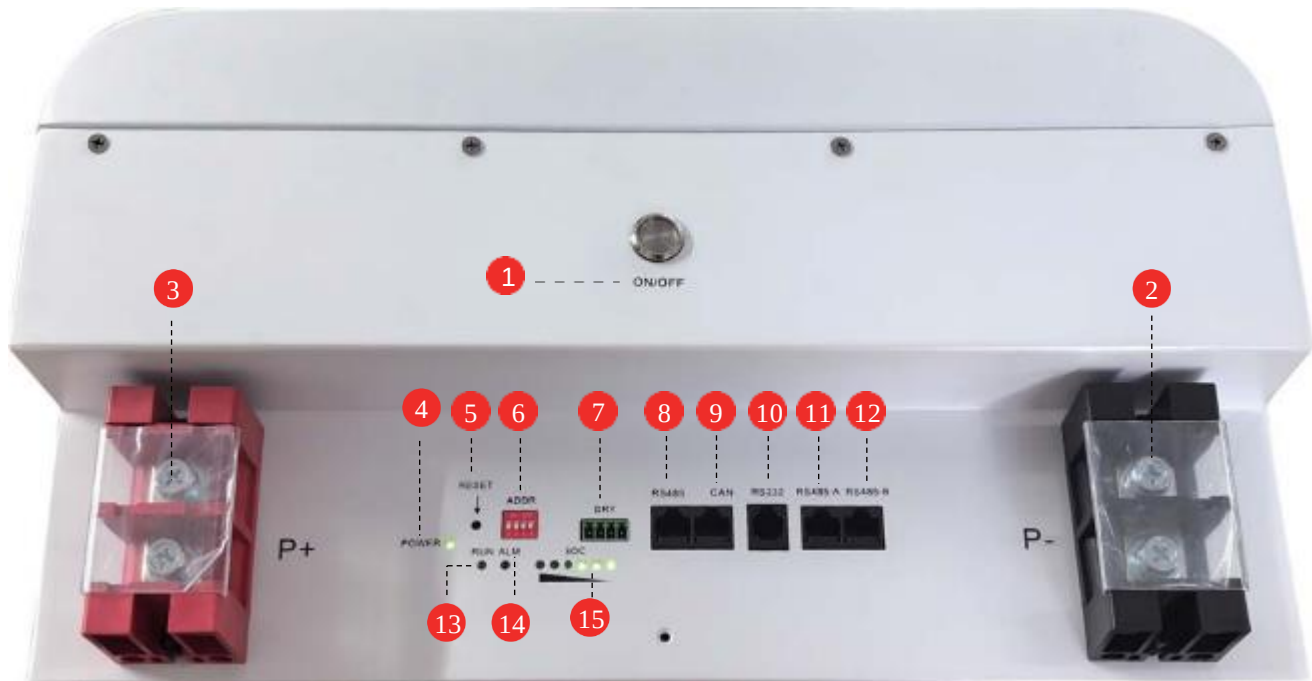
3.2 Accessories



- 1. Desiccant
- 2. Negative power line
- 3. Positive power line
- 4. Communication line

- 5. Expansion screws——optional
- 6. Packing EPE
- 7. Wall bracket —— optional
- 8. Packaging outer box

4 Port description and wiring method



4.1 Port Description

1. Battery pack switch button
- 2.P- Negative output port
- 3.P+ positive output port
- 4.ON/OFF power indicator
5. Reset button
6. Parallel address dial
7. Dry contact
8. RS485 communication interface
(for connecting to inverter communication)
- 9.CAN communication interface (for connecting inverter communication)
10. RS232 communication interface (for connecting the battery pack to the host computer)
- 11.12.RS485-A/B communication interface (for parallel communication)
13. Operation status indicator
14. Alarm indicator light
- 15.SOC indicator light

4.2 Wiring method

1. Parallel wiring method: P-black terminal connects the negative power line to the negative pole of the load, the negative pole of the parallel machine, and the negative pole of the charging port.
2. Parallel wiring method: Connect the P+ red terminal to the positive power line to the positive pole of the load, the positive pole of the parallel machine, and the positive pole of the charging port.
3. RS485/CAN communication port, One of them is connected to the inverter communication port (follow the inverter communication selection) .
4. RS485-A/B communication interface, Used in parallel mode,
5. RS232 is used when you need to read battery pack and BMS data or need to modify parameters or upgrade.
6. For other functions, please refer to the product specifications
7. After P+/P- is connected, Press the ON/OFF switch to enter the power-on standby state.

5 ledInstructions

Table 1 LED working status indication

state	Normal/Warning /Protection	ON/OFF	RUN	ALM	Battery indicator LED						illustrate
		●	●	●	L6	L5	L4	L3	L2	L1	
Shutdown	Hibernation	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Total destruction
Standby	normal	Always on	Flash 1	OFF	According to the power indicator						Standby mode
	Alerts	Always on	Flash 1	Flash 3							Module low voltage
Charge	normal	Always on	Always on	OFF	According to the power indicator (The highest LED Flash 2)						The highest power LED flashes (2 flashes), ALM does not flash when charging alarm occurs
	Alerts	Always on	Always on	Flash 3							
	Overcharge protection	Always on	Always on	OFF	Always on	Always on	Always on	Always on	Always on	Always on	If there is no mains power, the indicator light turns to standby mode
	Temperature, overcurrent, failure Protect	Always on	OFF	Always on	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	normal	Always on	Flash 3	OFF	According to the power indicator						
	Alerts	Always on	Flash 3	Flash 3							
	Undervoltage protection	Always on	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge
	Temperature, over current, short circuit, Reverse connection, failure protection	Always on	OFF	Always on	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge
Invalidation		OFF	OFF	Always on	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and discharging

Table 2 Capacity Indication

State		Charge						Discharge					
Capacity indicator light		L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●	L6 ●	L5 ●	L4 ●	L3 ●	L2 ●	L1 ●
Battery capacity (%)	0% ~17%	OFF	OFF	OFF	OFF	OFF	Flash 2	OFF	OFF	OFF	OFF	OFF	Always on
	18% ~ 33%	OFF	OFF	OFF	OFF	Flash 2	Always on	OFF	OFF	OFF	OFF	Always on	Always on
	34% ~ 50%	OFF	OFF	OFF	Flash 2	Always on	Always on	OFF	OFF	OFF	Always on	Always on	Always on
	51% ~ 66%	OFF	OFF	Flash 2	Always on	Always on	Always on	OFF	OFF	Always on	Always on	Always on	Always on
	67% ~ 83%	OFF	Flash 2	Always on	Always on	Always on	Always on	OFF	Always on	Always on	Always on	Always on	Always on
	84% ~100%	Flash 2	Always on	Always on	Always on	Always on	Always on	Always on	Always on	Always on	Always on	Always on	Always on
Running indicator light		Always on						Flash (Flash 3)					

Table 3 LED flashing description

Flashing mode	ON	OFF
Flash 1	0.25S	3.75S
Flash 2	0.5S	0.5S
Flash 3	0.5S	1.5S

Note: LED indicator alarm can be enabled or disabled through the host computer , and the factory default is enabled.

6 Buzzer Action Description

In case of fault, it beeps for 0.25S every 1S;

When in protection mode, it beeps for 0.25S every 2S (except for overvoltage protection); When alarming, it beeps for 0.25S every 3S (except over-voltage alarm);

The buzzer function can be enabled or disabled by the host computer, and is disabled by factory default.

7 Reset button description

BMS In sleep mode , Press the button (3~6S) Release , The protection board is activated , led The indicator light changes from RUN” and light up in sequence for 0.5 seconds. When the BMS is activated, Press the button (3~6S) After releasing, Save The guard is dormant , led The indicator lights light up in sequence starting from the lowest power light 0.5 Sec. BMS In active state hour, Press the button (6~10S) After releasing, The protection board is reset, All LEDs light up simultaneously for 1.5 seconds.

BMS After being reset, the parameters and functions set by the host computer are still retained. If you need to restore to the original parameters, This can be achieved by "restoring default values" on the host computer. However, the relevant operation records and storage data remain unchanged (such as quantity, number of cycles, protection records, etc.) .

8 Sleep and wake up

8.1 Hibernation

When any of the following conditions are met, The system enters low power mode:

1. The single or overall over-discharge protection is not released within 30 seconds.
2. Press the reset button (3~6S) , After releasing the button.
3. The lowest cell voltage is lower than the sleep voltage. And the duration reaches the sleep delay time (while meeting the no communication , no protection, no balancing, no current) .
4. Standby time exceeds 24 hours (no communication, no charging or discharging, No mains electricity) .
5. Force shutdown through the host computer software.

Before entering sleep mode, Make sure that no external voltage is connected to the input terminal. Otherwise it will not be able to enter low power mode.

8.2 wake

When the system is in low power mode, When any of the following conditions are met, The system will exit low power mode. Enter normal operation mode:

1. Connect the charger, The charger output voltage must be greater than 48V.
2. Press the reset button (3~6S) , After releasing the button.
3. With RS232 activation.

9 Communication Description

9.1 independent RS 485 communication

The default baud rate is 9600 bps . This interface is used to communicate with the inverter. When this battery is the host, it can aggregate The machine data communicates with the inverter.

9.2 CAN communication

Default baud rate 500K , This interface is used to communicate with the inverter , when this battery is the host , can summarize the number of slaves Data communicates with the inverter.

9.3 RS 232 communication

BMS can RS232 interface to communicate with host computer , so that the host computer can monitor various Information, including battery voltage, current, temperature, status and battery production information , etc. The default baud rate is 9600bps.

9.4 Parallel RS 485-A/B communication

You can view the PACK information, the default baud rate is 9600bps. If you need to communicate with monitoring equipment via RS485-A/B Communication, the monitoring device acts as the host and polls data based on the address. The address setting range is 2~ 15.

9.5 Bluetooth communication----optional

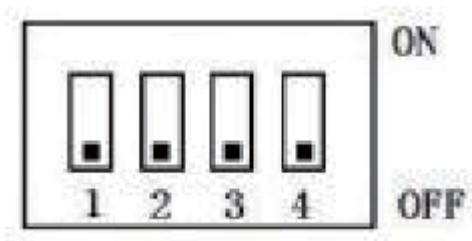
BMS can communicate with PACEEX Bluetooth via Bluetooth APP communication, thus APP monitors various information of the battery , Including battery voltage, current, temperature, status state, SOC, SOH and battery production information, etc. , the default baud rate is 9600bps.

9.6 WiFi Communication----Optional

Long press the reset button 10-13 seconds, the running lights are all on and then turn bright 1 light state and then release (ON/O FF light except outside) , Wait 8 seconds to The new device is visible in the Add Device section of the APP .

10 DIP switch settings

when When PACK is used in parallel, The DIP switch setting address on the BMS distinguishes different PACK, required Avoid setting the same address , BMS Dial The definition of switches is shown in the table below. , in parallel mode ,Default dial address The one with 1 is the host.



地址	拨码开关位置			
	#1	#2	#3	#4
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

11 Troubleshooting

Use Status	Problem phenomenon	Possible causes	Troubleshooting
Installation Process	Sparkling during wiring	1. The battery pack is powered on 2. Load equipment is turned on in advance	1. Turn off the battery pack 2. Turn off the load
	Unable to turn on	Battery exhausted	Connect the charger to charge Try again in 3 minutes
Charging process	Not charging	1. The charging line is not connected properly 2. The ON/O FF key is not pressed Or it is not open.	1. Check the charging circuit 2. Press ON/O FF or open the circuit breaker
	Slow charging speed	1. Insufficient input power 2. The ambient temperature is too high	3.1. Check the charger specifications 4.2. Move to a cool place or ventilate to cool down
	Not fully charged	Charging voltage is low Or not selected correctly	Select the correct voltage parameters: 15 strings*3.65=54.75V ; 16 strings*3.65=58.4V
Usage Process	No output	5. Overcurrent protection 6. Entering sleep mode	1. Check whether the load is overpowered 2. Press the reset button to restart
	Short usage time	1. Large load power 2. The battery is not fully charged 3. There is a voltage difference in the battery cells 4. Battery capacity attenuation	a matching battery pack based on the load power and required working time . Power * time = wh (select Suitable battery pack) 2. Use the battery pack after fully charging it 3. Whether there is a pressure difference can be read through the display screen and the host computer . If there is a pressure difference, Can be charged to At about 8 0%, the charging power starts to decrease, allowing the battery to The group has a longer charge balance 4. Replace the battery
	The characters on the display are not clear	1. Display screen aging 2. Impact with hard objects	1. Replace the display Replace the display screen and take good protection

12 maintain

12.1 Check the wiring for looseness/damage/aging every 3 months.

12.2 The battery pack cannot be disassembled without permission.

12.3 Fully charge and discharge the battery every 3 months. Helps maintain battery life and calibrate battery charge.

12.4 Check every 3 months whether the battery pack usage environment meets the installation and placement conditions in 2.1 of this manual

12.5 If you encounter a problem that you cannot solve, Contact the manufacturer promptly.

For any of the following situations or their consequences, The Company is not responsible for:

1. Earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes , equipment damage caused by force majeure such as extreme weather;
2. Not operating within the conditions of use described in this manual;
3. The installation and use environment does not comply with relevant international, national or regional standards;
4. Unqualified personnel install and use the equipment;
5. Failure to operate in accordance with the operating instructions and safety warnings in the product and documentation;
6. Unauthorized disassembly, modification of products or modification of software codes;
7. Damage caused by transportation by you or a third party you entrust;
8. Damage caused by storage conditions not meeting the requirements of product documentation;
9. The materials and tools you bring with you do not meet the requirements of local laws, regulations and relevant standards;
10. Damage caused by your or a third party's negligence, intent, gross negligence, improper operation or reasons not attributable to our company.