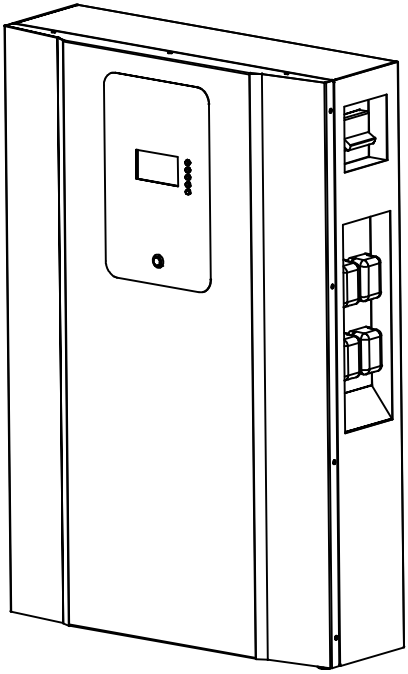
User Manual



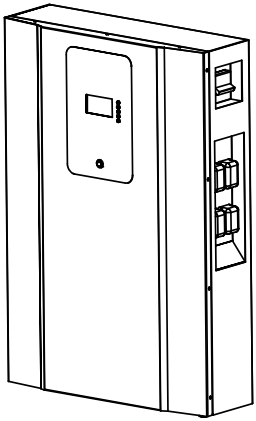
LiFePO4 BATTERY

Thank you for choosing our product.

- For any questions, free to call or email us any time.
- Please refer to the actual product If the diagrams provided shows a slight difference.
- Before using the product, please read the following precautions carefully to avoid damage or errors.

1. INTRODUCTION

1.1. Before Using The Battery



Thank you for choosing our energy storage system.

- This manual provides information regarding safety precautions to prevent possible accidents and how to use the product. Please read this manual carefully before use for safety and keep this manual handy for reference. Work on the lithium battery should be carried out by qualified personnel only.
- Please note the warning sign on the battery, do not tear up or destroy the warning labels.
- Before use, please make sure the battery is correctly chosen for the application and power/load demands.
- Please check the battery for damage, leakage, abnormal temperature, smoke, etc.
- For safe transportation and storage, the capacity status of the battery when delivered will be around 50%.
- Please charge the battery to full before putting in service, using an appropriate charger.

1.2. Safety Precautions

Our products are designed with full consideration of safety. However, all electrical appliances can be dangerous if used inappropriately; it can cause a fire or electric shock that leads to severe injury or death. For your protection, please read these safety precautions thoroughly.

Definitions of Symbols:
Below are symbols used in this manual and the unit.
Please read through the following definitions before reading the manual.

	**Warning**	If you ignore these instructions, it can lead to a fire or electric shock causing serious injury or death.
	**Caution**	If you ignore these instructions, it can lead to electric shock or other accidents causing injury or harm to nearby products.

Warning

If you do not follow the instructions below, it can lead to a fire or electric shock causing serious injury or death.

■ Instruction

Use designated cable. A non-designated cable use can cause electric shock. Be sure to use the cable designated in this manual.

■ Prohibited

Do not damage cables. If you damage a cable, it can cause a fire or electric shock.

1. Do not work over or damage a cable.
2. Do not place heavy objects on a cable or pull the cable.
3. Do not place a heater near the cable, which may result in the cable overheating.
4. Do not tuck down a cable when installing in a rack.
5. When you unplug a communication cable, be sure to hold the plug and pull it.

■ Instruction

Connect a power cable and communication cable properly.

1. If you connect a power cable improperly, contact resistance will increase and it may damage the parts or cause a fire.
2. Insert the connector of the communication cable all the way in. If it is connected improperly, the system may be deactivated.

■ Prohibited

Do not install in a closed area. If the module/controller is installed in a closed area with no air-conditioning, heat may build up inside the set and cause a fire.

■ Prohibited

Do not place the set in direct sunlight or near a heater. Doing so can cause deformation, a breakdown, or a fire. Pay extra attention when you place the set near windows.

■ Prohibited

Do not install the set where excessive oil smoke, steam, moisture or dust is contained in the air. If the set is installed in such a place, it may cause a fire or electric shock.

■ Instruction

Wear insulating gloves and protection glasses during installation and connection of the set to prevent electric shock or other injuries.

■ No Wet

1. Do not allow water and/or foreign objects inside the module
2. Water or foreign objects inside the module can cause a fire or electric shock.
3. Should this occur, however, turn off the “POWER ON/OFF" switch on the controller to shut down, and remove the power connector from the POWER CONNECTOR terminal of the module.

■ Do not disassemble

Do not open the set unnecessarily. Opening and modifying the set can cause a fire or electric shock.

Caution

If you ignore any of the following instructions, it can cause injury or damage to nearby products.

■ Prohibited

Do not cover the vent. If the vent is covered, heat may build up inside the set and cause a fire.
1. Do not put the set in a poorly ventilated and narrow space.
2. Remove any dust buildup in the vent.
3. Do not place the set upside down or sideways.
4. Do not place on a shag carpet or bed.
5. Do not cover the vent with a cloth, etc.

■ Instruction

Install in a stable place.
1. If you install the set in an unstable place, such as an unstable rack, it may fall and cause injury.
2. Do not install upside down or sideways. The set may drop and cause injury.

■ Instruction

Use the designated packaging materials for transportation. If you do not use the designated packaging materials, the packaging material may be damaged by vibration during transportation and it may cause injury.

■ Instruction

Install based on the designated way of installation. If you do not follow the designated way of installation, the set may drop due to the strength poverty and can cause injury.

■ Instruction

Fix a rack to the floor. If a rack falls by the weight of the set, it may cause serious injury or death.

■ No Wet

Do not touch with wet hands If you touch the set with wet hands, it may cause electric shock.

■ Instruction

Install other equipment or accessories properly. If you inadequately install other equipment or accessories sold separately, they may fall and cause injury. When you install any of the following accessories, install it properly based on this manual.

■ Instruction

Set up cables properly If your foot is caught by a cable, the set may fall and cause injury. Connect and install cables carefully.

■ Instruction

Power off at a malfunction In case any malfunction happens, please turn off the POWER ON/OFF switch in order to shut down, and remove the power connector from the POWER CONNECTOR terminal of the module.

■ Prohibited

Do not put anything, stand or sit on the set If you put anything on the set, it may fall and cause injury. Also, if it is used as a stool, for example, it may topple and cause injury.

■ Instruction

Follow related laws or ordinances for disposal. When you dispose of this product, do not dispose as general or household waste.

■ Instruction

Disposal with specified method Contact technical vendor when you discard. Do not disassemble, destroy, or disposal in the fire.

Danger

If liquid is leaking from the module, observe the following measures.

Do not allow the liquid to come in contact with skin or clothing.

- If the liquid comes in contact with skin or clothing, wash thoroughly with plenty of water.
- If the liquid gets into the eyes or mouth, flush immediately with clean water, and immediately seek medical treatment.
- Contact customer service.

1.3. Precautions for Use

■ In the case of a failure, or any of the abnormalities shown below, turn off the set and contact customer services.
1. Abnormal sound, smell or smoke.
2. Water or particles inside the product.
3. The product is dropped, or the cabinet is damaged.

■ Charge and discharge the product according to the control signals of the controller. Do not hammer a nail or punch a hole in the product.

■ Replace the module with a new one if discharge time at room temperature is noticeably short, even from fully charged.

1.4. DO NOT:

■ Disassemble.

■ Modify the product (Modification may destroy the protection function inside, or cause abnormal charge/ discharge, heat generation, gas eruption, or fire.).

■ Touch the rear output terminal except for installation.

■ Throw the product into fire or heat, or otherwise expose the set to heat or naked flame.

■ Submerge the product in liquid or allow it to become wet.

■ Apply strong shock, crush, or drop.

■ Use for medical purposes.

■ Place any foreign objects inside.

■ Connect any devices that exceed the operating voltage and current range.

■ Do not unplug the power connector from the POWER CONNECTOR terminal while power is turned on.

2. SPECIfiCATION AND FUNCTIONS

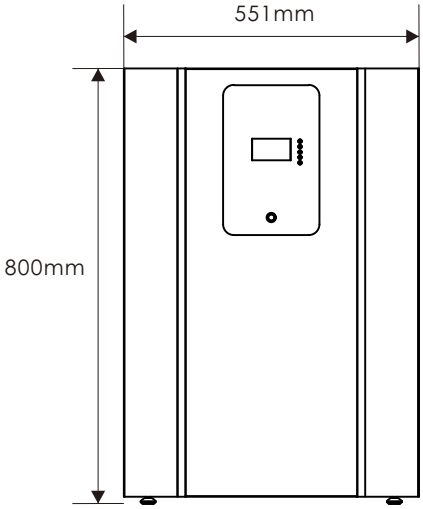
2.1. Basic functions

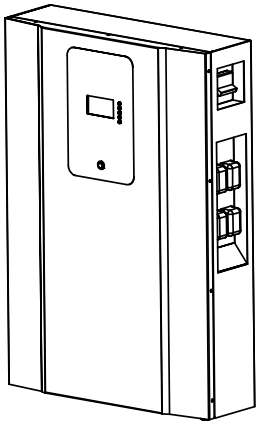
* SOC self-learning
* Customized APP
* Buzzer alarm
* Low power consumption design
* Anti-ignition function
* 10 temperature sampling
* LED status indication
* Data storage function
* Multiple units can be used in parallel
* Customized communication protocol
* Adaptive communication in parallel
* High-precision current sampling
* PWM pre-charging technology
* Intelligent balance management technology
* APP online upgrade function
* One-key start, one-key switch shipping mode
* Isolated communication: two independent RS485, two independent CAN
* WIFI, Bluetooth, 4G modules are reserved for external connections
* Screen: Reserved for button screen and touch screen
* Parallel automatic address assignment function, automatic identification of host function
* Remote inverter program upgrade function (specific inverter)
* Parallel machine can be used to automate the upgrade program function
* APP can support CAN, RS485, wireless (4G, WIFI, BCE) monitoring and online upgrade
* Short circuit protection, over-charge, over-discharge, under-voltage, over-current, over-temperature, low temperature, differential pressure alarm and protection

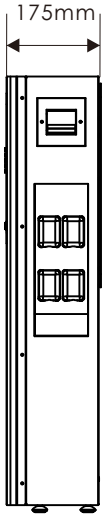
2.2. Environmental Requirement

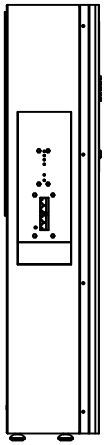
Type	Parameter	unit
Operating Temperature	-20~75	˚C
Storage Temperature	-20~75	˚C
Operating Humidity	10~85	%RH
Store Humidity	10~85	%RH

2.3. Dimensions

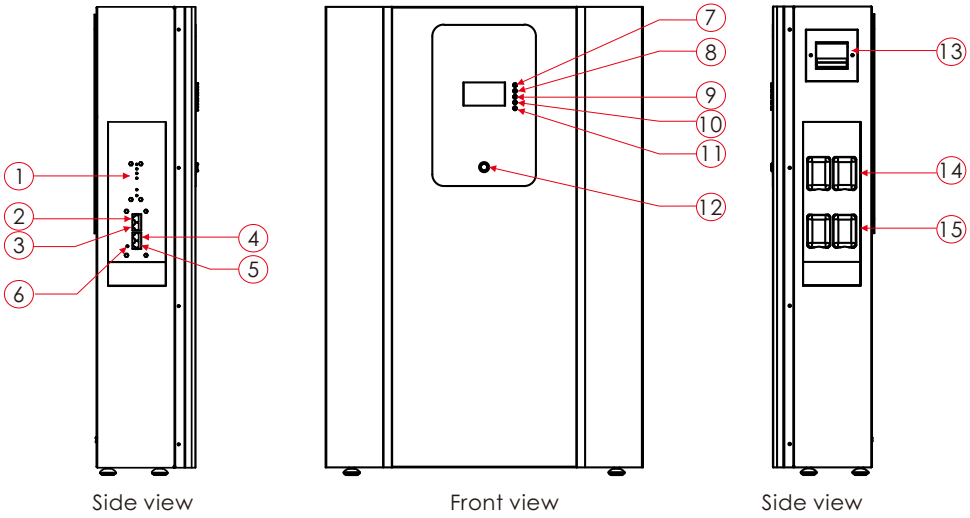








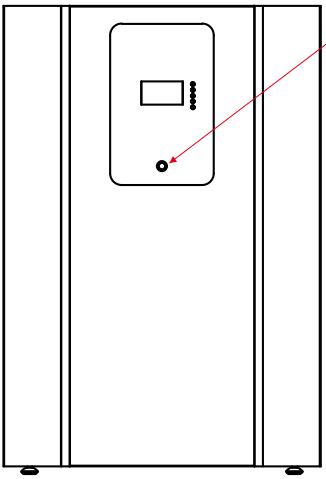
2.4. Panel indication



Side view　　Front view　　Side view

Item	Project	Explanation
1	LED	LED1, 2, 3, 4, 5, 6
2	CAN	Parallel port
3	CAN	Parallel port
4	RS485	Communication with upper computer
5	CAN	Communication with inverter
6	Reset switch	Reset switch
7	MENU	MENU
8	ENTER	ENTER
9	UP	UP
10	DOWN	DOWN
11	Back/wake up	Back/wake up
12	Main switch	Main switch
13	Air switch	Air switch
14	“+”	Port Positive *2
15	“-”	Port Negative *2

2.5. Button description



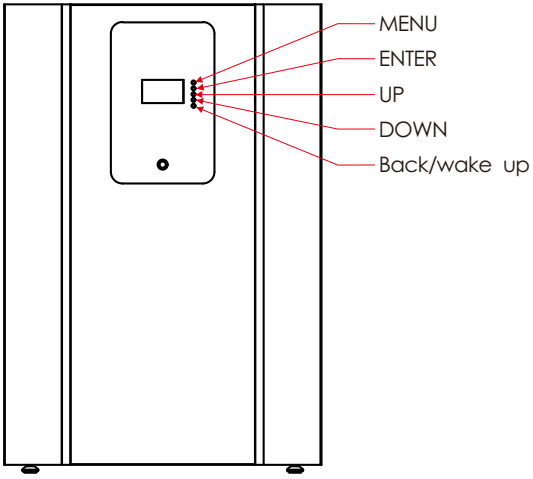
ON/OFF

1) Press the ON/OFF button 3S-6S to release and sleep; The LED indicator illuminates for 0.5 seconds sequentially, starting with the lowest battery level. Press the ON/OFF button 6S-10S to release and reset and restart; The LED lights all flash 3 times at the same time, with a cycle of 2 seconds; Then it is displayed normally.

2) Press the ON/OFF button 1S-2S to wake up the battery while sleeping; (In BMS sleep mode, the BMS system will enter very low-power transport mode and the BMS discharge function will be turned off.)

3) Press the enabling power switch to enter the transport mode.

- Press the MENU key at any page to return to the MENU page
- Press "UP" or "DOWN" to select UP or DOWN
- Press "ENTER" to ENTER the selection
- Press "BACK" to return to the previous page, but the interface displays the original inverter or prompt message, returning to the menu page
- After the inverter is selected, the message Set InverterMod Succeed is displayed. If the inverter is selected successfully, fail is displayed. After 3 seconds, the menu page is returned



2.6. LED indication instructions

2.6.1. LED operating status indication

State	Normal/Alarm/ Protection	RUN	ALM	Battery level indicator LED				Illustrate
		●	●	●	●	●	●	
Shutdown	Dormancy	no	no	no	no	no	no	Completely extinguished
Standby	Normal	Twinkle 1	no	According to the indication of the power level				Standby state
	Alarm	Twinkle 1	no					Module low voltage
Charge	Normal	Continuous	no	According to the battery level indication (battery level indication up to LED flashing 2)				The maximum battery LED flashes (flashes 2) and the ALM does not flash when the overcharge alarm is alarmed
	Alarm	Continuous	no					
	Overcharge protection	Continuous	no	Continuous	Continuous	Continuous	Continuous	If there is no mains power, it will be turned into standby
	Temperature, overcurrent, fail-safe	no	Continuous	no	no	no	no	Stop charging
Discharge	Normal	Twinkle 3	no	According to the indication of the power level				
	Alarm	Twinkle 3	no					
	Undervoltage protection	no	no	no	no	no	no	Stop discharging
	Temperature, overcurrent, short circuit, reverse polarity, fail-safe	no	Continuous	no	no	no	no	Stop discharging
Lapse		no	Continuous	no	no	no	no	Stop charging and discharging

2.6.2. Capacity indication

State		Charge			
Capacity indicator		L4	L3	L2	L1
		●	●	●	●
Electricity	0~25%	no	no	no	Twinkle 2
	25~50%	no	no	Twinkle 2	Continuous
	50~75%	no	Twinkle 2	Continuous	Continuous
	75~100%	Twinkle 2	Continuous	Continuous	Continuous
Running indicator ●		Continuous			

State		Discharge			
Capacity indicator		L4	L3	L2	L1
		●	●	●	●
Electricity	0~25%	no	no	no	Continuous
	25~50%	no	no	Continuous	Continuous
	50~75%	no	Continuous	Continuous	Continuous
	75~100%	Continuous	Continuous	Continuous	Continuous
Running indicator ●		Twinkle 3			

2.6.3. LED Twinkle Status

Status	On	Off
Twinkle 1	0.25s	3.75s
Twinkle 2	0.5s	0.5s
Twinkle 3	0.5s	1.5s

3. CHARGING AND DISCHARGE

3.1. Charging

■ Please use a special charger for LiFePo4 battery which matches the specific battery parameters.

■ The proper continuous charging current is from 0.2CA to 0.5CA. For best performance, charge as follows: 0.2CA Constant Current to 36A, then Constant Voltage of 58.4V, until the current drops to 0.02CA. Rest 30 min before use.

■ Please refer to the battery datasheet for more information about charging.

■ Charge the battery under the environment temperature range from 0°C to 45°C. Try to keep the temperature close to 25°C for best performance/lifespan ratio. Note that due to internal protection, the battery will not charge under temperatures below -20°C.

■ The charging process and time should be observed, otherwise, overcharge may occur and can lead to shortening of the battery lifespan and cause a safety hazard.

3.2. Discharge

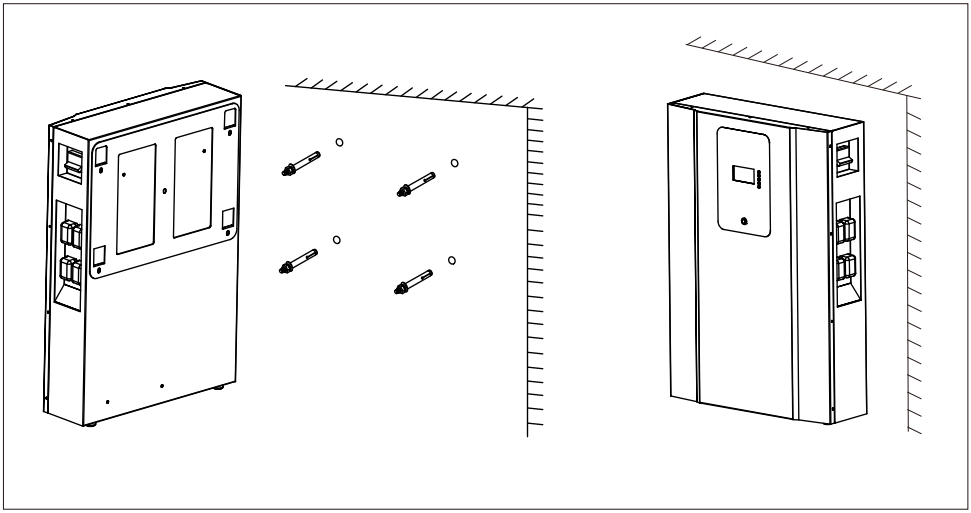
■ Please refer to your battery datasheet for the maximum rate of discharge for your specific battery model.
■ LiFePo4 batteries can be discharged up to 100% of their capacity. However, to optimize the performance of your LiFePo4 battery, and to avoid the BMS disconnecting the battery, we recommend limiting the discharge to 20%.
■ Discharge the battery under the environment temperature range from -20°C to 60°C. Try to keep the temperature close to 25°C for best performance/lifespan ratio.

4. INSTALLATION AND OPERATION

■ Make sure the lithium battery's positive and negative electrode are connected correctly to the load/appliance.
■ Please charge the battery to full before putting in service, using an appropriate charger.
■ It is advisable to protect the battery with a fuse.
■ Do not connect the battery in series or parallel with other batteries if not specifically indicated in the datasheet.

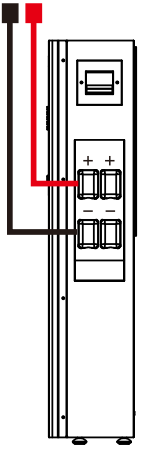
4.1. Installation Guide

Use the expansion bolt of M10*80 to fix the wall panel, and then hang the battery on the board.



4.2. DC Cable Connection

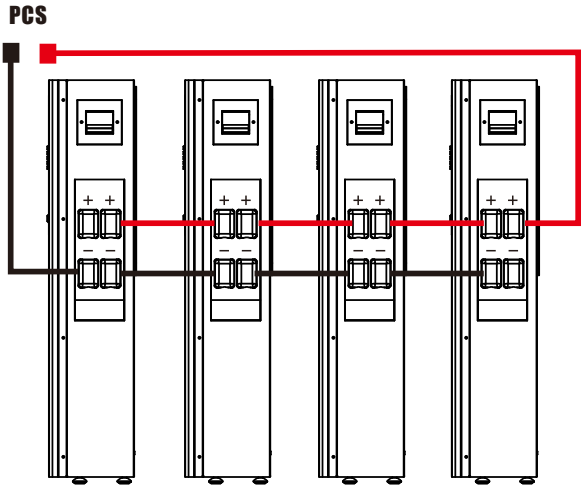
4.2.1. Single Unit



Single Unit Connection

4.2.2. Multi-Units in Parallel (4 sets as an example)

Max. Number Of Parallel: 4 Sets



Multi-Units Connection

Master Pack and Slave Pack can be used as single unit as well as multi-units (in parallel) mode. The customer must inform supplier if multi-units mode is required.

5. TRANSPORTATION AND STORAGE

5.1. Transportation

It is forbidden to encounter serious vibration and shock during transportation.

5.2. Storage

■ The battery must be stored under clean and dry conditions, and temperatures in the range of -10°C to 45°C. Do not store the battery in an environment with a temperature above 50°C, it may cause the battery to overheat, even catch fire or shorten its lifespan. Try to keep the temperature close to 25°C for the best performance/lifespan ratio.
■ The ideal state of charge of the lithium battery for storage is 50%. With time the battery will self-discharge. It is not permitted to store the battery for long periods with a remaining capacity under 10% or over 90%. This may cause irreversible damage.
■ The longest storage period of an unused battery, connected to an appliance, but not used is 3 months. After this period, the battery could be damaged, thus It must be recharged within above mentioned period.
■ The longest storage period of a new battery charged to 50% of capacity is 6 months. After this period, the battery could be damaged, thus it must be recharged within above mentioned period.
■ Keep the battery away from the risk of falling, the falling will cause internal damage, even leakage, heat, smoke, catch fire or explode.
■ it's forbidden to use or store the battery in a place with strong electrostatic and magnetic fields, otherwise, it may damage the battery safety protection devices and cause a safety hazard.
■ If the battery is stored out of the original packaging, cover the poles with an insulator to prevent accidental short circuits.

5.3. Recycling

Terminals must be covered with a protective cap or non-conductive tape prior to battery disposal to lithium recycler. Dispose of LiFePo4 batteries at an authorized lithium recycling facility.

6. DISCLAIMER

Due to continued product improvements, product specifications are subject to change without notice.
Any questions please contact the accordingly sales to get the most updated product specifications.