

POLINovel

RACK SERIES LiFePO4 Battery

Rack48100



USER MANUAL

2023.12

Table Of Contents

USER MANUAL	1
01 Safety instructions	1
1.1 Warning	1
02 Battery introduction	2
2.1 Product features	2
2.2 Normal performance	2
2.3 Interface Introduction	3
2.4 Installation instructions	4
2.5 Transportation of battery packs	4
2.6 Storage of battery packs	4
03 Installation	5
3.1 Installation requirements	5
3.2 Schematic diagram of battery appearance	5
3.3 Carry and install the battery pack	6
3.4 Wiring Instructions	7
3.5 Dialing Code	8

01 Safety instructions

1.1 Warning

1. The input voltage and output voltage of this equipment are above 20V DC, if not operated properly, it may cause short circuit or damage to electrical equipment, etc. Please read this manual carefully before installation and operation, pay attention to the various labels on the equipment, do not let children touch alone to prevent accidents. Non-professional maintenance personnel, please do not remove the battery equipment casing
2. During installation, operation and maintenance of the equipment, the relevant safety codes and related operating procedures must be observed, otherwise personal safety and equipment damage may be jeopardized. The safety precautions mentioned in the manual are only intended to supplement local safety codes.
3. The Company shall not be liable for any liability resulting from violation of the general safety operation requirements or from violation of the safety standards for the design, production and use of the equipment.



Precautions for Battery Usage

This battery system is composed of battery pack and protection plate, non-professional and improper operation and use may cause sparking, short circuit and other serious consequences. The installation and maintenance of the system must be operated by professional technicians, and the use of the system must strictly comply with the relevant safety regulations. Non-professionals are strictly prohibited from installing and maintaining the lithium-ion battery pack and abusing it beyond its scope.

1. Please read and keep this manual carefully.
2. Please pay attention to all warning labels on the battery, do not tear or damage the warning labels.
3. It is strictly prohibited to immerse the battery in seawater or water, and when not in use, it should be placed in a cool and dry environment.
4. Prohibit the battery in the heat of high temperature sources, such as fire, heaters, etc. Use and stay, do not expose the lithium battery to fire, lithium battery may explode.
5. When charging, please use a special charger for lithium-ion batteries, it is strictly prohibited to plug the battery directly into the power outlet.
6. Prohibit the use of metal directly connected to the battery positive and negative short circuit.
7. Prohibit knocking or throwing, stepping on the battery or directly welding the battery and piercing the battery with nails or other sharp objects.



Notice

1. It is prohibited to use or place the battery under high temperature, otherwise it may cause the battery to overheat, fire, or function failure, life shortening.
2. It is prohibited to use the battery in the place of strong static electricity and strong magnetic field, otherwise it is easy to destroy the battery safety protection device and bring unsafe hidden danger.
3. If the battery leaks and the electrolyte gets into your eyes, please do not rub it, flush your eyes with water and send it to the doctor immediately, otherwise it will hurt your eyes.
4. If the battery emits a strange odor, becomes hot, discolored, deformed, or if any abnormality occurs during use, storage, or charging, immediately remove the battery from the device or charger and deactivate it.

5. If the electrodes are dirty, wipe them with a dry cloth before use, otherwise it may lead to poor contact and malfunction.
6. Discarded batteries should be wrapped in insulating paper to prevent short-circuiting and fire.



Keep equipment well ventilated

02 Battery introduction

2.1 Product features

1. Lithium iron phosphate battery, safe and environmentally-friendly
2. Waterproof, dustproof: IP54
3. Battery built-in BMS to prevent over-charge, over-discharge, safe and reliable
4. Short charging time, the fastest charging time of 2 hours (100A fast charging)
5. The internal structure of the battery module is designed according to automotive grade, completely fixed at the top, bottom, left, right, front and back.
6. The positive and negative extremes of the battery are conveniently and reliably connected by locking wire ear type.

2.2 Normal performance

NO.	Item	General Parameter	
1	Rated capacity	100Ah	
2	Standard voltage	51.2V (16S)	
3	Standard Charge voltage	58.4V	
4	Charging method	CC-CV	
5	Charge current	Normal	50A
		Max	100A
6	Cut-off voltage	43.2V	
7	Continuous discharge current	100A	
8	Peak discharge current	150A	
9	Total weight	About50kg	
10	Impedance at 1000Hz.	≤ 50mΩ	
11	Charge method	Charge	30 - 140°F
		Discharge	-4 - 140°F
12	Storage environment	Temperature	50 - 113°F

		Humidity	≤ 75%RH
13	Cycle life	1C@DOD100%	≥2500 cycles
		0.2C@DOD100%	≥4000 cycles
14	Self-discharge rate	≤3%/Month	
15	Battery dimension	L= 442mm(17.4")	
		W=555mm(21.9")	
		H=177mm(6.97")	

2.3 Interface Introduction



No.	Name	Silk-screen	Remark
1	Positive	+	M8 screw nut/Red
2	Negative	-	M8 screw nut/Black
3	Breaker	Breaker	Output breaker
4	Power button	ON/OFF	
5	LCD	/	Display of battery info
6	ON/OFF LED	/	

	SOC LED	SOC	State of Charge
	ALM LED	ALM	Alarm indicator
	RUN LED	RUN	Operation indicator
	Reset button	RST	Reset the BMS
	Dial switch (ADD)	ADDR	Set the battery address
7	COM Output port	CAN/RS485	Battery and inverter communication port
8	RS485 parallel port	RS485	Parallel communication port

2.4 Installation instructions

1. Please read this manual carefully before installation, if the installation is not carried out in accordance with the instructions in this manual, or ignoring the warnings in the manual and there is damage to the equipment, the company has the right not to carry out quality assurance.
2. For all operations and wiring, please ask a professional electrical or mechanical engineer to operate.
3. When installing, please don't move other parts inside the box except the terminals and the parts that must be removed.
4. All electrical installations must comply with local electrical safety standards.
5. If maintenance is required, please contact the local designated system installation and maintenance personnel.
6. the machine in the process of operation, may be local temperature is relatively high, please be careful to touch, in order to prevent burns.

2.5 Transportation of battery packs

Battery packs are strictly inspected and tested before leaving the factory, in order to avoid bad battery packs during transportation, please use soft materials such as pearl cotton for packaging and use customized wooden boxes for transportation, when using non-containerized vehicles for transportation, the battery packs should be fixed as much as possible to ensure the safety of transportation.

2.6 Storage of battery packs

1. Battery packs are best placed in packed packages and placed in a ventilated and dry place;
2. the recommended storage temperature range is: 5- 45 °C, humidity is 65 ± 10%;
3. if there is a large number of battery packs need to be stored, the warehouse needs to do the following:
 - a. the warehouse can control temperature and humidity, such as air conditioning or dehumidification equipment, to avoid battery packs for a long time in a high humidity environment;
 - b. the warehouse should be equipped with automatic fire extinguishing system, emergency sprinkler system, dry powder fire extinguishers and firefighting sand (construction sand can be);
 - c. can not be mixed with flammable materials (such as packaging materials cartons, cardboard boxes, etc.), it is recommended to use an independent warehouse to store battery packs;

d. secondary fire door;

e. in accordance with the lithium battery packaging instructions on the labeling and stacking requirements placed, it is strictly prohibited to stack more than a certain height;

4. battery packs placed for a long time, should be charged and discharged in a timely manner within 3 months to prevent over-discharge of the battery; prohibit the battery packs to be placed for a long time after discharge.

03 Installation

3.1 Installation requirements

This part of the guidance provided to the installer to choose the appropriate installation location to avoid damage to the machine or the relevant operator.

1. The product is placed in a fixed position to ensure that it can withstand the weight of the battery for a long time; when it is dropped to the ground, due to the product's tallness, its installation is as follows.

The installation position must be in accordance with the size of the battery pack, please refer to Figure 3-5 for installation dimensions.

2. It is prohibited to install the battery pack on the surface of the building built with flammable or non-heat-resistant materials.

3. Do not install the battery pack in a place with poor air circulation to affect the natural heat dissipation of the battery pack.

4. The protection class of the battery pack is IP54, it is recommended for indoor use, and it is recommended not to expose the battery pack to direct sunlight.

5. The ambient temperature around the battery pack should be: $-20-60^{\circ}\text{C}$.

6. Please take care to provide sufficient clearance for the battery pack.

7. Do not install the battery pack in a place where children can reach it.

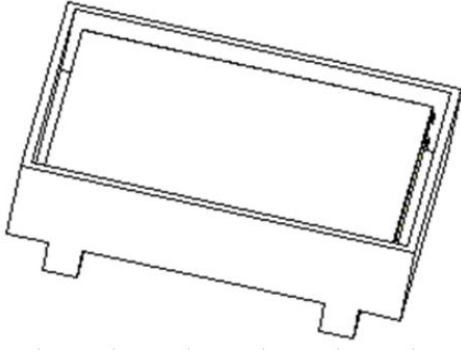
3.2 Schematic diagram of battery appearance



3.3 Carry and install the battery pack

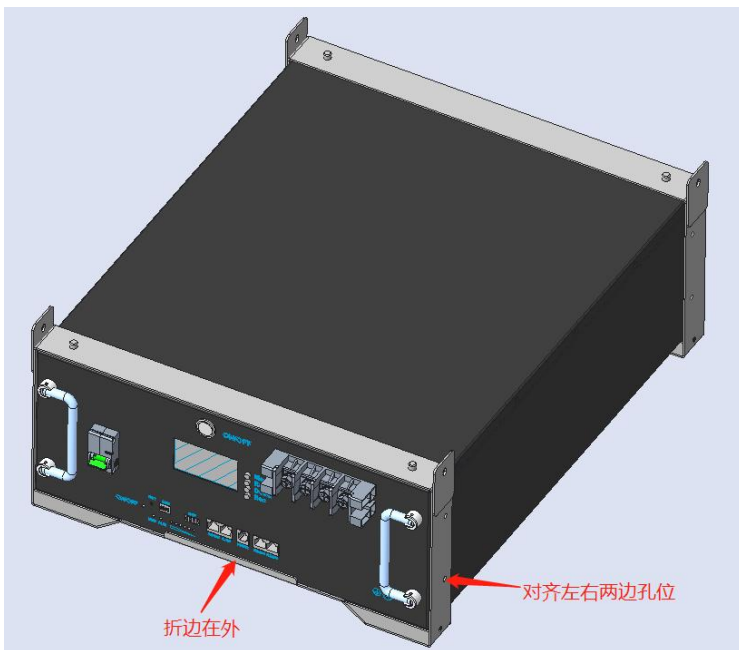
DANGER: The battery pack is heavy and should be handled with care to maintain balance so that it does not fall and injure the operator.

1. Lift the battery out of the battery box and transport it to the designated installation location



2. battery box bracket installation

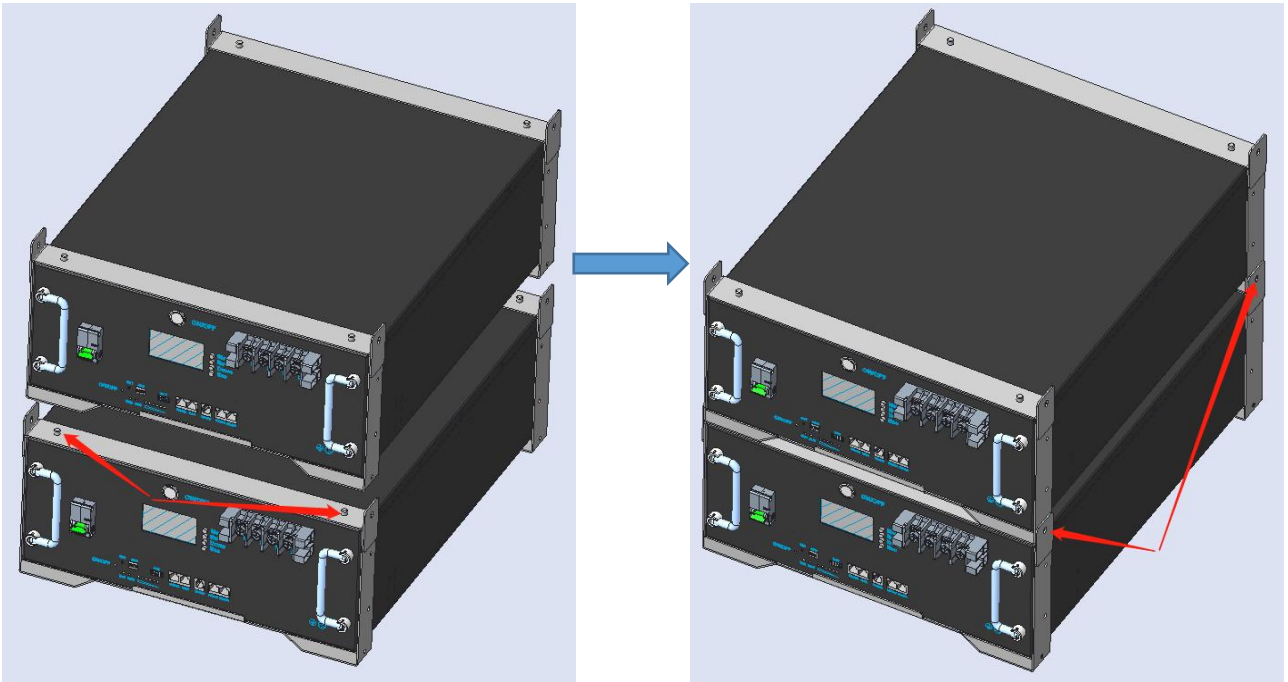
a. take the bracket out of the wooden box, front and rear sets of folded edges outside, aligned with the left and right sides of the hole position;



b. Lock the 8 holes on the front, back, left and right side with the delivered M4 Phillips screws.

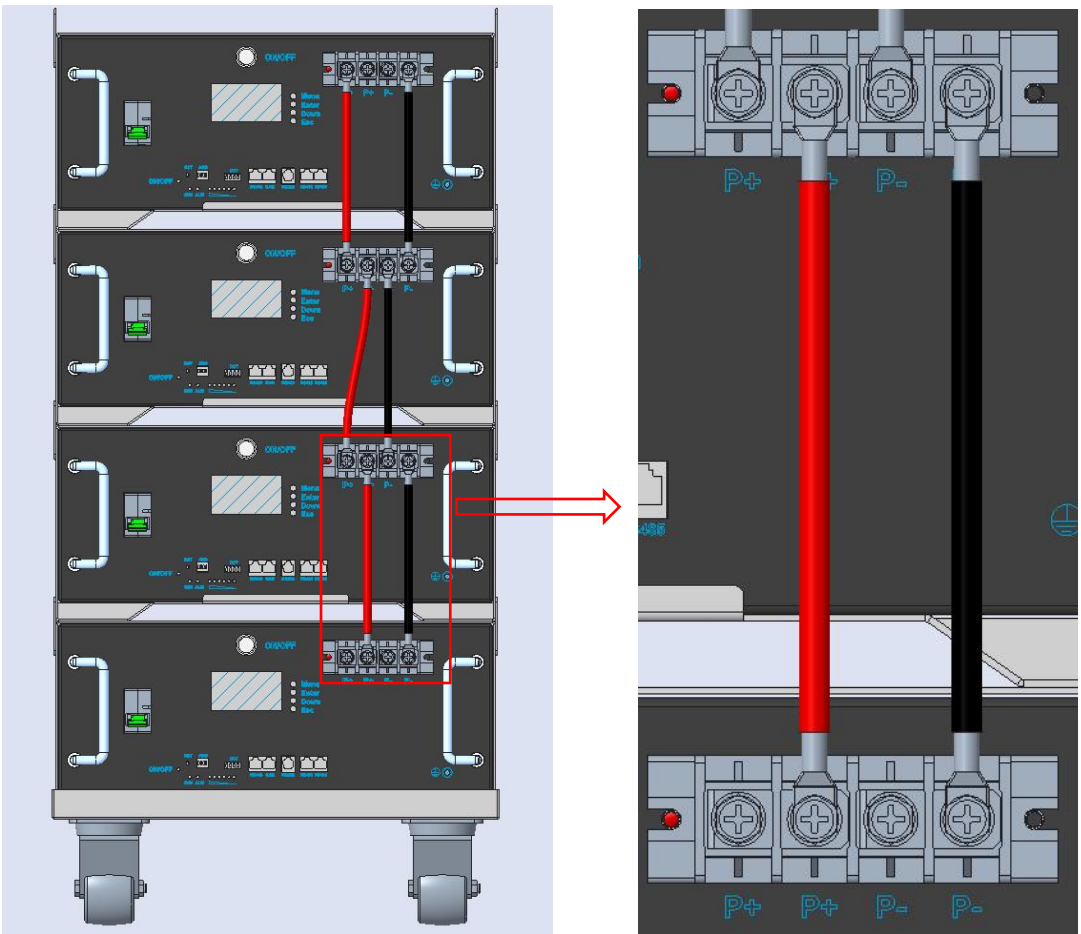
3. Stacking installation

Stack the battery box with bracket upwards in order, align the studs on the bracket to put it down, and then lock the M4 Phillips screws after putting it down by aligning the 4 holes in front, back, left and right.

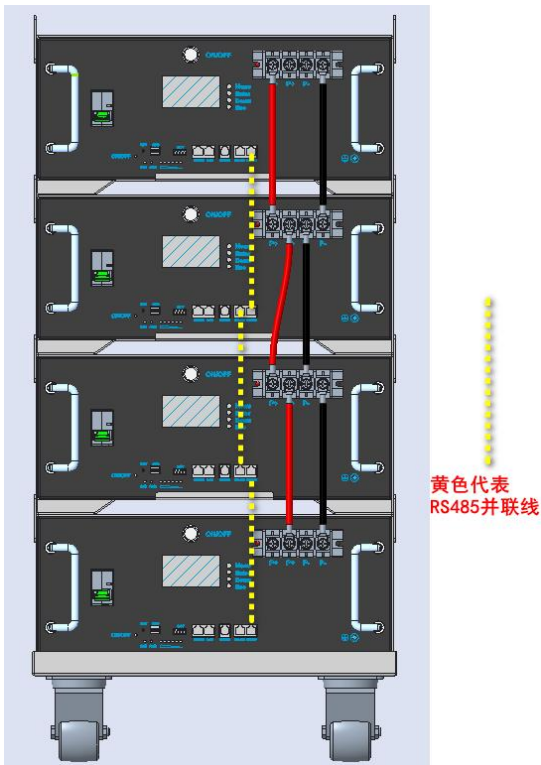


3.4 Wiring Instructions

1. Parallel connection of cables after stacking battery boxes



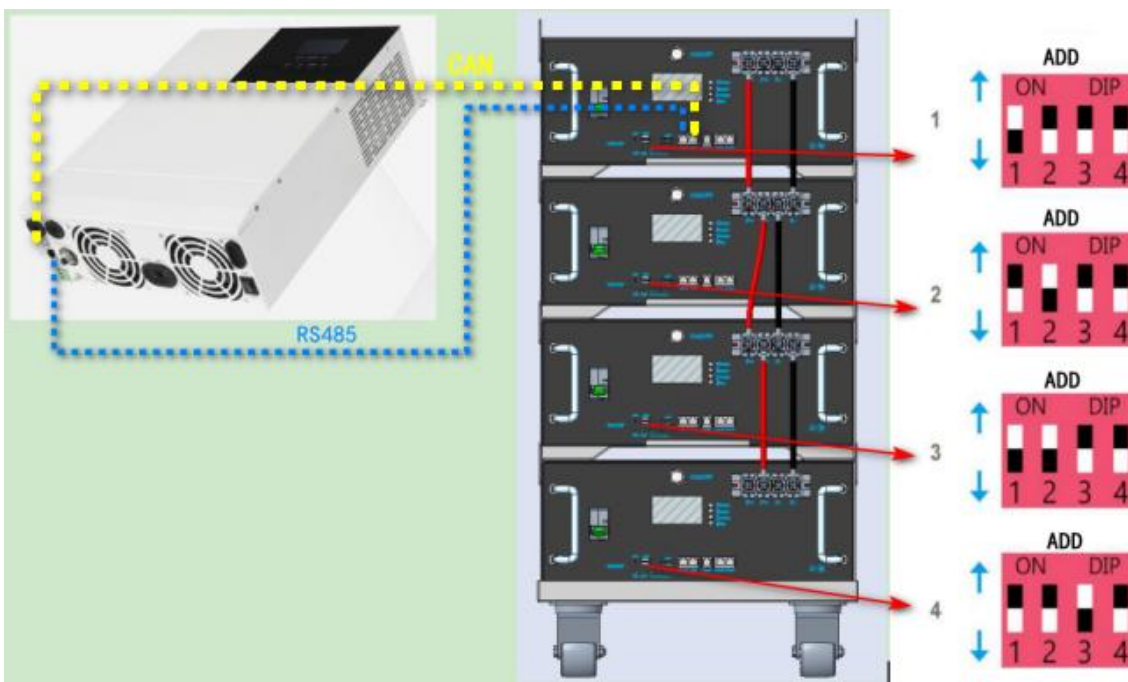
2. Parallel connection of communication cables after battery box stacking
 (yellow line mean RS485 communication cable)



3.5 Parallel Dialing Code

1. Dialing code setting

The dial code of the battery box communicating with the inverter is always set to 1, and the following battery boxes connected in parallel with it are set to 2,3,4 in turn The following figure shows that



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