USER MANUAL

⚠ Important Safety Instructions ⚠

Disclaimer

The manufacturer is not liable for any damage caused by:

- Intentional or accidental misuse, abuse, neglect or improper maintenance, and use under abnormal conditions.
- Failure due to incorrect installation and improper operation of peripheral equipment.
- Alterations made to the product without the manufacturer's express written consent.

Safety Tips:

- Keep batteries away from water, heat, sparks and hazardous chemicals.
- Do not puncture, drop, crush, burn, penetrate, shake or shock the battery.
- Do not open, disassemble or modify the battery.
- Do not touch any terminals or connectors.
- Do not touch exposed electrolyte or powder if the battery case is damaged.
- Electrolyte or powder that comes into contact with skin or eyes must be rinsed off immediately with plenty of water.
- Rinse immediately with plenty of water and seek medical attention.
- Make sure you have disconnected the battery charger or charge controller before working on the battery.
- Never connect or disconnect the battery terminals without first disconnecting the load.

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Battery Introductions

Features of LiFePO4 Battery

- Longer Cycle Life: Up to 20 times longer cycle life than lead-acid batteries, helping to minimize replacement costs and reduce total cost of ownership.
- Lighter weight: weighs approximately 40% of comparable lead-acid batteries. The perfect replacement for lead-acid batteries.
- Higher Power: Provides twice the power of lead-acid batteries, even at high discharge rates, while maintaining high energy capacity.
- Wider temperature range: -30°C ~ 60°C.
- Superior Safety: Built-in battery management system for automatic protection. Lithium Iron Phosphate chemistry eliminates the risk of explosion or combustion due to high shock, overcharge or short circuit conditions.
- Higher Flexibility: Modular design supports series and parallel connection of batteries to provide you with more energy capacity.

Versatility

Lithium batteries can be used in most applications such as RVs, Solar, Household Battery, Off-Grid, Golf Cart, Trolling Motor, Travel Trailer, Camper, Fish Finder, and so on.

Note: The battery cannot be used as a starting battery.

Battery Specification

PRM / MDL	Cap (Wh)	Volt (V)	Max DISCH Cur(A)	Max power (W)	CHG Volt (V)	Max CHG Cur(A)
48-100	5120	44-54.4	200	10240	58.4	50
48-200	5120	44-54.4	200	10240	58.4	50
48-135	6912	44-54.4	200	10240	58.4	70
48-166	8500	44-54.4	200	10240	58.4	70
48-300	15360	44-54.4	200	10240	58.4	75

Batteries in series and parallel

All of our batteries can be connected in parallel, and some batteries can be connected in series. Please refer to our parameter table above.

Connection Notes:

- Do not connect batteries of different chemistries, brands, models, rated capacities or nominal voltages in parallel or series.
- Fully charge all the batteries first, and when the voltage is consistent, then connect them in series or parallel.
- It is normal for individual batteries to show voltage differences after use, but the maximum voltage difference will not exceed 3V.

Parallel connection

To connect multiple batteries in parallel, first connect the positive (+) terminals of the batteries to each other. Then, connect the negative (-) terminals of the batteries to each other. Finally, connect the positive (+) terminal of the first battery and the negative (-) terminal of the last battery into the system. This arrangement increases the total capacity of the batteries while keeping the battery voltage constant.

Series connection

To connect multiple batteries in series, simply connect the positive (+) terminal of the battery and the negative (-) terminal of the battery in sequence. This connection increases the battery voltage while keeping the battery capacity constant.

Note:

Secure all cable connections to proper specifications to ensure good contact between cable lugs and terminals. Over-tightening the cable connections may cause the terminals to break, while loose cable connections may cause the terminals to melt or catch fire.

Installation environment

The battery should be installed in a clean, cool and dry place away from water, oil and dust. Accumulation of these substances on the battery can cause current leakage, resulting in self-discharge and possible short-circuiting. Adequate air circulation must be provided to prevent excessive heat buildup and to minimize temperature variations between batteries.

Charging/Discharging

Charging Precautions

It is recommended to use a special charger for LiFePO4 to charge the battery. If solar panels or generators are used to charge the battery, set the parameters accordingly. Incorrect charging parameters and methods may damage the battery.

Discharge Precautions

- Make sure the battery parameters meet the load requirements and connect the load correctly according to the positive and negative markings.
- It is recommended to ensure that the instantaneous maximum power of the load is less than or equal to the maximum power that can be withstood by the battery BMS.
- If the battery voltage drops to 0-5V during discharge, this may be due to the BMS protection device inside the battery terminating the battery discharge. At this point, the battery is not damaged. Simply charge the battery for 1-3 minutes using a charger specifically designed for lithium iron phosphate batteries or a charger with an activation function and the battery will return to normal.

Charging Parameter Settings

When using the controller, refer to the following parameter settings for the battery charger.

BAT VOLT / PRM SET	48V
High Volt Disconnect	59.2V
Charge Voltage	58.4V
Equalize Charge Volt	56V
Boost Charge Volt	57.6V
Float Charge Volt	55.2V
Boost Char Return Volt	52.8V
Over Disc Return Volt	56.8V
Low Voltage Alarm	48V
Over Discharge Volt	40V
Discharge Limit Volt	40V

Battery Management System

Batteries include a Battery Management System (BMS) that protects the battery by warning of overvoltage, overcurrent, overshoot, over-discharge, and short circuit and by automatically disconnecting the battery. The triggering and restoring conditions for each type of protection are shown in the table below.

		48-135	48-150	48-166	48-200	48-300
Max. Discharge Continuous Current		135A	150A	166A	200A	300A
Max. Discharge Instantaneous Current		700A		900A	640A	1000A
Over voltage protection	protection value	60V				
	release value	56.8V			57.6V	
	Release conditions	Voltage self-recovery or discharging recovery				
Low voltage protection	protection value	35.2V				
	release value	43.2V				
	Release conditions	Voltage self-recovery or charging recovery				
Over current Discharge	protection value	900A	800A	900A	760±120A	1300±200A
	release value	Disconnect load or charge release			Automatic recover after a delay of 32S	
	Short circuit protection recovery	Disconnect load or charge release			Recover by releasing load after approximately 5s	
Over temperature Charge	protection value	127.4℉	194℉	149℉	149℉	149℉
	release value	120.2℉	149℉	140℉	131℉	131℉
Low temperature Charge	protection value	5℉	--	28.4℉	14℉	14℉
	release value	17.6℉	--	37.4℉	23℉	23℉
Over temperature Discharge	protection value	167℉	194℉	185℉	167℉	167℉
	protection release value	136.4℉	149℉	140℉	149℉	149℉
Low temperature Discharge	protection value	--	--	--	-4℉	-4℉
	release value	--	--	--	14℉	14℉
Balance Function	Equalization turn-on voltage	56V			52.8V	
	Equalization current	200mA	140mA	--	200mA	80mA

Troubleshooting

If there is any problem with the battery during use, please refer to the following instructions or contact us for assistance.

Issue Category	Problem Details	Solutions
Capacity issue	Low battery capacity	Please use a professional coulometer to test the actual capacity of the battery in a proper environment. The power consumption of the battery is related to the connected load equipment.
Display issues	The monitor cannot light up, the battery is working properly	The monitor will not affect the normal use of the battery. If you confirm that the monitor is damaged, please contact us with a photo or video of the damaged monitor and we will provide a replacement for the monitor.
	The monitor cannot light up and the battery cannot work	Please contact us to replace or repair the battery.
	Inaccurate display capacity	The monitor maps the power level according to the battery voltage, which is inaccurate, just a reference and will not affect the normal use of the battery. If you want to get more accurate power data, please buy a professional coulometer for upgrade.
Charging issues	The battery cannot be charged or fully charged	Please use a professional lithium iron phosphate charger for charging. If it is controller charging, please refer to our charging parameter table for setting.
	Battery full charge voltage	The voltage of a fully charged battery will fluctuate slightly depending on the environment. Most batteries will stabilize at around 13.5V after a full charge and one hour of rest, and voltages between 13.3V and 14.4V are within the normal range.
Discharge issues	Display voltage is normal, positive and negative voltage is less than 8.8V.	BMS protection due to excessive current. Charging the battery with a professional charger for 3 minutes will activate the battery again.

After-sale Service

Our batteries are mainly sold through Amazon and the brand's official website.

If you are experiencing battery problems that cannot be solved you can contact us for technical support.

Of course, you can always contact us at the following e-mail address. We will reply within 24 hours.

In order to solve the problem for you quickly, please include the following contents in the email:

1. Order number;
2. Order quantity;
3. Recipient's name;
4. Battery model;
5. Pictures or videos related to the battery problem;

USER MANUAL

LITHIUM LIFEPO4 BATTERY

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.