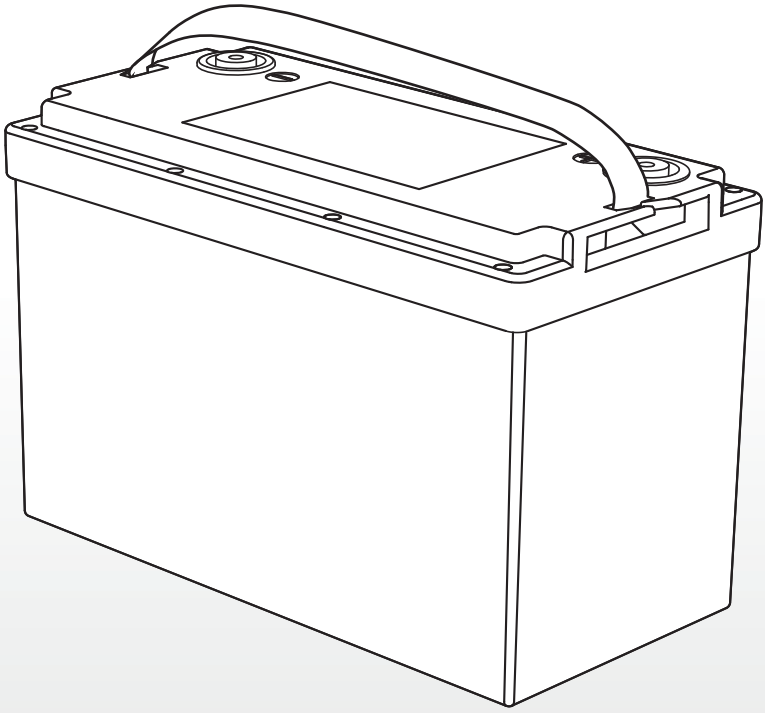
User Manual



LFP121

12.8V 108Ah LiFePO4 Battery

Contents

Disclaimer 01-02

Product List 03

Product Description 03-06

- Overview 03
- Mounting Direction 04
- Specifications 05-06

Charge Methods 07-09

- Battery Charger 07
- Solar Panel 07
- Alternator and Generator 08

SOC Estimation 09

Cable Sizing 10

Series and Parallel Connection 11-13

- Conditions 11
- Steps 11-12
- Charge Method 13

FAQ 14-15

Compliance and Certification 16

Disclaimer

Disclaimer

Before using this product, please read this user manual carefully to ensure that you fully understand the product and can use it correctly. After reading this user manual, please keep it in a safe place for future reference. Improper use of this product may cause serious injury to yourself or others, or result in product damage and property loss. By using this product, you are deemed to have understood, recognized and accepted all the terms and contents of this document. The Company shall not be responsible for any damages caused by the user's failure to use this product in accordance with this user manual.

In accordance with laws and regulations, the company reserves the right of final interpretation of this document and all documents related to this product. This document is subject to change, update, revision or termination without notice.

Please visit our website for the latest product information.

●The company shall not be held responsible for any damage caused by force majeure(e.g. fire, typhoon, flood, earthquake) or use under other abnormal circumstances by the customer.

Transportation

1、Do not subject this product to severe impacts, vibrations, or drops.

2、Do not carry this product onto a plane.

Environment

3、Keep the product away from water resources, heat resources, metal objects and chemical substances and dust environment.

4、Place the product on a stable and flat surface.

5、Store the product in a dry, well-ventilated place.

6、Follow the environment temperature requirements specified in the user manual.

7、Do not use the product in an environment with strong static electricity or magnetic fields.

8、Keep the product out of reach of children and pets.

Operation

9、Do not damage, repair, modify or disassemble this product by yourself.

10、Do not use any unofficial or not recommended components or accessories.

11、Turn off all loads and power sources before connecting and disconnecting the battery.

Disclaimer

12、Do not put fingers or hands into the product.
13、Do not insert wires or other metal objects into the product to prevent short circuits.
14、Do not use the product to power medical equipment and precision instrument.
15、Do not stack any heavy objects on the product.
16、Check the polarity before wiring. Do not reverse the positive and negative terminals.
17、Do not short circuit the battery terminals.

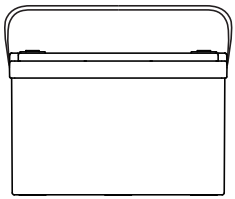
Emergency

18、If the product falls into water or gets wet, stop using it immediately and place the product in a secure, waterproof, and well-ventilated area, then contact customer service for further support.
19、If the product is smoking or catches fire, it is recommended to use the fire extinguishers.
20、If the product is overturned and severely damaged, wear insulating gloves to turn it off, and then place the product in an open area far from flammable materials and people, and dispose of it according to local laws and regulations.

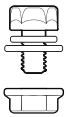
Recycling and Disposal

21、The product with severe damage, malfunction, or depleted battery life should be properly disposed of or recycled.
22、The product contains batteries. Please dispose of the product following local laws and regulations for battery disposal and recycling. Do not dispose of it with household waste to avoid environmental pollution and safety hazards.
23、If possible, ensure the battery is completely discharged (to 0% capacity) before disposing of the product.If not, refrain from placing the battery directly into a battery recycling box. Instead, contact a professional battery recycling company for proper handling.

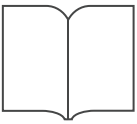
Product List



LiFePO4 Battery*1



M8 Bolts*2

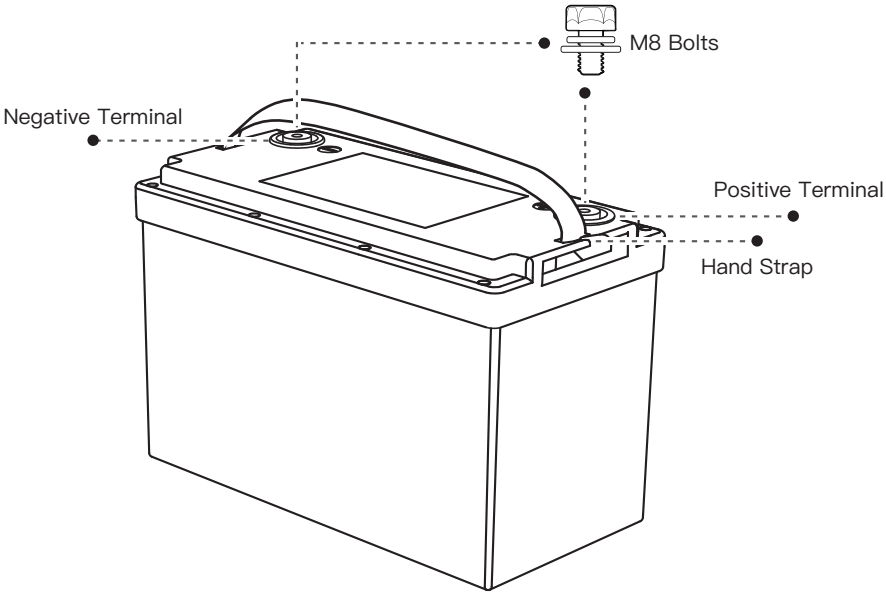


User Manual*1

Warranty Card*1

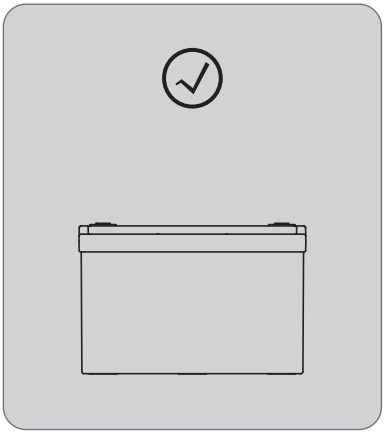
Product Description

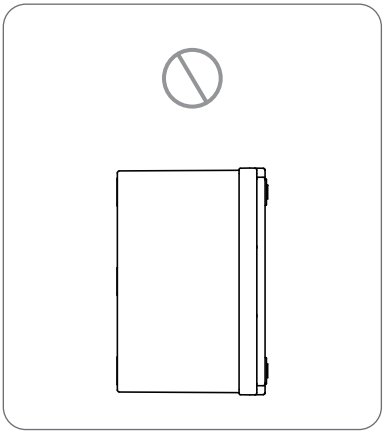
Overview

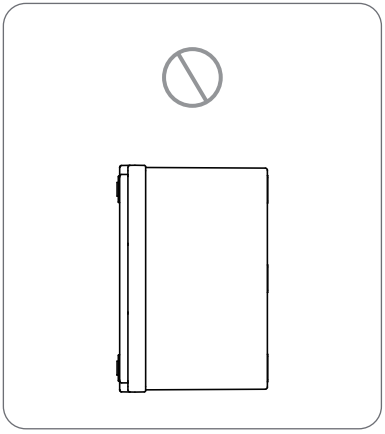


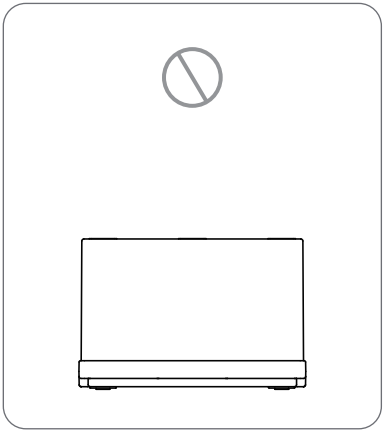
Product Description

Mounting Direction









Product Description

Specifications

Rated Voltage	12.8V
Rated Capacity	108Ah
Rated Energy	1382Wh
Charge Voltage	14.4V~14.6V
Charge Current	50A~100A
Max. Continuous Charge Current	100A
Max. Continuous Discharge Current	100A
Short-term Max. Discharge Current	200A at 10 seconds
Primary Discharging Over-current Protection	300±40A at 1000±300ms
Secondary Discharging Over-current Protection	580±50A at 100±60ms
USB-C Input/Output	5V3A; 9V3A; 12V3A; 15V3A; 20V5A (100W Max)
Protection Type	Over-charge Protection: 14.6V±100mV Over-discharge Protection: 9.2V±200mV Charging Over-current Protection: 120A±20A Short-circuit Protection High-temperature Charge Protection Low-temperature Charge Protection High-temperature Discharge Protection Low-temperature Discharge Protection
Self-discharge Rate	⩽3% per month
Internal Resistance	⩽40mΩ

Product Description

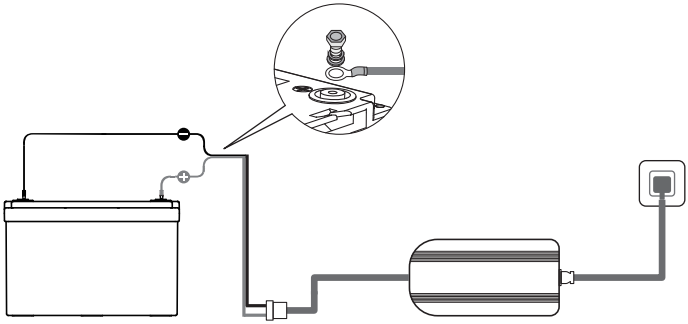
IP Grade	IP65
Cycle Lifespan	3000 cycles at 80% DOD
Battery Type	LiFePO4
Charge Temperature	32°F~122°F(0℃~50℃)
Discharge Temperature	-4°F~122°F(-20℃~50℃)
Storage Temperature	14°F~122°F(-10℃~50℃)
Housing Material	ABS
Bolts	M8 Bolts: 0.31*0.55in(8*14mm)
Dimension	Support up to 4 batteries in series and 2 in parallel (maximum 8 batteries total)
Communication	Not supported
Dimension	Approx.12.99*6.74*8.63in (330*171.25*219.31mm) Compatible with Group 31 Battery Box
Net Weight	Approx. 21.16lb (9.6kg)

Charge Methods

Battery Charger

①It is recommended to use lithium iron phosphate(LiFePO4) dedicated battery charger. Charge Voltage: 14.4V~14.6V.

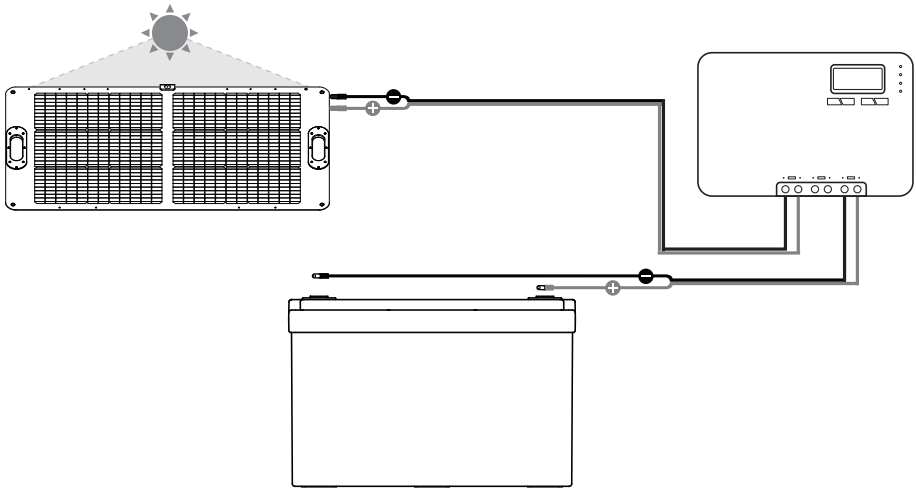
②Do not use lead-acid battery charger to charge the battery.



Solar Panel

Please choose a controller that supports LiFePO4 battery mode or Li-ion battery mode to use with solar panels.

Controller Charge Voltage: 14.4V~14.6V



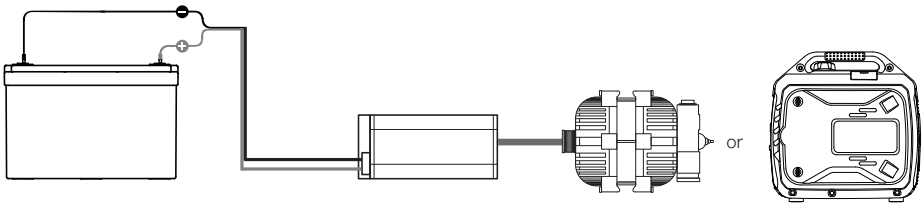
Charge Methods

Alternator and Generator

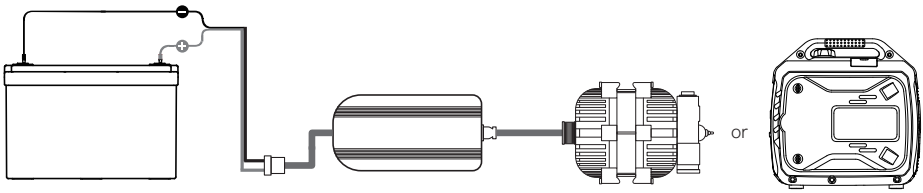
①If the alternator/generator supports DC output, please connect a DC–DC charger between the battery and the alternator/generator.

②If the alternator/generator supports AC output, please connect a AC–DC charger between the battery and the alternator/generator.

③Both Charge Voltages should set within this range: 14.4V~14.6V



DC–DC DC Output



AC–DC AC Output

SOC Estimation

Please disconnect all the power sources and loads from the battery, and left alone for 3 hours.

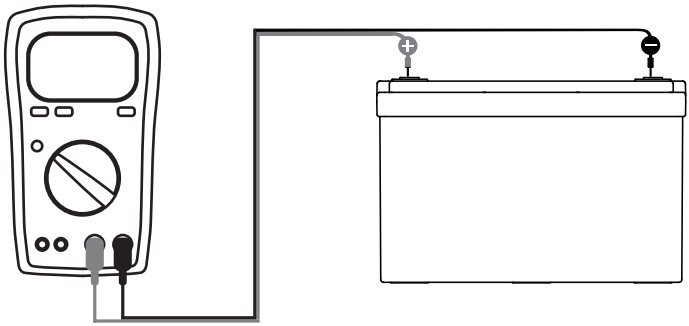
Use a multimeter to test the resting voltage and get an estimated state of charge (SOC) of the battery referring to the chart below.

Voltage(V)	SOC(%)
13.52V	100%
13.32V	70%~90%
13.2V	60%
13.16V	40%~50%
13.12V	30%
13V	20%
12.8V	10%
10.64V	0%

Ta: 77℉/25℃

Due to the internal electrochemical reaction mechanism of lithium iron phosphate (LiFePO4) batteries, the voltage remains stable within a narrow range during charging or discharging. This steady voltage phase is called the plateau voltage.

During the plateau voltage stage, the voltage remains nearly constant, while the State of Charge (SOC) changes significantly.



Cable Sizing

Refer to the table below for the amperage of different sizes of copper cables to handle the expected load.

Cable Gauge(AWG/mm2)	Current Capacity(A)
14(2.08)	20
12(3.31)	25
10(5.25)	35
8(8.36)	50
6(13.3)	65
4(21.1)	85
2(33.6)	115
1(42.4)	130
1/0(53.5)	150
2/0(67.4)	175
4/0(107)	230

Series and Parallel Connection

Conditions

① The capacity and battery management system (BMS) of the batteries must be identical.

②The batteries must be of the same brand (to ensure the BMS are consistent).

③The purchase dates should be within one month of each other.

④ The ambient temperature should be maintained at approximately 73.4℉~80.6℉(23℃~27℃).

Steps

①Fully charge each battery individually and verify that the resting voltage reaches at least 13.5V.

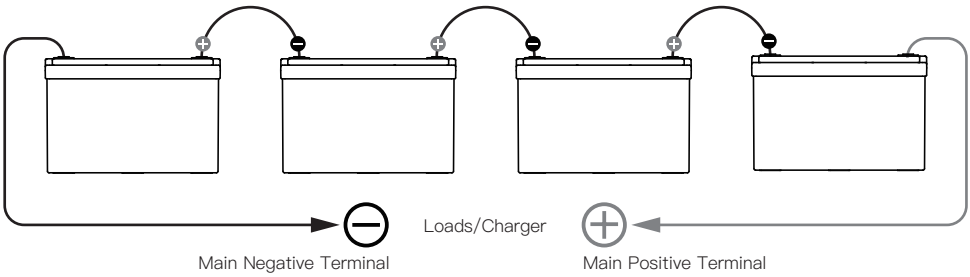
②Wear insulated gloves and prepare tools such as wrenches, a multimeter, bolts, and cables.

③Connect all batteries in parallel first, then let the battery system rest for 6~12 hours.

④Connect the batteries as shown in the diagram to build the battery system.

⑤Repeat the above steps every six months to balance the batteries and reduce voltage differences between them.

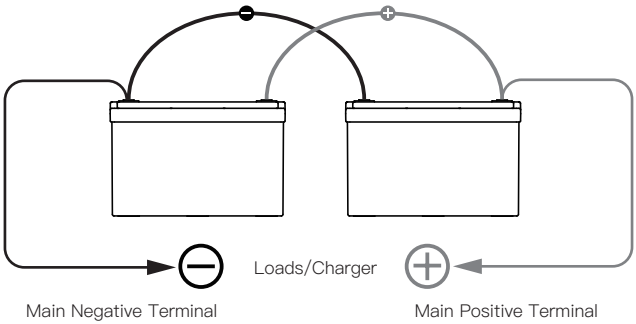
Series Connection: Up to 4 batteries can be connected in series.



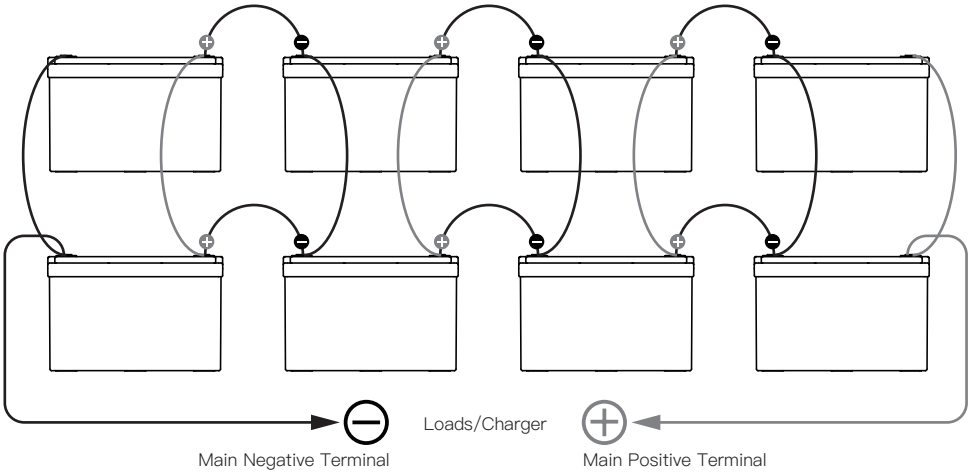
Series and Parallel Connection

Steps

Parallel Connection: Up to 2 batteries can be connected in parallel.



Series-Parallel Connection: Up to 8 batteries (4 in series × 2 in parallel).



Series and Parallel Connection

Charge Method

a)When batteries are connected in series, the charging voltage will increase accordingly; when connected in parallel, the charging voltage remains the same.

b)Please charge the battery system by connecting its main positive and main negative terminals (as illustrated in the above diagrams).

Battery Quantity in Series and Parallel	Charging Voltage
2 in parallel	14.4V~14.6V
2 in series	29.0V~29.2V
3 in series	43.5V~43.8V
4 in series	58V~58.4V

FAQ

1.How to clean the product?

①Disconnect the battery from the system before cleaning.

②Wipe the battery case with a cloth slightly dampened with water.

③Dry the battery completely with a dry, soft, clean cloth before connecting.

2.How to store the product?

Store it in a dry, well-ventilated place. The recommended storage temperature is 14℉~122℉(-10℃~50℃) and keep it away from water resources, heat resources, metal objects and chemical substances.

3.How to maintain the product?

①Charge it to around 60% capacity and turn off the product before storing it.

②For long-term storage, please disconnect the battery system and fully discharge and then fully charge the battery(0%-100%) once every 6 months.

③And the warranty will be voided if the product has not been charged or discharged in 6 months.

4.What checks do you need to do when charging and discharging?

①Check the terminals and bolts for rust, corrosion, or melting. Replace terminals and bolts in time.

②Check for loose wiring and make sure the wiring is well connected.

③Check whether the parameters of other equipment for charging and discharging comply with the lithium iron phosphate battery settings.

④Check the battery for signs of bulging, leakage or odor. if so, please stop using it and contact customer service.

5.Can I charge the battery in the cold?

①It is not recommended to charge the battery when the ambient temperature is below 32℉/0℃. Please charge the battery indoor then.

②Do not charge the battery when the battery itself is below 32℉/0℃.

6.Can I leave the battery on charging all the time?

Yes.

7.How to disable battery protection?

①Over-charge Protection and Charging Over-current Protection: disconnect the battery charger.

②Over-discharge Protection, Short-circuit Protection and Discharging Over-current Protection: use lithium iron phosphate(LiFePO4) dedicated battery charger to charge the battery.

③High-temperature Charge/Discharge Protection: Disconnect all the connections, and move the battery to a low-temperature, ventilated place.

④Low-temperature Charge/Discharge Protection: Disconnect all the connections, and move the battery to a warm, ventilated place.

8.Can I use the battery for golf carts or trolling motors?

No, the battery size is not suitable for golf carts and the max. continuous discharge current is lower than the starting current of trolling motors.

9.Can I charge the battery when battery is powering loads?

Yes.

10.Can this product be brought on board a plane?

No, this product cannot be brought on board a plane due to aviation regulations for lithium-based batteries.

Compliance and Certification

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.

Notice

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:

(1)Reorient or relocate the receiving antenna.
(2)Increase the separation between the equipment and receiver.
(3)Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
(4)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.