



Model Number:  
GV12I73T31B

Titan31B



# GreatVolt Titan31B

12.8V 173Ah LiFePO4 Battery for RV & Van,  
Marine & Trolling Motor, Solar & Off-Grid.

\*100A continuous | 346A surge for 5 seconds | 500A surge for 2 seconds

\*Note: This built-in protection will reset after five seconds in most fault conditions. Disconnecting the battery from loads will also reset the BMS.

[www.GreatVolt.com](http://www.GreatVolt.com)



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Thank you for choosing a GreatVolt product! To ensure safe and effective use, please read this manual carefully before use and keep it for future reference.

### **Product Introduction**

The GreatVolt 12.8V 173Ah lithium iron phosphate (Titan3IB) battery pack is built with premium-grade LiFePO4 cells to deliver outstanding performance and value. It offers high energy density, longer cycle life, and superior safety. With a flexible and versatile design, it is typically designed for applications such as electric vehicles, backup energy storage, RVs and marine systems, home emergency power, as well as industrial and commercial use.

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## 1.Revision Log

### Revision History

Version	Date	Contents	Reviewed by
		First issue	Mao

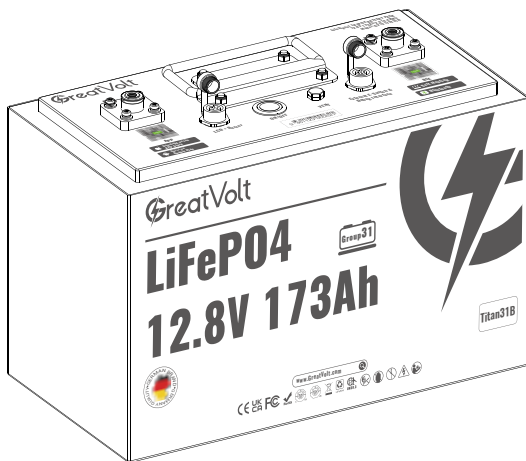
## 2.Please Read Carefully Before Use

-  Do not disassemble, crush, puncture, or strike the battery to avoid internal short circuits, fire, or explosion.
-  Do not throw the battery into fire or expose it to excessive heat.
-  Do not short-circuit the positive and negative terminals of the battery.
-  Do not use or store the battery in humid or high-temperature environments.
-  Do not charge the battery with a non-designated charger.
-  Do not mix batteries of different models, capacities, ages, or charge levels.
-  Keep the battery away from children and pets.
-  If you notice any deformation, discoloration, leakage, odor, or overheating, stop using the battery immediately and contact after-sales service.

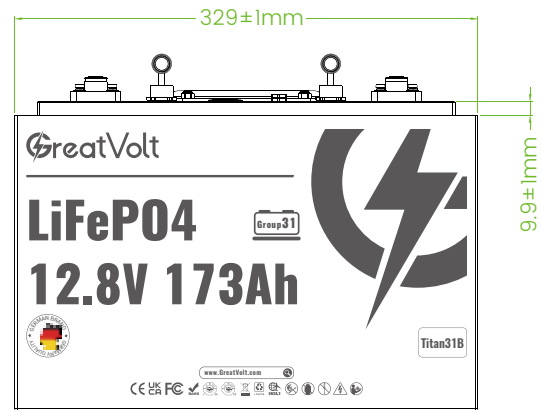
## 3.Battery Specifications

Battery Cell Type	LiFePO4
Rated Capacity	173Ah
Nominal Voltage	12.8V
Voltage Range	10~14.6V
Cycle Life	3000+ cycles, 80% SOH, 25°C/0.5C
Dimensions	329mmL X 173mmW X 237mmH
Weight	18KG
Connection Method	Series & Parallel(4S4P)
Terminal Screw Size	M8x12mm
Recommended Terminal Torque	619~974in-lbs(70~110N-m)
Protection Grade	IP67
Certification	UL1973,UL9540A,EC62619 /for cells /MsDs for shippin /UN38.3

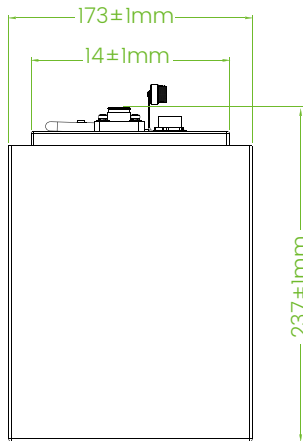
## 4.Dimension Drawings



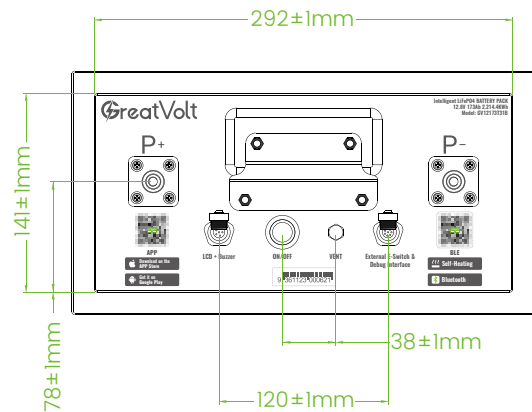
Perspective



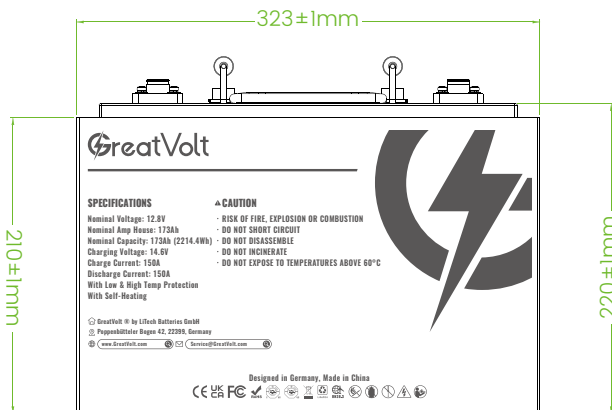
Front view



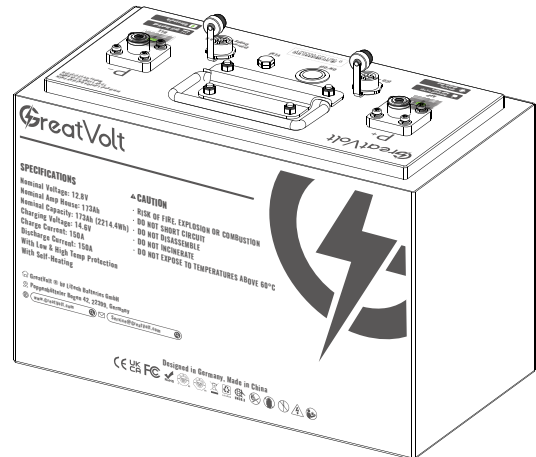
Side view



Top view



Rear view



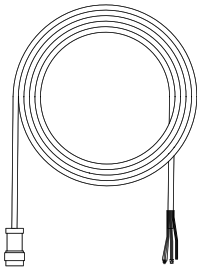
Perspective

## 5.Installation Tips ⚠

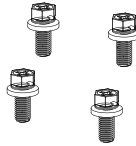
- i** The battery must be securely fixed with screws, and the cable connections must be properly insulated to prevent the insulation from loosening or becoming displaced during use, which could result in a short circuit or accident. This manual uses a typical battery as an example to describe the installation method.
- i** To ensure the best battery performance, it is recommended to install the battery in a clean, cool, and dry location, avoiding the accumulation of water, oil, or dirt. Such substances on the battery may cause leakage, self-discharge, or even short circuits.

## 6.Install the Required Components 🧰

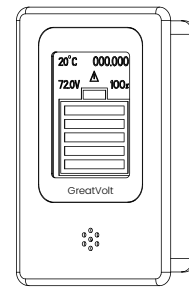
- i** It is recommended to use the components provided by [GreatVolt.com](https://www.GreatVolt.com). Alternative installation methods may also be adopted to meet specific application requirements.



Communication line



Screw

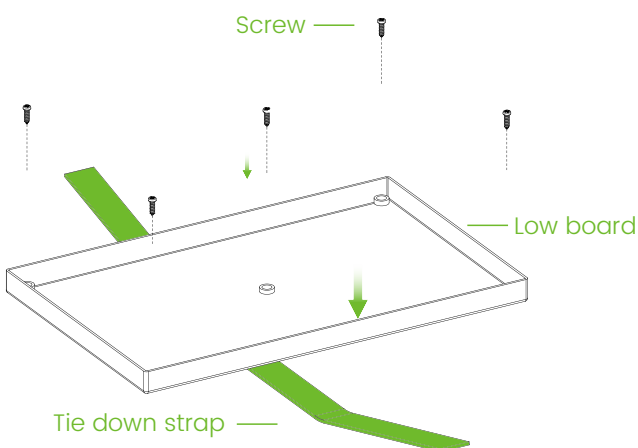


Display (Optional)

## 7.Install the battery bracket 🔪

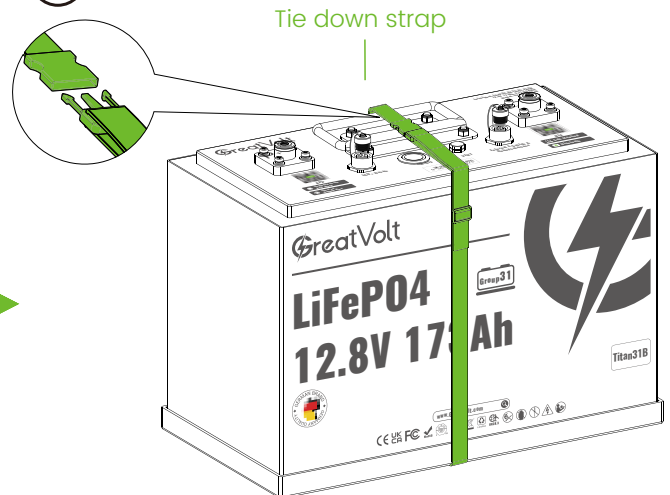
- i** During battery installation, it is recommended to place the unit on a metal or plastic bracket and secure it firmly with Tie down strap. Side mounting is also acceptable, but ensure that the positive and negative terminals from the battery are not obstructed.

①



Disassembly

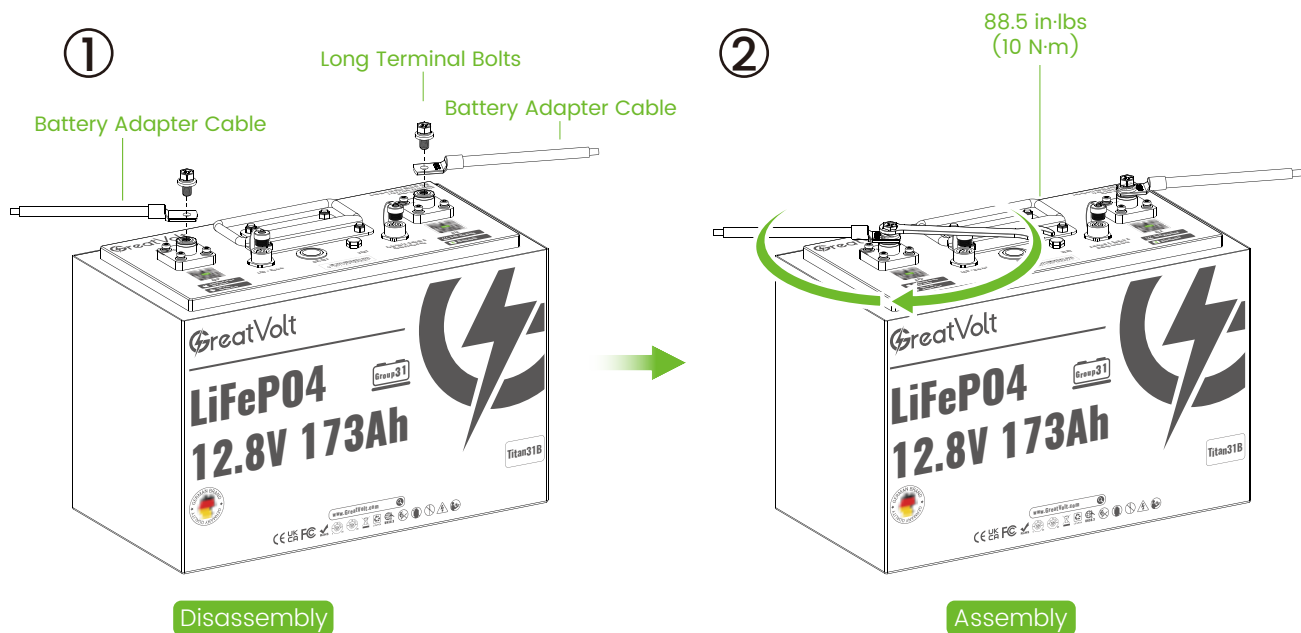
②



Assembly

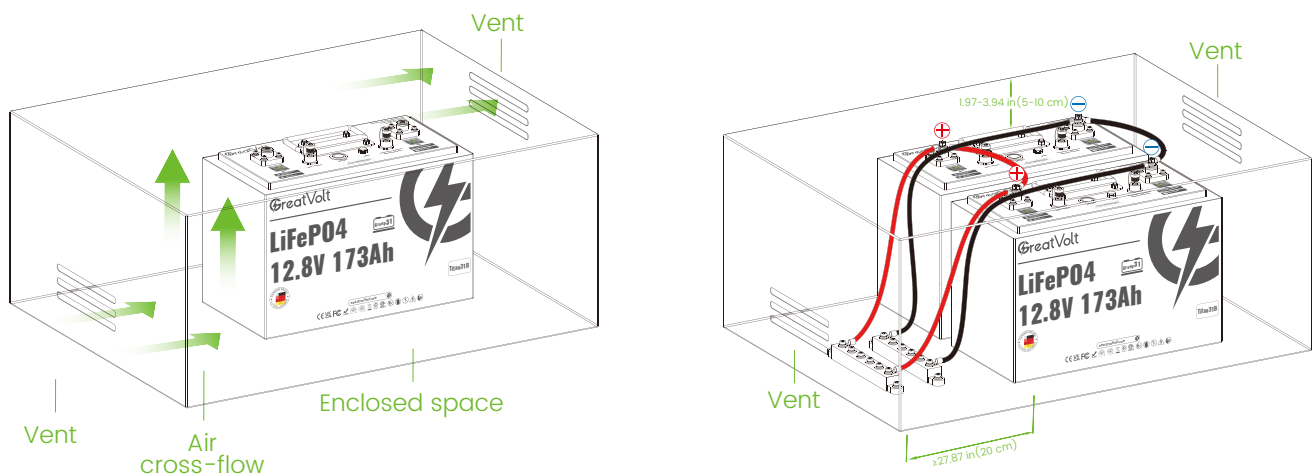
## 8.install battery terminal 🔪

- i** Ensure that the Battery Adapter Cable's ring terminal makes firm contact with the battery terminal surface, and place the washer of the long terminal bolt on the very top. Do not place the washer between the battery terminal and the cable's ring terminal, as this may cause poor contact, high resistance, and excessive heating.



- i** To ensure safe and stable system operation, connect cables according to the manufacturer's recommended cable specifications and torque. Excessive tightening may cause terminal breakage. When securing multiple cable connections to a battery terminal, use a proper long terminal bolt with washers. Loose connections may result in terminal melting or fire hazards.

## 9. Standardized installation



Keep Dry

Fragile

Ventilation

- i** Ensure the cable's ring terminal is in full contact with the top surface of the battery terminal, tighten the screw, and cover it with an insulation cap. Ensure proper conductor contact to avoid high resistance and overheating.
- i** When making connections, avoid short-circuiting the battery terminals to prevent irreversible damage to the battery and load, as well as potential damage caused by an instantaneous high current.
- i** Check the polarity (positive and negative) before wiring to avoid irreversible battery damage caused by reverse polarity.
- i** To ensure safe and reliable system operation, tighten cable connections according to the manufacturer's recommended torque specifications. Over-tightening may cause the terminal to break, while loose connections may cause the terminal to overheat, melt, or even catch fire. When installing multiple cable ring terminals on a single battery terminal, use the supplied long terminal bolt to ensure a fully secure connection.

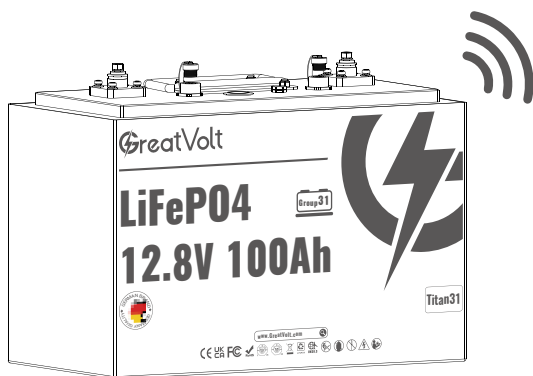
## 10. How to Configure Cables

**i** Use appropriately sized cables (sold separately) based on the expected load. Refer to the table below for the current ratings corresponding to each cable gauge. When selecting cables according to the battery's voltage and capacity, if the cable length exceeds 10 feet (3,000 mm), a thicker gauge cable may be required to prevent excessive voltage drop, which could affect the battery's efficiency.

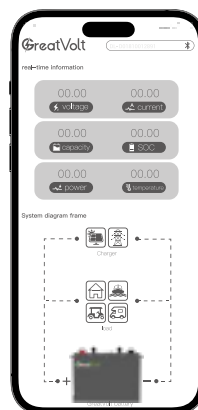
Cable Gauge Size	Ampacity
14 AWG (2.08 mm <sup>2</sup> )	35A
12 AWG (3.31 mm <sup>2</sup> )	40A
10 AWG (5.25 mm <sup>2</sup> )	55A
8 AWG (8.36 mm <sup>2</sup> )	80A
6 AWG (13.3 mm <sup>2</sup> )	105A
4 AWG (21.1 mm <sup>2</sup> )	140A

## 11.App & Bluetooth

**i** Bluetooth Connection Diagram.



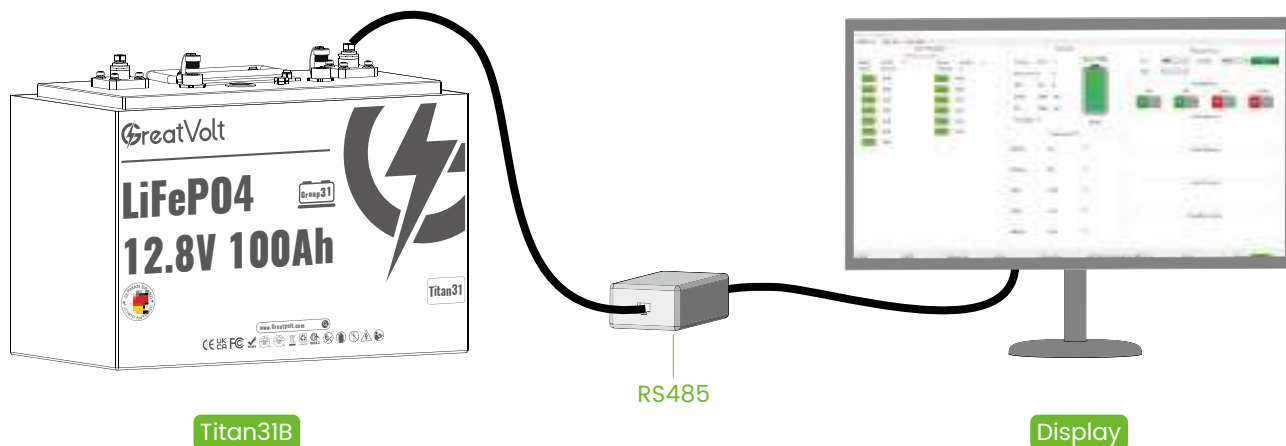
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APP

## 12.Communication

**i** PC Software Connection Diagram.



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RS485

Display

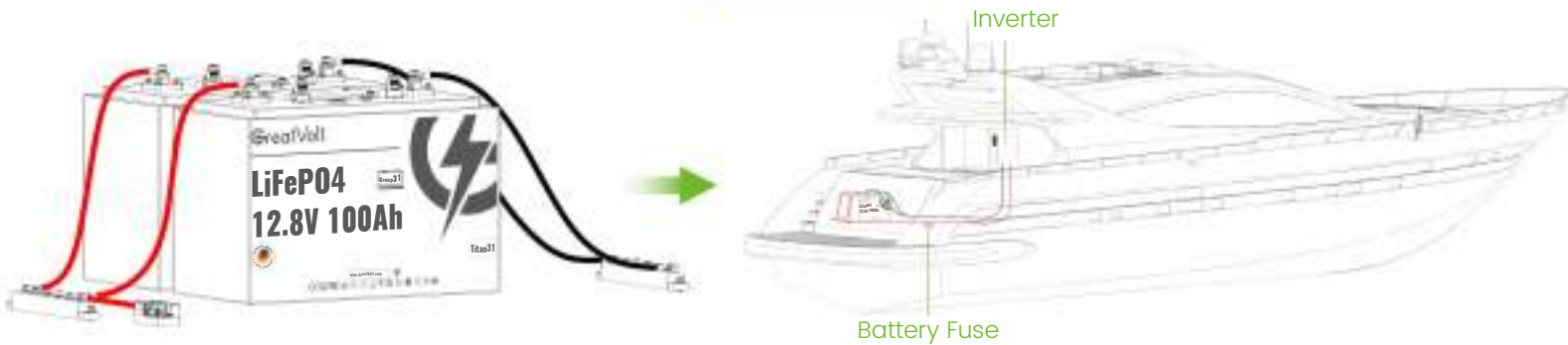


## 13. System Connection Diagram for Application Fields

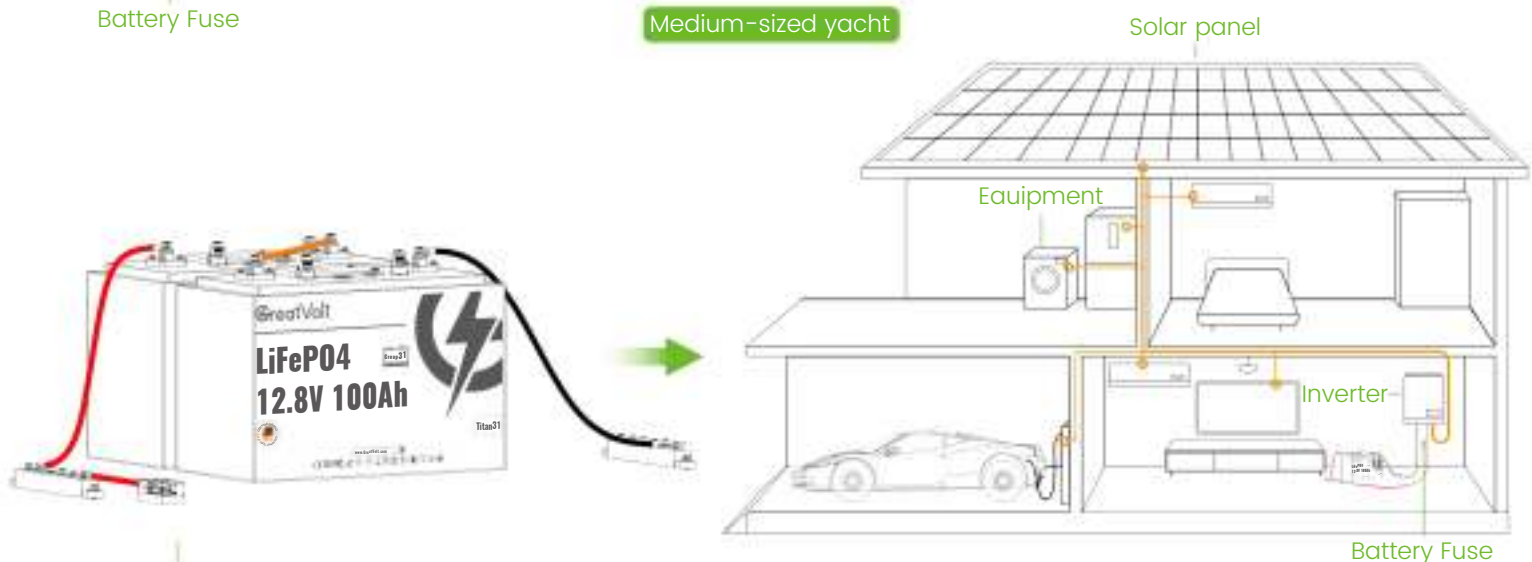
The diagrams below illustrate typical application scenarios. Configure the battery system according to your specific requirements.



Solar-powered RV



Medium-sized yacht

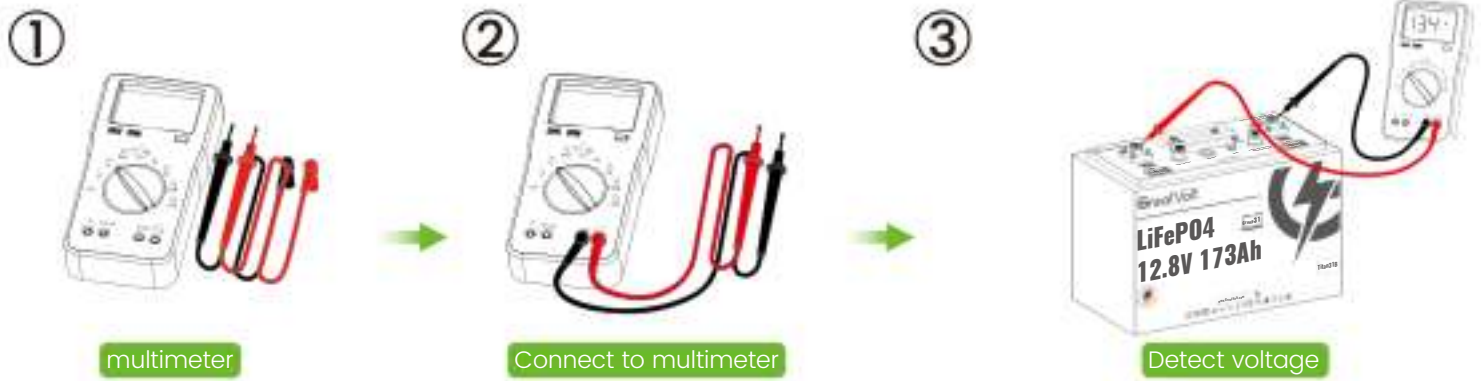


Solar house

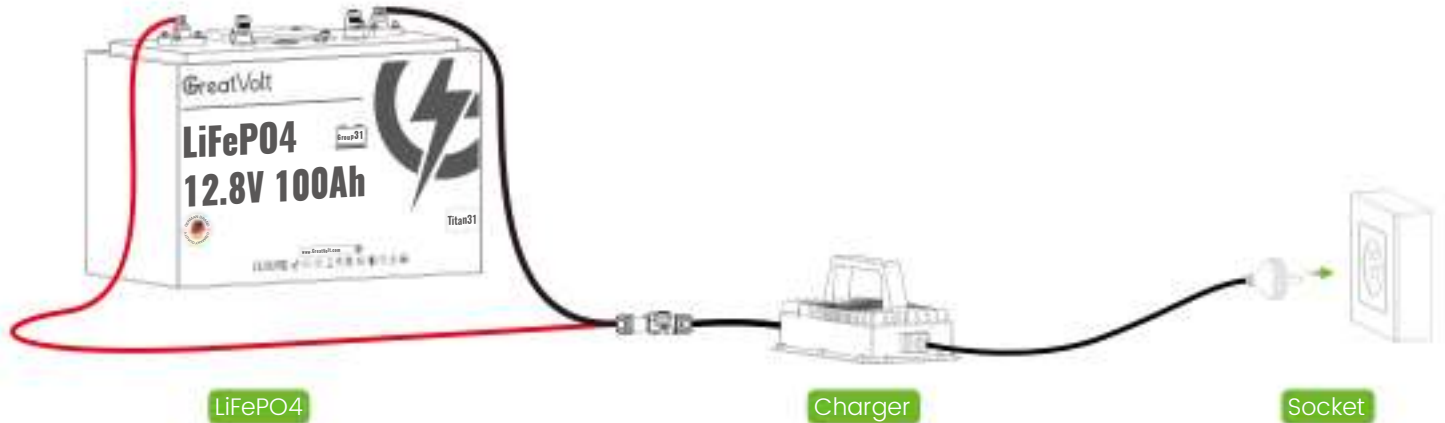
## 14. Measure battery balance before parallel series

Before connecting batteries in series or parallel, it is important to perform balancing to reduce voltage differences and optimize performance. Please follow these three steps:

Step 1: Before connecting the battery system, measure the voltage of each battery. Only batteries with a voltage difference of less than 0.2V may be connected in series or parallel to form a system.

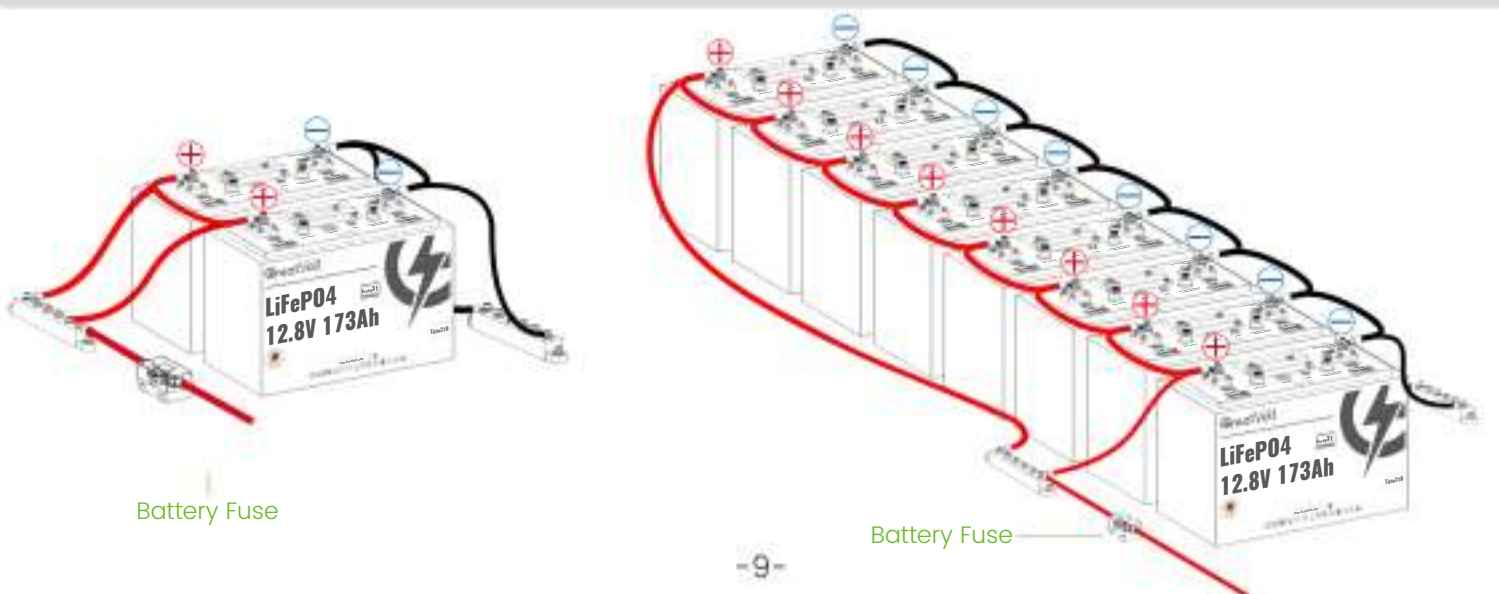


Step 2: If the voltages of the batteries are inconsistent, you can balance them either by fully charging all batteries with a charger or by discharging them uniformly with a load, so that the battery voltages remain consistent.



Step 3: If no abnormalities are found after completing the above steps, you may proceed with series or parallel connections according to actual requirements.

- ❶ Please select cables of appropriate specifications for series or parallel connections. Higher-grade cables help handle high currents and are typically arranged in parallel or stacked configurations to distribute power efficiently.
- ❷ Calculate the battery voltage and capacity in series and parallel connections. The cable length between each battery should be kept consistent to ensure that all batteries can work evenly together.
- ❸ Please note that the wiring methods provided below are for reference only, as the optimal approach may vary depending on the specific situation. It is important to take into account factors such as cable size, the equipment used, and environmental conditions.
- ❹ Parallel Connection: At least 2 identical batteries are required for parallel connection, and up to 8 identical batteries can be connected in parallel.

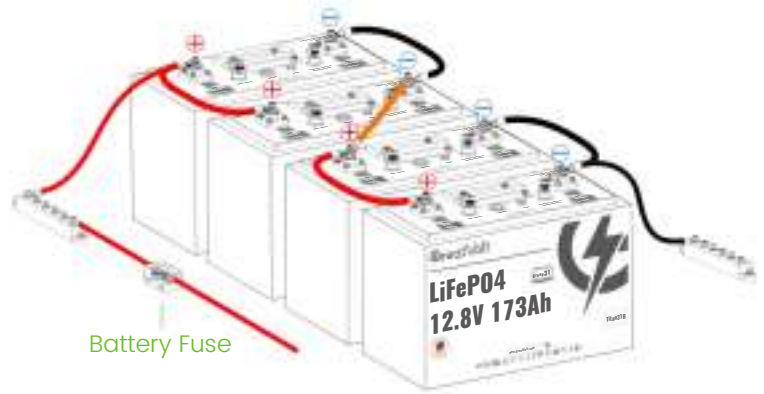
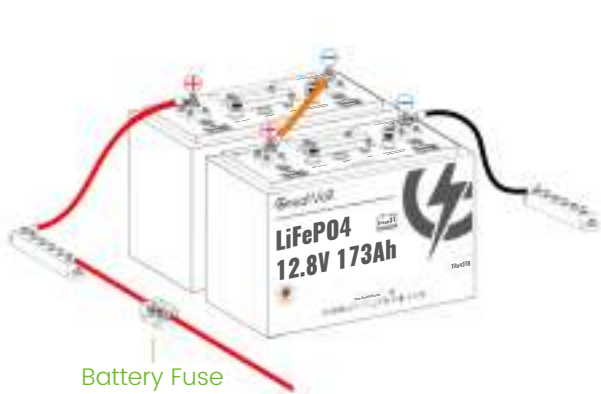


2P

8P

2P	Battery System	12V (12.8V) 346Ah
	Energy	4428Wh
8P(Max)	Battery System	12V (12.8V) 1384Ah
	Energy	17715Wh

- Series Connection: At least 2 identical batteries are required for series connection, and up to 4 identical batteries can be connected in series.

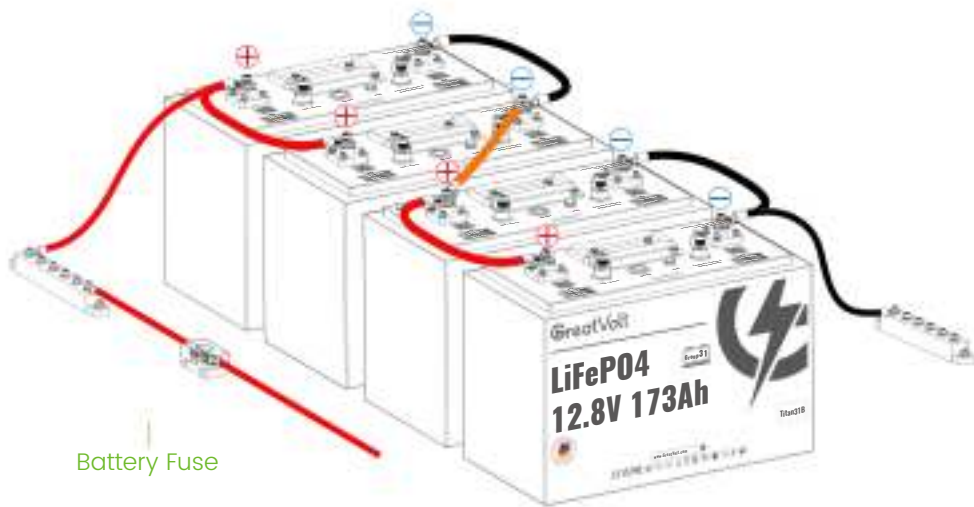


2S

4S

2S	Battery System	24V (25.6V) 173Ah
	Energy	4428Wh
4S(Max)	Battery System	48V (51.2V) 173Ah
	Energy	8857Wh

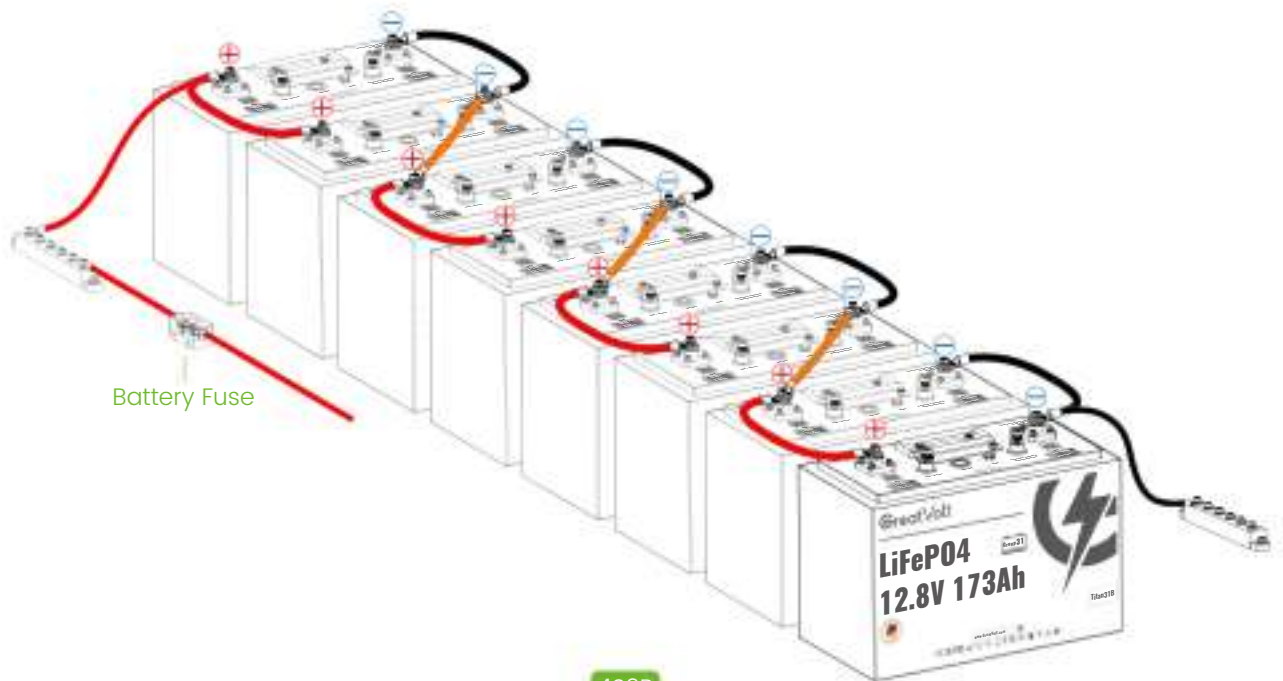
## 15. Battery in series and parallel



2S2P

2S2P	Battery System	24V (25.6V) 346Ah
	Energy	8857Wh





4S2P

4S2P

Battery System

48V (51.2V) 346Ah

Energy

17715Wh



4S4P

4S4P

Battery System

48V (51.2V) 693Ah

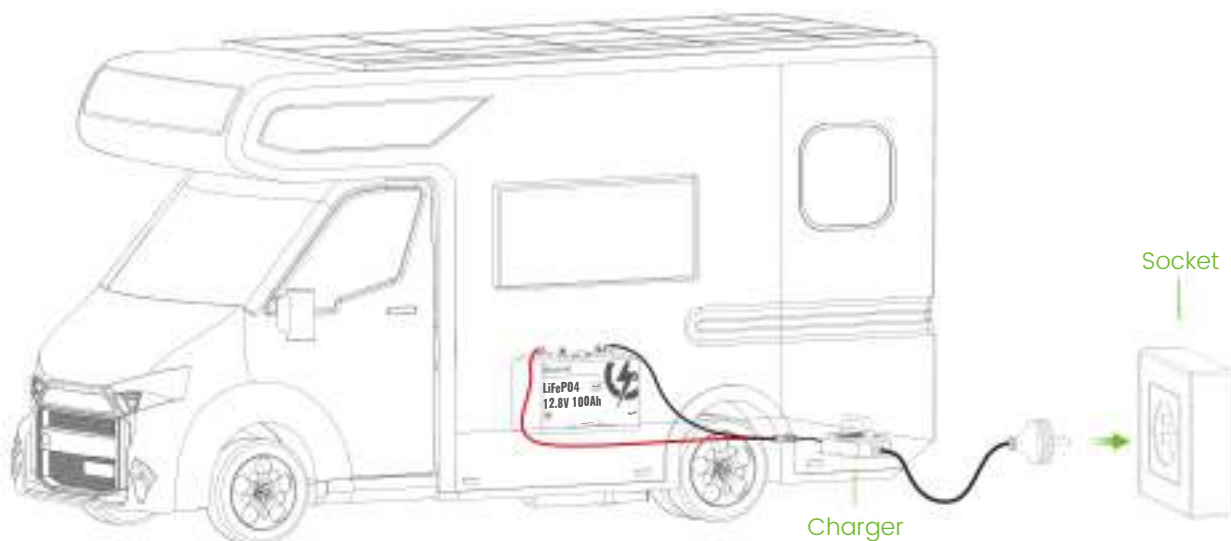
Energy

35430Wh

## 16.Usage Tips and Safety Measures for Series and Parallel Connections

- When multiple batteries are connected into a system, it is recommended to perform a routine inspection every month. Check whether the wiring terminals are loose or oxidized (if oxidation is found, disconnect the power and wipe with a dry cloth). Also check the battery voltage status. If the voltage difference is greater than 0.5V, the batteries should be individually balanced by charging.
- Do not connect batteries with different chemical properties, rated capacities, nominal voltages, brands, or models in parallel or in series. Doing so may cause potential damage to the batteries and connected equipment, and may also pose safety risks.

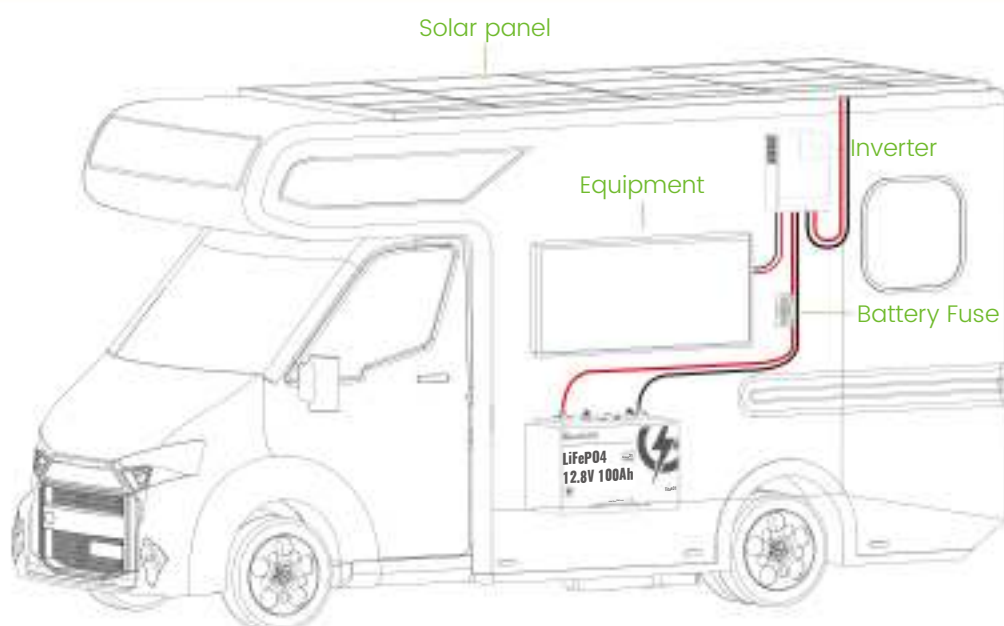
## 17.Charge



Reconnect Voltage	@13.2V
Recommended Charge Voltage	14.6V
Charge Cut-off Voltage	15V
Recommended Charge Current	0.2C/34.6A
Maximum Charge Current	100A

- 1 Please use the supporting LiFePO4 battery charger to charge the battery.
- 2 Please ensure that the charger output voltage matches the rated voltage of the battery before charging.
- 3 Connect the positive terminal of the charger to the positive terminal of the battery and the negative terminal to the negative terminal when charging.
- 4 The charging environment temperature should be between 0°C and 45°C.
- 5 Please choose an open area when charging and always monitor the battery status.
- 6 When the charger displays a charging current of 0.1A or full, it means the battery is fully charged. Please disconnect the charger in time.

## 18.Discharge

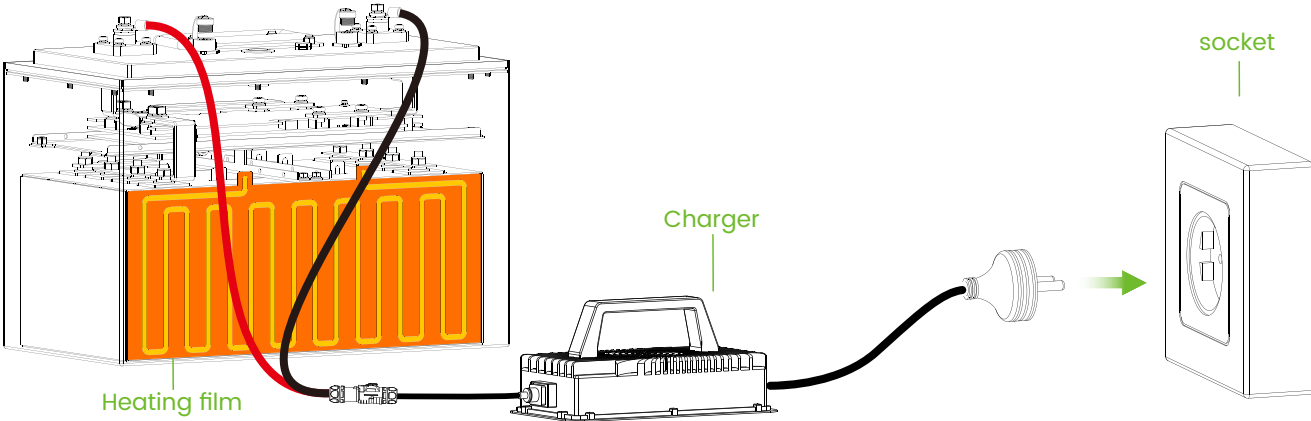


Recommended Low Voltage Cut-off Voltage	11.2V
BMS Discharge Cut-off Voltage	10V
Reconnect Voltage	12V
Recommended Discharge Current	50A
Maximum Discharge Current	150A

- Do not use batteries that exceed the maximum continuous discharge current or are below the discharge cut-off voltage.
- The discharge ambient temperature should be maintained between -20°C and 60°C.
- It is recommended to recharge the battery when the remaining capacity exceeds 20% to avoid over-discharge.

## 19.Heating Logic

- Heating Voltage: 14.6V
- Heating Current: Minimum Current 10A



Heating Method	Charging heating
Heating Voltage	14.6V
Heating Start Current	≥10A
Heating Start Temperature	≤0°C
Heating Stop Temperature	≥5°C

## 20.Battery Protection Parameters

- The battery with a BMS (Battery Management System) that provides protection and recovery against over-voltage, under-voltage, over-current, short circuit, high temperature, and low temperature conditions. The trigger and recovery conditions for each type of protection are listed in the protection table below.

Battery operating Status		Condition(For Reference Only)	
Single-cell overvoltage protection	≥3.75V	/	≤3.50V
Single-phase undervoltage protection	≤2.5V	/	≥2.7V
Charging overcurrent protection 1	≥160A	5 seconds	5 seconds
Charging overcurrent protection 2	/	/	5 seconds
Discharge overcurrent protection 1	≥200A	60 seconds	5 seconds
Discharge overcurrent protection 2	≥350A	5 seconds	5 seconds
Discharge overcurrent protection 3	≥500A	1 seconds	5 seconds
Charging low temperature protection	≤0°C (°F)	/	≥5°C (°F)
Charging high temperature protection	≥50°C (°F)	/	≤45°C (°F)
Discharge low temperature protection	≤-20°C (°F)	/	≥-10°C (°F)
Discharge high temperature protection	≥60°C (°F)	/	≤55°C (°F)
Short circuit	≥1000A	Battery short circuits are strictly prohibited	

## 21.Storage

- i** Please keep the battery in the cool and dry environment: Within 1 month -5°C~35°C or Within 6 months 0°C~35°C, relative humidity ≤75%, please charge the battery pack (around 50% SOC) regularly (every 60-90 days) to keep its chemistry active and longer lifespan. Long shelf time without charging the battery, the battery may completely depleted or totally died.

## 22.Maintenance

- i** Regularly inspect the battery appearance and remove any dust or dirt from its surface.
- i** Regularly check the battery cables for looseness or corrosion, and tighten or replace them if necessary.
- i** If you notice a significant drop in battery performance, contact after-sales service promptly.

## 23.Usage Tips and Protection

- i** **Avoid battery pack collisions and water ingress**  
When using the battery in environments with rain or snow, take extra care to protect it from impact and water. The battery pack is the core component of the equipment, and any physical damage may reduce performance or pose safety risks.
- i** **Pay attention to the operating temperature range**  
The battery's normal operating temperature range is -20°C to 60°C, with charging temperature range 0°C to 55°C. Operating the battery outside these ranges may shorten its lifespan. Therefore, use the battery within the specified range and avoid operation under extreme temperature conditions.
- i** **Avoid over-discharge**  
Excessive discharge can affect battery life. If the battery indicator shows low charge, recharge it promptly to avoid damage caused by insufficient power.
- i** **Use the correct charger**  
The optimal charging environment is between 10°C and 30°C. Ensure the charger is functioning properly to prevent unstable voltage or overcharging, which can harm the battery.
- i** **Avoid long-term storage without charging**  
If the battery is not used for a long time, it will gradually self-discharge, leading to deep discharge. For storage, keep the charge above 25% and recharge at least once every three months to prevent irreversible capacity loss.
- i** **Ensure safe connection during use**  
If you notice the battery operating abnormally, stop using it immediately and contact after-sales service. Avoid dismantling the battery yourself to prevent injury.
- i** **Avoid short circuits**  
Short circuits may cause abnormal battery operation or permanent damage. Keep the battery away from conductive objects to prevent short circuits.

**i Stop use if abnormal odor or heat occurs**

If you notice an unusual smell or heat during battery use, stop immediately and have it inspected. Prolonged abnormal use may cause further damage.

**i Do not use modified chargers**

Using incompatible chargers may damage the battery or reduce its performance. Always use chargers provided or recommended by the manufacturer.

**i Keep the battery away from heat sources and open flames**

Heat can damage the battery's safety mechanisms, reducing its lifespan and posing safety hazards.

## 24.Disclaimer

- i** Greatvolt assumes no responsibility for any loss caused by improper use or force majeure. The contents of this manual are subject to change without prior notice.

## 25.Contact GreatVolt

 GreatVolt ® by LiTech Batteries GmbH.

 Poppenbütteler Bogen 42, 22399, Germany.



[www.GreatVolt.com](http://www.GreatVolt.com)



[Service@GreatVolt.com](mailto:Service@GreatVolt.com)



Please keep this manual safe for reference.  
Have a happy use!

