



USER MANUAL

12V & 24V Series
LiFePO₄ Battery





Important Safety Instructions

Please save these instructions.

DISCLAIMER

Please read all specifications, usage, storage conditions, and warnings on this document before use. Always adhere to our handling and usage directions for this battery pack. Misuse of batteries can cause the battery to malfunction, degrade and reduce its capacity or life expectancy, overheat, explode, or become a fire hazard. Customers are responsible for the proper use and storage of this battery pack which is outlined on this document. If at any point, the battery excessively overheats, leaks, etc, or does not function as stated, or is visibly damaged; **DO NOT USE.** Please contact our support team for further assistance.

We do not bear responsibility for any damages caused by the misuse of this battery accidental or otherwise

WARNINGS

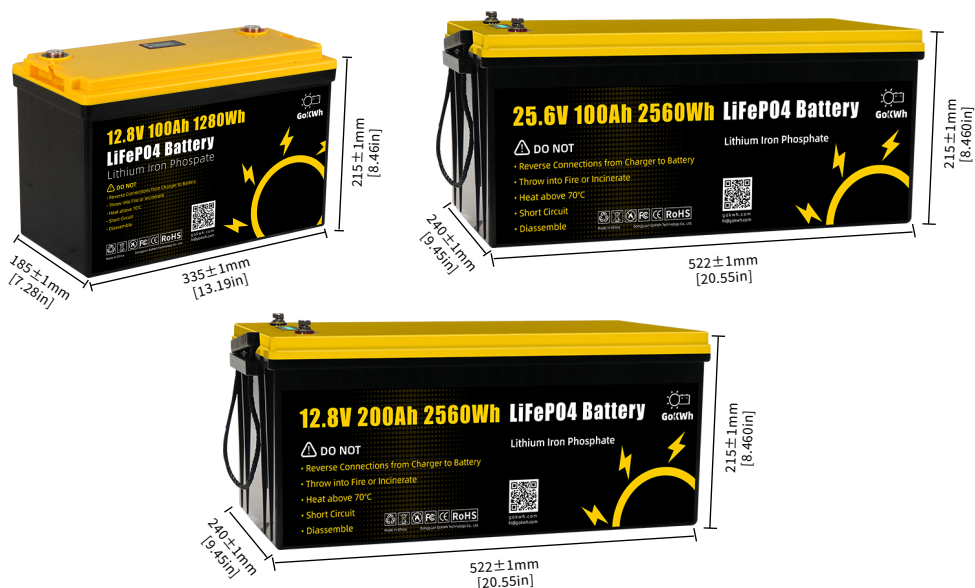
1. DO NOT immerse the battery in water or allow it to get wet.
2. DO NOT use or store the battery near sources of heat such as a fire or heater.
3. DO NOT reverse the positive (+) and negative (-) terminals.
4. DO NOT connect the battery directly to wall outlets or car cigarette-lighter sockets without proper charging equipment. DO NOT allow exposed ends of cables connected to opposite terminals to touch.
5. DO NOT put the battery into a fire or apply direct heat.
6. DO NOT use the battery if the battery casing has been pierced, broken, cracked, or otherwise visibly damaged. DO NOT forcibly open the battery casing for any reason.
7. Avoid severe physical shock. Do not throw the battery or heavily strike the battery in any way. Do not put excessive pressure or step on the battery.
8. Never solder anything directly to the battery terminals.
9. DO NOT attempt to disassemble or modify the battery in any way.
10. DO NOT place the battery in a microwave oven or pressurized container.

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Product Overview

Battery Dimensions:



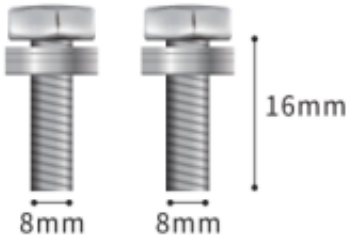
Terminal Size :

M8 (1.25mm Metric Thread)

Post Bolts :

M8 (1.25mm Metric Thread " 16mm Bolt Length)

(The bolts can be replaced with M8 bolts of other lengths based on actual needs)



Specification



Model	12V100AH	12V200AH	24V100AH
Basical			
Cell Type	LiFePO4(LFP)		
Dimensions	L13.19*W7.28*H8.46 L335*W185*H215mm	L20.55*W9.45*H8.46 L522*W240*H215mm	L20.55 W9.45*H8.46 L522*W240*H215mm
Terminal Type	M8		
Case Material	ABS(Flame Retardant Plastic)		
LCD Display	Yes		
Warranty	5 Year		
Electrical			
Nominal Voltage	12.8 V		25.6 V
Nominal Capacity	100 Ah	200 Ah	100 Ah
Nominal Energy	1280 Wh	2560 Wh	2560 Wh
Charge Method	CC/CV		
Recommend Charge Voltage	≤14.6V		≤29.2
Recommend Charge Current	≤50 A	≤100A	≤50 A
Recomend Discharge Cut-off Voltage	≥10V		≥20V
Recomend Discharge Current	≤100 A	≤200 A	≤100 A
Internal Resistance	≤30 mΩ		
Performance			
Cycle Life	≥4000 Cycles		
Service Life	10 Years		
Protection	IP65, Built-in BMS		
Temperature Range			
Charge	0~45°C (32~113°F)		
Discharge	'-20~60°C (-4~140°F)		
Storage	'-10~45°C (14~113°F)		
Scalability			
Parallel Connection	Up to 4P 12.8V 400Ah 5.12 kWh	Up to 4P 12.8V 800Ah 10.24kWh	Up to 4P 25.6V 400Ah 10.24kWh
Series Connection	Up to 4S 51.2V 100Ah 5.12kWh	Up to 4S 51.2V 200Ah 10.24kWh	Up to 4S 102.4V 100Ah 10.24 kWh

Battery Connection

Safe and reliable installation requires trained and certified technicians. Therefore, the purpose of this section is only to serve as a guideline as all scenarios cannot be covered.

Preparation

Before the installation and operation of the battery, it is recommended to have the following equipment or tools available:

- Proper Protective Equipment
- Insulated Tool(s)
- Multimeter
- Battery Cable
- Battery Charger / Charge Controller

Inspection

Please check for visible damage including cracks, dents, deformation, and other visible abnormalities. The top of the battery and terminal connections should be clean, free of dirt and corrosion, and dry. If any problems are detected with the battery, please contact us for assistance. Refer to the last page of the manual for contact information.

Cable Sizing

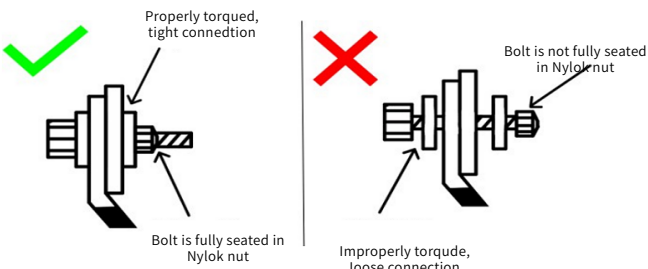
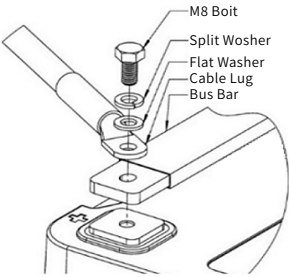
Battery cables (sold separately) should be appropriately sized to handle the expected load. Please refer to the following table for the ampacities of copper cables with different gauge sizes.

Copper Cable Gauge Size (AWG/mm2)	Ampacity (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

The above values are from the NEC Table 310.15(B)16 for copper cables rated at 75°C (167°F), operating at an ambient temperature of no more than 30°C (86°F). Lengths in excess of 6 feet (1829 mm) may require heavier gauge cable to avoid excess voltage drop in undersized wiring.

Battery Terminal

The depths of the female battery terminal threads are no more than 12 mm. Consider this when determining the proper bolt length to secure bus bars, cable lugs, and any washers that will be affixed to the terminal connection pad. If too much torque is applied to a bolt, the female threads of the battery terminal will be stripped and the damage will not be covered under warranty due to misuse of the product. Consider the 12 mm thread depth when selecting your bolts so that they do not bottom-out. Conversely, a minimum of 3 threads must be engaged before applying 8 lb-ft of torque so as to not damage the threads.



Connecting Batteries in Banks

CAUTION

The batteries pack support max 4S or 4P, but in practical applications, consumers need to calculate based on their own load situation.

The maximum voltage after series and parallel connection of battery packs should less load voltage.

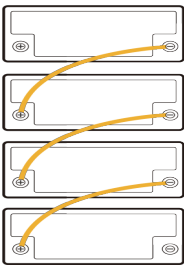
The load current should be less than the recommended current of the battery pack after series and parallel connection.

It is recommended to balance the voltage before using it in series or parallel.

DO NOT string batteries with different chemistries, brands, models, rated capacities, or nominal voltages in parallel.

In parallel battery banks, the cables between each battery should be of equal length to ensure that all batteries in the system can work equally together.

The built-in BMS of the battery pack only protect and balance the internal battery cells. If the battery pack is connected in series or parallel, if you want to achieve better protection and balance, you can additionally install an external BMS control.



Connection In Series

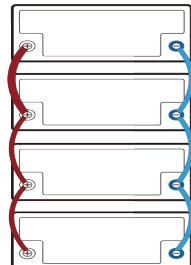
(Maximum of 4 Batteries)

12V50AH:**48V(51.2V)** 50Ah

12V100AH:**48V(51.2V)** 100Ah

12V200AH:**48V(51.2V)** 200Ah

24V100AH:**96V(102.4V)** 100Ah



Connection In Parallel

(Maximum of 4 Batteries)

12V50AH:**12V(12.8V)** 200Ah

12V100AH:**12V(12.8V)** 400Ah

12V200AH:**12V(12.8V)** 800Ah

24V100AH:**24V(25.6V)** 400Ah

Battery Charging

LiFePO4 Batteries perform a 2-stage charging algorithm called "Constant Current/Constant Voltage" (CC/CV).

The standard LiFePO4 profile is 0.2C CC charge to 14.2V, and then, CV at 14.4V charge until the charge current declines to $\leq 0.05C$.

The recommended max. charging current for a 100Ah LiFePO4 battery is 50A (0.5C). A faster charge of 100A (1C) may be used as necessary, however, regularly charging your battery this way may shorten its life and subsequently its total capacity due to the extra heat generated during this process.

We do not recommend using any other types of chargers for LiFePO4 batteries, such as SLA and Gel chargers.

Battery Storage

Temperature

The battery can be operated at temperatures of $-10\sim 45^{\circ}\text{C}$ ($14\sim 113^{\circ}\text{F}$), and a temperature between 10°C to 35°C (50°F to 95°F) is ideal for long-term storage. Store in a fireproof container and away from children.

Capacity

For a longer-lasting product, it is best to store your battery at a 50% charge level and recharge every three months if it is not going to be used for a long time.

Troubleshooting

If any problems occur during the battery operation, please refer to the following instructions or contact us for assistance

LCD Setting

LCD Parameter

- Voltage Detection & Setting Range: DC8-100V
- Working Current: $\leq 15\text{mA}$
- Detection Accuracy: $\pm 1\%$

Mode Declaration

- Ternary lithium battery **L** measurement is made from **L03** string to **L20** string (power-off memory)
- Lead acid battery **P** measurement: DC12V, 36V, 48V, 60V, 72V, 84V (power off memory)
- Lifepo4 Battery **F** measurement from F03 to F23 (power off memory)

Press the upper right corner of the main menu for 2 seconds, enter the mode setting page, and then press the upper right corner for 2 seconds to exit the setting page and return to the main menu.

Note: there are two kinds of lithium battery (ternary lithium **L** and Lifepo4 **F**), distinguish; first charge the battery first, a series of ternary lithium battery is DC 4.2V, a series of Lifepo4 battery is DC 3.65V; for example: saturation voltage shows 84V (20 string), this is ternary lithium battery, and then select the parameters according to the setting mode of ternary lithium battery.

Mode 1-P for Lead Acid Battery



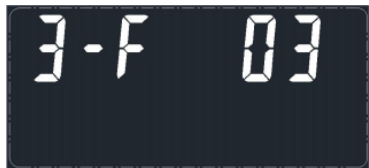
On the lead-acid battery setting page, the voltage value is flashing, press the lower right corner to select the required battery voltage. After selecting the voltage, press the button in the upper right corner to confirm and save the value (the voltage value is always bright), press the button in the upper right corner for 2 seconds to return to the main page, or short press the button in the upper right corner to perform other mode setting.

Mode 2-L for Ternary Lithium Battery



On ternary lithium battery setting page, battery string number numerical flashing, short press the lower right corner button selection need to use the battery string, select battery string number, short press the upper right corner button to confirm and save the value (battery string number often bright), press the upper right corner button for 2 seconds to return to the main page, or short press the button in the upper right corner to perform other mode setting.

Mode 3-F for Lifepo4 Battery



On Lifepo4 battery setting page, battery string numerical flashing, short press the lower right corner button selection need to use the battery string, select battery string number, short press the upper right corner button to confirm and save the value (battery string number often bright), press the upper right corner button for 2 seconds to return to the main page, or short press the button in the upper right corner to perform other mode setting.

Mode 4-Custom high and low voltage settings



Custom low voltage and saturation voltage, display 00.0 000, the left number is the low voltage parameter, the right number is the saturation voltage parameter. On the right side, 000 is actually 00.0, for example, 255 shows 25.5.

•Mode 5-Displays backlight settings



On the backlight setting page, ON / OFF flashes, and press the lower right corner button to select **ON** or **OFF**, **ON**: The display is automatically closed for 10 seconds, **OFF**: the display is always bright, press the upper right corner button to confirm and save the option, press the upper right corner button for 2 seconds to return to the home page, or press the upper right corner button to perform other mode setting.

Mode 6-Low voltage alarm setting (flashing reminder of lightning signs)



In low voltage alarm setting page, the left 00.0 is set the value, short press the lower right corner button set bit value, bit value set, long press 2 seconds after the lower right corner button shift, alarm voltage set, short press the upper right corner button to confirm and save the value (all values always bright), press the upper right corner button for 2 seconds to return to the home page, or press the upper right corner button to perform other mode setting.

Warranty

All GoKWh 12V and 24V series LiFePO4 batteries come with 5-year manufacturer's defect warranty from the date of battery purchase.

This warranty covers the following 12V and 24V Series LiFePO4 battery models:

*Note: All batteries are fully tested before being shipped.

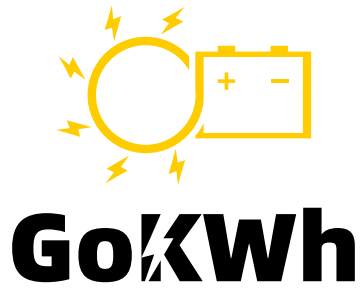
5-Year Warranty for After-Sales Service

Warranty is a guarantee against manufacturer defects only.

GoKWh warrants this battery to be free from manufacturer defects for 5 years. If for some improbable circumstance the battery is defective, we will replace the battery. The following situation is not covered by the warranty:

- Batteries that have been poorly maintained, incorrectly charged, reversed polarity, improperly installed, stored and used in excessive heat, physical damage, fire, freezing, water damage, tampering, damage to terminals, failure to maintain proper battery charge or use in excess of rated charge/discharge cycles.
- Loss or damage due to force majeure or external causes, misuse, accident, negligence, unauthorized modification or repair.
- Warranties apply only to the original owner and are not transferable. We will verify your purchase before processing any warranty claims or returns.
- The buyer intentionally conceals or fails to cooperate in providing usage information.

GoKWh has a team of technicians to provide technical support if needed. Proof of purchase and your usage will be requested. The customer is responsible for shipping costs. If we deem the product manufacturer defective, we will cover the replacement shipping costs.



Make Your Daily Power Up.

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