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› GLCE ENERGY 12V 300Ah LiFePO4 Battery User Manual

GLCE ENERGY GLCE-12300 (12V 300Ah)

GLCE ENERGY 12V 300Ah LiFePO4 Battery User Manual

Model: GLCE-12300 (12V 300Ah)

Brand: GLCE ENERGY

1. INTRODUCTION

Thank you for choosing the GLCE ENERGY 12V 300Ah LiFePO4 Battery. This manual provides essential information for the safe and efficient use of your new battery. Please read it thoroughly before installation and operation to ensure optimal performance and longevity.



Figure 1.1: The GLCE ENERGY 12V 300Ah LiFePO4 Battery, a high-capacity lithium iron phosphate battery designed for various deep cycle applications.

2. SAFETY INFORMATION

Adhering to these safety guidelines is crucial for preventing injury, damage, and ensuring the long life of your battery.

- Always wear appropriate personal protective equipment (PPE), including safety glasses and insulated gloves, when handling batteries.
- Do not short-circuit the battery terminals. This can cause severe damage to the battery and pose a fire hazard.
- Use only chargers specifically designed for LiFePO₄ batteries. Using incompatible chargers can lead to overcharging and damage.
- Do not expose the battery to extreme temperatures outside its specified operating range (-20°C to 55°C for discharge, -5°C to 55°C for charge).
- Avoid dropping, puncturing, or otherwise physically damaging the battery.
- Ensure proper ventilation when installing and operating the battery.
- Keep the battery away from flammable materials and sources of ignition.
- In case of fire, use a Class D fire extinguisher or copious amounts of water. Do not use CO₂ or foam extinguishers.
- The integrated 200A Battery Management System (BMS) provides protection against over-voltage, short circuit, over-discharge, over-current, over-charge, and over-heating. However, proper handling is still essential.

Smart BMS Protection



over-voltage
protection



short circuit
protection



Over-discharge
protection



Over-current
protection



Over-charge
protection



Over-heating
protection

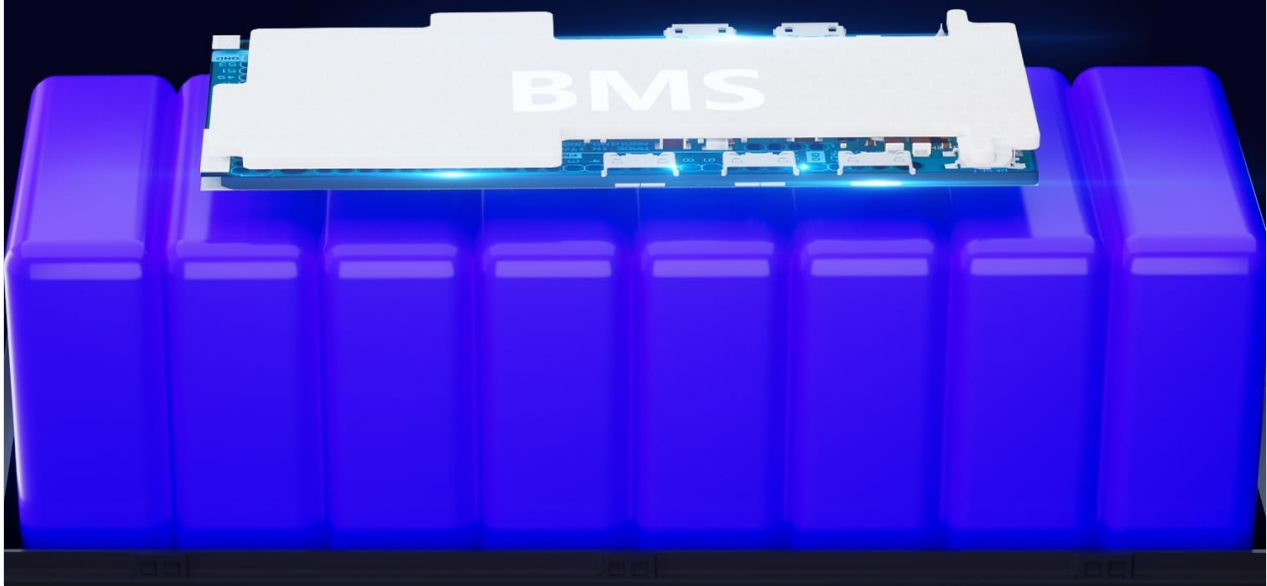


Figure 2.1: The intelligent 200A BMS protects the battery from common failure causes, including over-voltage, short circuit, over-discharge, over-current, over-charge, and over-heating.

3. PRODUCT FEATURES

The GLCE ENERGY 12V 300Ah LiFePO4 battery offers numerous advantages over traditional lead-acid batteries:

- **Advanced Technology:** Utilizes Grade A LiFePO4 cells, ensuring safety, non-toxicity, and renewable energy.
- **Longer Shelf Life & Cycle Life:** Offers up to 10 years service life with 4000 to 15000 deep cycles (4000 cycles at 100% DOD, 8000+ cycles at 80% DOD, and up to 15000+ cycles at 60% DOD).
- **Intelligent 200A BMS:** Built-in Battery Management System provides comprehensive protection against over-voltage, short circuit, over-discharge, over-current, over-charge, and over-heating.
- **Wide Operating Temperature:** Can operate at -20°C to 55°C and be recharged at -5°C to 55°C.
- **Lightweight & Compact:** Significantly lighter and more compact than comparable lead-acid batteries,

making installation and transport easier.

- **Environmentally Friendly:** Non-toxic and renewable energy source.



Figure 3.1: Comparison highlighting the compact size, light weight, and long lifespan advantages of LiFePO4 batteries over traditional SLA batteries.

4. SPECIFICATIONS

Key technical specifications for the GLCE ENERGY 12V 300Ah LiFePO4 Battery:

Parameter	Value
Battery Type	LiFePO4 (Lithium Iron Phosphate)
Nominal Voltage	12.8V
Capacity	300Ah

Parameter	Value
Energy	3840Wh
Maximum Continuous Discharge Current	200A (BMS protected)
Cycle Life	4000+ cycles at 100% DOD, up to 15000+ cycles at 60% DOD
Operating Temperature (Discharge)	-20°C to 55°C (-4°F to 131°F)
Operating Temperature (Charge)	-5°C to 55°C (23°F to 131°F)
Dimensions (L x W x H)	20.55" x 9.45" x 8.58" (522mm x 240mm x 218mm)
Weight	25.8kg / 56.88lbs
Terminal Type	M8



Figure 4.1: Visual representation of the battery's key specifications including type, voltage, capacity, weight, cycle life, energy, and physical dimensions.

5. SETUP

5.1 Unpacking

Carefully remove the battery from its packaging. Inspect the battery for any signs of damage during transit. If any damage is found, contact GLCE ENERGY support immediately.

The package should contain:

- 1 x GLCE ENERGY 12V 300Ah LiFePO4 Battery

5.2 Initial Charge

It is recommended to fully charge the battery before its first use. Use a dedicated LiFePO4 battery charger. Refer to the "Charging" section for detailed instructions.

5.3 Wiring (Serial & Parallel Connections)

The GLCE ENERGY 12V 300Ah battery supports both serial and parallel connections to achieve higher voltage or capacity. For optimal performance and safety, only connect batteries of the same capacity and brand, and ideally, purchased within 3 months of each other.

- **Parallel Connection:** Connect positive terminals to positive terminals and negative terminals to negative terminals. This increases the total capacity (Ah) while maintaining the same voltage (12V). Maximum support: 4 batteries in parallel (4P).
- **Serial Connection:** Connect the positive terminal of one battery to the negative terminal of the next. This increases the total voltage (V) while maintaining the same capacity (Ah). Maximum support: 2 batteries in series (2S) for 24V systems.
- Ensure all connections are secure and use appropriately sized cables to handle the expected current.



Figure 5.1: Example of a home energy system utilizing multiple GLCE ENERGY batteries connected to a solar panel and inverter to power various loads. This setup demonstrates potential parallel and series configurations.

6. OPERATING

6.1 Charging

Always use a charger specifically designed for LiFePO4 batteries with a charging voltage of 14.4V to 14.6V. Avoid overcharging or undercharging.

Common charging methods include:

- **Solar + Panel:** Connect to a solar panel system with an MPPT (Maximum Power Point Tracking) controller for efficient solar charging.
- **Generator:** Use a generator with a compatible LiFePO4 charger.
- **Dedicated Charger:** Utilize a standard AC-powered LiFePO4 battery charger.

Serial&Parallel for more capacity

Tips: The same capacity & brand batteries can be wired in Parallel or Serial.
We suggest the batteries bought within 3 months.

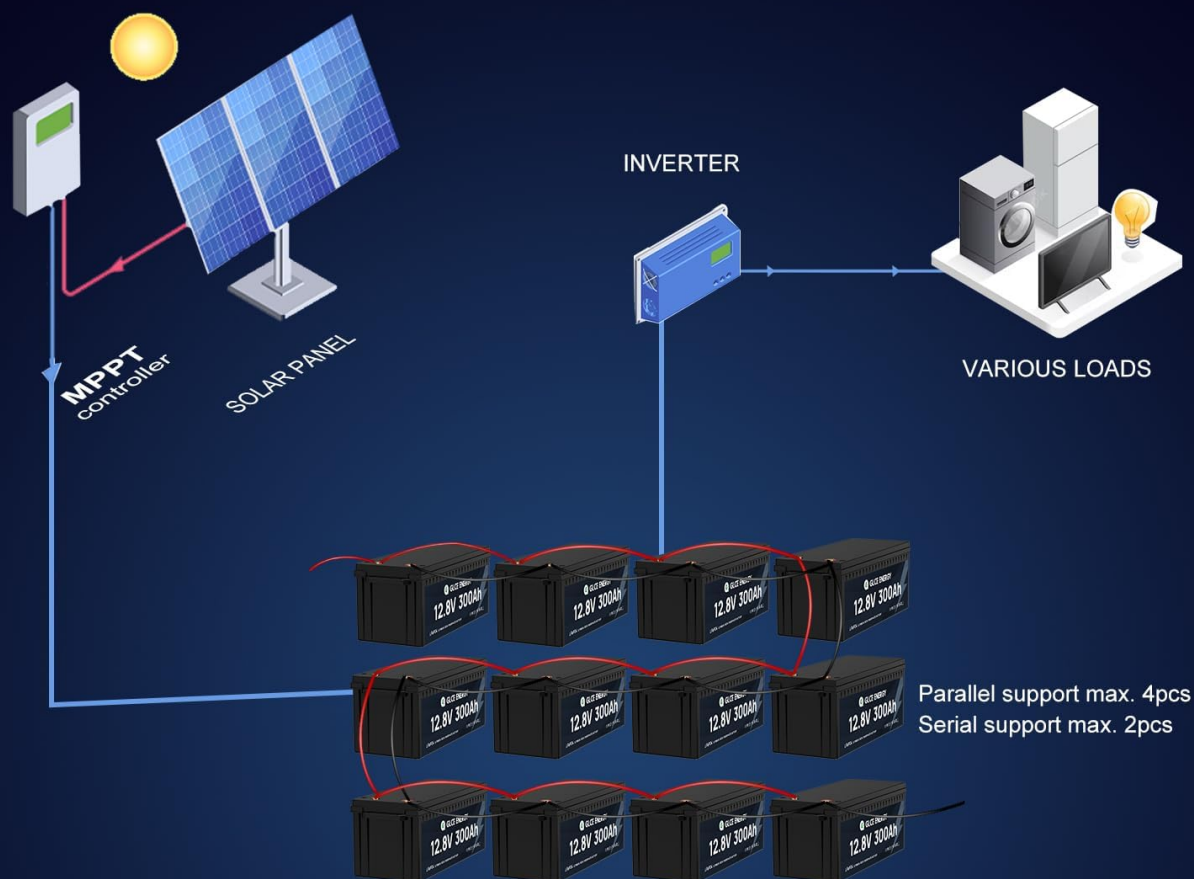


Figure 6.1: Illustration of the three primary methods for charging the GLCE ENERGY LiFePO4 battery: via solar panels, a generator, or a dedicated battery charger.

6.2 Discharge

The battery is designed for deep cycle applications. Ensure the total current draw from your connected devices does not exceed the battery's maximum continuous discharge current (200A) to prevent the BMS from activating its protection features.

6.3 Applications

The GLCE ENERGY 12V 300Ah LiFePO4 battery is versatile and suitable for a wide range of applications, including but not limited to:

- Trolling motors
- Solar energy systems (home, off-grid)
- Recreational Vehicles (RVs) and caravans
- Marine applications (boats, kayaks)
- Household appliances
- Sump pump batteries

- Industrial tools
- Electric scooters and children's electric vehicles
- Hunting and lawn/garden equipment



Figure 6.2: The GLCE ENERGY LiFePO₄ battery is designed for a wide array of applications, from recreational vehicles and marine use to home solar systems and portable power needs.

7. MAINTENANCE

LiFePO₄ batteries require minimal maintenance compared to lead-acid batteries, but following these guidelines will help ensure maximum lifespan:

- **Regular Inspection:** Periodically check the battery terminals for corrosion or loose connections. Clean terminals with a wire brush if necessary and ensure they are tightened securely.
- **Cleaning:** Keep the battery surface clean and dry. Use a damp cloth to wipe off dust or dirt. Do not use harsh chemicals or abrasive cleaners.

- **Storage:** If storing the battery for an extended period, ensure it is charged to approximately 50-70% of its capacity. Store in a cool, dry place away from direct sunlight and extreme temperatures. Disconnect it from all loads and chargers.
- **Avoid Deep Discharge:** While the BMS protects against over-discharge, consistently discharging the battery to 0% can reduce its overall lifespan. Aim to recharge before it reaches critically low levels.

8. TROUBLESHOOTING

This section addresses common issues you might encounter with your LiFePO4 battery. For problems not listed here, please contact GLCE ENERGY support.

Problem	Possible Cause	Solution
Battery not charging	Charger not compatible; loose connections; BMS in protection mode (over-discharge)	Ensure charger is LiFePO4 compatible; check all cable connections; if BMS is in protection, try a low-current charge to reactivate.
Battery not providing power	BMS in protection mode (over-discharge, over-current, short circuit); loose connections; battery fully discharged	Check load for short circuits or excessive current draw; verify connections; recharge battery.
Reduced capacity or runtime	Aging battery; consistent deep discharges; operating outside temperature range	Ensure proper charging habits; operate within specified temperature limits. If battery is old, replacement may be necessary.
Battery feels hot during operation/charging	Excessive current draw; poor ventilation; internal fault	Reduce load; ensure adequate airflow around the battery; if overheating persists, disconnect immediately and contact support.

9. WARRANTY AND SUPPORT

GLCE ENERGY stands behind the quality of its products. For warranty information, technical support, or any questions regarding your 12V 300Ah LiFePO4 Battery, please contact GLCE ENERGY customer service.

You can find more information and contact details on the official GLCE ENERGY store page on Amazon:

[Visit the GLCE ENERGY Store](#)

Please have your product model number (GLCE-12300) and purchase date ready when contacting support.

