

Qoltec[®]



Introduction

Thank you for placing your trust in us and choosing our LiFePO₄ battery. We are confident that this product will meet your expectations. This manual will guide you through the process of installing and fitting the battery and will be of assistance should any issues arise whilst using the device. If you encounter any problems, please refer to this manual before contacting our Customer Service department.

About the product

LiFePO₄ (lithium iron phosphate) batteries are modern energy sources characterised by high efficiency, light weight, chemical stability, a long service life and safe operation. To make the most of your LiFePO₄ battery's capabilities and ensure its long-term performance, please follow the recommendations below regarding use, storage, installation and handling.

Key features of the LiFePO₄ battery

- 100% depth of discharge,
- very low self-discharge rate,
- no memory effect, which is beneficial for highly efficient cyclic and buffering operation,
- longer service life – 3,000 charge and discharge cycles,
- completely maintenance-free battery, no need to top up the electrolyte,
- higher energy density compared to, for example, lead-acid batteries
- environmentally safe
- they do not emit toxic gases or chemical compounds,
- can operate in any position; no need to be positioned horizontally,
- shock-resistant battery.

Charging

- 1) Please use a dedicated lithium-ion battery charger that is suitable for the battery's specifications. Do not use a charger with unsuitable specifications. The correct continuous charging current is between 0.2CA and 0.5CA.
- 2) Charge the battery at an ambient temperature between -10°C and 45°C, ensuring there are no flammable objects nearby.
- 3) The charging time should not exceed 12 hours. Prolonged charging may shorten the battery's service life and pose a safety risk.

- 4) During charging, the battery will charge very quickly at the start and more slowly towards the end of the charging process. This is normal and is designed to ensure safety.
- 5) When using the battery in winter, if the temperature drops below -20°C, it will not be possible to charge the battery. This is normal. Please move the battery to a suitable environment to ensure it charges correctly.

Applications

The main areas of application for LiFePO₄ batteries are set out below:

- In uninterruptible power supply (UPS) systems to ensure continuity of power supply in the event of power cuts.
- In photovoltaic and wind power systems, LiFePO₄ batteries are used to store the energy generated by these sources
- In medical equipment, such as defibrillators, infusion pumps and other life-support devices.
- In emergency lighting systems, providing a long-lasting and reliable power source in the event of a mains power failure.
- In power supply systems for boats and yachts, providing a long-lasting and reliable source of energy at sea.
- Used in various types of military equipment, including drones, communication systems and other devices; in aviation, these batteries are used in various power supply systems
- They are used in large industrial installations to stabilise the power grid and manage energy demand.
- LiFePO₄ batteries are used in electric cars, electric bicycles, scooters and motorbikes.

Guidelines for the Safe Use of LiFePO₄ Batteries

- 1) Avoid exposing the battery to direct sunlight.
- 2) Use the battery in an environment with a temperature between -10°C and 45°C.
- 3) Do not immerse the battery in water.
- 4) Keep the battery away from heat sources.
- 5) Only charge the battery under supervision.
- 6) Do not short-circuit the terminals (+ and -) with any conductive objects.
- 7) Do not connect the battery directly to electrical sockets.

- 8) Do not throw the battery into a fire.
- 9) Do not transport the battery together with other metal objects.
- 10) Do not strike, throw or tread on the battery.
- 11) Do not dismantle or open the battery.
- 12) Do not store the battery for long periods when not in use.
- 13) Avoid leaving the battery in high-temperature conditions.
- 14) Store the battery with the terminals covered.

Battery installation

1) When installing a LiFePO₄ battery, please follow these guidelines:

- **Condition check:** Before installation, ensure that the battery is not mechanically or chemically damaged. Also check for any visible signs of leakage.
- **Avoid short circuits:** Take care during installation to prevent short circuits. Avoid contact between metal objects and the battery terminals.
- **Secure mounting:** Install the battery in a stable and adequately ventilated location. Ensure that the battery is well protected against shocks and vibrations.

NOTE: Before commissioning, all cells must be checked for mechanical damage, correct polarity and correct connections.

For transport purposes, the capacity of the lithium battery is approximately 30% due to self-discharge and the long storage and delivery times. It may be the case that, upon receipt, the battery has a low capacity or is discharged. Please do not be concerned; this is normal. Simply charge the battery in accordance with the instructions.

2) Connecting the Battery

1. Before connecting the battery, ensure that the device to which you are connecting it is switched off.
2. Identify the positive (+) and negative (-) terminals on the battery and on the device. The terminals are usually colour-coded: red (positive) and black (negative).

3. Connecting the positive (+) terminal: First, connect the positive (red) cable to the positive terminal of the battery. Ensure the connection is secure and stable.
4. Connecting the negative (-) terminal: Next, connect the negative (black) cable to the negative terminal of the battery. Make sure the connection is secure and stable.
5. Check that both connections are secure and stable. Ensure that the cables are firmly attached and do not have any slack.
6. If possible, secure the battery terminals to prevent accidental short-circuiting.
7. Once you have ensured that the connections are correct and secure, switch on the device.
8. For the first few minutes, monitor the operation of the device and the battery to ensure that everything is working correctly and there are no problems.

3) Connecting batteries

Our 12.8V LiFePO₄ batteries with a capacity of 100Ah and above can be connected in series and in parallel. The only condition that must be met to avoid damaging the batteries is to use batteries with the same voltage, the same capacity and the same level of wear. If you wish to increase the voltage, you must connect the batteries in series, i.e. (+) to (-). However, if you wish to increase the capacity, connect them in parallel: (+) to (+) and (-) to (-). So, for example, when connected in series, the voltages will add up to 51.2V, whilst the capacity will remain unchanged at 100Ah; when connected in parallel, the voltage will remain the same, but the capacity will increase to 400Ah ()

NOTE: LiFePO₄ batteries with a voltage of 12.8V and a capacity of 100Ah or more can be connected together.

Models: 53705, 53706, 53707, 53714

The maximum number of parallel connections is 4.

The maximum number of batteries that can be connected in series is 4.

When connecting batteries, ensure that the voltage differences between them do not exceed 0.01V. We do not recommend connecting batteries from different batches or brands, as differences in BMS systems and cells may affect their performance. **A voltage balancer must be used when connecting batteries together.**

Models: 53708, 53709

The maximum number of parallel connections is 4.

The maximum number of series connections is 2.

When connecting batteries, ensure that the voltage differences between them do not exceed 0.01V. We do not recommend connecting batteries from different batches or brands, as differences in BMS systems and cells may affect their performance.

Figure 1 in the appendix

Temperature

Do not place the battery in hot locations or opposite a window. The ambient temperature between individual cells should not differ by more than 3°C. Optimal durability, performance and service life are achieved when operating within a temperature range of 15°C to 25°C.

In a low-temperature environment, the battery capacity will be reduced. Please refer to the data below.

At -10°C, the battery capacity is 70%.

At 0°C, the battery capacity is 85%.

At 25°C, the battery capacity is 100%.

If the battery exhibits the following symptoms: a strange odour, abnormal heating, deformation or other irregularities, stop using it immediately and contact after-sales support.

Ventilation

Under normal conditions, gas evolution is negligible, and natural ventilation is sufficient to cool the cells and mitigate the effects of unexpected overcharging. Thanks to these properties, the batteries can be installed in offices and other

premises. Where batteries are installed in enclosed cabinets, adequate ventilation must be ensured.

Remember that correct use and proper care of the battery are very important for its service life. Store the battery in a dry, clean and well-ventilated place, away from flammable materials and sources of heat.

Storage and Disposal

Used batteries must be taken to the appropriate collection and recycling points. Do not dispose of the battery in ordinary household waste. Always follow the manufacturer's instructions and recommendations regarding the use, storage and maintenance of the battery.

Warranty

The LiFePO₄ batteries we offer are covered by a 24-month warranty, valid from the date of purchase.

Attachment

