

USER 'S MANUAL



*Upower Ecoline LiFePO₄,
Lithium Iron Phosphate Battery with Bluetooth™
Monitoring 12V-24V series*

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1 General Information

Thank you for purchasing **Upower Ecoline bluetooth** Lithium battery. Please read the following information carefully before installing your new battery.

This information defines the performance of the rechargeable Upower Ecoline LiFePO4 batteries distributed by Master Battery, S.L. and describes the type, performance, technical characteristics and warnings of the battery pack.

This battery is designed to be used in deep cycle applications where the maximum of series and parallels is 4.

Suitable for Camper Trailers, 4WD's (AUX battery), Caravans, solar energy, Low power communication sites or any application that requires the use of a deep cycle battery that meets the Ah capacity.

The battery is equipped with a LiFePO4 Battery Management System (BMS) that can monitor and optimize each single prismatic cell during charge & discharge to protect the battery pack from over charge, over discharge & short circuit. The BMS helps to ensure safe and accurate operation of the battery.

Lithium batteries require specific charging algorithms. The charging source required must include the correct charging algorithms and voltage parameters listed in the specification table below. Using the incorrect charging source will damage the battery cells and void the warranty.

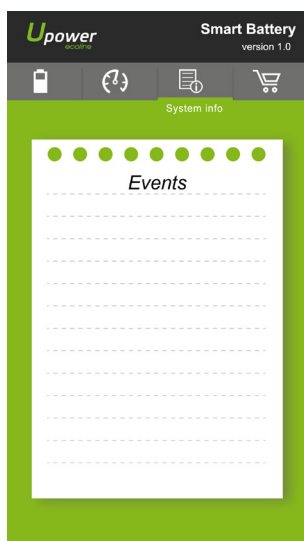
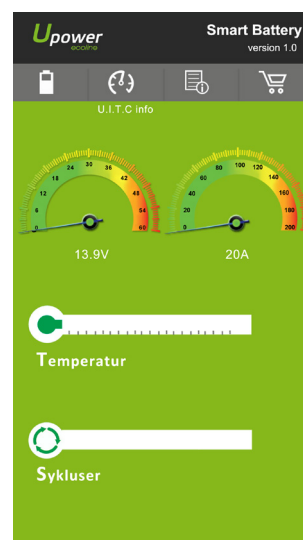
This Battery IS NOT designed to fit into an engine bay or any area subjected to high temperatures.

This use will cause damages and they will not be covered by Master Battery's Warranty.

2 Upower Ecoline Bluetooth™ Monitoring System for lithium batteries

By downloading the Android™ or Apple® app to your smartphone or tablet device, you can monitor the following information:

- Battery Capacity
- Battery Voltage
- Battery Current (Amps)
- Battery State of Charge (SOC)
- Battery State of Health (SOH)
- Battery Status
- Individual Cell Voltage
- Battery Temperature
- Battery Cycles
- Battery Alarms
- Battery Event Information



3 Warnings

Please read and follow the cautions listed on the battery before installation. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. Master Battery, S.L. is not responsible for any accident caused by ignoring our specifications.



WARNING!

Failure To Follow These Instructions May Result In Death Or Serious Injury!

- Do not use the battery for starting applications.
- The battery pack supports up to 4 series-connected applications.
- Do not dispose of it near fire.
- The battery must be installed far away from heat, high voltage sources and avoid exposure to sunlight for long periods of time.
- Do not throw the battery into water.
- Do not connect the positive and negative terminals of the battery together.
- Do not ship or store the battery with metal.
- Do not disassemble the battery. Battery warranty will be voided if the case is opened.
- Do not drop, impact or puncture the battery.
- Do not allow the battery to sit in a discharged state $\leq 11.50V$.
- When the battery capacity is low ($\leq 15\%$ SOC), please charge the battery.
- Please use the matched or suggested charger that contains a Lithium charge profile for this battery. Failure to install the correct battery charger will void all warranty.
- If the battery emits a peculiar smell, heating, distortion or appears to have any abnormality during operation or storage, please stop using the battery and take it out of service.
In such case contact Master Battery for further details.
- If the battery leaks and gets into your eyes or skin, do not wipe.
Rinse with clean water and seek medical attention immediately.

Low Battery Voltage Disconnection

The battery has a low voltage disconnection incorporated for self-protection. If the battery reaches the self- disconnection point (2.8V per cell) or ($\leq 11.2V$) the battery will disconnect.

To reconnect, a charge voltage of $\geq 12.8\text{v}$ must be applied to the battery before the over-discharge activates and allows the charge current to flow into the battery.

Master Battery, S.L. strongly recommends keeping the battery charged to avoid activating the low battery voltage disconnection.

By continuously tripping the low voltage disconnection of the battery you will cause damage to the sensitive electronic equipment that is attached to the battery, i.e battery chargers, solar controllers, inverters, stereo equipment, etc., all of which are not covered under the battery warranty.



IMPORTANT NOTE

USE OF INVERTERS

If an inverter is connected to the battery, having the first one more load capacity than the second one, it can damage the Battery Management System (BMS) and put undue stress on the cells that will void your warranty.

4 Storage & Transportation

Based on the cells' characteristics, proper environment for transportation of LiFePO₄ battery packs must be created to protect the battery.

- Battery should be stored in a dry, clean, shaded and well-ventilated environment, at a temperature between -20°C and 35°C .
- The battery should be stored at approx. 50% SOC during transportation.
- The battery needs to be charged every 6 months even if it is not being used.
- Keep the top of the battery and its terminals clean.
- Do not drop, turn over or stack the battery during the loading process.

5 Frequently Asked Questions:

Q: Why is the battery capacity showed in the app reducing?

A: The amount of energy a battery can hold is measured by its capacity. Capacity is the leading health indicator that determines the runtime and predicts the end of the battery-life. The battery's capacity shown on the Bluetooth App is the overall maximum capacity available from the battery. As the battery ages overtime, this figure will slowly reduce.

- 12V 100Ah: When the battery indicates 60% of its capacity (100Ah battery = 60Ah) the battery is deemed "end of life".
- 12V 125Ah: When the battery indicates 60% of its capacity (125Ah battery = 75Ah) the battery is deemed "end of life".

Reaching end of life does not necessarily mean that the battery will no longer function; in fact, in many cases it will still be usable, albeit in a diminished capacity.

Cycling is not the only cause of capacity loss; keeping a battery at elevated temperatures also induces stress. A fully charged Li-ion kept at 40°C loses approximately 35% of its capacity in a year without being used. Ultra-fast chargers and harsh heavy discharging is also harmful. This cuts battery life to half, and U-power can attest to this through our stringent testing regime.

Q: Can I install Upower Ecoline in a wet area?

A: Not generally recommended, even though the battery does have an IP54 rating. Master Battery recommends installing the battery in a dry, well ventilated, cool space. Below is a brief explanation of the IP rating.

IP 5# Dust Protected: Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment. Complete protection against contact.

IP #4 Splashing water: Water splashing against the enclosure from any direction shall have no harmful effect.

Q: Can I install Upower Ecoline laying on its side or on its end?

A: The battery is designed to be installed only in the upright position. Installing it lying on its side or on its end will damage the lithium cells with the possibility of internal venting from the cell and early failure of the battery will occur, which is not covered under warranty.

Q: Can I install Upower Ecoline under the bonnet of a car?

A: Master Battery recommends the installation of the battery in a dry, well ventilated cool space. Installing the battery under a bonnet of a vehicle will reduce the performance and shorten the battery's lifespan due to the fact that high temperatures are usually found within an engine bay.

Battery NOT Warranted under bonnet use.

Q: How safe are the Upower Ecoline Lithium Batteries?

A: Upower Ecoline LiFePO4 batteries are considered to be safe, non-flammable and non-hazardous by international and federally regulated standards.

Q: Can I use a lead-acid battery charger to charge a Upower Ecoline Lithium Battery?

A: Yes. HOWEVER, you must NOT use a lead-acid charger if it has an automatic "equalization mode" which cannot be permanently turned off. A lead-acid charger, that can be set to charge no higher than 14.6v, can be used for regular charging and then must be disconnected after the battery is fully charged. DO NOT leave the lead-acid charger connected to maintain or store the battery, because most chargers will NOT maintain the proper voltage charge algorithm for lithium batteries and damage will occur to the battery and this is not covered under warranty.

Ultimately, using a battery charger with a specific Lithium charge algorithm is the best option for maximum performance and lifespan of the Upower Ecoline.

6 Warranty

Two Year Limited Warranty

You are entitled to a replacement or refund for a major failure and to a compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if they fail to be of acceptable quality and the failure amounts to a major failure.

The limited warranty program is the only one that applies to this unit and it sets forth all the responsibilities of Upower Ecoline. There is no other warranty other than those described herein.

Any implied warranty of commercial fitness of this unit for a particular purpose, is limited in time to the duration of this warranty.

This unit is warranted, to the only original purchaser, to have defect-free materials and technical support for two years from the date of purchase without additional charge. The warranty does not extend to subsequent purchasers or users other than OEM applications.

This unit is not intended for commercial use. This warranty does not apply to damaged units from misuse or incorrect installation/connection. Misuse includes wiring or connecting to improper polarity power sources.

Return and Repair Policy

If you are experiencing any problems with your unit, please contact our customer service department at info@masterbattery.es or phone (+34) 918 021 649 before returning the product to the retail store.

After speaking to a customer service representative, if the products are deemed non-working or malfunctioning, the product may be returned to the purchasing store within 30 days from the original purchase. Any defective unit that is returned to Master Battery within 30 days of the date of purchase will be replaced free of charge.

If such unit is returned after the 30th day but in less than two years from the purchase date, Master Battery will repair the unit or replace it free of charge. If the unit is repaired, new or reconditioned replacement parts may be used, at manufacturer's option.

A unit may be replaced with a new or reconditioned unit of the same or comparable design. The repaired or replaced unit will then be warranted under these terms for the remainder of the warranty period. The customer is responsible for the shipping charges of all the returned items back to Master Battery.

Limitations

This warranty does not cover accessories, damage or defects result from normal wear, tear (including chips, scratches, abrasions, discoloration or fading due to usage or exposure to sunlight), accidents, damage during shipping to our service facility, alterations, unauthorized use or repair, neglect, misuse, abuse and/or failure to follow instructions for care and maintenance.

If your problem is not covered by this warranty, contact our Support Team at info@masterbattery.es or phone (+34) 918 021 649 for general information if needed.

Disclaimer

While every precaution has been taken to ensure the accuracy of the contents of this guide, Master Battery assumes no responsibility for errors or omissions. Please note that the specifications and product functionalities may change without notice.

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