

# BC BATTERY CONTROLLER LITHIUM 1500

EN

Thank you for buying the new professional battery charger BC LITHIUM 1500, fully automatic and featuring a 7-cycles charging technology. BC LITHIUM 1500 is compatible with all 12V LiFePO4 batteries and it is provided with special charging program, called POLAR MODE, developed for charging LiFePO4 batteries with low ambient temperatures. The device is controlled by a microprocessor which is in charge of monitoring in real time the current status of your battery and executing autonomously the 7 following charging cycles.

## CHARGING ALGORITHM - BC LITHIUM 1500

**Phase 1 - Initialization:** the device verifies the battery conditions and an integrated sensor measures the ambient temperature: at low temperatures (< 5°C) the charging current is limited and the POLAR MODE is automatically activated.

**Phase 2 - Recovery:** if the battery is deep discharged, the device tries to recover it, taking it back to a higher voltage, necessary for the execution of the following step.

**Phase 3 - Soft Charge:** if the battery is in a condition of significant undercharge, the device provides a light pulsing current to the battery, to overcome this critical phase.

**Phase 4 - Bulk Charge:** during this phase, the device provides full current to the battery, recovering about 85-90% of the battery capacity.

**Phase 5 - Equalization / Absorption:** during this phase the device recovers the remaining 15-20% of the battery capacity, and the state of charge of the different battery cells is rebalanced.

**Phase 6 - Battery Analysis:** the device stops providing current to the battery for a short time, in order to verify whether the battery is able to retain the charge received during the previous phases. This test is periodically repeated during the maintenance.

**Phase 7 - Maintenance:** the device keeps your battery in the best charge conditions for very long periods (even months) during which your vehicle is left unused, without any possible drawback (battery overcharge/overheating...).

## BC LITHIUM 1500 - FEATURES

- Couple of green/red LED diodes to indicate the charging cycle executed and any error.

- Green LED diode (CHARGE): it shows the current charging cycle (Charge, Maintenance...);

- Red LED diode (ERROR): it notifies any occurring problem (polarity inverted, short circuit, battery not connected...).

For further information on the LED diodes, please refer to "BC LITHIUM 1500 Working Mode" section.

- **Integrated temperature sensor to measure the ambient temperature:** in case a low temperature is detected (< 5°C), the POLAR MODE is activated (Yellow LED on).

- Real time monitoring of the main battery parameters during every charging cycle.

- Battery Overcharge Protection, which triggers in case the microprocessor detects a voltage level higher than a given fixed threshold.

Upon conclusion of every cycle, the device switches automatically to the next one, without any external intervention: **BC LITHIUM 1500 CAN BE LEFT ALWAYS CONNECTED TO THE BATTERY WHEN THE VEHICLE IS LEFT UNUSED.**

The device belongs to BC Battery Controller family of battery chargers, distributed by the best battery/car/motorbike dealers. All the products BC Battery Controller have been designed, manufactured and tested according to the current norms in force in the European Union in order to comply with all the requirements for electronic equipments (i.e. device safety, electromagnetic compatibility). Please read carefully this manual and follow all its recommendations before using and installing the device.

## DIRECTIONS

This device has to be used according to the working conditions it has been designed for. Any other use is to be considered either dangerous or improper. The device is suitable for charging LiFePO4 batteries. Do not use the device for NiCd, NiMH, other types of lithium batteries or non-rechargeable batteries. The manufacturer is completely exonerated from whatever responsibility for possible damages due to either wrong or improper use of the device. It is important to remember that the following basic usage principles have to be considered whenever using the device:

- Do not touch the device with wet hands (or wet feet).

- Do not touch the device barefoot.

- Do not expose the device to the atmospheric agents (rain, water, saltiness...).

Please verify that the input and output cables are in good conditions before using the device. If the input cable is damaged, do not use the device: ask the manufacturer or an authorized service agent for repair or replacement.

Before executing any cleaning/maintenance operation on the device, please check the device is not connected to the power outlet. In case the device does not work properly, do not attempt to repair it: please ask either your local dealer or the equipment manufacturer (info@batterycontroller.it) for support. Any attempt to open unduly the device shall cause the withdrawal of the warranty.

## CONTENT OF THE PACKAGE

1. BC LITHIUM 1500 battery charger, with supply cable and battery connection cable directly coming out of the battery charger, consisting of two high insulation grade red and black wires (length: 2 meters).
2. Waterproof battery connector with eyelets (cod. STD2V), to be connected to the battery + saver cap.
3. Optional accessories may be included according to the selected kit: battery connector with clamps (cod. 30AMPPZ) and/or universal cigar socket adapter (cod. ACC612V) for both standard (diam. 18 mm) and German (DIN. 4165 - diam. 12 mm) cigar sockets.
4. Copy of this manual.

## BATTERY TYPES

The battery charger BC LITHIUM 1500 is specifically designed for the maintenance of all 12V LiFePO4 batteries currently available on the market), thanks to the charging algorithm executed. Please refer to the "Technical Data" for indications about the battery capacity range to which your battery charger is addressed.

## BATTERY CONNECTOR WITH EYELETS INSTALLATION PROCEDURE (STD2V)

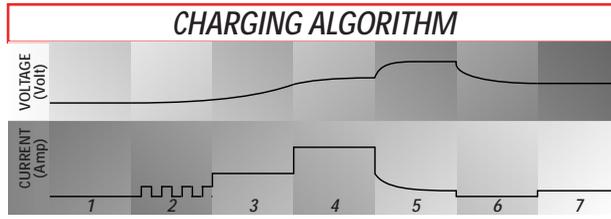
When charging a battery in a vehicle, it is advisable to install the battery connector with eyelets, which allows to perform the following procedure just once. The user is kindly requested to execute the installation with maximum care (see "Directions" and "Safety" sections). If necessary, please entrust qualified personnel with the execution of the steps reported here below:

- Connect the eyelets to the battery: the black wire shall be connected to the (-) negative battery terminal, the red wire to the (+) positive battery terminal.

- Fix the connector in a stable and easy-to-reach place on board (for example, under the saddle).

## BATTERY CONNECTOR WITH CLAMPS INSTALLATION PROCEDURE (30AMPPZ)

If the battery is out of the vehicle, just connect the black clamp to the (-) negative battery terminal and the red clamp to the (+) positive battery terminal. If charging the battery in a vehicle, connect first to the battery terminal not connected to the chassis (usually the positive one, red clamp to the + battery pole), and then connect the other clamp to the chassis, far from the battery and the fuel line. After using the device, disconnect in reverse sequence.



## SAFETY

BC LITHIUM 1500 is not intended for use by children or persons with reduced physical, mental or sensory capabilities, or lack of enough experience and knowledge to understand the instructions on this manual, except in the presence of a responsible person who can ensure the safe use of the device. Keep out of reach of children and ensure that they can not play with it. The device is designed and manufactured in accordance with the norms and regulations in force in the E.U. and provided with the following set of active guard mechanisms:

1. Protection from battery polarity inversion.
2. Protection from output lines short circuit (even for an indefinite time).
3. Over-temperature protection: the current supplied to the battery gets limited in case of device overheating.

In order to prevent any accident, please respect the following guidelines:

1. Always wear protective goggles when operating in proximity of the battery.
2. Do not try to recharge a frozen battery.
3. During the charge of a battery, avoid generating flames or sparks in its proximity since it might produce explosive gases. If the battery is out of the vehicle, place it in a well ventilated area.
4. Do not put the battery charger device on top of the battery during its charge.
5. Batteries contain a corrosive electrolyte. In case the battery electrolyte gets in touch either with your skin or with your eyes, rinse them immediately and abundantly with fresh water and ask for a doctor.
6. **The device is only suitable for LiFePO4 batteries, do not try to recharge other types of lithium batteries!**

## BC LITHIUM 1500 CONNECTION PROCEDURE

- Remove the connector saver cap from STD2V cable and connect the battery charger to STD2V cable. Otherwise, connect the battery charger to the battery through the insulated clamps or the cigar socket adapter.
- The red LED diode (ERROR) will turn on, to indicate 220V supply missing.
- Connect BC LITHIUM 1500 to the 220V power outlet.
- The red LED diode (ERROR) will turn off. The green LED diode (CHARGE) will turn on, blinking or with fixed light according to the cycle executed (for further information, please refer to "BC LITHIUM 1500 Working Mode" section).
- In case a low ambient temperature is detected, the POLAR MODE is automatically activated, in order to ensure the maximum safety during the charging process.

## BATTERY CHARGER DISCONNECTION PROCEDURE

Please follow the following steps to disconnect the battery charger from the battery:

- Disconnect the battery charger from the 220V power outlet.
- Disconnect the battery charger from the STD2V cable with eyelets and put the saver cap on STD2V cable connector. Otherwise, disconnect the clamps from the battery or the cigar socket adapter from the cigar socket.
- Put the battery charger back in its box to minimise its exposure to atmospheric agents.

## BC LITHIUM 1500 WORKING MODE

In case of normal working conditions, the device indicates the charging cycle executed through the green LED diode (CHARGE) as follows:

- Green LED diode slowly blinking: Charge cycles (phases 1, 2, 3, 4) executed.

- Green LED diode swiftly blinking: Equalization/Absorption cycle (phase 5) executed.

- Green LED diode on (fixed light): Maintenance cycle (phase 7) executed.

- Red LED diode (ERROR) off.

- In case a low ambient temperature (< 5°C) is detected at the beginning of the charging procedure, a yellow LED turns on to indicate that the POLAR MODE is active.

For more details about the charging steps, please refer to the "Charging Algorithm" section on this manual.

Possible occurring anomalies are indicated by the device as follows:

- Red LED diode on (fixed light): it means the 220V input power is missing.

- Red LED diode slowly blinking: the device is not connected to the battery.

- Red LED diode swiftly blinking: polarity inversion or short circuit.

- Green LED diode (CHARGE) + Red LED diode (ERROR) alternatively blinking: the Battery Analysis (phase 6) failed. The battery is not able to retain the charge received, it may be necessary to substitute it.

In case of wrong installation or functioning, disconnect the device following the procedure reported in the "Battery Charger Disconnection Procedure" section.

## ACCESSORIES

The default harness can be varied with a full set of accessories to allow a very quick connection to the battery. For any further information about this topic, please visit the "Accessories" section on [www.batterycontroller.co.uk](http://www.batterycontroller.co.uk) web site or ask your local dealer.

## MAINTENANCE

In order to ensure a regular functioning, it is suggested to periodically check the correct and stable connection of the eyelets to the battery and to remove dust and oil from the battery poles with a metallic brush. Please read the "Safety" section before.

The device has been specifically designed to be maintenance-free. Please remove possible dust which may get accumulated on the cover of the device using a delicate detergent to avoid damaging the stickers. In case any item of the kit does not work correctly, please contact either your local dealer or the manufacturer asking for item repairing or substitution. Any attempt to open the device shall imply the warranty becomes no longer valid.

## WARRANTY

Forelectronica Srl provides a 36 months warranty to cover the device malfunction or failure due to improper assembly/manufacturing or breakage of any internal component. Parts, whose deterioration is because of the usage, are not covered by the warranty. Any repairing right under manufacturer's warranty decays in any of the following cases: improper use of the device; unduly opening of the device; repairing performed by unauthorised personnel.

This warranty is limited to the original buyer of the device and it can not be transferred to third parties. This warranty excludes implicit forms of warranty, including possible damages due to the usage of the battery charger: Forelectronica Srl is exonerated from any damage to either persons or goods due to the usage of its products. The transportation expenses to return the defective device, together with the Warranty Coupon reported here and the supplier ticket, are to be paid by the purchaser.

## STATEMENT OF CONFORMANCE

Forelectronica Srl declares under its responsibility that the battery chargers BC Battery Controller fulfil all European norms and regulations.

Rules of reference: EN60335-1, EN60335-2-29, EN62233 (in accordance with Directive LVD 2006/95/EC and subsequent amendments); EN55014-1, EN55014-2, EN61000-3-2 and EN61000-3-3 (in accordance with Directive 2004/108/EC and subsequent amendments).

## MANUFACTURER:

Forelectronica Srl  
Via Meucci, 11 20080  
Cislano (MI) - ITALY  
info@batterycontroller.it



## WARRANTY COUPON

This warranty covers the device malfunction or failure due to improper assembly/manufacturing or breakage of any internal component. Parts, whose deterioration is because of the usage, are not covered by the warranty. This warranty excludes implicit forms of warranty: Forelectronica Srl is exonerated from any damage to either persons or goods due to the usage of its products.

**Model:** \_\_\_\_\_  
**Anomalies Description:** \_\_\_\_\_

Attention! This coupon has to be returned together with the supplier ticket and the device in its original packaging.

## TECHNICAL DATA

MODEL	BC LITHIUM 1500
Input Voltage	220÷240V ac, 50-60Hz
Output Voltage	14.2V - nominal 12V
Charging Current	1.5 A max
Diagnostics & Safety	Battery Poles Inversion Short Circuit Overheating
Charging Algorithm	Automatic 7 cycles
Battery Types	12 V LiFePO4
Battery Capacity	1-100 Ah
Operating Temperature	from - 20°C to + 50°C