

ECOTEC

powerful solutions in battery charging



Operating Instructions for ECOTEC BLU (Battery Logging Unit)

Table of Contents

General Safety	3
Installation	4
Operation	6
Panel and Interface	6
Functions	7
Warranty	10

General Safety



Hydrogen gas is generated when charging batteries, which can cause an explosion.



During and immediately after charging, batteries may not be placed in the vicinity of sparks or open flame.



Do not use the battery charger if it is damaged. Do not touch damaged components. Turn off the input AC voltage immediately and contact service personnel.



Batteries should only be charged in a well ventilated area.

Installation

Connect the BLU so that the battery side guide symbol is pointing towards the battery. Check that the LED is lit up and flashing according to status indicator description. Connect the other end of the BLU to the vehicle.

If necessary, use the MP Access Service tool to clear the statistics and configure the BLU according to the present battery and logging needs.

Battery operation analysis

Mount the BLU with the **red** SB connector connected to the battery connector and secure the device with cable ties to the battery, to prevent the BLU from being removed from the battery during charging.

Vehicle operation analysis

Mount the BLU with the **blue** SB connector connected to the vehicle connector and secure the device with cable ties to the vehicle, to prevent the BLU from being removed from the vehicle if/when the battery is removed.

Please note that the product described in this manual contains a radio transmitter that complies with Part 15 of the FCC rules and is licensed as listed below:

FCC ID: B7WACCESS

Canada IC: 10687A-ACCESS



WARNING! Changes/modifications not approved by the responsible party could void the user's authority to operate the equipment. This transmitter must not be relocated or operated in conjunction with any other antenna or transmitter.

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body (excluding extremities: hands, wrists, feet and ankles).

AVERTISSEMENT! Les changements/modifications non approuvés par le parti responsable pourraient invalider l'autorité de l'utilisateur à faire fonctionner l'équipement. Cet émetteur ne doit pas être relocalisé ou être utilisé avec une autre antenne ou émetteur.'

Cet équipement est conforme aux limites d'exposition de émissions de IC, FCC présentées pour un environnement non contrôlé. Cet équipement devrait être installé de façon à ce que l'antenne soit éloigné de 20 centimètres ou plus du corps humain (en excluant les extrémités : les mains, les poignets, les pieds et les chevilles).

BLU Panel and interface



When the BLU is powered up the blue LED will be continuously lit for 2 seconds.

1 - BLU status indicator

Flashing with 1/4 Hz	BLU status ok.
Flashes with 1 Hz	An alarm is present in the BLU. Please use the MP Access service tool to evaluate the alarm further.
Not lit	No power supply.

2 - Battery side guide symbol

The BLU shall be connected between battery and vehicle so that the arrow in the symbol is pointing towards the battery. If the BLU is mounted incorrectly, the charging current will be monitored as discharging current and vice versa.

Functions

Security

The BLU is protected from change of parameters with a pin code, default set to 2451 (level 1) and 3562 (level 2). The pin code can be changed using the MP Access Service tool.

Current measurement

The BLU has a built in 24 bit ADC that enables an extremely high resolution and with the shunt type sensor a very good accuracy can be achieved. Calibration is done with the MP Access Service tool.

Voltage measurement

Supply voltage is measured by the built in 24 bit ADC providing a very high resolution and accuracy. Calibration is done with the MP Access Service tool.

Temperature measurement

BLU internal temperature is measured using an NTC sensor, providing an accuracy of approximately $\pm 1^{\circ}\text{C}$.

Historical log

The BLU stores detailed battery usage information in the historical log which can be downloaded and analyzed using the MP Access Service tool. All logs are time stamped using the built in real time clock/calendar.

The battery history log data can be recorded two ways. Either by cycle (one discharge interval and the following charge interval) or accumulated into 24 hour daily totals. The operating mode can be set using the Service Tool Software.

BLU current is measured once every second. Charge and discharge intervals are determined programmable threshold levels that can be modified using the Service Tool software.

When using the 24 hour daily log mode of recording, one historical log is generated every day at midnight. All the measured and calculated parameters will be summarized for these 24 hours and stored as one log.

The actual battery capacity needs to be set in the BLU configuration. If the correct capacity is not entered, history logs will be generated, but State of Charge (SOC) and other recorded values will not be correctly calculated.

The historical log is first in first out (FIFO), in other words if the internal memory gets full the oldest logs are replaced by new ones. With 1024 kB log memory the BLU stores 500 history logs.

Event log

In the Event log, alarms going active and inactive are stored together with information about current firmware etc. All logs are time stamped using the build in clock and calendar and can be read out using the MP Access Service tool.

The event log is cyclic, i.e. if the internal memory gets full the oldest logs are replaced by new ones. With 1024 kB log memory the BLU stores 100 event logs.

Instant log

During operation the BLU is configured to store information about battery current, voltage and battery temperature continuously. All logs are time stamped using the built in real time clock/calendar and can be read out using the MP Access Service tool.

The parameter Interval sets the time in seconds between each log, if set to 0 the log functionality is turned off. When the Interval value is altered, except when set to 0, all logs are deleted.

The instant log is cyclic, i.e. if the internal memory gets full the oldest logs are replaced by new ones. With 1024 kB log memory the BLU stores 15000 instant logs.

State of charge (SOC)

The BLU calculates the battery SOC by integrating ampere hours being charged and discharged. When battery voltage is >2.5 VPC and current < 10 % of Battery capacity for five minutes the SOC counter is reset to 100 %.

Calibration

The voltage and current measurement can be calibrated by using the MP Access Service tool. When performing calibration the difference between point 1 and point 2 needs to be greater than 10000 mA for current and 1000 mV for voltages. If the difference is smaller an error message will be shown.

Clear statistics

All logs can be cleared using the MP Access Service tool, Configuration menu. It is recommended to clear all the statistics prior to making a new measurement.

For service assistance and parts ordering, contact:

Ecotec Ltd. LLC

Phone: 937-606-2793

Fax: 937-606-2026

<http://www.ecotebatcharger.com>



Warranty

Battery Logging Unit (BLU) FOR INDUSTRIAL APPLICATIONS IN NORTH AMERICA

Ecotec warrants each new Ecotec BLU for industrial application and use to be free from defects in material and workmanship. This product warranty applies to the original purchaser of the equipment provided that:

- 1) The Ecotec BLU is installed, operated and maintained in accordance with the Ecotec printed installation and operating instructions.
- 2) The Ecotec BLU is used under normal conditions for the purposes for which it was designed.
- 3) The Ecotec BLU is not subject to misuse, negligence, accident or unauthorized modification. Misuse to include abnormal operating conditions (including exposure to chemicals, flames, extreme dust or extreme temperatures).
- 4) The Ecotec BLU is properly serviced in accordance with Ecotec service guidelines and using Ecotec parts.
- 5) The Ecotec BLU is used in accordance with Ecotec's performance ratings for the equipment.

This warranty is subject to the following provisions:

- 1) **Products and Parts Warranted:** Subject to the exceptions listed below each new Ecotec BLU is warranted for a period of twelve (12) months covering parts only from the commencement of warranty period.
- 2) **Commencement of Warranty Time Periods:** The warranty period shall commence on the date of installation provided, however, that under no circumstances shall this period exceed 30 days from date of shipment by Ecotec.
- 3) **Limitation of Liability:** Ecotec's liability is limited to the repair of any defects or, at Ecotec's option, the replacement of the defective product with the same or similar product. Purchaser shall assume the responsibility for the removal, re-installation and freight in connection with replacement components. Replacement and exchange parts will be

warranted for the remainder of the original Ecotec's charger warranty period or for a period of ninety (90) days, whichever is greater.

Ecotec shall not be liable for direct or indirect, special or consequential damages in excess of such repair or replacement. In no event shall the purchaser be entitled to recover for contingent expenses resulting from, but not limited to, travel expenses, lodging, duties and taxes, rental or replacement equipment, loss of business or profits or any other commercial losses.

- 4) **Use of Defective Product:** Continued use of a defective Ecotec charger, unless approved by Ecotec, may void warranty.

Except as stated above, all other warranties and conditions, either expressed or implied, including implied warranties of merchantability and fitness for a particular purpose, are excluded and buyer assumes all risks and liability resulting from use of the goods. Ecotec neither assumes nor authorizes any persons to assume for Ecotec any other liability in connection with the sale or use of the goods sold, and there are no verbal agreements or warranties collateral to or affecting this written warranty.

Warning: At all times, safety must be considered an important factor in the installation, servicing and operation of the Ecotec BLU, and only skilled, qualified technical assistance should be utilized.

