

## BATTERY GUARD 40 / 60 / 200 OWNERS MANUAL

EN-LBC1224-40

EN-LBC1224-60

EN-LBC1224-200

### READ THE OWNERS MANUAL CAREFULLY BEFORE INSTALLING BATTERY GUARD

#### Description:

The Battery Guard (hereafter BG) is an intelligent, fully waterproof, battery guard with expansion capabilities for an on/off switch, alarm buzzer or relay and our Battery Watch (not supplied). To ensure low losses, the BG is provided with two screw terminals, one Input + and one Output +. The rest, like the minus and the accessories are connected via four 6.3 mm faston connectors. The LED indicates the output status (on/off) of the BG and in the programming mode the LED indicates the program position. The BG is provided with an 'Automatic board system detection' with which the BG automatically detects what the battery voltage (12V or 24V) of the system is, so that it does not need to be set manually. Both under and over voltage thresholds can be easily programmed.

#### Installation:

Mount the BG on a cooling (metal) surface so that it can release the developed heat. Connect the BG as close as possible to the battery (maximum distance: 50cm). This way can the voltage can be monitored exactly. Any programming of the BG must take place before the equipment (users) can be connected. For the minus connection use a cable of 1.5mm<sup>2</sup> which goes directly from the battery to the BG and **do not use** this connection for anything else.

#### Warnings:

- **The product should only be connected by skilled fitters / mechanics, which are aware of the regulations for working with high battery voltages.**
- **Live parts must not come into contact with the housing of the BG.**
- **Use of bad material and / or too thin wires can damage the BG.**
- **A short circuit between the positive and negative terminals of the battery may cause severe damage to your system.**
- **Always use fuses (of the correct value).**

#### Operation:

In the standard programming (position 11 in the "Configuration Table") a buzzer may be connected to the alarm output. This will sound an alarm after 15 seconds when there is under voltage. If the situation does not change, the BG will turn off attached devices after 60 seconds and the alarm will be switched off. Since with over voltage there is a risk of damage to the connected equipment this will be switched off immediately when there is over voltage (16/32V) and the alarm output will pulsate. This is done to distinguish between an under voltage alarm and an over voltage alarm.

A second application is to connect a relay to the alarm output. The BG must then be programmed in position 12 (see "Programming"). The relay will switch on during an alarm and only switch off when reaching the reset value of the under voltage. The relay can thus be used to activate a charger or generator.

#### Remote ON / OFF

You can connect a switch to the OFF terminal of the BG. If the OFF terminal is connected to the Minus the BG will immediately switch off the attached devices. If the switch is opened again, the BG will switch on again after about 5 seconds. Since the current through the switch is zero (<10mA) a small switch can be used.

#### Battery Watch (optional)

As can be seen in the connection diagram, there may be an optional Battery Watch connected. This is a simple battery status monitor which, by means of 3 LEDs, indicates the status of the battery. Please contact your dealer.

#### Programming:

To start the programming mode a connection must be made between the Program Input and Input+. The LED will flash. The number of flashes indicates the program position (see table on back) that the BG is in. As soon as the desired program position is reached the connection (between the Program Input and the Input+) must be broken. As confirmation the BG will repeat the number of flashes. If it does not match your selection, you can repeat the steps.

There are two types of settings that can be applied. Positions 1 to 10 adjust the threshold and reset values for an under voltage alarm and the operation of the alarm can be set with positions 11 and 12. These settings must be made separately (one after another).

When removing the battery voltage and programmed positions remain retained. Once the programming is complete, the equipment can be connected. First disconnect the battery connection, connect the equipment to the Output+ and then reconnect the battery.

**Note:** Before programming first disconnect the equipment from the BG.

#### Configuration Table

| 12 Volt mode |               |         |
|--------------|---------------|---------|
|              | Under voltage | Reset   |
| Position 1*  | 10.5 V        | 12 V    |
| Position 2   | 10 V          | 11.5 V  |
| Position 3   | 9.5 V         | 11.5 V  |
| Position 4   | 11.25 V       | 13.25 V |
| Position 5   | 11.5 V        | 13.8 V  |
| Position 6   | 10.5 V        | 12.8 V  |
| Position 7   | 11.5 V        | 12.8 V  |
| Position 8   | 11.8 V        | 12.8 V  |
| Position 9   | 12 V          | 13 V    |
| Position 10  | 10 V          | 13.2 V  |

| Alarm function |                |
|----------------|----------------|
| Position 11*   | Normal alarm   |
| Position 12    | Relay function |

| 24 Volt mode |               |        |
|--------------|---------------|--------|
|              | Under voltage | Reset  |
| Position 1*  | 21 V          | 24V    |
| Position 2   | 20 V          | 23 V   |
| Position 3   | 19 V          | 23 V   |
| Position 4   | 22.5 V        | 26.5 V |
| Position 5   | 23 V          | 27.6 V |
| Position 6   | 21 V          | 25.6 V |
| Position 7   | 23 V          | 25.6 V |
| Position 8   | 23.6 V        | 25.6 V |
| Position 9   | 24 V          | 26 V   |
| Position 10  | 20 V          | 26.4 V |

| Alarm function |                |
|----------------|----------------|
| Position 11*   | Normal alarm   |
| Position 12    | Relay function |

\* Default settings.

Normal alarm:- Alarm output is activated in case of emergency: deactivation after 1 minute.

Relay function:- Alarm is activated in case of emergency: deactivation upon reaching the reset voltage.

## Technical Specifications

|  | EN-LBC1224-40                               | EN-LBC1224-60     | EN-LBC1224-200      |
|--|---|-------------------|---------------------|
| Cable diameter                           | 10mm <sup>2</sup>                           | 15mm <sup>2</sup> | 50mm <sup>2</sup>   |
| Automatic detection of 12V or 24V system | 8 - 20V → 12V mode                          |                   |                     |
|  | 20 - 35V → 24V mode                         |                   |                     |
| Adjustable under voltage programs        | 10  |                   |                     |
| Over voltage disconnect voltage          | 12V mode → 16V                              |                   |                     |
|  | 24V mode → 32V                              |                   |                     |
| Maximum load / shutdown                  | approx. 40A - 45A                           | approx. 60A - 65A | approx. 200A - 210A |
| Surge                                    | 120A  |                   | 480A                |
| Voltage drop                             | 0.1V @ 40A                                  | 0.15V @ 60A       | 0.125V @ 200A       |
| Current consumption                      | Output active: 4mA                          |                   |                     |
|  | Output inactive: 2mA                        |                   |                     |
| Shutdown at overload / short circuit     | After 5 seconds. (Switch on again 1 minute) |                   |                     |
| Voltage accuracy                         | 2%  |                   |                     |
| Current accuracy                         | 20%   |                   |                     |
| IP-code                                  | IP66  |                   |                     |
| Dimensions (H x W x D)                   | 82 x 41 x 65mm                              |                   | 61 x 112 x 120mm    |
| Weight                                   | 185g  |                   | 730g                |

## Wiring Diagram

