



# **Battery Guard MBW** **40/60**

**Owner's Manual MBW40/60**

**Read the owner's manual carefully before mounting the MBW!**

Owner's manual MBW40 / MBW60

The new Battery Guard MBW40/60 (hereafter called MBW) is an intelligent, watertight, Battery Guard with accessory connections for an ON/OFF switch, Alarm buzzer or relay and our CurrentWatch current sensor (not included). The unit has two bolts as connection for the Input+ and the Output+ to guarantee low losses. Other connections, like the minus and the accessories, are made by a 4-pole 6.3mm faston connector. A blue LED shows the status (ON/OFF). In program mode, it shows the program position. The MBW has an 'Automatic Boardsystem Detection'; the MBW detects which battery voltage (12 or 24V) is used. This does not need to be programmed manually. There is a choice out of 10 on/off threshold voltage programs, for both 12V and 24V, which can be programmed in a simple way. The MBW uses very little current. In the OFF mode or when in undervoltage the MBW uses just 2mA or less.

Installation

The installation of the MBW has to be done by qualified personnel. Working on a battery voltage is not without danger. Use wires of sufficient diameter and connectors of good quality. All connections have to be done via a fuse of the right value. See for a guiding principle for the wire diameter the separate chapter. Attention! Live wires should never make contact with the case of the MBW or the vehicle. Wrong connection could damage the electronic circuit. Mount the MBW on a cooling (metal) surface, so it can dissipate the generated heat. Mount it as close as possible to the battery (max. 50cm). This is the only way to exactly guard the voltage of the battery. Wait with connecting the equipment until the MBW is fully programmed. Use a 1.5mm<sup>2</sup> wire for the minus connection which is directly connected to the battery. No other equipment should use this wire.

Programming

To start the program mode a connection should be made between the Input+ and the ProgramInput. The LED will start flashing. The number of flashes represents the program-position (see table) it is in. As soon as the desired program-position is reached the connection, between the Input+ and the ProgramInput, should be removed. To confirm the programmed position the LED will repeat the number of flashes. If it is not the right position, the previous steps have to be repeated. A change in position 11 or 12 has to be programmed separately. The programmed positions will be remembered, even if the battery connection has been removed. After completing the programming the equipment can be connected. ATTENTION! First remove the battery-connection, connect the equipment to the Output+ and then reconnect the battery. Default program-position is position 1 and 11. See program table.

Remote ON/OFF

There is a possibility to connect a switch to the MBW's OFF connection. If the OFF connection is connected to the Minus, the MBW will shut down the connected equipment after about 1 second. If the connection is removed, the equipment will be started up again after about 1 second. The current through the switch is almost nothing, so a small switch can be used.

Alarm-output

A buzzer can be connected to the alarm-output. The buzzer/alarm will be activated at undervoltage after about 12 seconds. When there is no change in this situation the MBW will shut down the equipment about 90 seconds later. The buzzer/alarm will also be stopped. Because at overvoltage (16V/32V) the equipment can be damaged, the MBW will shut down the equipment immediately and the alarm-output will pulsate. This way you can hear the difference between an undervoltage and an overvoltage alarm. A second application of this output is with the use of a relay. In this application the MBW should be programmed in program-position 12 (default is position 11). This way the relay will be activated at alarm and when it reaches the upper voltage threshold it will be deactivated again. This way the relay can be used to activate a charger or generator.

CurrentWatch

The Prog/Current connection can be used to connect a CurrentWatch. The CurrentWatch will show the current used by your equipment. If you are interested in this product, please contact your supplier.

Wire diameter

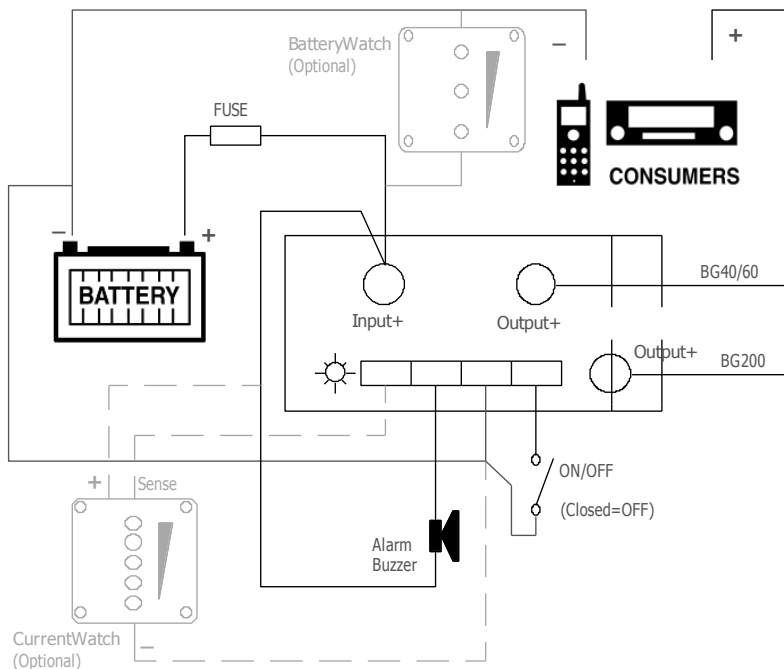
Use at least the following wire diameters for the bolt connection:

- MBW40 minimal 10mm<sup>2</sup>
- MBW60 minimal 15mm<sup>2</sup>

In difficult environments it is advised to use larger diameters.

Specifications:

- Autodetect 12 or 24V Battery voltage
  - 8-20V -> 12V mode
  - 20-35V -> 24V mode
- 10 programmable voltage thresholds
- Overvoltage shut down
  - > 16V (12V mode)
  - > 32V (24V mode)
- Current in use ~ 4mA
- Current in OFF position or under- or over-voltage position
- Maximum Load (shut down current)
  - MBW40 : ~ 40A (45A)
  - MBW60 : ~ 60A (65A)
- Peak current
  - MBW40 & MBW60 : 120A
- Shut down at overload after 5 sec. (after 1 minute start up)
- Connections
  - ON/OFF switch
  - Alarm buzzer or relay
  - CurrentWatch current sensor
- Voltage drop
  - MBW40 : ~ 0,0875 @35A
  - MBW60 : ~ 0,125 @ 50A
- Voltage tolerance ~2%
- Current output tolerance +/- 20%
- Watertight IP66
- The MBW will shut down after about 5 seconds when overloaded. After about 60 seconds the MBW will start up again.



Programming table

12 Volt mode		
	Undervoltage Threshold	Uppervoltage Threshold
Position 1	10,5V	12 V
Position 2	10 V	11,5V
Position 3	9,5V	11,5V
Position 4	11,25 V	13,25 V
Position 5	11,5V	13,8 V
Position 6	10,5V	12,8 V
Position 7	11,5V	12,8 V
Position 8	11,8 V	12,8 V
Position 9	12 V	13 V
Position 10	10 V	13.2 V
Position 11	Normal Alarm	
Position 12	Relayfunction	

24 Volt mode		
	Undervoltage Threshold	Uppervoltage Threshold
Position 1	21 V	24 V
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
Position 11	Normal Alarm	
Position 12	Relayfunction	

Position 1 & 11 Default positions

Normal alarm : Alarm output activated at alarm; deactivated after 1 minute.

Relay function : Alarm output activated at alarm; deactivated at overvoltage threshold.