Rev04 23-11-2015

BatteryProtect
ENGLISH

Installation

1. The BatteryProtect (BP) must be installed in a well-ventilated area and preferably close (max 50 cm) to the battery (but, due to possible corrosive gasses not above the battery!). Voltage drop over a long or undersized cable between the battery plus and the BP may result in unexpected shutdown of the BP.
2. A properly sized fuse must be inserted according to local regulations in the cable between the battery and the BP.
3. Use a 1,5 mm² wire (included) for the minus connection, which should be connected directly the battery minus. No other equipment should be connected to this wire.
4. The BP will automatically detect the system voltage after connection of plus and minus to the battery. During voltage detection the 7 segment display shows a series of flashes between the top and lower part.
5. Do not connect the load output until the BP has been fully programmed.
6. A remote on-off switch can be connected to the two pole connector (see figure 1) or between pin 2-1 of the two pole connector and the battery plus.
7. A buzzer, LED or relay can be connected between the alarm output and the battery plus (see figure 1). Maximum load on the alarm output: 50 mA (short circuit proof).

Load disconnect events and alarm output options

Buzzer or LED mode (buzzer or LED connected to the alarm output):

- In case of under voltage, a continuous alarm will start after 12 seconds. The BP will disconnect the load after 90 seconds and the alarm will stop. Reconnect delay: 30 seconds.
- In case of over voltage, the load will be disconnected immediately and an intermittent alarm will remain on until the overvoltage problem has been corrected.

Relay mode (relay connected to the alarm output):

- In case of under voltage, the relay will engage after 12 seconds. The BP will disconnect the load after 90 seconds and the relay will disengage.
- In case of over voltage, the load will be disconnected immediately and the alarm output will remain inactive.

Li-ion mode:

- Connect the load disconnect output of the VE.Bus BMS to pin 2-1.
  The load is disconnected immediately when the load disconnect output of the VE.Bus BMS switches from "high" to "free floating" (due to battery cell under voltage, over voltage or over temperature). The under voltage thresholds and alarm output of the BP are inactive in this mode.

Programming

The BP can be programmed for the desired voltages and modes by connecting the PROG pin to ground. Please see the programming table.
The display will first step through the shutdown and restart voltages. Disconnect the PROG pin when the desired voltage is displayed.
The display will confirm the chosen voltage and default mode (A) twice.
Reconnect the PROG to ground if another mode is (b or C) is required. Disconnect when the required mode is displayed.
The display will confirm the chosen voltage and mode twice.

Operation

There are 4 possible error modes, indicated by the 7 segment display:

- E 1 Short circuit detected
- E 2 Over load or over temperature
- E 3 Under voltage
- E 4 Over voltage

After 5 minutes the error is no longer displayed to reduce current consumption.
The decimal point of the 7 segment display is used for status indication:

- On solid: the BP attempts to activate the output
- Flash every 5s: output is active
- Flashing every 2s in Li-ion mode: output "connecting"

Remote control and short circuit

- The BP will connect the load 1 second after closing the remote contact.
- The BP will disconnect the load immediately when the remote contact is opened.
- When in Li-ion mode the BP will connect the load 30 seconds after the remote input of the BP has been pulled high by the VE.Bus BMS. This delay increases to 3 minutes in case of frequent switching.
- In case of a short circuit, the BP will attempt to connect the load every 5 seconds. After two attempts the display will show E 1 (short circuit detected).

Programming table

7 segment display	Under voltage shut down 12 V / 24 V system	Under voltage restart 12 V / 24 V system
0	10,5 V / 21 V	12 V / 24 V
1	10 V / 20 V	11,5 V / 23 V
2	9,5 V / 19 V	11,5 V / 23 V
3	11,25 V / 22,5 V	13,25 V / 26,5 V
4	11,5 V / 23 V	13,8 V / 27,6 V
5	10,5 V / 21 V	12,8 V / 25,6 V
6	11,5 V / 23 V	12,8 V / 25,6 V
7	11,8 V / 23,6 V	12,8 V / 25,6 V
8	12 V / 24 V	13 V / 26 V
9	10 V / 20 V	13,2 V / 26,4 V
A	Buzzer or LED mode	
b	Relay mode	
C	Li-ion mode	

Specifications

BatteryProtect	BP-65	BP-100	BP-220
Maximum cont. load current	65 A	100 A	220 A
Peak current	250 A	600 A	600 A
Operating voltage range	6 – 35 V		
Current consumption	When on: 1,5 mA When off or low voltage shutdown : 0,6 mA		
Alarm output delay	12 seconds		
Max. load on alarm output	50 mA (short circuit proof)		
Load disconnect delay	90 seconds (immediate if triggered by the VE.Bus BMS)		
Load reconnect delay	30 seconds		
Default thresholds	Disengage: 10,5 V or 21 V Engage: 12 V or 24 V		
Operating temperature range	Full load: -40°C to +40°C (up to 60% of nominal load at 50°C)		
Weight	0,2 kg 0.5 lbs	0,5 kg 0.6 lbs	0,8 kg 1.8 lbs
Dimensions (hxwxd)	40 x 48 x 106 mm 1.6 x 1.9 x 4.2 inch	59 x 42 x 115 mm 2.4 x 1.7 x 4.6 inch	62 x 123 x 120 mm 2.5 x 4.9 x 4.8 inch