Battery Management System (BMS)

Upgrade Instructions

Enginer, Inc.

Enginer, Inc. Shanghai. May 2010 Edition

Enginer PHEV BMS Upgrade Instructions

1. Differences between Previous Versions and Upgraded Version

Previous Version:
One BMS monitors only 8 battery cells;
Equilibrium current is only 300MA;
Energy consuming method rather than inter-charging to each other;
With alerm noise at high or low voltage.

Upgraded Version:
One single BMS manages 16 pairs of battery cells, i.e a total of 32 cells;
Suspending charging once any single cell exceeds 3.8V;
Suspending output once a single cell drops down to below 2.5V;
System sleeps if any cell drops to below 2V;
Advanced cells inter-charging (balancing) feature at 1.0-1.4 A current (coming soon).

Warning:

☑ Please recharge promptly when system runs out of power;
☑ To avoid battery failure, please DO disconnect (pull off the sockets) BMS from batteries if system is not to be used for over one week.

2. Use of Monitor Screen Menu

Page 1: Displays input / output voltages and currents delivered by Enginer PHEV to stock (OEM) battery;
Page 2: Voltages in cells 1-4;
Page 3: Voltages in cells 5-8;

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Page 4: Voltages in cells 9-12;
Page 5: Voltages in cells 13-16.

Buttons:
“ 》” Page down
“ 《 ” Page up

BMS in 30 seconds resumes Page 1 automatically.

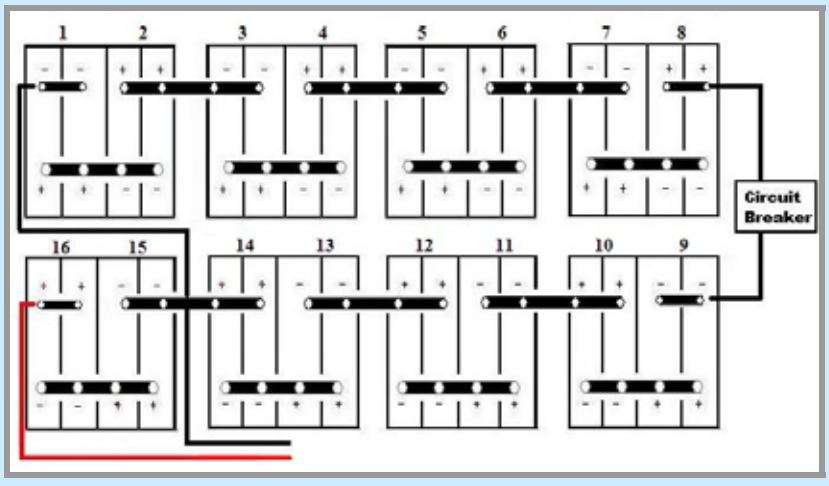
LEDs:

“**P**” green LED: BMS power on
4 groups of lights correspond 4 groups of batteries:
W1 P1 (cells 1-4); **W2 P2** (cells 5-8);
W3 P3 (cells 9-12); **W4 P4** (cells 13-16);
“**W**” red LED flashing alarms at least 1 of the 4 cells in the group at low voltage (<2.5V);
“**W**” red LED light: at least 1 of the 4 cells is over-charged (>3.8V).

3. Upgrade BMS Battery Connection and Wiring

(1) Cell connections

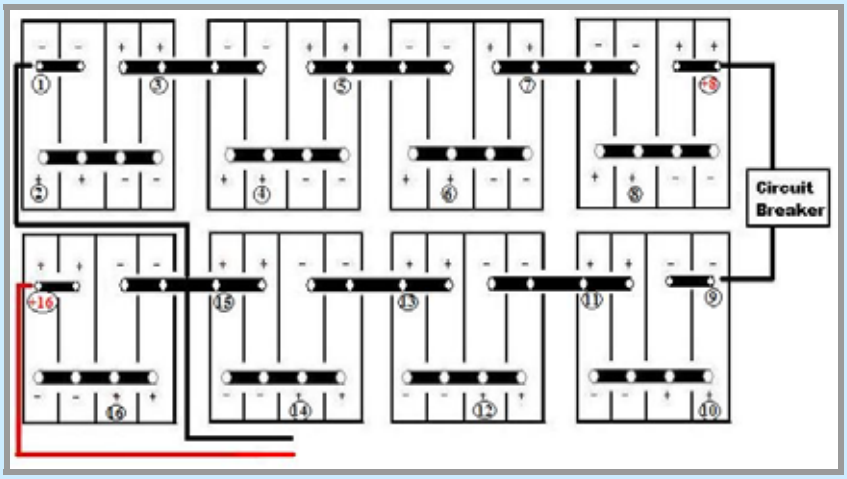
① Two buddy cells in parallel inter-connected before multiple connection to another buddy cells. BMS displays voltages corresponding the numbers as shown in the following drawing:



② Connecting detecting wires

Each wire has been marked with number, please connect all wires properly to their right positions as shown below:
Port 1 is for lower bank cells (1-8)

Port 2 is for high bank cells (9-16)



(2) BMS upgrade mounting and connections

① Mounting

a. PHEV without BMS mounting bracket:

Mount your new BMS on left top of Converter with 4 long screws which stick through and fix both BMS and Converter on chassis bottom. Flat rings are required in those screws between BMS and Converter for ventilation purpose.

b. PHEV with BMS mounting bracket on left side of the Charger

Fix the BMS on left top of Charger with 2 short screws on top of the Charger and the other 2 on the “Z” sharp bracket.

* Connection / wiring between BMS and batteries remain the same as before.

Mounting without “Z” bracket


Mounting with “Z” bracket

② Connecting batteries:

Plug battery voltage detecting wires 1-8 into a socket marked with “1” on BMS;

Plug battery voltage detecting wires 9-16 into a socket marked with “2” on BMS.

Warning: DO NOT plug wrongly between two sockets to avoid error.

③ Connecting 5000W Converter: 8 pin cable, 2 combined wires, connectors. Insert BMS output into Anderson Plug on Converter input.

Connecting 3000W Converter: 8 pin cable, cnnectors. Insert BMS output into Anderson Plug on Converter input. There is no cut-off signal.

④ Connecting Charger: Insert BMS output into Charger output.