

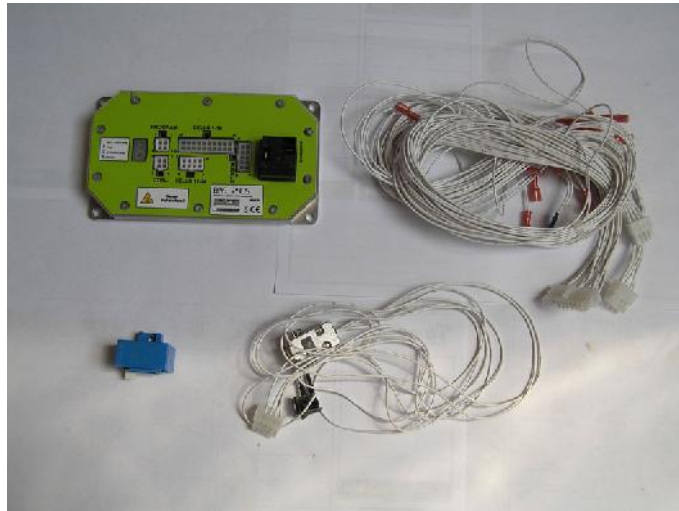
## BMS2405 CONNECTION GUIDE:

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This is simple step-by-step manual how to CONNECT AND proceed basic SETUP of BMS2405. In following example connection 48V (16 cells) LiFePo4 [LFPo20AH](#) battery pack was used, but it is possible to use this Connection guide for any number of cells supported by BMS2405 (6 – 24 cells).

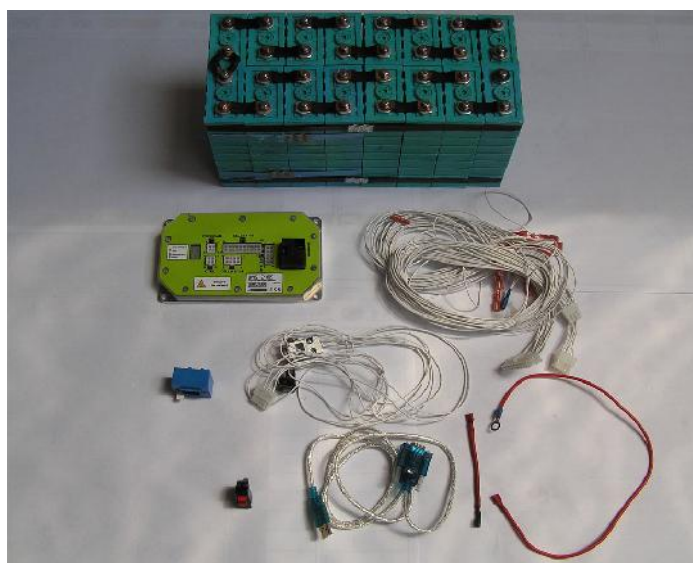
### General information:

Following picture displays content of original package :



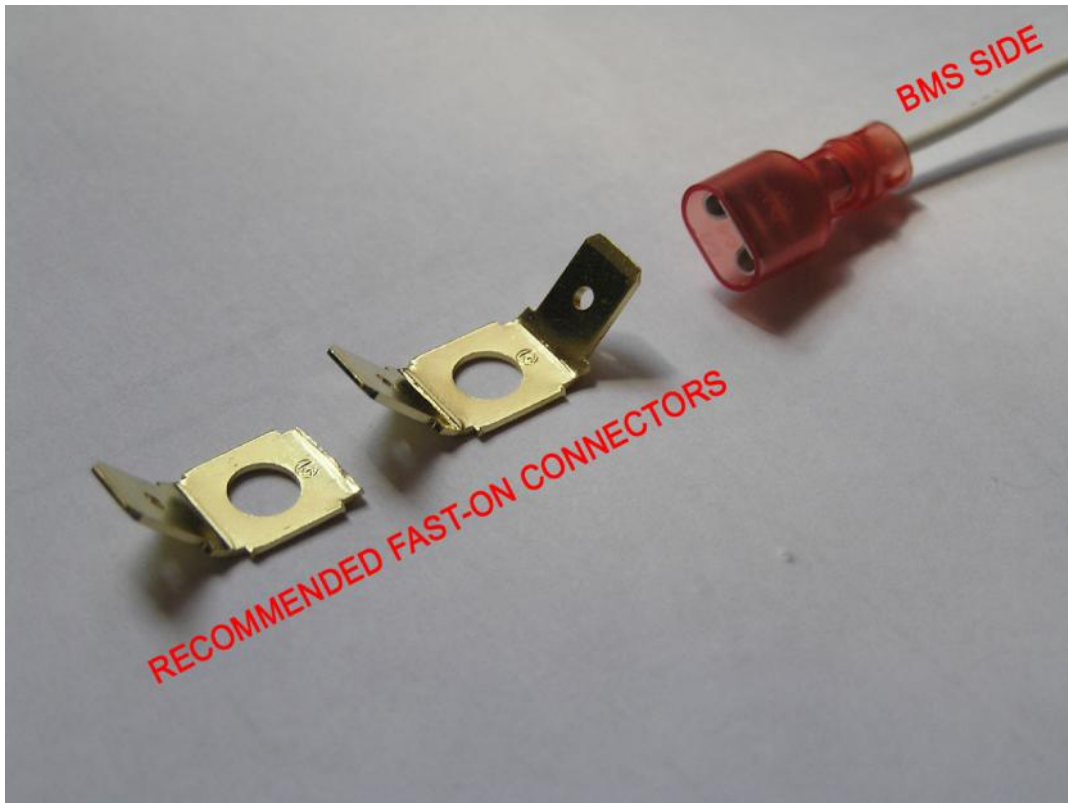
- BMS2405 units
- HASS 50-2 current sensor
  - 20 pin cell cable
  - 8 pin cell cable
  - 10 pin system cable
- Serial PC communication cable

Except the battery pack we had used following basic components for our sample connection:



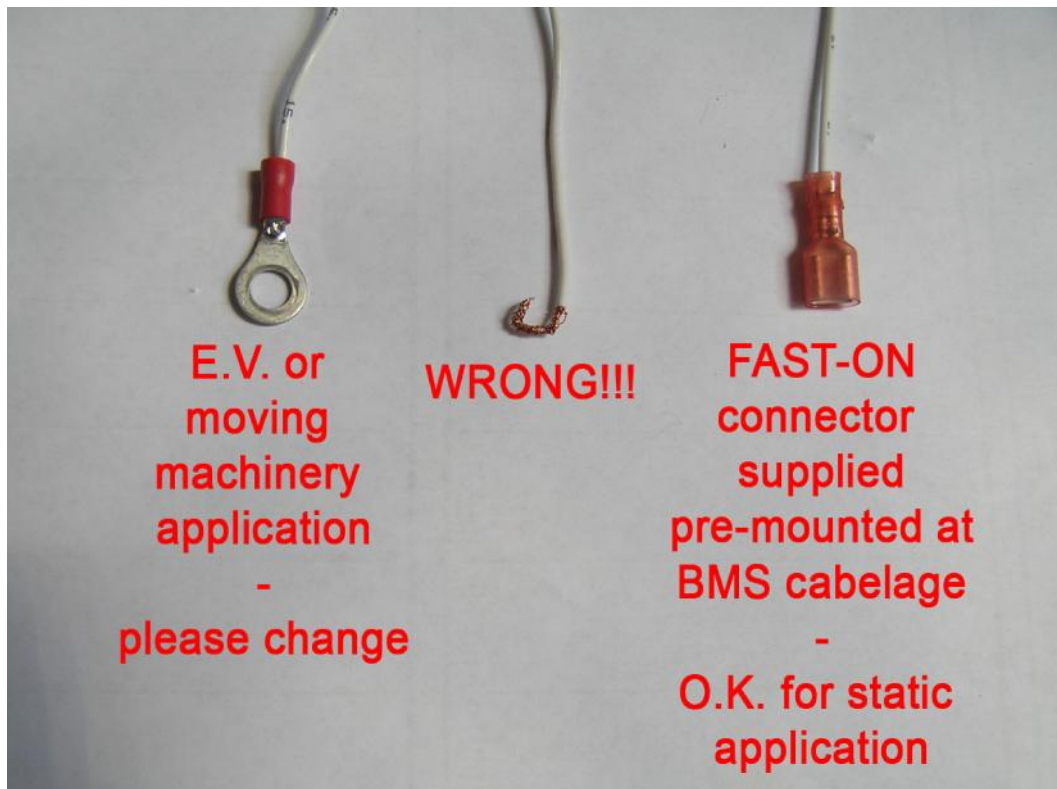
- USB – RS232 interface
  - ON/OFF switch
- Eye connector to female FAST-ON cable
- Female FAST-ON to female FAST-ON cable

At supplied cables for cells connection there are female FAST-ON connectors pre-mounted. For static installations it is wise to use recommended connector as shown at the picture below.



*GWL does not offer small installation material, please check your local electronic parts store offer.*

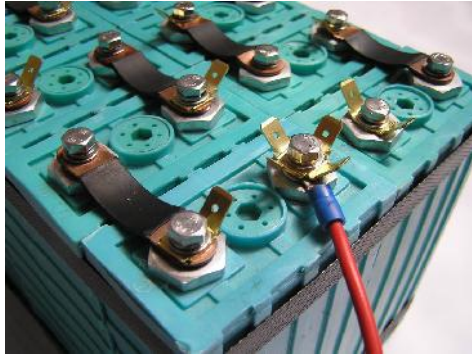
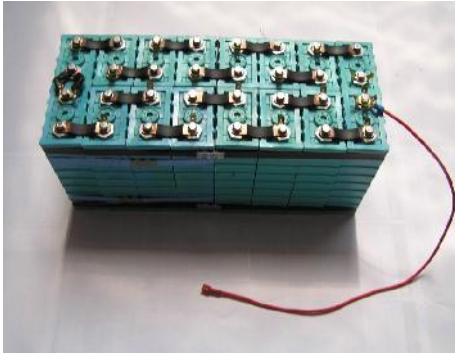
For applications where vibrations might occur (such as electric vehicles or moving machinery), it is recommended to change FAST-ON connectors for classic eye type connector:





## Connection to battery pack:

- 1) Prepare your battery pack.



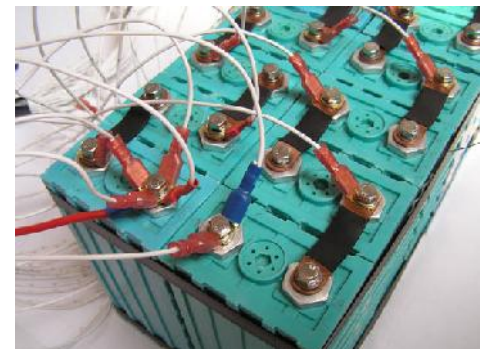
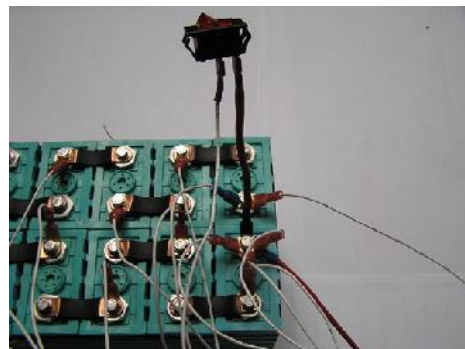
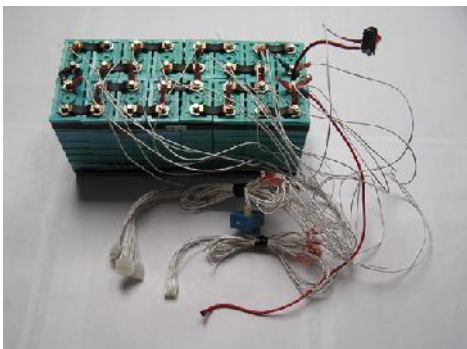
Keep your terminals and terminal connectors clean and without oxidation!

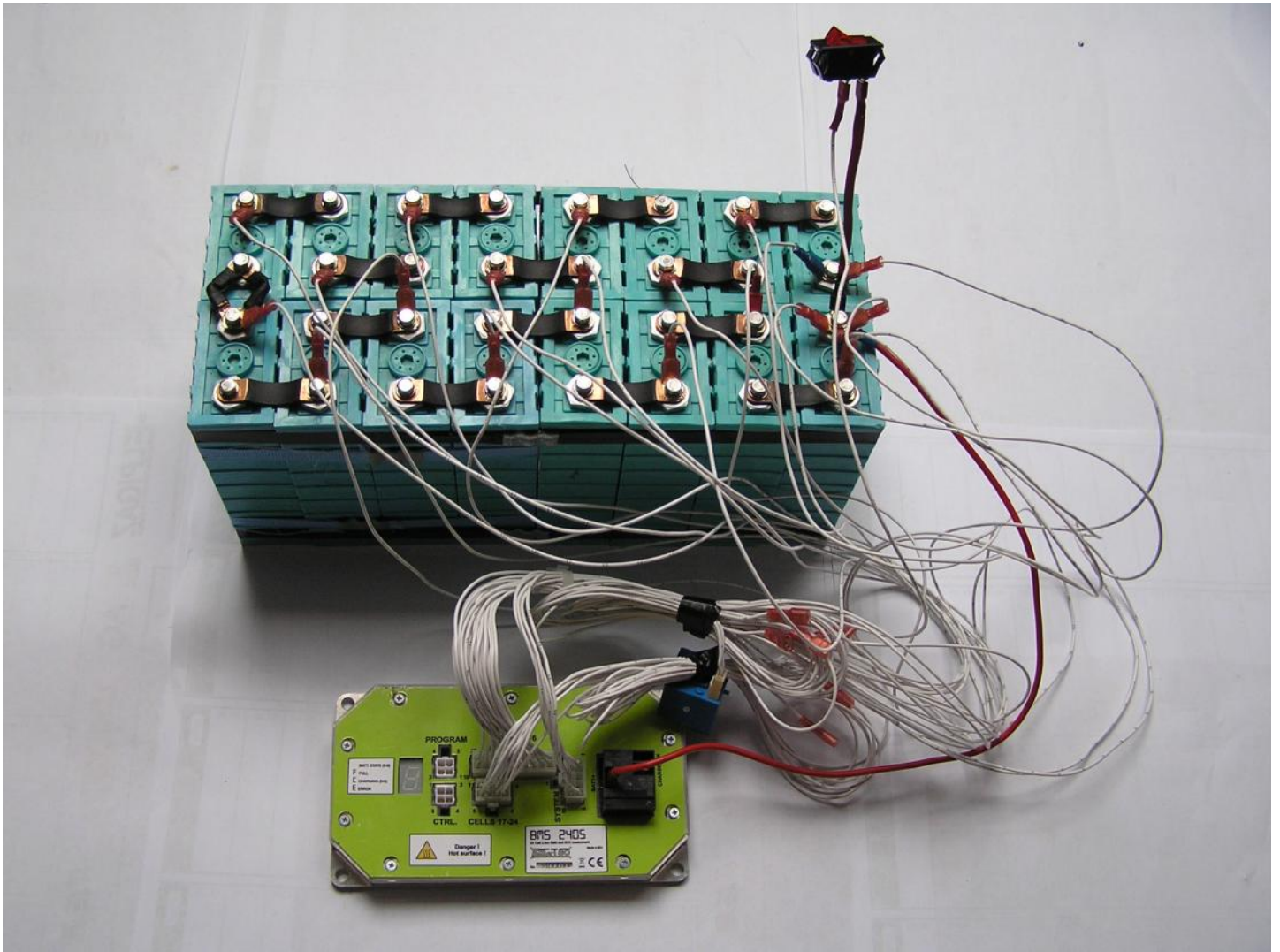
- 2) Connect 20-pin connector, 8-pin connector and SYSTEM connector to battery pack



**ALWAYS CONNECT CABLES TO BMS IN FOLLOWING ORDER:**

- 1 – 20 PIN CELLS CABLE
- 2 – 8 PIN CELLS CABLE
- 3 – 10 PIN SYSTEM CABLE
- 4 – 12v PLUS CABLE
- 5 – SERIAL CABLE





In case of system with less than 24 cells some wires will stay loose (not connected). FOR 16 cells system these are :

20-pin connector: 8,9,10  
8-pin connector: 1 to 6  
System connector: 2,3,4,6,7

**ALWAYS PROTECT LOOSE WIRES FROM SHORT CIRCUIT, FOR EXAMPLE BY PUTTING HEAT SHRINK TUBE AT THE END OF LOOSE WIRE.**





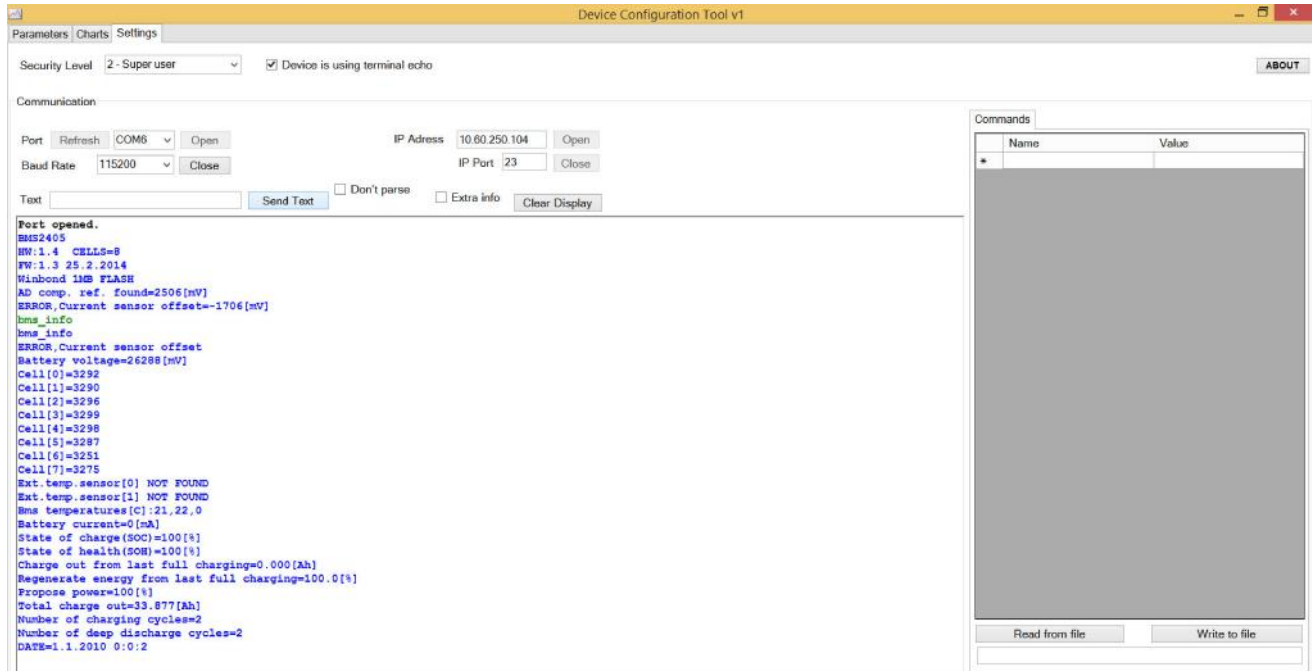
## First start setup:



With BMS connected to the battery and to PC run the Device Configuration Tool (if you do not have it, you can download it at [Faktor.de](http://Faktor.de)).

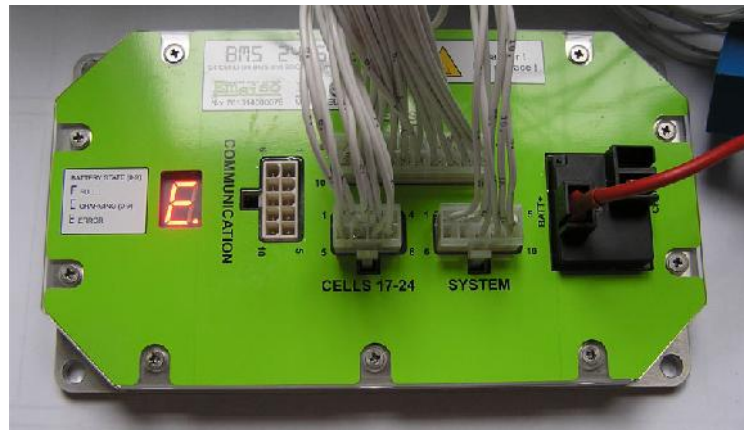
1) At *Settings Tab* set following options:

- Security Level: “2 – Super user”
- Select COM Port of your USB-RS232 interface (not supplied with BMS2405).
- Baud rate is 115200



2) Start the BMS by Ignition ON (supply voltage at PIN1 of SYSTEM connector)

3) By default cell number is 24. If you use different cell number, the BMS goes into error (see picture below). In 10 s after power up you have to send any valid command (from Text field at Setting page) so BMS stays alive. Otherwise BMS is turned off -> begin with step 1 again.



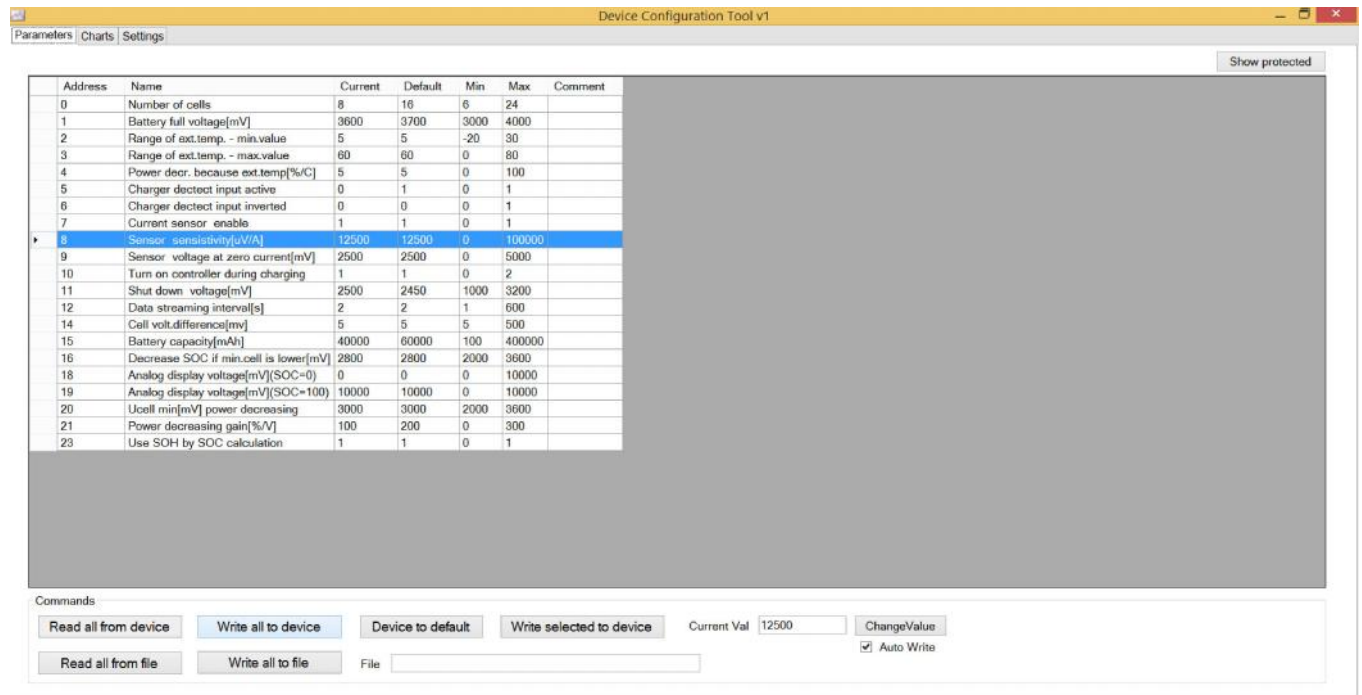
*NOTE: Suitable command to stop BMS shut-down counting is “bms\_info”, which will show you cause of error state at first line of the log window.*

4) Set number of cells by sending “Number\_of\_cells XX” command, where XX is your number of cells.

5) Restart the BMS (Ignition to 0 and back to 1 in few seconds).

6) If cells are connected correctly and all cells have voltage > 2.5V then BMS will show number between 0 and 9. If BMS is still in Error state, then send command “bms\_info” and read 1<sup>st</sup> line for description of error.

7) Enable current sensor at “Parameters” menu. First you must read data from BMS by clicking “Read all from the device”. After enabling current sensor by changing 0 to 1 you confirm your settings by clicking “Write all to device”.



Now everything should be working correctly. Please restart the BMS and verify that the display is showing number between 0 and 9. 0 to 9 value corresponds with State of Charge (SOC) of the battery pack. Please perform one full charge and one full discharge cycle to calibrate the SOC display. If BMS is still showing E symbol (error state), please always check the reason with BMS\_INFO. Most often causes of Error state are following:

- One of the cell not connected or bad connected
- Cell voltage below 2.5V
- Current sensor not connected or bad connected and still enabled in the Parameters menu.
- Voltage at zero current is not correct. Please refer to manual for appropriate settings. This should not occur if supplied current sensor is used..