# EV Power BATMON Configurator-204 Manual

Introduction

The EV Power Batmon Battery Management System (BMS) is designed to monitor and balance cells in a Lithium Ion battery. Configuration is possible for any Lithium chemistry.

It is comprised of three parts; CBM-12S cell modules connected to up to 12 cells in series, the Battery Monitoring Unit (BMU), and the Configurator.
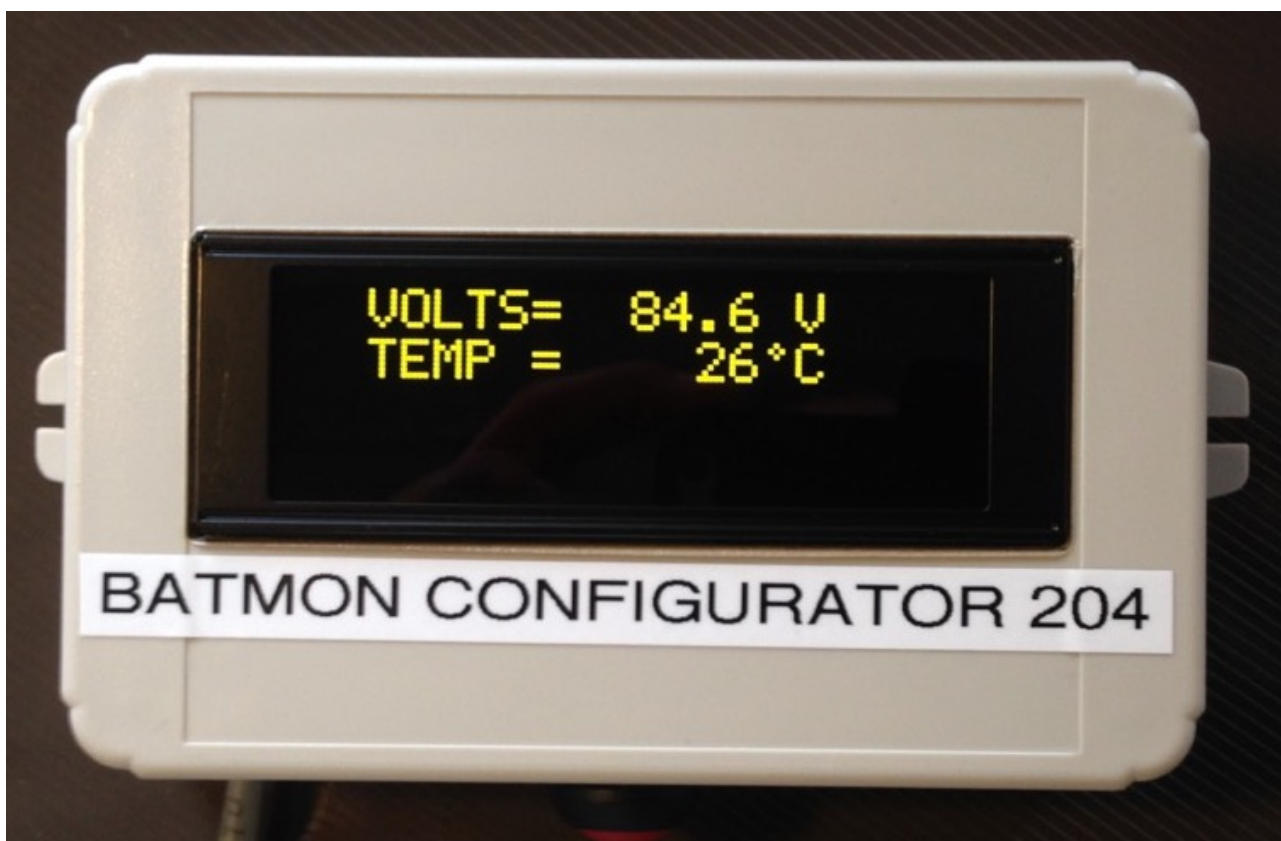
Configurator Features

- **2 Line LCD Display**
- Connects directly to the Batmon BMU (Battery Monitoring Unit)
- Displays cell voltages and stack temperatures for up to 4 stacks (48 cells)
- Allows configuration of the BMU for various thresholds.

Read these instructions before commencing installation.

Specifications - CONFIGURATOR-204 (OLED)

|	
Supply Voltage (from BMU)	12V
Current Consumption (from BMU)	10mA
Dimensions	125 x 80 x 40mm

How to Use the Configurator

Plug it into the BMU. If the BMU is powered up on 12V the Configurator will display a splash screen with the firmware version number then after a few seconds it will display the screen below. If the screen remains blank then there is a problem with comms to the BMU. Note that we talk about "stacks" here, a stack is 4-12 cells attached to one CBM-12S.


Press the button on the Configurator and the display will show Stack 1 voltages, up to 12 cells, and temperature as below. Scroll through up to 4 stacks this way. The cells are in groups of three with labels A,B,C, D.

There are various error messages that get displayed in the main screen.
Cell Overvoltage: one or more red LEDS on the CBM-12S will be lit up indicating that it is trying to balance the cells.
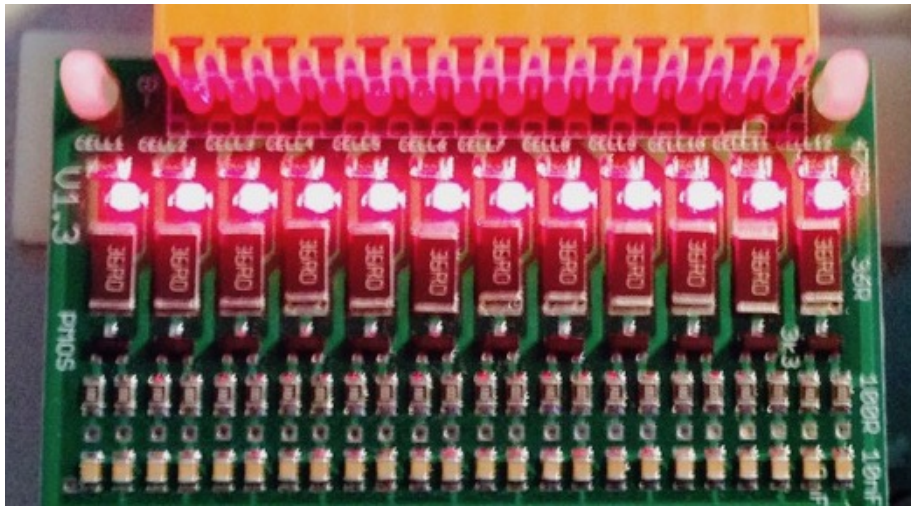
Cell Low Voltage:
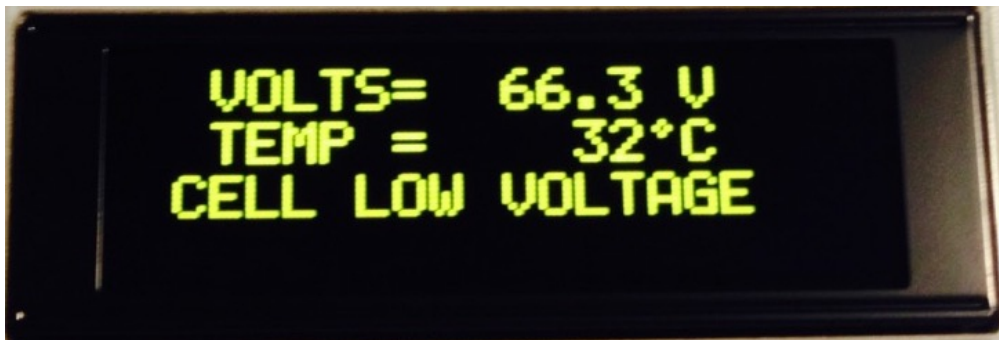
Stack Over Temperature:

Using the Configurator to Alter BMU Thresholds

Using the configurator you can change parameters that affect the outputs of the BMU and also the balancing voltages of the CBM-12S modules. Be careful !

Press and hold the Configuator Button until a screen similar to the following appears. It may take a few attempts as the firmware polls the button at specific intervals.

To simply view all the parameters just use short presses to click through them all. No changes will be made.

To change a parameter, press and hold the button at the displayed parameter and then use a combination of short and long presses to either alter the digits or move to the next digit. It takes some practice.

The following parameters are listed in order of appearance:

– **Number of stacks=** 1 - 4 depending on how many CBM-12S modules are connected to the BMU via the IsoSPI daisy chain. The BMU will monitor this number of stacks only.

– **CELLS IN Sx =** S means "stack", for each stack set the number of attached cells, 4-12. They can all be different.

– **MIN CELL V=** set the minimum cell voltage, if any cell in the whole battery (not just the stack) falls below this value the BMU will set a low cell alarm and activate the LV output. For LFP it might be 2.50V and for LiNCM this might be set to 3.00V. Please check the manufacturers specifications.

– **NOM CELL V=** nominal cell voltage. 3.2V for LiFePO4, 3.6 → 3.7V NCM, LiPoly etc. Used to calculate where the charger drops back into Boost mode. Active when COBID=0

– **BALANCE V=** this is the voltage above which cell balancing may occur. Cell balancing is indicated by the red LEDs on the CBM-12 modules illuminating. A shunt resistor (36ohm) is switched across the cell at this time. This might be set to 3.45V for LFP and 4.00V for NCM.

– **PEAK CHG V=** Peak voltage (per cell) that the charger should charge to for 100% SOC. Active when COBID=0

– **MAX CELL V=** set the voltage that if any cell goes above the BMU will flag an error and set the HV output. This might be 3.75V for LFP and 4.20V for NCM.

– **CELL DELTA V=** measured in milliVolts this parameter sets the difference in voltage between the highest and lowest cell in the battery that will cause balancing to happen. If the cell difference is lower than this value no balancing is necessary as the battery is already balanced. If greater then cell balancing will start on the cells that are above the BALANCE V threshold. 20mV is a good starting value. If it is set to 0mV then all cells above the BALANCE V threshold will have shunt balancing activated.

– **BOOST CURR=** Maximum charging current , 0 → 20A, active when COBID=0

– **BAL CURRENT=** Reduced current to aid cell balancing when the cell balance voltage is reached , active when COBID=0

– **MAX TEMP=** in degrees Celsius this is the temperature above which if any stack goes the BMU will flag an error and set the TEMP output. 60 is a good starting point.

– **CAN COB-ID=** 848 this is the CANbus COB-ID (in decimal) that the BMU will transmit cell voltage records on. 848 is the default. Leave as is unless you need to change it. SET to 0 for CHARGER CONTROL MODE.

– **BAUD RATE 1-3=** CANbus Baud rate, 1=125kBPS, 2= 250k (CHARGER MODE), 3=500k. 1 is the default.

– **TO UPLOAD, P/HOLD** if you are happy with the set parameters, press and hold the button on the Configurator. This will then cause the defined parameters to be upload to the BMU. The BMU LED indicator will give two short flashes to indicate success.
If you have made a mistake in setting some parameters or were just viewing, simply do a short press to scroll back to the main screen.

Notes:
1) If the number of cells in each stack is not set correctly the low and high voltage threshold outputs of the BMU will not work correctly. It will also display error messages such as LOW VOLTAGE ERROR.

2)   The cell balancing voltage threshold applies to all cells equally, regardless of the number of stacks and cells selected. It cannot be varied for different stacks.

3)   The Configurator displays the thresholds that have previously been set up in it (or the defaults). THIS MAY NOT REFLECT WHAT IS ALREADY STORED IN THE BMU. Unless the BMU is loaded with parameters from another source the Configurator will always be accurate. There is no way to read the parameters from the BMU at present. Best to manually record them.