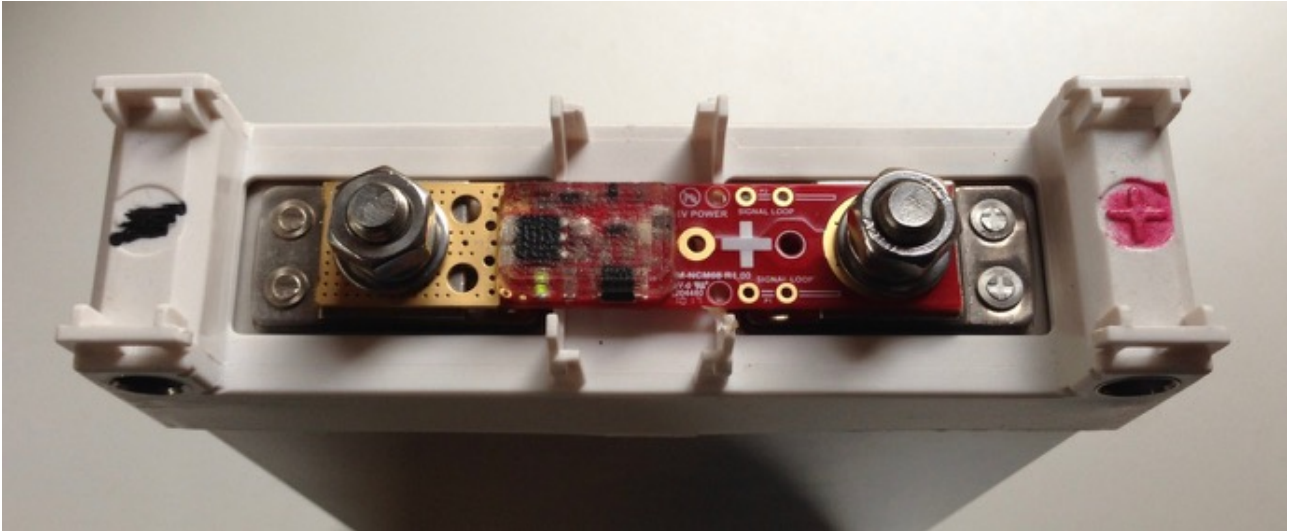




EV Power Australia Pty Ltd

DATASHEET - CBM-NCM08 ANALOG CELL BALANCING and MONITORING MODULES



EV power CBM cell balancing/monitoring modules combine simplicity and reliability to maintain Lithium NCM (Nickel Cobalt Manganese) cell balance and protection.

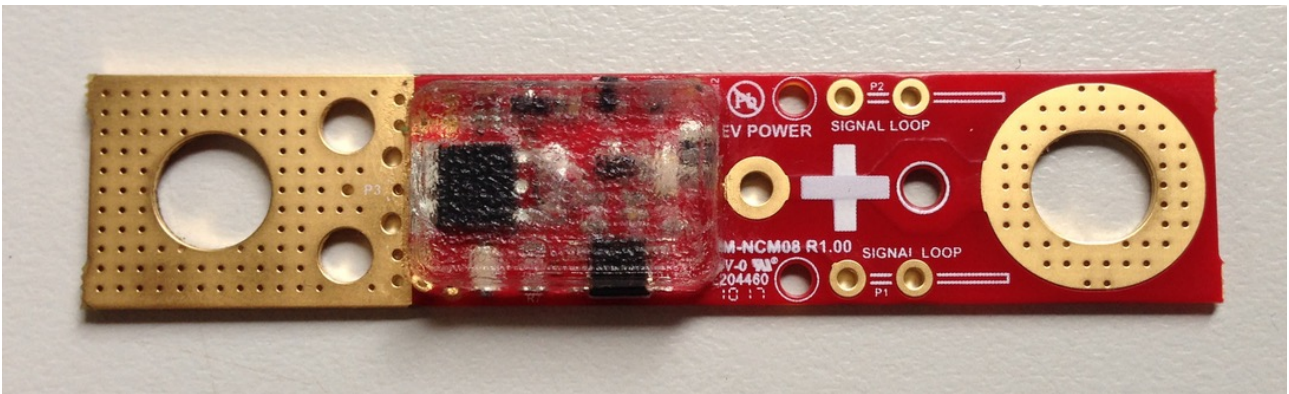
These BMS cell modules are designed to connect directly on top of prismatic NCM cells of 75-150Ah capacity. They can operate as standalone cell balancers or as part of a larger distributed battery management system. They can be daisy chained together using the proprietary one wire current loop signal interface which is normally closed if all the cells are within safe operating voltage limits and open circuit otherwise. This can be used to control chargers and loads or to interface with an EV Power Battery Control Unit (BCU).

A cell module regulates the cell to which it is attached when the voltage reaches 4.10V. This is done by shunt regulation up to 700mA. It allows unbalanced cells in a battery to even out during charging when a suitable charger is used. In this way it maintains a balanced NCM battery under normal operating conditions. Note that the cell modules cannot balance an initially unbalanced pack.

The system is designed to be failsafe. In order to operate the cell modules require a cell voltage within the recommended limits. An internal fuse protects against over-voltage and cell module failure.

CBM-NCM08 Cell Module Features

- Up to 700mA shunt balancing current
- EPOXY ENCAPSULATED (the only one on the market!)
- Commences balancing at 4.10V
- Unique EV Power patented one wire current loop NC interface, daisy chain the signal loop.
- 2.80V under-voltage, 4.25V over-voltage signalling.
- Reverse Polarity protected
- Over-voltage protection (>4.5V) via internal fuse. Module is permanently disabled.
- The lowest profile of ANY cell top BMS balancer, does not protrude above terminal bolt level.
- Gold plated connections
- Operational current ~3.5mA @ 3.70V (< 250uA below 2.9V)
- **Designed and manufactured in Australia**



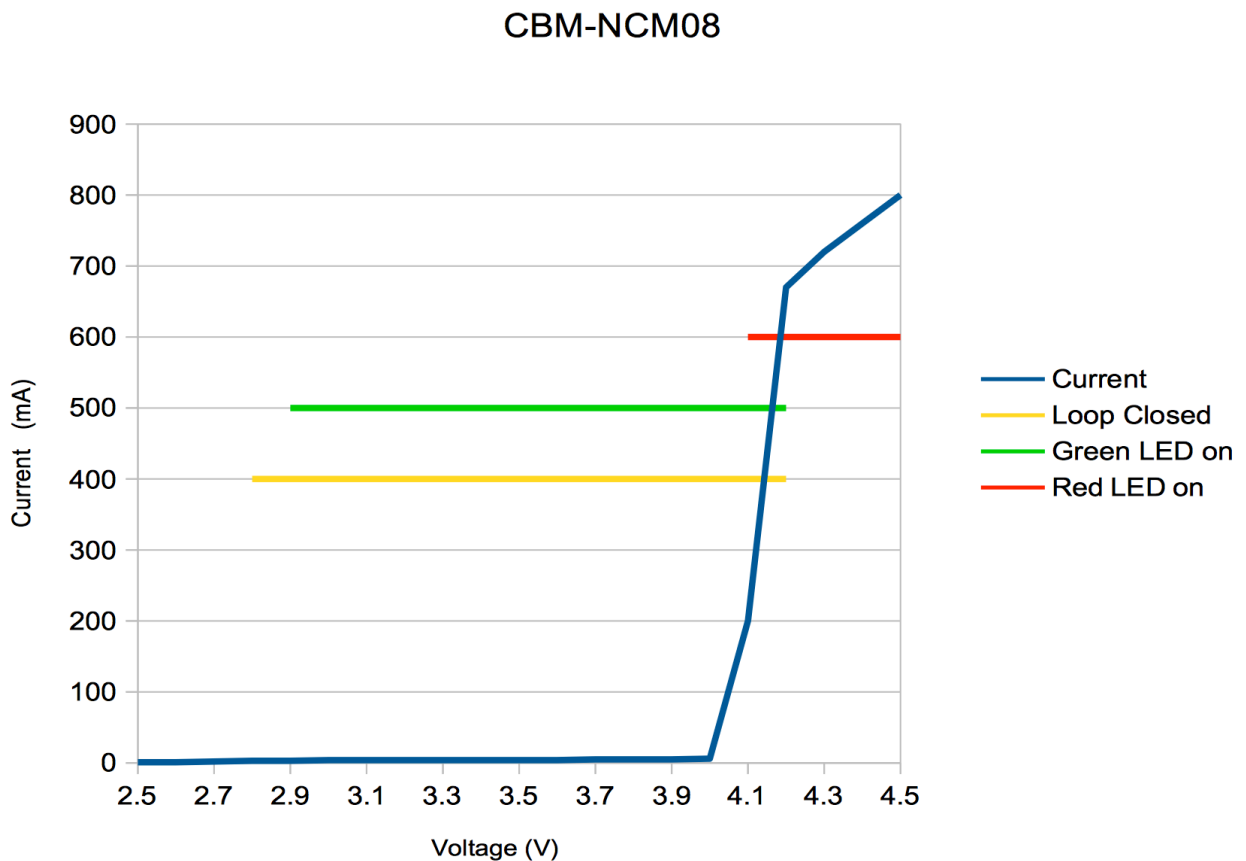
CBM-NCM08 Cell Module Specifications

Nominal Cell Voltage:	3.7V
Bypass Voltage:	4.10V (Bypass shunt will switch on)
Max. Bypass Current:	0-700mA (note: this slowly increases from 4.10V)
Weight:	<10g
Power Consumption:	< 3.5mA @ 3.7V, variance +/- 0.15 mA (<0.1Ah / month) < 250uA @ 2.8V
LED Indicators:	Green (ON=OK), Red(ON=Bypass active)
Safety Limits:	2.8V < OK < 4.25V
Current Loop Relay:	Normally closed when cell voltage is within the safety limits.
Max NC loop current:	50mA (non-polarized)
Max height above terminal bolts:	zero
Environmental:	Epoxy encapsulated against dust and moisture ingress. Gold plated terminal connections.

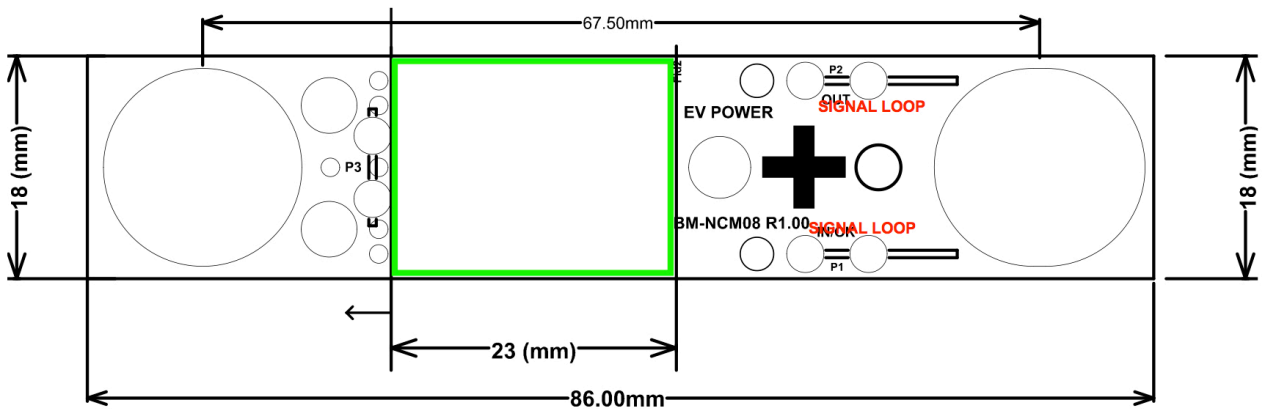
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CBM-NCM08 Cell Module Operation

- If the cell loop is closed circuit ($0.75 \text{ ohm} \times \text{number of cells}$) AND the overall battery voltage is in range then keep charge and discharge active. All ok.
- If the cell loop is open circuit AND the battery voltage is low, then disable discharge but keep charge active at $<1 \text{ Amp}$ (max 15 minutes).
- If the cell loop is open circuit AND the battery voltage is high then disable charge. Keep discharge active.
- If the cell loop is open AND the battery voltage is in normal range then one or more cells may have a problem. Disable charge and discharge, revert to service person.



CBM-NCM08 Dimensions



TS90 BATTERY MANAGEMENT SYSTEM CONNECTIONS

