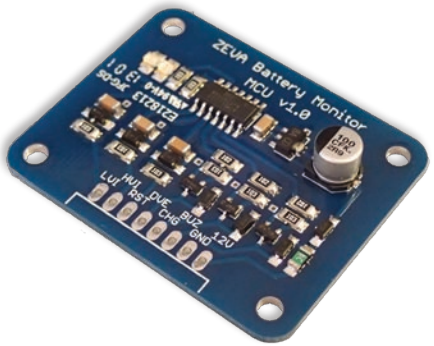
Zero Emission Vehicles Australia

http://www.zeva.com.au



Battery Monitor MCU

Reliable and economical protection for your LiFePO4 battery pack.

WHY USE A BATTERY MONITORING SYSTEM?

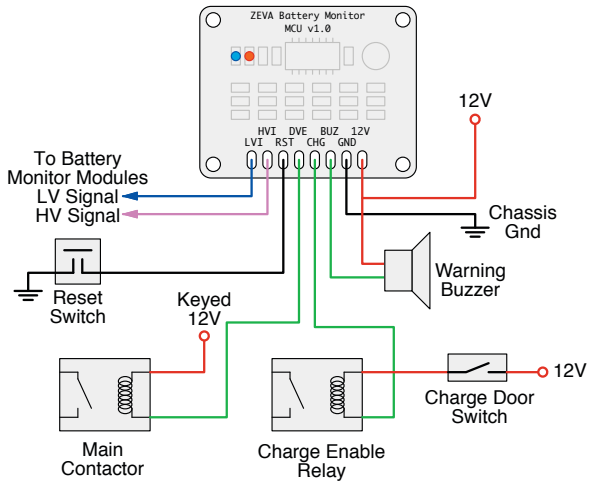
Lithium batteries can be easily damaged if their voltage goes out of safe operating range – either too high (from overcharging) or too low (over-discharging).

EV battery packs are commonly built from a large number of cells in series to achieve higher voltages. Due to manufacturing tolerances, cells always have some variation in capacity, so there will always be some cells which get full or go flat before others.

In battery packs made up of many cells in series, the overall voltage gives little indication of individual cell voltages, so it is important to have a system which monitors the voltage of each cell and take action if any individual cell goes out of range.

The ZEVA Battery Monitor Master Control Unit (BMMCU) was designed to supervise the battery monitor modules on large battery packs, to warn if any cells go out of range, and automatically disable the drive contactor and/or charge enable relay if an error condition persists.

RECOMMENDED WIRING DIAGRAM



Note: *HVI and LVI inputs may be joined together when used with single-output (combined high/low) battery monitors, including ZEVA BMM8s from V1.3 onwards.*

CONNECTIONS

- **LVI:** Low Voltage Input, signal from battery modules
- **HVI:** High Voltage Input, signal from battery modules
- **RST:** Via momentary switch to ground to reset MCU
- **DVE:** Drive output, pull-down on main contactor
- **CHG:** Charge enable output, pull-down on charge relay
- **BUZ:** Connect to -ve of warning buzzer (e.g 12V piezo)
- **GND:** Connect to chassis ground
- **12V:** Connect to permanent 12V (aux battery +ve)

INSTALLATION AND USE

This MCU was designed to work with the ZEVA Battery Monitor Modules (BMMs), and should be used with the momentary output (non-latching) variant. It can also be used with modules which use a single wire for both high/low voltage, by connecting it to both LVI and HVI.

The MCU has three “pull down” outputs, each rated at up to 2A continuous. Pull-downs connect to the negative side of loads (such as contactors and relays), and require +12V to be applied to the positive side.

- For the Drive output, connect your key-switched 12V to the positive side of your main contactor, and the negative side to the DVE pin on the BMMCU. This way the vehicle can only operate when both the key is on and the batteries are within safe range – and no power is wasted holding relays closed when the key is off.

- For the charge output, it is recommended that permanent 12V be connected through a charge door switch to the positive side of the charge relay (which can interrupt either AC power to, or DC output from, the charger). The relay negative connects to the CHG pin on the BMMCU, such that the charger can only run when the charge door is open and the batteries are within safe range.

If either LVI or HVI inputs go open circuit, the warning buzzer will sound immediately and the blue or red LEDs (respectively) will go out. If LVI remains open for more than 10 seconds, the Drive output will be disabled. If the HVI remains open circuit for more than 1 second, the Charge output will be disabled. The Reset input is used to re-enable outputs once the error condition is removed.

SPECIFICATIONS

- Power supply: 6-28V (12V nominal)
- Reverse voltage and fuse protected
- Dimensions: 48x38x10mm
- Independent high and low voltage inputs
- Outputs: 3x pull-down type (2A max)
- Dual status LEDs for visual feedback
- Low quiescent power consumption (a few mA)

TECHNICAL SUPPORT

If you have any queries not covered by this manual, feel free to contact us via our website: **www.zeva.com.au**

Products are covered against manufacturing faults for a period of 12 months from date of purchase. If you believe your module may be faulty, please contact us for RMA information.

ZEVA is a 100% carbon neutral business. All products proudly designed and manufactured in Australia.