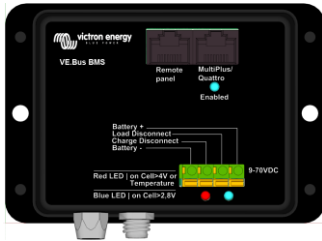


# VE.Bus BMS

www.victronenergy.com



VE.Bus BMS

### Protects each individual cell of a Victron lithium iron phosphate (LiFePO<sub>4</sub> or LFP) battery

Each individual cell of a LiFePO<sub>4</sub> battery must be protected against over voltage, under voltage and over temperature.

Victron LiFePO<sub>4</sub> batteries have integrated Balancing, Temperature and Voltage control (acronym: BTV) and connect to the VE.Bus BMS with two M8 circular connector cord sets.

The BTV's of several batteries can be daisy chained. Please see our LiFePO<sub>4</sub> battery documentation for details.

The BMS will:

- shut down or disconnect loads in case of imminent cell under voltage,
- reduce charge current in case of imminent cell overvoltage or over temperature (VE.Bus products only, see below), and
- shut down or disconnect battery chargers in case of imminent cell overvoltage or over temperature.

### Protects 12 V, 24 V and 48 V systems

Operating voltage range of the BMS: 9 to 70V DC.

### Communicates with all VE.Bus products

The VE.Bus BMS connects to a MultiPlus, Quattro or Phoenix inverter with a standard RJ45 UTP cable.

Other products, without VE.Bus can be controlled as shown below:

#### Load Disconnect

The Load Disconnect output is normally high and becomes free floating in case of imminent cell under voltage. Maximum current: 2 A.

The Load Disconnect output can be used to control

- the remote on/off of a load, and/or
- the remote on/off of an electronic load switch (Battery Protect) and/or
- a Cyrix-Li-load relay.

#### Charge Disconnect

The Charge Disconnect output is normally high and becomes free floating in case of imminent cell over voltage or over temperature. Maximum current: 10 mA.

The Charge Disconnect output can be used to control

- the remote on/off of a charger and/or
- a Cyrix-Li-Charge relay and/or
- a Cyrix-Li-ct Battery Combiner.

#### LED indicators

- **Enabled (blue):** VE.Bus products are enabled.
- **Cell>4V or temperature (red):** charge disconnect output low because of imminent cell over voltage or over temperature.
- **Cell>2,8V (blue):** load disconnect output high.

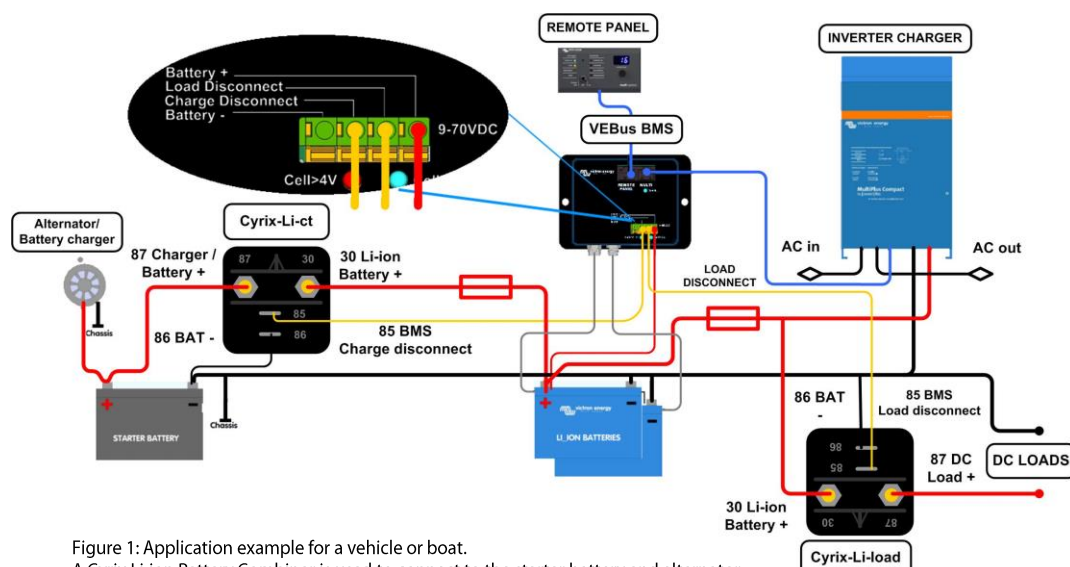


Figure 1: Application example for a vehicle or boat.

A Cyrix Li-ion Battery Combiner is used to connect to the starter battery and alternator. The UTP cable to the inverter/charger also provides the minus connection to the BMS.

VE.Bus BMS	
Input voltage range	9 – 70 VDC
Current draw, normal operation	10 mA (excluding Load Disconnect current)
Current draw, low cell voltage	2 mA
Load Disconnect output	Normally high Source current limit: 2 A Sink current: 0 A (output free floating)
Charge Disconnect output	Normally high Source current limit: 10 mA Sink current: 0 A (output free floating)
GENERAL	
VE.Bus communication port	Two RJ45 sockets to connect to all VE.Bus products
Operating temperature	-20 to +50°C 0 - 120°F
Humidity	Max. 95% (non condensing)
Protection grade	IP20
ENCLOSURE	
Material and color	ABS, matt black
Weight	0,1 kg
Dimensions (hxxwxd)	105 x 78 x 32 mm
STANDARDS	
Standards: Safety Emission Immunity Automotive	EN 60950 EN 61000-6-3, EN 55014-1 EN 61000-6-2, EN61000-6-1, EN 55014-2 Regulation UN/ECE-R10 Rev.4

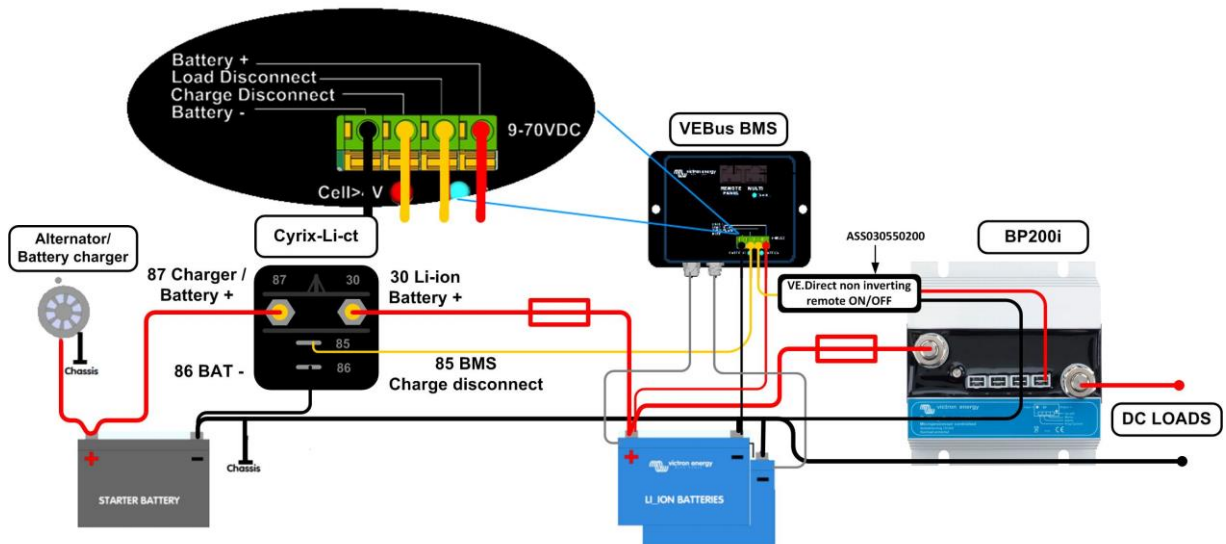


Figure 2: Application example for a vehicle or boat, without inverter/charger.  
Here a BatteryProtect BP200i is used to disconnect the load, instead of a Cyrix-Li-Load.



### Six Cyrix Combiners especially designed for use with the VE.Bus BMS:

#### Cyrix-Li-load (120A or 230A)

The Cyrix-Li-Load will prevent frequent switching when a low cell voltage is followed by a higher voltage after loads have been switched off.

Note: instead of a Cyrix-Li-Load, a BatteryProtect may also be used (see figure 2).

#### Cyrix-Li-ct (120A or 230A)

A battery combiner with a Li-ion adapted engage/disengage profile and a control terminal to connect to the Charge Disconnect of the BMS.

#### Cyrix-Li-Charge (120A or 230A)

A unidirectional combiner to insert in between a battery charger and the LFP battery. It will engage only when charge voltage from a battery charger is present on its charge-side terminal. A control terminal connects to the Charge Disconnect of the BMS.