

# Smart BMS 12/200

Protects the alternator against overload

[www.victronenergy.com](http://www.victronenergy.com)

## Battery Management system

The BMS connects to 12,8V Victron LiFePO4 (LFP) batteries. Up to 5 batteries may be connected in parallel. Can be used as a system on/off switch.

## Starter battery Protection

This function is similar to that of a Cyrix Battery Combiner or Argo FET Battery Isolator. Current can flow to the LFP battery only if the input voltage (= voltage on the starter battery) exceeds 13V. Additionally current cannot flow back from the LFP battery to the starter battery, thus preventing eventual damage to the LFP battery due to excessive discharge.

## Alternator and battery protection

The input current is electronically limited to approximately 90% of the fuse rating. A 100A fuse, for example, will therefore limit the input current to approximately 90A.

Choosing the right fuse will:

- Protect the LFP battery against excessive charge current (important in case of a low capacity LFP battery).
- Protect the alternator against overload in case of a high capacity LFP battery bank (most 12V alternators will overheat and fail if running at maximum output during more than 5 minutes).

## Load/battery charger output-input (Power Port SYSTEM+)

This Power Port can be used to either charge or discharge the LFP battery (i.e. via a charger, an inverter or inverter/charger) with a maximum continuous current of 200A in both directions.

Can also be used as a load output, thus DC loads can be connected directly to this port. The port is short-circuit protected with a peak discharge current of 400A.

The Smart BMS will make sure that the battery discharge will cut-off in case of imminent cell under voltage.

The Smart BMS will enable charging through this port, but no charge algorithm can be applied internally.

## Li-ion battery protection

Excessive input voltage and transients are regulated down to a safe level.

The Smart BMS will stop charging in case of cell over voltage or over temperature. It has three outputs, similar to the smallBMS:

### Load Disconnect output

The Load output is normally high and becomes free floating in case of imminent cell under voltage (default 2,8V/cell, adjustable on the battery between 2,6V and 2,8V per cell). Maximum current: 10mA. The Load output can be used to control the remote on/off input of a Battery Protect, inverter, DC-DC converter or other loads.

### Pre-Alarm output

The pre-alarm output can be used as warning when the battery voltage is low and it will trip shortly before the Load Disconnect output is disabled due to cell under voltage.

The pre-alarm output may be used to drive a relay, LED or Buzzer. It can be configured as continuous or intermittent signal.

The pre-alarm output is normally free floating and becomes high in case of imminent cell under voltage (default 3,1V/cell, adjustable on the battery between 2,85V and 3,15V per cell). Maximum current: 1A (not short circuit protected)

The minimum delay between pre-alarm and load disconnect is 30 seconds.

### Charge disconnect output

The Charge disconnect output is normally high and becomes free floating in case of imminent cell over voltage or over temperature. Maximum current: 10mA. The Charge disconnect output is not suitable to power an inductive load such as a relay coil. The Charge disconnect output can be used to control: the remote on/off of a charger, a Cyrix-Li-Charge relay, a Cyrix-Li-ct Battery Combiner.

(Note: in some cases an interface cable will be needed, please see the manual.)

## Remote on/off input

The remote on/off input controls the charging via the alternator. When off, charging via the alternator is disabled, while the BMS functionality will remain active allowing any loads and chargers to continue working regardless of the state of the remote input.

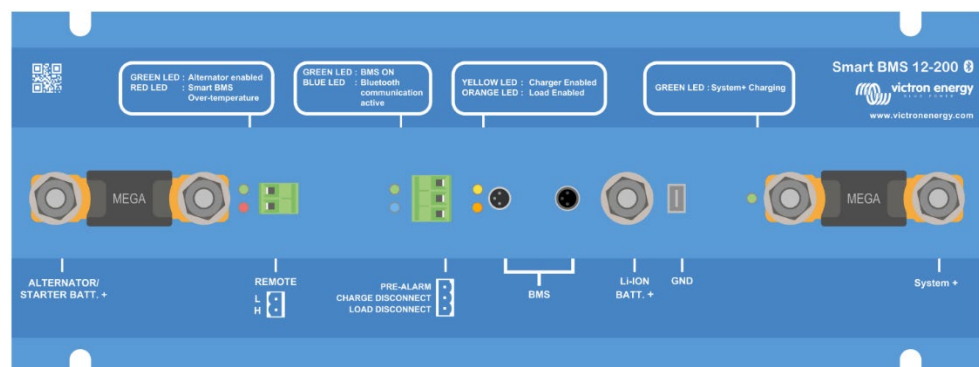
When "system on/off switch" is enabled via VictronConnect, the BMS functionality will also be disabled.

It consists of two terminals: Remote L and Remote H. A remote on-off switch or relay contact can be connected between H and L.

Alternatively, terminal H can be switched to battery plus, or terminal L can be switched to battery minus

## Ignition proof

No relays but MOSFET switches, and therefore, no sparks.



<b>Smart BMS 12V / 200A</b>	
Maximum continuous charge current	100A (with 125A fuse)
Maximum charge current, Port SYSTEM+	200A
Maximum discharge current, Port SYSTEM+	200A
Peak discharge current	400A
Input voltage to start charging	> 13V
Current consumption, no load operation	16 mA (excluding Load output and Charge output current)
Current consumption, remote off	5 mA (BMS functionality active)
Load disconnect output	Normally high (Vbat - 0.1V) Source current limit: 10mA (short circuit protected) Sink current: 0A (output free floating)
Charge disconnect output	Normally high (Vbat - 0.1V) Source current limit: 10mA (short circuit protected) Sink current: 0A (output free floating)
Pre-alarm output	Normally free floating High (Vbat) in case of alarm, max. 1A (not short circuit proof)
System on/off: Remote L and Remote H	Use modes of the system on/off: a. ON when the L and H terminal are interconnected b. ON when the L terminal is pulled to battery minus (V < 5V) c. ON when the H terminal is high (V > 3V) d. OFF in all other conditions
<b>GENERAL</b>	
Operating temperature range	-40°C to +60°C
Humidity, maximum / average	100% / 95%
Protection, electronics	IP65
DC power connection	M8
DC connector battery minus	Faston female, 6.3mm
<b>ENCLOSURE</b>	
Weight	2kg
Dimensions (hwxwd)	65 x 120 x 340 mm
<b>STANDARDS</b>	
Emission	EN 61000-6-3, EN 55014-1
Immunity	EN 61000-6-2, EN 61000-6-1, EN 55014-2
Automotive EMC Directive	ECE R10-5

System example with MultiPlus-II

