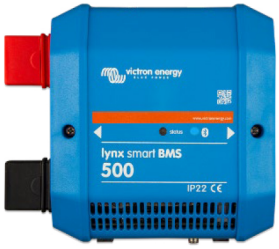
Battery Management System (BMS) Overview

www.victronenergy.co.nz

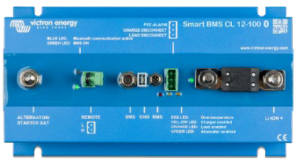
SmallBMS with pre-alarm

VE.Bus BMS V2

VE.Bus BMS



Lynx Smart BMS



Smart BMS CL 12/100

Smart BMS 12/200

BMS 12/200

Feature highlights common to all models:

- Specifically designed for use with our Lithium Battery 12,8V & 25,6 V Smart battery range.
- Communicates directly with the lithium battery via the battery's M8 circular connector cables.
- Protects the lithium battery cells from overvoltage, under voltage or a too low or high temperature by turning off loads or charge sources via its "load disconnect" and "charge disconnect" terminals.
- Up to 5 paralleled batteries, or paralleled battery series strings can be connected to the BMS.

System Voltages:

- The SmallBMS, VE.Bus BMS V2, VE.Bus BMS and the Lynx Smart BMS can connect to a 12, 24 or 48 V system.
- The other BMS models can only connect to a 12 V system.

System connection:

- The SmallBMS, VE.Bus BMS V2 or VE.Bus BMS require that all loads and charge sources are directly connected to the battery. The BMS turns them off in case of a battery cell voltage or temperature alarm via the "load disconnect" and "charge disconnect" terminals.
- The Lynx Smart BMS has a safety DC contactor. It disconnects the system from the battery or battery bank in case of a battery cell voltage or temperature alarm and can be used as a main system on/off switch.
- The Smart BMS 12/200 and the BMS 12/200 have a dedicated system output to which both loads, and chargers can be connected. The system output will disconnect in case of a battery cell voltage or temperature alarm.

Alternator:

- The Smart BMS CL 12/100, Smart BMS 12/200 and the BMS 12/200 have a dedicated alternator input. This input wil activate when the alternator is running, and the starter battery has reached a sufficient voltage. It will current limit the alternator supply and blocks reverse current from the lithium battery into the starter battery. It disconnects in case of a battery cell voltage or temperature alarm.
- The Lynx Smart BMS has an alternator ATC mode, so additional alternator protection is not needed.

Pre-alarm options:

- All models have a pre-alarm output with exception of the BMS 12/200.

Remote on/off options:

- All models have a "remote on/off" terminal with the exception of the VE.Bus BMS.
- The "Smart" BMS models can also be turned on and off via Bluetooth and the VictronConnect app.

Bluetooth and the VictronConnect app

- All "Smart" BMS models are equipped with Bluetooth and can be monitored, operated, and configured via the Victron Connect app. The Lynx Smart BMS also supports Bluetooth live data advertisement.

Battery monitor

- The Lynx Smart BMS has a full-featured built-in battery monitor.

Communication options:

- The VE.Bus BMS and VE Bus BMS V2 can directly control a VE.Bus inverter or inverter/charger in case of a battery cell undervoltage, overvoltage or temperature alarm.
- The VE.Bus BMS V2 and Lynx Smart BMS can be used for communication or control via a GX device and can control compatible inverter/chargers and solar chargers via DVCC control without the need to use the load and/or charger disconnect terminals.
- The Lynx Smart BMS can monitor up to 4 Lynx distributor modules.

Optional accessories:

- The VictronConnect app (free download) for "Smart" BMS modules.
- Pair of M8 circular connector 3 pole cables, to extend the battery BMS cables.
- Cable for Smart BMS CL 12/100 to MultiPlus.
- VE.Direct non inverting remote on/off cable.
- Inverting remote on-off cable.
- Non inverting remote on-off cable.

System design recommendations:

- The **SmallBMS** for 12 , 24 or 48 V systems without inverter/chargers.
- The **VE.Bus BMS V2** for 12, 24 or 48 V systems with inverter/chargers and a GX device
- The **VE.Bus BMS** for 12, 24 or 48 V systems with inverter/chargers.
- The **Lynx Smart BMS** for 12, 24 or 48 V systems with digital integration and with the need to have a safety relay to disconnect DC loads and/or inverters or inverter/chargers, like is the case in yachts or recreational vehicles.
- The **Smart BMS CL 12/100** for 12 V systems with an alternator.
- The **Smart BMS 12/200** – for 12 V systems with an alternator and DC loads and an inverter or inverter/charger.
- The **BMS 12/200** for 12 V systems with an alternator and DC loads but without an inverter/charger. Be aware that this model is end-of-life and will switch battery positive instead of the negative. Consider using a Smart BMS 12/200 instead.

AEP Pacific 1 Ride Way, Rosedale, Auckland, NZ T: 09 4145520 E: sales@aeppacific.co.nz

Comparison overview:

- The below overview is a comparison and a brief summary of the BMS features. For full technical specifications, see the individual BMS datasheets.

Features	Small BMS	VE.Bus BMS V2	VE.Bus BMS	Lynx Smart BMS	Smart BMS CL 12/100	Smart BMS 12/200	BMS 12/200
System voltage	12, 24 or 48 V	12, 24 or 48 V	12, 24 or 48 V	12, 24 or 48 V	12 V	12 V	12 V
System connection	No	No	No	500 A	No	200 A	200 A
Alternator port	No	No	No	Yes (Alternator ATC mode)	100 A	100 A	80 A
Battery monitor	No	No	No	Yes	No	No	No
Bluetooth	No	No	No	Yes	Yes	Yes	No
Data communication	No	VE.Bus communication with inverter/charger(s) and a GX device.	VE.Bus communication only direct with inverter/charger(s), not with a GX device.	VE.Can communication with a GX device NMEA 2000	No	No	No
Control via GX device (DVCC)	No	Yes	No	Yes	No	No	No
Allowed to discharge terminal(s)	High/free floating 1 A	High/free floating 1 A	High/free floating 2 A	Relay 0.5 A	High/free floating 10 mA	High/free floating 10 mA	No
Allowed to charge terminal(s)	High/free floating 10 mA	High/free floating 10 mA	High/free floating 10 mA	Relay 0.5 A	High/free floating 10 mA	High/free floating 10 mA	No
Pre-alarm terminal(s)	Free floating/high 1 A	Free floating/high 1 A	Free floating/high 1 A	Programmable relay 2 A	Free floating/high 1 A	Free floating/high 1 A	No
Remote on/off terminal	Yes	Yes	No	Yes	Yes	Yes	Yes
Auxiliary output	No	Yes, 1 A	No	Yes, 1.1 A	No	No	No
Auxiliary input	No	Yes, 1 A	No	No	No	No	No
Possible to update firmware	No	No	No	Yes	Yes	Yes	No
Weight (kg)	0.1	0.12	0.1	1.9	1.6	2.0	1.8
Dimensions (mm)	106 x 42 x 23	24 x 95 x 106	105 x 78 x 32	190 x 180 x 80	65 x 120 x 224	65 x 120 x 340 mm	65 x 120 x 260
Protection	IP20	IP20	IP20	IP22	IP65	IP65	IP65
Remarks	-	-	End-of-life, use a VE.Bus BMS V2 instead	Is part of the Lynx Distribution System A future 1000 A model will replace this model	-	-	End-of-life, use a Smart BMS 12/200 instead

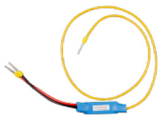
Lithium Battery 12,8V & 25,6V Smart

M8 circular connector 3 pole cable

Cable for Smart BMS CL 12/100 to MultiPlus

VE.Direct non inverting remote on/off cable

Inverting remote on-off cable



Non inverting remote on-off cable