**Lynx Ion**

**See document ‘updating new firmware to the Lynx Ion’ for update instructions.**

**Change log:**

**v1.21  April 8th 2014**

Changes:

* Battery SOC is no longer lost during a shutdown (both manual shutdown, and automatic shutdowns due to under voltage or other error conditions)
* Added automatic recovery from a low voltage shutdown:
After the Lynx Ion has shut down (opened the main contactor) due to under voltage, it will continuously monitor voltage on its output. When it sees a voltage 2V higher than battery bank voltage, it will close the relay. It then checks the battery current: if the batteries are charged, it keeps the contactor closed. In case the batteries are being discharged, because the available charge power is not sufficient, it opens the main contactor again. After 5 unsuccessful retries it will stop retrying.
* Added historic data: error-shutdown counter, and highest and lowest cell voltage ever recorded.
* Added charger-control via VE.Can: the Lynx Ion will use VE.Can to control connected chargers. It is therefore no longer necessary to wire the Allow-to-charge terminals to the charger or a contactor. Note that this only works on chargers that support VE.Can BMS-Control. At the moment this is only the MPPT Solar charger controller 150/70, with firmware version v2.01 or higher.
* Improved VE.Can stability
* Improved general system stability

**v1.19-15-5-2013**

Changes:

* Bilge pump output is now configured to give status led output functionality by default. It can be configured to function as the original bilge pump output with a software tool. Tool is available on request.
* Fixed contactor voltage bug: on short high currents, the Lynx Ion could go in alarm and open the main contactor.

**v1.18​–2-4-2013**

Changes:

* Support for REV2 hardware. The differences between REV1 and REV2 hardware are
	+ Reduction in power consumption in standby mode. See manual for the reduction. Firmware also supports REV1 hardware.
	+ REV2 hardware is easier to update, see How to upload new firmware document for details.
* Changed LED behavior in standby mode, the LED is now always off, instead of blinking rapidly
* Changed LED and BEEP behavior when an error occurs. See manual for more information.
* System goes to standby after 10 minutes in error mode.
* Added key functionalities:
	+ When in error or running mode the system can be set into standby by holding the START key pressed.
	+ When in error mode and the START key is shortly pressed it will restart the system.
* When an extra battery is connected to the BMS CAN-Bus of a running system an error will occur.
* System saves the last 4 errors occurred. Requires Ion Control firmware version 1.07 or higher.

**v1.15​–22-1-2013**

Changes:

* Fixed temperature shutdown mechanism. The new rules are:

Stop charging and discharging at +60C (charge and discharge contact off)
Charge and discharge alarm at +65 (main contactor open)

Stop charging at -5C (charge contact off)
Stop discharging at -20C (discharge contact off)

Charging alarm at -10C and current > 10A (main contactor open)
Discharging alarm at -25C and current < -10A (main contactor open)

Previous versions opened the big contactor already at 0C for under-temperature protection.

**​***Known issues:*

* It will not start when connected to other VE.Can products. After connecting it to the batteries, the LED will be constant green, instead of blinking rapidly, and it will not respond when you the start-button is pressed. Workaround is to disconnect it from the rest of the VE.Can network, then restart it by pressing the reset button on the bottom (the left one), and after proper power up reconnect the rest of the VE.Can network.

**v1.14​–9-10-2012**

Changes:

* Added and enabled balancing
* Fixed lynx shunt life-timer bug
* Added reset functionality to the front button (it now works as a system on/off pushbutton)
* Fixed bug in min and max cell voltages

**v1.13​–3-8-2012 – this version has serious bugs, do not use it**

Changes:

* Improved handling of invalidated data. Fixes bug where SOC and TTG where shown incorrectly in an unsynchronized situation.

*Known issues:*

* It resets now and then, opening the main relay and causing a black-out (lynx shunt life-timer bug)
* Min and max cell voltage are incorrect

**​v1.12 – 31-7-2012**

Changes:

* Fixed invalidate values if shunt goes offline.
* Added the sending of all history values from shunt.
* Fixed discharge issue (after discharged first charge it with 5Ah before enabling discharger again)
* Fixed error set in initializing state of BMS.
* Fixed "delay" in beeping on error set.
* Changed sending of battery status / detailed status only when BMS is running.
* Added sending battery status(instance 1: minimal cell voltage)
* Added sending battery status(instance 2: maximum cell voltage)
* Added sending cell voltages of every battery
* Fixed start-up sequence for use with more than 2 batteries connected to the bus.
* Added support for sending n2k message per battery. Only the first 16 batteries.
* Added support for connecting 48 batteries to the BMS-bus.

**v1.11 - 14-6-2012**

Changes:

* Added lynx shunt set low soc to 10%
* Changed peukert coeff. to 1.00.

**v1.10 – 10-6-2012**

Changes:

* Fixed bug in synchronizing shunt when charged

**v1.00 – 6-6-2012**

Initial version