

BMS Firmware Release Notes

Version	Changes
v2.3.257	*Fixed: Regional number format(available with the new <i>Battery Insider</i> v2.5.3.3 version), OP gate open after fully charge, Fix for external current sensor min/max safety setting. *New feature: New event added for charge restart level. *New feature: wakes up from sleep less than 30ms. *<i>Battery Insider</i> v2.5.3.3 or later version is required.
v2.3.256	*Improved: current calculation and calibration for PCB2.2 Lowpower
v2.3.255	*Improved: Faster current calculation and calibration. *Fixed: Discharge over current cutoff occurs irrespective of charger connection status(Dual port mode).
v2.3.254	* New feature: Charge Restart Level
v2.3.252	* Improved: Current measurement accuracy * New feature: Low power board min and max values
v2.3.251	* New feature: Discharge over-current cutoff timeout. * New feature: Discharge peak current cutoff. * New feature: Charger startup delay. * New feature: Charger disable delay. * New feature: Battery maximum cycle count. * New feature: Multipoint temperature sensor power control for <i>PCB</i> v2.2. * New feature: State of Health calculation. * New feature: High power board min and max values * <i>Battery Insider</i> v2.5.1.0 or later version is required.
v2.3.250	* Fixed: entry to sleep mode sequence (instant wake-up) when the SOC-BAR module is connected.
v2.3.249	* Improved: option to select external current sensor type. * Improved: internal charger detection procedure. * Improved: fully charged state recovery procedure. * <i>Battery Insider</i> v2.5.0.9 or later version is required.
	Company rebranded to Enepaq
v2.3.248	* New feature: option to select external current sensor type (dual range type <i>DHAB S/133</i> or cheaper single range type sensors). * <i>Battery Insider</i> v2.5.0.8 or later version is required.
v2.3.247	* Internal release.
v2.3.246	* Improved: internal self-tests safety procedures.
v2.3.245	* Improved: initialization procedure after <i>BMS</i> restart. * Improved: <i>SOC-BAR</i> indication when <i>BMS</i> is in the charging state.
v2.3.244	* Improved: current measurement. * Improved: watchdog initialization. * Fixed: <i>UART</i> communication <i>Read Battery Pack Voltage</i> command.
v2.3.243	* Improved: current measurement. * Improved: over-current fault detection (rejected short current peaks). * Improved: charging finish logic. * Improved: <i>SOC</i> calculation in sleep mode (high battery capacity). * Improved: load/charger switch diagnostics feature. * Improved: <i>Ignition</i> feature (disabled unexpected load output toggling due to load

	measurement. Load measurement are only made in certain cases). * Fixed: internal 5V power supply remains disabled after wakeup from sleep mode due to <i>UART</i> communication, when <i>Ignition</i> feature is activated (unexpected large negative current measurement value). * New feature: possibility to invert external current sensor direction (available with the new <i>Battery Insider v2.5.0.6</i> version). * New feature: possibility to disable load/charger switches diagnostics (available with the new <i>Battery Insider v2.5.0.6</i> version).
v2.3.242	* Improved: current and cell voltage measurement accuracy.
v2.3.241	* Fixed: charging not starting on <i>PCB v2.1</i> hardware version when <i>Fully Discharged Warning</i> occurred, charger is connected, <i>Charger Switch Type</i> configured as <i>Charge FET</i> and <i>Load Switch Type</i> configured as <i>Discharge FET</i> .
v2.3.240	* Improved: external charger detection feature.
v2.3.239	* New feature: possibility to turn off automatic <i>BMS</i> fault state recovery. * Improved: charging finish logic (disabled charger switch toggling when charger voltage is too high). * Improved: <i>Charge Finished Current</i> setting maximum value (<i>Charger Switch Type</i> dependent). Fixed: external current sensor inverted current flow direction.
v2.3.238	* Fixed: unexpected random <i>AFE</i> driver crash bug. * Fixed: cells balancing bug, where balancing the last balanced cells is not disabled when cells disbalance becomes lower than the allowed disbalance.
v2.3.237	* Improved: <i>BMS</i> up time calculation in sleep mode. * Improved: <i>Battery Insider</i> events timestamp initialization after <i>BMS</i> restart. * Improved: <i>BMS</i> state detection.
v2.3.236	* Support for <i>Hardware v2.3</i>, <i>v2.0</i> no longer supported. * Support for <i>Battery Insider v2.5.0.5</i> or later. * Updated: <i>BMS Register Map</i> and <i>Event Message List</i>. * New feature: cells voltages measurement in sleep mode when <i>Ignition</i> feature is disabled. * New feature: temperature faults recovery in <i>BMS</i> sleep mode when <i>Ignition</i> feature is disabled. * New feature: <i>BMS</i> load and charger switches self diagnostic (<i>BMS</i> generates warning sound when <i>BMS</i> detects charging/discharging current, but switches should be closed). * New feature: <i>BMS Single Port</i> operation mode. * New feature: load relay/contactor precharge. * Improved: <i>LED</i> functionality to lower <i>BMS</i> power consumption in active state. * Improved: <i>BMS</i> up time calculation in sleep mode. * Improved <i>BMS</i> fault detection logic: <i>BMS</i> can detect more than one fault at a time. * Improved: charger detection logic: charging current is not monitored for charger detection, if external <i>Charger Detection</i> pin is used. * Improved: external current sensor detection logic. * Improved: external current sensor measurement for high current ranges. * Improved: external inputs/outputs settings security.
v2.3.235	* Internal release.
v2.3.234	* Fixed: over-current cutoff settings values changing to default values after reset <i>BMS</i> when external current sensor is used.
v2.3.233	* Improved: added 20 sec. timeout to detect charger connected for slower chargers.
v2.3.232	* New feature: <i>DIDOX</i>, <i>AIHOxAL</i>, <i>AIHOxAH Load Switch Type</i> settings. * New feature: activated <i>AIHOxAH Charger Switch Type</i> settings.

	* Improved: removed <i>Charger Disconnected</i> event message after reset <i>BMS</i>. * Improved: cell balancing algorithm. ** Cells balancing enabled, if voltage is higher than minimum cell voltage minus allowed disbalance. ** Reduce percentage of cells balancing, if <i>BMS</i> temperature exceeds safe limit.
v2.3.231	* New feature: multipint <i>NTC</i> sensor temperature measurement. * Improved: dual <i>NTC</i> sensor temperature measurement.
v2.3.230	* New feature: <i>UART-CAN</i> converter supported. * Improved: <i>BMS</i> statistics calculation. * Improved: fully discharge exception logic (allowed to charge). * Improved: <i>ASCII</i> broadcast protocol. * Fixed: <i>UART MODBUS</i> commands errors.
v2.3.229	* New feature: <i>SOC</i> calculation in sleep mode. * New feature: <i>Battery Insider SOC-BAR</i> menu settings. * Improved: optimized energy consumption in sleep mode. * Improved: turning off <i>5V</i> internal power supply in sleep mode. * Fixed: <i>SOC-BAR</i> indicator blinking. * Improved: <i>Number of Series Cells</i> setting minimum value changed to 4 cells. * Improved: compatibility with v2.0, v2.1 and v2.2 <i>PCB</i> versions.
v2.3.228	* New feature: charger external detection. * New feature: activated <i>Charger Switch Type DIDOx</i> and <i>AIHOxAL</i> settings. * New feature: supported hardware version <i>PCB</i> v2.2. * Improved: external inputs/outputs settings security.
v2.3.227	* Improved: low temperature cutoff logic. * Improved: external inputs/outputs settings security. * Fixed: unexpected <i>BMS</i> restart while writing new settings. * Fixed: unexpected <i>BMS</i> jump to bootloader while writing new settings.
v2.3.226	* New feature: <i>Ignition</i> input to enable/disable <i>BMS</i>. * Improved: power management during sleep. * Improved: fully discharged cutoff logic (charger turned off only when <i>Charger Switch Type – Charge FET</i>). * Fixed: <i>Battery Insider</i> reset <i>BMS</i> feature when <i>Load Swich Type – AIDOx</i> and <i>Charger Switch Type – AIDOx</i>. * Fixed: unexpected charger disconnection when <i>Ignition</i> pin is selected.
v2.3.225	* Improved: under-voltage cutoff exception logic. * Fixed: disabled input pullup resistors. * Fixed external current sensor detection.
v2.3.224	* New feature: cells balancing in regeneration state. * Improved: power management in sleep state when <i>BMS</i> is in fault state.
v2.3.223	* Fixed: <i>BMS</i> freeze when charging.
v2.3.222	* Improved: <i>SOC-BAR</i> functionality (disable before sleep). * Improved: <i>UART</i> communication wakeup from sleep mode using external interrupt. * Improved: added 3 sec. <i>UART</i> communication timeout. * Fixed: temperature value in <i>CAV3</i> protocol.
v2.3.221	* Improved: current limit changes when external current sensor is connected. * Improved: <i>Charge Finished Current</i> and charger disconnection thresholds. * Improved: external temperature sensor measurement. * Improved: sleep management. * Fixed: pack voltage measurement.

	* Fixed: charger detection (connection and disconnection). * Fixed: charging algorithm (<i>CFET</i> toggle).
v2.3.220	* Improved: cells balancing algorithm. * Improved: backup data saved to <i>EEPROM</i>. * Improved: power management in sleep state. * Changed: speed value to <i>km/h</i>.