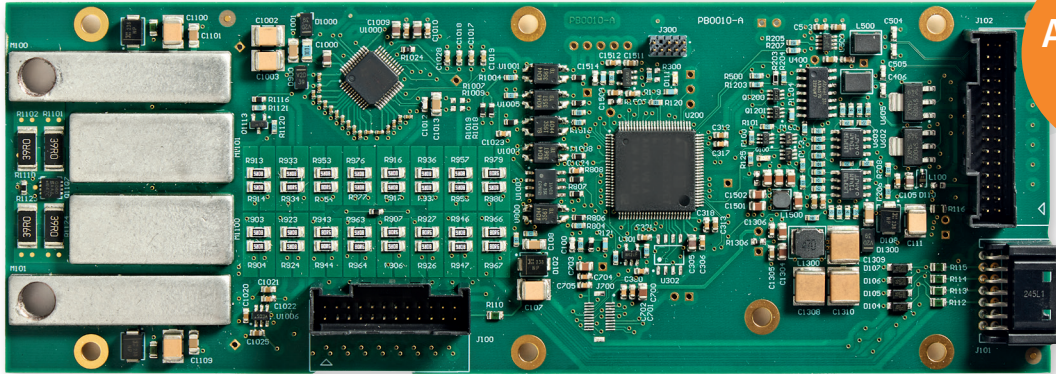




## LO-BMS16-MA™

Lithium Optima Battery Management System with 16 voltage channels – Monolithic design



Advanced version

### PRODUCT DESCRIPTION

**LO-BMS16-MA™** is a cost efficient BMS for 15-60V Lithium Batteries. It is the first BMS designed for Industrial and Light automotive applications, that is compliant with **ISO13849 PL C** level for systems out of context.

With integrated AI and Fuzzy logic-based algorithms, the product offers state of the art precision and robustness on all relevant performance indicators such as **SOC**, **SOH** and **SOP**. The BMS maintains a fast and stable balancing of all cells allowing longer life and faster charge times.

**LO-BMS16-MA™** is amongst the first stand-alone BMS products that offers cybersecurity compliance.

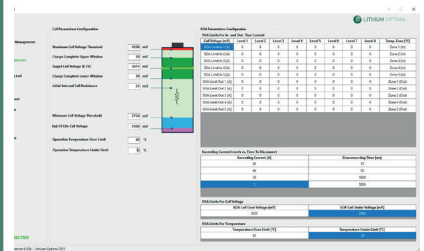
The licensed **LO-BMS16-MA™** toolbox with BMScript™ includes on-target Scripting, configuration, live-view, logging and monitoring. Allows the battery Engineer a user-friendly, accelerated journey to a safe battery with ultimate flexibility and optimal performance.

### APPLICATION ADVANTAGES

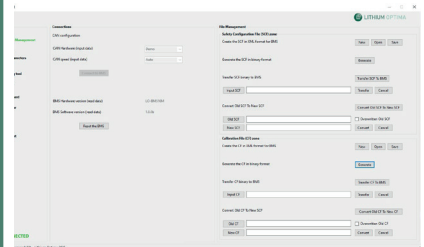
**LO-BMS16-MA™** is extremely versatile, MONOLITIC design that integrates all key functions of a BMS

- Shorter charge time through improved balancing
- Better utilization of battery capacity by more accurate and robust SOC
- Longer battery life due to better estimation of SOH
- Improved power utilization by more accurate SOP estimation
- Faster battery design through user-friendly and extremely flexible configuration tool
- Lower cost through integrated MONOLITIC design with state-of-the-art chipset

#### OPTIMIZER – Safety settings



#### OPTIMIZER – File upload



#### OPTIMIZER – Live view



The LO-BMS16-MA™ provide Optimal Support for the following applications:



AGV



Scooter



3 wheeler



Forklift



Robot



Drone



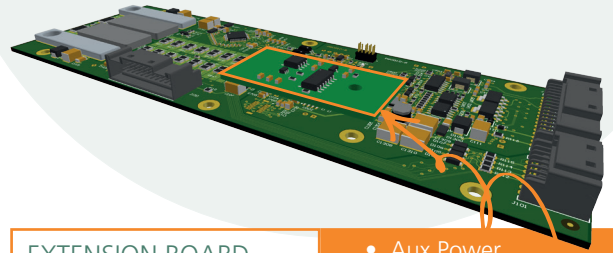
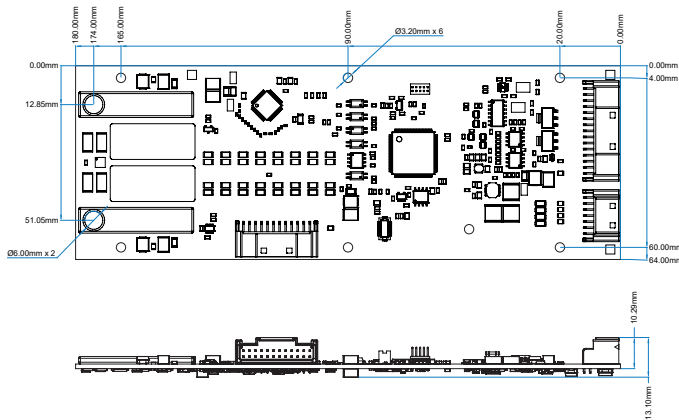
Palletlifter



Lift



Cleaning Machine



EXTENSION BOARD  
FUNCTIONS  
(custom design):

- Aux Power
- Bluetooth/WiFi gate
- Leak detection
- Aux I/O

## PERFORMANCE SPECIFICATIONS

Performance parameter	Measurement range	Performance
State of Charge (SOC) advanced	0-100% charge (All Chemistries)	+/-0,5%
State of Charge (SOC) advanced	20-80% charge (LFP)	+/-2,5%
State of Health (SOH) standard	>500 cycles, 0-100% regular charge/discharge	+/-1,5%
State of Health (SOH) advanced	>500 cycles, 20-80% charge	+/-2,5%
State of Power (SOP) advanced		+/-5,0%
Balancing (Standard)	Delta achieved with regular fully charge conditions	<20 mV
Balancing delta (advanced)	>500 cycles, 20-80% charge with LFP Based on Cell SOC	+/-2,0%
Balancing time (advanced)	Compared with classic balancing (End Of Charge)	25%

## TECHNICAL SPECIFICATIONS

Parameter	Description	Unit	Min	Typical	Max
Battery High Voltage range	Normal operating area	V	15		60
BMS power Supply	Build in DC/DC	V	15		60
Pre-charge function	Automatic capacitance adaptation algorithm	Ω		20	
Max Current - Continuous	Without active cooling @ TA=25°C	A			±100
Max Current – Peak (1s)	Without active cooling @ TA=25°C	A			±120
Number of Cells in series	LTO/LFP/NMC	#	10/6/5		16/16/14
Number of temperature sensors	External for pack / module (NTC)	#			4
Cell voltage accuracy	Over the full temperature range	mV	-1,4		1,4
Detectable cell voltage range		V	-1,0		5,5
Battery Pack Voltage accuracy	Sum of cells	mV		±22,4	
Cell balancing current	@cell voltages =4,2V	mA	93	95	97
Temperature measurement accuracy	NTC 10kΩ	°C		±1,0	
Temperature measurement range		°C	-40		85
Normal power consumption		W			1,7
Off mode consumption		mW			tbid
Auto-off function	Force BMS to sleep based on conditions				
Parallel pack and hot-swap function	Number of supported strings in parallel	#			10
Number of GPIO	Support digital and PWM	#			4
CAN communication (number)	Support CAN 2.0A/B, CAN FD	#			1
CAN Speeds (Configurable)	125, 250, 500 and 1000 kbit/s				
Weight	Complete product weight	g		86	
Dimensions	H/L/W	mm	13,1	180	64

## COMPLIANCE

Standard/Regulation	Description
EN-61004	Environmental requirements
ISO 13849 PL C	Functional Safety for industrial machines
EU 1542	Battery Passport