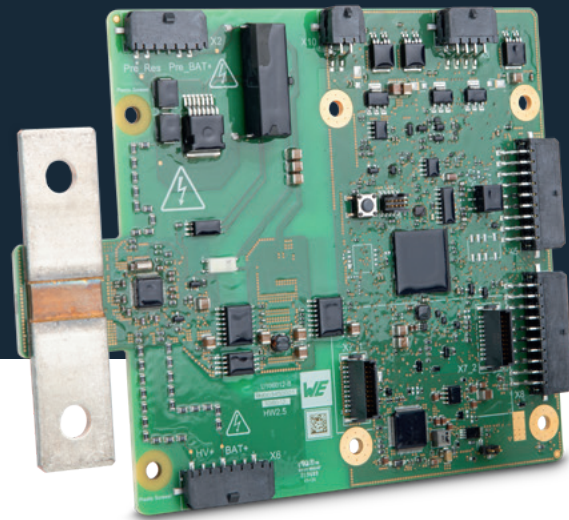


BMS-14/7

Battery Management System for industrial lithium based storages



The Battery Management System (BMS) is designed to control and monitor lithium (NMC, LFP, LTO) based battery storages for industrial applications.

The BMS consists of a Current Measurement Board (CMB) that communicates with up to 30 Cell Supervision Circuit Boards (CSC) in one String, according to the storage size and capacity. Each CSC measures the voltage of up to 14 cells and up to 7 temperature sensors, covering applications up to 1000 V, depending on the cell chemistry. Passive cell balancing is executed at 100 mA balancing current.

General information

Operating temperature	-20 °C to +85 °C
Supply voltage	24 V
Pollution degree	PD2
Operation altitude	≤ 2000 m
Net	IT / TN OVC II
Dimensions: Current Measurement Board (L x W x H)	160.86 x 126.31 x 17.24 mm
Dimensions: Cell Supervision Circuit (L x W x H)	130.00 x 75.10 x 10.73 mm

Standards and regulations

IEC 61508	Functional safety of safety-related electrical / electronic / programmable electronic systems
IEC 62619	Safety requirements for secondary lithium cells and batteries for use in industrial applications
IEC 60664	Insulation coordination for equipment in low-voltage power supply systems
IEC 61000-6-2	Electromagnetic compatibility (EMC)
IEC 61000-6-4	
EU 2023/1542	EU Battery Regulation

Features and benefits

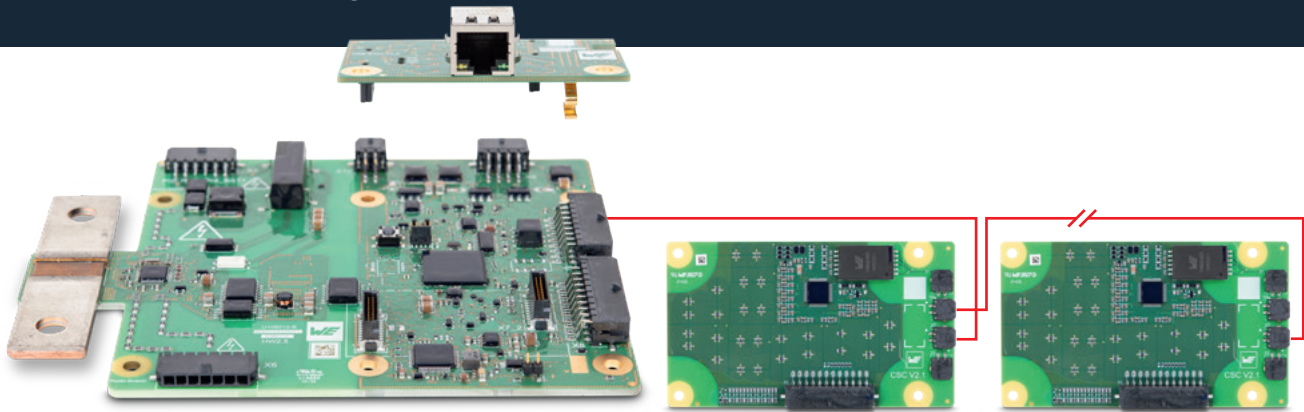
- **Designed for IEC 62619** applications.
- **Functional safety** according to IEC 61508 SIL2.
- **Easy scalability:** By combining up to 30 CSCs the BMS can be extended to larger applications.
- **Flexible extension** with plug & play expansion boards for additional communication interfaces.
- **Customised product configuration** according to your individual requirements. It is possible to make modifications to the hardware base.
- **Integration support** by our experienced FAEs, who assist with the system integration of your product.
- **Also small order quantities** with customised solutions are possible for prototyping and deployments.

BMS functions

Cell voltage measurement	Shutdown in case of over- / undervoltage
Cell temperature measurement	Shutdown in case of over- / undertemperature
System lock	Ensures safe operation
Overcurrent protection	Shutdown in case of overcurrent
Cell balancing	Balancing of serial connected cells
Contactor control	Main contactors actuation and cycle counter
Precharge	System precharge with time-out and energy limitation
SoC & SoH	State of Charge and State of Health calculations
Current calculation (SoC based)	Calculation of charge and discharge currents based on SOC and temperature
Modbus TCP interface	Communication of system information

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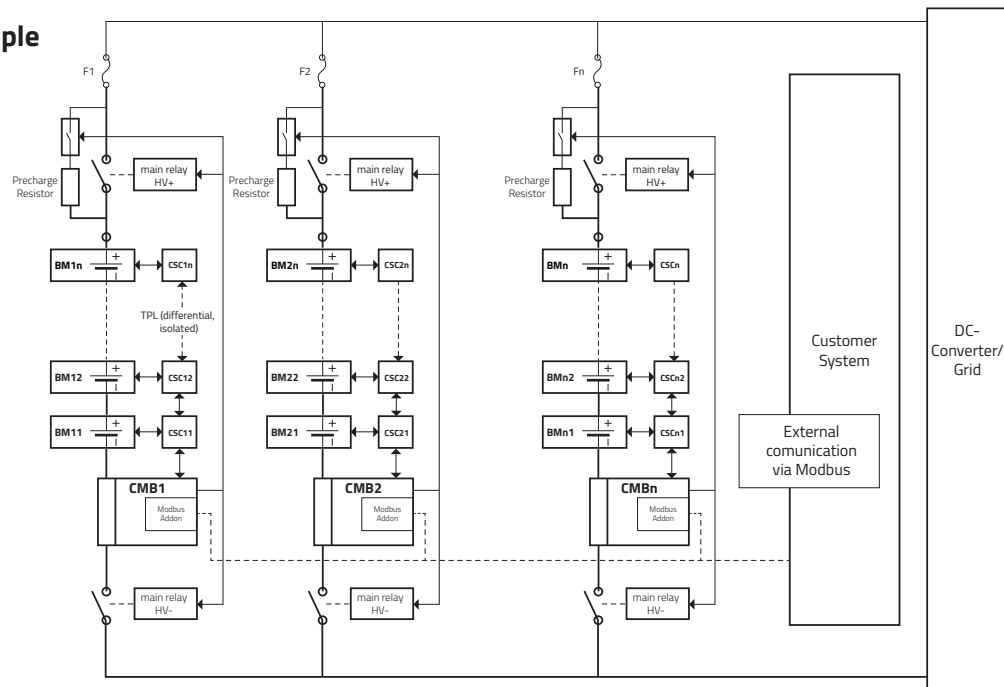
Parameters Current Measurement Board

Peak current measurement	350 A, up to 1000 A peak
Current measurement accuracy	$\pm 1\%$ minimal ± 100 mA
Rail-voltage	55 V to 1000 V
Voltage measurement accuracy	$\pm 2\%$ (between 55 V and 1000 V)
Internal precharge	2.5 A
Use Case	Precharge relay on-board or optional external On-board current measurement safety real-time operating system
Extension boards	Ethernet available (Custom designs on demand)

Parameters Cell Supervision Circuit Board

Cell count	7 to 14
Voltage range per cell	-0.3 to 5 V
Cell voltage measurement accuracy	± 0.8 mV to ± 8.0 mV
Cell balancing current	100 mA
Cell temperature channels NTC	Max. 7 Channels
Cell temperature accuracy	$\pm 2^\circ$ (with 1% NTC)

Application example



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