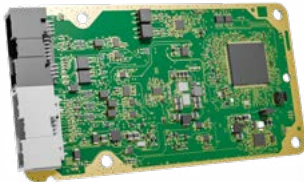


# Battery Management System Gen 2.0

An intelligent platform approach



Battery Management  
Controller (BMC)



Cell Monitoring  
Board (CMB)



Current Voltage  
Measurement (CVM)

The Webasto Battery Management System (BMS) is engineered to meet the stringent demands of the commercial and high-performance vehicle markets. Originally developed for Webasto Battery Systems, this BMS has evolved into a versatile standalone product suitable for various customer applications, focussing on multipack systems. Developed, certified, and rigorously tested in Germany, the Webasto BMS ensures top-tier reliability and performance. Additionally, it offers flexibility for adaptation to specific customer requirements, making it an ideal choice for diverse and demanding applications. The depth of added value makes Webasto a reliable system partner that stands by the customer's side from development through production to integration and commissioning.

## Standards & norms

- **Functional safety:** ISO 26262, ASIL C (ASIL D on demand)
- **Cyber security:** ISO 21434, HSM
- **Vehicle communication:** CAN-Bus based on J1939
- **EMC:** ECE-R10, ISO 10605, ISO 13766, GWT A D05-02-2022:12, ISO 114521, ISO 7637, CISPR 25
- **Flashing:** over UDS
- **Environmental tests:** ISO 16750, ISO 19014-3
- **Sustainability:** Battery Regulation 2023/1542

## All advantages at a glance:

- Cutting-edge multipack handling with distributed intelligence on pack level without dedicated master
- Modular platform approach
- Flexible CAN communication based on J1939
- Intensively tested and certified to the highest safety and quality standards
- Simple and fast integration and adaption

## Technical specifications

- Enables high power outputs scalable in voltage and current demands
- Within multipack system, each battery pack can take over speaker role
- Diagnosis, contactor controlling and communication (BMC)
- High voltage, current and isolation measurement (CVM)
- Cell voltage and temperature measurement and cell voltage balancing execution (CMB)



Truck



Premium car



Light vehicles



Bus



Special vehicle



Off-highway



Agricultural



Airport



Material handling

## Interfaces and general specifications\*\*

	BMS Gen 2.0
<b>Housing</b>	On demand
<b>Operating temperature</b>	-40 °C to +85 °C
<b>Voltage and current measurement</b>	1000 V (1500 V on request) 2600 A
<b>Connector</b>	Standard automotive low voltage connectors
<b>Power supply</b>	12 V / 24 V (48 V on request)
<b>CPU</b>	32-bit automotive safety multicore MCU running at 300 MHz with 6 MB internal program memory
<b>Autosar</b>	4.2.2
<b>Calibration tool</b>	Calibration data management XCP, UDS or data set
<b>Hardware interfaces</b>	CI30, CI30c, CI15, HV interlock, PWM, addressing pins, 4x digital / 4x analog inputs, up to 5 HV-contactors with onboard economizer
<b>Communication</b>	4x CAN FD (1x wake-up and partial networking) 2x ADI IsoSPI, 1x LIN
<b>Enhanced function</b>	Wake up: CL 15, network management according AUTOSAR, various sensor & load supplies up to 1 A
<b>Cell monitoring board</b>	≤16x or ≤24x cells supported per CMB, passive balancing, 4x external & 3x internal temperature sensors

\*\*Further specifications upon request.

## Functional specifications\*\*

	BMS Gen 2.0
<b>Contact control monitoring</b>	HV+/- and precharge contactor with single-coil connector, stuck detection, aging monitoring
<b>Current measurement</b>	Shunt resistor based measurement with +- 2600 A range and <1% accuracy
<b>Pyroswitch operation</b>	Triggered via CVM/ BMC
<b>Thermal runaway detection</b>	Via CO <sub>2</sub> sensor, H <sub>2</sub> sensor or GB standard
<b>Monitoring</b>	Temperature, isolation, high voltage, cell voltage, crash signal
<b>Precharge</b>	Multipack precharge
<b>Battery status &amp; limits</b>	Advanced SoX algorithms
<b>Thermal management</b>	Thermal management algorithm and interface
<b>HVIL</b>	Voltage or current based
<b>OBD2</b>	On demand
<b>Software update</b>	Via CAN, FOTA capable

## Scalable multipack architecture:

- Single pack & multipack operation
- Each pack can take over speaker role
- Advanced limp home concept

## System architecture example: scalable up to 20 packs

