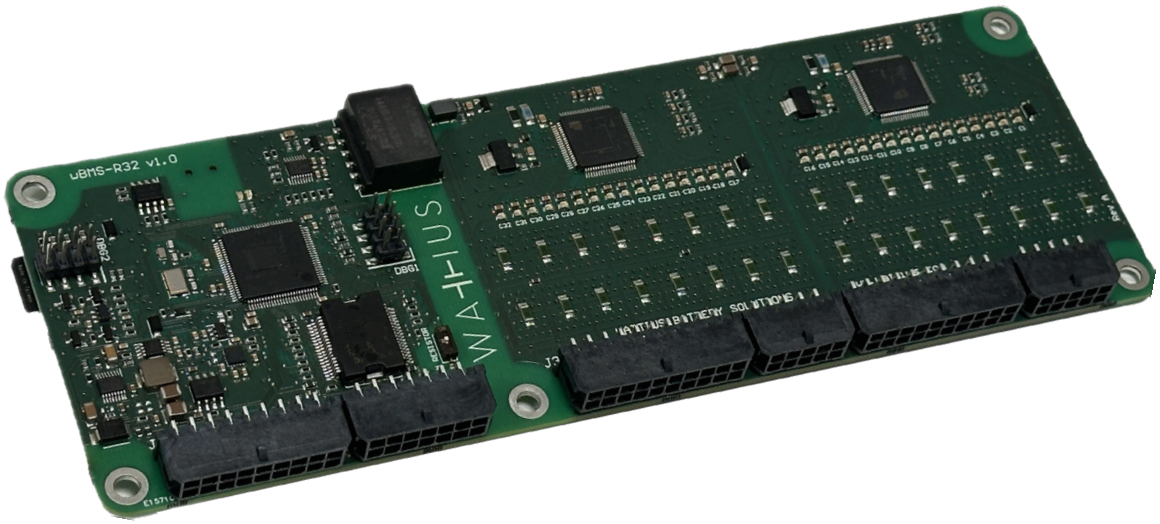
wBMS-R32

Compact 32-cell integrated Battery Management System



Introduction

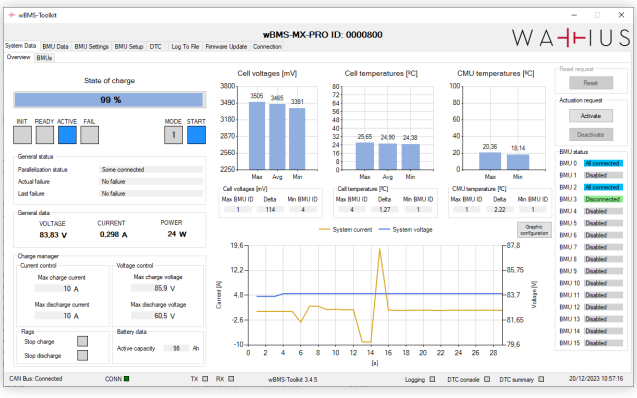
The Wattius wBMS-R32 is a compact Battery Management System developed to work with up to **32-cell** lithium batteries while safely providing extended isolated interface possibilities. The system has been designed to meet all relevant industry requirements such as IEC61508.

This system can monitor and balance up to 32 cells in series with total maximum voltage measurement **error of ± 1,5 mV** for the entire range. It features state-of-the-art low power mode as well as integrated hardware and software diagnostics.

Multiple wBMS-R32 units can be connected in **parallel** without additional hardware. The system automatically handles string connection and provides a single control interface with the inverter / charger.

The wBMS-R32 protects the battery by driving up to 6 power contactors, calculates advanced parameters such as SoC and SoH and features multiple interface possibilities such as **CAN bus, Bluetooth, and USB**.

wBMS-Toolkit



Connectivity

CANbus, Bluetooth & USB.
Real-Time logging of events, alarms and operation data to microSD card.
Monitoring, configuration & analysis with free wBMS-Toolkit PC software.

Performance

Up to 32 cell measurement with ± 1,5 mV max. error.
Ultra low power mode (< 15 mW).
High-precision SoC algorithm.
Up to 300mA autonomous balancing
Parallelization of up to 16 devices.
EMC CE Class A & B compatible.

Safety

IEC61508 compatible design and components.
Internal diagnostics and safety-critical redundant systems.
Cell and relay open-wire detection.

The wBMS-R32 is compatible with the wBMS-Toolkit, our Windows software provided free of charge:

- Monitor all **BMS data** in real time.
- Configure **hundreds of configuration parameters.**
- Data logging, diagnostics and flags.
- Firmware update.

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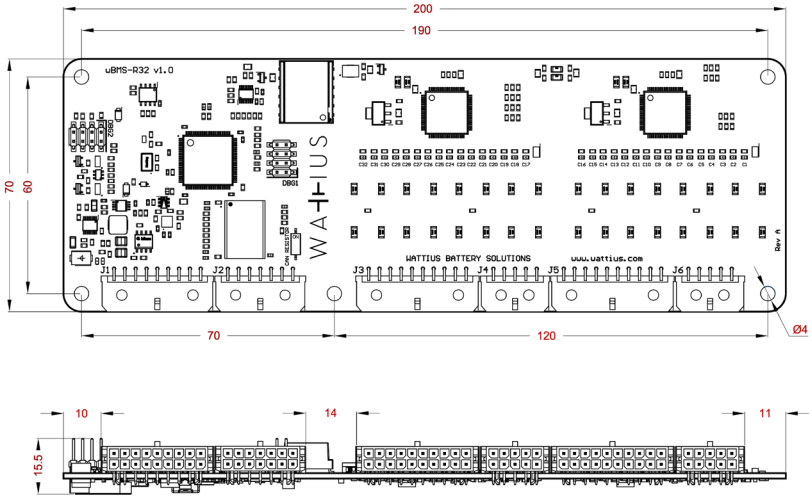
Main Specifications

Power Supply	10 - 36 Vdc. < 15 mW in deep sleep mode. Independent input for output supply.
Cell measurements (voltage & temperature)	Multiple cell chemistry and supercapacitors. Extended internal redundancy and hardware integrity diagnostics. Open wire detection.
Cell voltage	5 - 32 cells. 0 - 5 Vdc. ± 1,5 mV cell voltage max total error.
Cell temperature	Up to 10 channels. Configurable NTC 10 kΩ. ± 1 ºC cell temperature max total error.
Balancing	Autonomous. Configurable. Up to 300 mA per channel.
Current sensing	External 0 - 5 Vdc hall current sensor. < ± 0,1 mV.
CAN Interface	CAN bus 2.0 A/B (Up to 1Mb/s). Referenced to external power supply. Configurable termination resistor with integrated switch. Compatibility with external current, voltage and insulation sensors. Compatibility with multiple inverters and chargers.
Other interfaces	Mini USB 2.0. Bluetooth 5.0 Low Energy.
General Input	2x analog / digital (configurable) signal up to 36 Vdc. 4x dry contact digital input. Configurable to multiple functions (ignition key, HVIL, relay feedback etc.).
General Output	6x independent channels. External supply voltage. Maximum total output 4 A. External fuse recommended. Channel 1-4: 2 A nominal, 4 A peak per channel. Channel 5-6: 1 A nominal, 2 A peak per channel. Adjustable PWM @ 10 kHz max. Open circuit, short-to-battery and short-to-ground detection.
Memory	Integrated redundant EEPROM to store system configuration and maximeter. MicroSD support (up to 32 GB). MicroSDHC Class 10 is recommended.
Operating temperature range	-40 to +85 ºC
Parallelization	Up to 16 devices in parallel without external hardware.



Dimensions in mm

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