

Introduction

The Wattius wBMS-R24 is a compact Battery Management System developed to work with up to 24-cell lithium batteries while safely providing extended isolated interface possibilities. The system has been designed to meet all relevant industry requirements such as ISO26262 / IEC61508 and provides reinforced isolation according to EN50178.

This system can monitor and balance up to 24 cells in series with total maximum voltage measurement error of $\pm 1,5$ mV for the entire range. It features state-of-the-art low power mode as well as integrated hardware and software diagnostics.

Multiple wBMS-R24 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-R24 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.

With the wBMS-Toolkit PC software multiple configuration parameters can be tuned to work with different types of cells, architectures and use cases, as well as providing an excellent tool to monitor the system and access diagnostic and debug information.

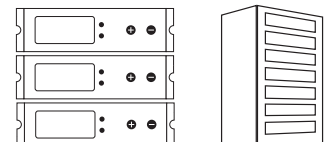
Applications



Electric mobility



Industrial



Domestic & high-scale storage

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 24 cell measurement with $\pm 1,5$ 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

ISO26262 & EN50178 compatible design and components.

Internal diagnostics and safety-critical redundant systems.

Cell and relay open-wire detection.

Main Specifications

Power Supply	10 - 36 Vdc. < 15 mW in deep sleep mode. Independent input for output supply.
Maximum system voltage	800 Vdc (EN50178, reinforced isolation). Compatible with transformerless stationary ESS use cases.
Cell measurements (voltage & temperature)	Multiple cell chemistry and supercapacitors. Extended internal redundancy and hardware integrity diagnostics. Open wire detection.
Cell voltage	5 - 24 cells. 0 - 5 Vdc. ± 1,5 mV cell voltage max total error.
Cell temperature	Up to 6 channels. Configurable NTC 10 kΩ. ± 1°C 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 switch. CANopen compatibility.
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 16 GB). MicroSDHC Class 10 is recommended.
Data logging	Continuous logging of cell data. Event / error / alarm log.
Parallelization	Up to 16 devices in parallel without external hardware.

