

MR-BMS771: battery management board for mobile robotics and portable equipment

Customizable 7-14 cell battery pack Battery Management System (BMS) incorporating automotive grade BCC and MCU components, suitable for portable or removeable applications such as mobile robotics, two-wheelers, scooters, mowers, medical devices, higher end power tools, UPS, ESS or industrial equipment.

MR-BMS771 battery management system

- BMS is suitable for 7-14 cell Li-ion, LiFePO4, NMC or other chemistries.
- Supported with models and base example via NXP MATLAB Simulink Model-Based Design Toolbox (MBDT).
- BMS example application software based on NuttX RTOS, demonstrating command line customization and configuration via a console connection.

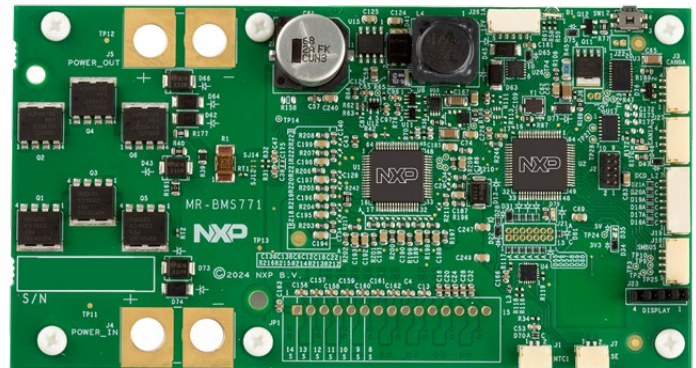
Key features

- 30 Amps as configured
- Cell balancing, coulomb counting, voltage, 3x temperature and overcurrent protection
- Command line control and config via console
- Automotive grade components
- Secure element certificates and secure logging 2x CAN Bus, NFC*, UART, I²C (SMBus) peripheral an initiator

*Not installed first version

Target applications

- Robotic AMR, service robot, drones
- Portable medical
- High end power tools
- Two-wheeler/scooter/golf cart
- UPS/battery backup
- Security and building control systems



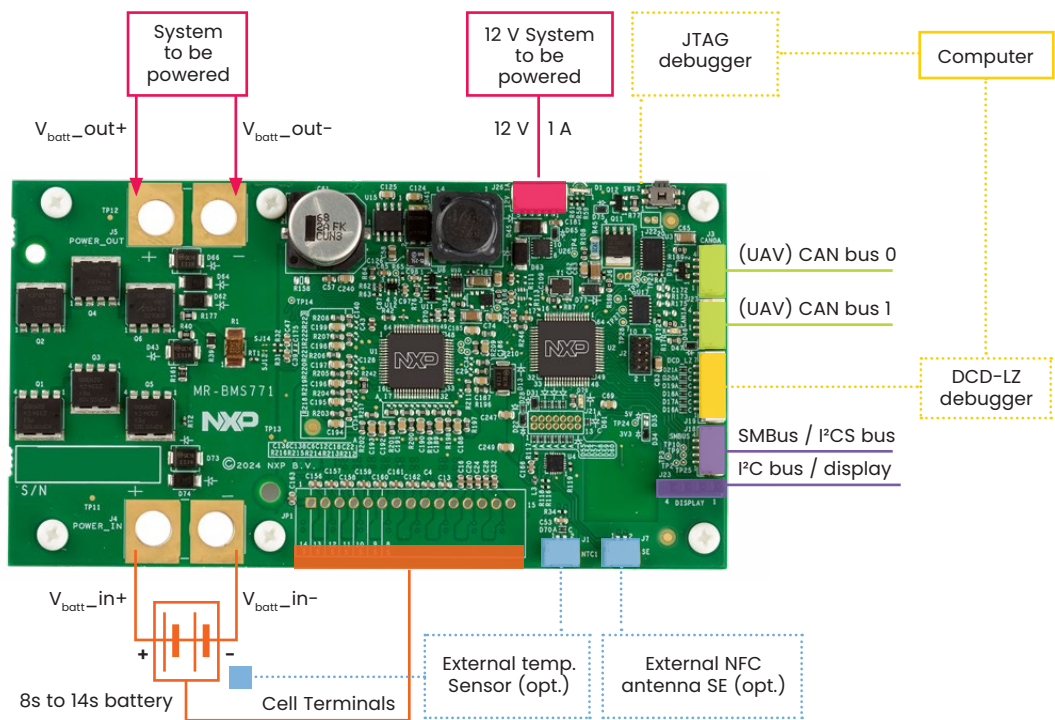
Enablement tools

- Development hardware:
 - Schematics and layout source files
 - MCU-Link-MR debugger with integrated USB-C-uart console
- Runtime software:
 - MBDT models and example
 - RTOS based application example in NuttX
- Compiler:
 - Opensource GCC (NuttX)
 - S32 design studio

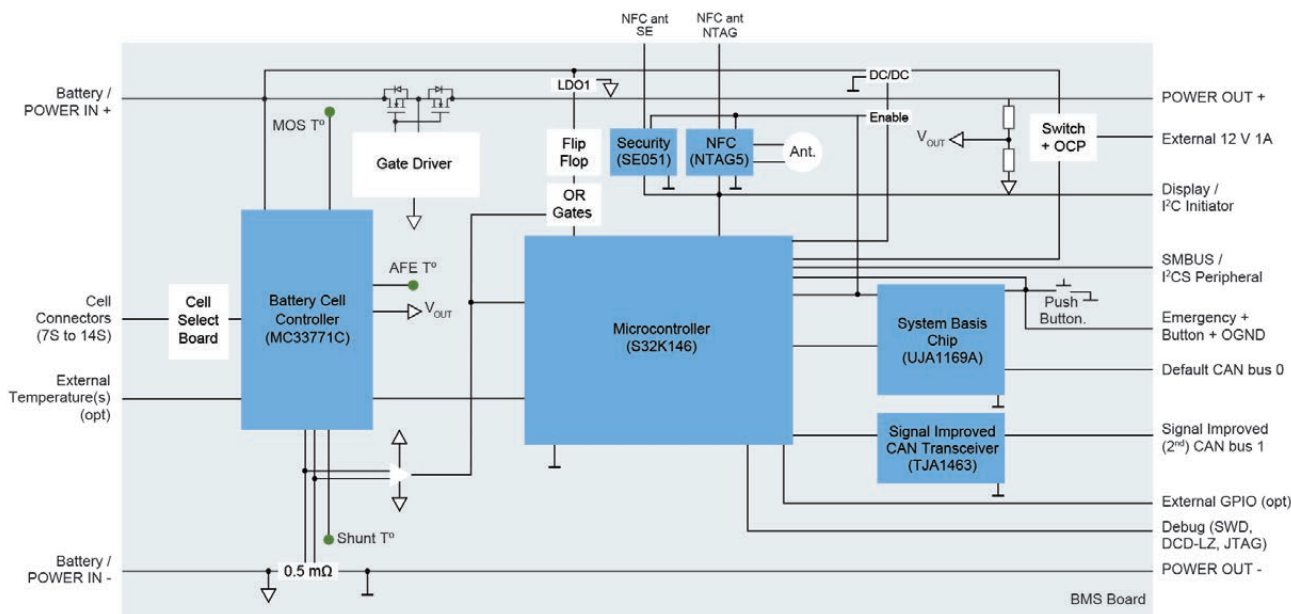
BCC	MC33771
MCU	S32K148, Arm® M4 core @112 Mhz
Interfaces	UART, CAN FD, SMBus/ I ² C, NFC*
Power	7-14 cell, (9.6 V-59.9 V) 30A as built and tested. FET and heatsink dependencies could allow > 100 A
MC33771	±0.5% accuracy from milliamps to kiloamps with integrated coulomb counter, 0.8 mV maximum voltage measurement error
Security	SE051
HMI	Graphic OLED, switches, LEDs

*Not installed first version

Battery management application block diagram



MR-BMS771 hardware block diagram



Orderable samples

Part number	Other features	Package
MR-BMS771	7-14S (Cell) variant	Reference design board and accessories
RDDRONE-BMS772	3S-6S (Cell) variant	Reference design board and accessories

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