Melexis
INSPIRED ENGINEERING

The snout of the platypus is a sensory organ with electroreceptors in the skin of the bill, which allow him to detect the electrical field that gets generated when his prey contracts its muscles. With his 40,000 sensitive electronic sensors, this unique semi aquatic egg-laying mammal represents our current sensors.

MLX91230

SMART IVT BATTERY SENSOR

HALL-BASED DC CURRENT SENSING WITH UNPRECEDENTED ACCURACY

MLX91230

The MLX91230 is the first smart Hall-based current sensor of a Gen 3 portfolio. With a measurement of three physical quantities (current, voltage and temperature) and a dedicated 32 KB Flash memory on a single IC, this ASIL compliant product is ideal for safety applications. With its diagnostics the MLX91230 is removing an important part of the burden from the integrator in developing all the safety mechanisms. Boosting accuracy of Hall-effect DC current sensing, the MLX91230 comes with 0.5% accuracy over temperature (-40°C to 125°C) for a 1% lifetime drift all-in. The MCU enables automatic gain control to cover higher dynamic ranges, and the on-board flash memory supports custom software and extensive compensation of system imperfections. Supplied with a regulated 5V or directly connected to the 12V battery, the MLX91230 in SOIC8 outputs measurements and diagnostics either on LIN bus or via UART.

KEY FEATURES

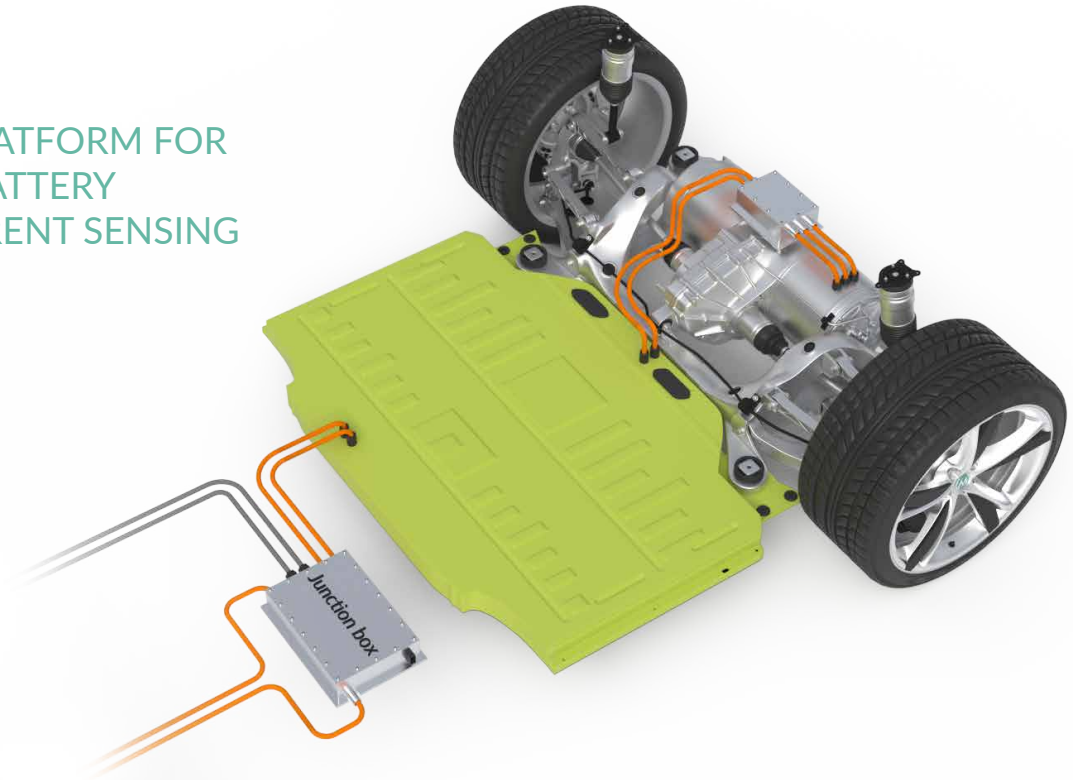
- IVT battery measurements:
  - Hall-based current sensor
  - Internal (PTAT) temperature sensor
  - Voltage measurement
- 16-bit MCU Memories:
  - 32 KB Flash
  - 128 B Flash Configuration Sector
  - 20 KB ROM
  - 2 KB RAM
  - 512 B EEPROM
- LIN/UART communication
  - LIN Physical Layer compliant to ISO17987-4 and SAE J2602
  - UART as CAN MCU bridge
  - Wake-up on LIN and UART or on internal timer
- Overcurrent detection functionality (<500µs)
- Ambient temperature from -40°C to 125°C
- Possible Automatic Gain Control (AGC) for higher dynamic range
- Supply voltage: 4.5 to 18V (12V battery)
- Low current consumption (<21mA), programmable duty cycled sleep mode (RAM content maintained at <100µA)
- Magnetic range of 512mT
- ISO 26262 ASIL compliant SEooC (Safety Element out of Context)
- AEC-Q100 Grade 1 automotive qualified
- Low level SW libraries provided by Melexis
- User programmable transfer characteristic
- RoHS compliant package SOIC8 (DC)

APPLICATIONS

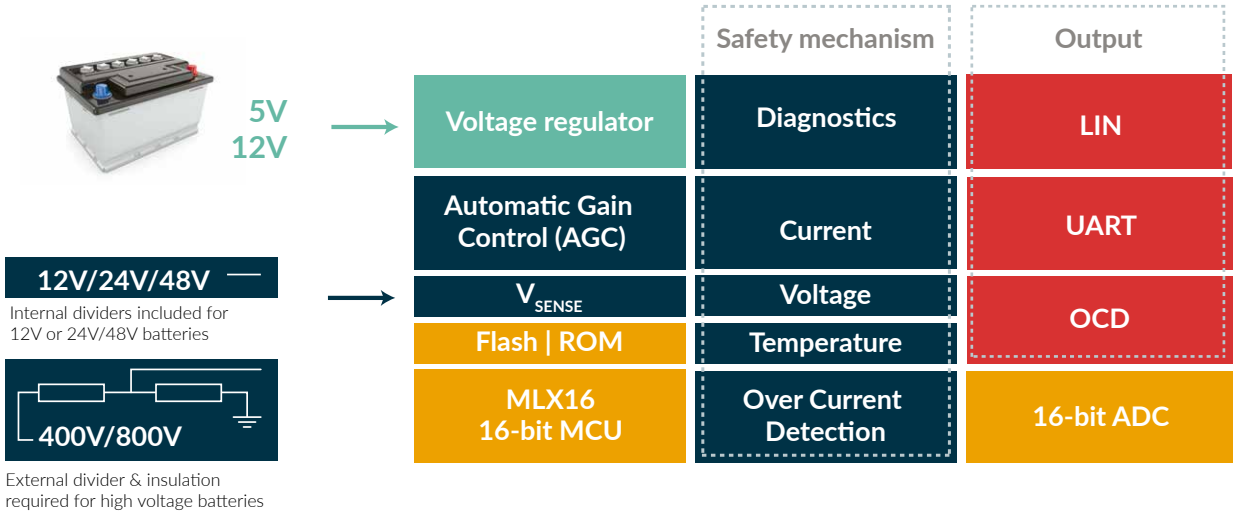
Hall based primary and redundant current measurement (homogenous or heterogenous sensing technology):

- Battery Terminal Sensor 12V/24V
- Battery Management System 48V/HV
- Enabling Battery State of Charge (SoC), State of Health (SoH) and State of Function (SoF)
- Smart Battery Disconnect Unit, Junction Box or Power Relay Assembly
- Smart Pyrofuses
- Smart HV relays or contactors
- HV DC FastCharge current sensing
- Zone controller

IC PLATFORM FOR EV BATTERY CURRENT SENSING



BLOCK DIAGRAM



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