Automotive Qualified Current Sensors for Battery Management

CH1B02xB, CH1B03xB, CH1B04xB

Problem/Solution

In electric vehicles (EVs), precise monitoring of electrical currents is critical for optimizing performance and ensuring operational safety. Without accurate current sensing, the vehicle's battery management systems may struggle to regulate energy flow efficiently, potentially leading to suboptimal battery usage, overheating, or even safety hazards. By integrating a current sensor into EVs, manufacturers can enhance overall efficiency, extend battery life, and deliver a safer and more reliable driving experience for users.

Technical Resources

Series Page | CH1B02xB Datasheet | CH1B03xB Datasheet | CH1B04xB Datasheet

Tech Info | Video

Benefits

- Non-intrusive solution
- High current measurement
- High accuracy with low thermal drift
- Analog or digital interfaces
- Single or Dual channel output

CH1B02xB

CH1B03xB

CH1B04xB

Features

- Open-loop Hall Effect sensor technology
- ±1500 A maximum current range
- High sensing accuracy (as low as 0.5%)
- Analog (CH1B02xB) or CANbus (CH1B040B, CH1B032B)
- Dual outputs (CH1B02xB)

Markets/Applications

- Battery Management Systems (BMS)
- Hybrid (xEV) / Battery Electric Vehicle (BEV)
- HV Battery Junction Boxes
- Battery Disconnect Units
- Power Relay Assemblies

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Automotive Qualified Current Sensor for Pyro Triggering

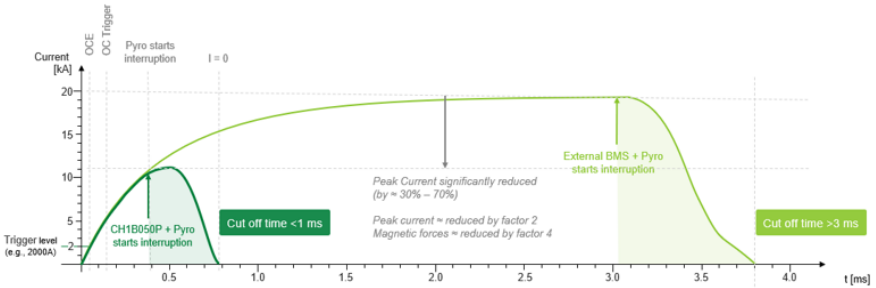
CH1B050P

Problem/Solution

The potential energy in the high-voltage battery can cause severe damage to critical components of the energy storage and management systems. As a result, high-speed circuit interruption capability is a crucial need for modern electric vehicles. Littelfuse pyro triggering devices can trigger the pyro-fuse in one-third the time typically required by an overcurrent detection signal from a current sensor alone.

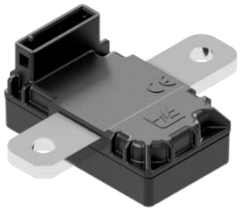
Technical Resources

Series Page | CH1B050P Datasheet | Tech Info | Video



Benefits

- Fast, reliable circuit interruption
- High fault current interruption capability
- High voltage rating for high voltage battery circuits
- Diagnostic monitoring
- Low power consumption



Features

- 40 µs typical overcurrent triggering time
- ±2000 A interrupt level
- System voltage up to 1000 V
- Error status reporting output
- 200 mA maximum supply current

Markets / Applications

- Pyro-fuse module
- HV Battery Pack
- HV Battery Junction Box

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Automotive Qualified Current Sensors for Motor Control

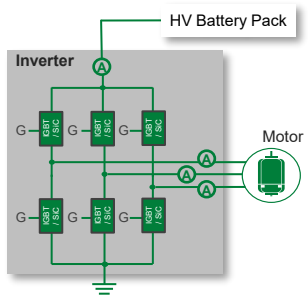
CH1P01xM, CH1B02xM

Problem/Solution

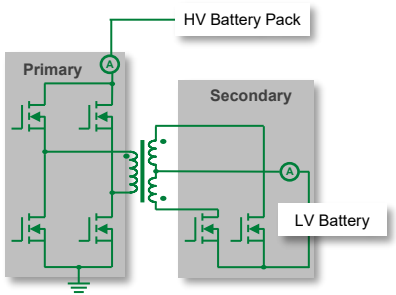
Hybrid and battery electric vehicles require high-speed measurement of electrical current in power conversion and torque management of drive motors. The CH1B02xM and CH1P0xM current sensors offer a variety of current sensing solutions for applications requiring high speed, smooth waveform current measurement. By integrating current sensors into EVs, manufacturers can enhance overall efficiency and deliver a safer and more reliable driving experience for users.

Technical Resources

Series Page | CH1P01xM Datasheet | CH1B02xM Datasheet | Tech Info | Video



Inverter



DC-DC Converter

Benefits

- Non-intrusive solution
- High sensing accuracy with low thermal drift
- Wide current measurement range
- Multiple mounting options
- Automotive safety integrity level compliant

CH1P01xM

CH1B02xM

Features

- Open-loop Hall Effect technology
- <4% total sensing error
- Current measurement up to ±1500 A
- PCB or busbar mounting
- ASIL-QM rated

Markets / Applications

- Motor Inverters
- Starter Generators
- DC/DC Converters
- AC / DC Converters

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