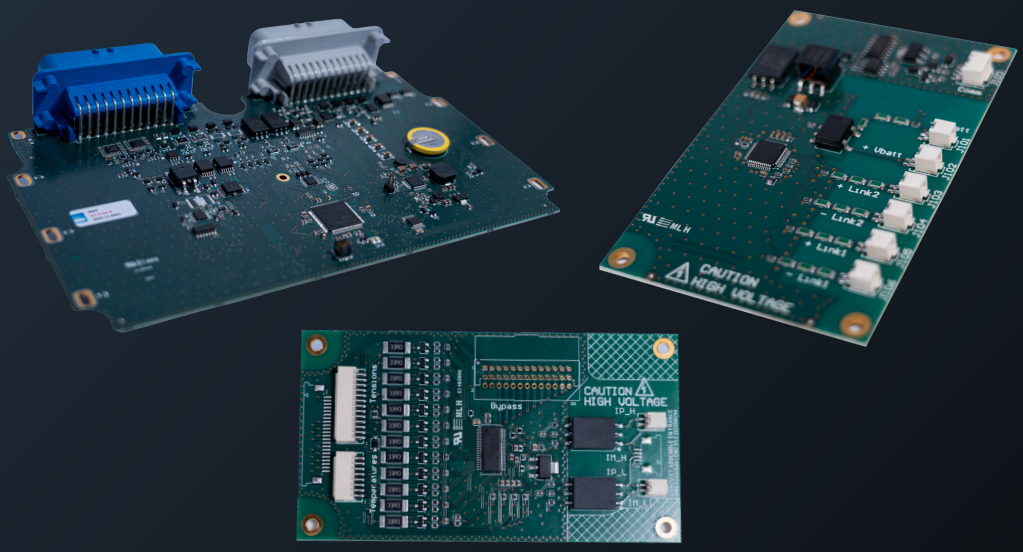
Product Sheet

HiVO BMS PowerSafe

- 750A
- CAN BUS
- EN61508
- Serializable
- SIL2 compliant
- External Powerbox



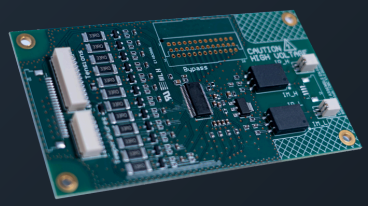
Non contractual photo

- Marine
- Automotive
- Energy storage

Presentation of the system

HiVO

HiVO Slave Board

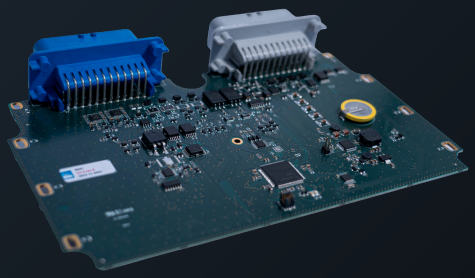


CMC *Cells Management Controller*

Main tasks :

- Supervision from 5 up to 12 Li-ion cells connected in series according to chemistry
- Supervision of 4 NTC
- Balancing (150 mA)

HiVO Master Board

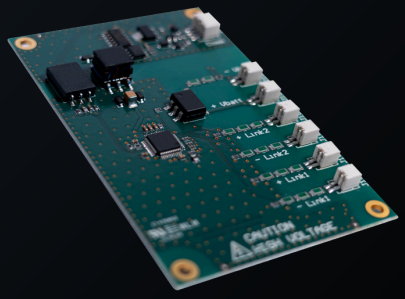


BMC *Battery Management Controller*

Main tasks :

- Up to 20 CMC
- Calculation of SOC
- Calculation of the maximum admissible currents in charge and in discharge according to the state of the battery (SOC, temperature,...)
- Battery pack supervision and alarm generation
- Contactor management (one on the plus pole and one on the minus pole) up to 4 contactors
- 2 CAN buses
- Management of the isolation measurement module between the HV battery and the chassis
- Balancing control
- Possibility to connect up to 7 BMC in parallel thanks to an EMS board
- Compatible 12 or 24V (power supply)

HiVO Isolation Board



IMC *Isolation Management Controller*

Main tasks :

- Supervision from 5 up to 12 Li-ion cells connected in series according to chemistry

Technical Description

HiVO

Cells management

- Master/Slave architecture
- Possibility to connect up to 20 CMC in series to manage a battery pack with a voltage up to 1000 Volts
- Possibility to connect up to 7 BMC in parallel thanks to an EMS
- Management of 4 NTC temperature sensors per CMC
- +/- 2 mV of accuracy
- Management from 5 to 12 cells in series per CMC, compatible with all cell technologies (NMC, Na Ion, LFP, LTO…)
  - NMC/Na Ion : From 5S to 12S*
  - LFP : From 6S to 12S*
  - LTO : From 8S to 12S*

Protections

- Overcharge and undercharge, tunable by software
- Overcurrent and over/under temperature, tunable by software
- Designed following ISO26262, equivalent ASIL B

Power Box

- Bidirectional measurement of the battery current with a hall effect sensor
- Charge and discharge management
- Command up to 4 external electromechanical contactors
- Command up to 2 current sensors

Smart functions

- SOC and SOH calculation
- Advanced self-diagnostic of the board
- Communication by CAN bus 2.0B (opto-isolated)
- HVM (Master) is configurable using the CCP protocol
- Calculation of max charge and discharge current allowed.
- Insulation measurement through an external board (bender)
- Black box integrated with faults history storage and life counters
- Possibility to modify the parameters (cells characteristics, alarms thresholds…) using the Supervision software
- Passive balancing with a 150mA bypass current per cell

Spare IO

(function can be customized)

- 2 High Side outputs
- 2 Low Side outputs
- 3 Analog inputs
- 3 Digital inputs
- 1 PWM input

** 18S available on request, other configurations can be developed on separated demands.*

Technical Description

HiVO

Power supply

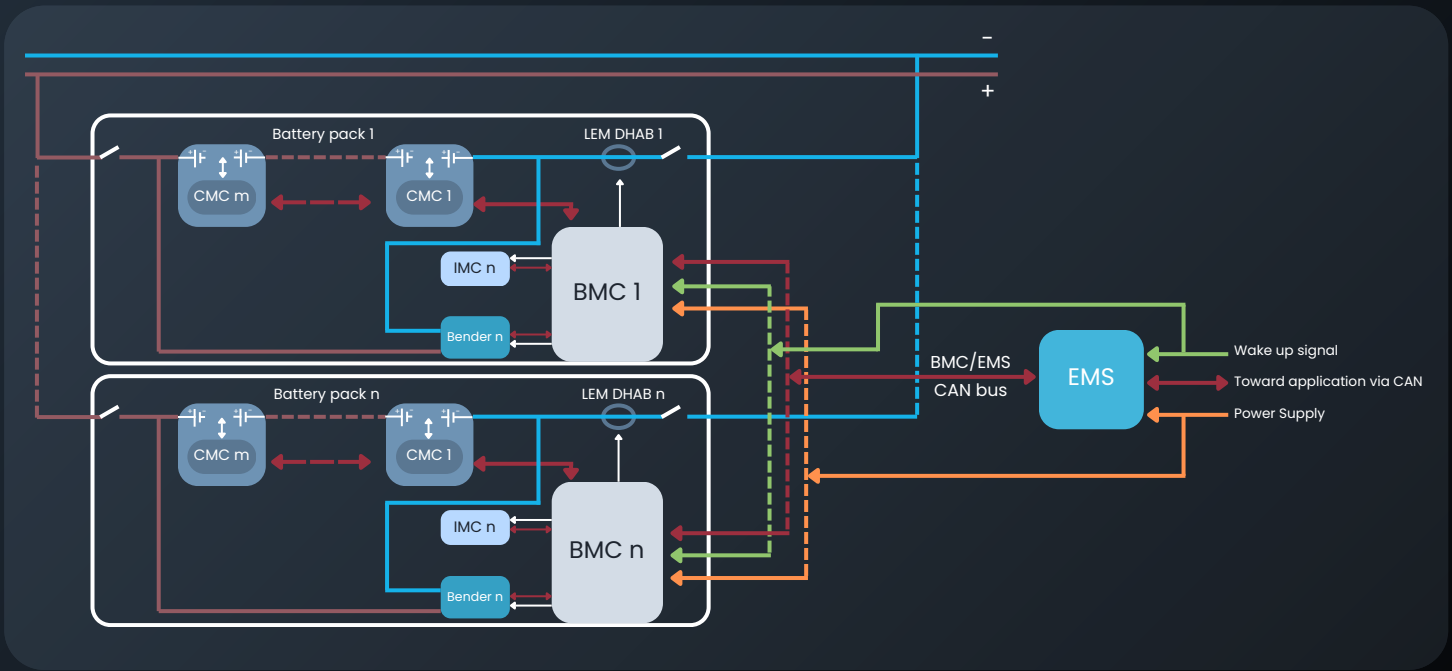
- The EMS and BMC are powered with an external 12V/24V power supply
- The IMC is powered from the BMC
- The CMCs are powered from cells
- Low consumption in standby mode (on cells): < 5 µA

Mechanical format

- CMC : 103.5mm x 55.5mm
- BMC : 227,6 mm x 130.4mm
- IMC : 96mm x 64mm

Architecture of the system

HiVO uses the following electrical architecture :



It is based on a master / slave architecture (BMC/CMC) driving a power box (electromechanical contactors, Hall current sensor ...) and an isolation measurement module (IMC).

This system has been developed and validated on heavy electric vehicles.