

Great performance has always come from good management

LiTHIUM BALANCE
BATTERY MANAGEMENT SYSTEMS



Patented, Award Winning BATTERY MANAGEMENT

- 2006: Established at Danish Technological Institute
- 2008: DONG Energy invests
- 2009: Commercial launch
- 2014: 300 projects done
- 2015: 5000+ vehicles with our BMS



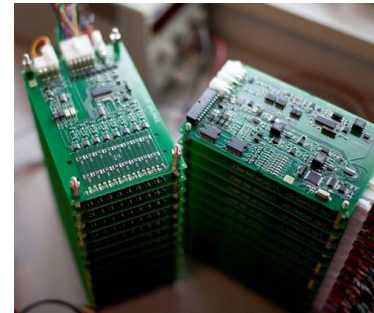
TOP 25

Why battery management?



Li-ion is intrinsically instable ...

... unless managed well!



Consequences of poor management

- Thermal run-away
- Shorter cell life
- Loss of capacity (and range)
- Longer charge time

BMS responsibility is to ensure:

- Safety & Lifetime
 - Keep within voltage, temp, current range
- Performance
 - Balance cell voltages to increase capacity
- Interface
 - Control charger and load
 - Display and log data



300+ customer projects done

Industrial

Forklifts, cleaning, lifts



Automotive

Truck, bus, car, MC, scooter



Battery

Batteries, integrators



LiBAL Fast Charge Interface™

CHAdeMO Fast Charge Interface



The first CHAdeMO certified vehicle side fast charging controller



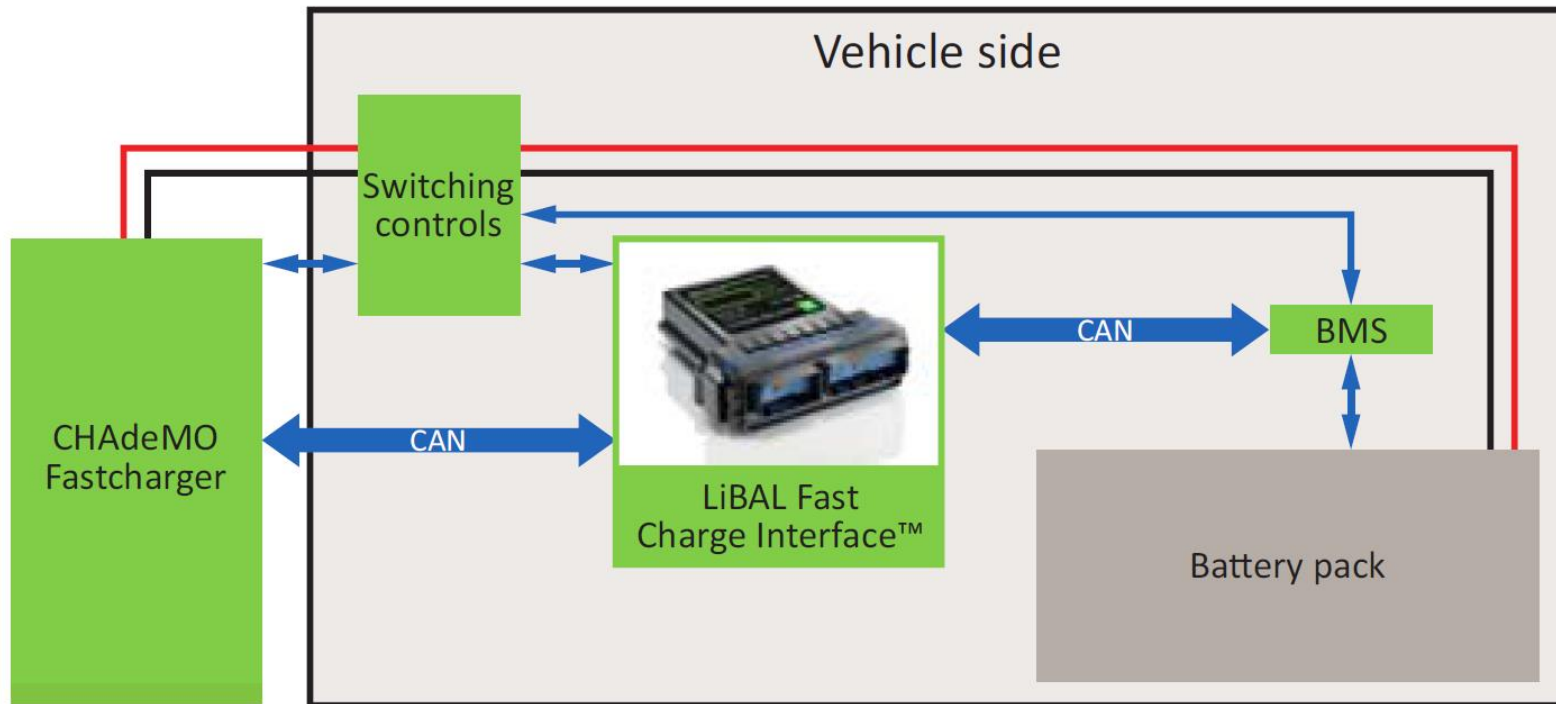
System overview



- Vehicle side implementation of DC fast charging standard based on IEC 62196 - **CHAdeMO**
- Designed for highest levels of functional safety
- Reliable hardware built on a well-known and proven system architecture
- ASIL D rated OS & micro controller
- Available in ruggedized IP67 enclosure



Vehicle side implementation



Specifications overview



Specification	Value
CHAdeMO Certified	Yes
SAE Combo, GB/T	In development
CAN bus interfaces	2 optically isolated, up to 1Mb/s
Connector	MODICE 581-01-48-010
IP rating	IP 67
Supply voltage	12 V
Power consumption	<100mA, operation
Dimensions	13.2x11.4x4.2 cm
Temperature range	-40°C - 85°C
Diagnostic data logging	1 GB SD card
Real time clock	Yes
Analog inputs	2
Digital inputs	2
Relay drivers	3



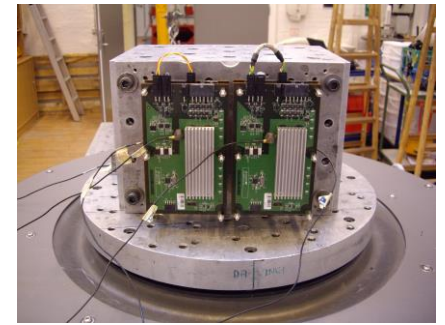
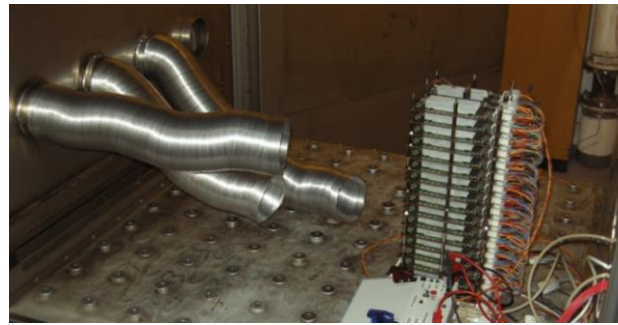
Reliable in harsh conditions



Tested to hell ...

- EMC >200volts/m (80-1000MHz) per EN61000-4-3
- Fast transients 4kV on all inputs per EN61000-4-4
- Random vibration 10-1000Hz per EN60068-2-6
- Temperature from -90°C up to 120°C

... So you can use it on earth with confidence!



The first CHAdeMO certified vehicle side fast charging controller





IDIADA Automotive Technology SA
as accredited certification body by the *CHAdeMO Association* certifies that the vehicle charging interface mentioned below has been assessed and found to be in accordance with the requirements of CHAdeMO protocol 1.0

Manufacturer:

LiTHIUM BALANCE 
BATTERY MANAGEMENT SYSTEMS

Product name: Fast Charge Interface

Hardware version 000599 Rev B	Firmware version CHAdeMO V1.0 Build Rev. 453	Serial number Series 15W11-600B000108
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Certificate NO. 0005
Issue date: 1st October 2015


Klaus Kersting
Product Manager EV/HEV