

BMS HIL Test System



Real-time battery pack simulation

The BMS Hardware-in-the-Loop (HIL) Test System is a high performance platform providing all necessary input signals used for battery pack simulation. A real-time operating system executes complex cell and pack models commonly used for BMS algorithm development and firmware regression testing.

APPLICATIONS

- Simulating an aging battery pack or individual cells
- Testing and evaluating BMS balancing, responses and tolerances
- Monitoring and evaluating a BMS during specific drive profiles

FEATURES

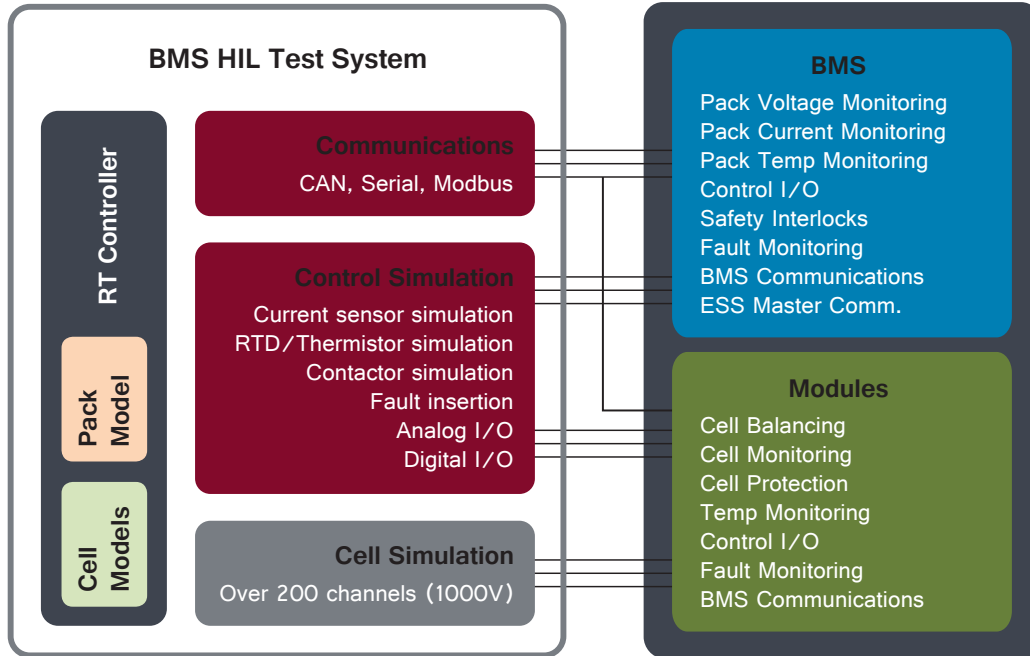
- Over 200 series connected cell channel simulation
- Pack voltage simulation up to 1000Vdc
- Current and temperature sensor simulation
- BMS control I/O and communication simulation
- Fault insertion and auxiliary system measurements
- Custom cell and pack model integration (Simulink, C++, LabVIEW, etc.)
- Software application for manual operation, automated test, and reporting

Trying to evaluate BMS and perform environmental testing?

Inquire about Bloomy's BMS Validation System.

SYSTEM DIAGRAM

The BMS HIL Test System is a modular platform, providing unique configurations to test BMS and module functionality for automotive and power grid applications.



HARDWARE SPECIFICATIONS

The following specifications are standard. Systems can be customized to accommodate specific requirements.

CELL CHANNEL SIMULATION		TEMPERATURE SENSOR SIMULATION		COMMUNICATION PROTOCOLS	
Number of Channels	12 / module	Typical Signal Type	Resistance (thermistor/RTD)	Standard Protocol	High-speed CAN
Max number of Modules	20 (240 channels @ 4.2V)	Number of Channels	12 / module	Number of Ports	2
Channel Type	Sink and Source	Range	10Ω to 500 kΩ	Baud Rate	40 kbits/s to 1Mbit/s
Voltage Range per cell	0.0 to 5.0V	Resolution	1Ω	Additional Protocols	LIN, SPI, RS232, Modbus
Voltage Resolution	0.1 mV	Accuracy	1%	PACK VOLTAGE SIMULATION	
Voltage Accuracy	±3 mV	Additional Signal Types	Analog voltage (±10V) Analog current (0 – 40 mA)	Number of Channels	1 channel
Current Range	±500.0 mA	CURRENT SENSOR SIMULATION		Voltage Range	up to 1000 VDC
Current Resolution	0.1 mA	Typical Signal Type	Analog voltage	Current Range	1.5 ADC
Current Accuracy	±4 mA	Number of Channels	2 channel	Programming Accuracy	±0.25% of full scale
Current Limiting Accuracy	±10 mA	Range	±10V	BMS CONTROL I/O	
Common Mode Isolation	1000 VDC CH-TO-CH, CH-TO-GND	Resolution	16 bit	Number of Channels	24 input / 24 output
CELL CHANNEL READBACK		Accuracy	±0.5%	Voltage Range	0 to 60V
Voltage Resolution	0.1 mV	Additional Signal Types	CAN communications	Current Drive	150 mA
Voltage Accuracy	±3 mV	BMS BUS VOLTAGE SIMULATION		Common Mode Isolation	60V channel-to-channel
Current Resolution	0.1 mA	Number of Channels	2 channel		
Current Accuracy	±4 mA	Voltage Range	0 to 60V		
		Current Range	0 to 20A		
		Power Range	850W		

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