BLOOMY®

Automated test solutions for the entire product lifecycle

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, software and firmware regression testing.

APPLICATIONS

- Functional safety testing and tuning of BMS hardware, software and firmware
- Evaluating BMS balancing, responses, and tolerances
- Monitoring and evaluating a BMS during simulated drive cycles and load profiles

FEATURES

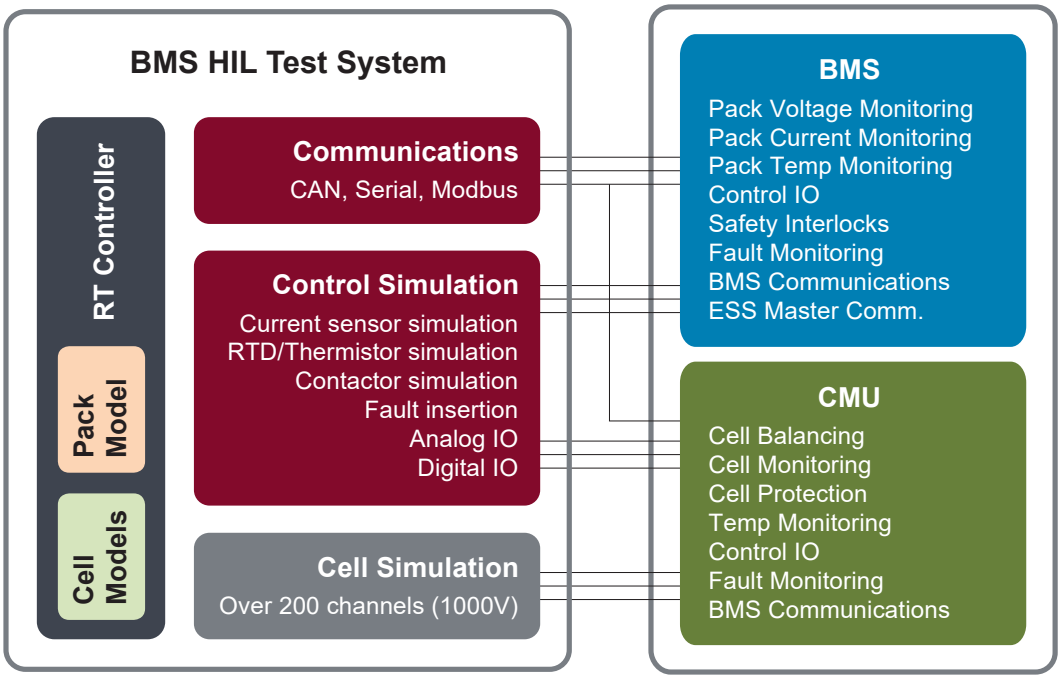
- Over 200 cells of simulation
- Pack voltage simulation up to 1000 VDC
- Current and temperature sensor simulation
- BMS control I/O and communication simulation
- Fault insertion and auxiliary system measurements
- Custom cell and pack model integration (Simulink, C++, LabVIEW, etc.)
- Software application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

Need to perform ESS, HASS and HALT testing?

Inquire about Bloomy's BMS Environmental Test 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	
Number of Channels	12 / module
Max number of Modules	20 (240 channels @ 4.2V)
Channel Type	Sink and Source
Voltage Range per cell	0.0 to 5.0V
Voltage Resolution	0.1 mV
Voltage Accuracy	±3 mV
Current Range	±500.0 mA
Current Resolution	0.1 mA
Current Accuracy	±4 mA
Current Limiting Accuracy	±10 mA
Common Mode Isolation	1000 VDC
CELL CHANNEL READBACK	
Voltage Resolution	0.1 mV
Voltage Accuracy	±3 mV
Current Resolution	0.1 mA
Current Accuracy	±4 mA

TEMPERATURE SENSOR SIMULATION		
Typical Signal Type	Voltage	Resistance
Number of Channels	4 to 64	
Range	±10V	2.5Ω – 1.5MΩ
Resolution	<1 mV	2Ω
Accuracy (typical)	0.03%	0.2%
CURRENT SENSOR SIMULATION		
Typical Signal Type	Analog voltage	
Number of Channels	2 channel	
Range	±10V	
Resolution	16 bit	
Accuracy	±0.5%	
Additional Signal Types	CAN communications	
BMS BUS VOLTAGE SIMULATION		
Number of Channels	2 channel	
Voltage Range	0 to 60V	
Current Range	0 to 20A	
Power Range	850W	

COMMUNICATION PROTOCOLS	
Standard Protocol	High-speed CAN
Number of Ports	2
Baud Rate	40 kbits/s to 1Mbit/s
Additional Protocols	LIN, SPI, RS232, Modbus
PACK VOLTAGE SIMULATION	
Number of Channels	1 to 10
Voltage Range	Up to 1000 VDC
Output Power	5W 30W 1500W
Resolution	0.1V 0.1V 0.003V
Accuracy (typical)	1-2% 1-2% 0.075%
BMS CONTROL I/O	
Number of Channels	Up to 32 input / 32 output
Voltage Range	0 to 30V
Current Drive	Up to 150 mA
Common Mode Isolation	30V bank-to-bank