BMS Environmental Test System

Simulate and measure BMS activity

The BMS Environmental Test System is a configurable platform simulating the essential signals used by Battery Management Systems (BMS) and cell monitoring modules with the ability to perform environmental testing on multiple BMS units simultaneously. The system implements single point value testing to evaluate specific BMS functions such as cell over and under voltage scenarios, cell leakage current, lost communications, or faulty system I/O.

APPLICATIONS

- Laboratory evaluation
- Parametric testing
- Life-cycle testing
- HALT, HASS testing

FEATURES

- Simultaneous testing of multiple units
- Hardware configurations for up to 1000V pack simulation
- Individually controlled cell voltage simulation for over 200 channels
- BMS current, temperature, I/O, communications simulation
- Fault insertion and auxiliary system measurements
- Chamber and vibration control interface for environmental testing
- Software application for manual operation, automated test, and reporting

Trying to evaluate BMS algorithms?

Inquire about Bloomy's BMS HIL Test System.

SYSTEM DIAGRAM

The BMS Environmental Test System is a modular platform, providing a range of channel count and types, and can be packaged as a desktop unit or portable test station. The diagram below shows two BMS and Modules in an environmental chamber.
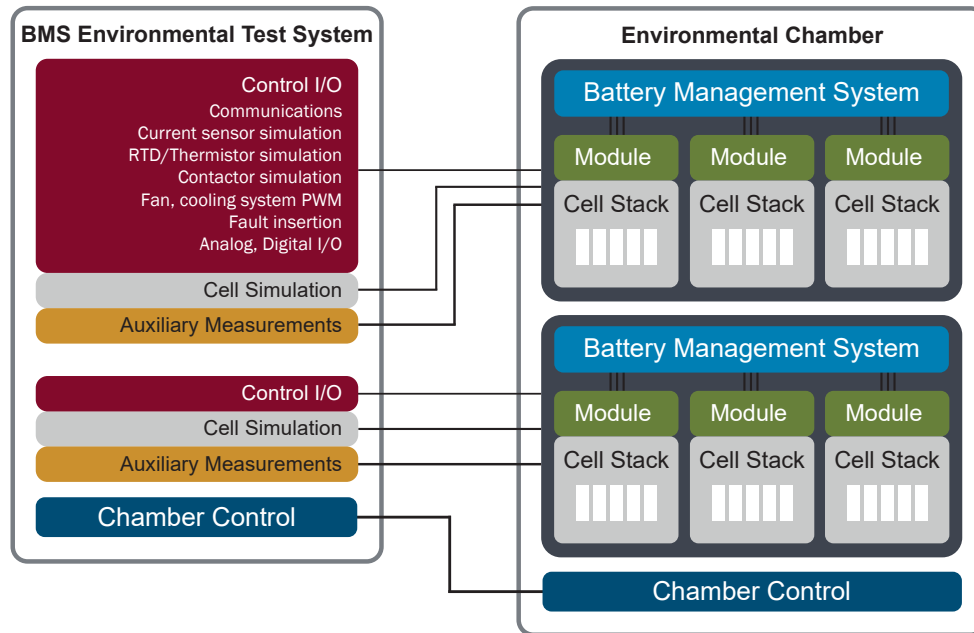
HARDWARE SPECIFICATIONS

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 CH-TO-CH, CH-TO-GND

CELL CHANNEL READBACK

Voltage Resolution	0.1 mV
Voltage Accuracy	±3 mV
Current Resolution	0.1 mA
Current Accuracy	±4 mA

Higher accuracies can be achieved with a custom relay matrix and an integrated 7.5 digit DMM.

TEMPERATURE SENSOR SIMULATION

Typical Signal Type	Resistance (thermistor/RTD)
Number of Channelss	12 / module
Range	10Ω to 500 kΩ
Resolution	1Ω
Accuracy	1%
Additional Signal Types	Analog voltage (±10V) Analog current (0 – 40 mA)

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 channel
Voltage Range	up to 1000 VDC
Current Range	1.5 ADC
Programming Accuracy	±0.25% of full scale

BMS CONTROL I/O

Number of Channels	24 input / 24 output
Voltage Range	0 to 60V
Current Drive	150 mA
Common Mode Isolation	60V channel-to-channel

Call 508-281-8288 or visit
www.bloomy.com