



The Leader in Automated Test, Data Acquisition and Control Systems



BMS Manufacturing Test System

Ensures functionality before assembly

The Battery Management System (BMS) Manufacturing Test System was developed to cover functional testing of product during end-of-line manufacturing. The system hardware includes all instrumentation to test a BMS, a mass interconnect for quick product transition and bed-of-nail fixtures to ensure less down time, higher throughput, and easy maintenance. The system application easily integrates into manufacturing processes, provides a method to test multiple product types, and optimizes tests to ensure only good product is released from manufacturing.

APPLICATIONS

- BMS master and module testing
- End-of-Line manufacturing test
- Maintenance and quality testing

FEATURES

- Instrumentation to simulate
 - Pack and/or cell voltages
 - Temperature and current sensors
 - Control I/O such as contactors and fans
 - Communications, etc.
- Mass interconnect for quick product transition
- Fault insertion and auxiliary system measurements
- Software application for automated manufacturing test and reporting
- Bar-code scanner, traveler printing, uninterpretable power supply, safety integration

Trying to validate a BMS?

Inquire about Bloomy's BMS Validation System.

MANUFACTURING INTEGRATION

The BMS Manufacturing Test system is a modular design that includes all necessary instrumentation and manufacturing necessities such as an uninterruptable power supply (UPS), barcode scanner, traveler printing, and safety integration. A robust Virginia Panel mass interconnect provides a method for interchangeable fixtures to connect to the instrumentation to test a wide range of BMS models.

The system application has been optimized for manufacturing test with a fully automated test management environment to configure system tests, control instruments, communicate to the product, and execute test profiles. The application features include:

- Fixture and product identification
- Barcode scanning
- Minimizing operator interaction
- Product test optimization
- Customized reports and travelers
- Database integration

HARDWARE SPECIFICATIONS

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

CELL CHANNEL SIMULATION		CURRENT SENSOR SIMULATION		BMS CONTROL I/O	
Number of Channels	12 / module	Typical Signal Type	Analog voltage	Number of Channels	24 input / 24 output
Max number of Modules	20 (240 channels @ 4.2V)	Number of Channels	2 channel	Voltage Range	0 to 60V
Channel Type	Sink and Source	Range	±10V	Current Drive	150 mA
Voltage Range per cell	0.0 to 5.0V	Resolution	16 bit	Common Mode Isolation	60V channel-to-channel
Voltage Resolution	0.1 mV	Accuracy	±0.5%	FAULT INSERTION	
Voltage Accuracy	±3 mV	Additional Signal Types	CAN communications	Number of Channels	24
Current Range	±500.0 mA	BMS BUS VOLTAGE SIMULATION		Type	Relays
Current Resolution	0.1 mA	Number of Channels	2 channel	Voltage Range	0 to 500V
Current Accuracy	±4 mA	Voltage Range	0 to 60V	AUXILIARY MEASUREMENTS	
Current Limiting Accuracy	±10 mA	Current Range	0 to 20A	Number of Channels	32
Common Mode Isolation	1000 VDC CH-TO-CH, CH-TO-GND	Power Range	850W	Type	7.5V DMM (voltage, current, resistance)
CELL CHANNEL READBACK		COMMUNICATION PROTOCOLS		Voltage	±10 nV to 1000 VDC
Voltage Resolution	0.1 mV	Standard Protocol	High-speed CAN	Current	8 DC current ranges with sensitivity down to 1 pA
Voltage Accuracy	±3 mV	Number of Ports	2	Resistance	10 µΩ to 5 GΩ
Current Resolution	0.1 mA	Baud Rate	40 kbits/s to 1Mbit/s	Common Mode Isolation	±500 VDC/Vrms
Current Accuracy	±4 mA	Additional Protocols	LIN, SPI, RS232, Modbus		
<i>Higher accuracies can be achieved with a custom relay matrix and an integrated 7.5 digit DMM.</i>		TEMPERATURE SENSOR SIMULATION			
PACK VOLTAGE SIMULATION		Typical Signal Type	Resistance		
Number of Channels	1 channel	Number of Channels	12 / module		
Voltage Range	up to 1000 VDC	Range	10Ω to 500 kΩ		
Current Range	1.5 ADC	Resolution	1Ω		
Programming Accuracy	±0.25% of full scale	Accuracy	1%		
		Additional Signal Types	Analog voltage (±10V) Analog current (0 – 40 mA)		

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