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Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Battery Management System (BMS) Trainer | RVX 121

Category: Renewable Energy · **Order Code:** RVX 121 · **Country of Origin:** India

Product Overview

The Battery Management System (BMS) Trainer RVX 121 studies lithium-ion battery management systems with dual testing capability. This BMS trainer features 15-channel lithium battery emulator (1.2-4.9V per cell, 2mV accuracy), 48V 6Ah real lithium battery, 1kW battery discharger (0-20A constant current), and protection board test system (over-charge, over-discharge, short-circuit, balancing). Hot air gun tests temperature sensors, and loop resistance measurement analyzes circuit quality. PC software and Bluetooth app provide real-time monitoring.

View this product online: https://scienticoindia.com/product/battery-management-system-bms-trainer-rvx-121/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Battery Management System (BMS) Trainer RVX 121 — Technical Specifications

Parameter	Value
BMS Board Cell Count	15 cells (48V)
Lithium Battery Emulator Channels	15 voltage channels
Emulator Voltage Range	1.2V to 4.9V per cell
Emulator Voltage Accuracy	2mV
Emulator Current per Channel	1000mA
Emulator Voltage Isolation	1.5KVA
Real Lithium Battery	48V, 6Ah, LFP type
Battery Temperature Sensors	4 units integrated
Battery Discharger Power Rating	1kW
Discharger Voltage Range	0 to 100V
Discharger Current Range	0 to 20A
Discharger Voltage Accuracy	±0.2% of reading
Discharger Current Accuracy	±0.2% of reading
Discharger Capacity Accuracy	±1%

Parameter	Value
Discharge Timing Range	0 to 999 hours
Data Logging Interval	2 seconds minimum
Hot Air Gun Temperature Range	100°C to 480°C
Protection Board Test Voltage Range	0.5V to 5V
Protection Board Voltage Accuracy	±5mV
Protection Board Current Range	1A to 120A
Protection Board Current Accuracy	±0.1A
Cell Balance Current Range	0 to 1000mA
Loop Resistance Range	0 to 500mΩ
Short-Circuit Detection	0 to 9999 microseconds
Test Strings Supported	1 to 16 strings
Temperature Sensor Test	Hot air gun capability
Data Acquisition	USB interface

Technical Data

BMS Board:

- 15-cell 48V lithium battery management
- PC-based software control
- Mobile Bluetooth app interface
- Cell terminal connections
- Temperature sensor inputs

Lithium Battery Emulator:

- 15 voltage channels
- Supply: 12V, 6A
- Variable voltage per cell: 1.2V to 4.9V
- Output current: 1000mA per channel
- Voltage accuracy: 2mV
- Voltage isolation: 1.5KVA
- Digital increment/decrement control

Real Lithium Battery:

- Capacity: 48V, 6Ah
- Type: Lithium iron phosphate (LFP)
- Cell count: 15 cells
- Temperature sensors: 4 units
- All cell connections terminated for BMS interface

Battery Discharger Unit:

- Power rating: 1kW maximum
- Input power: AC 220V +10%, 50Hz
- Voltage measurement range: 0 to 100V
- Voltage precision: ±(0.2% reading + 0.2% range)
- Discharge current range: 0 to 20A
- Current precision: ±(0.2% reading + 0.2% range)
- Capacity precision: ±1%

- Discharge mode: Constant current
- Timing range: 0 to 999 hours per step
- Data logging interval: 2 seconds minimum
- Inspection time: Real-time display

Protection Board Test System:

- Quick test mode for rapid testing
- Precise test mode with 5mV accuracy
- Over-charge protection testing
- Over-discharge protection testing
- Short-circuit protection testing
- Cell balancing function testing
- Over-voltage/under-voltage protection
- Delay time testing (1-20 seconds)
- Single cell self-consumption (0-500μA)
- Total self-consumption measurement
- Equalization current and voltage testing
- Loop resistance measurement (0-500mΩ)
- High-current module: 1-120A range, 0.1A accuracy
- Voltage module: 0.5-5V programmable output
- Short-circuit module: Super-capacitor instant voltage replication
- Test string support: 1 to 16 strings

Hot Air Gun:

- Temperature range: 100°C to 480°C
- Adjustable blower speed
- Digital temperature setting
- Digital fan speed control
- 7-segment display
- Temperature probe included

Key Features

Key Features

- Dual Battery Testing: Battery management system trainer supports both lithium battery emulator for safe development and real 48V lithium battery for actual testing
- Safe Emulation Testing: 15-channel lithium battery emulator enables BMS software development and firmware optimization without live battery risk
- Comprehensive Protection Testing: Quick and precise test modes evaluate over-charge, over-discharge, short-circuit, and cell balancing protection functions
- High-Current Capability: 120A maximum current testing with 0.1A accuracy enables high-power battery pack protection testing
- Individual Cell Testing: 1 to 16 cell string support with individual self-consumption measurement (0-500μA) for cell-level analysis
- Loop Resistance Analysis: Precise measurement (0-500mΩ ±1mΩ) evaluates battery protection circuit internal resistance
- Short-Circuit Detection: Super-capacitor short-circuit module instantly replicates battery voltage for accurate protection response timing (0-9999 microseconds)
- Temperature Validation: Hot air gun (100-480°C) with adjustable speed tests BMS temperature sensor accuracy and thermal protection thresholds
- Real-Time Data Logging: Battery discharger captures discharge curves at 2-second intervals up to 999 hours for capacity and performance analysis
- Multi-String Testing: Support for 1-16 cell strings accommodates various battery pack configurations and modular testing requirements

Experiments

- BMS board software and firmware testing
- Lithium battery emulator operation and configuration
- Over-charge protection threshold testing
- Over-discharge protection threshold testing
- Short-circuit protection response testing
- Cell balancing function and equalization current analysis
- Over-voltage and under-voltage protection testing
- Protection delay time measurement and tuning
- Single cell self-consumption analysis
- Total protection board self-consumption measurement
- Loop resistance and internal circuit quality testing
- Temperature sensor functionality and threshold testing
- Hot air gun temperature simulation for thermal protection
- Constant current discharge testing and curve recording
- Battery capacity measurement and degradation tracking
- Multi-string protection board comparison testing
- Quick production testing procedures
- Precise development and debugging procedures
- Bluetooth app monitoring and control
- Real-time BMS performance visualization
- Protection board failure mode analysis

Construction and Design

The Battery Management System (BMS) Trainer RVX 121 integrates BMS board with 15-cell capacity and PC software interface supporting Bluetooth mobile app connectivity. Lithium battery emulator with 15 independent voltage channels (1.2-4.9V range, 2mV accuracy) enables safe firmware development and testing. Real 48V 6Ah lithium iron phosphate battery with four temperature sensors provides production-representative testing. Battery discharger unit (1kW rated) enables constant current discharge testing with precise voltage and current measurement (±0.2% accuracy) and real-time data logging at 2-second intervals. Protection board test system with dual-mode operation (quick and precise) evaluates all major protection functions including over-charge, over-discharge, short-circuit, and cell balancing. High-current module (120A, 0.1A accuracy), voltage module (0.5-5V ±5mV), and short-circuit module (super-capacitor replication) provide comprehensive testing capability. Hot air gun (100-480°C adjustable) with digital controls tests temperature sensor response. Loop resistance measurement (0-500mΩ ±1mΩ) analyzes protection circuit quality. Support for 1-16 cell strings accommodates various battery configurations. All test equipment includes real-time display and USB data acquisition for comprehensive documentation.

Software

PC-based BMS software with mobile Bluetooth app interface for real-time monitoring and control. DAQ software in National Instruments LABVIEW environment (optional) for automated data acquisition and analysis. Windows operating system compatible.

Scope of Delivery

- 1 BMS board (15-cell, 48V with PC software and Bluetooth app)
- 1 Lithium battery emulator board (15-channel voltage control)
- 1 Real 48V 6Ah lithium iron phosphate battery with temperature sensors
- 1 Battery discharger unit (1kW, 0-20A constant current)
- 1 Protection board test system (quick and precise test modes)
- 1 Hot air gun with temperature probe (100-480°C)
- 1 Complete cable and termination set
- 1 Instruction manual

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q: Why does the Battery Management System (BMS) Trainer RVX 121 include both battery emulator and real battery?
A: Lithium battery emulator enables safe BMS software development without live battery risk. Real 48V lithium battery provides production-representative testing after firmware optimization. Together they enable comprehensive development and validation workflows.

Q: What protection functions does the Battery Management System (BMS) Trainer RVX 121 test?
A: Protection board test system evaluates over-charge, over-discharge, short-circuit, cell balancing, over-voltage, under-voltage, and self-consumption functions. Delay time testing and loop resistance measurement assess protection circuit quality.

Q: How accurate is the Battery Management System (BMS) Trainer RVX 121 voltage and current measurement?
A: Battery discharger achieves ±0.2% accuracy for both voltage and current measurement. Protection board test system provides ±5mV voltage and ±0.1A current accuracy, with 5mV precision in development testing mode.

Q: Can the Battery Management System (BMS) Trainer RVX 121 test different battery pack configurations?
A: Yes. Protection board test system supports 1 to 16 cell string testing. Individual cell self-consumption measurement and balancing current analysis enable configuration-specific analysis.

Q: How does the Battery Management System (BMS) Trainer RVX 121 validate temperature sensors?
A: Hot air gun with adjustable temperature (100-480°C) and fan speed enables thermal protection threshold testing. Temperature sensors validate BMS response to thermal conditions without battery heating risk.

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