

Rechargeable Battery Automatic Testing Formation And Capacity Grading Equipment High Precision Cell Capacity Grading Cabinet

Item Number: CD03



Introduction

High performance rechargeable battery automatic testing formation and capacity grading equipment engineered with 512 independent channels seamless constant current constant voltage switching intelligent multi condition cell sorting power failure recovery and robust automated data acquisition for cylindrical polymer pouch cells

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Application	Description	Key Benefit
Lithium-Ion Cell Formation	Initial activation and SEI layer growth for freshly assembled cylindrical and polymer pouch cells.	Precise current ramping and zero-surge voltage transitions ensure dense, stable SEI formation for extended cycle life.
High-Volume Capacity Grading	Mass testing and multi-stage classification of finished rechargeable cells into strict capacity bins.	512 independent channels with local LED indicators maximize throughput and streamline physical sorting processes.
Battery Pack Cell Matching	Automated sorting by open-circuit voltage, capacity, and discharge plateau for pack-level cell balancing.	Tight parameter binning minimizes internal pack imbalance, maximizing module reliability and operational safety.
Electrochemical Quality Assurance	Statistical verification of incoming cell lots, batch-to-batch consistency audits, and rate capability verification.	Comprehensive data acquisition captures detailed V-I-T curves and automatically calculates charge retention ratios.
Electrolyte and Chemistry R&D	Multi-cycle endurance evaluation and degradation profiling under continuous charge-discharge protocols.	Flexible 32-step scheduling and 256-cycle loops allow researchers to execute complex aging and degradation profiles.
Production Yield Optimization	Automated calculation of constant-current charging ratios, capacity losses, and median discharge voltages.	In-depth production analytics identify assembly anomalies early, reducing material scrap rates on manufacturing lines.

Specification Parameter	Specification (CD03-5KL)	Specification (CD03-0.2TS)
Model Item Designation	CD03-5KL	CD03-0.2TS
Total Channel Capacity	512 Independent Channels	512 Independent Channels
Workflow Control Mode	Full cabinet centralized control	Full cabinet centralized control
Charging Operating Modes	Constant Current (CC), Constant Voltage (CV)	Constant Current (CC), Constant Voltage (CV)
Charge Cut-off Criteria	Voltage, Current, Time, Capacity	Voltage, Current, Time, Capacity
Discharging Operating Modes	Constant Current (CC)	Constant Current (CC)
Discharge Cut-off Criteria	Voltage, Time, Capacity	Voltage, Time, Capacity
Sampling Inspection Period	≤10 s	≤10 s
Voltage Measurement Range	0 to 5 V	0 to 5 V
Voltage Display Resolution	1 mV	1 mV

Specification Parameter	Specification (CD03-5KL)	Specification (CD03-0.2TS)
Battery Voltage Range (Charge)	0 to 4.5 V	0 to 4.5 V
Battery Voltage Range (Discharge)	4.5 to 2.0 V	4.5 to 2.5 V
Constant Voltage (CV) Range	3 to 4.5 V	3 to 4.5 V
Voltage Measurement Accuracy	$\pm(0.05\% \text{ RD} + 0.1\% \text{ FS})$	$\pm(0.05\% \text{ RD} + 0.1\% \text{ FS})$
Current Operating Range	Charge: 0.025 to 5 A; Discharge: 0.025 to 5 A	Micro/Pouch current calibrated standard
Current Display Resolution	1 mA	1 mA
Current Measurement Accuracy	$\pm(0.1\% \text{ RD} + 0.1\% \text{ FS})$	$\pm(0.1\% \text{ RD} + 0.1\% \text{ FS})$
Time Setting Range	0 to 30,000 minutes (Arbitrary programmable)	0 to 30,000 minutes (Arbitrary programmable)
Time Measurement Accuracy	$\leq \pm 0.1\%$	$\leq \pm 0.1\%$
Cell Fixture Mechanism	Quick push-clamp type	Polymer pouch cell clamp type
Fixture Center Spacing	Designated cylindrical standard	55 mm
Supported Cell Chemistry/Format	Designated cylindrical lithium-ion cells	Polymer pouch lithium-ion cells
Communication Interface	RS485 (Baud rate: 57,600 bps)	RS485 (Baud rate: 57,600 bps)
Host Communication Topology	1 PC to 1-15 Cabinets (≤ 10 recommended)	1 PC to 1-15 Cabinets (≤ 10 recommended)
Operating Power Requirements	3-Phase 4-Wire, AC 380V $\pm 10\%$, 50 Hz	3-Phase 4-Wire, AC 380V $\pm 10\%$, 50 Hz
Maximum Power Consumption	≤ 23 kW	≤ 4 kW
Full-Load Operating Current	Phase: Max 30 A; Neutral: Max 3 A	Phase: Max 15 A; Neutral: Max 3 A
Equipment Starting Current	~ 60 A (Instantaneous breaker closure)	~ 30 A (Instantaneous breaker closure)
Operating Environment	Temp: 0 to 40°C; Relative Humidity: $\leq 85\%$	Temp: 0 to 40°C; Relative Humidity: $\leq 85\%$
External Dimensions (W x D x H)	1650 mm x 500 mm x 1914 mm	1440 mm x 500 mm x 1840 mm
Gross Equipment Weight	~ 400 kg	~ 200 kg

Subsystem Component	Minimum Specification Requirement
Processor (CPU)	Intel Pentium 4 or higher performance processor
System Memory (RAM)	2 GB RAM minimum
Storage Capacity	200 GB available hard drive storage
Display Subsystem	EGA/VGA color display monitor
Peripheral Interface	1 x Dedicated RS232 serial communication port (or compatible converter)
Optical Drive & Input	1 x CD-ROM drive, standard mouse and keyboard
Operating System	Microsoft Windows XP or newer Windows OS
Reporting Hardware	Standard Windows-supported desktop printer