



KINTEK SOLUTION

Battery Tester Catalog

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KINTEK SOLUTION

COMPANY PROFILE

>>> About Us

KINTEK Solution is a technology-driven innovator specializing in comprehensive laboratory equipment for battery R&D and advanced materials research. Our portfolio spans the entire cell fabrication workflow—from mixing, coating, and precision pressing (automatic, heated, isostatic) to cell assembly and testing. Also essential in ceramics and powder metallurgy, our systems prioritize precision, safety, and repeatability, empowering researchers and industrial labs to achieve groundbreaking results.



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

Dual Channel Dds Function Arbitrary Waveform Generator High Precision Signal Source

Item Number: CD08



Introduction

Engineered for advanced laboratory research and electronic testing this dual channel DDS arbitrary waveform generator delivers 200MSa/s sampling 13-bit vertical resolution versatile modulation capabilities integrated frequency counting and exceptional signal fidelity across demanding industrial and R&D applications worldwide

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Application	Description	Key Benefit
Battery & Electrochemical Impedance Testing	Generates ultra-stable low-frequency sinusoidal and arbitrary excitation signals to analyze electrochemical cell dynamics and interface kinetics.	Delivers clean sub-hertz signals down to 1 μ Hz with precise amplitude control down to 2 mVpp.
Semiconductor & Sensor Calibration	Provides precise pulse, ramp, and analog-modulated signals to evaluate sensor response curves, ADC linearity, and operational amplifier thresholds.	Exceptional amplitude flatness (± 0.4 dB) and low harmonic distortion ($< 0.8\%$) prevent measurement artifacts.
Power Electronics & Gate Driver R&D	Simulates gate drive pulses, square waves with < 20 ns transition times, and specialized burst sequences to stress power semiconductor switches.	High edge-transition speed and robust short-circuit output protection safeguard instrumentation.
Communication Systems Simulation	Generates ASK, FSK, and PSK digitally keyed signals along with AM/FM/PM modulated carriers for RF frontend and receiver testing.	Broad carrier frequency support up to 60 MHz with versatile internal or external modulation control.
Ultrasonic & Piezoelectric Device Driving	Delivers phase-synchronized dual-channel excitation across resonant transducers, piezoelectric actuators, and acoustic sensors.	High-resolution 0.1° phase adjustment facilitates precise multi-channel resonant alignment.
Academic Research & Automation Test Benches	Serves as a versatile signal stimulus and automated verification source in university laboratories and industrial automated test equipment (ATE).	Standard RS232/USB interfaces facilitate rapid SCPI command scripting and automated data logging.

Model Series / Item Number	CD08-15	CD08-25	CD08-40	CD08-60
Sine Wave Frequency Range	1 μ Hz to 15 MHz	1 μ Hz to 25 MHz	1 μ Hz to 40 MHz	1 μ Hz to 60 MHz
Square Wave Frequency Range	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz
Triangle Wave Frequency Range	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz	1 μ Hz to 15 MHz
Pulse Wave Frequency Range	100 μ Hz to 6 MHz	100 μ Hz to 6 MHz	100 μ Hz to 6 MHz	100 μ Hz to 6 MHz
Arbitrary Waveform Range	1 μ Hz to 6 MHz	1 μ Hz to 6 MHz	1 μ Hz to 6 MHz	1 μ Hz to 6 MHz
Noise Bandwidth (-3dB)	7 MHz bandwidth	7 MHz bandwidth	7 MHz bandwidth	7 MHz bandwidth
Frequency Resolution	1 μ Hz	1 μ Hz	1 μ Hz	1 μ Hz
Frequency Accuracy	± 5 ppm	± 5 ppm	± 5 ppm	± 5 ppm
Frequency Stability	± 1 ppm / 3 hours	± 1 ppm / 3 hours	± 1 ppm / 3 hours	± 1 ppm / 3 hours

Specification Parameter	Technical Value / Characteristic
Waveform Types	Sine, Square, Triangle, Pulse, Noise, Arbitrary (including DC)

Specification Parameter	Technical Value / Characteristic
Arbitrary Waveforms	32 built-in profiles; 50 user-defined customizable storage locations
Waveform Length	8,192 points (8k depth)
Sampling Rate	200 MSa/s
Vertical Resolution	13-bit
Sine Harmonic Suppression	≥ 45 dBc (< 1 MHz); ≥ 40 dBc (1 MHz to 20 MHz)
Total Harmonic Distortion (THD)	$< 0.8\%$ (20 Hz to 20 kHz, 0 dBm)
Square Wave Rise / Fall Time	< 20 ns (Overshoot $< 5\%$)
Square Duty Cycle Range	Freq < 100 kHz: 1%-99%; 100 kHz $\leq$ Freq < 5 MHz: 20%-80%; Freq ≥ 5 MHz: 40%-60% (0.1% resolution)
Pulse Width & Edge Transitions	Pulse width min. 20 ns (1 ns resolution); Edge transition time min. 20 ns; Jitter 6 ns + 0.1% of period
Sawtooth / Ramp Linearity & Symmetry	Linearity $\geq 98\%$ (0.01 Hz to 10 kHz); Symmetry 0.0% to 100.0% (0.1% resolution)
Output Amplitude Range (50 Ω load)	Freq < 10 MHz: 2 mVpp to 20 Vpp; 10 MHz $\leq$ Freq < 30 MHz: 2 mVpp to 10 Vpp; Freq ≥ 30 MHz: 2 mVpp to 5 Vpp
Amplitude Resolution & Accuracy	1 mV resolution; Accuracy: $\pm(1\%$ of setting + 2 mVpp) (1 kHz sine, 0 offset, > 10 mVpp)
Amplitude Flatness (ref 1 kHz, 1Vpp)	± 0.4 dB (< 10 MHz); ± 1.0 dB (≥ 10 MHz)
DC Offset Range & Resolution	Amp > 0.1 V: ± 10 Vpk (ac + dc); 2 mV $<$ Amp ≤ 0.1 V: ± 0.250 Vpk (ac + dc); Resolution: 1 mV
Phase Adjustment & Resolution	0° to 359.9° (0.1° resolution)
Output Protection & Impedance	50 $\Omega \pm 10\%$ (typical); Output protected against short-circuit conditions up to 60 seconds

Function Type	Supported Specifications
Modulation Channels & Carriers	CH1 or CH2 (Default CH1); Sine, Square, Ramp, Pulse, Arbitrary (except DC)
AM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Depth: 0%–120%
FM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Dev: 0 to max carrier freq
PM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Phase Dev: 0°–360°
ASK / FSK Modulation	Source: Internal/External; Mod Wave: 50% square; Rate: 2 mHz–1 MHz; Depth: 0 to carrier amplitude / FSK keying
PSK Modulation	Source: Internal/External; Mod Wave: 50% square; Modulation Rate: 2 mHz–1 MHz; Phase Deviation: 0°–360°
Sweep Function	Channel: CH1/CH2; Type: Linear, Logarithmic; Sweep Time: 1 ms to 500.000 s; Direction: Forward, Reverse
Burst Function	Pulse Count: 1 to 65,535 cycles, Infinite, Gated; Start/Stop Phase: 0°–360°; Internal Period: 1 μ s to 500 s
Trigger Source & Inputs	Trigger: Internal, External, Manual; Input Voltage: 2 Vpp–20 Vpp (AC/DC); Pulse Width: > 100 ns
Analog Modulation Input	Input Impedance: 1 M Ω ; Voltage Signal Range: ± 2.5 V (ac + dc)
SYNC Output	TTL-compatible, 50 Ω impedance, Rise/Fall < 25 ns, Maximum Frequency 25 MHz

Specification Parameter	Value / Operating Range
Frequency Counter Range	1 Hz to 100 MHz (Gate time: 0.01 s to 10 s continuously adjustable)
Counter Capacity & Coupling	0 to 4,294,967,295 (32-bit); Manual counting mode; AC or DC coupling (Input: 2 Vpp to 20 Vpp)
Period & Pulse Width Measurement	1 ns resolution; Maximum measurable duration: 20 s
Display Screen	3.5-inch TFT LCD, 480 $\times$ 320 resolution, 16-bit true color with bilingual (EN/ZH) menu support
Communication Interfaces	RS232 (Standard), USB Device (Standard), USB Host (Optional)
Power Supply Voltage & Consumption	220V AC $\pm 10\%$ or 110V AC $\pm 10\%$ (Optional); Power consumption < 15 W
Operating & Storage Temperature	Operating: +10°C to +40°C; Non-operating / Storage: -10°C to +60°C
Environmental Humidity Range	$\leq 90\%$ Relative Humidity (within 0°C to 40°C range)
Unit Dimensions & Weight	265 mm (W) $\times$ 105 mm (H) $\times$ 305 mm (D); Net Weight: 2.6 kg
Standard Included Accessories	Model 30A51 3-Core Power Cord (1 pc), Model 33A52 BNC Coaxial Cable (1 pc)

Pin Bed Cylindrical Battery Formation And Capacity Grading System With Energy Feedback

Item Number: CD01



Introduction

Optimize lithium cell manufacturing with this energy regenerative pin bed battery formation and capacity grading system featuring 768 independent channels DSP digital control ultra low harmonic distortion and up to 50 percent lower power consumption across high volume production lines

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Application	Description	Key Benefit
Cylindrical Lithium-Ion Formation	Executes solid electrolyte interphase (SEI) layer formation on freshly assembled cylindrical cells under tightly regulated CC/CV regimes.	Ensures uniform SEI growth, long cell cycle life, and low internal impedance across mass production batches.
Commercial Capacity Grading	Conducts automated charge-discharge cycling to precisely measure discharge capacity, coulombic efficiency, and voltage plateaus.	Delivers high-speed sorting accuracy with 0.1mA current resolution and 0.1mV voltage resolution for consistent pack matching.
Battery Pack Sorting & Binning	Segregates mass-produced cells into granular performance bins based on capacity ratings, discharge curves, and nominal operating characteristics.	Minimizes capacity mismatch within downstream multi-cell battery packs, preventing premature pack degradation.
Cell Aging & Self-Discharge Testing	Evaluates post-formation open-circuit voltage (OCV) retention and static degradation over prolonged controlled rest cycles.	Automated multi-step safety profiles enable continuous, unattended multi-day verification runs without operator intervention.
Pilot Line Process Optimization	Facilitates rapid validation of novel electrolyte formulations, electrode thicknesses, and formation protocols on pilot cell batches.	Channel-level programming flexibility allows simultaneous execution of diverse test recipes across modular tiers.
Quality Assurance & Reliability Audits	Performs continuous stress cycling, cycle life benchmarking, and lot conformance testing on incoming cell shipments.	High power module MTBF (30,000 hours) and biannual calibration cycles guarantee repeatable audit compliance.

Specification Parameter	Technical Value / Standard
Equipment Item Code	CD01
Total Channel Capacity	768 Independent Channels per Cabinet (256 Channels / Tier, 3 Tiers)
Supervisory Control Capability	1 Master Computer controls up to 6 Equipment Cabinets (4,608 Channels)
Total Connected Power Capacity	28.8 kW
Rated Channel Power	30 W per Channel
Grid Input Configuration	Three-Phase 5-Wire (3P+N+PE)
Grid Input Voltage Range	380 Vac $\pm$ 15% (Withstands up to 450 Vac static input for 1 hour)
Grid Input Frequency	50 Hz $\pm$ 10%
Grid Power Factor (PF)	> 0.99 (Conditions: Full configuration, rated grid voltage, full load charge/discharge)
Grid Inrush / Surge Current	$\leq$ 10 A
Total Harmonic Current Distortion (THDI)	< 5%
Channel Voltage Range	Charge: 0 V to 5 V Discharge: 2 V to 5 V
Channel Current Range	Charge: 20 mA to 6 A Discharge: 20 mA to 6 A

Specification Parameter	Technical Value / Standard
Battery-Side Input Impedance	> 100 kΩ
Current Measurement Accuracy	±(0.05% FS + 0.05% RD)
Voltage Measurement Accuracy	±3 mV
Current Display Resolution	0.1 mA
Voltage Display Resolution	0.1 mV
Time Setting / Sampling Resolution	1 s
Voltage Noise and Ripple	≤ 50 mV (Vpp)
Current Rise Time (90% Load)	≤ 50 ms
Channel Startup Time (90% Load)	≤ 50 ms
System Charging Efficiency	> 70% (Condition: 380 Vac grid, full battery discharge load)
Energy Feedback Regeneration Efficiency	> 65% (Condition: 380 Vac grid, full battery discharge load)
Primary Controller Architecture	Industrial-Grade High-Performance DSP Microcontroller
Communication Protocol / Interface	10M Ethernet Port
Cabinet Status Display	Integrated Multi-Segment LED Panel Display
Power Module Reliability (MTBF)	≥ 30,000 Operating Hours
Recommended Calibration Interval	Current: Every 6 Months Voltage: Every 6 Months
Operating Temperature Range	0 °C to 45 °C
Environmental Storage Standard	Conforms to GB/T 4798.1-2005

Automated Clamping Battery Formation And Capacity Grading Cabinet For Cell Inspection And Sorting

Item Number: CD05



Introduction

Maximize battery production efficiency with our automated clamping formation and capacity grading cabinet. Featuring 128 independent channels, true four-wire testing precision, energy feedback recovery, and flexible step programming, this system delivers robust quality inspection and high-throughput grading for advanced cell manufacturing.

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Application	Description	Key Benefit
Prismatic Lithium-Ion Cell Formation	Initial solid electrolyte interphase (SEI) layer formation via controlled CC/CV charging across high-capacity prismatic cells.	Uniform SEI formation with precise current stepping and micro-level voltage monitoring.
Commercial Battery Capacity Grading	High-throughput discharge testing to classify manufactured cells into tightly binned capacity and voltage tolerance groups.	Eliminates capacity mismatch in downstream pack assembly through multi-parameter grading curves.
Battery Pack Production QC Inspection	End-of-line verification testing of incoming cells to detect internal micro-shorts, abnormal self-discharge, and high contact impedance.	Fast screening and sorting via 3-second cabinet polling and integrated barcode traceability.
Life Cycle and Degradation Profiling	Multi-cycle endurance evaluation executing up to 256 programmable loops to analyze capacity fade and Coulombic efficiency.	Reliable long-term unattended operation with 6-month calibration stability and automated data logging.
Pilot-Line R&D Electrochemical Testing	Rapid prototyping of novel cathode/anode formulations and electrolyte additives under diverse C-rate charging profiles.	Independent channel control allows parallel execution of differing test profiles across one cabinet.
Energy Storage Cell Pre-Shipment Validation	High-current charge-discharge cycling (up to 30 A per channel) for commercial ESS cells prior to modular integration.	Reduced operational electricity expenses via 65% discharge grid-tie energy regeneration.
Post-Formation Aging and Self-Discharge Analysis	Precise open-circuit voltage (OCV) and resting platform tracking following formation to identify defective cells.	High-resolution voltage sensing (0.1 mV) identifies subtle electrochemical self-discharge anomalies.

Specification Parameter	Value / Characteristic
Product Item Identifier	CD05
Channel Capacity	128 Independent Channels (Double-Sided Layout)
Fixture Mechanism	Automated Electric Press-Down Multi-Pin Clamping
Fixture Measurement Type	True Four-Wire (Kelvin Connection), Adjustable Polarity Spacing
Charge / Discharge Current Range	300 mA to 30,000 mA (30 A) per Channel
Current Measurement Accuracy	±0.05% FS + 0.05% RD
Current Resolution	1 mA
Voltage Measurement Range	0 mV to 5000 mV (0 to 5 V)
Charge Voltage Range	0 mV to 4500 mV (0 to 4.5 V)
Discharge Voltage Range	800 mV to 4500 mV (0.8 to 4.5 V)

Specification Parameter	Value / Characteristic
Voltage Measurement Accuracy	±0.05% FS + 0.05% RD
Voltage Resolution	0.1 mV
Time Measurement Range & Accuracy	Up to 999 minutes per step, Accuracy: ±0.1%
Calibration Method & Stability Cycle	Software digital calibration; ≥6 months stability within specification
Programmable Step Types	Constant Current (CC) Charge, CC-CV Charge, CC Discharge, Rest/Dwell
Step Termination Conditions	Current, Voltage, Time, Capacity
Max Step & Cycle Capability	Up to 32 Steps per recipe; Up to 256 Execution Cycles
Full Cabinet Inspection Polling Speed	≤ 3.0 Seconds (all 128 channels)
Capacity Grading Modes	Capacity, Time, Capacity + Curve, Time + Curve, Capacity + Voltage, Setpoint Voltage
Safety Protections	Over-Current, Under-Current, Over-Voltage, Under-Voltage, Over-Capacity, Leakage Current; Dual Hardware & Software Protection for Over-Voltage / Under-Voltage
Display & Diagnostic Curves	Real-time I-t, V-t, C-t, E-t, and C-V dynamic graphical curves
Data Acquisition & Export	Local raw/result data logging (MDB database format), MES server export compatibility
Barcode Scanning Capability	Supports 1D / 2D barcode scanning with channel binding and sequential/skip modes
Host Computer Capacity	1 Host PC controls 1 to 20 Cabinets (Recommended: 10 Cabinets per PC)
Host Interface / Communication	RS485 Serial Network Protocol
Operating Software Platform	Windows-based control suite with recipe library and status LED drivers
Power Conversion Efficiency	Charge efficiency ≥ 70%; Grid-feedback discharge recovery efficiency ≥ 65%
Overall Power Consumption	≤ 23.0 kW
Fixture Spacing (Positive to Negative)	Compatible Range: 45 mm (Min) to 150 mm (Max)
Compatible Cell Height Range	50 mm to 220 mm
Fixture Center-to-Center Pitch	78.5 mm
Tray Shelf Layer Pitch	270 mm
Tray Elevation Range	Lowest Layer: 270 mm; Highest Layer: 1620 mm
External Dimensions (L × W × H)	2030 mm × 700 mm × 2020 mm
Input Power Supply Requirements	Three-Phase AC 380V ± 10%, 50 Hz

Energy Regenerative Lithium Battery Automatic Formation And Capacity Grading Testing System

Item Number: CD04



Introduction

Discover high precision energy regenerative lithium battery automatic formation and capacity grading testing systems featuring independent 128 channel architecture four wire measurement grid energy feedback and seamless MES database integration for advanced cell production.

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Application	Description	Key Benefit
High-Volume Commercial Cell Formation	Initial solid electrolyte interphase (SEI) layer formation and cell activation for high-density lithium-ion battery cells under tightly regulated constant-current and constant-voltage regimes.	Ensures uniform, chemically stable SEI film growth across all 128 channels, maximizing long-term cycle life and initial Coulombic efficiency.
Production Capacity Grading and Binning	Automated high-throughput capacity sorting using multi-variable criteria such as total discharge capacity, plateau voltage, and dynamic discharge curves.	Delivers ultra-narrow capacity distribution bands for precision module and pack matching, reducing cell-to-cell imbalance in battery packs.
Pilot-Line Cell Chemistry R&D	Advanced electrochemical formulation testing involving specialized formation protocols, high-rate stepping up to 20A, and multi-cycle endurance evaluation.	High-fidelity data recording (0.1 mV / 1 mA resolution) and flexible 32-step recipe generation accelerate rapid iteration of novel battery chemistries.
Quality Assurance and Lot Screening	Comprehensive incoming and outgoing quality control audits, measuring open-circuit voltage, capacity retention, DC resistance indicators, and leakage currents.	Full barcode-to-channel binding and automated MES database synchronization provide unbroken regulatory compliance and quality traceability.
Energy-Efficient Pilot Degradation Testing	Long-term continuous charge-discharge cycling across multi-cell pilot batches to evaluate capacity fade, degradation kinetics, and thermal performance.	Grid-tied energy recovery captures discharge energy, slashing electrical utility consumption and heat dissipation inside environmental test enclosures.
Second-Life Battery Sorting and Re-grading	Evaluation and re-characterization of retired electric vehicle and energy storage cells to determine residual capacity and dynamic voltage curves.	Robust multi-step grading software categorizes degraded cells quickly and accurately into appropriate secondary energy storage applications.

Specification Parameter	Value / Technical Detail
Product Item Number	CD04
Channel Capacity	128 Channels (Completely independent CC/CV sources)
Charge / Discharge Current Range	300 mA to 20,000 mA (20 A) per channel
Current Measurement Accuracy	$\pm(0.05\% \text{ FS} + 0.05\% \text{ RD})$
Current Resolution	1 mA
Voltage Measurement Range	0 mV to 5,000 mV (5 V)
Charge Voltage Range	0 mV to 4,500 mV (4.5 V)
Discharge Voltage Range	1,800 mV to 4,500 mV (1.8 V to 4.5 V)
Voltage Measurement Accuracy	$\pm(0.05\% \text{ FS} + 0.05\% \text{ RD})$

Specification Parameter	Value / Technical Detail
Voltage Resolution	0.1 mV
Time Measurement Range & Accuracy	999 minutes per step, Accuracy: $\pm 0.1\%$
Cabinet Polling Speed	≤ 3 seconds for full 128-channel inspection cycle
Step Attributes	Constant Current Charging (CC), Constant Current-Constant Voltage Charging (CC-CV), Constant Current Discharging (CC), Rest (Sleep)
Step Cut-Off Conditions	Current, Voltage, Time, Capacity, Capacity Step-Delta
Max Programmed Steps per Recipe	32 Steps
Max Programmed Cycles	256 Cycles
Grading Methods	Capacity grading, Time grading, Capacity + Curve grading, Time + Curve grading, Capacity + Voltage grading, Fixed-point Voltage grading
Energy Recovery Power Efficiency	Charging Output Max Efficiency: $\geq 70\%$; Grid Recovery Max Efficiency: $\geq 65\%$
Calibration Method & Period	Full digital software calibration; 6-month calibration stability retention
Hardware & Software Protection	Over-voltage, under-voltage, over-current, under-current, over-capacity, leakage current (Dual hardware/software protection for charge over-voltage and discharge under-voltage)
Data Recording Telemetry	OCV, average voltage, step operating time, current, cumulative capacity, plateau capacity, step curve profiling, capacity-band grouping statistics
Real-Time Dynamic Curve Plotting	Voltage vs. Time (V-t), Current vs. Time (I-t), Capacity vs. Time (C-t), Energy vs. Time (E-t), Capacity vs. Voltage (C-V)
Barcode Integration	1D and 2D barcode scanner support; sequential scanning, channel-skipping scanning, full channel-to-barcode binding
Data Storage Architecture	Local detailed raw logs per run, local summary MDB result files, remote server centralized database sync with MES integration capability
Communication Interface	Industrial RS485 serial bus
Supervisory Control Capacity	1 to 20 units per host computer (Recommended: 10 units per host workstation)
Channel Status Indicators	Independent multi-color LED indicators per channel
Operating Input Power	Three-phase AC 380V $\pm 10\%$, 50 Hz
Total Equipment Power Consumption	≤ 15 kW
System Frame Dimensions (L $\times$ W $\times$ H)	2030 mm $\times$ 700 mm $\times$ 2020 mm (Reference nominal)

Programmable Dc Electronic Load Single And Dual Channel

Benchtop Power Testing System

Item Number: CD11



Introduction

High-precision single and dual channel programmable DC electronic load offering 1mV/1mA resolution, versatile CC, CV, CR, and CP modes, dynamic battery discharge analysis, and comprehensive hardware protection for advanced laboratory research and automated industrial power supply production testing.

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Application	Description	Key Benefit
Battery Pack & Cell Validation	Automated constant current and constant resistance discharge testing to measure cell capacity, internal resistance, and degradation kinetics.	Delivers precise 9999Ah capacity tracking and automated voltage cutoff to prevent destructive over-discharge.
Switch-Mode Power Supply (SMPS) Testing	Dynamic load step-response, transient recovery time analysis, and line/load regulation verification across varying load profiles.	Rapid transition times and dual-rate dynamic testing accurately simulate real-world transient loading conditions.
Charger & Adapter Burn-In	High-throughput burn-in, static efficiency validation, and continuous overload stress testing on production lines.	Robust multi-channel configurations maximize test density while programmable protection limits prevent catastrophic line downtime.
Linear Power Supply Characterization	High-precision ripple, noise, load regulation, and current limit threshold measurements across precise operating bands.	Ultra-low noise architecture and 1mV/1mA resolution detect minute voltage sags and regulation instabilities.
Automotive & Industrial DC-DC Converters	Sustained high-voltage (up to 500V) and high-current sink testing under diverse thermal and electrical operating envelopes.	Extended voltage and power ranges accommodate industrial and electric vehicle auxiliary DC-DC testing requirements.
Solar PV & Fuel Cell Research	Emulating dynamic source loading conditions and evaluating I-V curves under variable output resistance simulations.	Flexible CR, CP, and combined CR+CV modes allow accurate simulation of non-linear renewable source behavior.

Parameter	Specification Details
Input Line Voltage	220 Vac $\pm 10\%$ / 110 Vac $\pm 10\%$, 45 - 65 Hz
Display Interface	3.5-inch TFT LCD, 480 $\times$ 320 Resolution
Operating Temperature Range	0°C to 40°C
Storage Temperature Range	-10°C to 70°C
Operating Relative Humidity	< 80% RH
Standard Communication Interfaces	USB, RS-232
Optional Communication Interface	RS-485
Form Factor Dimensions	320 mm (L) $\times$ 220 mm (W) $\times$ 100 mm (H)

Model Identifier	Channels	Rated Power	Input Voltage Range	Input Current Range
CD11-5300A	Single Channel	200 W	0 - 150 V	0 - 30 A
CD11-5300	Single Channel	400 W	0 - 150 V	0 - 40 A
CD11-5301	Single Channel	400 W	0 - 150 V	0 - 60 A

Model Identifier	Channels	Rated Power	Input Voltage Range	Input Current Range
CD11-5302	Single Channel	400 W	0 – 500 V	0 – 15 A
CD11-5303	Single Channel	400 W	0 – 500 V	0 – 30 A
CD11-5304	Dual Channel	400 W (200 W × 2)	0 – 150 V	0 – 60 A (30 A × 2)

Function Mode	Parameter / Range	CD11-5300A	CD11-5300	CD11-5301	CD11-5304 (Per CH)
Constant Voltage (CV)	Range	0.1 – 19.999 V, 0.1 – 150.00 V	0.1 – 19.999 V, 0.1 – 150.00 V	0.1 – 19.999 V, 0.1 – 150.00 V	0.1 – 19.999 V, 0.1 – 150.00 V
	Resolution	1 mV, 10 mV	1 mV, 10 mV	1 mV, 10 mV	1 mV, 10 mV
	Accuracy	±(0.05% + 0.02% FS)	±(0.05% + 0.02% FS)	±(0.05% + 0.02% FS)	±(0.05% + 0.02% FS)
Constant Current (CC)	Range	0 – 3.000 A, 0 – 30.00 A	0 – 6.000 A, 0 – 40.00 A	0 – 6.000 A, 0 – 60.00 A	0 – 3.000 A, 0 – 30.00 A
	Resolution	1 mA, 10 mA	1 mA, 10 mA	1 mA, 10 mA	1 mA, 10 mA
	Accuracy	±(0.05% + 0.05% FS)	±(0.05% + 0.05% FS)	±(0.05% + 0.05% FS)	±(0.05% + 0.05% FS)
Constant Resistance (CR)	Range	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ
	Resolution	10 mΩ, 100 mΩ	10 mΩ, 100 mΩ	10 mΩ, 100 mΩ	10 mΩ, 100 mΩ
	Accuracy	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)
Constant Power (CP)	Range	0 – 200 W	0 – 400 W	0 – 400 W	0 – 200 W
	Resolution	10 mW	10 mW	10 mW	10 mW
	Accuracy	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)

Function Mode	Parameter / Range	CD11-5302	CD11-5303
Constant Voltage (CV)	Range	0.1 – 19.999 V, 0.1 – 500.00 V	0.1 – 19.999 V, 0.1 – 500.00 V
	Resolution	1 mV, 10 mV	1 mV, 10 mV
	Accuracy	±(0.05% + 0.02% FS)	±(0.05% + 0.02% FS)
Constant Current (CC)	Range	0 – 3.000 A, 0 – 15.00 A	0 – 3.000 A, 0 – 30.00 A
	Resolution	1 mA, 10 mA	1 mA, 10 mA
	Accuracy	±(0.05% + 0.05% FS)	±(0.05% + 0.05% FS)
Constant Resistance (CR)	Range	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ	0.05 Ω – 1 kΩ, 1 kΩ – 4.5 kΩ
	Resolution	10 mΩ, 100 mΩ	10 mΩ, 100 mΩ
	Accuracy	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)
Constant Power (CP)	Range	0 – 400 W	0 – 400 W
	Resolution	10 mW	10 mW
	Accuracy	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)

Measurement Parameter	Metric	150V Models (CD11-5300A, 5300, 5301, 5304)	500V Models (CD11-5302, 5303)
Voltage Readback	Range	0 – 19.999 V, 0 – 150.00 V	0 – 19.999 V, 0 – 500.00 V
	Resolution	1 mV, 10 mV	1 mV, 10 mV
	Accuracy	±(0.05% + 0.1% FS)	±(0.05% + 0.1% FS)
Current Readback	Range	Matches Model Maximum Current Limit	Matches Model Maximum Current Limit
	Resolution	1 mA, 10 mA	1 mA, 10 mA
	Accuracy	±(0.05% + 0.1% FS)	±(0.05% + 0.1% FS)
Power Readback	Range	200 W / 400 W (Model Dependent)	400 W

Measurement Parameter	Metric	150V Models (CD11-5300A, 5300, 5301, 5304)	500V Models (CD11-5302, 5303)
	Resolution	10 mW	10 mW
	Accuracy	±(0.1% + 0.5% FS)	±(0.1% + 0.5% FS)

Category	Parameter	Specification Details
Dynamic Test Function	Modes	Constant Current (CC), Constant Voltage (CV)
	Time Parameters (T1 & T2)	50 ms to 60 s
Battery Discharge Test	Discharge Modes	Constant Current (CC), Constant Resistance (CR)
	Max Capacity Tracking	9999 Ah
	Readout Resolutions	1 mA, 10 mA, 10 mΩ, 100 mΩ
Over-Voltage Protection (OVP)	Threshold	> 21 V or > 155 V (150V Models); > 21 V or > 510 V (500V Models)
Over-Current Protection (OCP)	CD11-5300A	> 3.1 A or > 31 A
	CD11-5300	> 3.1 A or > 41 A
	CD11-5301	> 6.1 A or > 61 A
	CD11-5302	> 3.1 A or > 16 A
	CD11-5303	> 3.1 A or > 31 A
	CD11-5304	> 3.1 A or > 31 A (Input cutoff per channel)
Over-Power Protection (OPP)	Threshold	210 W (200W Channels) / 410 W (400W Models)
Over-Temperature (OTP)	Thermal Cutoff	85°C Internal Heat Sink Limit
Additional Safety Features	Diagnostic Prompts	Input Reverse Polarity Indication, Audio Beeper Alarm, Non-Volatile Data Retention

Handheld Digital Lcr Bridge Meter With High Precision Component Impedance And Capacitance Testing

Item Number: CD06



Introduction

High precision handheld digital LCR bridge meter delivering continuous test frequencies up to 100kHz, 0.2% basic accuracy, component auto identification, versatile bias voltage output, and USB SCPI interface for laboratory research, battery development, and electronic component quality assurance testing.

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Application	Description	Key Benefit
Battery Electrode & Cell Characterization	Evaluates Equivalent Series Resistance (ESR) and contact impedance in lithium-ion and solid-state battery assemblies.	Pinpoints micro-ohm impedance shifts to evaluate electrolyte quality, current collector bonding, and cycle degradation.
Passive Component Quality Control	Performs high-speed sorting and tolerance verification on incoming batches of ceramic, electrolytic, and film capacitors.	Reduces inspection cycle times with rapid automated component identification and multi-tiered percentage tolerance sorting.
Power Electronics & Magnetic Core Analysis	Measures winding inductance, DC resistance (DCR), and quality factor (Q) across variable frequencies on transformers and inductors.	Identifies core losses, parasitic winding capacitance, and saturation vulnerability under user-defined test frequencies.
Ceramic & Piezoelectric Material R&D	Profiles impedance (Z), phase angle (θ), and dissipation factor (D) of advanced functional ceramics across a 100 Hz to 100 kHz sweep.	Yields high-resolution dielectric property data essential for tailoring advanced piezoelectric transducers and actuators.
SMD Component Manufacturing & Repair	Inspects miniature surface-mount devices (0201, 0402, 0805) directly on printed circuit boards or feeder tapes using dedicated SMD test tweezers.	Accelerates fault detection and component rework without introducing manual handling damage or stray capacitance errors.
Electrochemical & Sensor Impedance Testing	Analyzes baseline resistance and capacitive behavior of sensor electrodes, conductive coatings, and electrochemical biosensors.	Delivers stable DC bias excitation and precision low-level reactance measurements for sensitive bio-interface materials.

Specification Parameter	CD06-430B	CD06-430	CD06-431	CD06-432	CD06-433
Test Frequency Points / Range	100Hz, 120Hz, 1kHz, 10kHz, 40kHz, 100kHz	100Hz, 120Hz, 1kHz, 10kHz	100Hz, 120Hz, 1kHz, 10kHz, 40kHz, 100kHz	100Hz, 120Hz, 1kHz, 10kHz, 40kHz, 100kHz	100Hz - 100kHz Continuous (1Hz Steps)
Basic Accuracy	0.30%	0.30%	0.20%	0.20%	0.20%
Display Type	2.8-inch TFT Color LCD Screen (4.5 Digits Resolution)	2.8-inch TFT Color LCD Screen (4.5 Digits Resolution)	2.8-inch TFT Color LCD Screen (4.5 Digits Resolution)	2.8-inch TFT Color LCD Screen (4.5 Digits Resolution)	2.8-inch TFT Color LCD Screen (4.5 Digits Resolution)
Primary Display Parameters	L (Inductance), C (Capacitance), R (Resistance), Z (Impedance)	L, C, R, Z	L, C, R, Z	L, C, R, Z	L, C, R, Z
Secondary Display Parameters	X (Reactance), D (Dissipation Factor), Q (Quality Factor), θ (Phase Angle), ESR (Equivalent Series Resistance)	X, D, Q, θ , ESR	X, D, Q, θ , ESR	X, D, Q, θ , ESR	X, D, Q, θ , ESR
Electrolytic Capacitor Mode	Not Supported	Supported	Supported	Supported	Supported

Specification Parameter	CD06-430B	CD06-430	CD06-431	CD06-432	CD06-433
Direct Current Resistance (DCR)	Not Supported	Not Supported	Supported	Supported	Supported
Inductance (L) Range	0.000 μ H - 2000 H	0.000 μ H - 2000 H	0.000 μ H - 2000 H	0.000 μ H - 2000 H	0.000 μ H - 2000 H
Capacitance (C) Range	0.000 pF - 20.000 mF	0.000 pF - 20.000 mF	0.000 pF - 20.000 mF	0.000 pF - 20.000 mF	0.000 pF - 20.000 mF
Resistance (R/Z) Range	0.0001 Ω - 20.00 M Ω	0.0001 Ω - 20.00 M Ω	0.0001 Ω - 20.00 M Ω	0.0001 Ω - 20.00 M Ω	0.0001 Ω - 20.00 M Ω
Measurement Speed Modes	Fast (4 times/s), Medium (2 times/s), Slow (1 time/s)	Fast (4 times/s), Medium (2 times/s), Slow (1 time/s)	Fast (4 times/s), Medium (2 times/s), Slow (1 time/s)	Fast (4 times/s), Medium (2 times/s), Slow (1 time/s)	Fast (4 times/s), Medium (2 times/s), Slow (1 time/s)
Internal DC Bias Output	Not Supported	0 - 500 mV Adjustable (1 mV Step)	0 - 500 mV Adjustable (1 mV Step)	0 - 500 mV Adjustable (1 mV Step)	0 - 500 mV Adjustable (1 mV Step)
Test Signal Level	0.6 Vrms	0.6 Vrms	0.3 Vrms, 0.6 Vrms	0.1 Vrms, 0.3 Vrms, 0.6 Vrms, 1.0 Vrms	0 - 1.1 Vrms Adjustable (1 mV Step)
Calibration Functions	Open-Circuit Calibration, Short-Circuit Calibration	Open-Circuit Calibration, Short-Circuit Calibration	Open-Circuit Calibration, Short-Circuit Calibration	Open-Circuit Calibration, Short-Circuit Calibration	Open-Circuit Calibration, Short-Circuit Calibration
Screening / Sorting Limits	1% to 50% Configurable (Fixed Presets: 1%, 5%, 10%, 20%)	1% to 50% Configurable (Fixed Presets: 1%, 5%, 10%, 20%)	1% to 50% Configurable (Fixed Presets: 1%, 5%, 10%, 20%)	1% to 50% Configurable (Fixed Presets: 1%, 5%, 10%, 20%)	1% to 50% Configurable (Fixed Presets: 1%, 5%, 10%, 20%)
Deviation Measurement	Displays Real-time Percentage Deviation from Reference Value	Displays Real-time Percentage Deviation from Reference Value	Displays Real-time Percentage Deviation from Reference Value	Displays Real-time Percentage Deviation from Reference Value	Displays Real-time Percentage Deviation from Reference Value
Range Selection Modes	Auto Range and Manual Range Selection	Auto Range and Manual Range Selection	Auto Range and Manual Range Selection	Auto Range and Manual Range Selection	Auto Range and Manual Range Selection
Component Auto-Identification	Integrated Automated Component Type Recognition	Integrated Automated Component Type Recognition	Integrated Automated Component Type Recognition	Integrated Automated Component Type Recognition	Integrated Automated Component Type Recognition
Connectivity & Protocol	Mini-USB Device Interface, SCPI Protocol Supported	Mini-USB Device Interface, SCPI Protocol Supported	Mini-USB Device Interface, SCPI Protocol Supported	Mini-USB Device Interface, SCPI Protocol Supported	Mini-USB Device Interface, SCPI Protocol Supported
Power Source	High-Capacity Rechargeable Lithium Battery / Power Adapter	High-Capacity Rechargeable Lithium Battery / Power Adapter	High-Capacity Rechargeable Lithium Battery / Power Adapter	High-Capacity Rechargeable Lithium Battery / Power Adapter	High-Capacity Rechargeable Lithium Battery / Power Adapter
System Configuration Options	Screen Backlight Adjustment, Auto Power-Off Timer, Buzzer Alerts, Bilingual UI (Chinese/English)	Screen Backlight Adjustment, Auto Power-Off Timer, Buzzer Alerts, Bilingual UI (Chinese/English)	Screen Backlight Adjustment, Auto Power-Off Timer, Buzzer Alerts, Bilingual UI (Chinese/English)	Screen Backlight Adjustment, Auto Power-Off Timer, Buzzer Alerts, Bilingual UI (Chinese/English)	Screen Backlight Adjustment, Auto Power-Off Timer, Buzzer Alerts, Bilingual UI (Chinese/English)
Standard Included Accessories	Mini-USB Cable, Power Adapter, Short-Circuit Plate, Red/Black Rubber Plugs, Lithium Battery Pack	Mini-USB Cable, Power Adapter, Short-Circuit Plate, Red/Black Rubber Plugs, Lithium Battery Pack	Mini-USB Cable, Power Adapter, Short-Circuit Plate, Red/Black Rubber Plugs, Lithium Battery Pack	Mini-USB Cable, Power Adapter, Short-Circuit Plate, Red/Black Rubber Plugs, Lithium Battery Pack	Mini-USB Cable, Power Adapter, Short-Circuit Plate, Red/Black Rubber Plugs, Lithium Battery Pack
Optional Testing Fixtures	Kelvin Test Clips, SMD Precision Test Tweezers	Kelvin Test Clips, SMD Precision Test Tweezers	Kelvin Test Clips, SMD Precision Test Tweezers	Kelvin Test Clips, SMD Precision Test Tweezers	Kelvin Test Clips, SMD Precision Test Tweezers

Precision Lcr Digital Bridge Meter 10 Hz To 1 Mhz Component Impedance Analyzer

Item Number: CD10



Introduction

Engineered for comprehensive component characterization this precision digital LCR bridge meter delivers a 10 Hz to 1 MHz test bandwidth 0.05% basic accuracy high speed automated sorting and integrated DC bias control across demanding laboratory research and manufacturing inspection workflows.

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Application	Description	Key Benefit
Advanced Materials & Dielectric Research	Characterizing dielectric constant, loss tangent, and impedance spectra of novel ceramics, polymers, and solid electrolytes.	Wide 10 Hz–1 MHz sweep range identifies phase transitions, relaxation mechanisms, and boundary layer impedances.
Battery & Energy Storage Evaluation	Evaluating internal resistance (ESR), contact impedance, and interfacial capacitance of battery separators and electrode foils.	Low-frequency stability and 1 MHz resolution isolate interfacial charge transfer resistance from bulk electrolyte conductivity.
Precision Passive Component QC	High-speed testing and automated binning of multilayer ceramic capacitors (MLCC), precision resistors, and film capacitors.	200 meas/s acquisition speed and 10-bin comparator maximize throughput during incoming inspection and production sorting.
Magnetic Core & Inductor Profiling	Measuring quality factor (Q), inductance (Ls/Lp), and AC resistance across variable excitation currents and internal DC bias.	Programmable internal and external DC bias currents allow saturation and permeability analysis under realistic operating conditions.
Semiconductor & Sensor Characterization	Impedance analysis of varactors, diodes, piezoelectric transducers, and MEMS devices under variable DC bias potentials.	External bias support up to $\pm 60V$ allows comprehensive C-V profiling and reverse-bias capacitance measurements.
Automated SMT Production Lines	Inline automated testing and real-time pass/fail screening linked directly to pick-and-place handlers via industrial bus protocols.	Standard Handler, GPIB, and LAN interfaces provide noise-immune, sub-millisecond signaling for factory automation.

Parameter	Specification Details
Base Product Identifier	CD10
Variant Model Options	CD10-01 (10 Hz – 100 kHz) CD10-02 (10 Hz – 200 kHz) CD10-03 (10 Hz – 300 kHz) CD10-05 (10 Hz – 500 kHz) CD10-10 (10 Hz – 1 MHz)
Frequency Resolution & Accuracy	1 mHz Resolution, 0.01% Accuracy
Basic Measurement Accuracy	0.05%
Display Resolution	6½ Digits (6.5 Digits)
Measurement Parameters	Cp-D, Cp-Q, Cp-G, Cp-Rp, Cs-D, Cs-Q, Cs-Rs, Lp-D, Lp-Q, Lp-G, Lp-Rp, Ls-D, Ls-Q, Ls-Rs, Rs-Xs, Z - θ r, Z - θ d, Y - θ r, Y - θ d, G-B
Measurement Speed (≥ 100 Hz)	Fast: 50 meas/s (20 ms) Medium: 10 meas/s (100 ms) Slow: 1.25 meas/s (800 ms)
Custom Measurement Speed (≥ 1 kHz)	User-programmable from 0.5 meas/s to 200 meas/s
Capacitance Display Range (Cp, Cs)	0.001000 pF to 99.9999 F
Inductance Display Range (Lp, Ls)	0.001000 nH to 99.9999 kH

Parameter	Specification Details
Resistance & Impedance Range (R_p , R_s , $ Z $, X_s)	0.001000 m Ω to 999.999 M Ω
Conductance & Admittance Range (G , B , $ Y $)	0.001000 μ S to 999.999 kS
Phase Angle Range (θ_r / θ_d)	θ_r : ± 0.000001 rad to 3.14159 rad θ_d : ± 0.000001 deg to 179.9999 deg
Dissipation (D) & Quality Factor (Q) Range	D: ± 0.000001 to 9.99999 Q: ± 0.001 to 99999.9
Test Signal Voltage Range	0 to 2.0 Vrms (Resolution: 1 mV, Accuracy: 5% + 5 mV)
Test Signal Current Range	100 μ Arms to 20 mArms (Resolution: 10 μ A, Accuracy: 5% + 50 μ A)
Internal DC Bias Source	Voltage: -2.0 V to +2.0 V Current: -20.0 mA to +20.0 mA
External DC Bias Input	-60.0 V to +60.0 V
Signal Source Output Impedance	Selectable 30 Ω or 100 Ω
Comparator & Sorting Function	10 Bins: 8 Pass Bins, 1 Fail Bin, 1 Auxiliary Bin with statistical counting
Mathematical Operations	Direct Reading, Delta (Absolute value difference), Delta% (Percentage difference)
Calibration & Correction	Self-calibration, Open circuit, Short circuit, Load correction, 100 user frequency points, 256 designated frequency correction sets
List Sweep Function	10-point programmable multi-parameter list sweep
Display Screen	7.0-inch TFT LCD (800 $\times$ 480 Resolution), Chinese/English interface
Memory & Data Storage	Internal non-volatile memory and USB mass storage support
Remote Control Interfaces	GPIO, Ethernet (LAN), RS232C, USB Host, USB Device, Handler
Power Supply Requirements	220V AC $\pm 10\%$, 50 Hz
Power Consumption	< 20 W
Operating Temperature Range	0°C to 40°C
Physical Dimensions (W $\times$ D $\times$ H)	330 mm $\times$ 285 mm $\times$ 136 mm
Net Weight	3.6 kg

Prismatic Aluminum Shell Battery Negative Pressure Formation And Grading Machine

Item Number: CD02



Introduction

Optimize cell manufacturing with this advanced aluminum shell battery negative pressure formation machine featuring precise vacuum control, dual closed-loop accuracy, high-temperature activation, and automated capacity grading for high-yield prismatic lithium-ion production lines.

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Application	Description	Key Benefit
Prismatic EV Cell Formation	High-temperature negative-pressure electrochemical activation of aluminum-cased automotive lithium-ion cells.	Accelerates uniform SEI film creation while continuously extracting generated gas to avoid delamination and pouching.
Capacity Grading & Sorting	Precise charge-discharge cycling and energy measurement across wide multi-range currents for production sorting.	±0.05% FS accuracy guarantees narrow cell capacity bins, maximizing pack consistency and operational safety.
Direct Current Internal Resistance (DCIR) Testing	Programmable multi-pulse charging and discharging sequences with 100 ms minimum pulse widths and millisecond switching.	Provides instant, accurate internal resistance profiling at custom state-of-charge (SOC) operating points.
Battery R&D & Formulation Optimization	Evaluation of novel electrolyte additives, high-nickel cathodes, and silicon-carbon anodes under thermal-vacuum environments.	High-frequency 10 Hz sampling and flexible 10-layer nested loops reveal nuanced electrodynamic performance.
Energy Storage System (ESS) Cell Validation	Long-cycle formation protocols (up to 65,535 cycles) for heavy-duty prismatic cells requiring stringent physical constraint.	Mechanical torque clamping ensures flat cell geometry and eliminates internal delamination under high current.
Quality Assurance & Defect Screening	Low-voltage discharge testing down to 1.5 V and micro-current CV cutoff screening to detect micro-shorts and high self-discharge.	Sensitive 0.2 mA cutoff monitoring isolates defective cells early before battery pack integration.

Specification Category	Parameter Details	Engineering Value (Model: CD02)
Mechanical & Cell Sizing	Compatible Cell Geometry	Prismatic Aluminum-Case Lithium-Ion Cells
	Cell Thickness Range	25 mm to 55 mm
	Cell Height Range	80 mm to 150 mm
	Cell Width Range	100 mm to 160 mm (Customizable)
	Fixture Configuration	8 cells per clamp group (manual / torque wrench control)
Formation Environment	Vacuum Injection Port	Custom sealing cover plate design included
	Operating Formation Temperature	Ambient +15°C to 70°C
	Negative Pressure (Vacuum) Range	-15 kPa to -75 kPa (Built-in vacuum source: -90 kPa)
Channel & Control Architecture	Control Mode	Independent channel control with parallel channel support
	Circuit Topology	Constant current & constant voltage dual closed-loop
	Signal Resolution	AD: 24-bit; DA: 16-bit
	Connection Scheme	4-wire Kelvin connection (voltage & current sensing)
	Input Impedance	≥ 100 MΩ

Specification Category	Parameter Details	Engineering Value (Model: CD02)
Voltage Performance	Output Voltage Range	25 mV to 5.0 V
	Minimum Discharge Voltage	1.5 V (at 2 m cable length)
	Voltage Accuracy	±0.05% of Full Scale (FS)
	Voltage Stability	0.1% of Full Scale (FS)
Current Performance	Current Output Ranges	Range 1: 1A Range 2: 6A Range 3: 12A Range 4: 30A
	Minimum Output Current	5 mA
	Current Accuracy	±0.05% of Full Scale (FS)
	Current Stability	0.1% of Full Scale (FS)
Power & Dynamic Response	CV Cutoff Current Limits	Range 1: 0.2 mA Range 2: 1.2 mA Range 3: 2.4 mA Range 4: 6.0 mA
	Maximum Output Power	150 W per channel
	Power Accuracy & Stability	Accuracy: ±0.1% of FS Stability: 0.2% of FS
	Current Rise Time	≤ 1 ms (10% to 90% of FS)
	Charge/Discharge Switching Time	≤ 10 ms (-90% to 90% of FS)
	Sampling Rate	10 Hz (Minimum time interval: 100 ms)
	Power Efficiency	> 65%
Operating Modes & Logic	Charge/Discharge Modes	CC, CV, CCCV, CP, Pulse, CR Discharge, Follow Mode
	Cutoff Criteria	Voltage, Current, Relative Time, Capacity, Energy, -ΔV, Custom Variables
	Pulse Cycling Parameters	Min pulse width: 100 ms; Up to 32 pulses/step; Cont. charge/discharge switch
	Cycle & Step Capacity	1 to 65,535 cycles; ≤ 255 steps/cycle; Loop nesting < 10 layers
	Working Step Time Range	≤ 8,760 hours/step (Format: 00:00:00.000)
Utility & Facility Inputs	DCIR Testing	Integrated calculation using customizable sampling points
	Electrical Power Supply	AC 380V ±10%, 50 Hz, 3-Phase; Total Power: ~3 kW
	Compressed Clean Air Supply	0.6 to 0.8 MPa (Pressure fluctuation ±1%; water/oil removed)
	Dry Nitrogen Supply	0.1 to 0.3 MPa
Physical & Environmental	Built-in Vacuum Capability	-90 kPa
	Ingress Protection Rating	IP20
	Acoustic Noise Level	< 75 dB (Measured at 1 meter)
	Operating Temperature / Humidity	0°C to 45°C / 30% to 75% RH (Non-condensing, non-corrosive)
	Protective Grounding	Dedicated safety earthing required
	Dimensions (W x D x H)	Approx. 1200 mm x 900 mm x 1850 mm
	Equipment Weight	Approx. 400 kg
	Exterior Finish	Light Grey (RAL 7035 standard or customer specified)

Benchtop Digital Lcr Bridge And Dcr Component Meter

Item Number: CD07



Introduction

Discover high precision benchtop digital LCR bridge meters with continuous test frequency up to 100kHz, integrated DCR mode, 0.2% basic accuracy, programmable internal bias, automated comparator binning, and comprehensive SCPI communication interfaces for advanced laboratory research and production component testing.

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Application	Description	Key Benefit
Battery Electrode & Contact Testing	Characterizes contact resistance, current collector foil impedance, and direct current resistance (DCR) on battery tabs and cell assemblies.	Ensures low internal resistance and superior conductivity across energy storage materials to prevent thermal runaway.
Passive Component Manufacturing	High-speed sorting and verification of surface-mount inductors, precision thin-film resistors, and multi-layer ceramic capacitors (MLCC).	Delivers rapid 5-bin qualification via automated handler interfaces, significantly reducing inspection cycle times.
Electrolytic Capacitor Verification	Evaluates equivalent series resistance (ESR), loss factor ($\tan \delta$ / D), and polarized capacitance under internal DC bias voltages.	Prevents defective dielectric components from entering power electronic assemblies, enhancing field reliability.
Magnetic Material Characterization	Measures core loss, inductance (L), and quality factor (Q) on ferrite cores, chokes, and high-frequency pulse transformers across swept frequencies.	Identifies optimal magnetic saturation and high-frequency response boundaries for switch-mode power designs.
Incoming Quality Control (IQC)	Rapid parameter screening and tolerance validation (-50% to +50%) for incoming passive electronic components against vendor specifications.	Intercepts out-of-spec batches before board assembly, eliminating downstream manufacturing rework and costs.
Piezoelectric & Ceramic Sensor R&D	Profiles impedance (Z), phase angle (θ), and reactance (X) over continuous frequency bands to pinpoint fundamental resonance points.	Provides fine 1 Hz resolution and 0.2% precision necessary for mapping acoustic transducers and functional ceramics.
Semiconductor Package Testing	Evaluates lead-frame resistance, parasitic packaging inductance, and pin-to-pin leakage under controlled AC drive levels.	Minimizes high-frequency parasitic signal distortion in advanced semiconductor packaging architectures.

Specification Parameter	Fixed Frequency Series (CD07-4401 / CD07-4402 / CD07-4410)	Continuous Frequency Series (CD07-4501 / CD07-4502 / CD07-4510)
Base Model Identifiers	CD07-4401: 10 Fixed Points (100 Hz – 10 kHz) CD07-4402: 12 Fixed Points (100 Hz – 20 kHz) CD07-4410: 16 Fixed Points (100 Hz – 100 kHz)	CD07-4501: 10 Hz – 10 kHz (Continuous, 1 Hz step) CD07-4502: 10 Hz – 20 kHz (Continuous, 1 Hz step) CD07-4510: 10 Hz – 100 kHz (Continuous, 1 Hz step)
Basic Measurement Accuracy	0.20%	0.20%
Display Type & Resolution	3.5-inch TFT LCD, 480 × 320 resolution, 16M colors	3.5-inch TFT LCD, 480 × 320 resolution, 16M colors
Display Digits	Primary Parameter: 5 digits; Secondary Parameter: 5 digits	Primary Parameter: 5 digits; Secondary Parameter: 5 digits
Primary Parameters	L (Inductance), C (Capacitance), R (Resistance), Z (Impedance)	L (Inductance), C (Capacitance), R (Resistance), Z (Impedance)
Secondary Parameters	X (Reactance), D (Dissipation Factor), Q (Quality Factor), θ (Phase Angle), ESR (Equivalent Series Resistance)	X (Reactance), D (Dissipation Factor), Q (Quality Factor), θ (Phase Angle), ESR (Equivalent Series Resistance)
Inductance Measurement Range (L)	0.001 μ H – 9999 H	0.001 μ H – 9999 H

Specification Parameter	Fixed Frequency Series (CD07-4401 / CD07-4402 / CD07-4410)	Continuous Frequency Series (CD07-4501 / CD07-4502 / CD07-4510)
Capacitance Measurement Range (C)	0.001 pF – 99.99 mF	0.001 pF – 99.99 mF
Resistance Measurement Range (R / DCR)	0.0001 Ω – 99.99 M Ω	0.0001 Ω – 99.99 M Ω
Measurement Speed	Slow: 2 times/s; Medium: 4 times/s; Fast: 8 times/s	Slow: 2 times/s; Medium: 4 times/s; Fast: 8 times/s
Test Signal Excitation Level	6 Fixed Levels: 0.1 V, 0.3 V, 0.6 V, 1.0 V, 1.5 V, 2.0 V	0.1 V – 2.0 V continuously adjustable, 1 mV steps
Signal Source Output Impedance	Selectable 300 Ω , 1000 Ω	Selectable 300 Ω , 1000 Ω
Internal DC Bias Source	0 mV – 1500 mV adjustable, 1 mV steps	0 mV – 1500 mV adjustable, 1 mV steps
Range Selection Mode	Auto Range and Manual Range locking	Auto Range and Manual Range locking
Calibration Functionality	Full-scale Open Circuit and Short Circuit zero-clearing	Full-scale Open Circuit and Short Circuit zero-clearing
Screening & Tolerance Setup	Limit range: -50% to +50%; Fixed standard points: 1%, 5%, 10%, 20%	Limit range: -50% to +50%; Fixed standard points: 1%, 5%, 10%, 20%
Comparator Binning	5 Bins: 3 Qualified (Pass) Bins, 1 Unqualified (Fail) Bin, 1 Auxiliary Bin with beeper alarm	5 Bins: 3 Qualified (Pass) Bins, 1 Unqualified (Fail) Bin, 1 Auxiliary Bin with beeper alarm
Data Logging & Statistics	Maximum, Minimum, Average value recording	Maximum, Minimum, Average value recording
Command Set & Protocol	Standard SCPI protocol	Standard SCPI protocol
Standard Communication Interfaces	RS-232 (or RS-485), USB Device, Handler	RS-232 (or RS-485), USB Device, Handler
Optional Communication Interfaces	GPIO (IEEE-488), USB Host	GPIO (IEEE-488), USB Host
Power Supply Requirements	220 V AC $\pm 10\%$ or 110 V AC $\pm 10\%$, 45 Hz – 65 Hz	220 V AC $\pm 10\%$ or 110 V AC $\pm 10\%$, 45 Hz – 65 Hz
Power Consumption	< 10 W	< 10 W
Operating Environment	Temperature: 10°C to +40°C; Humidity: $\leq 90\%$ RH (at 0°C to 40°C)	Temperature: 10°C to +40°C; Humidity: $\leq 90\%$ RH (at 0°C to 40°C)
Storage Environment	Temperature: -10°C to +60°C	Temperature: -10°C to +60°C
Included Standard Accessories	3-Core Power Cable (30A51), 4-Terminal Kelvin Test Cable (35A51), User Manual	3-Core Power Cable (30A51), 4-Terminal Kelvin Test Cable (35A51), User Manual
Optional Test Fixtures & Cables	GPIO Cable (32P01), RS-232 Serial Cable (32P04), USB Data Cable (32P05), 2m/4m Extended Test Cable (35P01), Lead-Type Kelvin Test Fixture (35A52), SMD Patch Component Fixture (35P02), 4-Wire LCR SMD Tweezers/Pen (35P03), 4-Terminal Pair Kelvin Fixture, Gold-Plated Shorting Plate (35A53)	GPIO Cable (32P01), RS-232 Serial Cable (32P04), USB Data Cable (32P05), 2m/4m Extended Test Cable (35P01), Lead-Type Kelvin Test Fixture (35A52), SMD Patch Component Fixture (35P02), 4-Wire LCR SMD Tweezers/Pen (35P03), 4-Terminal Pair Kelvin Fixture, Gold-Plated Shorting Plate (35A53)

Prismatic Lithium Battery Cell Hot Press Testing Machine Type 200

Item Number: CD-9



Introduction

Engineered for prismatic lithium battery cell shaping and quality assurance, this heated press testing system delivers uniform thickness calibration, integrated short-circuit detection, precision thermal control, and a modular split benchtop design for battery R&D laboratories and production pilot lines.

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Application	Description	Key Benefit
Prismatic Cell Thickness Shaping	Applying uniform heated pressure to freshly wound or stacked Type 200 prismatic lithium-ion cores prior to casing.	Eliminates interlayer gaps, levels core thickness, and ensures smooth insertion into metal cell cases without damaging separators.
In-Line Separator Integrity Screening	Conducting high-voltage micro-short testing under active mechanical pressure and elevated temperature.	Identifies micro-punctures, electrode burrs, and separator thin spots under realistic compressive operating states.
Battery Material & Binder Curing	Activating thermal binders (e.g., PVDF) within dry or semi-solid electrode matrices under controlled compressive loads.	Enhances interfacial bonding between electrode active layers, conductive additives, and current collector foils.
Solid-State Battery Cell Prototyping	Compacting solid electrolyte layers against composite electrodes under elevated thermal and pneumatic conditions.	Minimizes solid-solid interfacial contact resistance and maximizes ionic transport across solid-state cell stacks.
R&D Pilot Line Quality Assurance	Standardizing pre-canning physical parameters across experimental batches of pouch and prismatic cell variants.	Provides reliable, quantifiable baseline data for cell dimensional stability, thermal behavior, and electrical isolation.
Cell Failure Analysis & Teardown Verification	Replicating hot-pressing thermal and mechanical profiles to evaluate separator resilience and mechanical threshold limits.	Allows forensic assessment of internal short-circuit triggers under precise thermal and pressure profiles.

Specification Parameter	Value / Detail (CD-9)
Product Item Identifier	CD-9
Target Cell Form Factor	Type 200 Prismatic Lithium Battery Cells
Operational Mechanism	Manual loading/unloading, pneumatic automatic pressing, integrated electrical testing
Power Supply Configuration	AC 220V $\pm$ 10%, 50 Hz, Single Phase
Total Power Consumption	$\leq$ 4.0 kW
Compressed Air Supply Requirement	0.4 MPa to 0.65 MPa (Clean, dry industrial compressed air)
Pneumatic Inlet Fitting Outer Diameter	$\varnothing$ 10 mm Quick-Plug Interface
System Architecture	Desktop split-cabinet configuration (Heating/Test Unit + Electrical Control Box)
System Interconnection Method	Multi-pin industrial aviation plugs and pneumatic quick-connect couplings
Process Flow Timing	Configurable stabilization dwell, programmable short-circuit test delay, automatic decompression
External Finish / Color	International Warm Gray 1C Protective Enamel
Operating Ambient Temperature	5°C to 35°C
Operating Relative Humidity	Relative Humidity (RH) < 45% (Non-condensing)

Specification Parameter	Value / Detail (CD-9)
Total Equipment Weight	≤ 80 kg

Programmable Dc Electronic Load Single And Dual Channel Benchtop Power Supply And Battery Capacity Tester

Item Number: CD12



Introduction

Engineered for precise battery characterization and power supply validation, this programmable DC electronic load delivers 1mV and 1mA resolution, advanced static and dynamic testing modes, robust multi-stage system protection, and seamless USB automated communication across industrial laboratory environments.

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Application	Description	Key Benefit
Battery Cell & Pack Characterization	Evaluates capacity degradation, internal resistance, and discharge curves of lithium-ion, solid-state, and lead-acid batteries up to 9999Ah.	Delivers automated cut-off logging and high-resolution capacity data without manual intervention.
Switched-Mode Power Supply (SMPS) Verification	Subject commercial switching converters and linear regulators to static, dynamic, and cross-regulation stress tests.	Verifies transient voltage recovery, ripple behavior, and load regulation precision under severe steps.
LED Driver & Ballast Testing	Emulates real LED diode electrical loads to verify power conversion efficiency and ripple suppression in lighting drivers.	Prevents driver damage while testing performance under variable forward voltage conditions.
Automated Production Line QC	Conducts high-speed end-of-line go/no-go screening, list-mode sequencing, and short-circuit verification on manufactured power modules.	Reduces cycle times and ensures consistent build quality through automated USB-driven routines.
EV On-Board Charger & DC-DC Testing	Applies steady and dynamic high-voltage/high-current sinking to evaluate sub-assembly automotive DC-DC conversion stages.	Ensures compliance with stringent automotive power electronics performance and safety standards.
Academic Research & Materials Science	Sinks controlled current profiles during the evaluation of novel fuel cells, supercapacitors, and photovoltaic harvesting modules.	Captures minute 1mV/1mA variations to assist in accurate electrochemical and materials modeling.

Parameter	Specification (CD12-5410)	Specification (CD12-5420)	Specification (CD12-5411)
Channel Architecture	Single Channel	Dual Channel	Single Channel
Rated Input Power	400W	400W (200W × 2)	400W
Input Voltage Range	0 to 150V	0 to 150V	0 to 500V
Input Current Range	0 to 40A	0 to 20A × 2	0 to 15A
Constant Voltage Mode Range	0.1 to 19.999V, 0.1 to 150.00V	0.1 to 19.999V, 0.1 to 150.00V	0.1 to 19.999V, 0.1 to 500.00V
Constant Voltage Resolution	1mV, 10mV	1mV, 10mV	1mV, 10mV
Constant Voltage Accuracy	±(0.05% + 0.02%FS)	±(0.05% + 0.02%FS)	±(0.05% + 0.02%FS)
Constant Current Mode Range	0 to 3.000A, 0 to 40.00A	0 to 3.000A, 0 to 20.00A	0 to 3.000A, 0 to 15.00A
Constant Current Resolution	1mA, 10mA	1mA, 10mA	1mA, 10mA
Constant Current Accuracy	±(0.05% + 0.05%FS)	±(0.05% + 0.05%FS)	±(0.05% + 0.05%FS)
Constant Resistance Mode Range	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ
Constant Resistance Resolution	10mΩ, 100mΩ	10mΩ, 100mΩ	10mΩ, 100mΩ
Constant Resistance Accuracy	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)

Parameter	Specification (CD12-5410)	Specification (CD12-5420)	Specification (CD12-5411)
Constant Power Mode Range	0 to 400W	0 to 200W	0 to 400W
Constant Power Resolution	10mW	10mW	10mW
Constant Power Accuracy	$\pm(0.1\% + 0.5\%FS)$	$\pm(0.1\% + 0.5\%FS)$	$\pm(0.1\% + 0.5\%FS)$
Dynamic Test Modes	CC, CV	CC, CV	CC, CV
Dynamic Timing (T1 & T2)	1ms to 60s (Resolution: 1ms)	1ms to 60s (Resolution: 1ms)	1ms to 60s (Resolution: 1ms)
Dynamic Timing Accuracy	0.1% + 1ms	0.1% + 1ms	0.1% + 1ms
Battery Discharge Modes	CC, CR	CC, CR	CC, CR
Max Battery Discharge Capacity	9999Ah	9999Ah	9999Ah
Battery Test Resolution	1mA, 10mA, 10mΩ, 100mΩ	1mA, 10mA, 10mΩ, 100mΩ	1mA, 10mA, 10mΩ, 100mΩ
Voltage Readback Range	0 to 19.999V, 0 to 150.00V	0 to 19.999V, 0 to 150.00V	0 to 19.999V, 0 to 500.00V
Voltage Readback Resolution	1mV, 10mV	1mV, 10mV	1mV, 10mV
Voltage Readback Accuracy	$\pm(0.05\% + 0.1\%FS)$	$\pm(0.05\% + 0.1\%FS)$	$\pm(0.05\% + 0.1\%FS)$
Current Readback Range	0 to 3.000A, 0 to 40.00A	0 to 3.000A, 0 to 20.00A	0 to 3.000A, 0 to 15.00A
Current Readback Resolution	1mA, 10mA	1mA, 10mA	1mA, 10mA
Current Readback Accuracy	$\pm(0.05\% + 0.1\%FS)$	$\pm(0.05\% + 0.1\%FS)$	$\pm(0.05\% + 0.1\%FS)$
Power Readback Range	0 to 400W	0 to 200W	0 to 400W
Power Readback Resolution	10mW	10mW	10mW
Power Readback Accuracy	$\pm(0.1\% + 0.5\%FS)$	$\pm(0.1\% + 0.5\%FS)$	$\pm(0.1\% + 0.5\%FS)$
Overvoltage Protection (OVP)	Cut-off > 155V	Cut-off > 155V	Cut-off > 510V
Overcurrent Protection (OCP)	Cut-off > 42A	Cut-off > 22A	Cut-off > 16A
Overpower Protection (OPP)	420W	220W	420W
Overtemperature Protection (OTP)	85°C Dual-stage	85°C Dual-stage	85°C Dual-stage
Short Circuit Current (CC)	$\approx 3A / \approx 40A$	$\approx 3A / \approx 20A$	$\approx 3A / \approx 15A$
Short Circuit Voltage (CV)	0V	0V	0V
Short Circuit Resistance (CR)	$\approx 40m\Omega$	$\approx 40m\Omega$	$\approx 40m\Omega$
Display	2.8-inch TFT LCD (400×240)	2.8-inch TFT LCD (400×240)	2.8-inch TFT LCD (400×240)
Interface	USB Device standard	USB Device standard	USB Device standard
AC Input Power Supply	220V AC $\pm 10\%$ / 110V AC $\pm 10\%$, 45-65Hz	220V AC $\pm 10\%$ / 110V AC $\pm 10\%$, 45-65Hz	220V AC $\pm 10\%$ / 110V AC $\pm 10\%$, 45-65Hz
Operating Temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C
Storage Temperature	-10°C to 70°C	-10°C to 70°C	-10°C to 70°C
Relative Humidity	< 80% RH	< 80% RH	< 80% RH
Physical Dimensions (W×H×D)	90mm × 190mm × 300mm	90mm × 190mm × 300mm	90mm × 190mm × 300mm

Pouch Cell Aluminum Laminated Film Short Circuit Tester

Lithium Battery Testing Equipment

Item Number: CD13



Introduction

High precision pouch cell short circuit tester designed for reliable detection of insulation faults between tabs and aluminum laminated film prior to electrolyte injection maximizing lithium battery cell production yield process safety and high throughput quality control across manufacturing lines

[Learn More](#)

Application	Description	Key Benefit
Pouch Cell Pilot Line Manufacturing	Pre-filling insulation verification for consumer electronics, drone, and medical device pouch cells.	Prevents defective dry cells from reaching the electrolyte filling and vacuum sealing stages, cutting chemical waste.
EV Battery Quality Assurance	High-speed quality screening of multi-tab and high-capacity pouch cells destined for automotive battery modules.	Identifies micro-burrs and edge-seal damage to eliminate field thermal runaway risks in electric vehicle battery packs.
R&D and Cell Prototyping	Precise validation of new tab welding techniques, pouch forming depths, and laminated packaging film materials.	Provides repeatable insulation baseline data to refine cell assembly tooling and pouch packaging parameters.
Contract Battery Assembly & QA	Rapid incoming and inline inspection of contract-manufactured dry pouch cells prior to electrolyte dispensing.	Maintains stringent quality gate standards with a high-throughput capability exceeding 900 parts per hour.
Solid-State & Advanced Battery Testing	Electrical insulation testing of prototype solid-state and high-voltage pouch cell configurations.	Delivers reliable three-point contact testing adaptable to emerging electrode chemistries and tab geometries.

Parameter	Specification (CD13)
Model Item Number	CD13
Inspection Points	3-Point Detection (Positive Tab, Negative Tab, Aluminum-Plastic Film)
Primary Function	Pre-filling short circuit & insulation testing between tabs and laminated film
Production Throughput	≥ 900 pcs/hour
Applicable Product Dimensions (L × W × H)	Up to 150 × 80 × 12 mm
Maximum Adaptable Cell Dimension	150 × 150 mm
Operating Air Pressure	0.4 – 0.8 MPa
Input Power Supply	Single-phase AC 220V, 50 Hz
Internal Control Voltage	24V DC
Probe Configuration	Fully adjustable probe position and spacing
External Dimensions (W × D × H)	530 × 400 × 350 mm
Total Equipment Weight	30 kg

Pouch Cell Aluminum Laminated Film Short Circuit Tester

Battery Testing Equipment

Item Number: CD14



Introduction

Boost battery production yields with our precision pouch cell short circuit tester engineered for rapid three point insulation verification between tabs and aluminum laminated film prior to electrolyte injection.

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Application	Description	Key Benefit
Pouch Cell Pilot Line Assembly	In-line automated quality screening of newly sealed pouch cells immediately prior to electrolyte filling.	Eliminates unnecessary electrolyte consumption by weeding out shorted cells early in the assembly flow.
Commercial EV Battery Manufacturing	High-throughput verification of large batches of automotive-grade pouch cells running at speeds over 900 units per hour.	Ensures ultra-low defect rates and mitigates downstream thermal runaway risks caused by micro-burrs and tab contact.
Consumer Electronics Cell Production	Precision insulation testing for ultra-thin, high-density smartphone, tablet, and wearable pouch cell configurations.	Accommodates delicate, thin-profile cell casings down to precise fractional millimeter tolerances without edge crushing.
Solid-State & Advanced Battery R&D	Rigorous interface insulation monitoring between novel solid electrolytes, metallic anodes, and composite pouch films.	Delivers reliable isolation data under low-pressure contact, supporting prototyping of next-generation chemistries.
Incoming Raw Cell Quality Assurance	Batch acceptance screening of pre-sealed cell envelopes and electrode assemblies prior to modular packing operations.	Provides standardized, repeatable three-point resistance verification to enforce supplier compliance.
Post-Edge-Sealing Failure Analysis	Targeted laboratory evaluation of edge-seal integrity and tab clearance following thermo-compression sealing processes.	Quickly pinpoints seal thinning, foil deformation, and internal separator displacement with adjustable probing.

Parameter	Specification (Model: CD14)
Product Item Number	CD14
Primary Function	Pre-electrolyte injection short-circuit testing (Tab-to-Film & Tab-to-Tab)
Detection Scope	3-Point Detection: Positive Tab, Negative Tab, Aluminum-Plastic Laminated Film
Input Power Supply	Single-phase AC 220 V, 50 Hz (Internal conversion to 24 V DC)
Operating Air Pressure	0.4 – 0.8 MPa
Throughput / Capacity	≥ 900 pieces / hour
Compatible Cell Size Range	Up to L 150 mm × W 80 mm × H 12 mm
Maximum Cell Substrate Dimension	150 mm × 150 mm
Contact Probe Mechanism	Multi-axis adjustable position high-durability contact probes
External Dimensions (W × D × H)	530 mm × 400 mm × 350 mm
Total Equipment Weight	30 kg
Actuation System	Precision pneumatic clamping with mechanical guidance

Insulation Resistance Battery Cell Short Circuit Tester For Advanced Electrical Safety And Quality Control

Item Number: CD15



Introduction

Evaluate cell insulation integrity with our high precision battery core short circuit tester. Delivering continuous 25V to 1000V DC output, programmable delay timers, rapid automated discharge, and PLC remote integration, it ensures dependable quality assurance across high throughput manufacturing lines.

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Application	Description	Key Benefit
Pouch Cell Separator Integrity Testing	High-voltage insulation verification across cathode and anode tabs prior to electrolyte injection.	Pinpoints micro-tears and separator misalignment before irreversible chemical filling.
Prismatic & Cylindrical Cell Winding QA	Dielectric breakdown screening of bare jelly-rolls and electrode-separator stacks under controlled DC bias.	Eliminates short-circuit hazards caused by metal burrs, particulate contamination, and foil overhangs.
Solid-State Battery Electrolyte Validation	High-resistance characterization of novel ceramic, polymer, and composite solid-state electrolyte sheets.	Provides micro-ampere leakage resolution across high-voltage gradients to confirm ceramic density.
Supercapacitor Dielectric Isolation	Controlled-delay leakage current testing across high-capacitance electrochemical double layers.	Compensates for capacitive absorption current to yield precise, steady-state leakage measurements.
Battery Module & Pack Busbar Isolation	Insulation resistance testing between cell terminals, cooling plates, structural enclosures, and busbars.	Guarantees compliance with international high-voltage electrical safety standards (e.g., UN 38.3, UL 2580).
Automated Inline Cell Sorting	Integration into automated pick-and-place sorting stations via PLC control and RS232 telemetry.	Enables sub-second go/no-go screening with automated test-data logging for full traceability.

Specification Parameter	Standard Configuration (CD15)	Low-Voltage Custom Variant (CD15-LV)
Output Voltage Range	25 V □ 1000 V DC	8 V □ 1000 V DC
Voltage Setting Resolution	1 V	1 V
Voltage Setting Accuracy	±(2% setting + 2 dgt.)	±(2% setting + 2 dgt.)
Voltage Measurement Accuracy	±(2% rdg. + 2 dgt.)	±(2% rdg. + 2 dgt.)
Maximum Output Current	1 mA	1 mA
Output Mode	Floating Ground	Floating Ground
Isolation Voltage	±1000 V	±1000 V
Voltage Ripple (1000V No Load)	≤ 5 Vp-p	≤ 5 Vp-p
Voltage Ripple (1000V Full Load)	≤ 10 Vp-p	≤ 10 Vp-p
Load Regulation Rate	1% (Full Load to No Load)	1% (Full Load to No Load)
Output Rise Time	15 ms (No Load, Umax)	15 ms (No Load, Umax)
Automatic Discharge Resistance	20 kΩ (Discharges 1 μF at 1000V in 200 ms / RC constant)	20 kΩ (Discharges 1 μF at 1000V in 200 ms / RC constant)
Delay Time Range & Accuracy	0.1 s □ 999.9 s; ±(0.1% setting + 1 dgt.)	0.1 s □ 999.9 s; ±(0.1% setting + 1 dgt.)

Specification Parameter	Standard Configuration (CD15)	Low-Voltage Custom Variant (CD15-LV)
Test Duration Range & Accuracy	0.5 s □ 999.9 s; ±(0.1% setting + 1 dgt.)	0.5 s □ 999.9 s; ±(0.1% setting + 1 dgt.)
Insulation Resistance Range Tier 1	2.000 MΩ □ 200.0 MΩ; ±(2% rdg. + 5 dgt.)	2.000 MΩ □ 200.0 MΩ; ±(2% rdg. + 5 dgt.)
Insulation Resistance Range Tier 2	200 MΩ □ 4000 MΩ; ±(5% rdg. + 5 dgt.)	200 MΩ □ 4000 MΩ; ±(5% rdg. + 5 dgt.)
Insulation Resistance Range Tier 3	4000 MΩ □ 9999 MΩ; ±(10% rdg. + 5 dgt.)	4000 MΩ □ 9999 MΩ; ±(10% rdg. + 5 dgt.)
Primary Displayed Parameters	Insulation Resistance (MΩ), Leakage Current (mA/μA)	Insulation Resistance (MΩ), Leakage Current (mA/μA)
Comparator Logic	Independent Upper Limit / Lower Limit screening	Independent Upper Limit / Lower Limit screening
Automatic Detection Mode	Continuous test with sustained high-voltage output	Continuous test with sustained high-voltage output
Capacitive Contact Check	Optional hardware module	Optional hardware module
Sampling Speed Settings	Fast, Medium, Slow	Fast, Medium, Slow
Parameter Storage Capacity	100 recipe memory groups	100 recipe memory groups
External Control Interfaces	RS232 Serial Port, Isolated PLC Interface	RS232 Serial Port, Isolated PLC Interface
Operating Environment	0°C □ 40°C, 20% RH □ 70% RH	0°C □ 40°C, 20% RH □ 70% RH
Power Supply Requirements	AC 220 V ± 10%, 50/60 Hz, 100 VA	AC 220 V ± 10%, 50/60 Hz, 100 VA
External Dimensions (W × H × D)	300 mm × 88 mm × 380 mm (Foot height: 15 mm excluded)	300 mm × 88 mm × 380 mm (Foot height: 15 mm excluded)
Standard Accessories Included	User Manual × 1, 1m Test Leads × 1, Communication Cable × 1	User Manual × 1, 1m Test Leads × 1, Communication Cable × 1



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