



KINTEK SOLUTION

Battery Material Tester Catalog

Contact us for more catalogs of Laboratory Press Machine, Battery Lab Consumables & Materials, Battery Testing & Electrochemical Equipment, Electrode Fabrication Equipment, Cell Assembly & Filling Equipment, etc.

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.



Comprehensive Airtightness Tester Precision Air Leak And Waterproof Testing System

Item Number: DS10



Introduction

Discover high-precision airtightness and waterproof leak testing with our comprehensive test system. Engineered for IPX rating verification, fast non-destructive air pressure sensing, and seamless production line automation with superior 0.2% FS measurement accuracy across wide pressure ranges.

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Application	Description	Key Benefit
Battery Cell & Pack Enclosures	Verifies the hermetic weld integrity and seal reliability of prismatic battery casings, cylindrical cells, pouch cell tabs, and pack-level cooling jackets.	Prevents hazardous electrolyte leakage, moisture ingress, and thermal runaway risks in energy storage systems.
IPX Waterproof Rating Certification	Evaluates consumer electronics, wearable devices, outdoor telecommunication housings, and acoustic components for IPX4 through IPX8 waterproof compliance.	Replaces messy water submersion with clean, rapid, and repeatable quantitative pressure decay data.
Automotive Component Testing	Inspects engine management sensors, electronic control unit (ECU) housings, fuel system connectors, fluid reservoirs, and lighting assemblies.	Ensures long-term resistance against harsh weather, automotive fluids, and severe operational vibration.
Medical Device Manufacturing	Validates fluidic integrity and hermetic isolation in IV sets, blood collection tubes, catheter connectors, and sterile surgical device packaging.	Eliminates bio-contamination hazards through dry, ultra-clean non-destructive micro-leak testing.
Die-Cast & Machined Housings	Detects porosity, blowholes, and sealing gasket imperfections in aluminum motor housings, pump bodies, and hydraulic valve blocks.	Identifies casting flaws early in the production line before costly downstream assembly and finishing.
Precision Valves & Fluid Fittings	Assesses seating tightness and stem seal integrity in pneumatic actuators, industrial valves, quick-disconnect couplers, and gas regulators.	Ensures zero fugitive emissions and maintains precise pressure containment in critical fluid circuits.
Home Appliance Modules	Conducts high-speed inline quality testing on steam iron water chambers, electric kettle heating bases, water purifier filters, and washing machine valves.	Minimizes end-user warranty returns and prevents internal electrical short circuits caused by moisture seepage.

Parameter	Specification
System Base Identifier	DS10
Sensor Measurement Accuracy	0.2% Full Scale (FS)
Digital Test Timer Range	1 s to 999 s (Fully Adjustable)
Required Supply Air Source	0.4 MPa to 1.0 MPa (Clean, Dry Compressed Air)
Standard Automation I/O Interface	Start, Stop, Pass (OK), Fail (NG), 1# Drive, 2# Drive Signal Outputs
Operating Power Supply	AC 220 V $\pm$ 10% / 50 Hz
External Dimensions (L $\times$ W $\times$ H)	350 mm $\times$ 400 mm $\times$ 180 mm
Net Equipment Weight	Approximately 10 kg
Detection Medium	Clean, dry compressed air (non-destructive, zero secondary pollution)
Supported Test Methodologies	Direct Positive Pressure, Direct Negative Pressure (Vacuum), Quantitative Volumetric

Model Identifier	Test Pressure Range	Standard Display Resolution	High-Precision Resolution
DS10-ZY-20	5 kPa to 20 kPa	1 Pa	1 Pa
DS10-ZY-50	5 kPa to 50 kPa	10 Pa	1 Pa
DS10-ZY-100	5 kPa to 100 kPa	10 Pa	1 Pa
DS10-ZY-200	5 kPa to 100 kPa	50 Pa	1 Pa
DS10-ZY-600	5 kPa to 100 kPa	50 Pa	1 Pa
DS10-ZY-1000	10 kPa to 800 kPa	100 Pa	1 Pa

Model Identifier	Test Pressure Range	Standard Display Resolution	High-Precision Resolution
DS10-FY-50	5 kPa to 50 kPa (Vacuum)	10 Pa	1 Pa
DS10-FY-100	5 kPa to 80 kPa (Vacuum)	10 Pa	1 Pa

Model Identifier	Test Pressure Range	Display Resolution
DS10-DL-100	5 kPa to 100 kPa	1 Pa
DS10-DL-200	5 kPa to 100 kPa	1 Pa
DS10-DL-500	10 kPa to 500 kPa	1 Pa
DS10-DL-1000	10 kPa to 800 kPa	1 Pa

Automatic Burr Measurement System High Precision Optical Video Inspection Machine For Battery Electrodes And Precision Components

Item Number: DS15



Introduction

Accelerate precision quality control with this automated burr measurement system featuring natural granite stability subpixel edge detection and programmable LED illumination for micron level battery electrode cutting edge inspection and micro component metrology workflows worldwide.

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Application	Description	Key Benefit
Battery Electrode Slitting & Die-Cutting	Automated inspection of micro-burrs, edge roughness, and foil overhanging along slitted cathode and anode edges.	Prevents separator puncture and internal battery short circuits by enforcing strict micron-level burr tolerances.
Precision Metal Stamping & Lead Frames	High-speed boundary analysis of stamped connector pins, micro-brackets, and copper lead frames.	Eliminates manual microscope inspection bottlenecks while catching punch wear before tooling breaks.
Semiconductor & PCB Stencil Inspection	Non-contact aperture profiling, solder paste stencil opening verification, and micro-via edge clarity checks.	Guarantees consistent solder paste deposition volume by detecting microscopic wall roughness and burrs.
Medical Device & Surgical Blade Manufacturing	Sharpness verification, tip geometry validation, and bevel burr measurement on surgical needles, trocars, and micro-scalpels.	Provides 100% verifiable quality logs for critical medical cutting edges where mechanical contact would damage the part.
Precision Micro-Machined Components	Rapid multi-point dimensional checking of micro-gears, watchmaking parts, and miniature hydraulic valves.	Replaces multi-tool manual setups with a single automated visual routine, reducing cycle times by up to 80%.
Optical & Sensor Housing Assemblies	Step height, chamfer angle, and groove edge inspection on micro-molded polymer and lightweight alloy camera housings.	Ensures light-tight assembly fits and prevents optical misalignment caused by unseated mating faces.

Specification Parameter	Technical Data (DS15)
Model Identifier	DS15
Measuring Range (X × Y × Z)	300 mm × 200 mm × 200 mm
Worktable Structure	Monolithic Grade 00 Natural Marble Base
Granite Worktable Dimensions	500 mm × 380 mm
Precision Glass Stage Dimensions	440 mm × 240 mm
Maximum Stage Load Capacity	35 kg
Maximum Allowable Workpiece Height	200 mm
X / Y Axis Measurement Accuracy	2 + L/200 μm (where L is measuring length in mm)
Z Axis Measurement Accuracy	5 + L/200 μm (where L is measuring length in mm)
System Repeatability	3 μm
X / Y Axis Positioning Speed	0 – 300 mm/s

Specification Parameter	Technical Data (DS15)
Z Axis Positioning Speed	0 - 100 mm/s
Linear Feedback Grating Scale	0.0005 mm (0.5 μm) Precision Metal Optical Scale
Linear Guide Rails	Taiwan HIWIN Heavy-Duty Linear Guides
Transmission Screws	Taiwan TBI Precision Ground Ball Screws
Spindle & Axis Bearings	Japan NSK Matched Duplex Radial Ball Bearings
Drive Motors	Multi-Axis AC Servo Motors
Motion Controller	HZ4000 Full Closed-Loop Motion Controller
Manual Control Interface	Professional 3-Axis Precision Ergonomic Joystick
Primary Image Sensor	Hikvision High-Definition Color Digital Camera
Auxiliary Navigation Sensor	Ultra-Wide Field-of-View CCD Optical Sensor
Optical Zoom System	1490 High-Definition Continuous Zoom Optical Lens
Optical Magnification	1.4x - 9.0x
Total Video Magnification	48x - 500x (displayed on monitor)
Contour (Bottom) Illumination	Parallel Transmitted LED Cold Light with Integrated Condenser Lens
Surface (Top) Illumination	5-Ring 8-Segment Programmable Surface LED Cold Light
Specialized Electrode Tooling	YZ-005 Fully Automated Rotary Foil Inspection Fixture
Metrology Software Suite	YZ-CNC Automated Vision Inspection Software
Host Computer & Display	High-Performance Industrial PC with 27-inch HD LCD Monitor
Workstation Integration	Heavy-duty ergonomic desk with integrated power distribution, controller rack, e-stop, and leveling casters
Electrical Power Requirements	AC 220V ± 10%, 50 Hz, 3A
Machine Physical Dimensions (W x D x H)	860 mm x 660 mm x 1700 mm
Machine Net Weight	460 kg
Optimal Operating Temperature	20°C ± 2°C (Permissible: 15°C - 25°C; Max Variation: < 2°C/hr)
Operating Relative Humidity	30% - 70% (Optimal: 55%)
Cleanroom Air Quality Standard	Clean environment: < 45,000 particles/ft³ for particles > 0.5 μm
Vibration Isolation Limit	Ambient floor vibration < 0.5T

Automatic Lithium Battery Electrode Sheet Resistance Tester
And Electrical Conductivity Meter

Item Number: DS18



Introduction

Streamline battery R&D quality control with our automatic lithium battery electrode sheet resistance tester, featuring programmable pressure loading up to 200kg, high-precision thickness monitoring, wide measurement ranges, and comprehensive real-time PC curve analytics.

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Application	Description	Key Benefit
Cathode & Anode Slurry Formulation R&D	Evaluates conductive agent distribution, binder concentration, and active material ratios by measuring the sheet electrical resistivity under varying simulated calendaring pressures.	Identifies optimal conductive network percolation thresholds to maximize active material utilization and minimize internal cell impedance.
Calendering & Compaction Process Optimization	Measures through-plane conductivity and thickness compaction curves across various rolling press loads ($0\text{--}200\text{ kg}$).	Determines optimal electrode density to balance electronic conductivity against electrolyte wetting and ion diffusion channels without over-compacting.
Current Collector Surface Treatment Verification	Analyzes the interfacial contact resistance between active electrode coatings and modified metal substrates (such as carbon-coated aluminum or copper foils).	Validates interfacial adhesion and contact impedance reductions, preventing delamination and capacity fading during rapid cycling.
High-Rate Cell Performance Screening	Screens candidate electrodes for fast-charging and high-power applications where through-plane electronic transport resistance dominates internal heat generation.	Guarantees batch-to-batch electrical uniformity, mitigating hot spots and uneven state-of-charge distributions across large-format pouch or prismatic cells.
Dry Battery Electrode (DBE) Process Characterization	Tests solvent-free dry-processed electrode films for binder fibrillization quality and structural conductive pathway continuity under mechanical stress.	Provides rapid, non-destructive feedback on dry mixing homogeneity and hot-lamination efficacy before cell assembly.
Solid-State Battery Composite Layer Evaluation	Characterizes composite solid electrolyte-electrode blends and solid electrolyte interphase (SEI) contact layers under variable compression.	Ensures uninterrupted electronic and ionic conduction pathways while verifying structural integrity under stack pressures.
Manufacturing Batch Quality Control & Incoming QA	Standardized benchtop testing of incoming raw electrode rolls and finished coated coils prior to slitting and winding operations.	Rapidly flags coating thickness variations, binder migration defects, and non-uniform conductive network issues, reducing final cell scrap rates.

Parameter Category	Specification Details (Model: DS18)
Model Designation	DS18
Measurement Method	Two-probe planar electrode method (through-plane electrical characterization)
Resistance Range	$10^{-7}\text{ }\Omega \sim 10^7\text{ }\Omega$
Resistivity Range	$10^{-7}\text{ }\Omega\cdot\text{cm} \sim 10^7\text{ }\Omega\cdot\text{cm}$
Conductivity Range	$5\times 10^{-7}\text{ S/cm} \sim 10^7\text{ S/cm}$
Selectable Test Currents	$1\text{ }\mu\text{A}$, $10\text{ }\mu\text{A}$, $100\text{ }\mu\text{A}$, 1 mA , 10 mA , 1000 mA
Resistance Accuracy	$\leq 0.3\%$ (Standard Resistance)
Resistance Resolution	$0.1\text{ }\mu\Omega$

Parameter Category	Specification Details (Model: DS18)
Applied Pressure Range	$0 \sim 200 \text{ kg}$ (programmable closed-loop control)
Pressure Loading Mechanism	Fully automatic motor-driven compression with target-set automatic execution
Planar Probe Electrode Material	High-conductivity copper (standard diameter: $\varnothing 10 \text{ mm}$; custom sizes available)
Test Stroke Range	$0 \sim 20 \text{ mm}$
Displacement Measurement Accuracy	0.01 mm
Sample Thickness Range	$0 \sim 10 \text{ mm}$
Sample Thickness Accuracy	0.001 mm ($\pm 1 \mu\text{m}$)
Software Interface Functions	Direct display of resistance, resistivity, conductivity, temperature, pressure, cross-sectional area, height/thickness, compacted density, real-time correlation curves, and automated test report generation
System Safety & Protection	Stroke limit protection, maximum pressure overload protection, emergency stop button, operator error prevention, and abnormal condition audible/visual alarms
Operation & Maintenance Guidance	Integrated safety compliance operational indicators and automated maintenance/calibration prompt notifications
Input Power Supply	$\text{AC } 220 \text{ V} \pm 10\%, 50 \text{ Hz}$
Total Power Consumption	$< 100 \text{ W}$

Wet Film Thickness Gauge High Precision Eccentric Wheel Meter For Liquid Coatings

Item Number: DS06



Introduction

Achieve precision wet film thickness measurement across battery coatings and functional films with this precision eccentric wheel gauge, engineered for flat and curved substrates to deliver unmatched consistency in demanding quality control and laboratory research.

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Application	Description	Key Benefit
Battery Electrode Slurry Coating	Verifying wet film deposition thickness of cathode (NMC, LFP) and anode (graphite, silicon) slurries immediately after slot-die or doctor blade coating.	Prevents mass loading variations, optimizes active material density, and eliminates batch rejection before costly drying phases.
Functional Optical & Conductive Films	Monitoring wet layer depth for anti-reflective, transparent conductive, and barrier coatings on rigid glass and polymer substrates.	Guarantees optical clarity, uniform sheet resistance, and precise dry film target thickness prediction.
Industrial Automotive Finishes	Measuring primers, basecoats, and clearcoats applied over stamped sheet metal and contoured automotive body components.	Ensures uniform appearance, prevents paint sagging or solvent popping, and verifies compliance with OEM coating specs.
Protective & Anti-Corrosion Coatings	Quality auditing of marine epoxy, polyurethane, and zinc-rich coatings applied to pipelines, tanks, and structural steel beams.	Validates protective barrier thickness on flat surfaces and curved pipe outer diameters to prevent premature corrosion failure.
Ceramic & Solid Electrolyte Tapes	Controlling tape casting layer thickness during doctor-blade spreading of ceramic slurries and solid-state electrolyte green tapes.	Assures uniform green tape density and prevents sintering warpage, cracking, or dimensional inconsistencies.
Printing Inks & Overprint Varnishes	Inspecting fluid ink deposition depth and UV-curable overprint varnishes on rigid packaging panels and metal sheet printing lines.	Prevents color density drift, avoids excessive drying times, and minimizes coating material consumption.
Coil Coating Quality Control	High-speed spot-checking of continuous coil coating lines processing aluminum and steel strip substrates.	Provides instant real-time thickness feedback to line operators to maintain continuous cross-web profile uniformity.
Adhesives & Laminating Resins	Quantifying applied wet film thickness of pressure-sensitive adhesives, hot-melts, and laminating resins before bonding.	Guarantees required bond strength, eliminates squeeze-out defects, and controls adhesive raw material expenditure.

Parameter	DS06-100	DS06-200	DS06-500	DS06-1000
Full Scale Range	0 - 100 μm	0 - 200 μm	0 - 500 μm	0 - 1000 μm
Recommended Operational Range	10 - 90 μm	20 - 180 μm	50 - 450 μm	100 - 900 μm
Scale Graduation Interval	5 μm	10 μm	25 μm	50 μm
Machining Tolerance	±5% across full scale	±5% across full scale	±5% across full scale	±5% across full scale
Measurement Wheel Architecture	3-wheel eccentric system	3-wheel eccentric system	3-wheel eccentric system	3-wheel eccentric system
Graduation Display Unit	Micrometers (μm)	Micrometers (μm)	Micrometers (μm)	Micrometers (μm)
Substrate Compatibility	Flat and single-axis curved	Flat and single-axis curved	Flat and single-axis curved	Flat and single-axis curved
Minimum Substrate Margin	≥25 mm from edge	≥25 mm from edge	≥25 mm from edge	≥25 mm from edge

Parameter	DS06-100	DS06-200	DS06-500	DS06-1000
Structural Material	High-grade stainless steel	High-grade stainless steel	High-grade stainless steel	High-grade stainless steel
Operating Mechanism	Manual 180° rolling	Manual 180° rolling	Manual 180° rolling	Manual 180° rolling
Solvent Resistance	Full resistance to NMP, ketones, alcohols, and esters	Full resistance to NMP, ketones, alcohols, and esters	Full resistance to NMP, ketones, alcohols, and esters	Full resistance to NMP, ketones, alcohols, and esters

Halogen Moisture Analyzer Precision Digital Laboratory Moisture Balance

Item Number: DS14



Introduction

Achieve rapid and highly accurate thermogravimetric analysis with this advanced halogen moisture analyzer. Built with 110g capacity, 1mg precision, 40°C to 199°C temperature range, LCD display, and 15-group memory, it provides dependable quality control across industrial laboratory applications.

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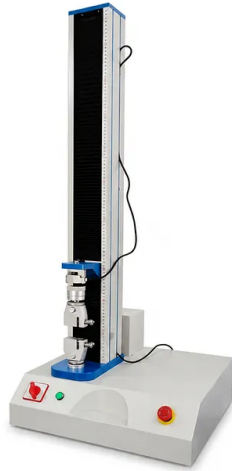
Application	Description	Key Benefit
Battery Slurry & Cathode Active Materials	Measuring residual solvent and moisture content in lithium-ion battery cathode/anode powders, binders, and wet slurries.	Prevents electrode foil bubbling, improves adhesion, and eliminates moisture-induced cell degradation in finished battery assemblies.
Powder Metallurgy & Sintered Metals	Verifying dry conditions of fine metallic powders and binder formulations prior to die compaction and sintering operations.	Eliminates steam micro-fissuring and void formation during high-temperature consolidation processes.
Advanced Technical Ceramics	Evaluating moisture levels in spray-dried ceramic granulates, oxide powders, and green body formulations.	Ensures consistent green body compaction density and prevents warping or cracking during kiln firing.
Polymers & Engineering Resins	Checking moisture in hygroscopic polymer pellets (polyamides, PET, polycarbonates) prior to injection molding or extrusion.	Prevents cosmetic surface splay, structural hydrolytic degradation, and mechanical failure in molded components.
Chemical Synthesis & Bulk Reagents	Routine batch testing of chemical salts, fine powders, crystalline compounds, and organic intermediates.	Accelerates batch release cycles with rapid 15-recipe method recall and consistent 1mg reading precision.
Food Quality & Agricultural Grains	Determining free and bound moisture in flours, starches, crushed seeds, dehydrated food goods, and agricultural feed.	Complies with strict commercial shelf-life requirements while reducing laboratory drying oven wait times.

Specification Parameter	Value / Configuration (DS14)
Item Number	DS14
Maximum Weighing Capacity	110 g
Readability (Resolution)	1 mg (0.001 g)
Heating Technology	Fast-Response Halogen Lamp
Sample Pan Diameter	Φ 90 mm
Display Technology	High-Contrast Digital LCD
Temperature Setting Range	40°C to 199°C
Timer Setting Range	1 min to 99 min
ATRO Measurement Mode 1	100% to 999%
ATRO Measurement Mode 2	0% to 999%
Internal Memory Capacity	15 Historical Test Groups / Parameter Sets

Computerized Dual Column Tensile Strength Testing Machine

Universal Materials Mechanical Test System

Item Number: DS04



Introduction

This computerized dual-column tensile strength testing machine delivers high-precision force measurement, real-time stress-strain curve analysis, and robust servo control across diverse industrial materials, supporting tension, compression, peeling, shear, and flexural evaluation for rigorous QA and R&D.

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Application	Description	Key Benefit
Polymer & Rubber Testing	High-elongation tensile, tear, and tensile-holding evaluation of raw elastomers, molded plastics, and dumbbell specimens.	Captures accurate elongation-at-break and yield behavior without frame distortion or crosshead slipping.
Metallic Wire & Springs	Tensile strength, yield proof, compression, and cyclic bend characterization of steel wires, cables, and industrial coil springs.	High stiffness frame provides clean stress-strain curve resolution at high peak loads.
Films, Foils & Tapes	90-degree and 180-degree peel testing, high-sensitivity shear, and puncture resistance of thin films, laminates, and adhesive layers.	1/250,000 sensor resolution accurately registers micro-load shifts and separation forces.
Structural Composites & Profiles	3-point flexural, shear, and compressive crushing tests on reinforced resin matrices, structural sections, and profile extrusions.	400 mm testing width and 1000 mm stroke accommodate complex geometries and bulky fixtures.
Automotive Components	Static compression, component pull-off, and seam-weld tear tests on molded interior components, fasteners, and rubber bushings.	Multi-condition auto-stop and programmable hold-load testing ensure adherence to manufacturing QA tolerances.
Construction & Geotextiles	Tensile pull, puncture, and prolonged stretch testing on industrial webbing, geotextile fabrics, strapping belts, and synthetic cords.	Generates complete statistical batch reports with exported curves for direct quality certification audits.

Specification Parameter	Model DS04 Technical Value
Model Designation	DS04
Nominal Force Capacity	10 kN (Custom load cell capacities available upon request)
Force Measurement Accuracy	Superior to $\pm 0.5\%$ of reading
Force Resolution	1/250,000
Effective Force Range	0.5% – 100% Full Scale (F.S.)
Indication Verification	Indication error: $\pm 0.5\%$; Indication variability: $\leq 0.5\%$
Positioning Accuracy	≤ 0.01 mm
Engineering Units	N, kN, kgf, gf, lbf
Drive Mechanism	High-precision zero-backlash dual ball screws with guided columns
Drive Power System	Digital AC servo motor with dedicated matched servo drive controller
Test Speed Range	1 – 500 mm/min (Stepless, fully adjustable)
Crosshead Return Speed	1 – 500 mm/min (User programmable)
Effective Crosshead Stroke	1000 mm

Specification Parameter	Model DS04 Technical Value
Effective Gripping Daylight	700 mm (Between standard grips)
Effective Test Width	400 mm
Load Cell Type	Sun Cells high-precision strain gauge transducer
Safety Shutdown Modes	Overload cutoff, specimen rupture stop, upper/lower travel limit switches, setpoint threshold stop
Control & Display System	External PC computer integration with real-time dynamic curve rendering
Software OS Compatibility	Windows 7 / Windows 10 (32-bit & 64-bit)
Report Generation	Automated Word format test reports (Serial numbers, peak forces, curves, averages, historical memory)
Standard Included Fixture	Customized precision compression platen set (Custom tensile/peel fixtures tailored to sample specs)
Included Accessories	Dedicated testing software suite, system interface data cables, manual pendant control box
Optional Accessories	Dedicated PC workstation, industrial report printer, specialized tensile/peel/shear grips
Power Supply	Single-Phase AC 220V $\pm 10\%$, 50 Hz
Power Consumption	400 W
Equipment Dimensions (L x W x H)	750 mm x 430 mm x 1570 mm
Net Equipment Weight	Approximately 185 kg

Coulometric Karl Fischer Moisture Titrator With Headspace Karl Fischer Oven For Trace Water Analysis

Item Number: DS20



Introduction

Optimize trace water determination with this automated coulometric Karl Fischer titrator and headspace oven system, engineered for battery cathode materials, electrolytes, and sensitive solids requiring precise moisture quantification, GLP compliance, and high throughput laboratory efficiency.

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Application	Description	Key Benefit
Battery Cathode and Anode Active Materials	Thermal extraction and titration of trace structural or adsorbed moisture in Li-ion electrode powders (LFP, NCM, graphite).	Prevents hydrofluoric acid generation and cell degradation by ensuring sub-ppm moisture verification prior to slurry mixing.
Battery Liquid Electrolyte Verification	Direct coulometric injection testing of non-aqueous organic carbonate electrolytes and functional additives.	Delivers rapid microgram-level quantification without thermal volatility side reactions, maintaining strict electrochemical stability standards.
Polymeric Battery Separators	Thermal desorption of residual surface and internal moisture from porous polyolefin and coated separator films.	Ensures uniform dielectric properties and eliminates vapor expansion hazards during cell formation and sealing.
Solid-State Electrolytes and Precursors	Enclosed headspace extraction of moisture from air-sensitive sulfide, oxide, or polymer solid electrolyte powders.	Protects reactive compounds from atmospheric exposure while obtaining reliable moisture content down to trace detection limits.
Pharmaceutical Active Ingredients (APIs)	Headspace analysis of thermally stable solid powders, excipients, and lyophilized drugs with low moisture solubility.	Eliminates sample dissolution issues and side reactions with Karl Fischer reagents, meeting pharmacopeia testing standards.
Technical Polymers and Engineering Plastics	Desorption moisture analysis of hygroscopic pellets, polyamides, and resin compounds prior to injection molding.	Prevents hydrolytic polymer degradation and structural voids in finished high-performance engineering components.
Fine Chemicals and Industrial Solvents	Routine quality control screening of anhydrous solvents, reagents, and specialty chemical formulations.	Fast, reagent-efficient testing with maximum titration speeds up to 2.24 mg H ₂ O/min for accelerated batch turnaround.

Parameter	Coulometric Titrator Unit	Headspace Karl Fischer Oven Unit
Item Identifier	DS20-Titrator	DS20-Oven
Measurement Method	Coulometric Karl Fischer Titration	Headspace Thermal Extraction / Carrier Gas Evaporation
Measurement Range	10 µg to 200 mg H ₂ O	Applied to solid samples compatible with 10 µg – 200 mg range
Maximum Titration Speed	2.24 mg H ₂ O / min	Dependent on sample outgassing kinetics
Display & User Interface	Color Touchscreen with dynamic "Moisture-Time" curve	Digital control panel for temperature & flow settings
Statistical Functions	Mean, Absolute Standard Deviation, Relative Standard Deviation (RSD)	Process status tracking and timing indicators
Regulatory Compliance	GLP, ISO 900x compliant reporting	GLP, ISO 900x workflow integration
External Interface	Balance connection for automated sample weight acquisition	Automated initiation triggering upon cycle start
Operating Power Supply	220 VAC	220 VAC
Operating Temperature	0 °C to 40 °C	0 °C to 40 °C
Operating Relative Humidity	< 85% RH	< 85% RH

Parameter	Coulometric Titrator Unit	Headspace Karl Fischer Oven Unit
External Dimensions (W × D × H)	178 mm × 138 mm × 311 mm	280 mm × 450 mm × 460 mm
Equipment Net Weight	3 kg	12 kg

Offline X-Ray Battery Inspection Machine High Resolution Cell Testing System

Item Number: DS17



Introduction

Enhance cell quality control with this offline X-ray battery inspection machine featuring a high-precision 130kV microfocus tube, four-axis motorized stage, real-time image analysis, and complete radiation safety shielding designed for demanding laboratory research and industrial cell defect verification workflows.

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Application	Description	Key Benefit
Pouch Cell Anode-Cathode Overhang Measurement	Non-destructive verification of internal electrode alignment and negative-to-positive foil overhang margins across the perimeter of stacked pouch cells.	Prevents lithium plating, internal dendritic growth, and thermal runaway risks by enforcing geometric manufacturing tolerances.
Cylindrical Cell Jelly-Roll & Tab Inspection	High-magnification radiography of wound 18650, 21700, and 4680 cylindrical formats to check tab weld integrity, inner winding deformation, and center-pin positioning.	Identifies mechanical winding collapse, misaligned internal current collectors, and incomplete tab bonds before final sealing.
Prismatic Cell Internal Component Verification	Penetrative scanning of aluminum-cased prismatic battery packs to inspect internal top-cap assemblies, electrode stack compression, and current collector connection points.	Validates structural stability against vibration stresses without requiring destructive physical decrimping or can opening.
Solid-State & Advanced Battery R&D	Radiographic analysis of novel solid electrolyte interfaces, metallic lithium anode distribution, and multi-layer structural uniformity under varying compression levels.	Accelerates material prototyping by revealing internal voiding, delamination, and phase uniformity during early development stages.
Ultrasonic & Laser Weld Quality Assurance	Sub-micron structural evaluation of ultrasonic tab-to-busbar joints and laser-welded terminal posts to detect porosity, micro-cracks, and lack of fusion.	Eliminates high-resistance electrical bottlenecks and mechanical joint failures within high-drain power battery designs.
Post-Mortem & Lifecycle Failure Analysis	Non-invasive forensic examination of cycled, swollen, or mechanically stressed test cells to diagnose internal structural degradation and layer shifting.	Preserves the exact physical failure state for root-cause analysis without introducing mechanical artifacts caused by destructive teardowns.

Parameter Category	Specification Parameter	Value / Detail (DS17)
Model Designation	System Identifier	DS17
Physical Dimensions	External Footprint (L x W x H)	1080 mm x 1180 mm x 1730 mm (subject to final engineering configuration)
	Overall System Weight	Approx. 1250 kg
	Chassis Finish Color	International Standard Warm Gray 1C
Environmental Requirements	Operating Temperature Range	0°C to 40°C
	Operating Humidity Range	30% to 70% RH (non-condensing)
Inspection Performance	Measurement & Inspection Accuracy	±0.06 mm (verified via standard calibration block)
	Effective Inspection Dimensions	420 mm x 360 mm
	Workstage Table Area	500 mm x 500 mm
X-Ray Generation System	Ray Source Type	Closed micro-focus X-ray tube
	Maximum Tube Voltage	130 kV

Parameter Category	Specification Parameter	Value / Detail (DS17)
	Focal Spot Dimension	< 7 μm
	Source Quantity	1 Complete Set
	Source Manufacturer	Unicomp
Detection & Imaging System	Detector Technology	High-resolution digital flat panel detector (FPD)
	Detector Model	1313HR
	Active Imaging Area	130 mm $\times$ 130 mm
	Detector Manufacturer	Careray
Motion Control System	Motorized Axes	4-Axis synchronized control (X / Y / Z1 / Z2)
Software & UI	Software Architecture	Proprietary multi-functional image processing software suite
	Inspection Capabilities	Real-time live dynamic radioscopy & high-precision manual inspection
	Software Language	English
	Peripherals & User Interface	22-inch LCD monitor, industrial joystick, mouse, keyboard, status indicator tower
Radiation & Safety	Radiation Dose Rate Standard	< 1.0 $\mu\text{Sv/h}$ (at full tube output)
	Enclosure Construction	Heavy-gauge steel plate encasing solid lead shielding layers
	Viewing Window	Certified optical-grade thick lead shielding glass
	Safety Interlock System	High-sensitivity dual-channel limit switches on all doors; instant automatic X-ray cut-off
Electrical Specifications	Input Voltage	AC 110–220V ($\pm 10\%$), 50/60 Hz single-phase
	Maximum Power Consumption	Approx. 3.0 kW

Coulometric Karl Fischer Moisture Titrator With Integrated Headspace Oven For Battery Materials

Item Number: DS08



Introduction

Engineered for advanced battery materials research, this integrated coulometric Karl Fischer moisture titrator delivers high-precision trace moisture analysis from 1 ppm to 100% with automated headspace heating, intelligent drift compensation, and robust data governance for quality control laboratories.

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Application	Description	Key Benefit
Lithium Battery Coated Electrodes	Headspace thermal extraction of residual water trapped within dried positive (cathode) and negative (anode) electrode coatings.	Prevents active material delamination and parasitic side reactions during cell cycling with rapid 5-minute automated testing.
Non-Aqueous Battery Electrolytes	Direct liquid injection coulometric titration of organic carbonate solvents and lithium salts (e.g., LiPF ₆).	Detects trace moisture down to single-digit ppm levels in under two minutes, avoiding hydrofluoric acid (HF) generation and electrolyte degradation.
Battery Separator Membranes	Thermal extraction analysis of microporous polyolefin (PE/PP) and ceramic-coated separator films using sealed 10 mL vials.	Ensures complete moisture liberation without melting the polymer structure, maintaining internal cell electrical isolation integrity.
Cathode Active Materials & Precursors	High-temperature moisture desorbing for lithium cobalt oxide (LiCoO ₂), NCM/NCA ternary powders, and lithium iron phosphate (LFP).	Provides high precision across variable sample masses with automated blank subtraction, guaranteeing consistent cathode synthesis quality.
Solid-State Electrolyte Powders	Trace moisture characterization of sulfide, oxide, and halide solid electrolytes under inert carrier gas conditions.	Prevents moisture-induced toxic gas generation (such as H ₂ S) and degradation of ionic conductivity in next-generation solid-state batteries.
Battery Slurry Binders & Additives	Moisture verification of conductive carbon black, PVDF, CMC, and SBR binders before slurry preparation.	Eliminates slurry gelling and agglomeration issues during high-speed coating, ensuring uniform electrode layer density.

Parameter	Specification (DS08)
Measurement Principle	Coulometric Karl Fischer Titration with Integrated Thermal Evaporation Oven
Moisture Measurement Range	3 µg to 199 mg H ₂ O (Mass) / 1 ppm to 100% (Concentration)
Moisture Detection Resolution	0.01 µg H ₂ O
Measurement Repeatability	≥ 99.7% (at 1000 µg H ₂ O calibration standard)
Applicable Sample States	Solid powders, sheets/films, non-aqueous liquids, and specialized gas samples
Sample Introduction Modes	Direct liquid injection, automated vial piercing, and purge cap displacement
Heating Temperature Range	Ambient to 285°C (Adjustable in 0.1°C increments)
Temperature Control Modes	Constant isothermal holding and 3-stage programmable temperature ramping
Maximum Heating Rate	15°C/min (for temperatures up to 200°C)
Carrier Gas Requirements	High-purity dry nitrogen (≥99.99%) or dry compressed air
Carrier Gas Pressure Limits	Inlet: Maximum 0.6 MPa; Regulated Output: 0 to 0.4 MPa
Carrier Gas Flow Control	Electronic display and control: 0 to 100 mL/min

Parameter	Specification (DS08)
Gas Flow Accuracy	1 mL/min
Sample Vial Volume	10 mL standard crimp-top headspace vials
Typical Analysis Duration	50 seconds to 15 minutes (depending on sample matrix and method)
User Interface & Controls	Full-color touchscreen with numeric keypad and one-touch automated start
Data Communication Ports	RS-232 serial port, USB interface, and USB stylus micro-printer output
Power Rating & Supply	300 W; 220 V AC, 50 Hz
System Dimensions (L × W × H)	500 mm × 250 mm × 360 mm
Instrument Net Weight	11.5 kg

Lithium Battery Powder Resistivity And Compacted Density Measurement System

Item Number: DS12



Introduction

Optimize cathode and anode slurry formulations with this automated lithium battery powder resistivity and compacted density measurement system featuring closed-loop servo pressure execution high-resolution displacement monitoring synchronous environmental logging and automated analytical software for precision electrode quality control workflows

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Application	Description	Key Benefit
Lithium-Ion Cathode Material Optimization	Characterizing ternary (NCM/NCA) and LFP powders under varying compaction pressures to determine electrical percolation thresholds and maximum volumetric density.	Identifies optimal calendaring densities to maximize cell capacity while preventing active particle fracture.
Anode Material Development	Evaluating synthetic graphite, natural graphite, hard carbon, and silicon-based composites for compacted density and electronic conductivity.	Establishes baseline conductivity and swelling behavior metrics critical for high-rate anode formulations.
Conductive Carbon & Graphene Screening	Assessing percolation networks in super-conductive carbon blacks, carbon nanotubes (CNTs), and graphene nanoplatelets across pressure gradients.	Enables precise formulation dosing to minimize dead weight while ensuring continuous conductive network formation.
Solid-State Electrolyte Evaluation	Measuring the densification efficiency, mechanical compressibility, and ionic/electronic resistivity of sulfide and oxide solid electrolyte powders.	Quantifies grain boundary contact resistance and structural integrity under operational stack pressures.
Capacitor & Supercapacitor Materials	Analyzing activated carbon powders and conductive polymer composites for electrode compaction limits and contact impedance.	Improves power density and equivalent series resistance (ESR) through optimized electrode compression parameters.
Quality Assurance & Incoming Inspection	Batch-to-batch verification of raw powder shipments against tight resistivity and compacted tap density specifications.	Prevents non-compliant active material lots from entering slurry mixing, minimizing manufacturing scrap rates.

Specification Parameter	DS12-1100 Base Variant	DS12-2100 Extended Variant
Resistance Measurement Range	1 $\mu\Omega$ – 1200 $\mu\Omega$	1 $\mu\Omega$ – 200 M Ω
Resistance Measurement Accuracy	$\pm 0.05\%$	$\pm 0.05\%$
Resistivity Measurement Range	10 ⁻⁵ $\Omega\cdot\text{cm}$ – 10 ⁹ $\Omega\cdot\text{cm}$	Extended analytical calculation via software
Conductivity Measurement Range	10 ⁻⁹ $\Omega\cdot\text{cm}$ – 10 ⁶ $\Omega\cdot\text{cm}$	Extended analytical calculation via software
Applied Pressure Range	0 – 200 MPa	0 – 200 MPa
Pressure Measurement Accuracy	$\pm 0.30\%$ F.S.	$\pm 0.30\%$ F.S.
Thickness Measurement Range	0 – 8 mm	0 – 8 mm
Thickness Resolution / Accuracy	0.5 μm / $\pm 5 \mu\text{m}$	0.5 μm / $\pm 5 \mu\text{m}$
Maximum Mold Sample Capacity	$\Phi 16 \text{ mm} \times 8 \text{ mm}$	$\Phi 16 \text{ mm} \times 8 \text{ mm}$
Temperature Measurement Range & Accuracy	0 – 50 $^{\circ}\text{C}$ ($\pm 2 \text{ }^{\circ}\text{C}$)	0 – 50 $^{\circ}\text{C}$ ($\pm 2 \text{ }^{\circ}\text{C}$)

Specification Parameter	DS12-1100 Base Variant	DS12-2100 Extended Variant
Humidity Measurement Range & Accuracy	20% - 90% RH ($\pm 5\%$ RH)	20% - 90% RH ($\pm 5\%$ RH)
Operating Power Supply	220 V ($\pm 10\%$ voltage tolerance)	220 V ($\pm 10\%$ voltage tolerance)
Power Consumption	2100 W	2100 W
Operating Environment Requirements	25 $\pm$ 5 °C; $\leq 80\%$ RH (non-condensing); away from strong electromagnetic fields	25 $\pm$ 5 °C; $\leq 80\%$ RH (non-condensing); away from strong electromagnetic fields
Net System Weight	165 kg	165 kg
External Dimensions (W x D x H)	370 mm x 580 mm x 1100 mm	370 mm x 580 mm x 1100 mm

Automatic Open And Closed Cell Content Analyzer True Density And Porosity Tester

Item Number: DS13



Introduction

Engineered for advanced materials research, this automated gas displacement analyzer delivers precise open and closed cell content, true density, and porosity measurements across rigid foams, geological cores, and sintered metals with exceptional accuracy and full standard compliance.

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Application	Description	Key Benefit
Rigid Polyurethane & Phenolic Foams	Evaluates open/closed cell volume ratios and cut-surface corrections according to ASTM D6226 and ISO 4590.	Ensures structural insulation ratings, moisture impermeability, and thermal barrier efficiency.
Acoustic Absorption Materials	Measures interconnecting void fractions and open cell percentages in porous acoustic baffles and sound deadening panels.	Correlates air-flow resistivity and sound transmission loss with microstructural open porosity.
Petroleum Geological Core Analysis	Analyzes effective porosity, skeletal matrix volume, and grain density on cut rock cores and drill cuttings.	Yields high-precision formation reservoir volume data without fluid-induced swelling or sample destruction.
Powder Metallurgy & Sintered Metals	Determines closed pore fractions, interconnecting porosity, and true density of sintered structural components.	Verifies sintering densification rates and mechanical structural integrity for safety-critical components.
Advanced Technical Ceramics	Characterizes skeletal volume and true density of green bodies, calcined ceramics, and refractory oxides.	Accurately tracks sintering shrinkage, structural phase transformation, and internal void closure.
Battery Electrode & Separator Research	Quantifies skeletal density and void volume of porous battery membranes, calendared electrodes, and active material powders.	Provides essential volume fractions required to optimize electrolyte wetting, transport kinetics, and energy density.

Specification Parameter	Value / Feature Detail (DS13)
Product Item Number	DS13
Measurement Capabilities	Open cell ratio, closed cell ratio, cut-surface corrected cell percentage, true density, skeletal volume, total porosity
Supported Sample Types	Rigid foams, porous blocks, geological cores, metal components, non-volatile liquids, slurries, powders, granules
Measurement Principle	Gas expansion displacement method (Archimedes principle / Boyle-Mariotte Law)
Accuracy Error	$\leq \pm 0.03\%$ (verified with certified reference standards)
Repeatability Error	$\leq \pm 0.03\%$
Display Resolution	0.01%
Analysis Cycle Time	3 to 5 minutes per sample (excluding initial flush and degassing)
Pressure Range	0 kPa to 100 kPa (user-programmable to prevent foam cell wall deformation)
Pressure Sensor Technology	Silicon diaphragm capacitive pressure sensor
Pressure Sensor Accuracy	0.1% of actual reading (surpassing 0.1% Full Scale standards)
Standard Sample Tube Size	27 mm × 27 mm × 51 mm (designed for standard 25 mm × 25 mm × 50 mm specimens per GB/T 10799)

Specification Parameter	Value / Feature Detail (DS13)
Optional Sample Cell Sizes	Cylindrical 25 mm core tubes and custom customer-specified dimensions available
Working Analysis Gas	High-purity Helium ($\geq 99.999\%$ purity, 40 L cylinder connection); Nitrogen optional
Dual-Gas Operation Mode	Optional configuration: High-purity Helium as analysis gas, High-purity Nitrogen as pneumatic drive gas
Valve Configuration	Heat-free pneumatic control valves with integrated manifold mounting
Compliance Standards	GB/T 40401, GB/T 10799, GB/T 29046, GB/T 29047, GB/T 3139, ASTM D1622, ASTM D2856, ASTM D6226, ISO 4590, Q/CR 549.8, D45 1355, T/CECS 717
Control System	Dual control architecture: Built-in Windows industrial PC and external PC serial interface
Enclosure Dimensions	380 mm (L) × 380 mm (W) × 480 mm (H)
Net Weight	25 kg

Two Station Battery Cap Pressure Testing Machine For Cylindrical Cell Safety Vent And Disconnect Pressure Inspection

Item Number: DS16



Introduction

Engineered for battery production quality control, this dual station cap pressure testing machine accurately inspects CID disconnect and bursting pressure on 18 and 21 series cell caps using standard workshop compressed air and automated PLC data logging systems.

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Application	Description	Key Benefit
18650 & 21700 Cell Quality Control	In-line sampling and outgoing quality audits of finished cylindrical cell cap assemblies prior to final cell sealing.	Identifies defective CID membranes and scoring anomalies before irreversible cell assembly.
CID Disconnect Pressure Verification	Precision measurement of the exact internal gas pressure at which the internal aluminum flip-chip disconnects the electrical circuit.	Guarantees that the electrical circuit cuts off reliably within design specifications under thermal abuse conditions.
Safety Vent Burst Threshold Testing	Destructive pressure testing to determine the maximum rupture pressure of the notched safety exhaust membrane.	Prevents violent can rupture by ensuring controlled gas venting occurs within the mandated safety pressure envelope.
Incoming Quality Inspection (IQ)	Rapid verification of purchased cap components delivered by tier-two component suppliers against procurement specifications.	Prevents non-compliant safety components from entering the active electrode assembly workflow.
Battery Safety R&D & Failure Analysis	Empirical testing of experimental vent geometries, scoring depths, and alternative alloy foil materials for next-generation cells.	Accelerates development cycles with immediate, high-resolution pressure curve feedback and digital data export.
Pilot Line Process Optimization	Routine calibration and validation of cap welding, crimping, and laser notching parameters during production ramp-up.	Establishes statistical Cpk benchmarks for cap mechanical safety thresholds across production batches.

Specification Parameter	Technical Data (DS16)
Equipment Identification	DS16
Nominal Testing Pressure Range	0.0 – 5.0 MPa
Maximum Output Pressure	6.0 MPa
Input Air Supply Pressure	0.5 – 0.6 MPa (Standard compressed air; no nitrogen required)
Electrical Power Supply	AC 220V ±10%, 50/60 Hz
Total Power Consumption	500 W
Number of Test Stations	2 independent testing stations
Station 1 Compatibility	18-Series Cap Assemblies (e.g., 18650, customizable to client samples)
Station 2 Compatibility	21-Series Cap Assemblies (e.g., 21700, customizable to client samples)
Clamping Mechanism	Pneumatic cylinder dual-fixtured clamping assemblies
Pressure Generation System	Single-stage pneumatic gas booster pump with optimized valve logic
Sensor Technology	High-precision digital pressure transmitter
Control & Display System	Industrial PLC controller with interactive color touchscreen interface

Specification Parameter	Technical Data (DS16)
Integrated Printer	Onboard micro dot-matrix stylus printer for immediate result slips
Data Export Interface	USB port for data transfer to flash drive and external PC analysis
Supplied Tooling	2 complete sets of precision-machined cap testing fixtures

Universal Multifunctional Continuous Sensing Touchscreen Rotational Viscometer For Laboratory And Industrial Fluid Rheology

Item Number: DS19



Introduction

Engineered for advanced fluid analysis, this multifunctional continuous sensing rotational viscometer delivers automated rheological testing, dynamic live trend monitoring, and high precision across battery slurries, polymers, adhesives, and chemical formulations with unmatched repeatability and robust operational security compliance.

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Application	Description	Key Benefit
Battery Electrode Slurries	Characterization of anode and cathode active material suspensions, binder dissolutions, and conductive carbon pastes across variable shear regimes.	Prevents slurry sedimentation, optimizes coating uniformity, and ensures defect-free electrode layer thickness during roll-to-roll manufacturing.
Polymer & Resin Formulation	Evaluating flow behavior, curing profiles, and molecular chain resistance in synthetic polymers, epoxy resins, and thermosetting compounds.	Delivers precise torque and shear rate analysis to ensure optimal polymer extrudability, injection flow, and structural integrity.
Paints, Inks & Functional Coatings	Testing leveling, sag resistance, and shear-thinning characteristics in high-solids paints, conductive inks, screen printing pastes, and barrier coatings.	Guarantees consistent application coverage, smooth finish, and reliable transfer across high-speed industrial printing and spray-coating lines.
Pharmaceuticals & Cosmetics	Monitoring the rheological stability, yield stress, and consistency of topical ointments, emulsions, suspensions, serums, and personal care gels.	Confirms batch-to-batch structural stability, patient application comfort, and strict adherence to pharmaceutical regulatory QC guidelines.
Chemicals & Petroleum Derivatives	Measuring viscosity indices and temperature-dependent flow dynamics for lubricants, crude fractions, synthetic oils, coolants, and bulk chemical reagents.	Ensures fluid stability under thermal stress, meeting stringent international lubrication standards and mechanical durability benchmarks.
Adhesives & Sealants Processing	Rheological qualification of hot-melt adhesives, cyanoacrylates, structural polyurethane sealants, and elastomeric bonding agents.	Optimizes dispensing pumpability, bead consistency, and open-time control for automated automotive and electronic assembly lines.

Model Identifier	Viscosity Range (cP / mPa·s)	Minimum Range Limit	Maximum Range Limit	Speed Range (RPM)	Available Speed Increments
DS19-LV	1† – 6,000,000 (6M)	1 cP (with ULA) / 15 cP (Standard)	6,000,000 cP	0.1 – 200	200 discrete selections
DS19-RV	100†† – 40,000,000 (40M)	100 cP (with Spindle #1)	40,000,000 cP	0.1 – 200	200 discrete selections
DS19-HA	200†† – 80,000,000 (80M)	200 cP (with Spindle #1)	80,000,000 cP	0.1 – 200	200 discrete selections
DS19-HB	800†† – 320,000,000 (320M)	800 cP (with Spindle #1)	320,000,000 cP	0.1 – 200	200 discrete selections

Parameter	Specification Details
Measurement Accuracy	±1.0% of full scale range (displayed concurrently with live test results)
Measurement Repeatability	±0.2% of full scale range

Parameter	Specification Details
Display Interface	5-inch full-color capacitive touchscreen with real-time trend plotting
Temperature Measurement	Built-in RTD temperature probe with dynamic visual readout (°C or °F)
Interface Parameters Displayed	Viscosity (cP or mPa·s), Temperature (°C/°F), Shear Rate, Shear Stress, % Torque, Speed, Spindle Number, Step Program Status
Security & Compliance	Password protection, customized user access durations, timestamped logging, portable login setup
Analytical Functions	Timed measurement, data averaging, user-programmable QC limits/alarms, custom spindle/speed libraries, step instruction sequences, on-screen data comparison
Data Interfaces	USB interface for computer connectivity, automated data acquisition, and automated PC instrument control

Category	Items Included / Supported Accessories
Standard Package Components	Instrument main unit, spindle set (6-spindle set for RV/HA/HB models or 4-spindle set for LV models), RTD temperature probe, spindle leg guard (included with LV and RV models; omitted from HA/HB), laboratory stand (Model G), and heavy-duty portable carrying case
Optional Modular Hardware	Ball-bearing suspension system (available for RV/HA/HB configurations), EZ-Lock rapid spindle coupling system, quick-action positioning stand, label printer, quick connector/extension hook
Specialized Sample Adapters	Ultra-Low Viscosity Adapter (ULA), Small Sample Adapter (SSA), Thermosel high-temperature heating system, Helipath stand with T-bar spindles for non-flowing substances, Spiral adapter, DIN adapter, and Vane spindles
Calibration & Verification	Certified high-precision Newtonian viscosity standard liquids, optional RV/HA/HB Spindle #1

Computerized Battery Electrode Tab Welding Tensile Tester And Separator Performance Testing Machine

Item Number: DS21



Introduction

Evaluate battery electrode tab welding strength and separator mechanical performance with this computerized tensile testing machine featuring high precision load cells versatile test modes real time data acquisition and multi unit switching for advanced battery materials research and production

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Application	Description	Key Benefit
Battery Tab Welding Quality	Measures the tensile peel and shear strength of ultrasonic and laser-welded tabs on cathode and anode current collectors.	Prevents internal open circuits and contact resistance spikes by verifying joint integrity before cell assembly.
Battery Separator Puncture Testing	Evaluates the puncture resistance and tensile yield strength of micro-porous polyethylene, polypropylene, and ceramic-coated separators.	Assesses barrier resistance against dendrite penetration to eliminate short-circuit risks in high-energy cells.
Metal Current Collector Characterization	Quantifies elongation, tensile strength, and tear propagation across ultra-thin copper and aluminum foils.	Optimizes coating tension parameters and reduces foil breakage during high-speed roll-to-roll electrode processing.
Aluminum-Plastic Film Peel Testing	Determines the bond strength, interlayer adhesion, and seal integrity of pouch cell casing laminates.	Guarantees hermetic sealing performance and prevents electrolyte leakage or ambient moisture ingress over cell lifespan.
Adhesive Tape and Protection Film Peeling	Performs 90-degree and 180-degree peel resistance tests on functional tapes, release liners, and protective films.	Ensures uniform adhesion and residue-free removal during automated battery pack and electronics manufacturing.
Medical Patches and Package Sealing	Evaluates tensile strength, peel resistance, and elongation of transdermal patches, sterile wraps, and medical adhesive tapes.	Validates package seal integrity and compliance with rigorous healthcare and sterile packaging standards.
Polymer and Composite Film Mechanics	Tests tensile modulus, yield point, and breaking strength of flexible packaging, woven materials, and synthetic films.	Delivers precise mechanical profiling to satisfy international packaging, polymer, and paper testing protocols.

Parameter	Specification (DS21)
Primary Capacity	50 N
Optional Load Capacities	20 N, 100 N, 200 N, 500 N, 1000 N
Accuracy Class	Class 0.5
Load Accuracy	±0.5 % (Max Precision up to 0.25 %)
Load Resolution	1/250,000
Force Display Resolution	0.001 N
Displacement Resolution	0.001 mm
Effective Stroke	Approximately 500 mm
Testing Width	Ø120 mm
Test Speed Range	0.5 – 500 mm/min (Stepless Regulation)
Control Method	Fully Computerized PC Control

Parameter	Specification (DS21)
Display Interface	Computer LCD Monitor (Real-time curves, peak values, test count)
Selectable Force Units	N, kN, kgf, gf, lbf
Selectable Stress Units	MPa, kPa, Pa, kgf/cm ² , lbf/in ²
Selectable Displacement Units	mm, cm
Testing Modes	Fracture/Breakage Test, Constant Load Retention, Fixed Deformation Test, Fixed Time Test
Transmission Mechanism	Taiwan TBI High-Precision Ball Screw Drive
Sensor Configuration	High-Precision S-Type Alloy Steel Load Sensor
Shutdown & Safety Protection	Overload Stop, Emergency Stop, Specimen Rupture Auto-Stop/Reset, Upper/Lower Travel Limit Switches, Over-time Protection
Data Management & Storage	Unlimited Test Record Storage, Individual/Group Deletion, Direct A4 Printing via PC
Standard Fixture	1 Set (Configured per Customer Application Requirements)
Exterior Construction	A3 Steel Housing with Electrostatic Powder-Coated Plastic-Sprayed Finish
Power Supply	Single Phase, AC 220V, 50/60 Hz
Machine Dimensions (W × D × H)	400 × 400 × 1180 mm
Equipment Weight	80 kg

Powder Tap Density Tester Automatic Bulk Density Analyzer For Battery Materials And Metal Powders

Item Number: DS05



Introduction

Accurately determine powder tap density and loose bulk density with this advanced three-workstation tap density tester featuring an extended 50mm amplitude compliant with GB5162 and YS/T 677 standards for high-precision battery materials research metallurgy and industrial quality control processes

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Application	Description	Key Benefit
Lithium-Ion Battery Electrode Materials	Measuring the tap density of cathode powders (LMO, NCM, LFP) and anode graphite to maximize volumetric energy density in cell manufacturing.	Ensures high active material loading in electrode slurries and guarantees consistent energy capacity per unit cell volume.
Powder Metallurgy & Metal Alloys	Assessing the packing density and compressibility of spherical and irregular metal powders (titanium, stainless steel, nickel alloys).	Optimizes die filling, enhances green compact strength, and prevents shrinkage porosity during subsequent sintering stages.
Advanced Ceramics & Refractory Compounds	Determining particle packing efficiency of alumina, zirconia, silicon carbide, and nitride powders prior to pressing or slip casting.	Reduces internal defects, increases green body density, and minimizes structural deformation during high-temperature firing.
Additive Manufacturing Feedstock	Evaluating the flow behavior, packing fraction, and batch consistency of virgin and recycled metal/polymer powders for 3D printing.	Prevents recoater streaking, ensures uniform layer spreading, and improves part density in laser powder bed fusion systems.
Powder Coatings & Surface Finishing	Characterizing the bulk density and aeration behavior of thermoset and thermoplastic coating formulations.	Guarantees uniform fluidization during application, eliminates coating voids, and improves dry film thickness uniformity.
Pharmaceutical Excipients & Active Ingredients	Analyzing bulk-to-tapped volume ratios (Hausner Ratio and Carr's Compressibility Index) for tableting and capsule filling formulations.	Predicts powder flowability through hoppers, prevents weight variation in dosing, and improves high-speed tableting yield.
Chemical & Mineral Processing	Quality control testing of fine catalysts, pigments, abrasives, carbon black, and mineral fillers across industrial processing plants.	Provides precise baseline metrics for storage silo design, shipping volume calculations, and automated pneumatic conveying.
Food & Agricultural Products	Testing powdered nutritional additives, starches, instant beverages, and dairy powders to evaluate compaction and packaging efficiency.	Reduces container head-space, stabilizes transport settling, and ensures standardized volumetric consumer packaging.

Specification Parameter	Value / Operational Rating
Product Item Number	DS05
Test Parameters	Tap Density (), Loose Bulk Density ()
Compliance Standards	GB5162-2006, YS/T 677-2008 (Lithium Manganese Oxide Protocol)
Vibration Stroke Amplitude	50 mm ± 0.2 mm
Vibration Frequency	60 taps / min
Tap Count Setting Range	1 – 9,999 taps (User Programmable)
Number of Workstations	3 Simultaneous Workstations
Measurement Error	Error < ±1.5%
Standard Measuring Cylinders	3 Units, Stainless Steel Construction
Cylinder Dimensions & Volume	16.6 ml Capacity (Inner Diameter: 16.25 mm, Depth: 80 mm)

Specification Parameter	Value / Operational Rating
Guide Assembly Material	High-Grade Stainless Steel Frame
Data Interface & Analysis	Computer Software Data Management & Calculation
Operating Voltage	AC 220 V $\pm$ 10%, 50/60 Hz
Rated Power	110 W
External Dimensions (W $\times$ D $\times$ H)	400 mm $\times$ 280 mm $\times$ 270 mm
Net Weight	Approx. 13 kg

Benchtop Conductivity Meter Precision Laboratory Conductivity Tester

Item Number: DS01



Introduction

Engineered for high accuracy, this benchtop conductivity meter delivers precise measurement of conductivity, TDS, salinity, and resistivity. Featuring automated verification, IP54 protection, and complete data traceability, this reliable laboratory instrument ensures operational compliance and quality control across demanding industrial workflows.

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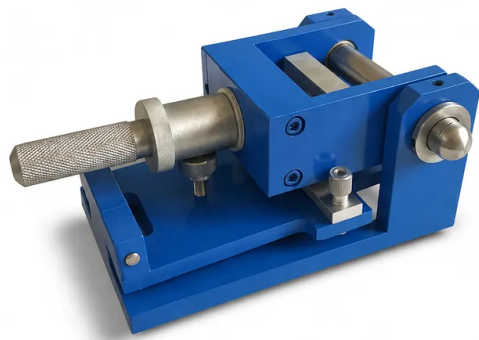
Application	Description	Key Benefit
Battery Electrolyte Formulation	Monitoring ionic conductivity and chemical stability of liquid and gel electrolyte solutions across broad concentration gradients.	Ensures optimal electrochemical transfer efficiency and high batch-to-batch repeatability in cell research.
Advanced Materials & Nanomaterials	Assessing ionic purity, dispersion stability, and washing bath conductivities during ceramic, polymer, and metallic powder synthesis.	Prevents ionic contamination and verifies complete removal of residual processing reagents.
Pharmaceutical & Biotech Processing	Performing purified water (PW) and water for injection (WFI) verification alongside standard formulation conductivity checks.	Guarantees stringent pharmacopeia regulatory compliance with automated pass/fail verification routines.
Chemical Manufacturing Quality Control	Characterizing raw chemical feedstock, concentrated acid/base baths, and finished chemical reagent solutions.	Delivers wide-range measurement capability spanning from trace ions up to 2,000 mS/cm without changing meters.
Environmental & Wastewater Analysis	Measuring salinity, TDS, and total ionic discharge in industrial effluent streams, municipal water sources, and environmental runoff.	Provides rapid multi-parameter analysis with robust IP54 protection in active environmental laboratories.
Semiconductor & Electronics R&D	Testing ultra-pure rinse water and plating bath chemistry where trace ionic presence directly dictates production yields.	High-resolution auto-ranging allows accurate detection of minute resistivity and conductivity shifts.

Parameter	Specification Details (DS01)
Product Item Number	DS01
Conductivity Measurement Range	0.000 μ S/cm to 2,000 mS/cm
Total Dissolved Solids (TDS) Range	0.00 mg/L to 1,000 g/L
Salinity Range	0.00 to 80.00 psu
Resistivity Range	0.00 to 100.0 M Ω -cm
Temperature Measurement Range	-30.0 $^{\circ}$ C to 130.0 $^{\circ}$ C
Conductivity Resolution	Auto-range, up to 0.001 μ S/cm
Temperature Resolution	0.1 $^{\circ}$ C
Conductivity Measurement Accuracy	$\pm$ 0.5% of measured value
Temperature Measurement Accuracy	$\pm$ 0.1 $^{\circ}$ C
Conductivity Calibration Modes	Linear calibration, manual cell constant entry
Calibration Points	1-point or 2-point calibration protocols

Parameter	Specification Details (DS01)
Display Interface	7-inch high-resolution color touchscreen
Primary User Modes	Standard analysis mode, uFocus parameter highlight mode
System Security & Governance	Two-level user access management (Administrator and Operator)
Data Logging & Traceability	Timestamped records including User ID, Sample ID, and Electrode ID
Method Automation	Automated routine verification with on-screen Pass/Fail indicators
Agitation Control	Programmable magnetic stirring duration and measurement stabilization delay
Housing Protection Rating	IP54 dust and splash water resistance
External Connectivity	Compatible with dedicated data management software export workflows

Battery Electrode Bend Tester Cylindrical Mandrel Flexibility And Coating Adhesion Testing System

Item Number: DS07



Introduction

Evaluate battery electrode coating adhesion and flexibility with this precision cylindrical mandrel bend tester designed for reliable cracking and delamination analysis across standardized mandrel diameters up to 32 mm in advanced energy storage research and quality control laboratories.

[Learn More](#)

Application	Description	Key Benefit
Lithium-Ion Battery Cathodes	Testing thick slurry coatings of LFP, NMC, or LCO on aluminum collector foils around tight radii.	Identifies cathode binder brittleness and prevents active material shedding during high-speed roll-to-roll calendaring.
Lithium-Ion Battery Anodes	Evaluating high-loading graphite and silicon-composite active layers coated onto thin copper substrates.	Quantifies binder flexibility to prevent micro-cracking during jelly-roll winding and prismatic cell assembly.
Solid-State Electrolyte Films	Assessing the mechanical compliance and flexibility of thin composite or polymer electrolyte membranes.	Determines critical bend radius to prevent crack-induced short circuits in flexible and solid-state cell architectures.
Current Collector Foil R&D	Assessing ductility and work-hardening characteristics of ultra-thin copper, aluminum, and nickel foils.	Ensures foil integrity along both longitudinal and transverse rolling directions under continuous bending loads.
Conductive Carbon & Primer Coatings	Measuring adhesion strength of carbon sub-coatings applied to metallic foils prior to main electrode slurry deposition.	Prevents interface delamination between the current collector and active layer during continuous cycling.
Industrial Coil & Can Coatings	Evaluating cracking thresholds of decorative, protective, and functional polymer varnishes on metallic plates.	Verifies post-forming post-cure flexibility and corrosion protection on deep-drawn metal components.
Academic Materials Science	Conducting comparative mechanical deformability studies across experimental slurry formulations and novel binder polymers.	Yields reproducible, publication-grade empirical data for flexible electronics and advanced electrochemical storage devices.

Specification Parameter	Value / Characteristic
Model Number	DS07
Standard Mandrel Diameters	2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 16 mm, 20 mm, 25 mm, 32 mm (12 sizes total)
Applicable Specimen Thickness	≤ 1.0 mm
Standard Specimen Dimensions	120 mm (L) × 50 mm (W)
Rotating Handle Adjustment Travel	> 17 mm
Clearance Between Arm & Mandrel	≤ 0.05 mm
Support Plate Elevation Travel	> 17 mm
Clearance Between Support & Mandrel	≤ 0.1 mm
Standard Bending Arc	180° continuous radial bend
Nominal Bending Duration	1 to 2 seconds
Inspection Standard Distance	Active area excluding < 10 mm from specimen edges

Specification Parameter	Value / Characteristic
Magnification Inspection Standard	Visual examination / 10× optical magnifier
Standard Testing Environment	Temperature: 23 ± 2°C; Relative Humidity: 50 ± 5%
Overall Equipment Dimensions	170 mm (L) × 110 mm (W) × 230 mm (H)
Net Shipping Weight	7.0 kg
Corrosion Protection Protocol	Anhydrous petroleum jelly application for extended storage

Portable Surface Roughness Tester Touchscreen Gauge With Integrated Thermal Printer

Item Number: DS11



Introduction

Inspect surface quality anywhere with this portable surface roughness tester featuring a color touchscreen graphic display integrated high speed thermal printer real time waveform analysis advanced curve evaluation and rechargeable battery operation for workshop and laboratory verification.

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Application	Description	Key Benefit
Precision Machining & Tooling	Verifying surface texture on milled, turned, and ground metal components directly on machine tools.	Eliminates scrap by catching surface finish degradation and cutter wear in real time before batch completion.
Battery Electrode & Foil Research	Measuring the surface roughness of copper and aluminum current collectors and coated electrode layers.	Ensures uniform slurry adhesion and consistent electrochemical interface bonding in cell assembly.
Automotive Powertrain Manufacturing	Inspecting cylinder bores, camshafts, crankshaft journals, and transmission gear tooth profiles.	Optimizes lubrication retention, reduces friction losses, and guarantees strict compliance with NVH standards.
Aerospace Component Finishing	Evaluating surface roughness of critical structural brackets, turbine blade roots, and hydraulic pistons.	Assures fatigue resistance and stress-crack prevention on safety-critical machined alloys.
Quality Assurance & Receiving Inspection	Conducting rapid incoming part audits in metrology labs and receiving inspection staging areas.	Accelerates supplier part qualification with immediate printed Pass/Fail reports and profile records.
Advanced Ceramics & Metallurgy	Analyzing the surface micro-topography of sintered structural ceramics, molds, and powder compacts.	Verifies micro-porosity distribution and post-sintering surface refinement without destructive sectioning.
On-Site Field Audits & Plant Maintenance	Performing preventive maintenance and repair audits on large industrial rollers, shafts, and vessels.	Provides completely untethered, self-contained inspection capability in remote or confined industrial spaces.

Specification Parameter	Technical Detail (DS11)
Product Item Number	DS11
Display System	Large high-visibility color graphic LCD with resistive/capacitive touchscreen interface
Graphical Visualization	Real-time surface roughness waveform, calculation results, measurement conditions, large-font readouts
Integrated Output Subsystem	Built-in high-speed thermal printer (supports text, tolerance stamps, and graphic profiles)
Printing Orientation Modes	Standard portrait text output and landscape (horizontal) graphic display-matched mode
Specialized Curve Computations	Abbott-Firestone Bearing Area Curve (BAC), Amplitude Distribution Curve (ADC)
Quality Decision Functions	Programmable upper/lower tolerance limits with automatic Pass/Fail (Go/No-Go) judgment
Power Architecture	Built-in high-capacity rechargeable battery pack with universal AC power adapter/charger
Operating Environments	Quality control laboratories, precision machining workshops, active production lines, field maintenance sites
Surface Profile Processing	Multi-parameter surface evaluation, standard roughness profile filtering, and micro-geometry analysis
UI Navigation	Full touchscreen navigation with optimized single-touch measurement triggering and condition presets

Specification Parameter	Technical Detail (DS11)
Data Documentation	Direct on-instrument waveform display, memory storage, and simultaneous hardcopy thermal generation

Battery Separator Tensile And Puncture Testing Machine

Item Number: DS02



Introduction

Evaluate battery separator mechanical integrity with our high precision tensile and puncture testing machine featuring advanced motor drive technology responsive load cell sensing comprehensive digital data acquisition and a generous eight hundred millimeter maximum stroke.

[Learn More](#)

Application	Description	Key Benefit
Lithium-Ion Battery Separators	Evaluates puncture resistance against lithium dendrite penetration and active material particle intrusion on polyolefin membranes (PE/PP).	Accurately predicts separator puncture threshold to prevent micro-shorts and enhance cell safety.
Wet & Dry Process Microporous Films	Determines machine direction (MD) and transverse direction (TD) tensile strength and elongation on micro-porous films.	Ensures membrane durability during high-tension high-speed roll-to-roll winding and slitting processes.
Ceramic-Coated Separators	Measures the tensile fracture profile and puncture resilience of ceramic-polymer composite coated membranes.	Identifies coating embrittlement, delamination risk, and reinforced puncture barriers.
Solid-State Electrolyte Membranes	Characterizes the tensile strength, elasticity, and puncture resistance of thin-film solid polymer and hybrid electrolyte layers.	Verifies mechanical robustness against solid-state cell stacking pressures and dendrite propagation.
Medical & Barrier Packaging Films	Tests tensile yield, tensile rupture, and sharp-tip puncture resistance on flexible barrier films and sterile packaging substrates.	Validates barrier containment integrity, seal boundary limits, and pinhole resistance under mechanical stress.
Capacitor & Dielectric Films	Evaluates the tensile modulus, break elongation, and puncture limits of ultra-thin biaxially oriented dielectric films.	Ensures uniform film tensioning without micro-tears during high-density winding operations.

Specification Parameter	Technical Value (Model: DS02)
Model Identifier	DS02
Maximum Test Force	200 N
Test Force Accuracy	±1%
Test Force Measurement Range	2% - 100% F.S.
Test Force Resolution	0.01% F.S.
Deformation Measurement Range	2% - 100%
Deformation Measurement Accuracy	±1%
Displacement Resolution	0.01 mm
Crosshead Displacement Relative Error	±2%
Testing Speed Range	1 mm/min - 500 mm/min
Crosshead Speed Relative Error	±5%
Maximum Testing Stroke	800 mm
Control Architecture	Computer-controlled closed-loop system (force, displacement, deformation, velocity)
Power Supply Requirements	AC 220 V ±10%, 50 Hz

Specification Parameter	Technical Value (Model: DS02)
Rated Power Consumption	0.5 kW
Equipment Dimensions (W × D × H)	600 mm × 500 mm × 1500 mm
Net Equipment Weight	76 kg

Dynamic Bet Specific Surface Area Analyzer For Powders And Porous Materials

Item Number: DS03



Introduction

High-precision dynamic BET specific surface area analyzer designed for rapid, accurate characterization of battery materials, catalysts, and porous powders. Features advanced thermal conductivity detection, ultra-low surface area sensitivity down to 0.0005 m²/g, and fast three-minute throughput.

[Learn More](#)

Application	Description	Key Benefit
Lithium-Ion Battery Cathode & Anode Quality Control	Characterization of specific surface area in graphite, LiCoO ₂ , LiMn ₂ O ₄ , LiFePO ₄ , Li ₄ Ti ₅ O ₁₂ , and nickel hydroxide precursors.	Ensures uniform binder distribution, optimizes slurry rheology, and maintains consistent electrochemical reaction kinetics.
Heterogeneous Catalyst & Petrochemical Sorbents	Routine surface monitoring of solid acid catalysts, supported metal catalysts, and activated gas purification sorbents.	Rapidly assesses active catalytic surface area and tracks pore blockage or thermal sintering during operational life cycles.
Advanced Technical Ceramics & Powder Metallurgy	Surface area profiling of fine alumina, zirconia, silicon carbide, titanium, and refractory alloy powders prior to compaction.	Predicts powder flowability, compaction green density, and final sintering shrinkage behavior to minimize structural defects.
Pharmaceutical Formulation & Excipient Analysis	Surface area determination of micronized active pharmaceutical ingredients (APIs) and porous particulate excipients.	Correlates directly with particle dissolution rates, bioavailability, blending uniformity, and compact compressibility.
Cement, Building Materials & Mineral Processing	Quality verification of supplementary cementitious materials, silica fume, calcined clays, and finely ground clinker.	Directly controls hydration reaction kinetics, setting rate, water demand, and ultimate compressive strength development.
Gas Filtration & Defense Protective Sorbents	Quality assurance testing for activated carbons, metal-organic frameworks (MOFs), and respiratory filter adsorbents.	Guarantees toxic gas adsorption capacity, breakthrough retention performance, and strict compliance with protective safety standards.

Specification Parameter	Value / Technical Detail
Model Identifier	DS03
Measurement Principle	Dynamic continuous-flow low-temperature nitrogen adsorption (GB/T 19587-2017 compliant)
Carrier & Adsorbate Gases	High-purity Helium (Carrier) and High-purity Nitrogen (Adsorbate)
Measurement Range	0.0005 m ² /g to no upper limit
Testing Methodology	Single-Point BET, Multi-Point BET, Comparative Reference Method
Measurement Accuracy Error	≤ ±3%
Measurement Repeatability Error	≤ ±3%
Analysis Time	Approximately 3 minutes per sample test cycle
Number of Analysis Stations	1 Active Measurement Workstation
Sample Tube Configuration	High-durability temperature-resistant GG-grade glass U-tube
Calibration Standard	GBW(E) 130275 National Certified Reference Standard Materials
Detection System	High-sensitivity, low-temperature thermal conductivity detector (TCD)
Calibration Mechanism	Dedicated proprietary precision standard volumetric gas injector

Specification Parameter	Value / Technical Detail
Operating Software	Dedicated analytical suite compatible with Windows 7 / Windows 10
Data Management Functions	Signal curve display, baseline auto-zeroing, report generation, curve comparison, print/export
Dimensions (W × D × H)	700 mm × 360 mm × 710 mm
Operating Power Supply	AC 220V ± 22V, 50 Hz ± 0.5 Hz
Ambient Operating Temperature	5°C to 35°C
Operating Relative Humidity	< 85% RH (non-condensing)

Battery Separator Air Permeability Tester Gurley Densitometer

Item Number: DS09



Introduction

Discover high precision lithium battery separator air permeability testing with automated Gurley densitometer equipment delivering exact differential pressure control ultra fine timing resolution and repeatable quality assurance measurements for advanced membrane research and manufacturing lines.

[Learn More](#)

Application	Description	Key Benefit
Lithium-Ion Battery Separator QA/QC	Verifying the Gurley air permeability of wet-process (PE) and dry-process (PP) microporous membranes during continuous roll manufacturing.	Ensures uniform pore distribution, reduces internal resistance variation, and prevents thermal runaway risks in finished cells.
Ceramic-Coated Separator Development	Evaluating the gas permeability changes before and after applying single- or double-sided sub-micron ceramic and polymer functional coatings.	Optimizes coating thickness and binder ratio without compromising electrolyte uptake and ionic transport efficiency.
Solid-State & Hybrid Electrolyte Matrices	Measuring gas diffusion resistance in porous polymer scaffolds and fibrous nonwoven support matrices used in semi-solid or solid-state batteries.	Validates matrix interconnectivity to ensure homogeneous liquid or gel electrolyte absorption across the solid electrolyte framework.
Supercapacitor Porous Separators	Analyzing low-resistance, high-flow cellulose and synthetic membrane separators designed for ultra-high-rate electrical double-layer capacitors (EDLC).	Guarantees minimal equivalent series resistance (ESR) while verifying mechanical boundary separation between electrodes.
Technical Paper & Filter Media Testing	Characterizing specialized industrial filter papers, gas diffusion layers (GDL), and barrier packaging materials requiring calibrated airflow resistance.	Delivers dual-unit reporting in s/100ml and $\mu\text{m}/(\text{Pa}\cdot\text{s})$ for accurate filtration efficiency and pore blocking analysis.
Fuel Cell Gas Diffusion Layer Research	Characterizing the through-plane gas permeability of carbon paper and carbon cloth substrates used in proton exchange membrane fuel cells (PEMFC).	Accelerates transport layer optimization to prevent mass transport losses during high current density fuel cell operation.

Parameter	Specification (DS09)
Item Number	DS09
Measurement Principle	Gurley Air Permeability Method
Time Measurement Range	30 - 10,000 s / 100 ml
Paper Measurement Range	0.1 - 2.5 μm / (Pa·s)
Timing Resolution	0.01 s
Differential Pressure Range	0 - 3 kPa (custom ranges optional)
Differential Pressure Accuracy	± 0.01 kPa
Standard Test Differential Pressure	1.21 kPa
Test Aperture Diameter	$\varnothing$ 9.05 mm
Effective Test Area	6.45 cm^2
Minimum Sample Dimensions	≥ 15 mm $\times$ 15 mm
Specimen Conditioning Temperature	23 $\pm$ 2 $^{\circ}\text{C}$ (GB/T 2918-1998 compliant)
Specimen Conditioning Relative Humidity	50 $\pm$ 10 % RH (GB/T 2918-1998 compliant)

Parameter	Specification (DS09)
Specimen Conditioning Duration	≥ 4 hours
Standard Testing Environment Temperature	23 ± 2 °C
Standard Testing Environment Humidity	50 ± 10 % RH
Supply Voltage & Frequency	220 V AC, 50 Hz
Power Consumption	100 W
Instrument Dimensions (W × D × H)	400 mm × 350 mm × 480 mm
Instrument Net Weight	28 kg



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