

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