



TCA 2SC-080

Dual-state Thermal Parameter Tester



High-precision



Thermal Imaging



Inversion



Heterogeneous



The TCA 2SC-080 combines infrared thermography-based non-contact temperature measurement with 3D heat transfer inverse analysis to non-destructively characterize thermal properties of encapsulated lithium battery cells and heterogeneous core-shell structures. It simultaneously measures in-plane/through-plane thermal conductivities, core-to-casing thermal resistance, and equivalent thermal conductivity in a single test cycle. Compatible with prismatic and cylindrical battery configurations, this system provides critical thermal parameter quantification for lithium battery R&D and composite material analysis.

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Product Features

- Non-destructive, in-situ accurate measurement of multi-dimensional thermal conductivity for battery samples.
- Capable of testing a wide range of sample sizes with minimal surface flatness requirements.
- Automatic setting of experimental parameters based on sample information, with adjustments made during the test process.
- Suitable for homogeneous or heterogeneous samples of various specifications, surface hardness, roughness, and porosity.
- Utilizes a 3D heat transfer model for testing and inversion analysis, measuring parameters such as core transverse thermal conductivity, core longitudinal thermal conductivity, and overall equivalent thermal conductivity.
- Non-contact measurement with automatic compensation for surface and support heat dissipation interferences, ensuring more accurate results.
- Supports external battery charging and discharging equipment to realistically simulate thermal conditions during these processes.
- Adjustable sample cold plate temperature and flow rate to simulate different heat dissipation conditions.
- Uniform temperature across six-sided cold plates, high-precision oil bath temperature control, and adjustable ambient temperature.
- Simple instrument operation with fully automated test initiation and execution.

Technical Specifications

Test Objects	Prismatic Cells, Cylindrical Cells
Test Parameters	Core Transverse/Longitudinal Thermal Conductivity Core-Shell Contact Thermal Resistance Overall Equivalent Thermal Conductivity
Maximum Sample Size	400 mm × 250 mm × 80 mm
Test Time	≤ 15 min
Repeatability	≤ 8%
Measurement Accuracy	Core Transverse Thermal Conductivity: ≤ 8% Core Longitudinal Thermal Conductivity: ≤ 10% Overall Equivalent Transverse Thermal Conductivity: ≤ 10% Overall Equivalent Longitudinal Thermal Conductivity: ≤ 10%
Temperature Range	0–80 °C
Temperature Stability	0.03 °C
Temperature Accuracy	0.1 °C

Application Fields



New Energy Vehicles



Energy Storage

