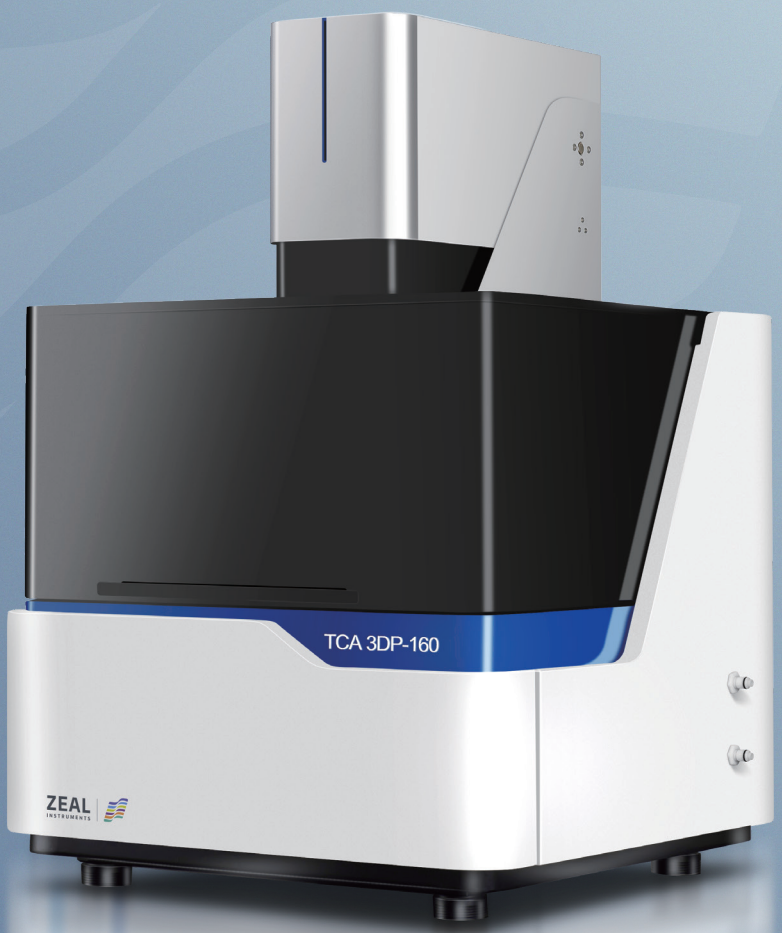
ZEAL INSTRUMENTS

TCA 3DP-160

3D Thermal Properties Analyzer

New Algorithm | 3D Data | Comprehensive | One Touch



The TCA 3DP-160 employs infrared thermography-based non-contact thermometry integrated with 3D heat transfer inverse parameter identification methodology. Specifically designed for multilaminate composite structures with inherent anisotropic thermal conductivity (e.g., pouch-type lithium-ion battery cells, CFRP laminates), this system enables in-situ determination of both in-plane and through-plane thermal conductivities through full-field temperature mapping.

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Product Features

- Capable of testing a wide range of sample sizes, with requirements for surface flatness.
- Non-destructive testing enables accurate measurement of the equivalent thermal conductivity of multi-layer thin film stacks.
- Suitable for homogeneous or heterogeneous samples of various specifications, surface hardness, roughness, and porosity.
- Uniform temperature across six-sided cold plates, high-precision oil bath temperature control, and adjustable ambient temperature.
- Non-contact measurement with automatic compensation for surface and support heat dissipation interferences, enhancing result accuracy.
- Simple instrument operation with fully automated experiment initiation and execution.
- Color graphics display test data, predicted data, error data, and error assessment for quick validation of experimental results.
- Automatic generation and saving of graphs and process data, with support for historical data query.

Technical Specifications

Thermal Conductivity Range	Longitudinal: 0.2–5 W/(m·K) Transverse: 5–100 W/(m·K)
Thermal Diffusivity Range	Longitudinal: 0.1–2 mm²/s Transverse: 2–50 mm²/s
Sample Size	Transverse (Area): ≤ 400 mm × 250 mm Longitudinal (Thickness): 3–20 mm

Test Time	≤ 10 min
Measurement Repeatability	≤ 3%
Temperature Range	0–60 °C
Temperature Stability	0.03 °C
Temperature Accuracy	0.1 °C