

AUTOMATED EQUIPMENT FOR MEASURING σ , α , κ , AND Z ON A SINGLE SAMPLE BY THE ABSOLUTE METHOD IN THE TEMPERATURE RANGE FROM 30 TO 900 °C



Areas of Application

The device is to be used for automatic integrated measurements of electric conductivity, thermopower, and thermal conductivity, as well as for determination of Q-factor of thermoelectric material samples in the temperature range from 30 to 900 °C. The design of measuring thermostat has been optimized for its use at a high temperature

Advantages

As compared with the world analogs this device enables simultaneous integrated measurements of thermopower, electric conductivity, thermal conductivity, and thermoelectric Q-factor on a single sample and gives a 3–5 higher accuracy of thermoelectric Q-factor measurements

Stage of Development. Suggestions for Commercialization

IRL6, TRL6
Manufactured and supplied, upon request

IPR Protection

IPR3

Specification

Temperature measurement range, °C	30–900
Duration of measurement of sample σ , α , κ , Z at one temperature point, min	45–75
Electric conductivity measurement range, $\text{Ohm}^{-1} \cdot \text{cm}^{-1}$	10–10 000
Thermal conductivity measurement range, $\text{W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$	0.1–20
Seebeck coefficient measurement range, $\mu\text{V} \cdot \text{K}^{-1}$	$\pm(10–500)$
Sample dimensions, mm:	
length	8–13
diameter (for round-section sample)	6–9
width/thickness (for square-section sample)	5–7
Error in determination of the sample thermoelectric properties (at 900 °C), at most, %:	
electric conductivity	1.5
seebeck coefficient	1.5
thermal conductivity	5
Alternating current supply voltage 50 Hz, V	220
Electric power consumption, at most, W	500
Overall dimensions, mm:	
measurement unit	240 × 270 × 200
measurement control unit	300 × 110 × 245

Contact Information

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