

Product Name : Two Probe Method High resistivity measurement Experiments for Physics Lab for High School Science Kits Lab	Product Code : HS-LAB0013
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Description : Two Probe Method High resistivity measurement Experiments for Physics Lab for High School Science Kits Lab
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Technical Specification :

Two Probe Method High resistivity measurement Experiments for Physics Lab - Two Probe Method For Resistivity Measurement of Insulators at Different Temperatures (Ambient to 200° C)

The Two Probe Method is one of the standard and most commonly used method for the measurement of resistivity of very high resistivity samples - near insulators. The resistivity measurement of such samples is beyond the range of Four Probe Method.

Description of the experimental setup

1. Two Probes Arrangement

It has two spring load contact probes. These probes move in a pipe and are insulated by Teflon washers. This probes arrangement is mounted in suitable stand, which also hold the sample plate and RTD sensor. The stand also serves as the lid of PID controlled Oven. Teflon coated leads are provide for connecting with High Voltage Power Supply EHT-11 and Digital Picoammeter DPM-111. With the set-up assuming max. voltage = 1500V; current 100x10-12A (max) and thickness of sample 1mm. The resistivity of the sample could be measured upto 1014 ohm.cm.

2. PID Controlled Oven

This is high quality temperature controlled oven suitable for Four Probe Set-up. The oven has been designed for fast heating and cooling rates, which enhances the effectiveness of the controller. While the basic design of the controller is around the PID configuration for its obvious advantages, wastage of power is avoided by using a Pulse Width Modulated (PWM) switch. This combination has the advantages of both on-off controller and linear PID controller. The result is a good stable and accurate temperature control.

Platinum RTD has been used for sensing the temperature. A wheatstone bridge and an instrumentation amplifier are used for signal conditioning. Feedback circuit ensures offset and linearity trimming to a great degree of accuracy. The set and measured temperature are displayed on 3½ digit DPM through selector switch.

Specifications

Temperature Range Ambient to 200° C

Resolution 0.1° C

Short Range Stability $\pm 0.2^\circ$ C

Long Range Stability $\pm 0.5^\circ$ C

Measurement Accuracy $\pm 0.5^\circ$ C (typical)

Oven Specially designed for this experimental set-up

Sensor RTD (A class)

Display 3½ digit, 7 segment LED with autopolarity and decimal indication

Power 150W

3. High Voltage Power Supply

4. Digital Picoammeter

The experimental set-up is complete in all respect

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