

TPX-200

Two Probe Setup

Two Probe Method for resistivity measurement of insulators at different temperatures

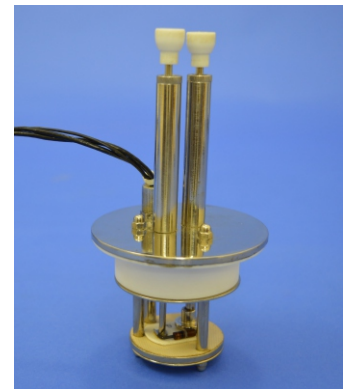
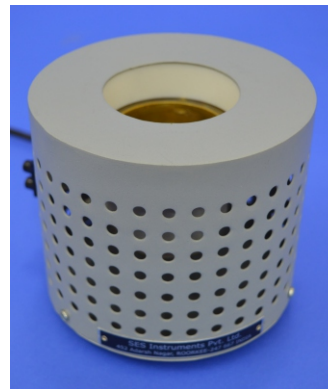
The Two Probe Method is one of the standard and most commonly used method for the measurement of resistivity of very high resistivity samples like sheets/films of polymers. The resistivity measurement of such samples is beyond the range of Four Probe Method.

Description of the experimental set-up



1. Two Probes Arrangement, TPA-01

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 a suitable stand, which also holds the sample plate and RTD sensor. The stand also serves as the lid of PID Controlled Oven. Teflon coated leads are provided for connecting with High Voltage Power Supply EHT-11 and Digital Picoammeter DPM-111. With this set-up assuming max. Voltage = 1500V; current 10×10^{-12} A (max) and thickness of sample 1mm, the resistivity of the sample could be measured upto 10^{14} ohm.cm..



2. PID Controlled Oven, PID-TZ

The unit is a high quality PID controller wherein the temperatures can be set and controlled easily. The P, I and D parameters are factory set for immediate use, however, the user may adjust these for specific applications as well as auto-tune the oven whenever required. The steps for these are given in the user manual. Although the controller may be used either for our small oven, up to 200°C or a larger oven up to 600°C, however, in the present setup only small oven is to be used. The controller uses thermocouple as temperature sensor.

3. High Voltage Power Supply, Model EHT-11

Specifications as per datasheet attached

4. Digital Picoammeter, Model DPM-111

Specifications as per datasheet attached

The experimental set-up is complete in all respect

Specifications of the oven controller

Temperature Flange	: Ambient to 200°C
Display Accuracy	: $\pm 0.3^\circ\text{C}$
Setting Type	: Front push buttons
Control Method	: PID, PIDF, PIDS
Measurement Accuracy	: $\pm 0.5^\circ\text{C}$ (typical)
Oven	: Specially designed for Four Probe Set-Up
Sensor	: Thermocouple (Chromel-Alumel)
Display	: 7 segment LED, two rows
Values	: Process Value, PV and Set Value, SV
Power	: 150W