

LETI-20 Apparatus of Heat Conductivity Coefficient

- *High performance temperature controller and sensor*
- *Simple structure, stable and reliable*
- *Affordable*



Thermal conductivity coefficient is a physical quantity representing the heat conduction characteristics of a material. Material structure change and impurities have a significant impact on thermal conductivity, so the thermal conductivity of a material often needs to be experimentally measured. Experimental methods for measuring thermal conductivity are divided into two categories: steady-state method and dynamic method. A steady-state method uses a heating source to heat the sample, and the temperature at different areas inside the sample depends on the heating speed and the heat conduction speed of the material. When the experimental conditions and parameters are properly controlled to make the heating and heat transfer process reach a balanced state, a stable temperature distribution inside the material will be formed. Based on the temperature distribution, the thermal conductivity coefficient of the material can be calculated.

This experiment measures the thermal conductivity coefficient of a poor conductor (rubber or bakelite) by using the steady-state method. Students can learn how to calculate the transfer rate and the cooling rate. The apparatus uses an adaptive heating plate with microcomputer temperature control, yielding a reading resolution of 0.1 °C. The instrument has been widely used in thermal physics experiments at universities.

Experimental Contents

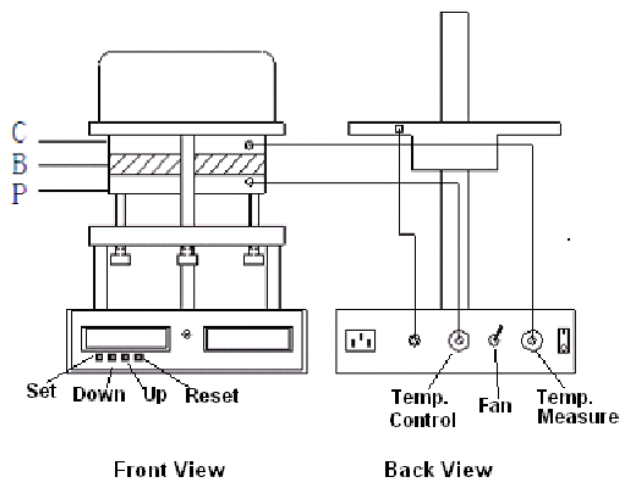
1. Measure the air specific heat capacity ratio at constant volume and constant pressure.
2. Observe thermodynamic process of air.
3. Learn how to measure gas pressure and temperature.

Specifications

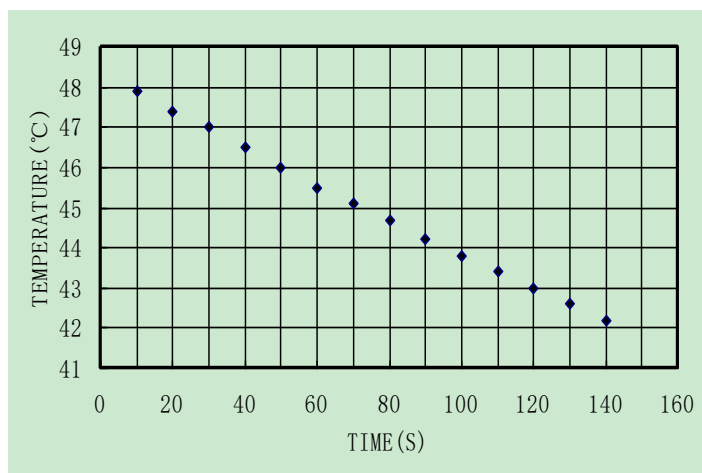
Thermometer	range: 0-100 °C
Temperature controller	room temperature to 80 °C; resolution: 0.1 °C
Experimental samples	rubber and bakelite
Uncertainty of measurement	< 6%

Part List

Main machine	including heater and temperature controller
Sample	rubber disk and bakelite disk (1 each)
Heat sink copper disk	1
Digital temperature sensor	2
Manual	1



Schematic of system



Cooling curve of sample plate

Note: above product information is subject to change without notice.