

≡ RADIAL HEAT CONDUCTION EXPERIMENT

TD1002B

Experiment that introduces the principle of radial heat conduction and thermal conductivity. Fits onto the Heat Transfer Experiments Base Unit.



KEY FEATURES

- One of four optional experiments for the Heat Transfer Experiments Base Unit (TD1002)
- Fits quickly and easily onto the base of the Heat Transfer Experiments Base Unit and water connections have self-sealing quick connectors needing no tools
- Shows the principles of radial heat conduction radially around a disc of uniform diameter
- Clear schematic printed on the baseplate aids student understanding
- Allows the thermal conductivity of the disc material to be measured
- Safe, low-voltage heater with over-temperature cut-out

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DESCRIPTION

This experiment has a solid brass disc with an electric heater (heat source) at its centre and a circular cross-section cooling tube (heat sink) around its circumference. It mounts on a base plate with a clear schematic of the experiment layout.

The electric heater and thermocouples connect to sockets on the Heat Transfer Experiments Base Unit, which also supplies the cold water feed and drain for the heat sink

Students turn on the cooling water flow and adjust the heater power until the experiment reaches equilibrium. At equally spaced radii on the disc, seven thermocouples measure the temperature as the heat conducts radially outwards from the heater. Insulation around the disc reduces heat loss by convection and radiation, so that the results should match the theory for simple radial conduction only.

STANDARD FEATURES

- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

- Demonstration and calculations of radial heat conduction
- Calculation of the thermal conductivity (k value)

ESSENTIAL BASE UNIT

- Heat Transfer Experiments Base Unit (TD1002)

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

SOUND LEVELS

Less than 70 dB(A)

SPECIFICATIONS

TecEquipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

NETT DIMENSIONS AND WEIGHTS:

390 mm x 280 mm x 170 mm high and 5.3 kg

PACKED DIMENSIONS AND WEIGHT:

0.03m³, 8kg