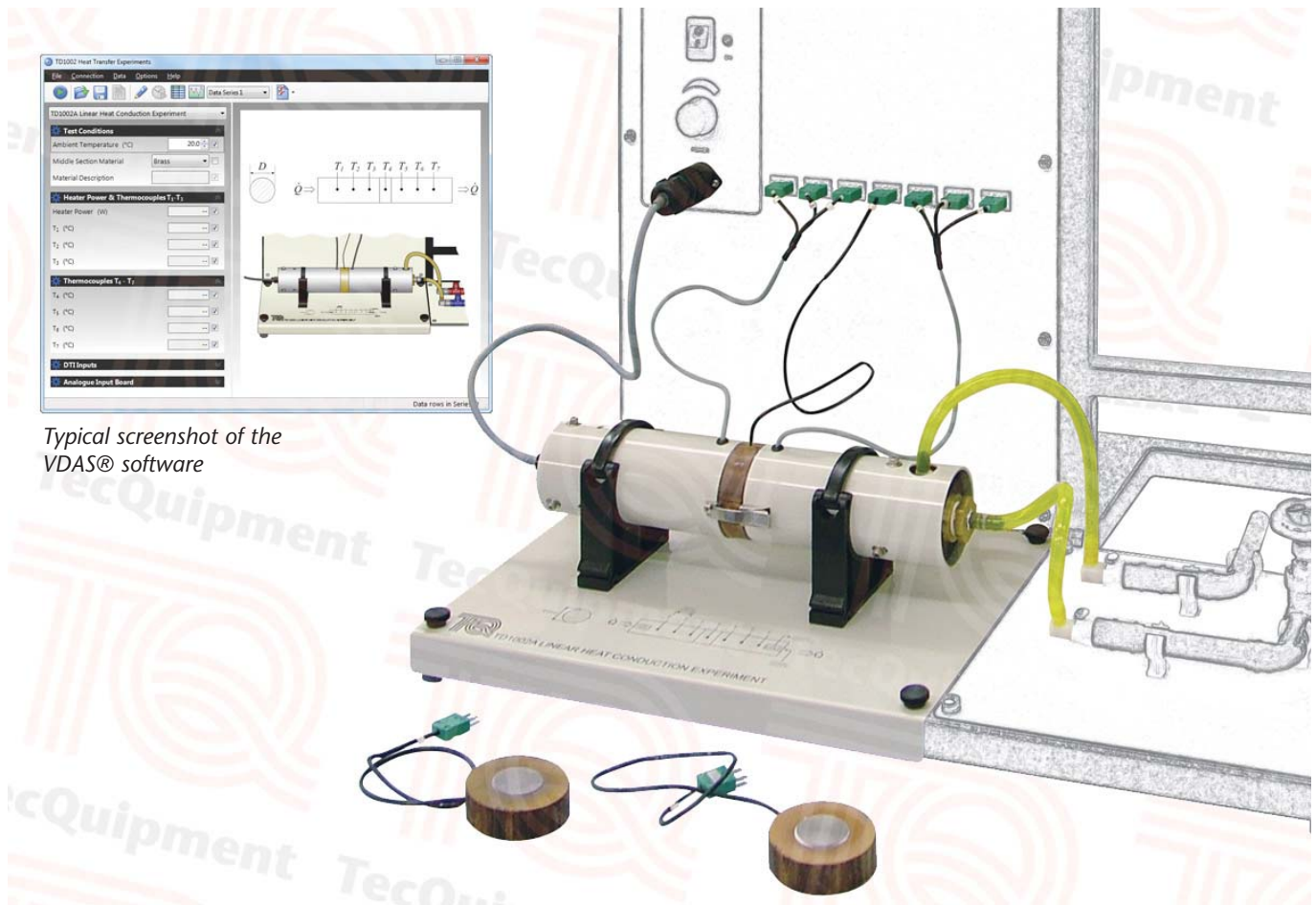


## TD1002a

## Linear Heat Conduction Experiment

***Introduces students to the principles of linear heat conduction and thermal conductivity***



Typical screenshot of the VDas® software

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

- TecEquipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- T +44 115 972 2611 • F +44 115 973 1520 • E info@tecequipment.com • W www.tecequipment.com
- An ISO 9001 certified company

# TD1002a

## Linear Heat Conduction Experiment

### Description

This experiment has a solid brass bar of circular cross-section, made in two sections with an interchangeable middle section. It mounts on a base plate with a clear schematic of the experiment layout. The first brass section includes three thermocouples and the electric heater (heat source). The second brass section includes a small water-cooled chamber (heat sink) and three more thermocouples. The interchangeable middle sections (supplied) are of different metals:

- Brass – so the bar becomes one length of brass
- Aluminium
- Stainless steel
- Copper

Each middle section has a thermocouple. 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 and then record the temperatures as the heat conducts along the bar. Insulation around the bar reduces heat loss by convection and radiation, so that the results should match the theory for simple linear conduction only.

### Standard Features

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

### Experiments

- Demonstration and calculations of linear heat conduction
- Calculation of the thermal conductivity ( $k$  value)
- Demonstration of the effectiveness of thermal paste
- Demonstration and calculations of thermal resistances ( $R$  value) in series
- Demonstration of 'thermal lag'

### 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)

### Technical Details

*Nett dimensions and weights:*  
Linear Heat Conduction Experiment (TD1002a):  
390 mm x 280 mm x 130 mm high and 4 kg

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