Product name:	Product code:
Extended Surface Heat Exchanger	Transfer Lab0023



Description

Extended Surface Heat Exchanger

Technical specification

The rod is manufactured from a solid cylindrical brass bar with a constant diameter of 10mm. The rod is mounted horizontally with support at both ends and positioned to avoid the influence of adjacent surfaces. The rod is heated by a cartridge type electric heating element which operates at low voltage for increased operator safety and is protected by a thermostat to prevent damage from overheating. The heating element is inserted co-axially into the end of the rod and is rated to produce 20 Watts nominally at 24V DC into the rod. The power supplied to the heated rod can be varied and measured. Eight thermocouples are attached to the surface of rod at equal intervals of 50mm giving an overall instrumented length of 350mm. Each thermocouple is wrapped around the rod to minimize errors by conduction. One thermocouple is mounted adjacent to the heated rod to measure the ambient air temperature. All temperatures are measured using K-type thermocouples, each fitted with a miniature plug for direct connection to the service unit. The rod is coated with a heat resistant matt black paint which provides a consistent emissivity close to unity The heated end of the rod is mounted co-axially inside a plastic housing which provides an air gap and insulates the area occupied by the heater to minimize heat loss and prevent burns to the operator

Extended Surface Heat Exchanger

- A small-scale accessory designed to demonstrate the temperature profile and heat transfer characteristics for an extended surface when heat flows along the rod by conduction and heat is lost along the rod by combined convection and radiation
- The extended surface comprises a 10mm diameter, long brass rod mounted horizontally and heated at one end with a 20 Watt, 24V DC heater.
- Eight thermocouples mounted at 50mm intervals along the rod provide the temperature distribution.
- Temperature of the ambient air is measured by an independent thermocouple.
- The accessory is mounted on a PVC baseplate which is designed to stand on the bench top and connect to the Heat Transfer Service Unit without the need for tools.
- A comprehensive instruction manual is supplied.

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Technical Details of **Extended Surface Heat Exchanger**