TH 310 HEAT CONDUCTION, Computer Interface

GENERAL DESCRIPTION:

The unit consists of two parts: a multi section bar for linear heat conduction studies, and a metal disc for radial heat conduction studies.

- Linear Heat Conduction Unit.

  The unit has 3 sections which can be pressed tightly together. The first section is for heat input where a heater and three temperature sensors at 10 mm interval are installed. The center section has two temperature sensors at 20 mm interval. The last section is a heat sink section where cooling water and three temperature sensors at 10 mm interval are installed.

  The center section may be removed and replaced with a smaller heat conduction section or a different heat conduction material. Both replaced sections are without temperature sensors. Matching surfaces of the heat conduction section are accurately finished to minimize conduction resistance and a heat conducting compound may be applied to further reduce resistance. Thermal conductivity of an insulation material can be determined by inserting a thin insulating disc between two heat conduction surfaces.
- Radial Heat Conduction Unit.

  The unit consists of a brass disc heated at the center by a heater with cooling water circulating around the periphery. Six temperature sensors are placed along a radius.

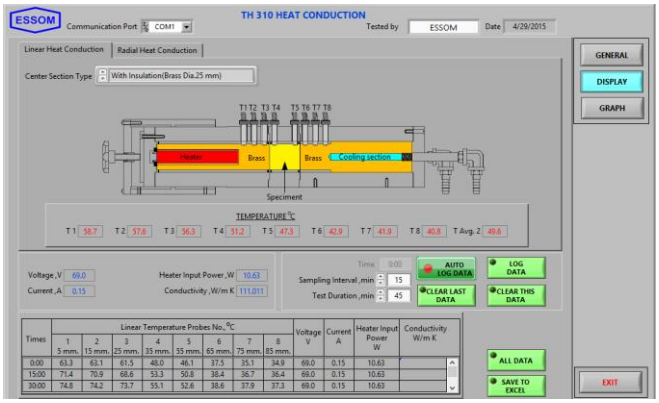
  The metallic parts of both linear and radial heat conduction units are effectively insulated inside plastic casings.
- A service module provides power supply, heater control unit, and measuring instruments.

  The test unit requires outside water supply for cooling.

  Instruction manual is also included.

EXPERIMENT CAPABILITIES:

- Heat conduction along a simple bar.
- Heat conduction along a composite bar.
- Effect of cross section area.
- Radial heat conduction.
- Effect of surface contact.
- Effect of insulation.



TECHNICAL DATA:

- Linear heat conduction:
  - Heating section : Brass with temperature sensors
  - Center section different diameter for brass and stainless steel.
  - Cooling section : Brass with temperature sensors
- Radial heat conduction : Brass with temperature sensors
- Heaters : 2 ea. 120W with dimmer switches
- Sensors with digital display : Voltage and current for input power measurement
  : Temperatures
- Software for data display and analysis by computer (separately supplied).
- Power supply : 220 V, 1 Ph, 50Hz. Other power supply is available on request.

Net (unpacked) shipping dimensions WxLxH : 45 x 65 x 20 cm
Net weight : Approx. 20 kg

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