



P4810 TEMPERATURE MEASURING APPARATUS

FEATURES

- ◆ Self-contained bench mounted unit
- ◆ Over temperature cut-out
- ◆ Variable transformer for controlling the rate of heating and the final temperature
- ◆ Incorporates high and low temperature sources
- ◆ Digital resistance thermometer/thermocouple instrument and digital NiCr/NiAl thermocouple instrument and power supplies

PRINCIPLE EXPERIMENTS

- ◆ Demonstrates common methods of temperature measurement
- ◆ Compares accuracy and method of calibration
- ◆ Demonstrates common faults occurring in thermocouple systems
- ◆ Allows investigation into basic thermocouple laws and their applications
- ◆ Dynamic response
- ◆ Errors associated with incorrect applications
- ◆ Conduction errors
- ◆ Lead errors
- ◆ Can be used as a service facility for other experiments

DESCRIPTION

Cussons P4810 Temperature Measuring Bench is designed to demonstrate a number of commonly used methods of temperature measurement, and provides the means for calibration and accuracy comparisons of the different methods. So suitable measuring devices can be found for particular applications.

Features are provided so that a number of faults commonly occurring in thermocouple systems can be demonstrated. In addition the unit may be used to provide a temperature measuring facility for use with other experiments.

The main unit comprises a bench mounting console which contains the hot water bath, furnace, ice bath, a digital resistance thermometer/thermocouple instrument, digital NiCr/NiAl thermocouple instrument and power supplies.

The hot water bath comprises a Dewar flask whose lid is fitted with a combined heater stirrer unit, low water cut out to provide boiling water reference at 760 mm Hg barometric pressure.

The heater unit incorporates an adjustable thermostatic temperature control and over-temperature cut-out.

The furnace comprises a brass block with holes drilled to accept a mercury in glass thermometer, resistance thermometer and thermocouple. An electrical heating element is fitted into the block, the electrical supply provided from a variable transformer with front panel control so that the rate of heating and final temperature can be controlled as desired. An over-temperature thermostat is set to limit the maximum temperature to 250°C.

The ice point bath comprises a Dewar flask which is filled with crushed melting ice. The flask is provided with a lid so that thermal insulation is very high. The lid incorporates three holes so that three temperature measuring devices may be inserted simultaneously.

The digital resistance thermometer/thermocouple instrument and the digital NiCr/NiAl thermocouple instrument are both commonly used commercial units.

TENDER SPECIFICATION

Bench Mounted console comprising:-

Hot water bath consisting of Dewar flask with electrical heater/stirrer unit, low water cut-out and thermostat to provide boiling water.

Brass block electric furnace with variable transformer control. Maximum temperature 250°C by thermostatic cut-out.

Dewar flask to be filled with crushed ice. (0.01°C reference).

Direct reading digital temperature indicator for use with Chromel/Alumel thermocouples.

Digital resistance/mV indicator for use with resistance thermometer and any of the thermocouples supplied.

Three thermocouples Chromel/Alumel (type K).

Two thermocouples Copper/Constantan (type T).

Two thermocouples Iron/Constantan (type J).

All thermocouples conform to BS 4937.

Mercury in glass thermometers -5°C to 105°C and -5°C to 360°C, 100 mm immersion

Platinum resistance temperature detector conforming to BS 1904 grade II.

Bimetallic temperature indicator 0-400°C.

Negative temperature coefficient thermistor and digital display unit.

Surface thermocouple probe (type K).

Hand held whirling hygrometer with wet and dry bulb thermometer scaled 5 to 50°C suitable for measuring wet and dry bulb temperature of ambient air, conforming to BS 2842.

SERVICES

For connection to 220/240 volt single phase 50 or 60 Hz supply. For connection to other voltages to special order.

SHIPPING DETAILS

Case size: 70 x 62 x 83 cm

Gross weight: 48 kgs

Nett weight: 40 kgs

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