



Thermodynamics

TE6

Humidity Measurement

Shows the principles of humidity measurement and compares different methods of measurement



- Shows how to measure and calculate the relative humidity (moisture content) of air
- Allows students to compare different humidity measuring instruments
- Includes an air filter to reduce the effects of air particles
- Includes mechanical and electronic instruments to measure temperature and humidity
- Variable flow rate fan to show the effect of air flow on humidity measurement
- Compact unit for ease of use and storage

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Humidity Measurement

Description

The Humidity Measurement unit allows students to compare different methods of humidity measurement. It shows the differences in accuracy between instruments and their ease of use. It also includes a blower unit with a valve to show how air flow affects the different instruments.

A square cross-section duct supports a blower unit. The duct contains a selection of instruments to measure humidity and temperature. A clear window in the duct allows students to see the instruments. A removeable outlet grill gives access to the instruments. A fan in the blower unit above the duct supplies a flow of air and a hand-operated valve varies the air flow rate. This allows students to study the effect of air flow on the instruments. An orifice plate and manometer measure the flow rate. An air filter in the air flow path stops dirt or other particles affecting the instruments. The instruments include a whirling hygrometer that students use near the outlet of the duct, providing an extra method of measuring temperature and humidity.

The back of the duct includes an extra port. It allows students to introduce low-pressure steam into the duct, to increase the range of experiments (steam generator not included).

Standard Features

- Supplied with comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives

Experiments

- Measurement of air flow rate in a duct
- Measurement of relative humidity using different types of instrumentation
- Comparison of measurement methods for accuracy and ease of use

Operating Conditions

Operating environment:
Laboratory environment

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

Essential Services

Electrical supply:
220 VAC to 240 VAC 50 Hz/60 Hz 1 A single-phase
or
110 VAC to 120 VAC 50 Hz/60 Hz 2 A single-phase
(specify on order)

Bench space needed:
Approximately 1500 mm x 600 mm

Specification

Nett dimensions and weight:
1250 mm wide x 420 mm front to back x 600 mm high and 29 kg

Packed dimensions and weight:
0.5 m³ and 35 kg

Instrumentation and sensors:

- Hair hygrometer
- Wet and dry bulb hygrometer
- Whirling hygrometer
- Thin film capacitive relative humidity sensor (complete with digital display)
- Thermistor temperature sensor (complete with digital display)

Maximum air flow rate:
110 litres/second

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