cussons
TECHNOLOGY

P4812

HUMIDITY MEASURING BENCH

INTRODUCTION

Cussons P4812 Humidity Bench provides the student with the means of measuring the humidity of the air in the laboratory by several different methods, whilst at the same time allowing comparisons to be made of the accuracy of one measurement against another.

THEORY

Relative humidity is defined as the ratio of the actual partial pressures of the air to that of the air when it is saturated at the same temperature with water vapour.

One way of determining relative humidities is by use of wet and dry bulb temperatures. If a thermometer, the bulb of which is covered by damp cotton gauze, is held in a stream of air, then the temperature shown on the thermometer will fall as heat is given up as water evaporates from the gauze. Eventually a point of equilibrium will be reached when the rate of heat transfer balances the loss of energy caused by vaporisation. The resultant temperature is known as the wet-bulb temperature as opposed to the actual temperature of the air which is known as the dry-bulb temperature. The difference between the two affords a measurement of relative humidity and is known as the wet-bulb depression.

DESCRIPTION

The essential component of the apparatus is a large, stainless steel duct which is supplied with air from a small blower via a set of damping filters. The air flow can be varied by regulating the butterfly valve situated at the blower outlet, and the flow rate calculated from the pressure drop across the blower inlet orifice as measured by the sloping manometer mounted against the back of the bench.

A window is provided in the air duct to enable the various readings to be taken without disturbing the conditions inside.

Instrumentation consists of two screen-type wet and dry bulb hygrometers, one giving a digital readout by means of thermistor probes and the other giving a direct readout via a mercury in glass thermometer. A further wet and dry bulb hygrometer of the aspirated type is provided in which the inclusion of an integral blower affords constant air velocity across the bulb. A sling hygrometer is included, to demonstrate a further, simple method of ventilation of the wet and dry bulb type.

Finally, there are two further types of hygrometers included with the apparatus, the first being a hair hygrometer seen through the window and the second one being a Vaisala capacitance type instrument with digital readout shown on top of the bench.

TENDER SPECIFICATION

Humidity bench comprising large stainless steel air duct fitted with single phase blower complete with damping filters and butterfly valve on the blower outlet and a 0 to 75 mm inclined water gauge. Instruments include two screen type wet and dry bulb hygrometers one with digital readout from thermistor probes and one with direct readout from mercury in glass thermometer, an aspirated hygrometer with integral blower, a sling hygrometer, a hair hygrometer and a Vaisala capacitance type within a bench mounted trolley.

SERVICES

Either 220/240V 50Hz single phase supply
or 110/115V 60Hz single phase supply.
Operation on other voltages to special order.

SHIPPING DETAILS

Case size: 132 x 80 x 168 cm
Gross weight: 190 kg
Nett weight: 144 kg

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