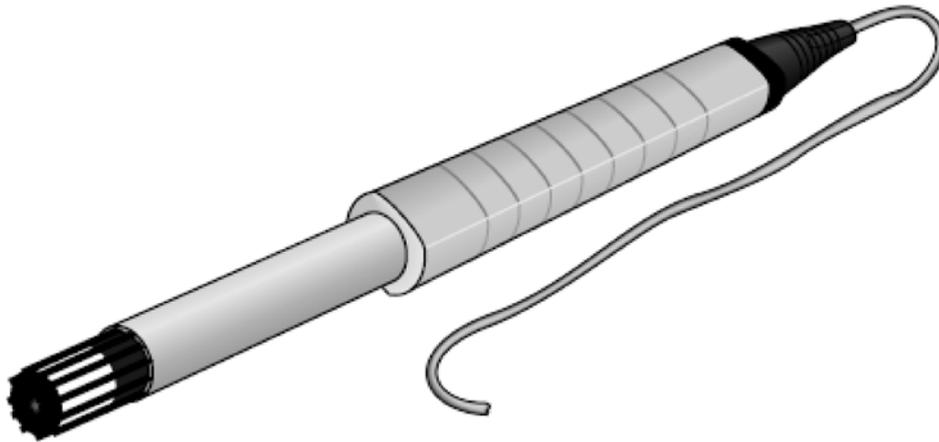


HMP45C Temperature and Relative Humidity Probe



An accurate, rugged probe suitable for a wide range of monitoring applications

Introduction

The HMP45C features good long-term stability and low power consumption, and is ideal for industrial and scientific applications. The probe uses Vaisala's HUMICAP® RH sensor, one of the most reliable sensors available. The HMP45C can be used in a wide range of environments and has high accuracy and negligible hysteresis. It is insensitive to dust and has very good tolerance against chemicals.

The combined performance of the RH sensor and improved IP65 protected probe enables you to make accurate and repeatable humidity and

temperature measurements with confidence.

Field Calibration

Field calibration is easy to carry out: the probe head containing the sensor and electronics can be quickly removed from the probe body, a replacement installed and the measurements continued while the other sensor head is calibrated in a laboratory. This feature means routine checks can be made without interrupting the measurements for long periods.

Radiation Shield

For outdoor use, the HMP45C is normally installed in a radiation shield (see overleaf).

Key Features

High-stability capacitive RH sensor

Accurate PT1000 temperature sensor

Low maintenance

Removable probe head

Simple programming

Direct connection to datalogger

Long cables available to order

Typical Applications

Automatic Weather Stations 

Environmental monitoring and control 

Moisture monitoring in building materials 

HMP45C Specifications

RH Measurement

MEASUREMENT RANGE: 0.8 to 100% RH

OUTPUT SCALE: 0-100% RH equals 0-1V DC

RH ACCURACY (at 20°C, including non-linearity and hysteresis):

Against factory references: $\pm 1\%$ RH

Against field references: $\pm 2\%$ RH (0 to 90% RH); $\pm 3\%$ RH (90 to 100% RH)

TEMPERATURE DEPENDENCE:
 $\pm 0.05\%$ RH/°C

LONG TERM STABILITY: Better than 1% RH per year

Temperature Measurement

MEASUREMENT RANGE: -39.2°C to +60°C

OUTPUT SCALE: -40°C to +60°C equals 0 to 1V DC

ACCURACY: $\pm 0.5^\circ\text{C}$ at -39°C; $\pm 0.2^\circ\text{C}$ at +20°C; $\pm 0.4^\circ\text{C}$ at +60°C

TEMPERATURE SENSOR:

Pt 1000 IEC 751 1/3 Class B

Response

SETTLING TIME AFTER POWER APPLIED: 500ms

RESPONSE TIME (at 20°C, 90% response): 15s with 0.2mm membrane filter

Electrical

SUPPLY VOLTAGE: 12V DC nominal (7 to 35V DC possible)

POWER CONSUMPTION: <4mA

OUTPUT LOAD: >10kohm (to ground)

Electromagnetic Compatibility

EMISSIONS: Radiated interference, test setup according to EN55022

IMMUNITY: Radiated Interference (IEC 1000-4-3) Level 1 (3V/m); Electrostatic Discharge (IEC-801-4) Level 4

Physical

OPERATING TEMPERATURE RANGE: -40°C to +60°C

STORAGE TEMPERATURE RANGE: -40°C to +80°C

WEIGHT: 350g (incl. package)

STANDARD CABLE LENGTH: 3m

CABLE TYPE: Low-temperature cable with Santoprene outer jacket

HOUSING MATERIAL: ABS plastic

HOUSING CLASSIFICATION: (electronics): IP65 (NEMA 4)

SENSOR PROTECTION: Standard membrane filter

DIMENSIONS: Diameter 24mm; Length 240mm excluding cable strain relief; Length of removable probe head 132mm

WEIGHT: 0.27 kg (0.6 lbs)

Mounting

When the sensor is used outdoors it is standard practice to install the sensor within a housing, known as a shield, to prevent solar radiation heating the sensor and thereby creating errors in the measurements. The shield also gives a degree of protection from adverse weather, e.g. hail, driving rain. The most common type of shield is a relatively small, naturally ventilated screen that is low maintenance and requires no power. Campbell Scientific offers and recommends the MET21 shield for this probe as it performs better than most other shields of a similar design. Please request a leaflet on that product for further details. For continuity with long term measurements some meteorological services require use of larger, more expensive, Stevenson screens. Alternatively, for best accuracy a ventilated shield can be used, although these require significant power. Please contact Campbell Scientific for further details of these options.

**Campbell Scientific offers a
complete range of sensors
– ask for a summary leaflet**

*Campbell Scientific products are
available from:*