HMP155 Humidity and Temperature Probe



HMP155 with an additional temperature probe and optional Stevenson screen installation kit

The Vaisala HUMICAP® Humidity and Temperature Probe HMP155 provides reliable humidity and temperature measurement. It is designed especially for demanding outdoor applications.

Long-term Stability

The HMP155 has the proven Vaisala HUMICAP®180R sensor that has excellent stability and withstands well harsh environments. The probe structure is solid and the sensor is protected by default with a sintered teflon filter, which gives maximum protection against liquid water, dust, and dirt.

Warmed Probe and High Humidity Environment

Measuring humidity reliably is challenging in environments where humidity is near saturation. Measurements may be corrupted by fog, mist, rain, and heavy dew. A wet probe may not give an accurate measurement in the ambient air.

This is an environment to which Vaisala has designed a patented, warmed probe for reliable measuring. As the sensor head is warmed continuously, the humidity level inside it stays below the ambient level. Thus, it also reduces the risk of condensation forming on the probe.

Fast Measurements

With its fast response time, the additional temperature probe for the HMP155 is ideal for measurement in environments with changing temperatures. The new membrane filter speeds up the RH measurement.

Features/Benefits

- Vaisala HUMICAP®180R sensor
 superior long-term stability
- Optional warmed humidity probe and chemical purge
- Plug-and-play
- USB connection for service use
- Fits with DTR13 and DTR503 radiation shields and also for a Stevenson screen
- Weather-proof housing IP66
- Optional, fast temperature probe
- Different output possibilities: voltage, RS-485, resistive Pt100
- Applications: meteorology, aviation and road weather, instrumentation

Long Lifetime

Protecting the sensor from scattered and direct solar radiation, and precipitation will increase its lifetime. Thus, Vaisala recommends installing the HMP155 in one of the following radiation shields: DTR503, DTR13, or a Stevenson screen. For the additional temperature probe, an installation kit is available to be used with DTR502 radiation shield.

Easy Maintenance

The probe can be calibrated using a pc with a USB cable, with the push buttons, or with the MI70 indicator.



Technical Data

Performance

RELATIVE HUMIDITY

Measurement range

0 ... 100 %RH

Accuracy (incl. non-linearity, hysteresis

and repeatability) at

+15 ... +25 °C (+59 ... +77 °F) ±1 %RH (0 ... 90 %RH) ±1.7 %RH (90 ... 100 %RH)

-20 ... +40 °C (-4 ... 104 °F) ±(1.0 + 0.008 x reading) %RH -40 ... -20 °C (-40 ... -4 °F) ±(1.2 + 0.012 x reading) %RH +40 ... +60 °C (+104 ... +140 °F) ±(1.2 + 0.012 x reading) %RH -60 ... -40 °C (-76 ... -40 °F) ±(1.4 + 0.032 x reading) %RH

Factory calibration ±0.6 %RH (0 ... 40 %RH)* uncertainty (+20 °C/+68 °F) ±1.0 %RH (40 ... 97 %RH)*

* Defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.

Recommended humidity sensor

HUMICAP® 180R(C)

Response time at +20 °C in still air with

a sintered PTFE filter

63 % 20 s 90 % 60 s

TEMPERATURE

Measurement range -80 ... +60 °C (-112 ... +140 °F)

Accuracy with voltage output at

-80 ... +20 °C ±(0.226 - 0.0028 x temperature) °C +20 ... +60 °C ±(0.055 + 0.0057 x temperature) °C

passive (resistive) output

according to IEC 751 $\pm (0.1 + 0.00167 \text{ x ltemperaturel})^{\circ}\text{C}$ 1/3 Class B

RS485 output

-80 ... +20 °C ±(0.176 - 0.0028 x temperature) °C +20 ... +60 °C ±(0.07 + 0.0025 x temperature) °C

Accuracy over temperature range (opposite)

Temperature sensor Pt100 RTD Class F0.1 IEC 60751

Response time with additional temperature

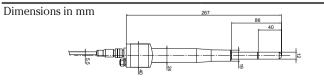
probe in 3 m/s air flow

63 % <20 s

OTHER VARIABLES

dew point/frost point temperature, wet bulb temperature, mixing ratio

Dimensions



General

Operating temperature range

Storage temperature range

Connection

Connection

Connection cables

Cable material

Wire size

Service cables

MI70 connection cable

Additional Toragh a sable length

Additional T probe cable length 2 m
Housing material PC
Housing classification IP66
Sensor protection sintered PTFE

optional membrane filter

-80 ... +60 °C (-112 ... +140 °F)

Weight (probe) 86 g

Electromagnetic compatibility: Complies with the EMC standard EN61326-1, Electrical equipment for measurement control and laboratory use - EMC requirement for use in industrial locations

Inputs and Outputs

Operating voltage

7 ... 28 VDC*

*Note: minimum operating voltage $12\ V$ with $0\dots 5\ V$ output and $16\ V$ with $0\dots 10\ V$ output, probe heating, chemical purge or XHEAT.

Outputs

voltage output

0 ... 1 V, 0 ... 5 V, 0 ... 10 V

resistive Pt100 (4-wire connection)

RS485

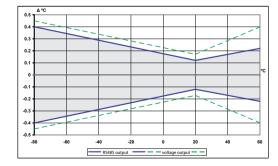
Average current consumption

(+15 VDC, load 100 kOhm)

 $\begin{array}{lll} 0 \dots 1 \text{ V output} & <3 \text{ mA} \\ 0 \dots 10 \text{ V output} & +0.5 \text{ mA} \\ \text{RS485} & <4 \text{ mA} \\ \text{during chemical purge} & \text{max. } 110 \text{ mA} \\ \text{with warmed probe} & \text{max. } 150 \text{ mA} \\ \end{array}$

Settling time at power-up

voltage output 2 s RS485 3 s





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