

HMP155 Humidity and Temperature Probe



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

Features/Benefits

- Vaisala HUMICAP®180R sensor - superior long-term stability
- Optional warmed humidity probe
- Plug-and-play
- Chemical purge
- USB connection for service use
- Installation kits for DTR13 and DTR502 radiation shields and also for a Stevenson screen
- Weather-proof housing IP66
- New, fast temperature probe
- Different output possibilities: voltage, RS-485, resistive Pt100
- Applications: meteorology, aviation and road weather, instrumentation

New Probe for Reliability

The new Vaisala HUMICAP® Humidity and Temperature Probe HMP155 provides reliable humidity and temperature measurement.

Long-term Stability

The HMP155 has a new generation 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 fastens RH measurement.

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 uncertainty (+20 °C / +68 °F) | ±0.6 %RH (0 ... 40 %RH)* ±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 1/3 Class B | ±(0.1 + 0.00167 x temperature) °C |
| RS485 output | |
| -80 ... +20 °C | ±(0.176 - 0.0028 x temperature) °C |
| +20 ... +60 °C | ±(0.07 + 0.0025 x temperature) °C |

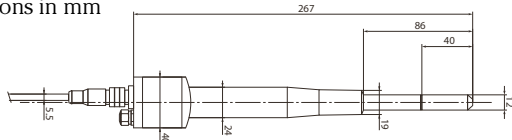
| | |
|---|-------------------------------|
| Accuracy over temperature range (opposite) | |
| Temperature sensor | Pt100 RTD 1/3 Class B IEC 751 |
| Response time with additional temperature probe in 3 m/s air flow | |
| 63 % | <20 s |
| 90 % | <35 s |

OTHER VARIABLES

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

Dimensions

Dimensions in mm

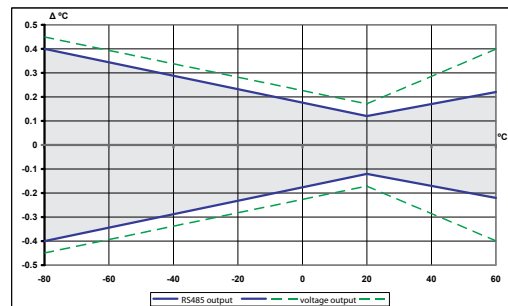


General

| | |
|--|---|
| Operating temperature range | -80 ... +60 °C (-112 ... +140 °F) |
| Storage temperature range | -80 ... +60 °C (-112 ... +140 °F) |
| Connection | 8-pin male M12 connector |
| Connection cables | 3.5, 10, and 30 m |
| Cable material | PUR |
| Wire size | AWG26 |
| Service cables | USB connection cable MI70 connection cable |
| Additional T probe cable length | 2 m |
| Housing material | PC |
| Housing classification | IP66 |
| Sensor protection | sintered PTFE optional membrane filter |
| 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 ... 28VDC* |
| *Note: minimum operating voltage 12V with 0 ... 5V output and 16V with 0 ... 10V output, probe heating, chemical purge or XHEAT. | |
| Outputs | |
| voltage output | 0 ... 1V, 0 ... 5V, 0 ... 10V |
| resistive Pt100 (4-wire connection) RS485 | |
| Average current consumption (+15 VDC, load 100 kOhm) | |
| 0 ... 1V output | <3 mA |
| 0 ... 10V output | +0.5 mA |
| RS485 | <4 mA |
| during chemical purge with warmed probe | max. 110 mA max. 150 mA |
| Settling time at power-up | |
| voltage output | 2 s |
| RS485 | 3 s |



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For more information, visit www.vaisala.com or contact us at sales@vaisala.com

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