CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

HMP155A

Vaisala Temperature and Relative Humidity Probe

Accurate, Wide Temperature Range

Higher end sensor where higher accuracy is required

Overview

The HMP155A provides reliable relative humidity (RH) and temperature measurements for a wide range of applications. It uses a HUMICAP®180R capacitive thin film polymer sensor to measure RH over the 0 to 100% RH range. A PRT measures temperature over the -80° to +60°C range. This rugged, accurate temperature/RH probe is manufactured by Vaisala.

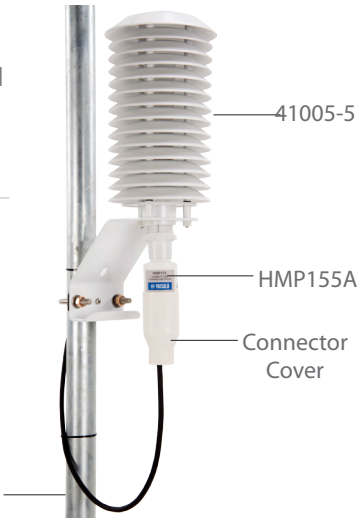
To reduce the current drain, power can be supplied to the HMP155A only during measurement when the sensor is connected to the datalogger's switched 12 V terminal. Dataloggers that do not have a switched 12 V terminal, such as the CR510 or CR7, can use the SW12V switched 12 V device to switch power to the sensor only during measurement.

Benefits and Features

- Well-suited for long-term, unattended applications
- Accurate and rugged
- Mounts to a mast, crossarm, or user-supplied pole
- Compatible with all Campbell Scientific dataloggers

Sensor Mounts

When exposed to sunlight, the HMP155A must be housed in a 41005-5 or RAD14 14-plate naturally aspirated radiation shield. The 41005-5 and RAD14 attaches to a crossarm, mast, or user-supplied pipe with a 2.5 to 5.3 cm (1.0 to 2.1 in) outer diameter. The RAD14 uses a double-louvered design that offers improved sensor protection from driving rain, snow, insect intrusion and has lower self-heating in bright sunlight combined with higher temperatures (> 24°C (~75°F)) and low wind speeds (< 2 m s^{-1} (~4.5 mph)) giving a better measurement.



Cable Length Recommendations[1]

2 m Height	CM106B[2]	CM110[2]	CM115[2]	CM120[2]	UT10	UT20	UT30
3.4 m (11 ft)	4.3 m (14 ft)	4.3 m (14 ft)	5.8 m (19 ft)	7.3 m (24 ft)	4.3 m (14 ft)	7.3 m (24 ft)	11.3 m (37 ft)

Notes:
1. The lengths assume the sensor is mounted at the end of a 2 ft crossarm.
2 The lengths assume the enclosure is mounted to the tripod mast. If it is mounted to the leg base, add 0.6 m (2 ft) to the cable length.

Ordering Information

Air Temperature and Relative Humidity Probe

HMP155A-L Vaisala Temperature/RH Probe with user-specified cable length. Enter cable length, in feet, after the -L. Must choose a cable termination option (see below).

Cable Termination Options (choose one)

-PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.

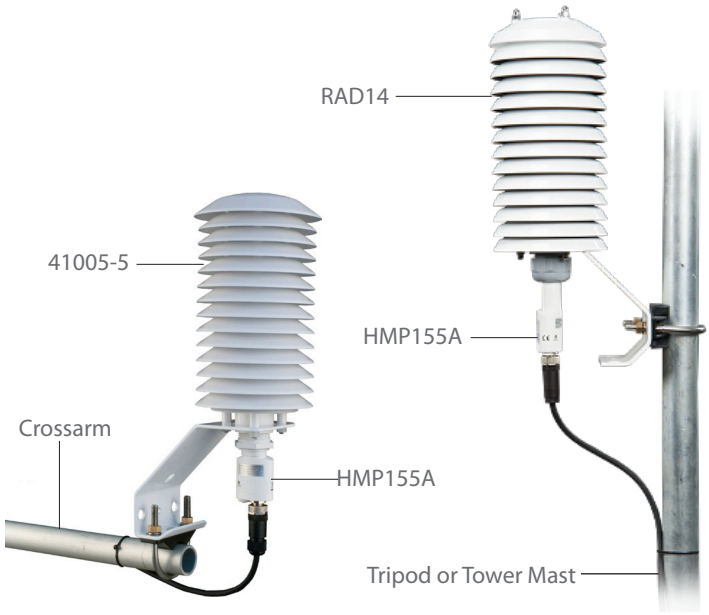
-PW Cable terminates in connector for attachment to a prewired enclosure.

Accessories

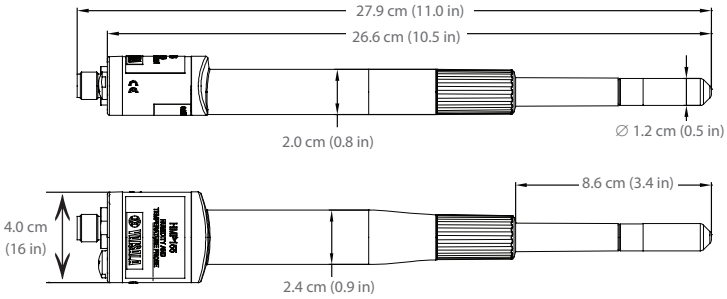
SW12V Switched 12 V device that uses a control port and a 12 V channel to switch power to the HMP155A instead of a switched 12 V terminal.

41005-5 14-Plate R. M. Young Radiation Shield with U bolts for attachment to a Campbell Scientific crossarm or mast.

RAD14 14-Plate MetSpec Radiation Shield with U bolts for attachment to a Campbell Scientific crossarm or mast.



Specifications



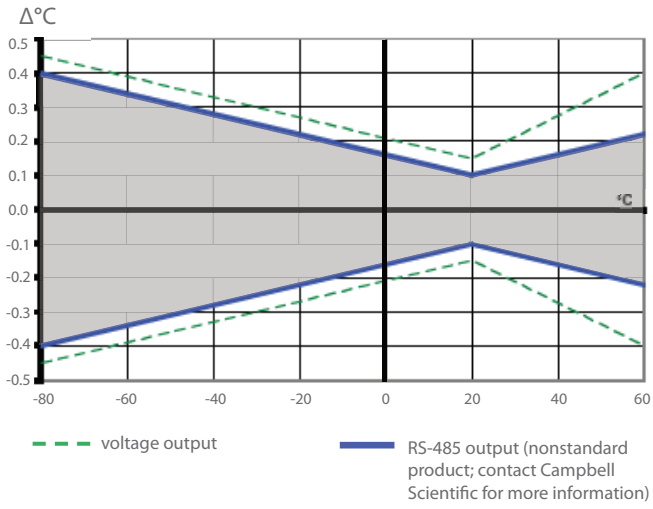
- Electromagnetic Compatibility: Complies with EMC standard EN61326-1 Electromagne
- Filter: Sintered PTFE
- Housing Material: PC
- Housing Classification: IP66
- Operating Humidity Range: 0 to 100%
- Voltage Output Range: 0 to 1 Vdc
- Average Current Consumption: ≤3 mA (analog output mode)
- Operating Voltage: 7 to 28 Vdc
- Settling Time at Power Up: 2 s

Air Temperature

- Temperature Sensor: Pt 100 RTD 1/3 class B IEC 751
- Measurement Range: -80° to +60°C
- Accuracy with Voltage Output
  -80° to +20°C: ±(0.226 - 0.0028 x temperature)°C
  +20° to +60°C: ±(0.055 + 0.0057 x temperature)°C
  Entire Temperature Range: see graph at right

Relative Humidity (RH)

- Sensor: HUMICAP®180R
- Measurement Range: 0.8 to 100% RH, non-condensing
- Response Time[a]: 20 s (63% step change); 60 s (90% step change)
- Factory Calibration Uncertainty (+20°C)[b]
  0 to 40% RH: ±0.6% RH
  40 to 97% RH: ±1.0% RH
- Accuracy (including non-linearity, hysteresis and repeatability)
  +15° to +25°C: ±1% RH (0 to 90% RH); ±1.7% RH (90 to 100% RH)
  -60° to -40°C: ± (1.4 + 0.032 × reading) % RH
  -40° to -20°C: ± (1.2 + 0.012 × reading) % RH
  -20° to +40°C: ± (1.0 + 0.008 × reading) % RH
  +40° to +60°C: ± (1.2 + 0.012 × reading) % RH



[a]The response time for the RH specification is for the HUMICAP®180R© at 20°C in still air with sintered PTFE filter and a 0% to 75% RH step change.

[b]The factory calibration uncertainty is defined as ±2 standard deviation limits. Small variations possible; see also calibration certificate.