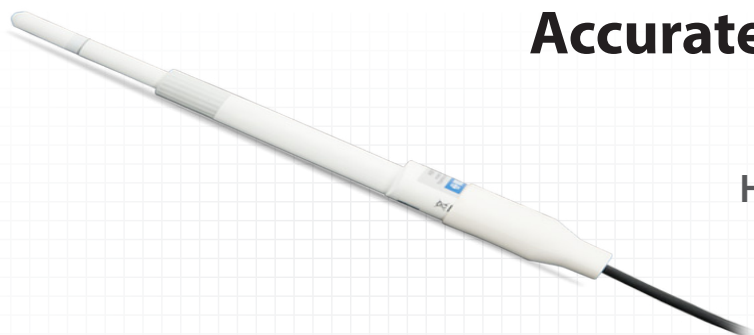




Accurate, Wide Temperature Range

Higher end sensor where higher accuracy is required

HMP155A with a new, stable HUMICAP[®] 180R sensor and with connector cover

Overview

The HMP155A provides reliable humidity 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 12V terminal. Dataloggers that do not have a switched 12V terminal, such as the CR510 or CR7, can use the PSW12V switched 12V device to switch power to the sensor only during measurement.

The probe structure is solid and the sensor is protected with a sintered Teflon filter, giving maximum protection against liquid, water, dust and dirt.

The HMP155A requires minimal maintenance with just a quick monthly check to make sure the radiation shield is free from debris and that the filter has not become contaminated.

For installation in the field the HMP155A is normally installed in a suitable radiation shield such as the RAD14 or Met21 shield to reduce errors due to solar heating and exposure to rain and snow.

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 (including the CR200(X) series)
- › Superior long-term stability
- › Plug-and-play
- › Weather-proof housing IP66
- › Optional USB connection for service use
- › Different output possibilities; voltage, RS-485, or resistive Pt100 (to special order)
- › Applications: meteorological applications, aviation and road weather, instrumentation



Specifications

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

Humidity sensor: HUMICAP®180R

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

Temperature

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

Accuracy with voltage output

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

Passive (resistive) output (to special order)

according to IEC 751 ±(0.1 + 0.00167 x temperature)°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)

Other variables

dewpoint/frost point temperature,
wet bulb temperature, mixing ratio (RS485 output only)

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

Standard Connection cable length 3 m, 5 m, 10 m and multiples of 5 m.

Cable material Santoprene covered with internal polyethylene insulation

Wire size AWG24

Service cables (optional) USB connection cable

Housing material PC

Housing classification IP66

Sensor protection sintered PTFE

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*

Outputs

voltage output 0 ... 1 V, 0 ... 5 V, 0 ... 10 V
resistive Pt100 (4-wire connection) - to special order
RS485

Average current consumption
(+15 VDC, load 100 kOhm)

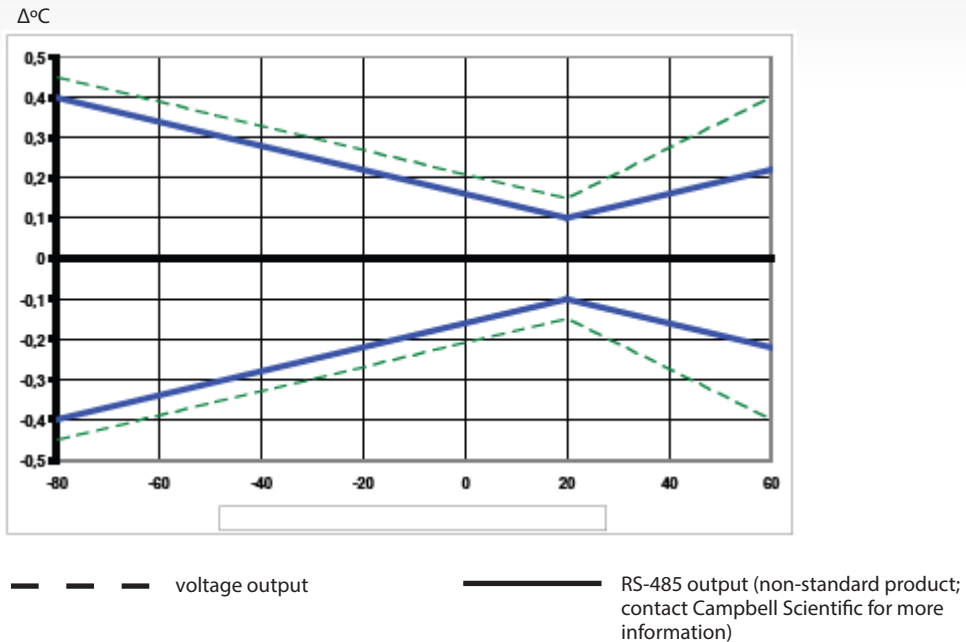
0 ... 1 V output <3 mA

RS485 <4 mA

Settling time at power-up
voltage output 2 s

^aThe 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.

^bThe factory calibration uncertainty is defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.



Ordering Information

Air Temperature and Relative Humidity Probe

HMP155A Vaisala Temperature/RH Probe with 3 m standard cable length.

Accessories

PSW12V Switched 12V device that uses a control port and a 12V channel to switch power to the HMP155A instead of a switched 12V terminal

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

MET21 Houses larger probes 14-25 mm in diameter taking up to 220 mm of the probe inside the shield. It can house the CS215, HC2S3, HMP45, HMP155, MP100A or smaller probes such as the 107 or PT100 using an adaptor.