HMP7 Relative Humidity and Temperature Probe

For High Humidities

Features

- RH accuracy up to 0.8 %RH
- Temperature accuracy up to 0.1 °C (0.18 °F)
- Temperature measurement range -70 ... +180 °C (-94 ... +356 °F)
- Vapor and pressure proof construction
- Probe and sensor warming functions minimize condensation on probe
- Sensor purge provides superior chemical resistance
- Modbus RTU over RS-485
- Plug & play compatible with Indigo™ series of transmitters
- Traceable calibration certificate: 5 points for humidity, 1 point for temperature

Vaisala HUMICAP® Humidity and Temperature Probe HMP7 is designed for applications that involve constant high humidity or rapid changes in humidity such as drying and test chambers, combustion air and other humidifiers and meteorological measurements where measurement performance and chemical tolerance are essential.

Proven Vaisala HUMICAP® Performance

Vaisala is the original innovator of the thin-film capacitive humidity measurement technology, which has now become the industry standard in humidity measurement.

HUMICAP® technology results from Vaisala's 40-year experience in industrial humidity measurement, providing the best stability, fast response time, and low hysteresis in a wide range of applications.

Avoiding Condensation at Extreme Humidity

Probe heating functionality heats up not only the sensor, but the whole probe head. When probe temperature is heated above dew point temperature, condensation on the probe can be avoided while measuring the dew point temperature of the process. By setting the temperature compensation value obtained, for example, with the TMP1 temperature probe, true relative humidity at process temperature can be measured while avoiding condensation by elevated probe temperature.

Vaisala Indigo™ Product Family

Indigo transmitters offer a variety of connectivity options through analog signals or digital outputs, configurable relays, and wireless (WLAN) configuration interface, providing a suitable solution for all industrial humidity measurements. The cable length between the probe and transmitter can be extended to up to 30 meters. For more information, see www.vaisala.com/indigo.

Flexible Connectivity

The probe is plug and play compatible with Vaisala Indigo™ series of transmitters, or it can be used as a standalone digital Modbus RTU transmitter over RS-485 serial bus. For easy-to-use access to field calibration, device analytics, and configuration functionality, the probe can be connected to Vaisala Insight™ Software (see www.vaisala.com/insight).

Services You Can Count On

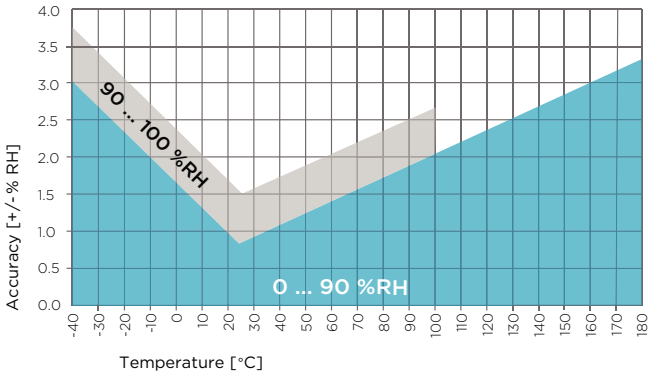
Each probe is manufactured and individually calibrated in Vaisala's world-class facility in Finland. The traceable factory calibration certificate is included also in electronic format in the probe. Validate and maintain the accuracy by calibrating the instrument on the field, or use Vaisala's easy and thorough calibration services.

Technical Data

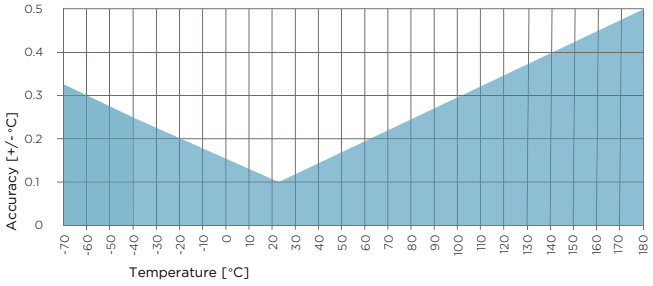
Measurement Performance

Relative Humidity	
Sensor	HUMICAP R2 Composite
Measurement range	0 ... 100 %RH
Accuracy at +23 °C (+73.4 °F) [1]	±0.8 %RH (0 ... 90 %RH)
T_{63} response time	15 s
Temperature	
Sensor	Pt100 RTD Class F0.1 IEC 60751
Measurement range	-70 ... +180 °C (-94 ... +356 °F)
Accuracy at +23 °C (+73.4 °F) [1]	±0.1 °C (±0.18 °F)

1) Defined against calibration reference



HMP7 Humidity Measurement Accuracy as Function of Temperature (Including Non-Linearity and Repeatability).



HMP7 Temperature Measurement Accuracy over Full Range (Including Non-Linearity and Repeatability)

SI Traceable Calibration

Uncertainty of relative humidity calibration (k = 2)	±0.5 %RH (0 ... 40 %RH) ±0.8 %RH (40 ... 95 %RH)
Uncertainty of temperature calibration (k = 2)	±0.1 °C (±0.18 °F) at +23 °C (+73.4 °F)

Operating Environment

Operating temperature range for probe body	-40 ... +80 °C (-40 ... +176 °F)
Operating temperature range for probe head	-70 ... +180 °C (-94 ... +356 °F)
Operating environment	Suitable for outdoor use
IP rating	IP66
Electromagnetic compatibility	EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements - Industrial environment

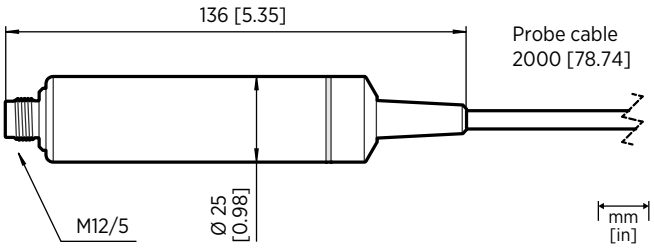
Inputs and Outputs

Operating voltage	18 ... 30 VDC
Current consumption	10 mA typical 500 mA max.
Digital output	RS-485, non-isolated
Default serial settings	19200 bps N 8 2
Protocols	Modbus RTU
Output Parameters	

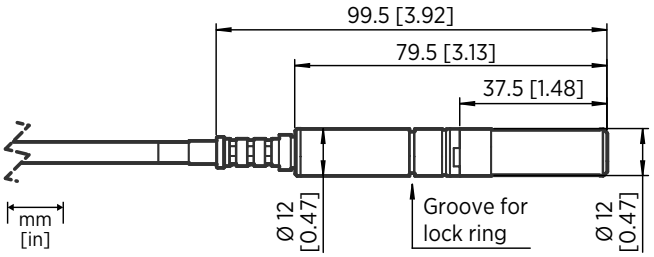
Relative humidity, temperature, dew point temperature, wet-bulb temperature, absolute humidity, mixing ratio, water concentration, water mass fraction, water vapor pressure, enthalpy

Mechanical Specifications

Connector	M12/5
Weight	310 g (10.9 oz)
Materials	
Probe	AISI316L
Probe body	AISI316L
Cable jacket	FEP



Probe Body Dimensions



HMP7 Probe Head Dimensions

Accessories

Transmitters	
Indigo 200	See order form
Connection Cables	
Connection cable to Indigo (1 m)	INDIGOCABLE1M
Connection cable to Indigo (3 m)	INDIGOCABLE3M
Connection cable to Indigo (5 m)	INDIGOCABLE5M
Connection cable to Indigo (10 m)	INDIGOCABLE10M
Open wires 1.5 m	223263SP
Open wires 10 m	216546SP
Open wires and 90° plug	244669SP
Flat cable 1 m M12/5	CBL210493SP
USB PC connection cable [1)]	242659
Filters	
Sintered stainless steel filter	HM47280SP
Stainless steel grid	HM47453SP
Metallized PPS plastic grid with stainless steel mesh filter [2)]	DRW010281SP
Metallized PPS plastic grid filter	DRW010276SP
Accessories	
Duct installation kit for RH probe	210697
Solar radiation shield	DTR502B
Cable gland M20x1.5 with split seal	HMP247CG
Swagelok for 12 mm probe, 1/2" ISO thread	SWG12ISO12
Swagelok for 12 mm probe, 3/8" ISO thread	SWG12ISO38
Swagelok for 12 mm probe, 1/2" NPT thread	SWG12NPT12

1) Vaisala Insight software for Windows available at www.vaisala.com/insight
2) Standard in delivery