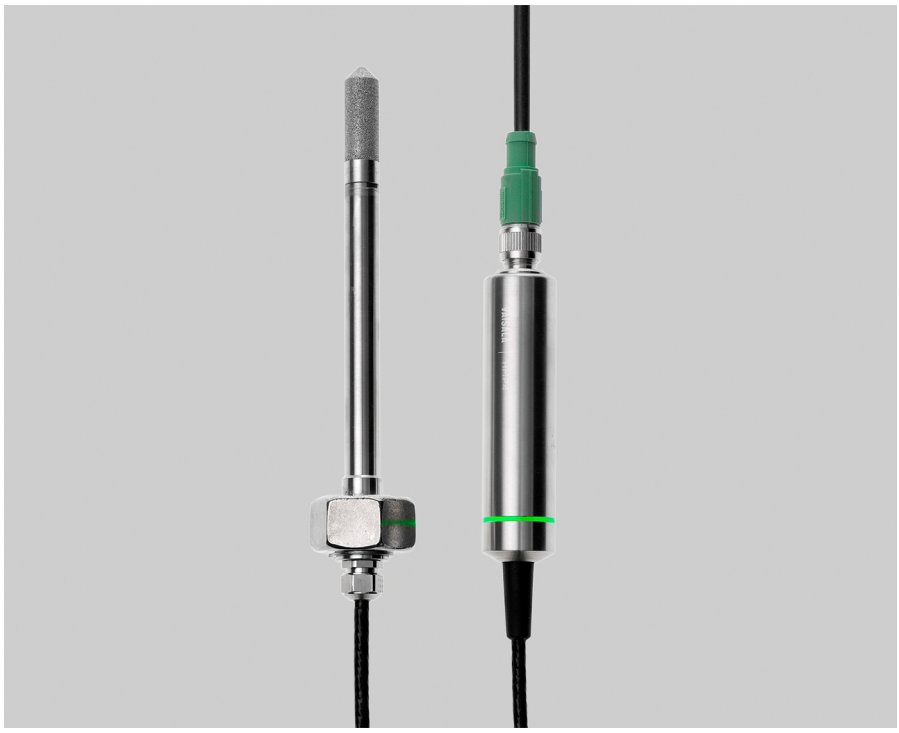
HMP4 Relative Humidity and Temperature Probe

For Pressurized and Vacuum Processes



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)
- Operating pressure 0 ... 10 MPa (0 ... 100 bar)
- 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 HMP4 is designed for high-pressure applications such as compressed air systems in maritime, breathing air, and industrial applications, 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.

Chemical Purge Minimizes Effects of Contaminants

In environments with high concentrations of chemicals and cleaning agents, the chemical purge option helps to maintain measurement accuracy between calibration intervals.

The chemical purge involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

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).

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.

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.

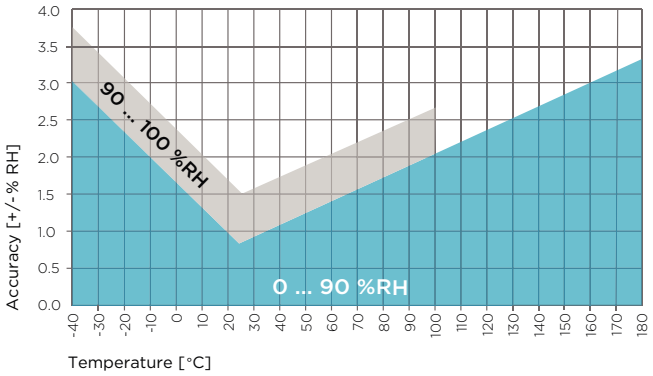
The interchangeable probes minimize the downtime associated with maintenance. Validate and maintain the accuracy by calibrating the instrument on the field or use the easy and thorough calibration service in Vaisala's service facilities in Helsinki, Boston, Beijing and Tokyo.

Technical Data

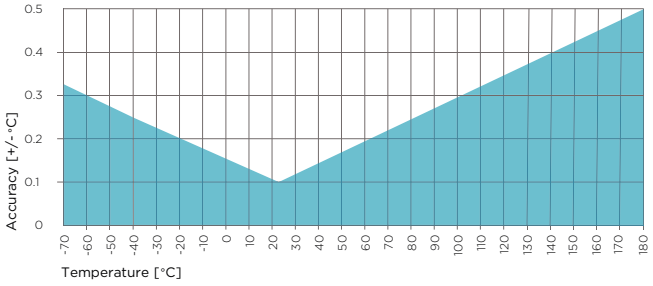
Measurement Performance

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



HMP4 Humidity Measurement Accuracy as a Function of Temperature (Including Non-Linearity and Repeatability)



HMP4 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	Complies with EMC standard EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements - Industrial environment
Operational pressure	< 100 bar

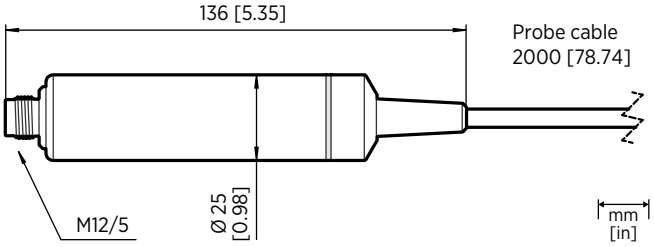
Inputs and Outputs

Operating voltage	15 ... 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	

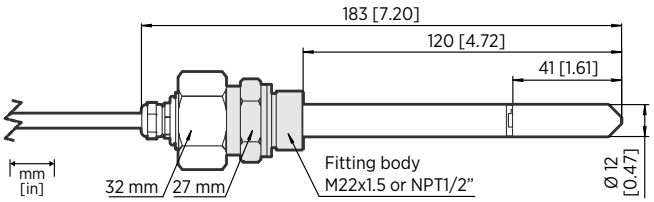
Relative humidity, temperature, dew point temperature, wet-bulb temperature, absolute humidity, mixing ratio, water concentration, water mass fraction, water vapor pressure, enthalpy

Mechanical Specifications

Probe fitting	M22x1.5 and NPT1/2" fittings included
Connector	M12/5
Weight	530 g (18.7 oz)
Materials	
Probe	AISI316
Probe body	AISI316
Cable jacket	FEP



Probe Body Dimensions



HMP4 Probe Head Dimensions

Accessories

Transmitters	
Indigo 200 Series	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 [2)]	HM47280SP
Stainless steel grid	HM47453SP
Metallized PPS plastic grid with stainless steel mesh filter	DRW010281SP
Metallized PPS plastic grid filter	DRW010276SP

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

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www.vaisala.com

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