



# HMP4 Relative Humidity and Temperature Probe

For Pressurized and Vacuum Processes



## Features

- RH accuracy up to  $\pm 0.8\%$  RH
- Temperature accuracy up to  $\pm 0.1\text{ }^{\circ}\text{C}$  ( $\pm 0.18\text{ }^{\circ}\text{F}$ )
- Temperature measurement range  $-70 \dots +180\text{ }^{\circ}\text{C}$  ( $-94 \dots +356\text{ }^{\circ}\text{F}$ )
- Operating pressure  $0 \dots 10\text{ MPa}$  ( $0 \dots 100\text{ bar}$ )
- Sensor purge provides superior chemical resistance
- Modbus RTU over RS-485
- Compatible with Indigo transmitters and Insight PC software
- Traceable calibration certificate: 6 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 compatible with Vaisala Indigo series of transmitters, and 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 for Windows®: see [www.vaisala.com/insight](http://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](http://www.vaisala.com/indigo).

# Technical Data

## Measurement Performance

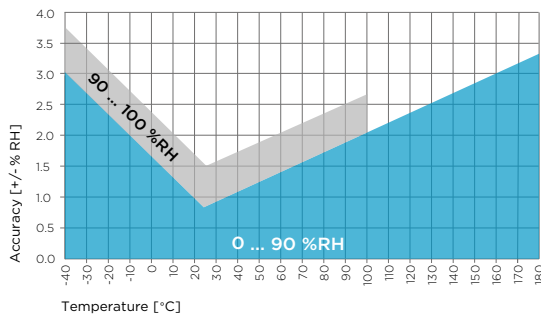
### Relative Humidity

Measurement range	0 ... 100 %RH
Accuracy at +23 °C (+73.4 °F) <sup>1)</sup>	±0.8 %RH (0 ... 90 %RH)
Factory calibration uncertainty <sup>2)</sup>	±0.5 %RH (0 ... 40 %RH) ±0.8 %RH (40 ... 95 %RH)
T <sub>63</sub> response time	15 s
Sensor options	HUMICAP® R2 HUMICAP® R2C <sup>3)</sup>

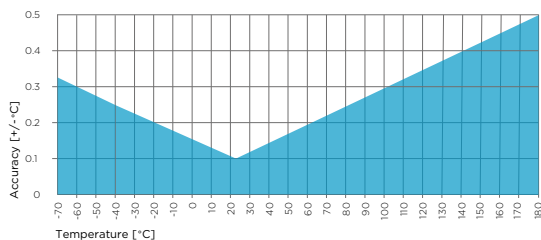
### Temperature

Measurement range	-70 ... +180 °C (-94 ... +356 °F)
Accuracy <sup>1)</sup>	±0.1 °C (±0.18 °F)
Factory calibration uncertainty <sup>2)</sup>	±0.1 °C (±0.18 °F) at +23 °C (+73.4 °F)
Sensor	Pt100 RTD Class F0.1 IEC 60751

- <sup>1)</sup> Defined against calibration reference. Including non-linearity, hysteresis, and repeatability.  
<sup>2)</sup> Defined as ±2 standard deviation limits. Small variations possible; see calibration certificate.  
<sup>3)</sup> Chemical purge feature available with this sensor



HMP4 Humidity Measurement Accuracy as a Function of Temperature



HMP4 Temperature Measurement Accuracy over Full Range

## Operating Environment

Operating temperature for probe body	-40 ... +80 °C (-40 ... +176 °F)
Operating temperature for probe head	-70 ... +180 °C (-94 ... +356 °F)
Operational pressure	< 100 bar
Operating environment	Suitable for outdoor use
Measurement environment	For air, nitrogen, hydrogen, argon, helium, oxygen, and vacuum <sup>1)</sup>
IP rating of probe body	IP66
EMC compatibility	EN61326-1, industrial environment

- <sup>1)</sup> Consult Vaisala if other chemicals are present. Consider safety regulations with flammable gases.

## Inputs and Outputs

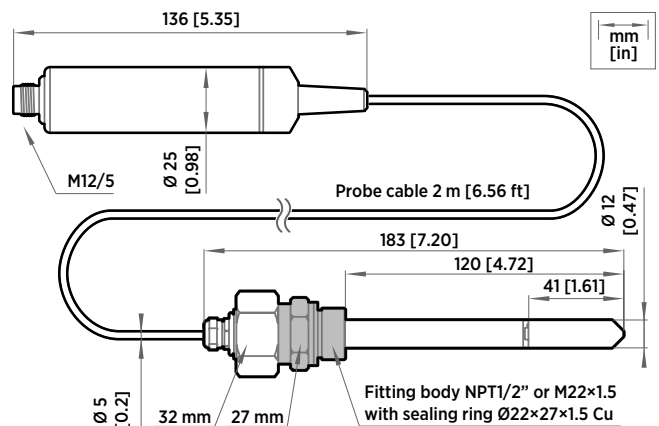
Operating voltage	15 ... 30 VDC
Current consumption	10 mA typical, 500 mA max.
Digital output	RS-485, non-isolated
Protocols	Modbus RTU

### 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-pin A-coded male
Fitting body	M22×1.5 or NPT1/2"
Weight	530 g (18.7 oz)
<b>Materials</b>	
Probe	AlSi316
Probe body	AlSi316
Cable jacket	FEP



HMP4 Probe Dimensions

## Accessories

USB PC connection cable <sup>1)</sup>	242659
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- <sup>1)</sup> Vaisala Insight software for Windows available at [www.vaisala.com/insight](http://www.vaisala.com/insight)



**VAISALA**

[www.vaisala.com](http://www.vaisala.com)

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