



# 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 (for Windows® 7, 8.1 and 10: 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

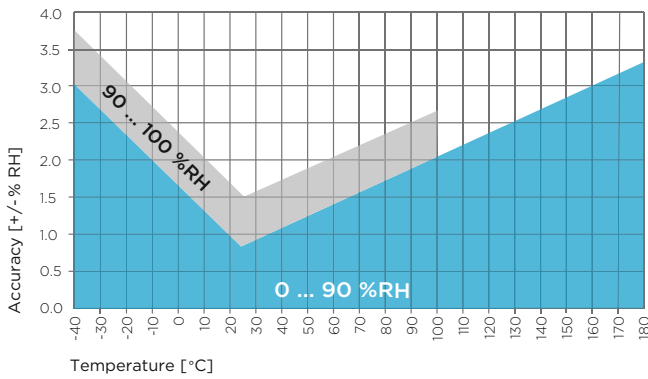
### Relative Humidity

Sensor	HUMICAP R2 Composite
Measurement range	0 ... 100 %RH
Accuracy at +23 °C (+73.4 °F) <sup>1)</sup>	±0.8 %RH (0 ... 90 %RH)
T <sub>63</sub> response time	15 s

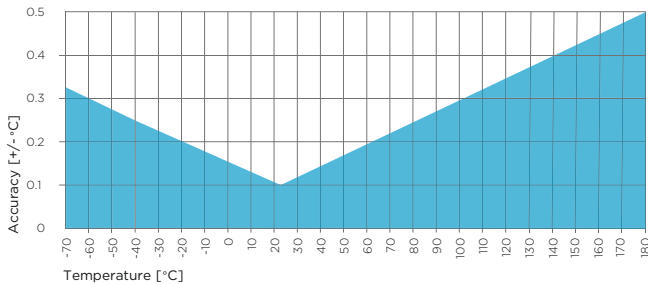
### Temperature

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

<sup>1)</sup> 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)

## 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, industrial environment
Operational pressure	< 100 bar

## Inputs and Outputs

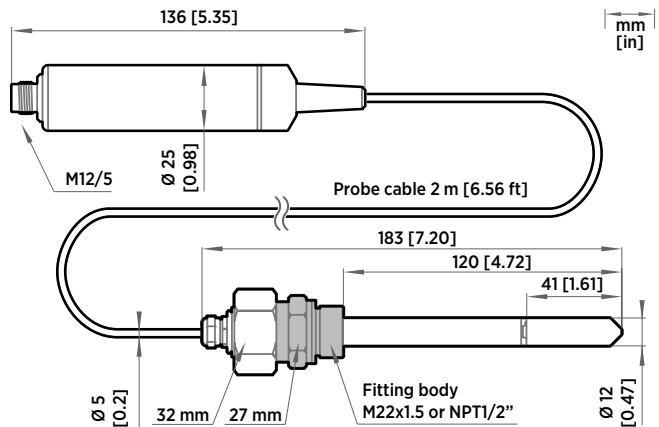
Operating voltage	15 ... 30 VDC
Current consumption	10 mA typical, 500 mA max.
Digital output	RS-485, non-isolated
Default serial settings	19200 bps N 8 2
Protocols	Modbus RTU

### 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)
<b>Materials</b>	
Probe	AISI316
Probe body	AISI316
Cable jacket	FEP



HMP4 Probe Dimensions

## 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)

