



# HMP8 Relative Humidity and Temperature Probe

For pressurized and vacuum processes



## Features

- RH accuracy up to  $\pm 0.8\%$  RH
- Temperature accuracy up to  $\pm 0.1\text{ }^{\circ}\text{C}$  ( $\pm 0.18\text{ }^{\circ}\text{F}$ )
- Operating pressure 0 ... 4 MPa (0 ... 40 bar)
- Temperature measurement range  $-70\text{ }^{\circ}\text{C}$  ...  $+180\text{ }^{\circ}\text{C}$  ( $-94\text{ }^{\circ}\text{F}$  ...  $+356\text{ }^{\circ}\text{F}$ )
- Sensor purge provides superior chemical resistance
- Probe installation depth can be freely adjusted and probe can be hot-swapped from pressurized pipelines with an installation valve
- 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 HMP8 is designed for pressurized applications in compressed air systems, refrigerant dryers, and other pressurized industrial applications, where easy insertion and removal of the probe and adjustable installation depth into the pipeline are needed.

## 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 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®. For more information, see [www.vaisala.com/insight](http://www.vaisala.com/insight).

## Vaisala Indigo product family

Indigo transmitters extend the capabilities of Indigo compatible measurement probes. The transmitters can display measurements on the spot as

well as transmit them to automation systems through analog signals, digital outputs, and relays. Cable length between probe and transmitter can be extended to up to 30 meters. For more information, see [www.vaisala.com/indigo](http://www.vaisala.com/indigo).



DNV GL type approval certificate no. TAA00002YT

# Technical data

## Measurement performance

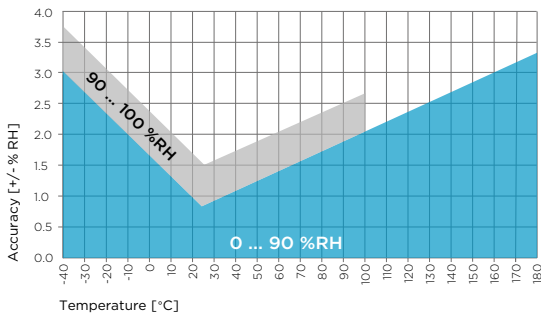
### Relative humidity

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>

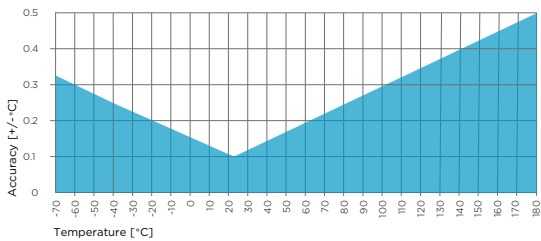
### Temperature

Measurement range	-70 ... +180 °C (-94 ... +356 °F)
Accuracy at +23 °C (+73.4 °F) <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

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



HMP8 humidity measurement accuracy as a function of temperature



HMP8 temperature measurement accuracy over full range

## Operating environment

Operating temperature of probe body	-40 ... +80 °C (-40 ... +176 °F)
Operating temperature of probe head	-70 ... +180 °C (-94 ... +356 °F)
Operational pressure	< 40 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

1) Consult Vaisala if other chemicals are present. Consider safety regulations with flammable gases.

## Inputs and outputs

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

## Output parameters

Absolute humidity (g/m <sup>3</sup> )	Relative humidity (%RH)
Absolute humidity at NTP (g/m <sup>3</sup> )	Relative humidity (dew/frost) (%RH)
Dew point temperature (°C)	Temperature (°C)
Dew/frost point temperature (°C)	Water concentration (ppm <sub>v</sub> )
Dew/frost point temperature at 1 atm (°C)	Water concentration (wet basis) (vol-%)
Dew point temperature at 1 atm (°C)	Water mass fraction (ppm <sub>w</sub> )
Dew point temperature difference (°C)	Water vapor pressure (hPa)
Enthalpy (kJ/kg)	Water vapor saturation pressure (hPa)
Mixing ratio (g/kg)	Wet-bulb temperature (°C)

## Compliance

EU directives	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU)
EMC compatibility	EN 61326-1, industrial environment
Type approvals	DNV GL certificate no. TAA00002YT
Compliance marks	CE, China RoHS, RCM, WEEE

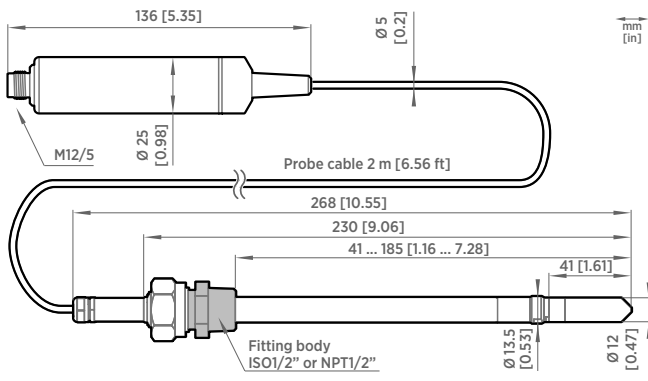
## Mechanical specifications

Connector	M12 5-pin A-coded male
Probe fitting	ISO1/2" and NPT1/2" fittings included
Weight	512 g (18.1 oz)
<b>Materials</b>	
Probe	AISI 316L
Probe body	AISI 316L
Cable jacket	FEP

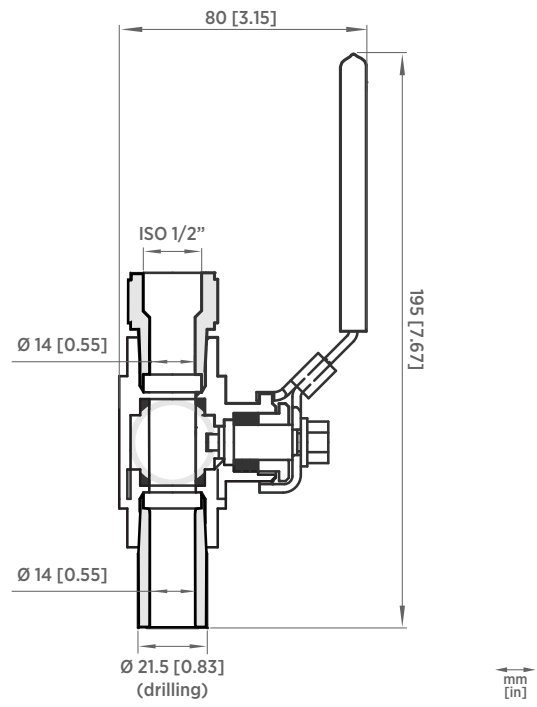
## Accessories

Ball valve ISO 1/2" with welding joint	BALLVALVE-1
Indigo USB adapter <sup>1)</sup>	USB2

1) Vaisala Insight software for Windows available at [www.vaisala.com/insight](http://www.vaisala.com/insight).



HMP8 probe dimensions



Ball valve kit dimensions