



HMP9 Compact Humidity and Temperature Probe



Features

- Miniature probe head with low thermal mass for superior response time
- RH accuracy up to 0.8 %RH
- Temperature accuracy up to 0.1 °C (0.18 °F)
- Temperature measurement range -40 ... +120 °C (-40 ... +248 °F)
- 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
- M10×1.5 cable gland included for mounting the probe head

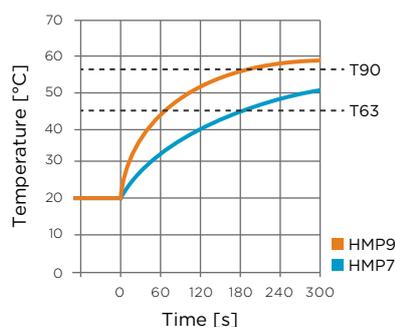
Vaisala HUMICAP® Humidity and Temperature Probe HMP9 is designed for easy installation into rapidly changing environments where fast response time, measurement performance, and chemical tolerance are essential.

Miniature probe head with HUMICAP® performance

The main feature of HMP9 is its 5 mm (0.2 in) diameter miniature probe head. Despite the small footprint, the probe head contains a HUMICAP® sensor that provides its industry standard humidity measurement performance.

HMP9 has great stability, fast response time, and low hysteresis in a wide range of applications. This makes it the superior choice in applications where the mechanical properties or replaceable filters of the heavier probes are not needed.

Measurement environments where occasional condensation is present are not a problem as long as the probe is protected from exposure to liquid water. For continuously condensing environments, use HMP7 with probe heating instead.



HMP9 T response time compared to HMP7

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.

Technical data

Measurement performance

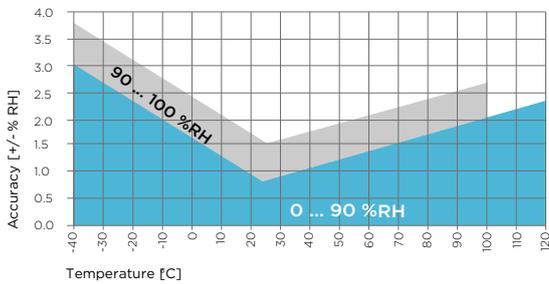
Relative humidity

Measurement range	0 ... 100 %RH
Accuracy at +23 °C (+73.4 °F) ¹⁾	±0.8 %RH (0 ... 90 %RH)
Factory calibration uncertainty ²⁾	±0.7 %RH (0 ... 40 %RH) ±1 %RH (40 ... 95 %RH)
T ₆₃ response time ³⁾	15 s
Sensor	HUMICAP® I

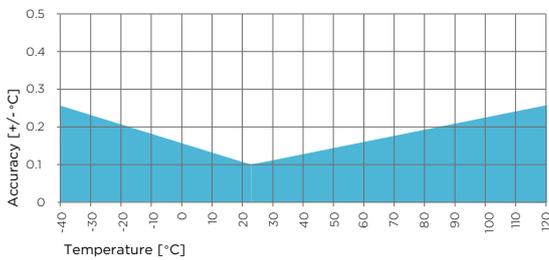
Temperature

Measurement range	-40 ... +120 °C (-40 ... +248 °F)
Accuracy at +23 °C (+73.4 °F) ¹⁾	±0.1 °C (±0.18 °F)
Factory calibration uncertainty ²⁾	±0.1 °C (±0.18 °F) at +23 °C (+73.4 °F)
T ₆₃ response time ³⁾	70 s

- 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) In still air.



HMP9 humidity measurement accuracy as a function of temperature



HMP9 temperature measurement accuracy over full range

Operating environment

Operating temperature of probe body	-40 ... +60 °C (-40 ... +140 °F)
Operating temperature of probe head	-40 ... +120 °C (-40 ... +248 °F)
Storage temperature	-40 ... +60 °C (-40 ... +140 °F)
Operating environment	Suitable for outdoor use when protected from rain
Measurement environment	For air, nitrogen, hydrogen, argon, helium, and oxygen ¹⁾
IP rating of probe body	IP65

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	5 mA typical, 400 mA max.
Digital output	RS-485, non-isolated
Default serial settings	19200 bps N 8 2
Protocol	Modbus RTU

Output parameters

Absolute humidity (g/m ³)	Relative humidity (%RH)
Absolute humidity at NTP (g/m ³)	Relative humidity (dew/frost) (%RH)
Dew point temperature (°C)	Temperature (°C)
Dew/frost point temperature (°C)	Water concentration (ppm _v)
Dew/frost point temperature at 1 atm (°C)	Water concentration (wet basis) (vol-%)
Dew point temperature at 1 atm (°C)	Water mass fraction (ppm _w)
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
Compliance marks	CE, China RoHS, RCM, WEEE

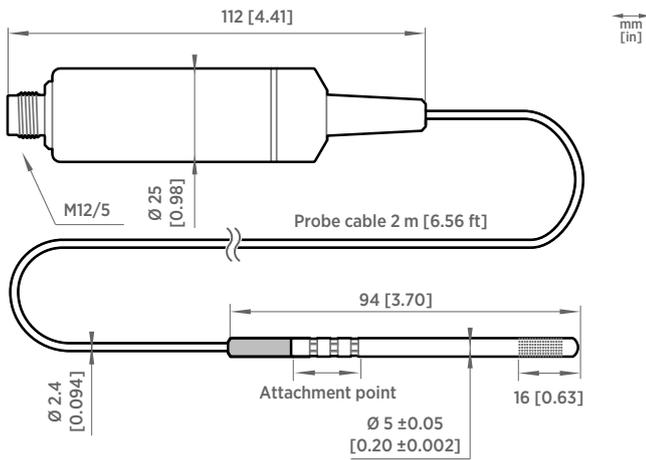
Mechanical specifications

Connector	M12 5-pin A-coded male
Weight	68 g (2.40 oz)
Materials	
Probe	AISI 316L
Probe body	PBT
Cable overmolds	FEP

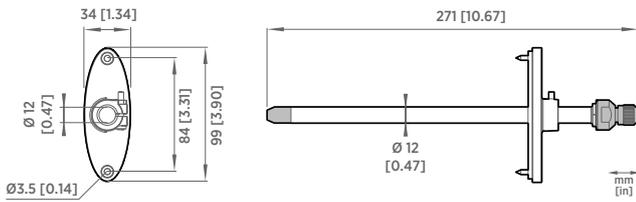
Accessories

HMP9 calibration adapter for HMK15	ASM213801
HMP9 duct installation kit	ASM214055
Solar radiation shield DTR502B with sensor head support 215130	DTR502B and 215130
Indigo USB adapter ¹⁾	USB2

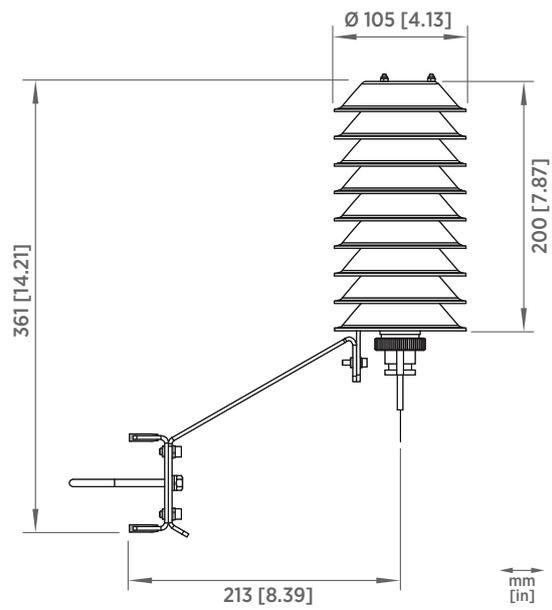
1) Vaisala Insight software for Windows available at www.vaisala.com/insight.



HMP9 probe dimensions



HMP9 Duct Installation Kit ASM214055 dimensions



Solar Radiation Shield DTR502B dimensions