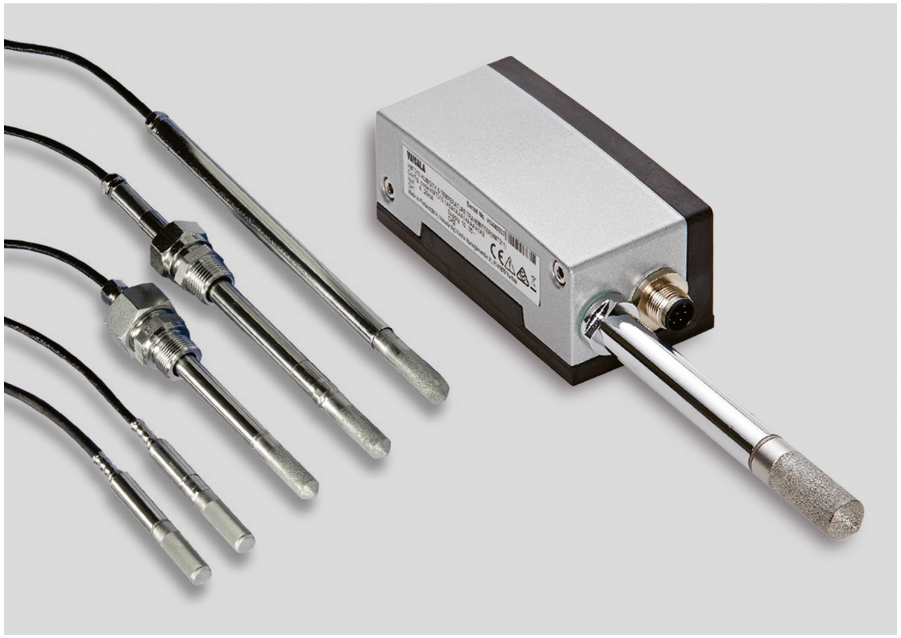
HMT310 Humidity and Temperature Transmitter



Features

- 4th generation Vaisala HUMICAP® sensor for superior accuracy and stability
- Full 0 ... 100 %RH measurement, temperature range up to +180 °C (+356 °F), depending on model
- Small size, easy to integrate
- Insensitive to dust and most chemicals
- Two analog signals and RS-232 ASCII output
- Pressure tolerance up to 100 bar

HMT310 incorporates the latest generation Vaisala HUMICAP® sensor. The sensor is a capacitive thin-film polymer sensor providing high accuracy, excellent long-term stability, and negligible hysteresis. It is insensitive to dust, particulate dirt, and most chemicals. HMT310 has various options for different environments and measurements.

Several Outputs, One Connector

HMT310 is powered up with 10 ... 35 VDC. It has two analog outputs and an RS-232 serial output in one M12 8-pin connector. The output signal and the supply power travel in the same cable, the only cable connected to the unit.

Chemical Purge

Chemical purge helps to maintain measurement accuracy between calibration intervals. It involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

A Variety of Features to Choose From

The following optional features and accessories are available for the HMT310 series:

- Warmed probe and sensor heating for high humidity conditions
- Chemical purge for applications risking an interference with chemicals in the measuring environment
- Calculated humidity quantities
- Sensor protection options and probe cable lengths
- Mounting kits
- Rain shield

Six Models for Demanding Applications

The HMT310 series includes:

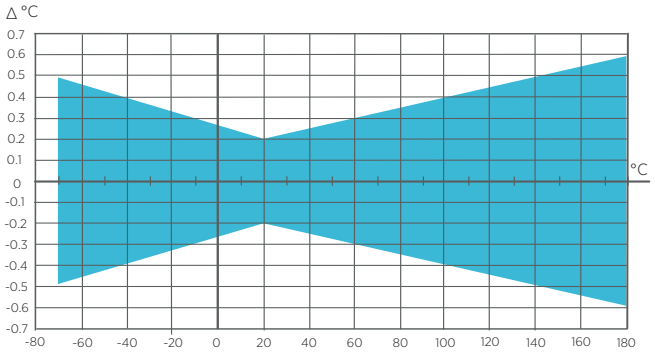
- HMT311 for wall mounting
- HMT313 for duct mounting and tight spaces
- HMT314 for high pressures up to 100 bar and vacuum conditions
- HMT315 for high temperatures
- HMT317 for high humidity applications, warmed probe option
- HMT318 for pressurized pipelines up to 40 bar

Technical Data

Measurement Performance

Relative Humidity	
Measurement range	0 ... 100 %RH
Response time (90 %) at +20 °C (+68 °F) in 0.1 m/s air flow	17 s with grid filter 50 s with grid and steel, netting filter 60 s with sintered filter
Factory calibration uncertainty (+20 °C)	±0.6 %RH (0 ... 40 %RH)[1)] ±1.0 %RH (40 ... 97 %RH)[1)]
Accuracy [2) 3)]	
at +15 ... +25 °C (+59 ... +77 °F)	±1 %RH (0 ... 90 %RH) ±1.7 %RH (90 ... 100 %RH)
at −20 ... +40 °C (−4 ... +104 °F)	±(1.0 + 0.008 x reading) %RH
at −40 ... +180 °C (−40 ... +356 °F)	±(1.5 + 0.015 x reading) %RH
Humidity Sensor Types	
HUMICAP® 180R	Typical applications
HUMICAP® 180RC	Applications with chemical purge/ warmed probe
HUMICAP® 180V	Catalytic sensor for H_2O_2 environments
HUMICAP® 180VC	Catalytic sensor with chemical purge for H_2O_2 environments
Temperature	
HMT311	−40 ... +60 °C (−40 ... +140 °F)
HMT313	−40 ... +80 °C (−40 ... +176 °F) or −40 ... +120 °C (−40 ... +248 °F)
HMT314, HMT315, HMT317, HMT318	−70 ... +180 °C (−94 ... +356 °F)
Typical accuracy at +20 °C (+68 °F)	±0.2 °C (±0.36 °F)
Temperature sensor	Pt100 RTD Class F0.1 IEC 60751

1) Defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.
2) Including non-linearity, hysteresis, and repeatability.
3) With HUMICAP® 180V and 180VC sensors, accuracy is not specified below −20 °C (−4 °F) operating temperature.



Accuracy Over Temperature Range

Operating Environment

Operating temperature for electronics	−40 ... +60 °C (−40 ... +140 °F)
Storage temperature	−55 ... +80 °C (−67 ... +176 °F)
Operating Pressure	
HMT314 HMT318 HMT317	0 ... 100 bar 0 ... 40 bar 0 ... 10 bar
EMC compliance	EN61326-1, Industrial environment

Inputs and Outputs

Two analog outputs, selectable and scalable	0 ... 20 mA or 4 ... 20 mA 0 ... 5 V or 0 ... 10 V 1 ... 5 V available through scaling
Typical accuracy of analog output at +20 °C	±0.05 % full scale
Typical temperature dependence of analog output	0.005 %/°C (0.003 %/°F) of full scale
Serial output	RS-232C
Connections	M12 8-pin male connector with RS-232C, current/voltage outputs (two channels) and U_{in}
Operating voltage	10 ... 35 VDC
External load	R_L < 500 Ω
Startup time after power-up	3 s
Minimum Operating Voltage	
RS-232C output	10 VDC
Analog output	15 VDC
Probe heating and chemical purge	15 VDC
Pressures above 10 bara (145 psia)	24 VDC
Power Consumption	
RS-232	12 mA
U_{out} 10 V (10 kΩ) channel 1 & channel 2	12 mA
I_{out} 20 mA (load 511 Ω) channel 1 & channel 2	50 mA
Chemical purge at 24 VDC	+ 220 mA
Warmed probe at 24 VDC	+ 240 mA

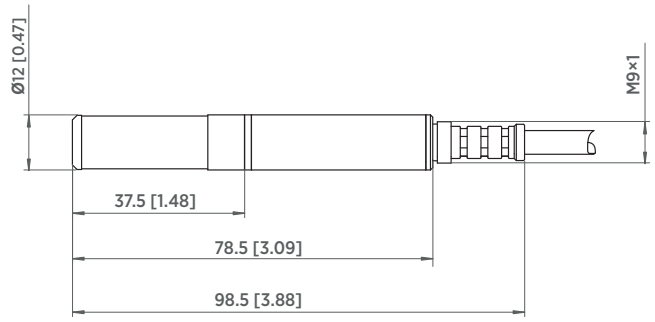
Mechanical Specifications

Transmitter housing material	G-AlSi10Mg
Transmitter base material	PPS
IP rating	IP66
Probe cable length	2, 5, or 10 m (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
Cable feed through alternatives	M12 8-pin male connector with 5 m cable, or 8-pin female screw terminal connector for cable diameter 4 ... 8 mm
Sensor protection	PPS grid with stainless steel net PPS grid Sintered filter Membrane stainless steel filter H_2O_2 filter

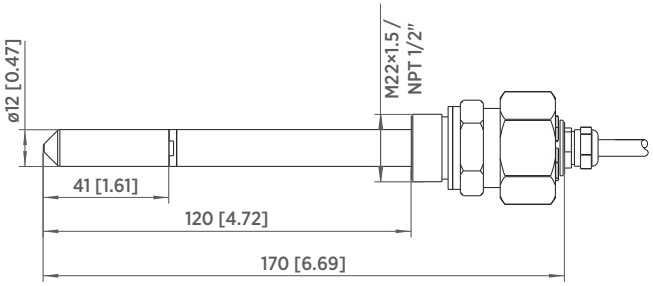
Spare Parts and Accessories

Rain shield	ASM211103
USB cable	238607
PPS plastic grid with stainless steel netting	DRW010281SP
PPS plastic grid filter	DRW010276SP
Sintered filter AISI 316L	HM47280SP
Stainless steel filter	HM47453SP
Stainless steel filter with membrane	214848SP
Catalytic H_2O_2 filter	231865

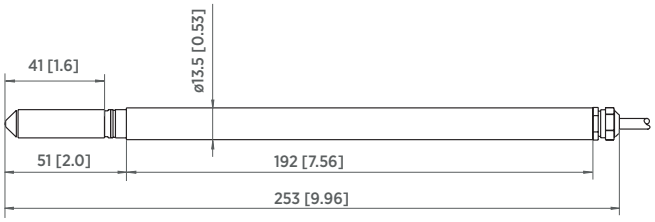
Dimensions in mm [in]



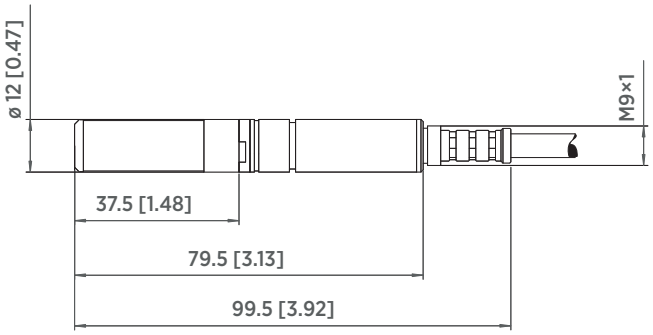
HMT313 Probe



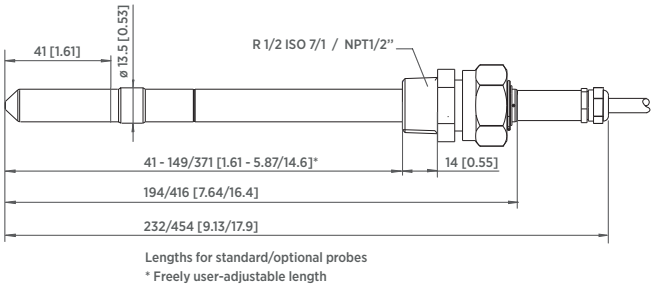
HMT314 Probe



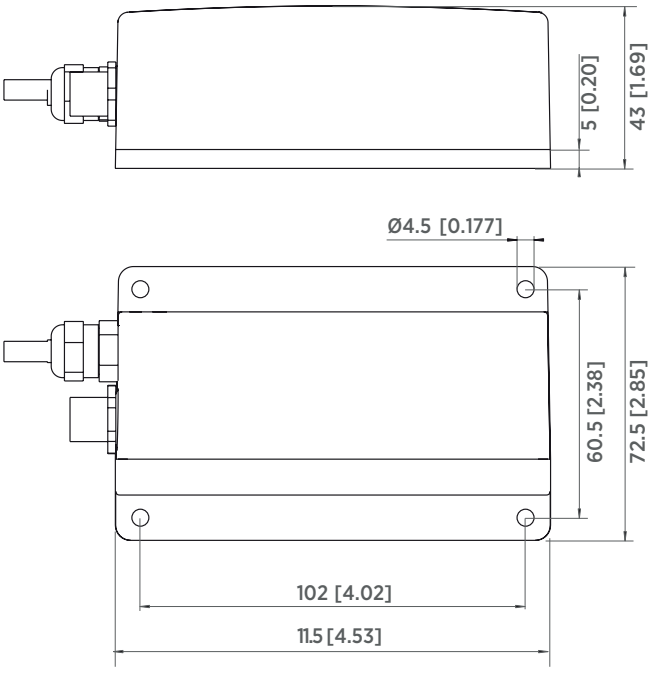
HMT315 Probe



HMT317 Probe



HMT318 Probe



HMT310 Transmitter Body

CE

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