

HMT310 Humidity and Temperature Transmitter



The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT310 models (from left to right): HMT313, HMT317, HMT314, HMT318, HMT315 and HMT311.

Features/Benefits

- Latest generation Vaisala HUMICAP® sensor for excellent 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
- NIST traceable calibration (certificate included)

Reliable Vaisala HUMICAP® Technology

The 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.

Several Outputs, One Connector

The HMT310 is powered up with 10 ... 35 VDC. It has two analog outputs and an RS232 serial output. 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.

Optional Functions

The following optional functions are available: several probes for various applications, calculated humidity quantities, variety of mounting kits, rain shield, sensor protection options and probe cable lengths, warmed probe and sensor heating for high humidity conditions (HMT317), and chemical purge for applications risking an interference with chemicals in the measuring environment.

Technical Data

Measured Values

RELATIVE HUMIDITY

Measurement range 0 ... 100 %RH
Sensor

Vaisala HUMICAP®180R	typical applications
Vaisala HUMICAP®180RC	applications with chemical purge/warmed probe
Vaisala HUMICAP®180V	catalytic sensor for H ₂ O ₂ environments
Vaisala HUMICAP®180VC	catalytic sensor with chemical purge for H ₂ O ₂ environments

Accuracy (including non-linearity, hysteresis, and repeatability) at a temperature range of

+15 ... +25 °C (+59 ... +77 °F)	±1 %RH (0 ... 90 %RH) ±1.7 %RH (90 ... 100 %RH)
-20 ... +40 °C (-4 ... +104 °F)	±(1.0 + 0.008 x reading) %RH
-40 ... +180 °C (-40 ... +356 °F)	±(1.5 + 0.015 x reading) %RH

Factory calibration uncertainty (+20 °C) ±0.6 %RH (0 ... 40 %RH)*
±1.0 %RH (40 ... 97 %RH)*

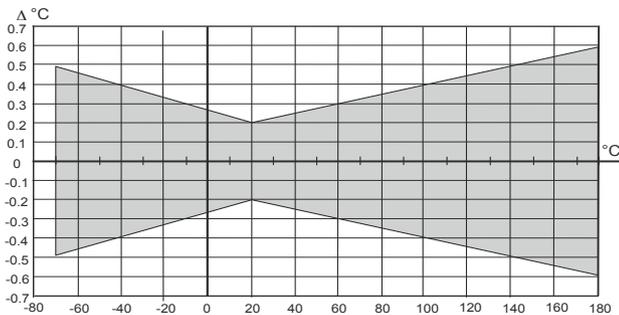
* Defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.

Response time (90 %) at +20 °C (+68 °F) 17 s with grid filter
in 0.1 m/s air flow 50 s with grid and steel, netting filter
60 s with sintered filter

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)

Accuracy over temperature range (see graph below)



Temperature sensor Pt100 RTD Class F0.1 IEC 60751

Electrical Connections

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 Connections	RS232C M12 8-pole connector with RS232C, current/voltage outputs (two channels) and U _{in}
Operating voltage	10 ... 35 VDC
Minimum operating voltage	
RS232C output	10 VDC
Analog output	15 VDC
Probe heating and chemical purge	15 VDC
Pressures above 10 bara (145 psia)	24 VDC
Power consumption	
RS232C	12 mA
U _{out} 10 V (10 kOhm) channel 1 & channel 2	12 mA
I _{out} 20 mA (load 511 Ohm) channel 1 & channel 2	50 mA
Chemical purge at 24 VDC	+ 220 mA
Warmed probe at 24 VDC	+ 240 mA
External load	R _L < 500 Ohm
Startup time after power-up	3 s

General

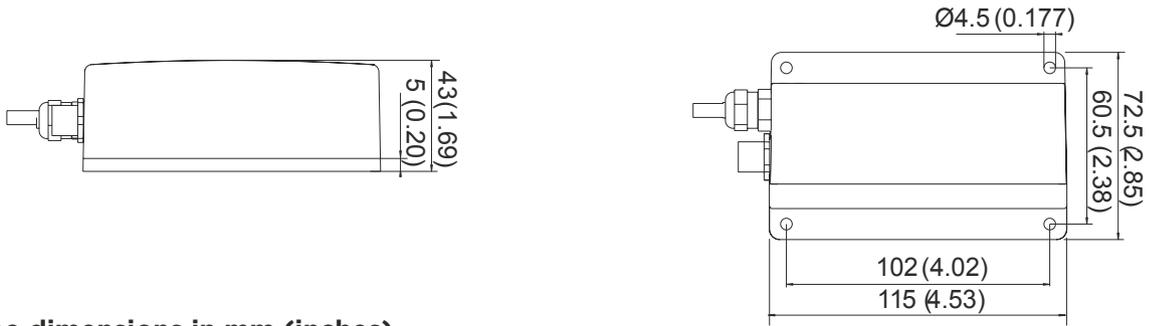
Operating temperature range for electronics	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature range	-55 ... +80 °C (-67 ... +176 °F)
Operating pressure	
HMT314	0 ... 100 bar
HMT318	0 ... 40 bar
HMT315, HMT317	vapor tight
Transmitter housing material	G-AISI10Mg
Transmitter base material	PPS
Housing classification	IP66
Cable feed through alternatives	8-pole connector with 5 m cable, Female 8-pin connector screw joint for cable diameter 4 ... 8 mm
Probe cable length	2m, 5m, or 10m
Sensor protection	PPS grid with stainless steel net, PPS grid, Sintered filter, Membrane stainless steel filter, H ₂ O ₂ filter
Complies with EMC standard EN61326-1, Industrial environment	

Accessories

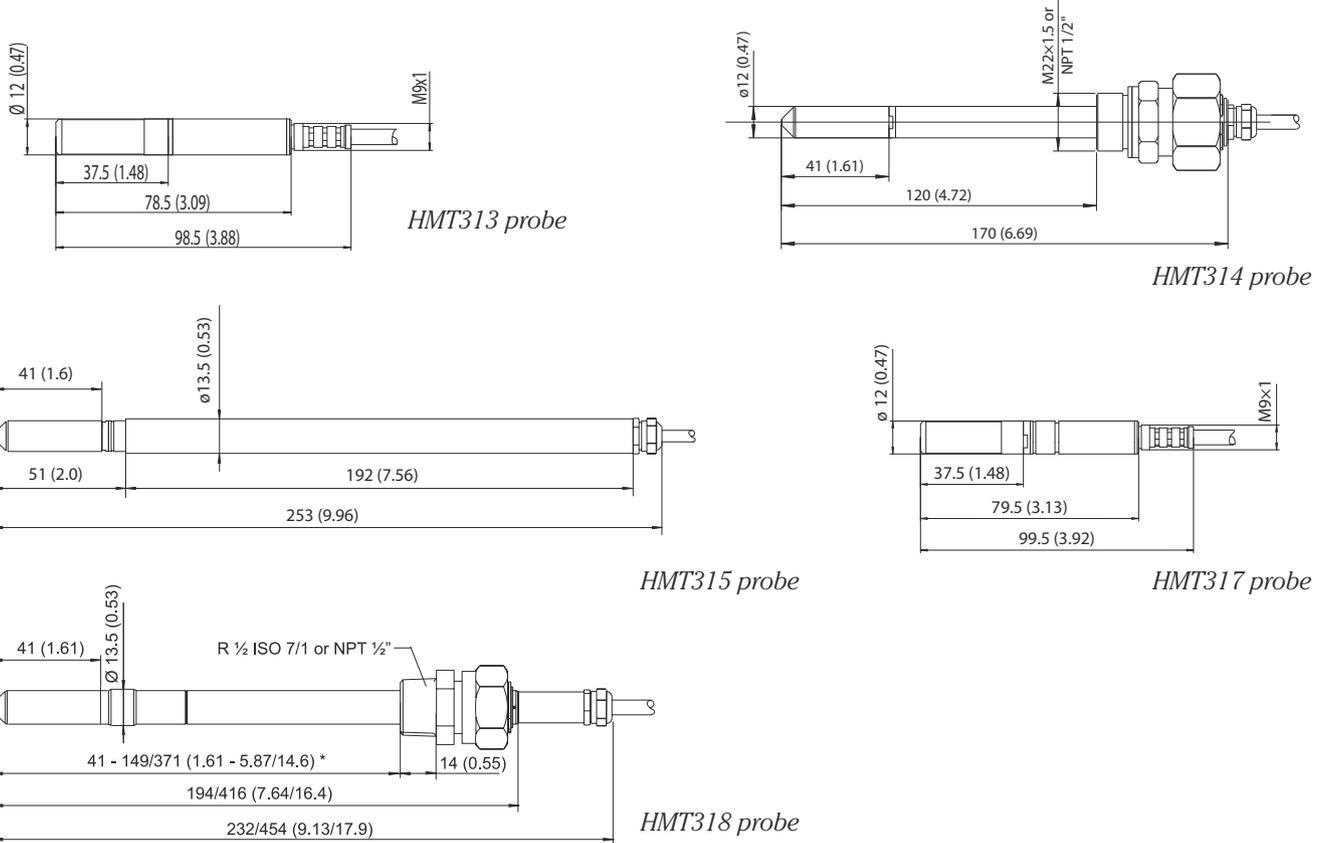
Rain shield	ASM211103
USB cable	238607
PPS Plastic Grid with Stainless Steel Netting	DRW010281SP
PPS Plastic Grid Filter	DRW010276SP
Sintered Filter AISI 316L	HM47280SP
Stainless Steel Filter	HM47453SP
Stainless Steel Filter with Membrane	214848SP
Catalytic H ₂ O ₂ Filter	231865

Dimensions

Transmitter body dimensions in mm (inches)



Probe dimensions in mm (inches)



Lengths for standard / optional probes
* freely user-adjustable length

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