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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

- Next-generation Vaisala HUMICAP® Sensor for excellent accuracy and stability
- Full 0 ... 100 %RH measurement, temperature range up to +180 °C (depending on model)
- Small size, easy to integrate
- Insensitive to dust and most chemicals
- NIST traceable

Reliable Vaisala HUMICAP® technology

The HMT310 incorporates the latest-generation Vaisala HUMICAP® Sensor. The Vaisala HUMICAP® Sensor is a capacitive thin-film polymer sensor. It features 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 12 ... 35 VDC. It has two analog outputs and an RS-232 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 calibraton intervals and 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, different mounting kits, 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

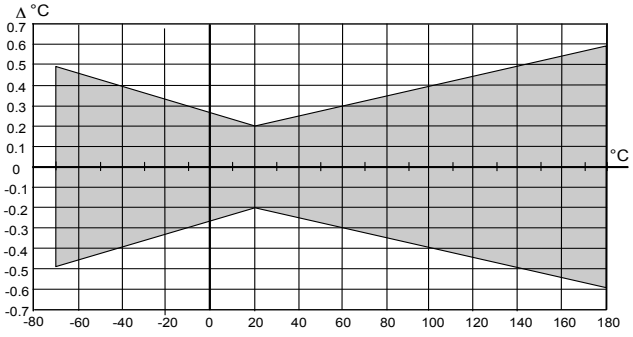
Measured values

RELATIVE HUMIDITY	
Measurement range	0 ... 100 %RH
Sensor	
Vaisala HUMICAP®180R	typical applications
Vaisala HUMICAP®180RC	applications with chemical purge and/or warmed probe
Accuracy (incl. non-linearity, hysteresis and repeatability) at a temperature range of	
+15 ... +25 °C	±1 %RH (0 ... 90 %RH) ±1.7 %RH (90 ... 100 %RH)
-20 ... +40 °C	±(1.0 + 0.008 x reading) %RH
-40 ... +180 °C	±(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 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
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)

Accuracy over temperature range (see graph below)



Typical temperature dependence of electronics	±0.05 °C/°C (±0.005 °F/°F)
Temperature sensor	Pt100 IEC751/3 class B

Electrical connections

Two analog outputs, selectable and scalable	0 ... 20 mA or 4 ... 20 mA
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-pole connector with RS-232C, current outputs (two channels) and U_{in}
Operating voltage	12 ... 35 VDC, the maximum operating voltage for a device with sensor heating is 24 VDC
Power consumption	30 mA with RS-232
External load	R_l < 500 Ohm
Startup time after powerup	3 s

General

Operating temperature range for electronics	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature range	-55 .... +80 °C (-67 ... +176 °C)
Operating pressure	
HMT314	0 ... 100 bar
HMT318	0 ... 40 bar
HMT315, HMT317	vapor tight
Transmitter housing material	G-AlSi10Mg
Transmitter base material	ABS/PC
Housing classification	IP65
Cable feed through alternatives	8-pole connector with 5 m cable, Female 8-pin connector screw joint for cable diameter 4 ... 8 mm
Sensor protection	PPS grid with stainless steel net, PPS grid, Sintered filter Membrane stainless steel filter

Complies with EMC standard EN61326-1, Industrial environment

Note: When using the current output, the RF field susceptibility level according to standard EN61000-4-3 with a frequency band of 110 ... 165 MHz, is only 3V/m (generic environment) with the specified accuracy.

HUMICAP® is a registered trademark of Vaisala.

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For more information, visit www.vaisala.com or contact us at sales@vaisala.com

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