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HMP110

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HMP110 Humidity and Temperature Probe



Features

- Miniature-size humidity transmitter
- Low power consumption and fast start-up for battery-powered applications
- Measurement range: 0–100 %RH; −40 ... +80 °C (−40 ... +176 °F)
- Cable detachable with standard M8 quick connector
- IP65 metal housing
- Compatible with Vaisala Insight PC software and Vaisala Indigo80 handheld indicator
- Optional RS-485 digital output supports Modbus® RTU
- ±1.5 %RH measurement accuracy (0–90 %RH)
- Temperature-only model HMP110T also available

Vaisala HUMICAP® Humidity and Temperature Probe HMP110 is a trouble-free and cost-effective humidity transmitter with high accuracy and good stability. It is suitable for volume applications or integration into other manufacturers' equipment. HMP110 is also suitable for glove boxes, greenhouses, fermentation and stability chambers, data loggers, and incubators.

Benefits

- Latest generation Vaisala HUMICAP® 180R sensor for best stability and high chemical tolerance
- Comes with calibration certificate
- Optional dew/frost point, wet bulb temperature, absolute humidity, mixing ratio, and enthalpy calculation

Easy installation

The probe cable has a screw-on quick connector for easy installation. Different cable lengths and accessories are available.

Low current consumption

HMP110 is suitable for battery-powered applications because of its very low current consumption. It also has a fast start-up time.

Several outputs

Temperature measurement is a standard feature in the HMP110, with dew/frost point temperature, wet bulb temperature, absolute humidity, mixing ratio, and enthalpy as optional calculated parameters. Three standard voltage outputs are available. An optional RS-485 output with Modbus support is also available.

Flexible connectivity

In addition to analog and digital (Modbus) output options, the probe can also be used with the Vaisala Indigo80 handheld indicator. For easy-to-use access to configuration and device analytics functionalities, the probe can be connected to Vaisala Insight software for Windows®. For more information, see www.vaisala.com/insight and www.vaisala.com/indigo80.

Robust design

The stainless steel body of HMP110 is classified as IP65, making it ideal for rough conditions. HMP110 has high chemical tolerance thanks to the HUMICAP® 180R sensor.

Technical data

Models

Model	Output	Special features
HMP110	RH+T	–
HMP110T	T	–
HMP110REF	–	Fixed output probe for validation of HMT120 and HMT130 transmitters

Measurement performance

Relative humidity	
Measurement range	0–100 %RH
Accuracy: [1]	
at 0 … +40 °C (+32 … +104 °F)	±1.5 %RH (0–90 %RH) ±2.5 %RH (90–100 %RH)
at −40 … 0 °C (−40 … +32 °F) and +40 … +80 °C (+104 … +176 °F)	±3.0 %RH (0–90 %RH) ±4.0 %RH (90–100 %RH)
Factory calibration uncertainty at +20 °C (+68 °F)	±1.1 %RH (0–90 %RH) ±1.8 %RH (90–100 %RH)
Humidity sensor types	HUMICAP® 180R
Stability	±2 %RH over 2 years
T_{90} response time	With plastic grid filter: approx. 17 s With membrane filter: approx. 20s With stainless steel sintered filter: approx. 60 s
Temperature	
Measurement range	−40 … +80 °C (−40 … +176 °F)
Accuracy (probes with analog output):	
at 0 … +40 °C (+32 … +104 °F)	±0.2 °C (±0.36 °F)
at −40 … 0 °C (−40 … +32 °F) and +40 … +80 °C (+104 … +176 °F)	±0.4 °C (±0.72 °F)
Accuracy (probes with digital output):	
at +15 … +25 °C (+59 … +77 °F)	±0.1 °C (±0.18 °F)
at 0 … +15 °C (+ 32 … +59 °F) and +25 … +40 °C (+77 … +104 °F)	±0.15 °C (±0.27 °F)
at −40 … 0 °C (−40 … +32 °F) and +40 … +80 °C (+104 … +176 °F)	±0.4 °C (±0.72 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751
Analog outputs	
Accuracy at +20 °C (+68 °F)	±0.2 % of FS
Temperature dependence	±0.01 % of FS/°C (±0.006 % of FS/°F)

1) Including non-linearity, hysteresis, and repeatability.

Operating environment

Operating temperature	−40 … +80 °C (−40 … +176 °F)
IP rating [1]	IP65

1) Not applicable with the plastic grid filter.

Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863
Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment
EMC emissions	CISPR 32 / EN 55032, Class B
Compliance marks	CE, RCM, UKCA

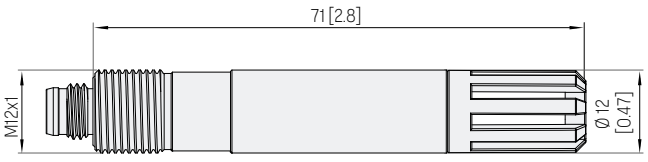
Inputs and outputs

Power consumption	1 mA average, max. peak 5 mA
Operating voltage [1]	
With 1 V / 2.5 V output	5–28 V DC
With 5 V output	8–28 V DC
With loop power converter	8–28 V DC
With digital output	5–28 V DC
Start-up time	
HMP110 probes with analog output	4 s at operating voltage 13.5–16.5 V DC 2 s at other valid operating voltages
HMP110 probes with digital output	1 s
Outputs	
2 channels	0–1 V DC / 0–2.5 V DC / 0–5 V DC / 1–5 V DC
1-channel loop-power converter (separate module, compatible with humidity accuracy only)	4–20 mA
Digital output (HMP110 probes with digital output)	RS-485 2-wire half duplex, supports Modbus RTU
External loads	
0–1 V	R_L min. 10 kΩ
Other voltage outputs	R_L min. 50 kΩ
Output parameters	
Relative humidity, temperature, dew/frost point temperature, wet bulb temperature, absolute humidity, mixing ratio, enthalpy	

1) Use lowest available operating voltage to minimize heating.

Mechanical specifications

Body thread	MI2×1 / 10 mm (0.4 in)
Cable connector	M8 4-pin female (IEC 60947-5-2)
Materials	
Body	Stainless steel (AISI 316)
Grid filter	Chrome coated ABS plastic
Cable	Polyurethane or FEP
Weight	
Probe	17 g (0.6 oz)
Probe with 0.3 m (1 ft) cable	28 g (1 oz)



Spare parts and accessories

Sensors	
Vaisala HUMICAP® 180R	HUMICAP180R
Vaisala HUMICAP® 180V	HUMICAP180V
Sensor protection	
Plastic grid filter	DRW010522SP
Membrane filter	DRW010525SP
Stainless steel sintered filter	HM46670SP
PTFE membrane filter with stainless steel grid	ASM212652SP
PTFE sintered filter	DRW244938SP
Probe installation	
Duct installation kit	215619
Probe mounting clamp set, 10-pcs	226067
Probe mounting flange	226061
Probe holder, 5 pcs	ASM213382SP
Plastic M12 installation nuts, pair	18350SP
Flat extension cable 1 m (3 ft) [1)]	CBL210649SP
Connection adapters	
4–20-mA loop power converter	UI-CONVERTER-1CB
Mounting bracket for converter	225979
USB cable for PC connection	219690
Connection cable for Indigo80 handheld indicator	262195SP
Connection cable for MI70 indicator	219980SP
Connection cables with open wires	
+60-°C 0.3-m (+140-°F 1-ft)	HMP50Z032SP
+60-°C 1.2-m (+140-°F 4-ft)	HMP50Z120
+60-°C 3-m (+140-°F 9.8-ft)	HMP50Z300SP
+80-°C 1.5-m (+176-°F 5-ft)	225777SP
+80-°C 3-m (+176-°F 10-ft)	225229SP
+180-°C 1.5-m (+356-°F 5-ft) FEP	238025
+180-°C 3-m (+356-°F 10-ft) FEP	226902SP

1) Connection cable 219980SP is also needed if this cable is used with MI70 indicator.

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