

## 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](http://www.vaisala.com/insight) and [www.vaisala.com/indigo80](http://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: <sup>1)</sup>	
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 <sub>90</sub> 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)

<sup>1)</sup> Including non-linearity, hysteresis, and repeatability.

## Operating environment

Operating temperature	-40 ... +80 °C (-40 ... +176 °F)
IP rating <sup>1)</sup>	IP65

<sup>1)</sup> 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

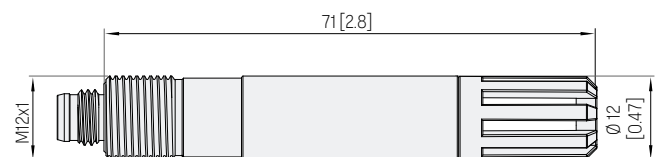
## Inputs and outputs

Power consumption	1 mA average, max. peak 5 mA
Operating voltage <sup>1)</sup>	
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 <sub>L</sub> min. 10 kΩ
Other voltage outputs	R <sub>L</sub> min. 50 kΩ
Output parameters	
Relative humidity, temperature, dew/frost point temperature, wet bulb temperature, absolute humidity, mixing ratio, enthalpy	

<sup>1)</sup> Use lowest available operating voltage to minimize heating.

## Mechanical specifications

Body thread	M12x1 / 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) <sup>1)</sup> CBL210649SP

### Connection adapters

4-20-mA loop power converter UI-CONVERTER-ICB

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

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