



# HUMICAP® Humidity and Temperature Probe HMP110



## 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
- Optional RS-485 digital output supports Modbus® RTU
- ±1.5 %RH measurement accuracy (0 ... 90 %RH)
- Temperature-only model HMP110T also available

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
- HMP110R replacement probe service available for easy maintenance
- Comes with calibration certificate
- Optional dew 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 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.

## 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.

## Easy maintenance

Maintaining measurement traceability is easy using the HMP110R replacement probe. We send you a replacement probe, you detach the old probe and send it back to us. This way the measurement is available at all times without interruptions.

# Technical data

## Models

Model	Output	Special features
HMP110	RH+T	
HMP110T	T	
HMP110R	RH+T	Replacement probe for HMP110
HMP110REF	-	Fixed output probe for validation of HMT120 and HMT130 transmitters

## Measurement performance

### Relative humidity

Measurement range	0 ... 100 %RH
Accuracy: <sup>1) 2)</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 <sup>®</sup> 180R HUMICAP <sup>®</sup> 180V
Stability	±2 %RH over 2 years

### 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
<b>Analog outputs</b>	
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.

<sup>2)</sup> With HUMICAP<sup>®</sup> 180V sensor, accuracy is not specified below -20 °C (-4 °F) operating temperature.

## Operating environment

Operating temperature	-40 ... +80 °C (-40 ... +176 °F)
EMC compliance	EN 61326-1, industrial environment

## 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 VDC

With 5 V output 8 ... 28 VDC

With loop power converter 8 ... 28 VDC

With digital output 5 ... 28 VDC

### Start-up time

HMP110 probes with analog output 4 s at operating voltage 13.5 ... 16.5 VDC  
2 s at other valid operating voltages

HMP110 probes with digital output 1 s

### Outputs

2 channels 0 ... 1 VDC / 0 ... 2.5 VDC / 0 ... 5 VDC / 1 ... 5 VDC

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

0 ... 2.5 V / 0 ... 5 V R<sub>L</sub> min 50 kΩ

### Output parameters

Relative humidity, temperature, dew point temperature, wet bulb temperature, absolute humidity, mixing ratio, enthalpy

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

## Mechanical specifications

IP rating IP65 <sup>1)</sup>

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

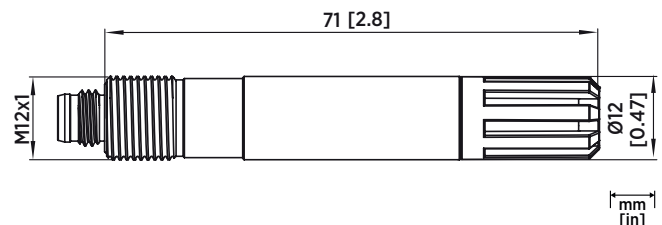
Cable Polyurethane or FEP

### Weight

Probe 17 g (0.6 oz)

Probe with 0.3 m (1 ft) cable 28 g (1 oz)

<sup>1)</sup> Applicable with stainless steel sintered filter and PTFE sintered filter only.



HMP110 and HMP110T probe dimensions

## 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

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

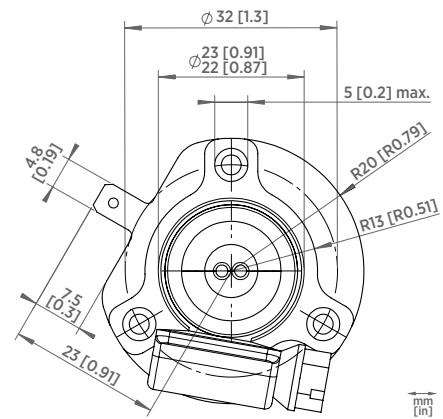
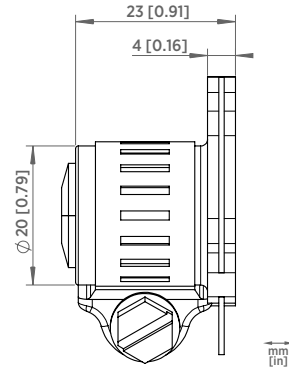
### Connection adapters

4 ... 20 mA loop power converter	UI-CONVERTER-1CB
Mounting bracket for converter	225979
USB cable for PC connection	219690
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.



Probe mounting flange, side and front view

