



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
- 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.



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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: ^{1) 2)} | |
| 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 HUMICAP® 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 |
| 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.

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

Operating environment

| | |
|-------------------------------------|------------------------------------|
| Operating temperature | -40 ... +80 °C (-40 ... +176 °F) |
| IP rating | IP65 ¹⁾ |
| Electromagnetic compatibility (EMC) | EN 61326-1, industrial environment |

¹⁾ Applicable with stainless steel sintered filter and PTFE sintered filter only.

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

0 ... 2.5 V / 0 ... 5 V R_L min. 50 kΩ

Output parameters

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

¹⁾ 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)

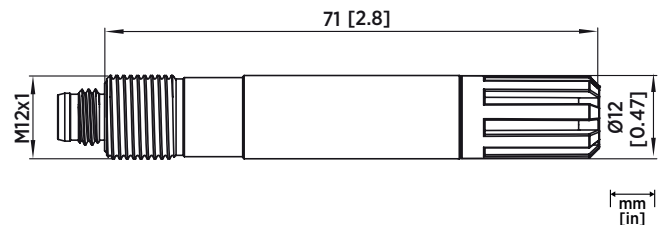
Grid filter Chrome coated ABS plastic

Cable Polyurethane or FEP

Weight

Probe 17 g (0.6 oz)

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



HMP110 and HMP110T probe dimensions



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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) ¹⁾ | CBL210649SP |

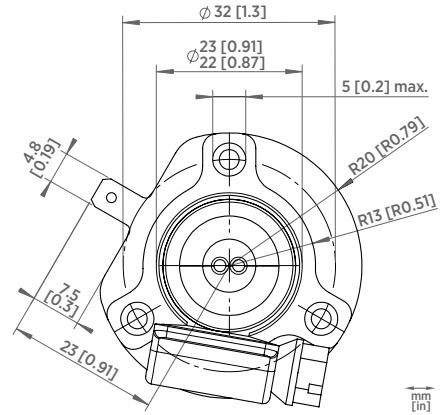
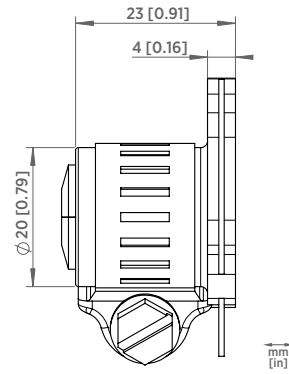
Connection adapters

| | |
|-------------------------------------|------------------|
| 4 ... 20-mA loop power converter | UI-CONVERTER-ICB |
| Mounting bracket for converter | 225979 |
| USB cable for PC connection | 219690 |
| Connection cable for 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



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