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)

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 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

The temperature measurement is a standard feature, dew point measurement is optional. 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. Thus, it survives 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

### Measurement Performance

#### Relative Humidity

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>0 ... 100 %RH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy at 0 ... +40 °C (+32 ... +104 °F) (Incl. Non-Linearity, Hysteresis and Repeatability):</td>
<td>±1.5 %RH</td>
</tr>
<tr>
<td>0 ... 90 %RH</td>
<td>±1.5 %RH</td>
</tr>
<tr>
<td>90 ... 100 %RH</td>
<td>±2.5 %RH</td>
</tr>
<tr>
<td>Accuracy at -40 ... 0 °C, +40 ... +80 °C (40 ... +32 °F, +104 ... +176 °F) (Incl. Non-Linearity, Hysteresis and Repeatability):</td>
<td>±3.0 %RH</td>
</tr>
<tr>
<td>0 ... 90 %RH</td>
<td>±3.0 %RH</td>
</tr>
<tr>
<td>90 ... 100 %RH</td>
<td>±4.0 %RH</td>
</tr>
<tr>
<td>Factory Calibration Uncertainty (+20 °C (+68 °F)):</td>
<td>±1.1 %RH</td>
</tr>
<tr>
<td>0 ... 90 %RH</td>
<td>±1.1 %RH</td>
</tr>
<tr>
<td>90 ... 100 %RH</td>
<td>±1.8 %RH</td>
</tr>
</tbody>
</table>

#### Humidity sensor
- Vaisala HUMICAP® 180R

#### Stability
- ±2 %RH over 2 years

### Temperature

#### Measurement range
- -40 ... +80 °C (-40 ... +176 °F)

#### Accuracy over Temperature Range (Probes with Analog Output):
- ±0.2 °C (±0.36 °F) when dew point depression < +15 °C (59 °F)
- ±0.4 °C (±0.72 °F) when dew point depression ≥ +15 °C (59 °F)

#### Accuracy over Temperature Range (Probes with Digital Output):
- ±0.1 °C (±0.18 °F) when dew point depression < +15 °C (59 °F)
- ±0.15 °C (±0.27 °F) when dew point depression ≥ +15 °C (59 °F)

#### Temperature sensor
- Pt1000 RTD Class F0.1 IEC 60751

### Dew Point

#### Measurement range
- -40 ... +80 °C (-40 ... +176 °F)

#### Accuracy at 0 ... +40 °C (+32 ... +104 °F) (Incl. Non-Linearity, Hysteresis and Repeatability):
- ±1 °C (±33.8 °F) when dew point depression < +15 °C (59 °F)
- ±2 °C (±35.6 °F) when dew point depression ≥ +15 °C (59 °F)

#### Analog Outputs

| Accuracy at +20 °C (+68 °F) | ±0.2 % of FS |
| Temperature dependence | ±0.01 % of FS/°C (±0.006 % of FS/°F) |

### 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

- 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
- HMP110 probes with digital output: 1 s

#### Outputs

- 2 channels
- 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 = 10 kΩ
- 0 ... 2.5 V: R = 50 kΩ

1) Use lowest available operating voltage to minimize heating.

### Mechanical Specifications

| IP rating | IP65 |
| Body thread | M12 x 1 / 10 mm (0.4 in) |
| Cable connector | 4-pin M8 (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

- UI-CONVERTER-ICB
- Mounting bracket for converter: 225979
- Plastic M12 installation nuts, pair: 18350SP
- USB cable for PC connection: 219690
- Probe mounting clamp set, 10 pcs: 226067
- Probe mounting flange: 226061
- Plastic grid: DRW010522SP
- Membrane filter: DRW010525SP
- Stainless steel sintered filter: DRW46670SP
- PTFE sintered filter: DRW244938SP
- Connection cables:
  - Standard 0.3 m (1 ft): HMP502032SP
  - Standard 3 m (9.8 ft): HMP502030SP
  - +80 °C 1.5 m (+176 °F 5 ft): 225777SP
  - +80 °C 3 m (+176 °F 10 ft): 225229SP
  - +180 °C 3 m (+356 °F 10 ft) FEP: 226902SP
  - Connection cable for HM70: 219980SP

### Connection Cables

- 4 ... 20 mA loop power converter: UI-CONVERTER-ICB
- Mounting bracket for converter: 225979
- Plastic M12 installation nuts, pair: 18350SP
- USB cable for PC connection: 219690
- Probe mounting clamp set, 10 pcs: 226067
- Probe mounting flange: 226061

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1) Connecting HMP110 to HM70 requires using both flat cable CBL210649SP and connection cable 209980SP.