HMT310 incorporates the latest generation Vaisala HUMICAP® sensor. The sensor is a capacitive thin-film polymer sensor providing high accuracy, excellent long-term stability, and negligible hysteresis. It is insensitive to dust, particulate dirt, and most chemicals. HMT310 has various options for different environments and measurements.

**Features**
- 4th generation Vaisala HUMICAP® sensor for superior accuracy and stability
- Full 0 ... 100 %RH measurement, temperature range up to +180 °C (+356 °F), depending on model
- Small size, easy to integrate
- Insensitive to dust and most chemicals
- Two analog signals and RS-232 ASCII output
- Pressure tolerance up to 100 bar

**HMT310**

- **Several Outputs, One Connector**
  - HMT310 is powered up with 10 ... 35 VDC. It has two analog outputs and an RS-232 serial output in one M12 8-pin connector. The output signal and the supply power travel in the same cable, the only cable connected to the unit.

- **Chemical Purge**
  - Chemical purge helps to maintain measurement accuracy between calibration intervals. It involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

- **A Variety of Features to Choose From**
  - The following optional features and accessories are available for the HMT310 series:
    - Warmed probe and sensor heating for high humidity conditions
    - Chemical purge for applications risking an interference with chemicals in the measuring environment
    - Calculated humidity quantities
    - Sensor protection options and probe cable lengths
    - Mounting kits
    - Rain shield

- **Six Models for Demanding Applications**
  - The HMT310 series includes:
    - HMT311 for wall mounting
    - HMT313 for duct mounting and tight spaces
    - HMT314 for high pressures up to 100 bar and vacuum conditions
    - HMT315 for high temperatures
    - HMT317 for high humidity applications, warmed probe option
    - HMT318 for pressurized pipelines up to 40 bar
Technical Data

Measurement Performance

Relative Humidity

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>0 … 100 %RH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response time (90 %) at +20 °C (+68 °F) in 0.1 m/s air flow</td>
<td>17 s with grid filter</td>
</tr>
<tr>
<td>50 s with grid and steel, netting filter</td>
<td></td>
</tr>
<tr>
<td>60 s with sintered filter</td>
<td></td>
</tr>
<tr>
<td>Factory calibration uncertainty (+20 °C)</td>
<td>±0.6 %RH (0 … 40 %RH)</td>
</tr>
<tr>
<td>±1.0 %RH (40 … 97 %RH)</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1 %RH (0 … 90 %RH)</td>
</tr>
<tr>
<td>±1.7 %RH (90 … 100 %RH)</td>
<td></td>
</tr>
<tr>
<td>at +15 ... +25 °C (+59 ... +77 °F)</td>
<td>±(1.0 + 0.008 x reading) %RH</td>
</tr>
<tr>
<td>at +40 ... +70 °C (+104 ... +158 °F)</td>
<td>±(1.5 + 0.015 x reading) %RH</td>
</tr>
</tbody>
</table>

Humidity Sensor Types

- **HUMICAP® 180R**: Typical applications
- **HUMICAP® 180RC**: Applications with chemical purge/warmed probe
- **HUMICAP® 180V**: Catalytic sensor for H₂O₂ environments
- **HUMICAP® 180VC**: Catalytic sensor with chemical purge for H₂O₂ environments

Temperature

- **HMT311**: −20 ... +60 °C (−4 ... +140 °F)
- **HMT313**: −20 ... +80 °C (−4 ... +176 °F) or −40 ... +120 °C (−40 ... +248 °F)
- **HMT314, HMT315, HMT317, HMT318**: −70 ... +180 °C (−94 ... +356 °F)

Typical accuracy at +20 °C (+68 °F)

| ±0.2 °C (±0.36 °F) |

Temperature sensor

P100 RTD Class F0.1 IEC 60751

Accuracy Over Temperature Range

Inputs and Outputs

Two analog outputs, selectable and scalable

| 0 ... 20 mA or 4 ... 20 mA |
| 0 ... 5 V or 0 ... 10 V |
| 1 ... 5 V available through scaling |

Typical accuracy of analog output at +20 °C

±0.05 % full scale

Typical temperature dependence of analog output

0.005 %/°C (0.003 %/°F) of full scale

Serial output

RS-232

Connections

M12 8-pin male connector with RS-232C, current/voltage outputs (two channels)

Operating voltage

10 ... 35 V DC

External load

R<sub>L</sub> < 500 Ω

Startup time after power-up

3 s

Minimum Operating Voltage

- **RS-232 output**: 10 V DC
- **Analog output**: 15 V DC
- **Probe heating and chemical purging**: 15 V DC
- **Pressures above 10 bara (145 psia)**: 24 V DC

Power Consumption

- **RS-232**: 12 mA
- **U<sub>out</sub>**: 10 V (10 kΩ) channel 1 & channel 2: 12 mA
- **I<sub>out</sub>**: 20 mA (load 511 Ω) channel 1 & channel 2: 50 mA
- **Chemical purge at 24 VDC**: +220 mA
- **Warmed probe at 24 VDC**: +240 mA

Mechanical Specifications

- **Transmitter housing material**: G-AlSi10Mg
- **Transmitter base material**: PPS
- **IP rating**: IP66
- **Probe cable length**: 2, 5, or 10 m (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
- **Cable feed through alternatives**: M12 8-pin male connector with 5 m cable, or 8-pin female screw terminal connector for cable diameter 4 ... 8 mm
- **Sensor protection**: PPS grid with stainless steel net, PPS grid, sintered filter, membrane stainless steel filter, H₂O₂ filter

Spare Parts and Accessories

- **Rain shield**: ASM211103
- **USB cable**: ZB8607
- **PPS plastic grid with stainless steel netting**: DRW010281SP
- **PPS plastic grid filter**: DRW010276SP
- **Sintered filter AISI 316L**: HM47280SP
- **Stainless steel filter**: HM47453SP
- **Stainless steel filter with membrane**: ZI48485SP
- **Catalytic H₂O₂ filter**: ZI3085
Dimensions in mm [in]

HMT313 Probe

HMT314 Probe

HMT315 Probe

HMT317 Probe

HMT318 Probe

HMT310 Transmitter Body

Lengths for standard/optional probes
* Freely user-adjustable length

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