Vaisala HUMICAP® Humidity and Temperature Module HMM170 is an open frame OEM module for integration into demanding environmental chambers and harsh conditions. The module provides a digital RS-485/Modbus RTU output and three freely configurable analog output channels. The module provides relative humidity, temperature, dew point, and other calculated parameters.

**Designed for Harsh Environments**

HMM170 probe covers the full temperature range -70 ... +180 °C (-94 ... +356 °F) used in climate chambers and the whole humidity range up to condensation. The small probe and compact component board offer easy and flexible installation. The probe cable options (2, 5, or 10 m (6.5, 16.4, or 32.8 ft)) offer excellent cost optimization and flexibility to any OEM application. By ordering HMM170 with the appropriate sensor, you can use the module in environments that are frequently sterilized with vaporized hydrogen peroxide (H₂O₂) or to measure humidity in oil medium, for example, for transformer and engine monitoring applications.

**Robust Sensor Technology**

The latest general purpose HUMICAP® R2 sensor has an improved corrosion resistance. The sensor can tolerate typical chemicals, such as cleaning agents used in climate chambers. The automatic sensor chemical purge function keeps the sensor clean from typical chemical fumes and the additional probe warming function prevents condensation. In case HMM170 gets in contact with water, the automatic heating rapidly dries the sensor to enable fast and accurate humidity measurement.

**Convenient to Use**

HMM170 is easy to install and convenient to use. It provides both digital and analog outputs for multiple needs. An integrated service port enables a quick and simple way to configure, check, and calibrate the module with the help of a USB cable and Vaisala Insight software.
**Technical Data**

**Measurement Performance**

**Relative Humidity**

- **Measurement range**: 0 ... 100 %RH
- **Accuracy**
  1. **at +15 °C ... +25 °C (59 ... +77 °F)**: ±1 %RH (0 ... 90 %RH), ±1.7 %RH (90 ... 100 %RH)
  2. **at -20 °C ... +40 °C (-4 ... +104 °F)**: ±1.0 %RH (0 ... 90 %RH), ±1.7 %RH (90 ... 100 %RH)
  3. **Factory calibration uncertainty at +20 °C (+68 °F)**: ±0.6 %RH (0 ... 40 %RH), ±1.0 %RH (40 ... 90 %RH), ±1.1 %RH (90 ... 95 %RH)

**Humidity sensor types**
- Vaisala HUMICAP® R2C
- Vaisala HUMICAP® 180L2
- Vaisala HUMICAP® 180VC

**Response time (90 %) at +20 °C (+68 °F) in 0.1 m/s air flow with Vaisala HUMICAP® R2C sensor:**
- with steel netting filter: 50 s
- with sintered filter: 60 s

**Temperature**

- **Measurement range**: -70 ... +180 °C (-94 ... +356 °F)
- **Temperature sensor**: Pt100 RTD Class F0.1 IEC 60751
- **Typical accuracy at +20 °C (+68 °F)**: ±0.2 °C (±0.36 °F)

1) Including non-linearity, hysteresis and repeatability.
2) Defined as ±2 standard deviation limits. Small variations possible; see also calibration certificate.

---

**Component Board Dimensions**

**Probe Head Dimensions**

**Inputs and Outputs**

- Three analog outputs (selectable and scalable): 0 ... 20 mA, 4 ... 20 mA, 0 ... 1 V, 0 ... 5 V, 1 ... 5 V, or 0 ... 10 V

- **Typical accuracy of analog output** at +20 °C (+68 °F): ±0.05 % full scale

- **Typical temperature dependence of analog output**: 0.005 %/°C (0.003 %/°F) full scale

- **Digital output**: RS-485 serial, Modbus

- **Service port**: M8 connector for USB cable

- **Operating voltage**: 15 ... 35 VDC

**Power Consumption**

- **Analog outputs**
  - 12 mA (voltage)
  - 50 mA (current)
- **Chemical purge at 24 VDC**: +220 mA
- **Warmed probe at 24 VDC**: +240 mA
- **External load**: $R_L < 500 \Omega$
- **Start-up time**: 3 s at power-up
- **Maximum wire size**: 0.5 ... 1.5 mm² (AWG)

---

Published by Vaisala | B211766EN-B © Vaisala 2019

All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. Any reproduction, transfer, distribution or storage of information contained in this document is strictly prohibited. All specifications — technical included — are subject to change without notice.