The Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 is designed for demanding industrial applications where stable measurements and extensive customization are essential. With multiple options to choose from, the instrument can be tailored to meet the specific needs of each individual application.

**Proven Vaisala HUMICAP® Performance**
The HMT330 series incorporates Vaisala’s 40 years of experience in industrial humidity measurement. The updated fourth-generation HUMICAP sensor provides accurate and stable measurement even in environments with high humidity or chemical contaminants.

**Chemical Purge Minimizes Effects of Contaminants**
In environments with high concentrations of chemicals and cleaning agents, the chemical purge option helps to maintain measurement accuracy between calibration intervals. The chemical purge involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.
Wide Range of Installation Options

The wide variety of measurement probes, several installation accessories, and universal mains and DC power options make the instruments easy to install in various locations and kinds of environment; walls, poles, pipelines, and ducts, for example. The input/output cable can be fed through the back of the transmitter, which is a useful feature, especially for cleanroom installations.

The HMT330 series includes six models:

- HMT331 for wall-mounted applications
- HMT333 for ducts and tight spaces
- HMT334 for high-pressure and vacuum applications
- HMT335 for high-temperature applications
- HMT337 for high-humidity applications
- HMT338 for pressurized pipelines

With multiple options to choose from, including local display, the HMT300 series can be tailored to meet the specific needs of each individual application. This device is designed to integrate seamlessly with the Vaisala viewLinc Environmental Monitoring System, which is a Part 11/Annex 11 compliant software that can be easily implemented following the GAMP5 guidelines.

Graphical Display of Measurement Data and Trends for Convenient Operation

The HMT330 series features an optional numerical and graphical display with a multilingual menu and keypad. It allows users to easily monitor operational data, measurement trends, and access measurement history for the past 12 months.

The optional data logger, with real-time clock, makes it possible to generate over four years of measurement history, and zoom in on any desired time or time frame.

The display alarm allows any measured parameter to be tracked, with freely configurable low and high limits.

Versatile Outputs and Data Collection

The HMT330 can support up to three analog outputs; an isolated galvanic power supply and relay outputs are also available.

For serial interface the USB service cable, RS232, and RS485/422 can be used.

HMT330 is also capable of applying the MODBUS communication protocol and, together with an appropriate connection option, provides either MODBUS RTU (RS485) or MODBUS TCP/IP (Ethernet) communication.

The data logger, with real-time clock and battery backup, guarantees reliable logging of measurement data for over four years. The recorded data can be viewed on the local display or transferred to a PC with Microsoft Windows® software. The transmitter can also be connected to a network with an optional (W)LAN interface, which enables a (wireless) Ethernet connection. A USB service cable makes it easy to connect the HMT330 to a PC via the service port.

Flexible Calibration

The HMT330 instruments are calibrated at five humidity points at the factory and come with a calibration certificate that meets all the relevant traceability and compliance requirements.

A quick, one-point field calibration can be performed with the handheld HM70 meter. A two-point field calibration can be performed, for example, with the HMK15 salt bath calibrator in a controlled environment. The transmitter can also be sent to Vaisala for recalibration, and accredited ISO/IEC17025 calibrations and special calibrations are available.
Technical Data

**Performance**

**RELATIVE HUMIDITY**

**Measurement range** 0 ... 100 %RH

**Accuracy (including non-linearity, hysteresis, and repeatability)**

- with Vaisala HUMICAP® 180 or 180R* for typical applications
- with Vaisala HUMICAP® 180C or 180RC* for applications with chemical purge/warmed probe
- with Vaisala HUMICAP® 180VC catalytic sensor with chemical purge for H₂O environments

<table>
<thead>
<tr>
<th>Temperature range</th>
<th>±1 %RH (0 ... 90 %)</th>
<th>±1.7 %RH (90 ... 100 %RH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+15 ... +25 °C (59 ... +77 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-20 ... +40 °C (4 ... +104 °F)</td>
<td>±(1.0 + 0.008 x reading) %RH</td>
<td>±(1.5 + 0.015 x reading) %RH</td>
</tr>
<tr>
<td>-40 ... +180 °C (-40 ... +356 °F)</td>
<td>±0.6 %RH (0 ... 40 %RH)</td>
<td>±1.0 %RH (40 ... 97 %RH)</td>
</tr>
</tbody>
</table>

Factory calibration uncertainty (+20 °C)

- ±0.6 %RH (0 ... 40 %RH)
- ±1.0 %RH (40 ... 97 %RH)

*Defined as ±2 standard deviation limits. Small variations possible; see also calibration certificate.*

**Response time (90%) at +20 °C (+68 °F)**

- 8 s/17 s** with grid filter in still air
- 20 s/50 s** with grid + steel netting filter
- 40 s/60 s** with sintered filter

**TEMPERATURE**

**Accuracy at +20 °C (+68 °F)** ± 0.2 °C (± 0.36 °F)

**Accuracy over temperature range** (measurement range depends on model)

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**Technical Data**

**Inputs and Outputs**

**Operating voltage** 10 ... 35 VDC, 24 VAC ±20% with optional power supply module

**Power consumption at +20 °C (U_{in} 24 VDC)**

- RS232 max. 25 mA
- L_{out} 2 x 0 ... 1 V/0 ... 5 V/0 ... 10 V max. 20 mA
- display and backlight + 20 mA
- during chemical purge max. 60 mA
- during probe heating (HMT337) + 120 mA

**Analog outputs (2 standard, 3rd optional)**

- current output 0 ... 20 mA, 4 ... 20 mA
- voltage output 0 ... 1 V, 0 ... 5 V, 0 ... 10 V

**Accuracy of analog outputs at +20 °C** ±0.05% full scale

**Temperature dependence of the analog outputs** ±0.005%/°C full scale

**External loads**

- current outputs R_i < 500 ohm
- 0 ... 1 V output R_i > 2 kohm
- 0 ... 5 V and 0 ... 10 V outputs R_i > 10 kohm

**Max. wire size** 0.5 mm² (AWG 20)

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**Optional data logger with real-time clock**

- Logged parameters max. four with trend/min/max values
- Logging interval max. 4 years, 5 months
- Logged points 13.7 million points per parameter
- Battery lifetime min. 5 years

**Display** LCD with backlight, graphical trend display of any parameter

**Menu languages** English, Chinese, Finnish, French, German, Japanese, Russian, Spanish, Swedish

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**Other available variables** (model-dependent)

- dew point temperature, mixing ratio, absolute humidity, wet bulb temperature, enthalpy, water vapor pressure
**Mechanics**

- **Cable bushing**: M20 x 1.5 for cable diameter 8 ... 11 mm/0.31 ... 0.43”
- **Conduit fitting**: 1/2” NPT
- **User cable connector (optional)**: M12 series 8-pin (male)
  - option 1: female plug with 5 m (16.4 ft.) black cable
  - option 2: female plug with screw terminals
- **Probe cable diameter**:
  - HMT333 (+80 °C): 6.0 mm
  - other probes: 5.5 mm
- **Standard probe cable lengths**: 2 m, 5 m or 10 m
  (Additional lengths available, please see order forms for details)
- **Housing material**: G-AlSi 10 Mg (DIN1725)
- **Housing classification**: IP 66
  - IP65 (NEMA4X) with local display
- **Weight**: depending on selected probe, cable and modules 1.0 - 3.0 kgs

**Operating Environment**

- **Operating temperature**
  - for probe: same as measurement range
  - for transmitter body: -40 ... +60 °C (-40 ... 140 °F)
  - with display: 0 ... +60 °C (32 ... 140 °F)
- **Electromagnetic compatibility**: Complies with EMC standard EN61326-1, Industrial Environment
  - Note: Transmitter with display test impedance of 40 ohm is used in IEC61000-4-5 (Surge immunity)

**Dimensions**

Dimensions in mm (inches)

<table>
<thead>
<tr>
<th>Transmitter with WLAN antenna</th>
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</thead>
<tbody>
<tr>
<td>Dimensions in mm (inches)</td>
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<tr>
<td>--------------------------------</td>
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<tr>
<td>77 (3.0)</td>
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</tbody>
</table>

**Mounting Options**

- **Mounting with Wall Mounting Kit**
- **Mounting with DIN Rail Installation Kit**
- **Pole Installation with Installation Kit for Pole or Pipeline**
- **Mounting Rain Shield with Installation Kit**

*not mandatory for wall installations*
**HMT331 Humidity and Temperature Transmitter for Demanding Wall-Mounted Applications**

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT331 is a high-quality wall-mounted transmitter for demanding HVAC and condition-monitoring applications.

**Typical Applications**
- cleanrooms
- pharmaceutical processes
- swimming halls
- museums and archives

**Technical Data**

| Temperature measurement range | -40 ... +60 °C (-40 ... +140 °F) |

**Accessories**
- USB service port cable with PC software 219916
- Connection cable for HM70 211339
- Wall mounting plate (plastic) 214829
- Pole installation kit with rain shield 215109
- DIN rail installation set 215094
- PPS plastic grid filter with stainless steel net DRW010281SP
- Stainless steel sintered filter HM47280SP

**Flexible Installation**

To install the probe in ducts, channels, and through walls, an installation kit is available with a stainless steel flange, lead-through piece, and steel support bar.

The HMT333 has two probe cable options – a flexible rubber cable that withstands temperatures of up to +80 °C, and a durable cable that withstands temperatures of up to +120 °C. Both cable options are available in lengths of 2, 5, and 10 meters. Additionally, flexible rubber cable (+80 °C) is available in 20-meter lengths.

For outdoor environments, the DTR502B solar radiation shield provides protection for the probe. The shield can be installed on a pole, beam, or flat surface.

**HMT333 Humidity and Temperature Transmitter for Ducts and Tight Spaces**

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT333 is a versatile instrument for applications where a small remote probe is needed, for example in demanding HVAC applications. Its small thermal mass enables rapid response to temperature changes.

**Typical Applications**
- cleanrooms
- pharmaceutical processes
- environmental chambers
- processes with moderate temperature and humidity

**Technical Data**

| Temperature measurement range | -40 ... +80 °C (-40 ... +176 °F) or -40 ... +120 °C (-40 ... +248 °F) |

**Accessories**
- Duct installation kit 210697
- Cable gland with split seal HMP247CG
- USB service port cable with PC software 219916
- Connection cable for HM70 211339
- Wall-mounting plate (plastic) 214829
- Pole installation kit with rain shield 215109
- Solar radiation shield DTR502B
- DIN rail installation set 215094
- PPS plastic grid filter with stainless steel net DRW010281SP
- Stainless steel sintered filter HM47280SP
The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT334 is designed for humidity measurement in pressurized spaces or vacuum chambers. Every probe is tested for gas and vacuum-tight installation. The HMT334 is ideal for permanent installations in pressurized or vacuum processes.

Typical Applications
- test chambers
- high-pressure and vacuum processes

Technical Data
- Temperature measurement range: -70 to +180 °C (-94 to +356 °F)
- Operating pressure: 0 to 10 MPa (0 to 100 bar)

Accessories
- Mounting flange 210696
- USB service port cable with PC software 219916
- Connection cable for HM70 211339
- Wall-mounting plate (plastic) 214829
- Pole installation kit with rain shield 215109
- DIN rail installation set 215094
- PPS plastic grid filter with stainless steel net DRW010281SP
- PPS plastic grid filter DRW010276SP
- Stainless steel sintered filter HM47280SP
- Stainless steel grid filter HM47453SP

HMT335 Humidity and Temperature Transmitter for High Temperatures

The HMT335 has a robust stainless steel probe, ideal for hot processes with high flow rates.

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT335 has a long stainless steel probe designed for high temperatures.

Robust Probe Ideal for High Flow Rates
With high tolerance for mechanical stress and high flow rates, the HMT335 is ideal for duct measurements. The stainless steel installation flange allows easy adjustment of the probe's installation depth.

Typical Applications
- hot drying processes
- food processes, e.g. baking ovens

Technical Data
- Temperature measurement range: -70 to +180 °C (-94 to +356 °F)

Accessories
- Mounting flange 210696
- USB service port cable with PC software 219916
- Connection cable for HM70 211339
- Wall-mounting plate (plastic) 214829
- Pole installation kit with rain shield 215109
- DIN rail installation set 215094
- PPS plastic grid filter with stainless steel net DRW010281SP
- PPS plastic grid filter DRW010276SP
- Stainless steel sintered filter HM47280SP
- Stainless steel grid filter HM47453SP
The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT337 is delivered in one of three configurations:

- Basic, with a non-warmed probe for moderate humidity
- With a warmed probe, for near-condensing conditions and dew point measurement
- With a warmed probe and an additional temperature sensor, for near-condensing conditions and relative humidity measurement

**True Humidity Readings in Condensation Conditions**

Vaisala’s unique warmed probe provides fast and reliable measurement in environments where humidity is near saturation. The heating prevents condensation from forming on the sensor.

As the probe is heated, the humidity level inside it stays below the ambient level. With accurate temperature measurement, the ambient dew point can be calculated precisely.

If the relative humidity value is needed, an additional temperature sensor is used. The measured ambient temperature provides the compensation for calculating relative humidity and other humidity parameters.

**Installation Options**

Tight installation through a process wall can be achieved with Swagelok® fittings. The optional HMT330MIK Installation Kit is available for outdoor installations; duct installation kits are also available.

**Technical Data**

| Temperature measurement range | -70 ... +180 °C (-94 ... +356 °F) |

**Accessories**

- Cable gland and AGRO HMP247CG
- Duct installation kit (RH probe) 210697
- Duct installation kit (T probe) 215003
- Swagelok fittings (NPT and ISO) for both RH and T probes (up to 10 bar) 214829
- Solar radiation shield DTR502B
- Meteorological installation kit HMT330MIK
- USB service port cable with PC software 219916
- Connection cable for HM70 211339
- Wall-mounting plate (plastic) 214829
- Pole installation kit with rain shield 215109
- DIN rail installation set 215094
- Warmed probe accessory HMT330WPA
- PPS plastic grid filter with stainless steel net DRW010281SP
- PPS plastic grid filter DRW010276SP
- Stainless steel sintered filter HM47280SP
- Stainless steel grid filter HM47453SP

*for more installation accessories, check the order form
The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT338 is designed for pressurized processes.

**Insert or Remove the Probe while the Process is Running**

With “hot tapping”, the probe is inserted directly into the process while it is running, without the need for venting or lowering the process pressure. The probe is tightened to a ball-valve assembly fixed to the process pipe or wall. The adjustable hex nut is hand-tightened to temporarily hold the probe in place. The probe is then pushed down to the appropriate depth. The hex nut is then tightened with a wrench to lock the probe in place. Hot tapping is possible in pressures up to 10 bar.

**Typical Applications**
- process lines
- environmental chambers
- vacuum-drying processes
- compressed air lines with refrigerant dryers

**Technical Data**
- Temperature measurement range: -70 ... +180 °C (-94 ... +356 °F)
- Operating pressure: 0 ... 4MPa (0 ... 40 bar)

**Accessories**
- Ball-valve set: BALLVALVE-1
- Pressure fitting ISO 1/2 to NPT 1/2: 210662
- USB service port cable with PC software: 219916
- Connection cable for HM70: 211339
- Wall-mounting plate (plastic): 214829
- Pole installation kit with rain shield: 215109
- DIN rail installation set: 215094
- PPS plastic grid filter with stainless steel net: DRW010281SP
- PPS plastic grid filter: DRW010276SP
- Stainless steel sintered filter: HM47280SP
- Stainless steel grid filter: HM47453SP
Dimensions of the Probes for the HMT330 Series

Dimensions in mm (inches)

HMT331 probe

HMT335 probe

HMT338 probe

HMT333 probe

HMT337 RH probe

HMT334 probe

HMT337 T probe

Installation flange

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Dimensions for HMT331 probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for HMT333 probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for HMT3337 RH probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for HMT334 probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for HMT335 probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for HMT337 T probe:
- ø 12 (0.47)
- 37.5 (1.48)
- 78.5 (3.09)
- 98.5 (3.92)

Dimensions for Installation flange:
- ø 75 (2.95)
- 90°