HMT330 Series Humidity and Temperature Transmitters for Industrial Applications

The HMT330 transmitter family has the solution for demanding industrial humidity measurements.

Features/Benefits

- Six models for demanding industrial applications
- Full 0...100 %RH measurement, temperature range up to +180 °C (+356 °F), depending on model
- Pressure tolerance up to 100 bar (depending on model)
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- Shows measurement trends and 1-year history graphically
- Multilingual user interface
- Excellent performance in harsh chemical concentrations
- Corrosion resistant IP65 housing
- NIST traceable (certificate included)

The Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT330 is designed for demanding industrial applications where stable measurement and wide customization possibilities are important.

Vaisala HUMICAP® performance

The HMT330 series incorporates Vaisala's 30 years of experience in industrial humidity measurement. The sensor measures accurately and reliably and is immune to particulate contamination and most chemicals.

Chemical purge minimizes effects of contaminants

In environments with high concentrations of chemicals and cleaning agents, chemical purge helps to maintain the accuracy between calibration intervals.

Chemical purge involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

Graphical measurement trend and history display

The HMT330 can be ordered with a large numerical and graphical display, allowing the user to easily monitor measurement trends and 1-year history.

Data collection and transfer to PC

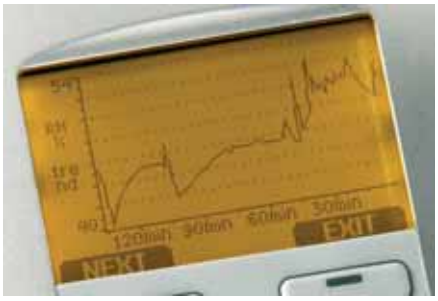
The recorded measurement data can be viewed on the display or transferred to PC with Windows®-based software.

Many ways to install

Mains and DC power options, and several mounting accessories make it easy to install the instrument.

Versatile outputs

The HMT330 can have up to three analog outputs. Galvanic isolation of supply power and analog outputs is also available. For digital communication, the RS-232, RS-485 or relay outputs can be used.



The display shows measurement trends and history up to 1 year.

Flexible calibration

The HMT330 instruments are factory-calibrated at six humidity points.

A quick one-point field calibration can be performed with the hand-held HM70 meter.

A two-point calibration can be performed with the HMK15 salt bath calibrator in a controlled environment.

The transmitter can be sent to Vaisala for recalibration. Accredited calibrations and maintenance contracts are also available.

Performance

Relative humidity

Measurement range	0...100 %RH
Accuracy against factory standards including non-linearity, hysteresis and repeatability	
at +20 °C (+68 °F)	± 1 %RH (0...90 %RH)
	± 1.7 %RH (90...100 %RH)
at -20...+40 °C (-4...+104 °F)	± (1.0 + 0.008 x reading) %RH*
at -40...-20 °C, +40...+180 °C (-40...-4 °F, +104...+356 °F)	± (1.5 + 0.015 x reading) %RH*
Factory calibration uncertainty** (+20 °C / +68 °F)	
0...40 %RH	± 0.6 %RH
40...97 %RH	± 1.0 %RH
Humidity sensors	
for typical applications	Vaisala HUMICAP® 180
chemical purge/warmed probe	Vaisala HUMICAP® 180C
high chemical concentrations*	Vaisala HUMICAP® 180L2*

* For Vaisala HUMICAP® 180L2 sensor

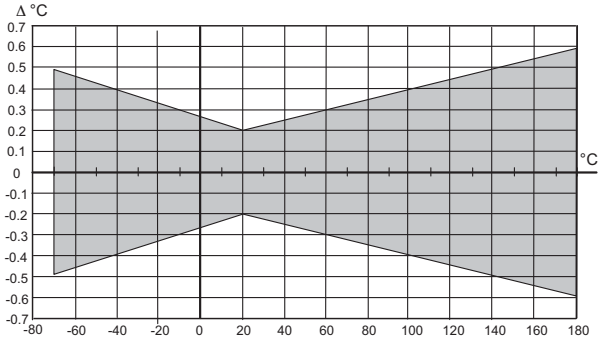
at -10...+40°C (+14...+104 °F)	± (1.0 + 0.01 x reading) %RH
at -40...-10 °C,+40...+180 °C (-40...+14 °F, +104...+356 °F)	± (1.5 + 0.02 x reading) %RH

** Defined as ±2 standard deviation limits.

Response time (90 %) at 20 °C (+68 °F) in still air	
with grid filter	8 s
with grid + steel netting filter	20 s
with sintered filter	40 s

Temperature

Measurement range	
HMT331	-40...+60 °C
HMT333	-40...+80 °C
HMT334, HMT335, HMT337, HMT338	-70...+180 °C
Accuracy at +20 °C (+68 °F)	± 0.2 °C
Accuracy over temperature range	



Temperature sensor	Pt 100 RTD 1/3 Class B IEC 751

Other variables available (depends on model)
dewpoint temperature, mixing ratio, absolute humidity, wet bulb temperature, enthalpy, water vapor pressure

Operating environment

Operating temperature	
for probe	same as measurement ranges
for transmitter body	-40...+60 °C (-40...+140 °F)
with display	0...+60 °C (+32...+140 °F)
Operating pressure	
HMT334	0...10 MPa (0...100 bar)
HMT338	0...4 MPa (0...40 bar)
HMT333, HMT335, HMT337	vapor tight

Complies with EMC standard EN61326-1:1997 + Am1:1998 + Am2:2001; Industrial Environment.

Inputs and outputs

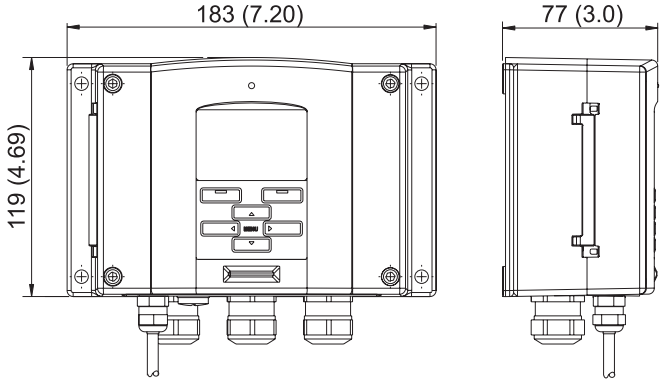
Operating voltage	10...35 VDC, 24 VAC
with optional power supply module	100...240 VAC 50/60 Hz
Power consumption @ 20 °C (U_{in} 24VDC)	
RS-232	max 25 mA
U_{out} 2 x 0...1V / 0...5V / 0...10V	max 25 mA
I_{out} 2 x 0...20 mA	max 60 mA
display and backlight	+ 20 mA
during chemical purge	+ 110 mA max
during 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 analog outputs	± 0.005 %/°C of full scale
External loads	
current ouputs	R_L < 500 ohm
0... 1 V output	R_L > 2 kohm
0... 5 V and 0... 10 V outputs	R_L > 10 kohm
Max wire size	0.5 mm^2 (AWG 20), stranded wires recommended
Digital outputs	RS-232, RS-485 (optional)
Relay outputs (optional)	0.5 A, 250 VAC
Display	LCD with backlight, graphic trend display of any parameter
Menu languages	English, French, Spanish, German, Japanese, Swedish, Finnish

Mechanics

Cable bushing	M20x1.5 (cable diameter 8...11mm)
Conduit fitting	M20x1.5 / 1/2"NPT
8-pole connector (male)	RKC8/9.M12
8-pole connector with 5 m cable (female)	RKT8-282/5M
Probe cable diameter	
HMT333	6.0 mm
other probes	5.5 mm
Housing material	G-AlSi 10 Mg (DIN 1725)
Housing classification	IP 65 (NEMA 4)

Dimensions

dimensions in mm (inches)



HMT331 Humidity and Temperature Transmitter for Demanding Wall-Mount Applications

The HMT331 is the state-of-the-art wall-mount humidity instrument.

Features/Benefits

- For temperatures -40...+60 °C (-40...+140 °F)
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- High tolerance for chemicals
- Shows measurement trends and 1-year history graphically
- Corrosion resistant metal IP65 housing
- NIST traceable (certificate included)
- Application examples: cleanrooms, pharmaceutical processes, greenhouses, swimming pools, museums and archive spaces

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT331 is the top-of-the-line wall-mount transmitter for demanding HVAC and condition monitoring applications.

Compared to regular wall-mount transmitters, the HMT331 offers:
- Higher measurement performance
- Better chemical tolerance
- Advanced graphical display features
- More powering options
- More output options
- A wider variety of output humidity parameters.

Graphical measurement trend and history display

The HMT330 series features a large numerical and graphical display, allowing the user to easily monitor measurement trends and 1-year history.

The measurement history is especially useful in stability rooms and archives. The minimum and maximum values for the previous year can be viewed.

The display shows measurement trends and 1-year history.

Outputs and power supply options for every need

The output options include three analog outputs, RS-232, RS-485, and alarm relays.

The voltage supply range is from 10 to 35 VDC. With an additional module, the transmitter can be connected to all universal mains AC supplies.

The input/output cable can be fed through the back of the transmitter, which is a useful installation feature especially in cleanrooms.

Technical Data

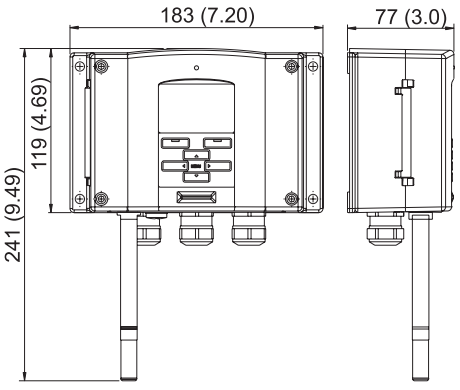
Temperature measurement range	-40...+60 °C (-40...+140 °F)

Accessories

PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)



HMT333 Humidity and Temperature Transmitter for Ducts and Tight Spaces

The HMT333 transmitter has a small probe for remote applications.

Features/Benefits

- For remote probe installations in demanding HVAC applications
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- High tolerance for chemicals
- For temperatures -40...+80 °C (-40...+176 °F)
- Small thermal mass - fast response to temperature changes
- Shows measurement trends and 1-year history graphically
- Corrosion resistant IP65 housing
- NIST traceable (certificate included)
- Application examples: cleanrooms, pharmaceutical processes, greenhouses, environmental chambers

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT333 is a versatile instrument for applications where a small remote probe is needed.

Flexible installation possibilities

For installing the probe in ducts, channels, and through walls, an installation kit consisting of an aluminum flange, lead-through piece and steel support bar is available.

The probe cable is flexible and available in 2, 5 and 10-meter lengths.

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

For moderate humidities and temperatures

The HMT333 is typically used in demanding HVAC applications such as cleanrooms, pharmaceutical processes and greenhouses.

For environments with continous high humidity, the HMT337 with a warmed, vapor-tight, stainless steel probe is recommended instead of the HMT333.

Duct installation kit.

Technical Data

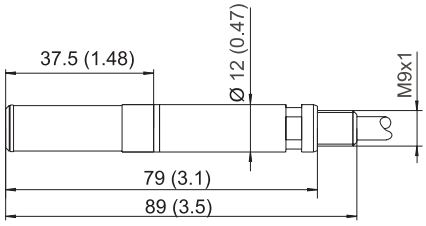
Temperature measurement range	-40...+80 °C (-40...+176 °F)

Accessories

Duct installation kit	210697
Cable gland	HMP247CG
PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
Solar radiation shield	DTR502B
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)



HMT334 Humidity and Temperature Transmitter for High Pressure and Vacuum Applications

The HMT334 is ideal for permanent installations into pressurized or vacuum processes.

Features/Benefits

- For pressures up to 100 bar and vacuum applications
- For temperatures -70...+180 °C (-94...+356 °F)
- ISO and NPT threads available
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- Shows measurement trends and 1-year history graphically
- Corrosion resistant IP65 housing
- NIST traceable (certificate included)
- Application example: test chambers

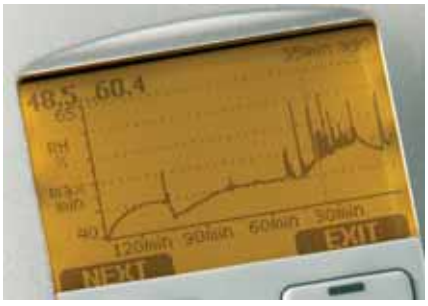
The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT334 is designed to measure humidity in pressurized spaces or vacuum chambers. Each probe is tested to ensure a gas and vacuum tight installation.

Vaisala HUMICAP® performance

The HMT334 incorporates Vaisala's 30 years of experience in industrial humidity measurement. The sensor provides accurate and reliable measurement and is immune to particulate contamination and most chemicals.

Graphical measurement trend and history display

The HMT330 series features a numerical and graphical display. The user can easily monitor measurement trends and history with minimum and maximum values for up to 1 year.



The display shows minimum and maximum values for up to 1 year.

Using the serial line the measurement data can be transferred to a PC, where it can be further processed and copied to other programs.

Technical Data

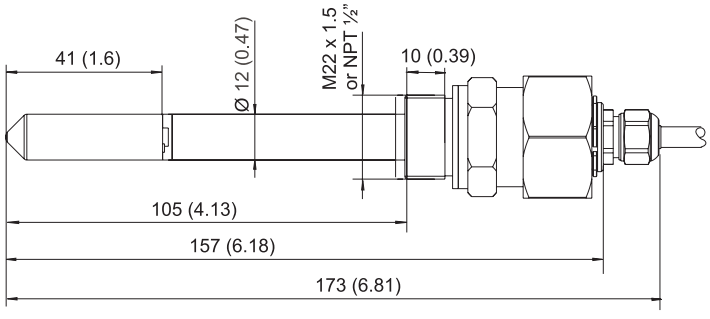
Temperature measurement range	-70...+180 °C (-94...+356 °F)
Operating pressure	0...10 MPa (0...100 bar)

Accessories

Fitting body ISO M22 x 1.5	17223
Fitting body NPT 1/2"	17225
PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)



HMT335 Humidity and Temperature Transmitter for High Temperatures

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

Features/Benefits

- For temperatures -70...+180 °C (-94...+356 °F)
- Long metal probe head
- Stainless steel installation flange available
- Adjustable installation depth
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- Shows measurement trends and 1-year history graphically
- Corrosion resistant IP65 housing
- NIST traceable (certificate included)
- Application example: hot drying processes

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

The probe tolerates mechanical stress and high flow rates. This makes the HMT335 ideal for duct-type measurements where smaller probes are not sturdy enough. An example application is a hot drying process.

Graphical measurement trend and history display

The HMT335 features a numerical and graphical display. The user can easily monitor measurement trends and history with minimum and maximum values for up to 1 year.

Vaisala HUMICAP® performance

The sensor provides accurate and reliable measurement and is immune to particulate contamination and most chemicals.

Technical Data

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

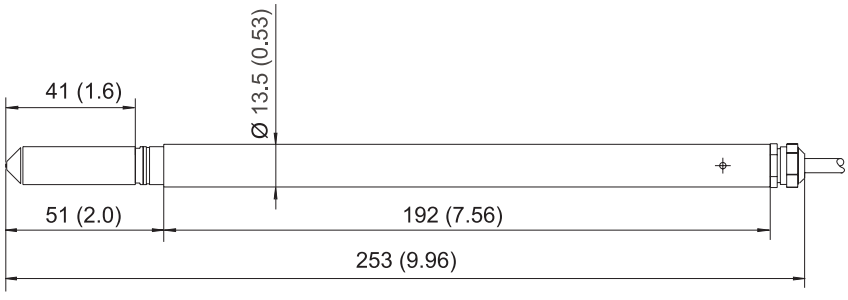
Accessories

Mounting flange	210696
PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)

The installation flange allows an adjustable installation depth for the probe



HMT337 Humidity and Temperature Transmitter for High Humidity Applications

The HMT337 is the transmitter for the most demanding process and meteorological measurements.

Features/Benefits

- For high-humidity applications in industry and meteorology
- Warmed probe head for superior performance in condensing environments
- Small, stainless steel, vapor-tight remote probe
- For temperatures -70...+180 °C (-94...+356 °F)
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- High tolerance for chemicals
- Shows measurement trends and 1-year history graphically
- Corrosion resistant IP65 housing
- NIST traceable (certificate included)

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT337 is delivered in three configurations:

- Basic: non-warmed probe for moderate humidities
- With warmed probe: for near-condensing conditions, dewpoint measurement
- With warmed probe and additional temperature sensor: for near-condensing conditions, relative humidity measurement

True humidity readings in condensing conditions

Vaisala's unique warmed probe head provides fast and reliable measurement in environments where humidity is near saturation. The heating helps the sensor to recover very fast from condensation.

As the probe head is warmed, the humidity level inside the head stays below the ambient level. With accurate temperature measurement, the ambient dewpoint can be calculated precisely.

Duct installation kit.

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

Many ways to install

A tight installation through a process wall can be achieved with Swagelok fittings. A duct installation kit, and meteorological installation kit for outdoor installations are available.

Technical Data

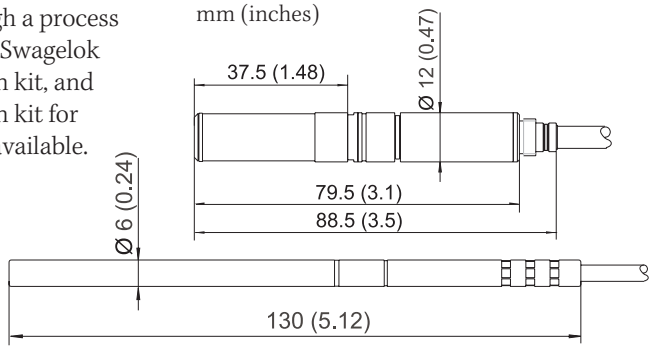
Temperature measurement range	-70...+180 °C (-94...+356 °F)

Accessories

Cable gland AGRO	HMP247CG
Duct installation kit (RH-probe)	210710
Duct installation kit (T-probe)	215003
Swagelok fittings (NPT and ISO) for both RH and T probes	
Solar radiation shield	DTR502B
Meteorological inst. kit	HMT330MIK
PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)



HMT338 Humidity and Temperature Transmitter for Pressurized Pipelines

The HMT338 is ideal for installations in pressurized processes where the probe needs to be removed while the process is running.

Features/Benefits

- Installed through ball valve: can be inserted and removed while the process is running
- Adjustable sensor head depth
- Pressure tolerance 40 bar
- For temperatures -70...+180 °C (-94...+356 °F)
- Vaisala HUMICAP® Sensor for excellent accuracy and stability
- Shows measurement trends and 1-year history graphically
- Corrosion resistant IP65 housing
- Two probe lengths available
- NIST traceable (certificate included)

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT338 is designed for pressurized processes.

Insert or remove probe while the process is running

With "hot tapping", the probe is inserted directly into the process while it is running, without exposing the need for venting or lowering the process pressure.

The probe head is screwed into a ball valve assembly that has been fixed to the process pipe or wall. The adjustable hex nut is hand-tightened to temporarily hold the probe in the 'up' position. Then the ball valve is opened, exposing the probe to the process, and the probe is pushed to the proper depth in the 'down' position. The hex nut is tightened with a wrench to lock the probe in place. Hot tapping is possible in pressures up to 10 bar.

Graphical measurement trend and history display

From the display, the user can easily monitor measurement stabilization and process trends. Measurement history with minimum and maximum values is available for up to 1 year.

Vaisala HUMICAP®

The HMT338 incorporates Vaisala's 30 years of experience in industrial humidity measurement. The sensor provides accurate and reliable measurement and is immune to particulate contamination and most chemicals.

Technical Data

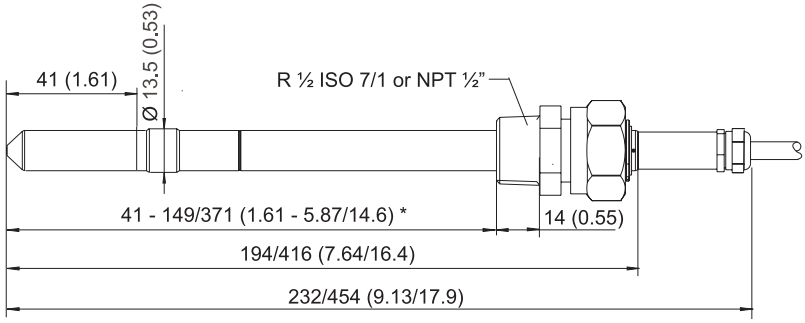
Temperature measurement range	-70...+180 °C (-94...+356 °F)
Operating pressure	0...4 MPa (0...40 bar)

Accessories

Ball valve set	DMP248BVS
PC software + cable	215005
Connection cable for HM70	211339
Wall mounting plate (plastic)	214829
Pole installation kit	215108
Rain shield	215109
DIN rail installation set	211477

Dimensions

Dimensions in mm (inches)



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