ТРАНСМИТТЕРЫ ТЕМПЕРАТУРЫ

HMT 300, 310, 330, 331, 333, 334, 335, 337, 338, 360

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

HMT300 Turbine Mounting Kit for Power Turbine Intake Air Measurement

The Vaisala HUMICAP® Turbine Mounting Kit HMT300TMK is shown with the cover open and HMT337 Humidity and Temperature Transmitter installed. (Not included in the HMT300TMK.)

The Vaisala HUMICAP® Turbine Mounting Kit HMT300TMK is developed to monitor the air intake of gas and liquid fueled power turbines. HMT300TMK is used together with HMT337 Temperature and Humidity Transmitter.

Features/Benefits

- Designed for high humidity applications
- Measurement range: -40 ... +100°C
- Patented, warmed probe
- Incorporates Vaisala HUMICAP® Sensor for excellent accuracy and long-term stability and resistance to dust and most chemicals
- Low maintenance need
- Outer cover provides protection from rain and direct sunlight
- NIST traceable (certificate included)

It is ideal for measuring in water vapor injection applications because the sensor has been optimized for high humidity environments by utilizing a patented, warmed probe. Water vapor is added to the intake of the turbine to increase the mass flow which in turn increases compression and electrical power output.

Low Maintenance

Power turbines also require exact water vapor injection in the chamber to reduce pollutant emissions. Vaisala's warmed probe technology is ideal because of its reliability in the field. In fact, the only suggested scheduled maintenance is annual calibration.

Patented, Warmed Probe Prevents Condensation

The HMT300TMK with the HMT337 installed, provides fast and reliable dewpoint measurement especially under high humidity conditions where dew would normally form on the humidity sensor and thereby cause errors in measurement. The patented warmed probe prevents condensation from forming on the sensor.

Protective Enclosure

The HMT300TMK includes a white, painted stainless steel enclosure with an installation kit for the probe. The HMT337 Humidity and Temperature Transmitter is installed in the stainless steel enclosure at the factory, when ordered together with HMT300TMK. The instrument can be equipped to be powered with either 24 VDC/VAC or with an internal 110/230 volt power supply unit.

The outer cover protects the transmitter from direct sun light and rain. The installation kit protects the probe from outer water splashes, keeps the sensor dry, and prevents any parts that could vibrate loose from entering the turbine.

The HMT300TMK can be ordered separately for installation with the customer's existing HMT337.

HUMICAP® Performance

The HMT330 Series Transmitters are fitted with the latest generation of the HUMICAP®, the polymer sensor known for its accuracy, reliability and long-term stability. The sensor has a high tolerance for particulate abrasion and chemical contamination.

Vaisala HUMICAP® Humidity and Temperature Transmitter HMT337

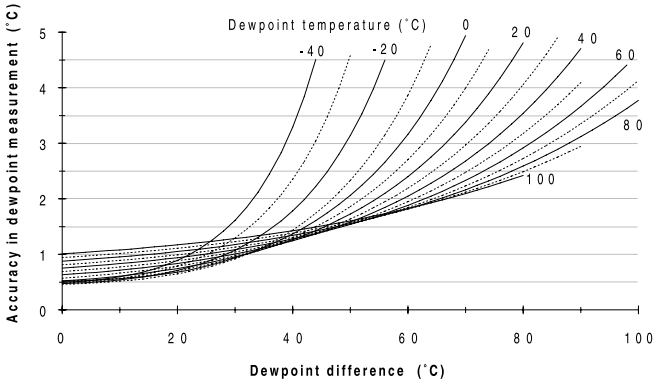
The HMT337 is intended for demanding industrial humidity measurement applications with a risk of condensation. The stainless steel probe is mechanically durable and preferred for most industrial applications.

Technical Data

Dewpoint Temperature

Measurement range	-40 ...+100 °C (-40 … +212 °F)

Accuracy: find the intersection of the dewpoint temperature curve and the dewpoint difference reading (process temperature - dewpoint temperature) on the x-axis and read the accuracy in dewpoint measurement at the y-axis



Response time (90 %) at +20 °C (68 °F) in still air (PPS grid with steel netting)	20 s
Sensor	HUMICAP® 180C

General

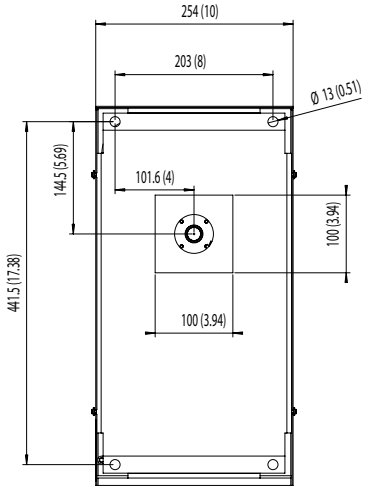
Connections	screw terminals for 0.5 mm² wires (AWG 20), stranded wires recommended
Operating voltage	24 VDC/VAC (20...28 V) or 115/230 VAC (Must be specified at time of order)
Recommended external load for current outputs	< 500 ohm
0...1 V output	> 2 kohm (to ground)
0...5 & 0...10 V outputs	> 10 kohm (to ground)
Operating temperature range for electronics	-40...+60 °C (-40 ...+140 °F)
Storage temperature	-55...+80 °C (-67 ...+176 °F)
Housing material	G-AlSi10 (DIN 1725)
Housing classification	IP65 (NEMA 4)
Bushing	8...11 mm diameter cables (0.31 ... 0.43 inch)
Humidity sensor protection (Ø 12 mm)	PPS grid with steel netting
Weight:	
HMT300TMK with HMT337	8,7 kg
HMT300TMK with HMT337, packed in a wooden shipping box	13,3 kg
Electromagnetic compatibility	Complies with EMC standard EN61326-1, Industrial Environment

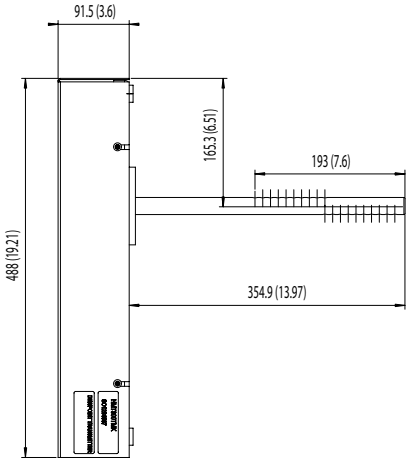
Outputs

Two standard outputs, third optional	0...20 mA, 4...20 mA, 0 ... 1 V, 0...5 V, 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 full scale
Serial output available	RS232C (optional RS485)

Dimensions

Dimensions in mm (inches)





HMT310 Humidity and Temperature Transmitter

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT310 models (from left to right): HMT313, HMT317, HMT314, HMT318, HMT315 and HMT311.

Features/Benefits

- Latest generation Vaisala HUMICAP® sensor for excellent 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
- NIST traceable calibration (certificate included)

Reliable Vaisala HUMICAP® Technology

The 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.

Several Outputs, One Connector

The HMT310 is powered up with 10 ... 35 VDC. It has two analog outputs and an RS232 serial output. 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.

Optional Functions

The following optional functions are available: several probes for various applications, calculated humidity quantities, variety of mounting kits, rain shield, sensor protection options and probe cable lengths, warmed probe and sensor heating for high humidity conditions (HMT317), and chemical purge for applications risking an interference with chemicals in the measuring environment.

Technical Data

Measured Values

RELATIVE HUMIDITY

Measurement range	0 ... 100 %RH
Sensor	
Vaisala HUMICAP®180R	typical applications
Vaisala HUMICAP®180RC	applications with chemical purge/warmed probe
Vaisala HUMICAP®180V	catalytic sensor for H_2O_2 environments
Vaisala HUMICAP®180VC	catalytic sensor with chemical purge for H_2O_2 environments
Accuracy (including non-linearity, hysteresis, and repeatability) at a temperature range of	
+15 ... +25 °C (+59 … +77 °F)	±1 %RH (0 ... 90 %RH) ±1.7 %RH (90 ... 100 %RH)
-20 ... +40 °C (-4 … +104 °F)	±(1.0 + 0.008 x reading) %RH
-40 ... +180 °C (-40 … +356 °F)	±(1.5 + 0.015 x reading) %RH
Factory calibration uncertainty (+20 °C)	±0.6 %RH (0 ... 40 %RH)* ±1.0 %RH (40 ... 97 %RH)*

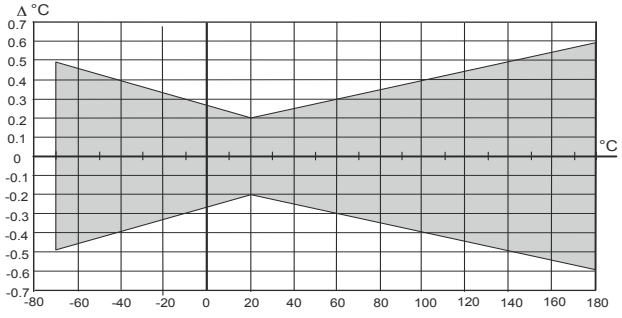
** Defined as ±2 standard deviation limits. Small variations possible, see also calibration certificate.*

Response time (90 %) at +20 °C (+68 °F) in 0.1 m/s air flow	17 s with grid filter 50 s with grid and steel, netting filter 60 s with sintered filter

TEMPERATURE

HMT311	-40 ... +60 °C (-40 ... +140 °F)
HMT313	-40 ... +80 °C (-40 ... +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)

Accuracy over temperature range (see graph below)



Temperature sensor	Pt100 RTD Class F0.1 IEC 60751

Electrical Connections

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	RS232C
Connections	M12 8-pole connector with RS232C, current/voltage outputs (two channels) and U_{in}
Operating voltage	10 ... 35 VDC
Minimum operating voltage	
RS232C output	10 VDC
Analog output	15 VDC
Probe heating and chemical purge	15 VDC
Pressures above 10 bara (145 psia)	24 VDC
Power consumption	
RS232	12 mA
U_{out} 10 V (10 kOhm) channel 1 & channel 2	12 mA
I_{out} 20 mA (load 511 Ohm) channel 1 & channel 2	50 mA
Chemical purge at 24 VDC	+ 220 mA
Warmed probe at 24 VDC	+ 240 mA
External load	R_L < 500 Ohm
Startup time after power-up	3 s

General

Operating temperature range for electronics	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature range	-55 ... +80 °C (-67 ... +176 °F)
Operating pressure	
HMT314	0 ... 100 bar
HMT318	0 ... 40 bar
HMT315, HMT317	vapor tight
Transmitter housing material	G-AlSi10Mg
Transmitter base material	PPS
Housing classification	IP66
Cable feed through alternatives	8-pole connector with 5 m cable, Female 8-pin connector screw joint for cable diameter 4 ... 8 mm
Probe cable length	2m, 5m, or 10m
Sensor protection	PPS grid with stainless steel net, PPS grid, Sintered filter, Membrane stainless steel filter, H_2O_2 filter
Complies with EMC standard EN61326-1, Industrial environment	

Accessories

Rain shield	ASM211103
USB cable	238607
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	214848SP
Catalytic H_2O_2 Filter	231865

HMT330 Series Humidity and Temperature Transmitters for Demanding Humidity Measurement

The HMT330 transmitter family offers reliable performance for a wide variety of 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
- 4th generation Vaisala HUMICAP® sensor for superior accuracy and stability
- Optional graphical display and keypad for convenient operation
- Multilingual user interface
- Excellent performance in harsh conditions; good chemical tolerance
- Corrosion-resistant IP65/IP66 housing
- 5-point calibration (certificate included)
- 10-year warranty when annually calibrated at the Vaisala Service Center
- RS232/485/422 WLAN/LAN
- MODBUS protocol support (RTU/TCP)
- Compatible with Vaisala viewLinc software

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.

Technical Data

Performance

RELATIVE HUMIDITY

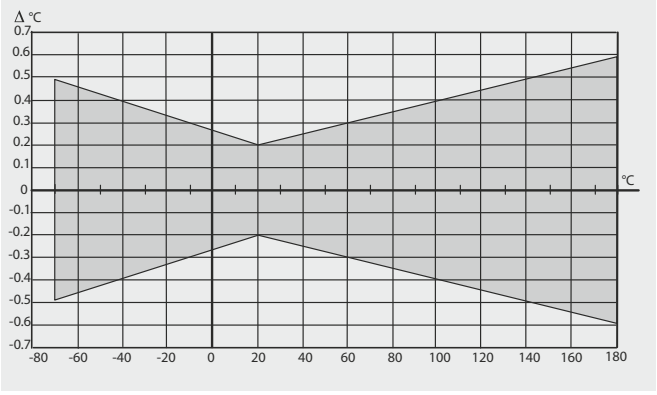
Measurement range	0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
with Vaisala HUMICAP® 180 or 180R*	for typical applications
with Vaisala HUMICAP® 180C or 180RC*	for applications with chemical purge/warmed probe
with Vaisala HUMICAP® 180VC	catalytic sensor with chemical purge for H_2O_2 environments
at +15 ... +25 °C (59 ... +77 °F)	±1 %RH (0 ... 90 %) ±1.7 %RH (90 ... 100 %RH)
at -20 ... +40 °C (-4 ... +104 °F)	±(1.0 + 0.008 x reading) %RH
at -40 ... +180 °C (-40 ... +356 °F)	±(1.5 + 0.015 x reading) %RH
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

*HUMICAP 180R or 180RC recommended

** with HUMICAP 180R or 180RC or 180VC sensor

TEMPERATURE

Accuracy at +20 °C (+68 °F)	± 0.2 °C (± 0.36 °F)
Accuracy over temperature range (measurement range depends on model)	



Temperature sensor	Pt100 RTD Class F0.1 IEC 60751

Other available variables (model-dependent)

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

Inputs and Outputs

Operating voltage	10 ... 35 VDC, 24 VAC ±20%
with optional power supply module	100 ... 240 VAC, 50/60 HZ
Power consumption at +20 °C (U_{in} 24 VDC)	
RS232	max. 25 mA
U_{out} 2 x 0 ... 1 V/0 ... 5 V/0 ... 10 V	max. 25 mA
I_{out} 2 x 0 ... 20 mA	max. 60 mA
display and backlight	+ 20 mA
during chemical purge	max. 110 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_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	RS232, RS485 (optional)
Protocols	ASCII commands, MODBUS RTU
Service connection	RS232, USB
Relay outputs (optional)	0.5 A, 250 VAC
Ethernet interface (optional)	
Supported standards	10BASE-T, 100BASE-TX
Connector	8P8C (RJ45)
IPv4 address assignment	DHCP (automatic), static
Protocols	Telnet, MODBUS TCP/IP
WLAN interface (optional)	
Supported standards	802.11b
Antenna connector type	RP-SMA
IPv4 address assignment	DHCP (automatic), static
Protocols	Telnet, MODBUS TCP/IP
Security	WEP 64/128, WPA2/802.11i
Authentication / Encryption (WLAN)	
Open / no encryption	
Open / WEP	
WPA Pre-shared key / TKIP	
WPA Pre-shared key / CCMP (a.k.a. WPA2)	
Optional data logger with real-time clock	
Logged parameters	max. four with trend/min/max values
Logging interval	10 sec. (fixed)
Max. logging period	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

Mechanics

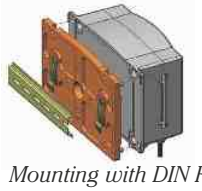
Cable bushing	M20 x 1.5 for cable diameter 8 ... 11 mm/0.31 ... 0.43"
Conduit fitting	1/2" NPT
User cable connector (optional)	M12 series 8-pin (male)
option 1	female plug with 5 m (16.4 ft.) black cable
option 2	female plug with screw terminals
Probe cable diameter	
HMT333 (+80 °C)	6.0 mm
other probes	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

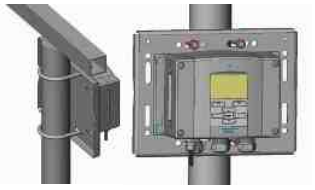
Operating temperature	
for probe	same as measurement range
for transmitter body	-40 ... +60 °C (-40 ... 140 °F)
with display	0 ... +60 °C (32 ... 140 °F)
Electromagnetic compatibility	Complies with EMC standard EN61326-1, Industrial Environment
	Note: Transmitter with display test impedance of 40 ohm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

Mounting Options

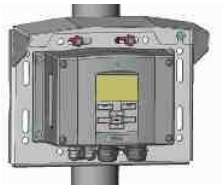
*Mounting with Wall Mounting Kit**



Mounting with DIN Rail Installation Kit



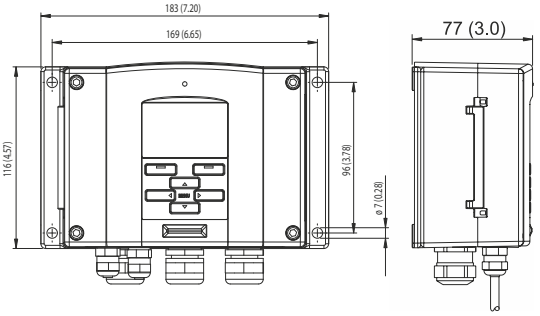
Pole Installation with Installation Kit for Pole or Pipeline



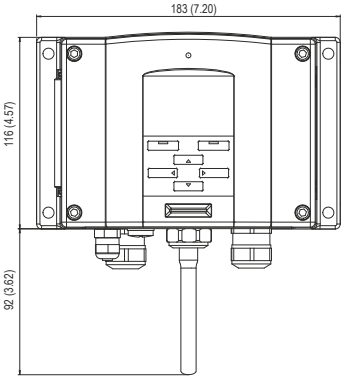
Mounting Rain Shield with Installation Kit

Dimensions

Dimensions in mm (inches)



Transmitter with WLAN antenna



HMT331 Humidity and Temperature Transmitter for Demanding Wall-Mounted Applications

The HMT331 is a state-of-the-art wall-mounted humidity measurement instrument.

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

HMT331 Humidity and Temperature Transmitter with short flexible probe and optional WLAN.

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

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.

The HMT333 transmitter's compact probe is designed for remote applications.

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.

Typical Applications

- cleanrooms
- pharmaceutical processes
- environmental chambers
- processes with moderate temperature and humidity

Duct installation kit for HMT333 and HMT337.

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
PPS plastic grid filter	DRW010276SP
Stainless steel sintered filter	HM47280SP

HMT334 Humidity and Temperature Transmitter for High Pressure and Vacuum Applications

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

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.

Typical Applications

- test chambers
- high-pressure and vacuum processes

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	17223SP
Fitting body NPT 1/2"	17225SP
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

The installation flange allows easy adjustment of the probe installation depth.

Technical Data

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

HMT337 Humidity and Temperature Transmitter for High Humidity

The HMT337 is ideal for the most demanding process and meteorological measurements in high-humidity condensing environments.

Typical Applications

- professional meteorology
- intake air monitoring of engines and gas turbines
- timber drying kilns

Duct installation kit for HMT333 and HMT337.

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)	
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

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.

Typical Applications

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

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.

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

HMT360 Series Intrinsically Safe Humidity and Temperature Transmitters

The Vaisala HUMICAP® Humidity and Temperature Transmitter HMT361 wall mount transmitter, shown with six probe options, is designed specifically for hazardous and explosive environments.

Features/Benefits

- Measures humidity and temperature, outputs also dew point, mixing ratio, absolute humidity and wet bulb temperature
- Safe operation with the entire transmitter in hazardous areas: Division 1 and 2 (USA, Canada), Categories 1G / Zone 0 and 1D / Zone 20 with protection cover (EU)
- Intrinsically safe
- Designed for harsh conditions
- Vaisala HUMICAP® Sensor features high accuracy, excellent long-term stability, and negligible hysteresis
- Six probe options
- Temperature range between -70 ... +180°C (-94 ... +356°F) depending on the probe option
- NIST traceable (certificate included)

The Vaisala HUMICAP® Humidity and Temperature Transmitter Series HMT360 are the ideal solution for measuring humidity in hazardous areas. They operate safely and reliably even in the most hazardous classifications. The HMT360 transmitters' proven performance and technology conform with rigorous international standards.

Intrinsically Safe

The entire HMT360 transmitter can be installed directly in explosive areas. It can withstand continuous exposure to potentially explosive environments that contain flammable gases or dust.

Customized Configuration

Due to the microprocessor based electronics, options and accessories, the HMT360 series is truly flexible.

Customers may specify the transmitter configuration when ordering the instrument, however changes in configuration can also easily be made in the field.

Interchangeable Probes

The HMT360 offers six probe options for various applications:

HMP361	- wall mount
HMP363	- confined spaces
HMP364	- pressurized spaces
HMP365	- high temperature
HMP367	- high humidity
HMP368	- pressurized pipelines

The interchangeable probes enable fast and easy removal or re-installation when required. Calibration, for example, is easy to perform due to the modular structure. All calibration coefficients are included in the probe unit itself, which means that probes can be switched between transmitter bodies without losing the accuracy.

Optimized Sensors

In addition to the standard Vaisala HUMICAP® Sensor, an application specific, very chemically durable sensor is also available.

Long-term Solution

The HMT360 transmitters are an investment; their rugged design, combined with trouble-free operation, ensure a long-term solution for monitoring humidity and dew point in explosive environments.

Customized calibration and maintenance contracts for the HMT360 series are available on request.

Technical Data

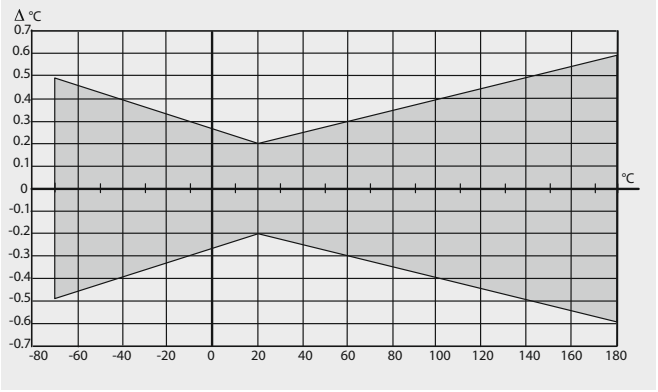
Performance

RELATIVE HUMIDITY

Measurement range	0 ... 100 % RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
with Vaisala HUMICAP® 180R	for typical applications
at +15 ... +25 °C (59 ... +77 °F)	± 1.0 % 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 ... +180 °C (-40 ... +356 °F)	± (1.5 +0.015 x reading) %RH
with Vaisala HUMICAP® 180_L2	for application with demanding chemical environment
at -10 ... +40 °C (14 ... +104 °F)	± (1.0 + 0.01 x reading) %RH
at -40 ... +180 °C (-40 ... +356 °F)	± (1.5 + 0.02 x reading) %RH
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) in still air	
with grid filter	17 s
with grid + steel netting filter	50 s
with sintered filter	60 s

TEMPERATURE

Measurement range	-70 ... +180 °C (-94 ... +356 °F) (depends on selected probe)
Typical accuracy of electronics at +20 °C (+68 °F)	±0.2 °C (0.36 °F)
Typical temperature dependence of electronics	0.005 °C/°C (0.005 °F/°F)
Sensor	Pt1000 RTD Class F0.1 IEC 60751
Accuracy over temperature range	



OTHER VARIABLES

Optionally available	dew point temperature, mixing ratio, absolute humidity, wet bulb temperature.

Operating Environment

Temperature range	
operating temp. range for electronics	-40 ... +60 °C (-40 ... +140 °F)
with display	-20 ... +60 °C (-4 ... +140 °F)
storage	-40 ... +70 °C (-40 ... +158 °F)
Pressure range	see probe specifications

Complies with EMC standard EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements; Industrial Environment.
NOTE! IEC 1000-4-5 complies only when using external EXi approved surge arrester in the safe area.

Inputs and Outputs

Operating voltage	12 ... 28 V
with serial port (service mode)	15 ... 28 V
Analog outputs	two-wire 4 ... 20 mA, one standard, one optional
Typical accuracy of analog outputs at +20 °C	±0.05% full scale
Typical temperature dependence of analog outputs	0.005% / °C (0.005% / °F) full scale
Analog outputs	connection via safety barriers
RS232C serial output for service use	connector type RJ45
Display	two-line LCD

Mechanics

Connections	screw terminals, 0.33...2.0 mm 2 wires (AWG 14-22)
Cable bushings	For 7.5...12mm or 10...15mm cable diameters (M20)
Conduit fitting	NPT 1/2" (M20)
Housing material	G-$AlSi_{10}$Mg (DIN 1725)
Housing classification	IP66 (NEMA 4X)
Housing weight	950 g

Options and Accessories

Duct installation kit (for HMP363/367)	210697
Mounting flange (for HMP365)	210696
Ball valve ISO 1/2 with welding joint (for HMP368)	BALLVALVE-1
pressure range at +20 °C (+68 °F):	0 ... 20 bar (0 ... 290 psia) (during installation max. 10 bar (145 psia)
Calibration adapter for HMK15	211302
Serial interface cable for PC connectors RJ45 - D9 female	25905ZZ
Galvanic isolator	212483
Zener barrier	210664
Protection cover (for use in the presence of combustible dust, ATEX)	214101 II 1 D IP65 T = 80 °C

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Астана +7(7172)727-132
Астрахань (8512) 99-46-04
Барнаул (3852) 73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812) 21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692) 22-31-93
Симферополь (3652) 67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462) 77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212) 92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

сайт: vsa.nt-rt.ru || эл. почта: vgs@nt-rt.ru