



HMT330 Series Humidity and Temperature Transmitters

for Demanding Humidity Measurement



Features

- 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
- Corrosion-resistant IP65/IP66 housing
- Excellent performance in harsh conditions; good chemical tolerance
- Traceable calibration for measurement and analog outputs (certificates included)
- 10-year warranty when annually calibrated at the Vaisala Service Center

Vaisala HMT330 Series HUMICAP® Humidity and Temperature Transmitters are 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 and is pre-configured for each delivery.

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.

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 HMT330 series can be tailored to meet the specific needs of each individual application and is preconfigured for each delivery. Sensor options include HUMICAP® 180R for general purposes

and HUMICAP® 180 for fast response time or low-temperature applications; and HUMICAP® 180C and HUMICAP® 180RC for applications requiring chemical purge functionality. For best corrosion resistance combined with chemical purge, the latest sensor HUMICAP® R2 is recommended.

Connectivity

- RS-232/485/422 LAN
- Modbus protocol support (RTU/TCP)
- Optional graphical display and keypad for convenient operation
- Multilingual user interface
- Compatible with Vaisala viewLinc software

HMT330 Series Humidity and Temperature Transmitters

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 of up to 4 years.



The display shows measurement trends and over four years of real-time measurement history.

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 up to four relay outputs are also available.

For serial interface the USB service cable, RS-232, and RS-485/422 can be used.

HMT330 is also capable of applying the Modbus communication protocol and, together with an appropriate connection option, provides either Modbus RTU (RS-485) 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 LAN interface, which enables an 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.

Chemical Purge Minimizes Effects of Contaminant

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

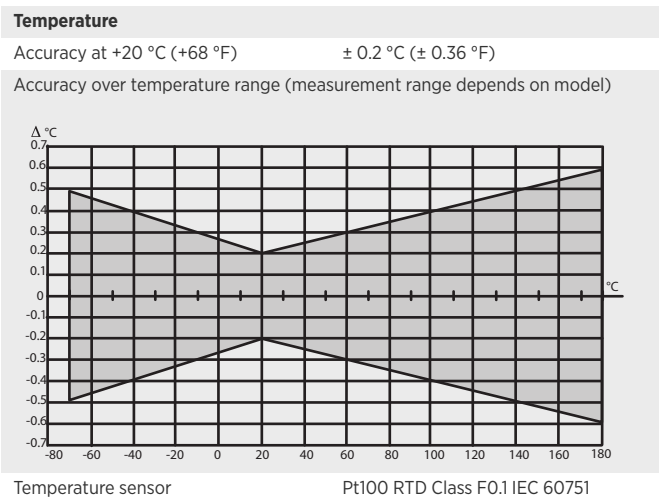
The chemical purge involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

	HMT331	HMT333	HMT334	HMT335	HMT337	HMT338
For	Measurement within rooms	General purposes	High pressure and vacuum applications	High temperatures	High humidity applications	Pressurized pipelines
Operating Temperature	-40 ... +60 °C (-40 ... +140 °F)	-40 ... +80 °C (-40 ... +176 °F) or -40 ... +120 °C (-40 ... +248 °F)	40 ... +180 °C (-40 ... +356 °F)	-40 ... +180 °C (-40 ... +356 °F)	-40 ... +180 °C (-40 ... +356 °F)	-40 ... +180 °C (-40 ... +356 °F)
Operating Pressure			0 ... 10 MPa (0 ... 100 bar)		0 ... 1 MPa (0 ... 10 bar)	0 ... 4MPa (0 ... 40 bar)

HMT330 Series Technical Data

Measurement Performance

Relative Humidity	
Measurement range	0 ... 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
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 ¹⁾
in still air	20 s/50 s with grid + steel netting filter ¹⁾ 40 s/60 s with sintered filter ¹⁾



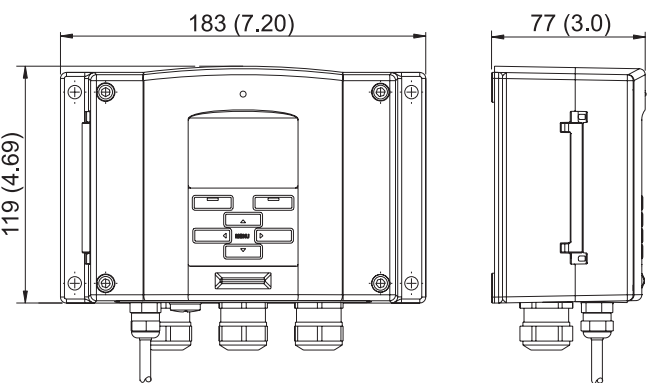
Other Available Variables (Model-Dependent)	
dew point temperature, mixing ratio, absolute humidity, wet bulb temperature, enthalpy, water vapor pressure	
1) With HUMICAP 180R or 180RC or 180VC sensor	

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)
Storage temperature	-55 ... +80 °C (-67 ... 176 °F)
EMC compliance	EN61326-1, Industrial Environment Note: Transmitter with display test impedance of 40 Ω is used in IEC61000-4-5 (Surge immunity)

Mechanical Specifications

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, see order forms for details)
Housing material	G-AlSi 10 Mg (DIN1725)
IP rating	IP66 IP65 (NEMA4X) with local display
Weight	1.0 - 3.0 kgs
depending on selected probe, cable and modules	



Dimensions in mm (inches)

Inputs and Outputs

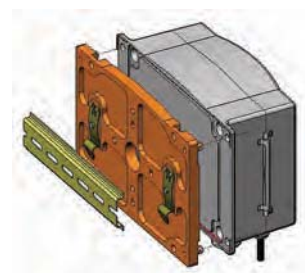
Operating Voltage	10 ... 35 VDC, 24 VAC $\pm 20\%$
with optional power supply module	100 ... 240 VAC, 50/60 HZ
Power Consumption at +20 °C (U_{in} 24 VDC)	
RS-232	max. 25 mA
U_{out} 2 x 0 ... 1 V/0 ... 5 V/0 ... 10 V	max. 25 mA
I_{out} 2 x 0 ... 20 mA	max. 60 mA
display and backlight	+ 20 mA
during chemical 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	$\pm 0.05\%$ full scale
Temperature dependence of the analog outputs	$\pm 0.005\%/^{\circ}\text{C}$ full scale
External loads:	
current outputs	$R_L < 500\ \Omega$
0 ... 1 V output	$R_L > 2\ \text{k}\Omega$
0 ... 5 V and 0 ... 10 V outputs	$R_L > 10\ \text{k}\Omega$
Max. Wire Size	0.5 mm ² (AWG 20)
	stranded wires recommended
Digital outputs	RS-232, RS-485 (optional)
Protocols	ASCII commands, Modbus RTU
Service Connection	RS-232, 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
Optional Data Logger with Real-Time Clock	
Logged parameters	max. four with trend/min/max values
Logging interval	10 sec. (fixed)
Max. logging period with max. temporal resolution	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

Mounting Options

Mounting with Wall Mounting Kit (not mandatory for wall installations)



Mounting with DIN Rail Installation Kit



Pole Installation with Installation Kit for Pole or Pipeline



Mounting Rain Shield with Installation Kit



Vaisala Meteorological Installation Kit HMT330MIK enables HMT337 to be installed outdoors to obtain reliable measurements for meteorological purposes