

VAISALA

Vaisala humidity,
temperature, and
CO₂ instruments
for HVAC
applications



Vaisala HVAC instruments – the industry standard for HVAC

High-quality measurement instruments are essential when it comes to optimizing HVAC controls. Vaisala's cost-efficient, reliable, accurate, and easy-to-use instruments for measuring humidity, temperature, and CO₂ can be used indoors and outdoors, and installed on walls and in ventilation

ducts. Our sensors and transmitters set the industry standard for energy efficiency, and are suitable for a wide variety of applications, from the optimization of cooling towers to demand-controlled ventilation based on carbon dioxide levels.

All Vaisala instruments for HVAC applications offer true humidity and temperature measurement thanks to our intelligent transmitter design, which ensures that measurements are not disturbed by electronic sensor heating. The humidity sensors used in our instruments have

excellent stability and reliability, while our CO₂ sensors include a unique built-in reference measurement to prevent drift and ensure long-term accuracy.





 **Online Store**
store.vaisala.com

Humidity and temperature

Vaisala humidity instruments are known for excellent long term stability and reliable operation ensuring low maintenance need throughout the product life cycle. The HVAC product range consists of duct and wall mount transmitters as well as transmitters with solar radiation shields for outdoor installations. Handheld instruments are available for spot-checking and on-site calibration.

±3% HUMIDITY AND TEMPERATURE INSTRUMENTS

Vaisala INTERCAP® humidity and temperature transmitters combine easy installation and reliable operation with low requirement for maintenance. The transmitters are equipped with interchangeable INTERCAP® humidity sensor, which can be easily exchanged in the field with minimum downtime.



HMW82/83 Wall-mount Humidity and Temperature Transmitters	HMW88/89 Wall-mount Humidity and Temperature Transmitters	HMD82/83 Duct-mount Humidity and Temperature Transmitters	HMS82/83 Outdoor Humidity and Temperature Transmitters
			
Output parameters: Relative humidity Temperature Passive Pt100 version	Output parameters: Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Output parameters: Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy	Output parameters: Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy
Outputs: 2 x 4...20 mA or 2 x 0...10 V	Outputs: 2 x 4...20 mA or 2 x 0...10 V	Outputs: 2 x 4...20 mA or 2 x 0...10 V	Outputs: 2 x 4...20 mA or 2 x 0...10 V
IP30	IP65 (NEMA4)	IP65 (NEMA4)	IP65 (NEMA4)
T-only models available		T-only models available	Integrated solar radiation shield

Take a look at the ±3% instruments and watch the installation video of HMS82/83 transmitter at www.vaisala.com/HMDW80.

±2% HUMIDITY AND TEMPERATURE INSTRUMENTS

Vaisala HUMICAP® humidity and temperature transmitters are intended for HVAC applications where high accuracy, stability and reliable operation are required. These transmitters are delivered with a traceable calibration certificate. Transmitters can be conveniently calibrated in the field using Vaisala HUMICAP® Handheld Humidity and Temperature Meter HM70.

±2% WALL-MOUNT TRANSMITTERS

HMW90 Series Wall-mount Humidity and Temperature Transmitters	HMW110/112 Wall-mount Humidity and Temperature Transmitters	HMT120/130 Series Humidity and Temperature Transmitters
		
<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy Mixing ratio Absolute humidity Dew point depression <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA or 2 x 0...5/0...10 V with relay <p>Digital output: BACnet and Modbus</p> <p>IP30</p> <p>T-only models available</p> <p>Four color options</p> <p>Optional decorative cover</p> <p>User exchangeable measurement module available</p> <p>±1.7%RH accuracy</p> <p>Calibration certificate included</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA <p>Digital outputs: Modbus</p> <p>IP65 (NEMA4)</p> <p>Calibration certificate included</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Enthalpy Mixing ratio <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA or 2 x 0...1 / 0...5 / 0...10 V <p>IP65 (NEMA4)</p> <p>Easily cleanable mechanics designed specifically for cleanroom use.</p> <p>T-only models available</p> <p>Available with fixed and remote probe</p> <p>Interchangeable probes available</p> <p>±1.5%RH accuracy</p> <p>Calibration certificate included</p>

Watch the installation and calibration video of the HMW90 series to learn how easy it is:





www.vaisala.com/HMW90.

±2% DUCT-MOUNT AND OUTDOOR TRANSMITTERS

HMD60 Duct-mount Humidity and Temperature Transmitters	HMD110/112 Duct-mount Humidity and Temperature Transmitters	HMS110/112 Outdoor Humidity and Temperature Transmitters	HMT120/130 Series Humidity and Temperature Transmitters
			
<p>Output parameters:</p> <ul style="list-style-type: none"> Relative Humidity Temperature Dew point Wet bulb Enthalpy Absolute humidity Mixing ratio <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA or 2 x 0...10V <p>Digital outputs: BACnet and Modbus:</p> <ul style="list-style-type: none"> IP66 (NEMA4X) <p>T-only models available</p> <p>A robust metal enclosure</p> <p>Two probe length options</p> <p>Field adjustment and calibration:</p> <ul style="list-style-type: none"> trimmers Vaisala HUMICAP® Hand-held Humidity and Temperature Meter HM70 Vaisala Insight PC Software <p>Configurable:</p> <ul style="list-style-type: none"> Vaisala Insight PC Software <p>±1.5 % RH and ±0.1 °C (±0.18 °F) accuracy</p> <p>Calibration certificate included</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA <p>Digital output: Modbus</p> <p>IP65 (NEMA4)</p> <p>Calibration certificate included</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Wet bulb temperature Enthalpy <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA <p>Digital output: Modbus</p> <p>IP65 (NEMA4)</p> <p>Integrated solar radiation shield</p> <p>Calibration certificate included</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Enthalpy Mixing ratio <p>Analog outputs:</p> <ul style="list-style-type: none"> 2 x 4...20 mA or 2 x 0...1 / 0...5 / 0...10 V <p>IP65 (NEMA4)</p> <p>Easily cleanable mechanics designed specifically for cleanroom use.</p> <p>T-only models available</p> <p>Available with fixed and remote probe</p> <p>Interchangeable probes available</p> <p>Solar radiation shield (DTR504A) for outdoor installations</p> <p>±1.5%RH accuracy</p> <p>Calibration certificate included</p>

±0.8% INDIGO COMPATIBLE HUMIDITY AND TEMPERATURE TRANSMITTERS

Vaisala HUMICAP® humidity and temperature probes are intended for industrial HVAC systems. The HMP3 and the HMP9 are intelligent, stand-alone probes compatible with the Indigo-series transmitters and Vaisala Insight PC software.





Indigo compatible HMP3 Humidity and Temperature Probe	Indigo compatible HMP9 Compact Humidity and Temperature Probe	Indigo 200 series transmitters for Vaisala smart probes	Insight PC Software for access to Indigo compatible probes
			
<p>Output parameters:</p> <ul style="list-style-type: none"> Relative Humidity Temperature Dew point temperature Dew point temperature difference Wet-bulb temperature Absolute humidity Mixing ratio Water concentration Water vapor pressure Enthalpy <p>IP66</p> <p>Digital output:</p> <ul style="list-style-type: none"> RS485, non-isolated <p>Protocols:</p> <ul style="list-style-type: none"> Modbus RTU <p>T-only models available</p> <p>Configurable:</p> <ul style="list-style-type: none"> Vaisala Insight PC Software <p>Accuracy:</p> <ul style="list-style-type: none"> ±0.8%RH 	<p>Output parameters:</p> <ul style="list-style-type: none"> Relative humidity Temperature Dew point temperature Dew point temperature difference Wet bulb temperature Absolute humidity Mixing ratio Water concentration Water vapor pressure Enthalpy <p>IP65</p> <p>Digital output:</p> <ul style="list-style-type: none"> RS485, non-isolated <p>Protocols:</p> <ul style="list-style-type: none"> Modbus RTU <p>Configurable:</p> <ul style="list-style-type: none"> Vaisala Insight PC software <p>Accuracy:</p> <ul style="list-style-type: none"> ±0.8%RH <p>Calibration certificate</p>	<p>Plug-and-play probe connection for Vaisala Indigo compatible probes</p> <p>Indigo 201: analog output (mA or V)</p> <p>Indigo 202 digital output: RS-485 with Modbus RTU</p> <p>IP65</p> <p>Resistant to dust and most chemicals</p>	<p>Access to:</p> <ul style="list-style-type: none"> Diagnostics data <p>Device-specific features:</p> <ul style="list-style-type: none"> event logs, parameter backup copy, electronic copy of the calibration certificate, data recording, testing and evaluation Field calibration Max. 6 probes for simultaneous attachment

[Watch video about the HMP9.](#)

Carbon dioxide

Vaisala's carbon dioxide instrument range for HVAC consists of duct and wall mount transmitters. They are easy to install and require practically no maintenance.

Vaisala carbon dioxide instruments are equipped with the proprietary CARBOCAP® sensor, which offers superior stability due to its built-in reference measurements. The internal referencing is vital in building with round-the-clock occupancy, where technologies based on assumed background CO₂ level reference is not applicable.




GMW90 Series Wall-mount Carbon Dioxide, Temperature, and Humidity Transmitters	GMW80 Series Carbon Dioxide, Humidity and Temperature Transmitters	GMD20 Series Duct-mount Carbon Dioxide Transmitters	GMP252 Carbon Dioxide Probe with DTR250 Radiation Shield
			
<p>Output parameters:</p> <ul style="list-style-type: none"> Carbon Dioxide Relative humidity Temperature <p>Calculated humidity parameters:</p> <ul style="list-style-type: none"> Dew point temperature Wet bulb temperature Enthalpy Mixing ratio Absolute humidity Dew point depression <p>Analog outputs (2 and 3 channel models available):</p> <ul style="list-style-type: none"> 0...20 mA / 4...20 mA or 0...5 / 0...10 V (with relay) <p>Digital output:</p> <ul style="list-style-type: none"> BACnet and Modbus <p>CO₂ measurement range:</p> <ul style="list-style-type: none"> 0...5 000 ppm <p>Accuracy ±50 ppm at 1000 ppm CO₂</p> <p>±75 ppm total accuracy over 5 years</p> <p>Versions with display, solid front and LED CO₂ indication.</p> <p>Four color options</p> <p>Optional decorative cover</p> <p>User exchangeable measurement modules available</p> <p>Calibration certificate included</p> <p>Ideal for demand-controlled ventilation</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Carbon Dioxide Pt1000 Relative humidity <p>Analog output options:</p> <ul style="list-style-type: none"> 4 ... 20 mA, 0 ... 10V <p>CO₂ measurement ranges:</p> <ul style="list-style-type: none"> 0...2 000 ppm <p>Accuracy ±60 ppm at 1000 ppm</p> <p>Versions with display, solid front, LED CO₂ indication and relay and GMW88 is IP64-rated.</p> <p>Ideal for demand-controlled ventilation</p>	<p>Output parameter:</p> <ul style="list-style-type: none"> Carbon Dioxide <p>Analog output options:</p> <ul style="list-style-type: none"> 0...20 mA, 4...20 mA, 0...10 V Optional relay and display <p>CO₂ measurement ranges:</p> <ul style="list-style-type: none"> 0...2 000 ppm 0...5 000 ppm 0...10 000 ppm 0...20 000 ppm <p>Reliable measurement with the sensor actually inside the duct</p> <p>Accuracy ±60 ppm at 1000 ppm</p> <p>Ideal for demand-controlled ventilation</p>	<p>Output parameters:</p> <ul style="list-style-type: none"> Carbon Dioxide <p>Calculated humidity parameters:</p> <ul style="list-style-type: none"> Dew point temperature Wet bulb temperature Enthalpy Mixing ratio <p>Analog output options:</p> <ul style="list-style-type: none"> 0 ... 20 mA, 4 ... 20 mA, 0 ... 10V <p>Digital output: Modbus</p> <p>Analog output ranges:</p> <ul style="list-style-type: none"> 0 ... 2000 ppm 0 ... 3000 ppm 0 ... 5000 ppm <p>Accuracy @ 400 ppm: ±40 ppm</p> <p>Weather proof and fully temperature compensated for a wide temperature range.</p> <p>Ideal for outdoor CO₂ measurement for DCV</p>

Watch the GMW80 installation video and see how fast the transmitter is installed: www.vaisala.com/GMW80.

Learn more about the Vaisala CARBOCAP® Technology by watching this video www.vaisala.com/CARBOCAP.

Handheld meters for spot-checking and calibration

Vaisala's HVAC offering includes handheld instruments for spot-checking measurements of humidity, temperature and carbon dioxide. These easy-to-use meters have a multilingual user interface and a variety of humidity parameters to choose from. The large graphical user interface enables monitoring the stabilization of the measurement.

HM40 Handheld Humidity and Temperature Meter Series	HM70 Handheld Humidity and Temperature Meter	GM70 Handheld Carbon Dioxide Meter
		
<p>Operating temperature range: -40 ... +100° (-40 ... 212 °F), depending on probe</p> <p>Four models available:</p> <ul style="list-style-type: none"> - HM41 Humidity and Temperature Meter - HM42 Humidity and Temperature Meter - HM45 Humidity and Temperature Meter - HM46 Humidity and Temperature Meter <p>with thin 4 mm remote probe</p> <ul style="list-style-type: none"> - HM45 Humidity and Temperature Meter - HM46 Humidity and Temperature Meter <p>with standard remote probe</p> <ul style="list-style-type: none"> - HM46 Humidity and Temperature Meter <p>with long, stainless steel remote probe</p> <p>No connections to fixed instruments</p>	<p>Operating temperature range from -70°C to +180°C (-94 ... 356 °F), depending on probe</p> <p>Three remote probe options</p> <p>Calibration interface with the following HVAC instruments: HMW90, HMD60/70, HMT120/130</p> <p>Data logging and data transfer to PC</p>	<p>Operating temperature range: -20...+60°C (-4...+140°F)</p> <p>Wide selection of CO₂ measurement ranges</p> <p>Calibration interface to the following HVAC instruments: GMW90, GMD20</p> <p>Data logging and data transfer to PC</p>

Read more about Vaisala's HVAC products www.vaisala.com/HVAC.

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