

# Vaisala Humidity, Temperature and CO<sub>2</sub> Instruments for HVAC Applications



**VAISALA**

# Vaisala HVAC Instruments

*The highest quality measurement instruments are essential when it comes to optimizing HVAC controls. That's why Vaisala offers cost-efficient, reliable, accurate, and easy-to-use instruments for measuring humidity, temperature, and carbon dioxide. They can be used indoors and outdoors, and installed on walls and in ventilation ducts. Easy to install and maintain, our sensors and transmitters set the industry standard for energy efficiency, from the optimization of cooling towers to demand-controlled ventilation based on carbon dioxide levels.*

We have renewed our HVAC products based on customers' feedback. Here's what we've improved:

- Easier installation:
  - Easy access to screw terminals
  - Screws that stay in place
  - Dip switches for quick configuration
- Easier maintenance:
  - Fast sensor replacement
  - Easy maintenance of traceable measurement accuracy with exchangeable modules
  - Multiple communication options available (analog, digital BACnet/Modbus)
- Easier purchasing:
  - Standard items make it easy to choose the instrument you want
- The new CO<sub>2</sub> measurement technology – microglow [www.vaisala.com/microglow](http://www.vaisala.com/microglow) – brings benefits to HVAC CO<sub>2</sub> measurements:
  - Sensor lifetime is extended by 50%
  - Only 1/3 of the power consumption of the previous generation

Here are the things you've come to expect from us that we haven't changed:

- True humidity and temperature measurement – our intelligent transmitter design ensures that electronic heating doesn't disturb humidity and temperature measurements
- Our humidity sensor, known for its excellent stability and reliability
- Our stable CO<sub>2</sub> sensor with the unique built-in reference measurement
- Quick and reliable deliveries

All the Vaisala HVAC instruments are available on the Vaisala online store.



[store.vaisala.com](http://store.vaisala.com)





# Humidity and Temperature

Vaisala has a comprehensive offering of instruments for measuring relative humidity and temperature in HVAC applications. 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. Hand-held 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<br>Wall-mount Humidity and Temperature Transmitters   | HMW88/89<br>Wall-mount Humidity and Temperature Transmitters  | HMD82/83<br>Duct-mount Humidity and Temperature Transmitters   | HMS82/83<br>Outdoor Humidity and Temperature Transmitters  |
|--|---|--|--|
|   |   |   |    |
| <p>Output parameters:<br/>Relative humidity<br/>Temperature</p> <p>Outputs: 2 x 4...20 mA<br/>or 2 x 0...10 V</p> <p>IP30</p> <p>T-only models available</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Wet bulb temperature<br/>Enthalpy</p> <p>Outputs: 2 x 4...20 mA<br/>or 2 x 0...10 V</p> <p>IP65 (NEMA4)</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Wet bulb temperature<br/>Enthalpy</p> <p>Outputs: 2 x 4...20 mA<br/>or 2 x 0...10 V</p> <p>IP65 (NEMA4)</p> <p>T-only models available</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Wet bulb temperature<br/>Enthalpy</p> <p>Outputs: 2 x 4...20 mA<br/>or 2 x 0...10 V</p> <p>IP65 (NEMA4)</p> <p>Integrated solar radiation shield</p> |

Take a look at the ±3% instruments and watch the installation video of HMS82/83 transmitter at [www.vaisala.com/HMDW80](http://www.vaisala.com/HMDW80).

## ±2% HUMIDITY AND TEMPERATURE INSTRUMENTS



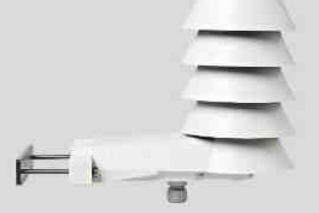

Vaisala HUMICAP® humidity and temperature transmitters are intended for HVAC applications where high accuracy, stability and reliable operation are required. These transmitters are delivered with a certificate from a NIST traceable calibration. Transmitters can be conveniently calibrated in the field using Vaisala HUMICAP® Hand-Held 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"> <li>Relative humidity</li> <li>Temperature</li> <li>Dew point temperature</li> <li>Wet bulb temperature</li> <li>Enthalpy</li> <li>Mixing ratio</li> <li>Absolute humidity</li> <li>Dew point depression</li> </ul> <p>Analog outputs:</p> <ul style="list-style-type: none"> <li>2 x 4...20 mA or</li> <li>2 x 0...5/0...10 V with relay</li> </ul> <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"> <li>Relative humidity</li> <li>Temperature</li> <li>Dew point temperature</li> <li>Wet bulb temperature</li> <li>Enthalpy</li> </ul> <p>Analog outputs:</p> <ul style="list-style-type: none"> <li>2 x 4...20 mA</li> </ul> <p>IP65 (NEMA4)</p> <p>Calibration certificate included</p> | <p>Output parameters:</p> <ul style="list-style-type: none"> <li>Relative humidity</li> <li>Temperature</li> <li>Dew point temperature</li> <li>Enthalpy</li> <li>Mixing ratio</li> </ul> <p>Analog outputs:</p> <ul style="list-style-type: none"> <li>2 x 4...20 mA or</li> <li>2 x 0...1 / 0...5 / 0...10 V</li> </ul> <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](http://www.vaisala.com/HMW90).




## ±2% Duct-mount and Outdoor Transmitters

| HMD60/70 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:<br/>Relative Humidity<br/>Temperature</p> <p>Analog outputs:<br/>2 x 4...20 mA or<br/>2 x 0...1 / 0...5 / 0...10V</p> <p>IP65 (NEMA4)</p> <p>T-only models available<br/>A robust metal enclosure</p> <p>Calibration certificate included</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Wet bulb temperature<br/>Enthalpy</p> <p>Analog outputs:<br/>2 x 4...20 mA</p> <p>IP65 (NEMA4)</p> <p>Calibration certificate included</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Wet bulb temperature<br/>Enthalpy</p> <p>Analog outputs:<br/>2 x 4...20 mA</p> <p>IP65 (NEMA4)</p> <p>Integrated solar radiation shield</p> <p>Calibration certificate included</p> | <p>Output parameters:<br/>Relative humidity<br/>Temperature<br/>Dew point temperature<br/>Enthalpy<br/>Mixing ratio</p> <p>Analog outputs:<br/>2 x 4...20 mA or<br/>2 x 0...1 / 0...5 / 0...10 V</p> <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<br/>Interchangeable probes available<br/>Solar radiation shield (DTR504A) for outdoor installations</p> <p>±1.5%RH accuracy</p> <p>Calibration certificate included</p> |

# 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 CO<sub>2</sub> level reference is not applicable.

| <b>GMW90 Series</b><br><b>Wall-mount Carbon Dioxide, Temperature, and Humidity Transmitters</b>   | <b>GMW80 Series</b><br><b>Carbon Dioxide, Humidity and Temperature Transmitters</b>   | <b>GMD20 Series</b><br><b>Duct-mount Carbon Dioxide Transmitters</b>  |
|---|---|---|
|   |   |   |
| <p>Output parameters:</p> <ul style="list-style-type: none"> <li>Carbon Dioxide</li> <li>Relative humidity</li> <li>Temperature</li> </ul> <p>Calculated humidity parameters:</p> <ul style="list-style-type: none"> <li>Dew point temperature</li> <li>Wet bulb temperature</li> <li>Enthalpy</li> <li>Mixing ratio</li> <li>Absolute humidity</li> <li>Dew point depression</li> </ul> <p>Analog outputs (2 and 3 channel models available):</p> <ul style="list-style-type: none"> <li>0...20 mA / 4...20 mA or</li> <li>0...5 / 0...10 V (with relay)</li> </ul> <p>Digital output:</p> <p>BACnet and Modbus</p> <p>CO<sub>2</sub> measurement range:</p> <p>0...5 000 ppm</p> <p>Accuracy ±50 ppm at 1000 ppm CO<sub>2</sub><br/>±75 ppm total accuracy over 5 years</p> <p>Versions with display, solid front and LED CO<sub>2</sub> 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"> <li>Carbon Dioxide</li> <li>Pt1000</li> <li>Temperature setpoint potentiometer</li> <li>Relative humidity</li> </ul> <p>Analog output options:</p> <p>4 ... 20 mA, 0 ... 10V</p> <p>CO<sub>2</sub> measurement ranges:</p> <p>0...2 000 ppm</p> <p>Accuracy ±60 ppm at 1000 ppm</p> <p>Versions with display, solid front, LED CO<sub>2</sub> indication and relay.</p> <p>Ideal for demand-controlled ventilation</p> | <p>Output parameter:</p> <p>Carbon Dioxide</p> <p>Analog output options:</p> <p>0...20 mA, 4...20 mA,<br/>0...10 V</p> <p>Optional relay and display</p> <p>CO<sub>2</sub> measurement ranges:</p> <p>0...2 000 ppm<br/>0...5 000 ppm<br/>0...10 000 ppm<br/>0...20 000 ppm</p> <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> |

Watch the GMW80 installation video and see how fast the transmitter is installed: [www.vaisala.com/GMW80](http://www.vaisala.com/GMW80).  
 Learn more about the Vaisala CARBOCAP® Technology by watching this video [www.vaisala.com/CARBOCAP](http://www.vaisala.com/CARBOCAP).

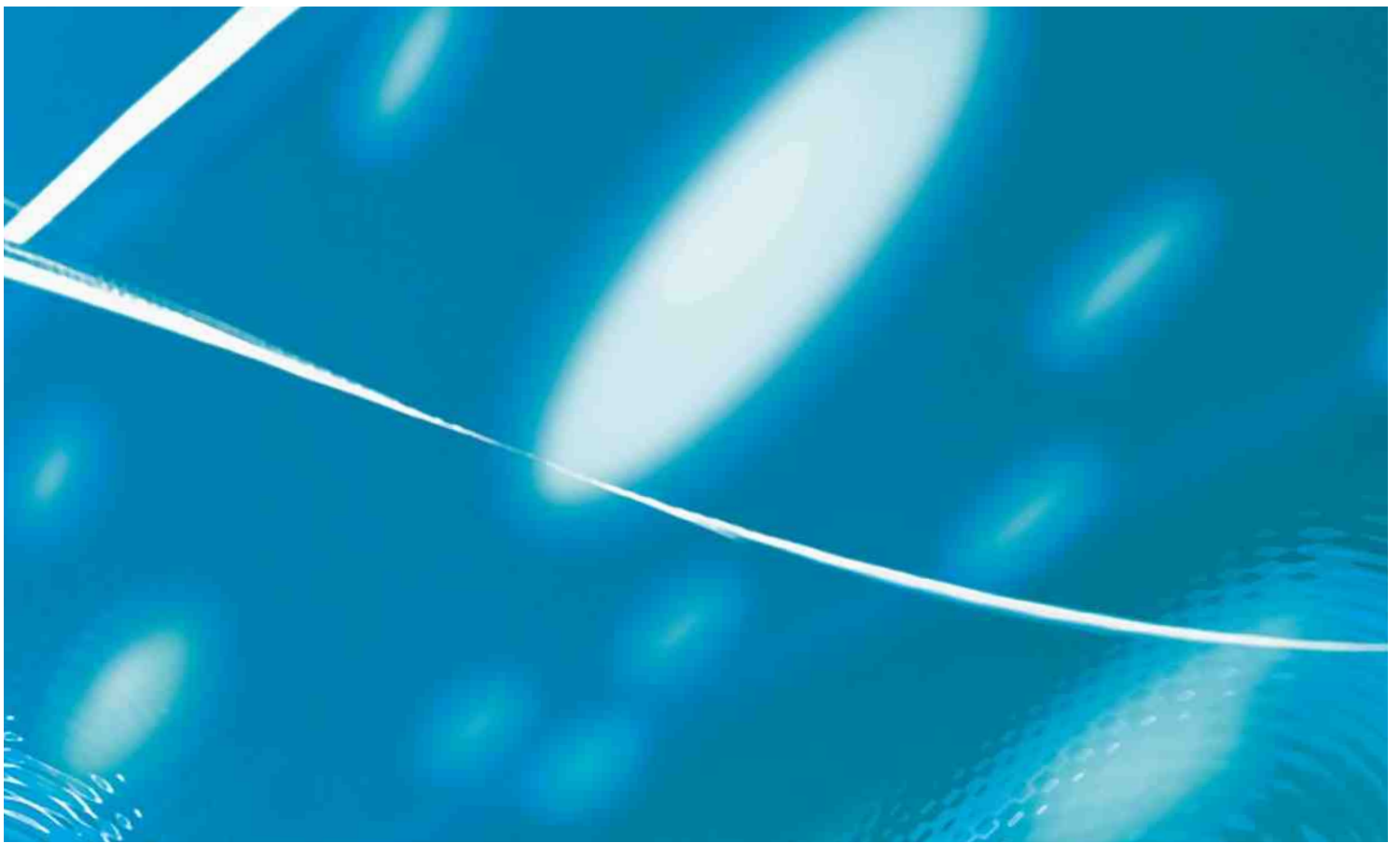
# Hand-Held Meters for Spot-Checking and Calibration

Vaisala's HVAC offering includes hand-held 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 Hand-held Humidity and Temperature Meter Series  | HM70 Hand-held Humidity and Temperature Meter  | GM70 Hand-held Carbon Dioxide Meter   |
|---|--|---|
|   |   |   |
| <p>Operating temperature range:<br/>-40 ... +100° (-40 ... 212 °F),<br/>depending on probe</p> <p>Four models available:</p> <ul style="list-style-type: none"> <li>- HM41 Humidity and Temperature Meter</li> <li>- HM42 Humidity and Temperature Meter with thin 4 mm remote probe</li> <li>- HM45 Humidity and Temperature Meter with standard remote probe</li> <li>- HM46 Humidity and Temperature Meter with long, stainless steel remote probe</li> </ul> <p>No connections to fixed instruments</p> | <p>Operating temperature range from<br/>-70°C to +180°C (-94 ... 356 °F),<br/>depending on probe</p> <p>Three remote probe options</p> <p>Calibration interface with the following HVAC instruments:<br/>HMW90, HMD60/70, HMT120/130</p> <p>Data logging and data transfer to PC</p> | <p>Operating temperature range:<br/>-20...+60°C (-4...+140°F)</p> <p>Wide selection of CO<sub>2</sub> measurement ranges</p> <p>Calibration interface to the following HVAC instruments:<br/>GMW90, GMD20</p> <p>Data logging and data transfer to PC</p> |

Read more about Vaisala's HVAC products [www.vaisala.com/HVAC](http://www.vaisala.com/HVAC).





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