



HMM210 Series Humidity, Dewpoint and Temperature Modules for Demanding Applications

DIFFERENT CONFIGURATIONS TO MEET DEMANDING APPLICATIONS

The HMM210 series modules are designed for Original Equipment Manufacturers (OEM's) needing humidity and dewpoint measurements in demanding applications. Examples include manufacturers of environmental chambers, growth chambers, incubators and hatchers. These modules provide high accuracy over wide temperature and relative humidity ranges. Also, they remain accurate and reliable under extreme conditions where a combination of high humidity and rapidly changing temperature can result in condensation on the sensor head.

THREE PROBE CONFIGURATIONS

- Relative Humidity (RH) plus Temperature (T) probe.
- Dewpoint probe features Vaisala's unique Composite Sensor, which remains heated a few degrees above ambient to prevent dew formation (condensation) on the sensor.
- Dewpoint probe described above, together with a temperature probe for obtaining relative humidity and temperature outputs.

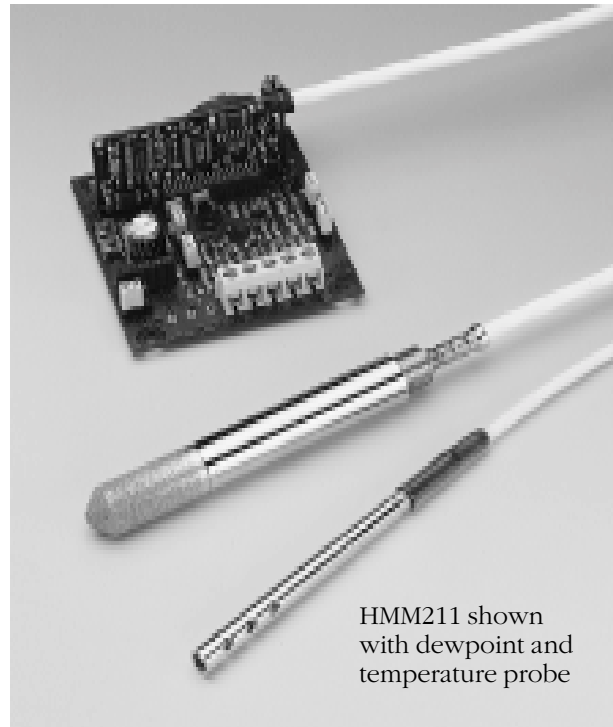
THREE BOARD CONFIGURATIONS

- HMM211 has analog outputs, and three-wire design. It is compatible with all three probes.
- HMM212 has current outputs and two-wire design. It is compatible only with the RH + T probe.
- HMM213 has RS232 output, and is compatible with all three probes.

DIFFERENT PROBE AND CABLE LENGTHS AVAILABLE

- The probes are 12 mm in diameter and available in lengths of 90* or 215 mm.
- Cable lengths of 65 cm, 150 cm or 300 cm are available for the RH+T and dewpoint probes.
- Cable lengths of 150 cm or 300 cm available for the separate temperature probe.

*Humidity probe warming only available for the 90 mm probe.



HMM211 shown with dewpoint and temperature probe

UNIQUE COMPOSITE SENSOR DESIGN OFFERS SEVERAL ADVANTAGES

This Composite Sensor, available on the dewpoint probe configuration, is warmed to always remain a few degrees higher than ambient. Advantages of this patented technique include:

- No condensation problems on the sensor, as the temperature of the probe always remains higher than the ambient.
- Fast response time, especially in rapidly changing temperatures.
- Improved stability and accuracy in high humidities.

NEW RE-GAINING OPTION

For 25 years, Vaisala's HUMICAP sensor has proven its resistance to dust and most chemicals. However, for some extreme applications such as chemical exposure in chambers, when there is a risk of certain rare chemicals accumulating on the sensor, thereby decreasing accuracy, Vaisala's new re-gaining option is recommended. With this option, contaminants are evaporated from the sensor and performance is returned to normal. Re-gaining is always activated when the module is switched on to remove the effects of cleaning, sterilization, etc.

TECHNICAL DATA - HMM210 SERIES

Relative Humidity

Measurement range	0...100% RH
Achievable accuracy when calibrated against high quality humidity standards	±1% RH (0...90% RH) ±2% RH (90...100% RH)
Accuracy against salt solutions (ASTM E104-85)	±2% RH (0...90% RH) ±3% RH (90...100% RH)
Response time (90% at +68 °F) in still air (with sintered filter)	15 s
Typical temperature dependence of electronics	±0.01% RH/°F (0.02 % RH/°C)
Humidity sensor	HUMICAP®180

Temperature

Measurement range	-94... +356 °F (-70...+180 °C)
Typical accuracy of electronics at +68 °F (+20 °C)	±0.18 °F (±0.1 °C)
Typical temperature dependence of electronics	0.0025 °F/F (0.0025°C/°C)
Temperature sensor in RH+T probe:	
HMM211 and 213	PT 100 RTD IEC 751 1/3 Class B
HMM212	PT 1000 RTD IEC 751 1/3 Class B
Additional temperature probe	PT 100 RTD IEC 751 1/4 Class B

Outputs

Two analog outputs selectable	
HMM211	0...1 V, 0...5 V, 0...10V 0...20 mA
HMM212	4...20mA (loop powered)
Digital output	
HMM 213	RS232

General

Operating temperature range	
Probe	-94...+356 °F (-70...+180 °C)
Electronics	23...+131 °F (-5...+55 °C)
Storage temperature range (Electronics)	-40...+160 °F (-40...+70 °C)
Sensor protection (standard)	stainless steel sintered filter
Connections	screw terminals for 0.5...1.5 mm2 wires
Meet EMC standards EN50081-1 and EN50082-2.	

Power Supply

Operating voltage	10...35 VDC
In modules with analog outputs the supply range depends to a certain extent on the selected output range.	
Current consumption without sensor head warming or re-gaining option	
HMM211 & 213	12 mA at 35 VDC

Configuration Options

	Compatible with modules:		
Probes	<u>HMM 211</u>	<u>HMM 212</u>	<u>HMM 213</u>
RH+T	yes	yes	yes
Dewpoint (heated composite sensor)	yes		yes
Temperature	yes		yes

Cable lengths

RH+T and Dewpoint probes	65, 150 and 300 cm
Temperature probe	150 and 300 cm

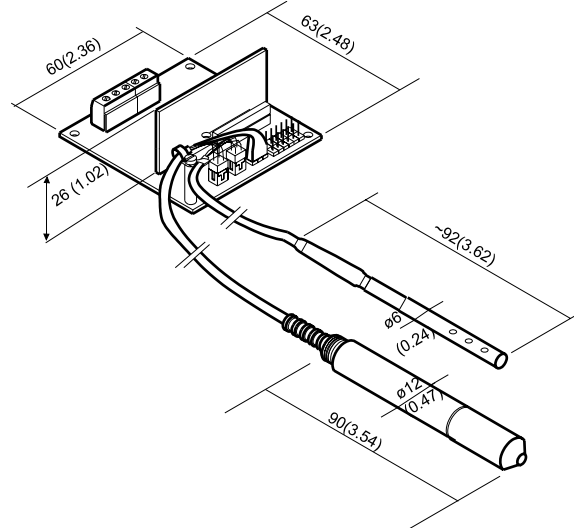
ReGaining

Automatically takes place at power-up

HUMICAP® is a registered trademark of Vaisala, Inc.
 Specifications subject to change without further notice.

HMM210

Dimensions in mm (inches)



HMM211 Wiring Diagram

