

# HMM210 Series Humidity Modules for Environmental Chambers

## **ACCURATE RELATIVE HUMIDITY AND TEMPERATURE OR DEWPOINT MEASUREMENT**

Vaisala's HMM210 series modules are optimized for harsh environments with both high humidities and a wide temperature range. The humidity measurement is fully temperature compensated.

The modules are highly versatile and flexible. They provide either relative humidity and temperature or dewpoint measurement with various configurations.

All modules have micro-processor based electronics and are equipped with analog or digital outputs. Moreover, the modules have excellent EMC characteristics.

## **FAST AND STABLE HUMIDITY MEASUREMENT**

A warmed humidity probe is available as an option for the HMM211 and the HMM213.

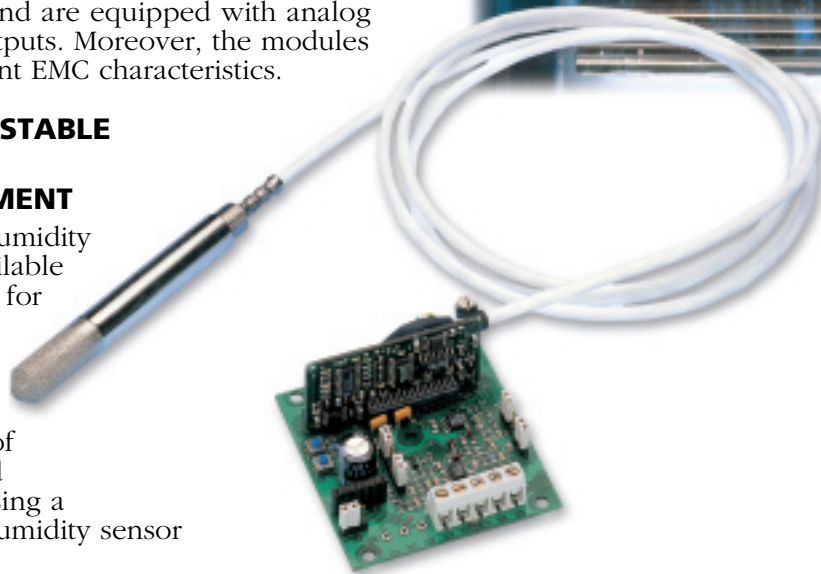
The advantages of this patented technique using a composite humidity sensor are:

- no condensation problems on the sensor head
- fast humidity response time especially in rapidly changing temperatures
- improved stability and accuracy in high humidities.

## **OEM APPLICATIONS**

The HMM210 series modules are designed for OEM type applications needing humidity or dewpoint measurement in demanding environments, e.g. in environmental chambers, growth chambers and incubators.

## **Fast real-time measurement in a wide temperature range**



## **RELIABLE HUMICAP® SENSOR**

The HMM210 series modules use Vaisala's HUMICAP® sensor which has high accuracy, excellent long-term stability and negligible hysteresis. The sensor is insensitive to dust and to most chemicals. In conditions of extraordinary high levels of chemicals and cleaning agents, sensor re-gaining is available as an option in order to assure accuracy between calibrations.

The calibration may be exercised quickly and easily using Vaisala's HMI41 humidity indicator or alternatively with a HMK15 saturated salt calibrator.

## TECHNICAL DATA HMM210 SERIES MODULES

### RELATIVE HUMIDITY

Measurement range	0...100 %RH
Accuracy against salt solutions (ASTME104-85)	±2 %RH (0...90 %RH) ±3 %RH (90...100 %RH)

Achievable accuracy when calibrated against high quality humidity standards	±2 %RH (0...100 %RH)
Response time (90%) at +20°C in still air (with a sintered filter)	15 s
Typical temperature dependence of electronics	0.02 %RH/°C
Humidity sensor	HUMICAP®180

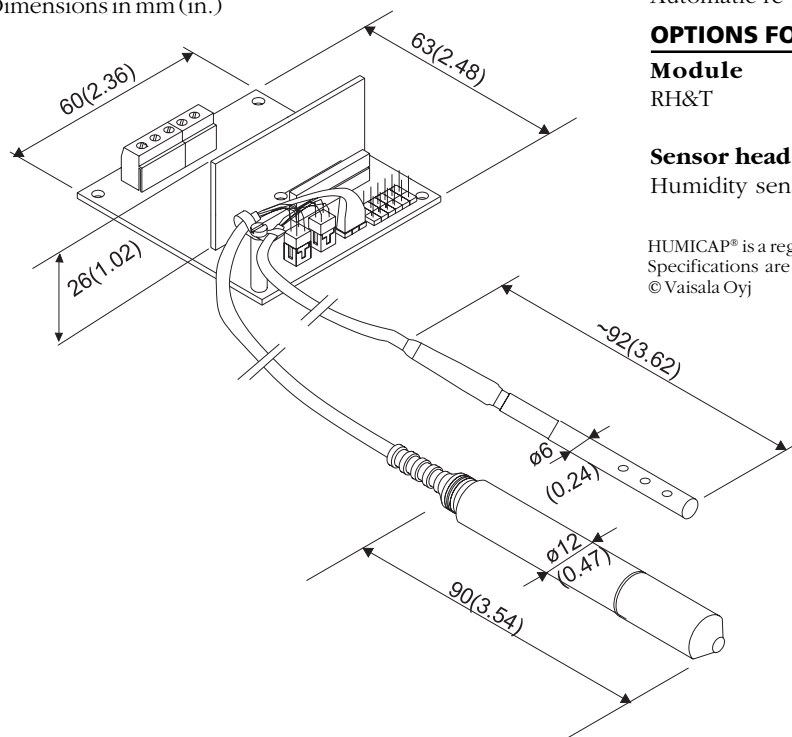
### TEMPERATURE

Measurement range	-70...+180 °C
Typical accuracy of electronics at +20 °C	±0.1 °C
Typical temperature dependence of electronics	0.0025 °C/°C
Temperature sensor (HMM211 & 213)	Pt 100 RTD IEC 751 1/3 Class B
Temperature sensor (HMM212)	Pt 1000 RTD IEC 751 1/3 Class B

### OUTPUTS

Two analog outputs selectable	
HMM211	0...1 V, 0...5 V, 0...10 V 0...20 mA
HMM212	4...20mA (loop powered)
Digital output	
HMM213	RS232

Dimensions in mm (in.)



### GENERAL

Operating temperature range	
probe	-70...+180 °C
electronics	-5...+55 °C
Storage temperature range (electronics)	
	-40...+70 °C
Sensor protection	
standard	stainless steel sintered filter
Connections	
	screw terminals for 0.5...1.5 mm <sup>2</sup> wires
Meets 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

### OPTIONS FOR HMM211 & HMM213

Module	Humidity head	Output
RH&T	normal	RH&T
Dewpoint	warmed	dewpoint
RH&T with two sensor heads	warmed	RH&T

### Sensor head

Humidity sensor head	Cable length
Humidity sensor head	65, 150, 300 cm
Optional T sensor head/module with two sensor heads	150, 300 cm

### Re-gaining

Automatic re-gaining takes place at power-up

### OPTIONS FOR HMM212

Module	Humidity head	Output
RH&T	normal	RH&T

### Sensor head

Humidity sensor head	Cable length
Humidity sensor head	65, 150, 300 cm

HUMICAP® is a registered trademark of Vaisala.  
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