HMP243 Dewpoint Transmitter for Condensing Environments and Challenging Outdoor Applications

UNIQUE COMPOSITE SENSOR PROVIDES EXCELLENT STABILITY UNDER EXTREME CONDITIONS

The HMP243 provides fast and reliable dewpoint measurement even under extreme conditions where a combination of high humidity and rapidly changing temperature can present unwanted dew formation on the sensor head. Because the temperature of the HMP243's sensor head is constantly higher than ambient, the possibility of dew formation is eliminated. The result is uninterrupted, accurate and stable dewpoint measurement that is unmatched by more common chilled mirror and psychrometric instruments.

FEATURES/BENEFITS

- Versatile and easy to use
- Wide temperature range from -40 to +356 °F (-40° to +180 °C)
- Configuration and parameters can be set by the user
- Electronic, on-site, one-point calibration
- Typically requires calibration/maintenance only every one to two years
- Aluminum housing protects against dust/sprayed water and electromagnetic interference
- Optional sensor re-gaining function for resistance to interfering chemicals
- Optional temperature sensor head for ambient temperature reference and calculation of relative humidity, dewpoint difference, mixing ratio, absolute humidity, wet bulb temperature
- Supplied with NIST traceable certificate of calibration

CUSTOMIZE YOUR INSTRUMENT

Vaisala's unique microprocessor design and modularity allow you to customize the HMP243 at time of purchase. You can select:

- Local display or no display
- Sensor head cable length (2, 5 or 10 meters)
- Serial bus (RS 232C, RS 485/422, digital current loop)
- Choice of filter
- Choice of analog output signals
- Various temperature measurement ranges
- Metric or non-metric units
- Installation kit for duct mounting
- Re-gaining option for extra protection against interference from rare chemicals
- Optional temperature sensor

HMP243

MEASURE DEWPOINT AND CALCULATE OTHER VARIABLES

With the addition of an optional temperature sensor to measure ambient temperatures, the HMP 243 can calculate relative humidity or absolute humidity; the difference between ambient and dewpoint temperature; and the mixing ratio and wet bulb temperature of ambient air. Small and light, the temperature sensor reacts quickly to changes in ambient temperature, providing very fast response time even for the calculated variables.

RE-GAINING OPTION

For 25 years, Vaisala's HUMICAP® sensor has proven its resistance to dust and most chemicals time and time again. When there is the risk of certain rare chemicals accumulating in the humidity sensor, thereby decreasing the 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 can be activated using a software command or it can be programmed to occur at set intervals.

Note: The temperature probe should be kept at least 1 meter apart from the heated probe. For outdoor installations, ask for the meteorological installation kit. (MIK)

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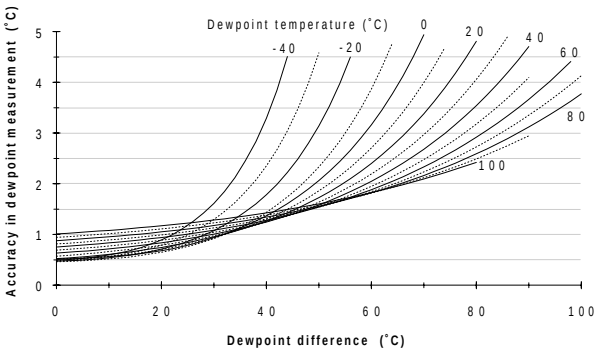
TECHNICAL DATA - HMP243

Dewpoint Temperature

Measurement range	-40...+212 °F (-40...+100 °C)
Reponse time (90%) at 68 °F (+20 °C) in still air (with sintered filter)	15 s
Sensor	HUMICAP® KC

Accuracy: find the intersection of the dewpoint temperature curve and the dewpoint difference reading (process temperature-dewpoint temperature) on the x-axis and read the accuracy in dewpoint measurement at the y-axis.



Temperature (option)

Measurement range	-40...+356 °F (-40...+180 °C)
Typical accuracy at 68 °F (+20 °C)	0.18 °F (±0.1 °C)
Typical temperature dependence of electronics	0.005 °F/°F (0.005 °C/°C)
Sensor	Pt 100 RTD IEC 751, class 1/4 B

Outputs

Two analog outputs selectable and scaleable	0...20 mA, 4...20 mA, 0...1 V, 0...5 V, 0...10V
Typical accuracy of analog output at 68° F (+20 °C)	±0.05% FS
Typical temperature dependence of analog output	0.005 % FS/°F (0.005 % FS/°C)
Serial output available	RS 232C

Calculated Variables

Available only when temperature sensor head is in use.

Typical ranges	
relative humidity	0...100% RH
dewpoint difference	0...+90 °F (0...+50 °C)
mixing ratio	0...500 g/kg d.a.
absolute humidity	0...600 g/m3
wet bulb temperature	32…+212 °F (0...+100 °C)
Accuracy of RH measurement	±(0.5% RH + 2.5% of reading)

General

Connections	screw terminals for 0.5 mm² wires (AWG 20), stranded wires recommended
Operating voltage	24 VDC/VAC (20..28 V)
Power consumption	200 mA max. (24 VDC)
during re-gaining	270 mA max. (24 VDC)
Recommended external load for	
current outputs	< 500 ohm
0...1 V ouput	> 2 kohm (to ground)
0...5 & 0...10 V outputs	> 10 kohm (to ground)
Electromagnetic compatibility	IEC 801-3
with sintered filter	3 V/m
with steel netting PPS grid	10 V/m
Operating temperature range for	
electronics	-40...+140 °F (-40...+ 60 °C)
with display cover	+32...122 °F (0...+50 °C)
Storage temperature range	-40...+158 °F (-40...+70 °C)
Housing material	G-Alsi12 (DIN 1725)
Housing classification	NEMA 4 (IP 65)
Bushing	for 7...10 mm diameter cables (8 x 0.5 mm² shielded cable)
Sensor head cable lengths	2, 5, or 10 meters
Humidity sensor protection Ø 13.5 mm	stainless steel sintered filter PPS grid with steel netting

Specifications subject to change without prior notice.
HUMICAP® is a registered trademark of Vaisala.

HMP243