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HMP243 Dewpoint Transmitter for Condensing Environments and Outdoor Applications

The HMP243 Transmitter, shown with a PPS plastic grid, non-condensing humidity sensor and optional temperature sensor, typically needs calibration/maintenance once a year.

Features/Benefits

- Wide temperature range: -40…+356 °F (-40 …+180 °C)
- Sensor cable lengths: 2, 5, 10 meters
- Optional temperature sensor
- Installation kit for duct mounting
- Choice of local display, filter, serial bus (RS232C, RS485/422, digital current loop), analog output signals and temperature ranges
- Typical calibration/maintenance is once a year
- Incorporates the HUMICAP® Sensor for excellent accuracy and long-term stability, negligible hysteresis and resistance to dust and most chemicals.
- NEMA 4 (IP65) housing protects against dust, water spray, and electromagnetic interference
- NIST traceable (certificate included)

Note: The temperature probe should be located at least 1 meter from the heated probe.

The HMP243 Dewpoint Transmitter provides fast and reliable dewpoint measurement under extreme conditions, where a combination of high humidity and rapidly changing temperature may cause unwanted dew formation on the sensor head.

Eliminates dew formation on sensor head

The HMP243 eliminates dew formation by maintaining the sensor head temperature higher than ambient. The result is uninterrupted, accurate and stable dewpoint measurement in condensing environments, that is unmatched by chilled mirror or psychometric instruments.

Calculates variables

By adding an optional temperature sensor as an ambient temperature reference, the HMP243 can calculate relative or absolute humidity; the difference between ambient and dewpoint temperature; mixing ratio and wet bulb temperature of ambient air.

The small sensor reacts quickly to temperature changes, and provides a fast response time, even for calculated variables.

On-site, one-point calibration

One-point calibration of relative humidity and temperature can be done in the field using Vaisala's hand-held HMK41 field calibrator. (See page 26.)

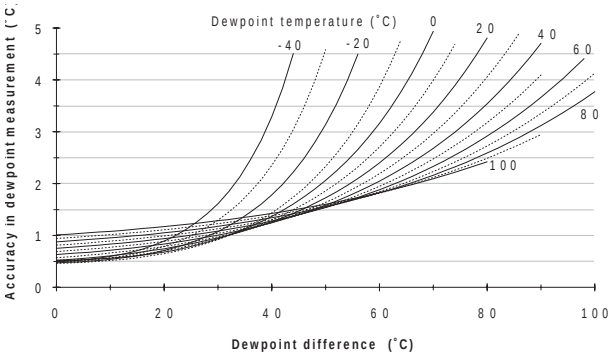
HMP243MIK provides radiation shields for dewpoint and temperature sensor heads.

Technical Data

Dewpoint temperature

Measurement range	-40…+212 °F (-40…+100 °C)
Response time (90 %) at +68 °F (+20 °C)	
in still air (w/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 1/4 Class B

Calculated Variables

Available only when temperature sensor is in use.

Typical ranges:

relative humidity	0…100 %RH
dewpoint difference	0...+90 °F (0...+50 °C)
mixing ratio	0…3500 gr/lb (0...500 g/kg d.a.)
absolute humidity	0…262 gr/ft³ (0...600 g/m³)
wet bulb temperature	+32…+212 °F (0...+100 °C)
Accuracy of RH measurement	±(0.5 %RH +2.5 % of reading)

Outputs

Two analog outputs selectable and scalable	0...20 mA 0...1 V	4...20 mA 0...5 V 0...10 V
Typical accuracy of analog output at +68 °F (+20 °C)		±0.05 %FS
Typical temperature dependence of analog output at +68 °F (+20 °C)		0.005 %FS/°F (0.005 %FS/°C)
Serial output available		RS232C

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 maximum (24 VDC)
during re-gaining	270 mA maximum (24 VDC)
Recommended external load for current outputs	< 500 ohm
Recommended external load	
for 0...1V output	> 2 kohm (to ground)
for 0...5 and 0...10 V outputs	> 10 kohm (to ground)
Electromagnetic compatibility	IEC 803-1
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 (IP65)
Bushing	for 7...10 mm diameter cable (8 x 0.5 mm² shielded cable)
Sensor head cable lengths	2, 5, 10 meters
Humidity sensor protection	stainless steel sintered filter
(ø 13.5 mm	PPS plastic grid with steel netting

Meets CE requirements on electromagnetic compatibility (10V/m to 3V/m) depending on the filter.

Dimensions

Dimensions in mm.