

DMT143 Dew Point Transmitter For OEM applications



Features

- Vaisala DRYCAP® technology with a unique autocalibration function
- Dew point measurement range $-70 \dots +60 \text{ }^\circ\text{C}$ ($-94 \dots +140 \text{ }^\circ\text{F}$)
- Accuracy $\pm 2 \text{ }^\circ\text{C}$ ($\pm 3.6 \text{ }^\circ\text{F}$)
- Withstands condensation
- Compatible with Vaisala Indigo80 handheld indicator and Insight PC software
- Traceable calibration
- Voltage (V) or current (mA) analog output
- RS-485 digital output with Modbus® RTU support
- LED alarm for exceeded dew point level
- Fast response time

Due to its wide measurement range and excellent long-term stability, Vaisala DRYCAP® Dew Point Transmitter DMT143 is an ideal choice for small compressed air dryers, plastic dryers, and other OEM applications.

Vaisala DRYCAP® technology

Vaisala DRYCAP® Dew Point Transmitter DMT143 is a miniature dew point measurement instrument.

The transmitter can be installed directly into pressurized systems at 50 bar (725 psi) maximum pressure. The long-term high performance is achieved with Vaisala DRYCAP® technology.

The sensor fully withstands getting wet, and therefore, the transmitter performs exceptionally well in applications that occasionally experience process water spikes, such as pipeline condensation during a system failure or start-up.

The sensor is also highly resistant to particulate contamination, oil vapor, and most chemicals, and is insensitive to the flow rate.

Long calibration interval

The typical calibration interval of DMT143 is 2 years. For any adjustment needs, the transmitter can be sent to a Vaisala Service Center.

The unique autocalibration function, developed by Vaisala, detects possible measurement inaccuracies and automatically corrects dry-end drift in the calibration curve. This ensures accurate measurements and long calibration intervals.

Easy installation

DMT143 has a variety of features to choose from, including different output and installation options, and alarm LED.

Due to its small size and light weight, DMT143 is quickly and easily installed in tight spaces or in small-size pipelines. The alarm LED indicates too high dew point in the process. The trigger point is preset at the factory. It can be later adjusted with the convenient Vaisala Insight PC software for Windows®.

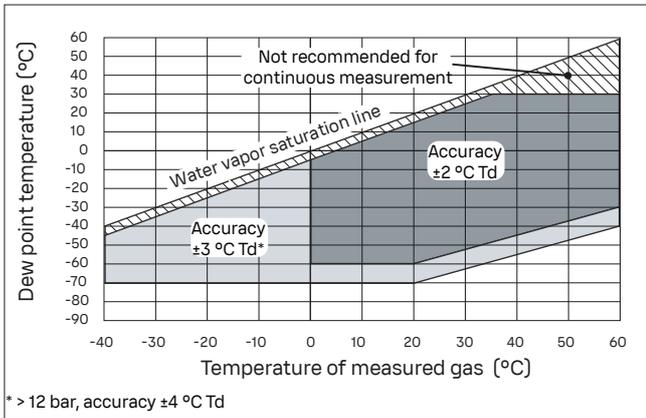
Insight PC software and the Indigo80 handheld indicator can also be used for other configuration options, as well as for viewing and logging measurement data (for more information, see vaisala.com/insight and vaisala.com/indigo).

Technical data

Measurement performance

Sensor	DRYCAP® 180D
Sensor protection	Stainless steel sintered filter
Calibration interval to confirm the specified accuracy (typical)	2 years
Dew point temperature	
Measurement range (typical)	-70 ... +60 °C (-94 ... +140 °F) $T_{d/f}$
Accuracy in air or N ₂ ¹⁾	±2 °C (±3.6 °F) $T_{d/f}$ (see graph below)
Dew point measurement accuracy vs. measurement conditions	
Response time 63 % [90 %]: ²⁾	
-70 → -20 °C $T_{d/f}$ (-94 → -4 °F $T_{d/f}$)	5 s [15 s] (typical)
-20 → -70 °C $T_{d/f}$ (-4 → -94 °F $T_{d/f}$)	45 s [10 min] (typical)
Water concentration by volume (ppm)	
Measurement range (typical)	10–40 000 ppm
Accuracy at +20 °C (+68 °F), 1 bar	1 ppm + 20 % of reading

- 1) When the dew point temperature is below 0 °C (32 °F), the transmitter outputs frost point temperature for $T_{d/f}$.
- 2) At +20 °C (+68 °F) gas temperature and 1 bar pressure and 1 liter/min flow rate.



Dew point measurement accuracy vs. measurement conditions

Operating environment

Measurement environment	For air, nitrogen, hydrogen, argon, helium, and oxygen ^{1) 2)}
Temperature ³⁾	-40 ... +60 °C (-40 ... +140 °F)
Relative humidity	0–100 % RH
Operating pressure ³⁾	0–50 bar (725 psi), absolute
Sample flow rate	No effect for measurement accuracy
Storage temperature	-40 ... +60 °C (-40 ... +140 °F)
IP rating	IP66

- 1) Consult Vaisala if other chemicals are present. Consider safety regulations with flammable gases. The transmitter is not certified for use in hazardous areas with potentially explosive atmospheres.
- 2) The transmitter is not tested for leakages, which may occur especially with small-molecule gases such as hydrogen and helium.
- 3) For extended temperature below 0 °C (+32 °F) or pressure above 20 bar (290 psi), absolute, the supply voltage must be 24–28 V DC.

Inputs and outputs

Analog output (scalable)	4–20 mA (3-wire), 0–1 V / 5 V, 1–5 V
Resolution for current output	0.002 mA
Resolution for voltage output	0.3 mV
Accuracy for current output at +20 °C	±0.05 mA
Accuracy for voltage output at +20 °C	±0.01 V
Operating voltage with digital output	12–28 V DC
Operating voltage with voltage output	12–28 V DC
Operating voltage with current output	18–28 V DC
Load for current output	Max. 500 Ω
Load for voltage output	Min. 10 kΩ
Typical temperature dependence	0.005 % of span/°C
Digital output	RS-485, non-isolated
Supported protocols	Vaisala Industrial Protocol Modbus RTU
Connector	4-pin M8 (IEC 60947-5-2)
Supply current at +20 °C (U_{in} 24 V DC)	
Normal measurement	10 mA + load current (typical)
During self-diagnostics	220 mA pulsed (typical)

Mechanical specifications

Mechanical connection	ISO 228-1 G1/2" 1/2" NPT 3/4"-16 UNF 5/8"-18 UNF
Housing material	Stainless steel (AISI316L)
Weight:	
G thread and UNF thread models	90 g (3.2 oz)
NPT thread model	100 g (3.5 oz)

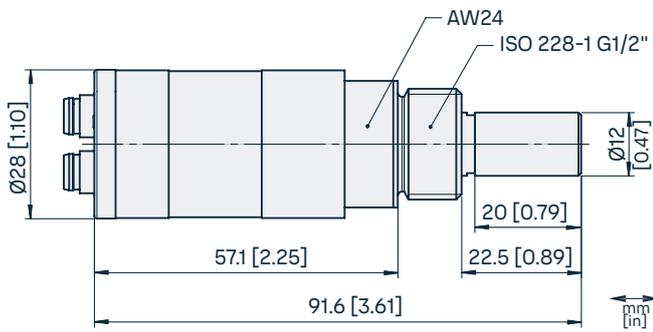
Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863
Electromagnetic compatibility (EMC)	IEC/EN 61326-1, industrial environment CISPR 32 / EN 55032, Class B FCC part 15 B, Class B ICES-3 / NMB-3 (Class B)
Compliance marks	CE, China RoHS, RCM, UKCA

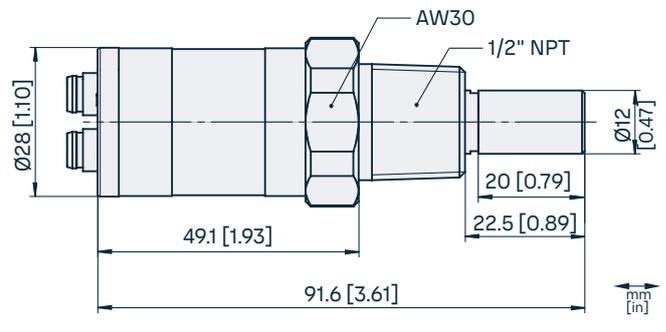
Spare parts and accessories

USB cable for PC connection ¹⁾	219690
M12 - M8 cable 1.5 m (4 ft 11 in), for connecting to Indigo80	262195SP
Loop powered external display	226476
Loop powered external display with relays	234759
Mounting bracket	ASM216087SP
Sampling cells	
Basic sampling cell	DMT242SC
With 1/4" Swagelok male connectors	DMT242SC2
With 1/4" Swagelok VCR connectors	DSCVCR14
With UNF 5/8"-18 thread	DSC74UNF58SP
With quick connector and leak screw	DSC74SP
Two-pressure sampling cell	DSC74BSP
Cooling/venting coil	DMCOILSP

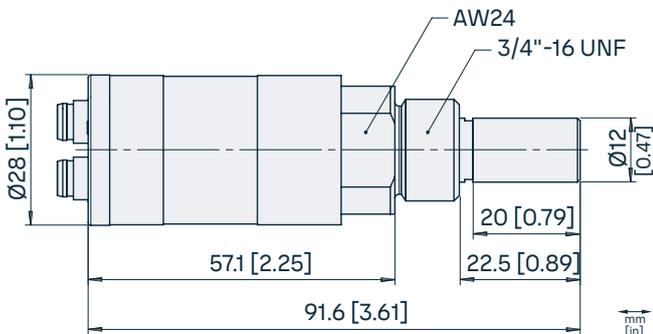
¹⁾ Vaisala Insight software for Windows is available at vaisala.com/insight.



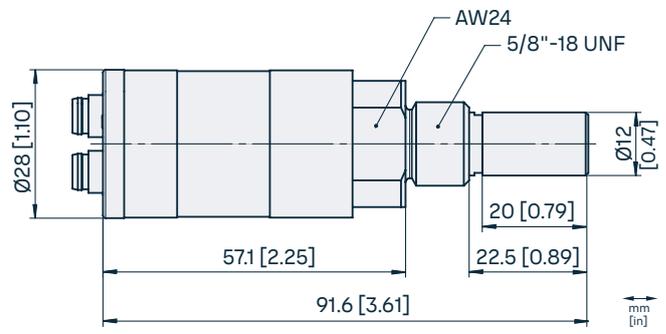
DMT143 with ISO 228-1 G1/2" thread



DMT143 with 1/2" NPT thread



DMT143 with 3/4"-16 UNF thread



DMT143 with 5/8"-18 UNF thread