DMT143 Dew Point Transmitter

For OEM applications

Features

- Vaisala DRYCAP® technology with a unique autocalibration function
- Calibration interval of 2 years
- Dew point measurement range −70 ... +60 °C (−94 ... +140 °F)
- Accuracy ±2 °C (±3.6 °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 psia) 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 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.

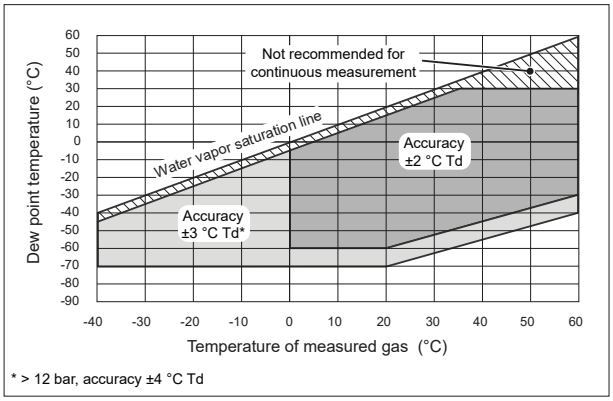
Due to its small size and light weight, DMT143 is quickly and easily installed in tight spaces or in small-size pipelines. The alarm LED indicates too high dew point in the process. The trigger point is preset at the factory. It can be later adjusted with the convenient Vaisala Insight PC software for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

Technical data

Measurement performance

Sensor	DRYCAP® 180D
Sensor protection	Stainless steel sintered filter
Recommended calibration interval to confirm the specified accuracy	2 years
Dew point temperature	
Measurement range (typical)	−70 ... +60 °C (−94 ... +140 °F) T_d
Accuracy in air or N_2 [1]	±2 °C (±3.6 °F) T_d (see graph below)



* > 12 bar, accuracy ±4 °C Td

Analog output scalings:	
Option 1	−80 ... +20 °C (−112 ... +68 °F) T_d
Option 2	−80 ... +20 °C (−112 ... +68 °F) T_d dew point at ambient pressure
Option 3	Free scaling
Response time 63 % [90 %]: [2]	
−70 → −20 °C T_d (−94 → −4 °F T_d)	5 s [15 s] (typical)
−20 → −70 °C T_d (−4 → −94 °F T_d)	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 is below 0 °C (32 °F), the transmitter outputs frost point.
2) At +20 °C gas temperature and 1 bar pressure and 1 liter/min flow rate.

Operating environment

Measurement environment	For air, nitrogen, hydrogen, argon, helium, and oxygen [1]
Temperature [3]	−40 ... +60 °C (−40 ... +140 °F)
Relative humidity	0 ... 100 % RH
Pressure [3]	0 ... 50 bar_a (725 psi_a)
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.
2) The transmitter not tested for leakages, which may occur esp. with small-molecule gases such as hydrogen and helium.
3) For extended temperature below 0 °C (+32 °F) or pressure above 20 bar_a (290 psi_a) the supply voltage must be 24 ... 28 VDC.

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 VDC
Operating voltage with voltage output	12 ... 28 VDC
Operating voltage with current output	18 ... 28 VDC
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 VDC)	
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 versions	90 g (3.2 oz)
NPT thread version	100 g (3.5 oz)

Compliance

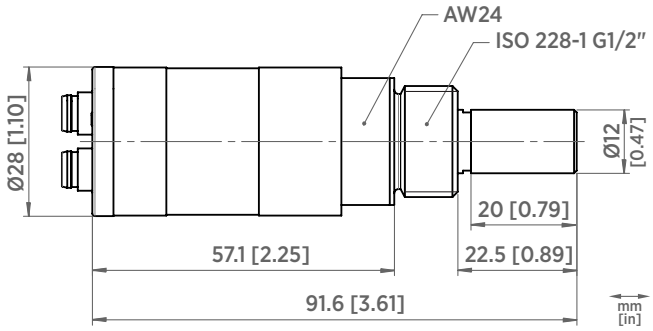
EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) amended by 2015/863
EMC compatibility	IEC/EN 61326-1, industrial environment CISPR 32 / EN 55032, Class B
Compliance marks	CE, China RoHS, RCM, UKCA

Spare parts and accessories

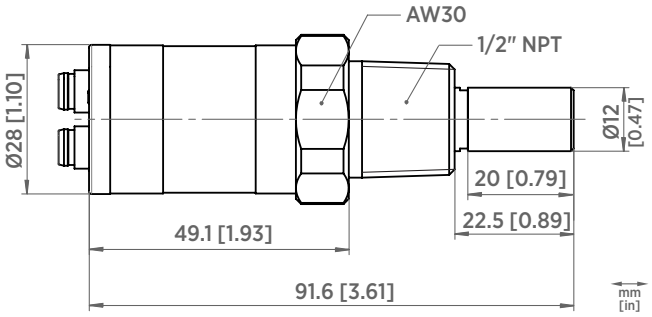
USB cable for PC connection [1]	219690
DM70 connection cable, M12-M8	219980SP
Loop powered external display	226476
Loop powered external display with relays	234759
Sampling cells	
Basic sampling cell	DMT242SC
With Swagelok 1/4" male connectors	DMT242SC2
With quick connector and leak screw	DSC74SP
Two-pressure sampling cell	DSC74BSP
Cooling/venting coil	DMCOILSP

See the DSS70A product page at www.vaisala.com for further information about the sampling cells available for DM70.

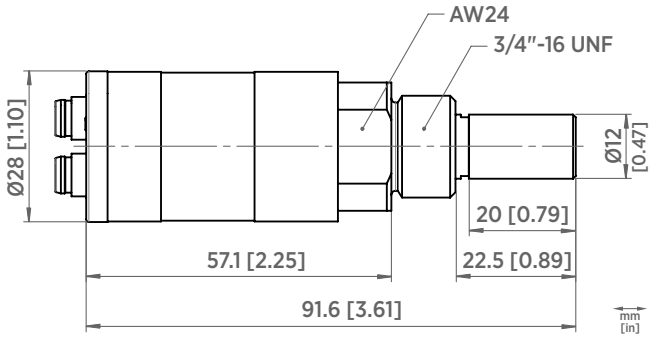
1) Vaisala Insight software for Windows is available at www.vaisala.com/insight.



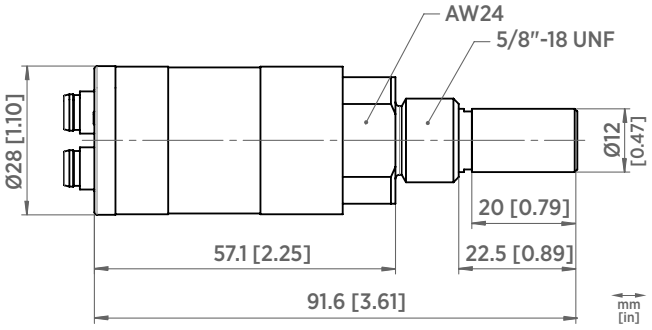
DMT143 with ISO 228-1 G1/2" thread



DMT143 with 1/2" NPT thread



DMT143 with 3/4"-16 UNF thread



DMT143 with 5/8"-18 UNF thread

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