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DMT142 Miniature Dewpoint Transmitter for OEM Applications

The Vaisala DRYCAP® Dewpoint Transmitter DMT142 is an ideal choice for small compressed air dryers, plastic dryers and other OEM applications.

Features/Benefits

- Miniature size dewpoint transmitter for e.g. small industrial dryer applications
- Vaisala DRYCAP® technology with auto-calibration
- Long calibration interval saves maintenance costs
- Dewpoint measurement range -60 ... +60 °C (-76 ... +140 °F) with an accuracy ±3 °C (±5.4 °F)
- Withstands condensation
- Fast response time
- Can be installed directly into systems at 50 bar_a (725 psia) maximum pressure
- IP65 (NEMA 4) housing protects from dust, dirt and splashed water
- Compatible with Vaisala DRYCAP® Hand-Held Dewpoint Meter DM70
- NIST traceable (certificate included)

The Vaisala DRYCAP® Dewpoint Transmitter DMT142 is a miniature dewpoint measurement instrument for industrial OEM applications like air dryers and plastic dryers. Due to its compact size and low-maintenance technology, dewpoint measurement can now be included in even the smallest air dryers.

Vaisala DRYCAP® performance

The long-term high performance is achieved with Vaisala DRYCAP® technology, which includes innovations like the patented autocalibration feature. Because the sensor fully withstands getting wet, 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 immune to particulate contamination, oil vapor and most chemicals, and is insensitive to the flow rate.

Long calibration interval

The DMT142 has one of the longest calibration intervals available, typically two years. Additionally, the hand-held DM70 from Vaisala can be used to confirm the performance of the DMT142 without disconnecting the transmitter. If there is need for adjustment, the transmitter can be sent to Vaisala Service.

Low maintenance need due to innovative auto-calibration

The DMT142 uses a patented auto-calibration procedure to detect measurement inaccuracies and automatically make corrections to the calibration curve if needed. Auto-calibration works while the process is running, and usually the user will not even realize it has taken place.

Small, rugged and intelligent

The DMT142 is designed for extreme conditions that require protection against dust, dirt and splashed water. The transmitter can be installed directly into pressurized systems at 50 bar (725 psia) maximum pressure.

Easy installation

The DMT142 has a variety of features to choose from, including different output and installation options. Due to its small size and light weight, the DMT142 is quickly and easily installed in tight spaces or in small-size pipelines. Units are delivered installation-ready. If necessary, the output can be rescaled via the serial interface.

The Vaisala DRYCAP® Hand-Held Dewpoint Meter DM70 is ideal for confirming the performance of the DMT142 in the field.

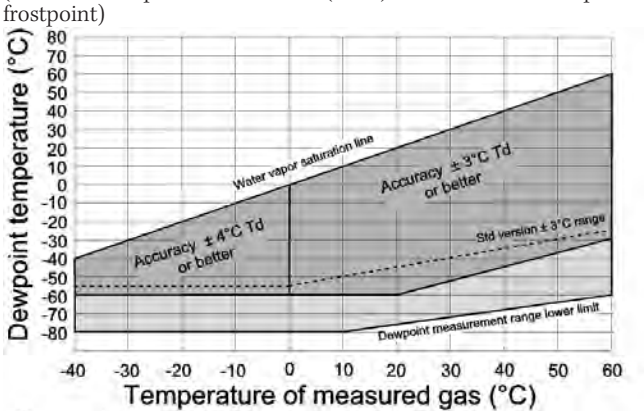
Technical Data

Measured variables

Dewpoint temperature

Measurement range (typical)	
Standard version	-40 ... +60 °C (-40 ... +140 °F) T_d
Extended version	-60 ... +60 °C (-76 ... +140 °F) T_d
Analog output scalings	
option 1	-80 ...+20 °C (-112 ... +68 °F) T_d
option 2	-60 ... +40 °C (-76 ... +104 °F) T_d
option 3	free scaling
Accuracy	±3 °C (±5.4 F) T_d (see graph below)

(when the dewpoint is below 0 °C (32 °F), the transmitter outputs frostpoint)



Dewpoint accuracy vs. measurement conditions

Dewpoint accuracy range for the extended version. Standard version with dotted line.

Response time 63% [90%] at +20 °C gas temperature and 1 bar pressure	
-60 -> -20 °C T_d (-76 -> -4 °F T_d)	5 s [10 s]
-20 -> -60 °C T_d (-4 -> -76 °F T_d)	45 s [10 min]

ppm volume concentration

Measurement range	70 ... 200 000 ppm
Accuracy at +20 °C (+68 °F), 1013 mbar	7.3 ppm + 9.2% of reading

Operating environment

Temperature *)	0 ... +60 °C (+32 ... +140 °F)
Relative humidity	0 ... 100 %RH
Pressure *)	0 ... 50 bar_a (725 psia)
Sample flow rate	no effect for measurement accuracy

*) For extended temperature down to -40 °C (-40 °F) or pressure up to 50 bar_a (725 psia) the supply voltage must be 24 ... 28 VDC.

Outputs

Analog output (scalable)	4 ... 20 mA (3-wire)
	0 ... 1 V
	0 ... 5 V
Resolution for current output	0.002 mA
Resolution for voltage output	0.3 mV
Typical temperature dependence	0.005% of span / °C
Connector	4-pin M8 (IEC 60947-5-2)
	connection cable with snap-on or thread locking available
RS232 serial line for service use	with DMT142RS cable

General

Sensor	Vaisala DRYCAP® 180D
Measured gases	non-corrosive gases (SF6 gas with special model)
Recommended calibration interval to confirm the specified accuracy	2 years
Operating voltage with voltage output	12 ... 28 VDC
Operating voltage with current output	18 ... 28 VDC
Supply current	
normal measurement	10 mA + load current
during self-diagnostics	max. 220 mA pulsed
Load for current output	max. 500 ohm
Load for voltage output	min. 10 kohm
Housing material	stainless steel body (AISI 316L) plastic cap (ABS/PC)
Sensor protection	stainless steel sintered filter (part. no. DRW010335)
Mechanical connection	G1/2" ISO 228-1 thread with bonded seal ring (U-seal)
Housing classification	IP65 (NEMA 4)
Storage temperature range	-40 ... +80 °C (-40 ... +176 °F)
Weight	118 g (4.16 oz)

Complies with EMC standard EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements; Industrial environment.

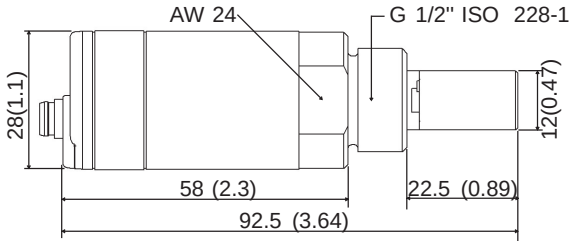
Accessories

Output cable M8, snap-on connector, 2 meters	211598
Output cable M8, thread connector, 0.3 meters	HMP50Z032
Output cable M8, thread connector, 3 meters	HMP50Z300
Connection cable for DM70	211917ZZ
Service cable for serial line	DMT142RS
Sampling cells	
basic sampling cell	DMT242SC
with Swagelok 1/4" male connectors	DMT242SC2
with quick connector and leak screw	DSC74
two-pressure sampling cell	DSC74B
cooling/venting coil	DMCOIL

See DM70 / Portable Sampling Systems and Sampling Cells for further information about sampling cells available.

Dimensions

DMT142 dimensions in mm (inches).



Wiring

Wiring of the connector

1 = VDC supply + (brown)
2 = signal sense - (voltage output only) (white)
3 = VDC supply - (blue)
4 = signal + (black)