



# DMP5 Dew Point and Temperature Probe

For high-temperature applications



## Features

- Measures humidity at temperatures up to +180 °C (+356 °F)
- Dew point measurement range -40 ... +100 °C (-40 ... +212 °F)  $T_{d/f}$
- Dew point measurement accuracy up to  $\pm 2$  °C ( $\pm 3.6$  °F)  $T_{d/f}$
- Sensor purge provides superior chemical resistance
- Condensation-tolerant
- Modbus RTU over RS-485
- Compatible with Indigo transmitters and Insight PC software
- Traceable calibration certificate

Vaisala DRYCAP® Dew Point and Temperature Probe DMP5 is designed for humidity measurement in applications with high temperatures. The long and robust steel probe and an optional installation flange allow easy installation with adjustable depth through insulation, for example, in ovens.

### Measure humidity directly in hot processes

DMP5 is built for direct measurement in hot and dry processes, up to +180 °C (+356 °F). As the probe can be directly placed in the process, there is no need for a sampling system or trace heating. As a result, high measurement accuracy and constancy are maintained. DMP5 provides unmatched dry-end measurement accuracy at temperatures up to 140 °C; however, it can operate safely at temperatures up to 180 °C. DMP5 incorporates the Vaisala DRYCAP® sensor, which is accurate, reliable, and stable. The sensor is condensation-tolerant and is immune to particulate contamination, oil vapor, and most chemicals. Sensor warming minimizes the risk of condensation accumulating on the sensor. If the DRYCAP® sensor does

get wet, it will rapidly dry and recover its swift response time. In low humidity conditions the sensor will auto-calibrate to ensure accurate measurement.

### Chemical purge minimizes effects of contaminants

In environments with high concentrations of chemicals and cleaning agents, the chemical purge option helps to maintain measurement accuracy between calibration intervals.

The chemical purge involves heating the sensor to remove harmful chemicals. The function can be initiated manually or programmed to occur at set intervals.

### Services you can count on

Each probe is manufactured and individually calibrated in Vaisala's world-class facility in Finland. The traceable factory calibration certificate is included also in electronic format in the probe.

The interchangeable probes minimize the downtime associated with maintenance. Validate and maintain the accuracy by calibrating the instrument on the field or use the easy and thorough calibration service in Vaisala's service facilities in Helsinki, Boston, Beijing and Tokyo.



DNV GL type approval certificate no. TAA00002YT

# Technical data

## Measurement performance

### Dew point

Sensor	DRYCAP® 180S
Measurement range	-40 ... +100 °C (-40 ... +212 °F) T <sub>d/f</sub>
Accuracy	±2 °C (±3.6 °F) T <sub>d/f</sub> See accuracy graph

Response time 63 % [90 %]<sup>1)</sup>

From dry to wet	5 s [10 s]
From wet to dry	45 s [5 min]

### Temperature

Measurement range	0 ... +180 °C (+32 ... +356 °F) <sup>2)</sup>
Accuracy at +100 °C (+212 °F)	±0.4 °C (±0.72 °F)
Temperature sensor	Pt100 RTD Class F0.1 IEC 60751

### Mixing ratio

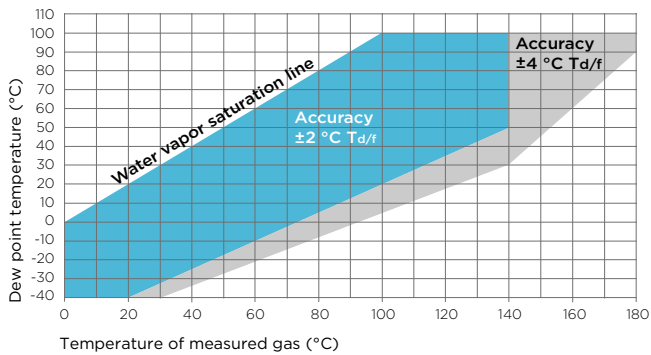
Measurement range (typical)	0 ... 1000 g/kg (0 ... 7000 gr/lbs)
Accuracy (typical)	±12 % of reading

### Absolute humidity

Measurement range	0 ... 600 g/m <sup>3</sup>
Accuracy	±10 % of reading (typical)

1) Tested with sintered filter.

2) If sensor warming is enabled, temperature measurement is locked when humidity rises above 80 %RH and warming is switched on.



Dew point accuracy vs. measurement conditions

## Operating environment

Operating temperature range for probe head -40 ... +180 °C (-40 ... +356 °F)

Operating temperature range for probe body -40 ... +80 °C (-40 ... +176 °F)

Storage temperature -40 ... +80 °C (-40 ... +176 °F)

Measurement environment For air, nitrogen, hydrogen, argon, helium, and oxygen<sup>1)</sup>

IP rating for probe body IP66

1) Consult Vaisala if other chemicals are present. Consider safety regulations with flammable gases.

## Inputs and outputs

Operating voltage	15 ... 30 V DC
Current consumption	10 mA typical, 500 mA max.
Digital output	RS-485, non-isolated
Protocols	Modbus RTU

## Output parameters

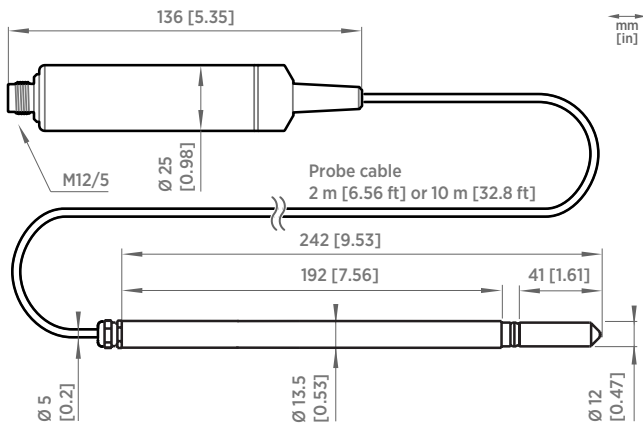
Absolute humidity (g/m <sup>3</sup> )	Relative humidity (%RH)
Absolute humidity at NTP (g/m <sup>3</sup> )	Relative humidity (dew/frost) (%RH)
Dew point temperature (°C)	Temperature (°C)
Dew/frost point temperature (°C)	Water concentration (ppm <sub>v</sub> )
Dew/frost point temperature at 1 atm (°C)	Water concentration (wet basis) (vol-%)
Dew point temperature at 1 atm (°C)	Water mass fraction (ppm <sub>w</sub> )
Dew point temperature difference (°C)	Water vapor pressure (hPa)
Enthalpy (kJ/kg)	Water vapor saturation pressure (hPa)
Mixing ratio (g/kg)	

## Compliance

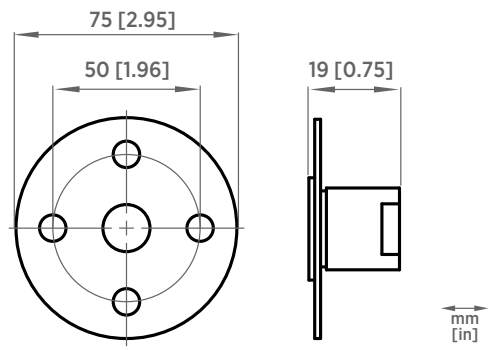
EU directives	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU)
EMC compatibility	EN 61326-1, industrial environment
Type approvals	DNV GL certificate no. TAA00002YT
Compliance marks	CE, China RoHS, RCM

## Mechanical specifications

Connector	M12 5-pin A-coded male
Weight	436 g (15.37 oz)
Probe cable length	2 m (6.56 ft) or 10 m (32.8 ft)
<b>Materials</b>	
Probe	AISI 316L
Probe body	AISI 316L
Cable jacket	FEP



DMP5 dimensions



Optional mounting flange 210696 dimensions

## Accessories

Mounting flange	210696
Indigo USB adapter <sup>1)</sup>	USB2

<sup>1)</sup> Vaisala Insight software for Windows available at [www.vaisala.com/insight](http://www.vaisala.com/insight).