

## DMP80 Series Handheld Dew Point and Temperature Probes

### For spot-checking applications



#### Features

- Portable design optimized for industrial spot-checking and field calibration
- Dew point measurement accuracy up to  $\pm 2^{\circ}\text{C}$  ( $\pm 3.6^{\circ}\text{F}$ )  $T_{d/f}$
- Wide dew point measurement range
- Sensor purge improves long-term stability and chemical resistance
- Condensation-tolerant
- Compatible with Indigo80 handheld indicator and Insight PC software
- Calibration certificate included

Vaisala DRYCAP® Handheld Dew Point and Temperature Probes DMP80 Series have been designed for portable use, especially with the Indigo80 handheld indicator. The combination of DMP80 probe and Indigo80 is ideal for spot-checking and field calibration of installed Vaisala humidity instruments.

#### Reliable measurements with the Vaisala DRYCAP sensor

Vaisala DRYCAP sensor is robust against particulate contamination, water condensation, oil vapor, and most chemicals. The sensor tolerates condensation and recovers perfectly if exposed to liquid water. The sensor's performance is excellent also in dynamic and low dew point applications, thanks to its fast reaction time and stability. The probes can be inserted directly into pressurized processes, and respond rapidly from ambient to process conditions. The DMP80 probes are suitable for direct process dew point measurement in a wide temperature and pressure range.

DMP80 series probes are delivered with standard factory calibration certificates, with accredited calibration as an option. The probes can therefore be used as a working standard in field calibration.

#### Sensor purge minimizes effects of contaminants

In environments with high concentrations of chemicals and cleaning agents, the sensor purge option helps to maintain measurement accuracy between calibration intervals. Sensor purge involves heating the sensor briefly to remove chemicals that could lower measurement performance and cause drifting.

#### Robust design for handheld measurements

The design of the probe handle has been optimized for manual operation in versatile measurement environments. The IP66-classified probe handle offers excellent protection against moisture and dust with the probe connection

cable attached. Also the cable connection is protected against mechanical stress by the robust design of the handle.

#### Flexible connectivity

DMP80 probes are optimized for portable spot-checking, field calibration, and data logging use with the Indigo80 handheld indicator. For easy-to-use access to device analytics and configuration, DMP80 probes can be connected to Vaisala Insight software for Windows®.

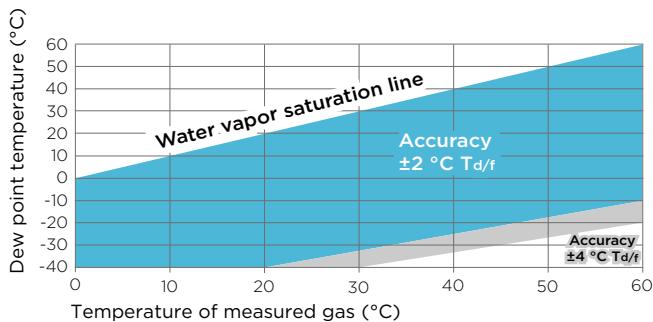
For more information, see [www.vaisala.com/indigo](http://www.vaisala.com/indigo) and [www.vaisala.com/insight](http://www.vaisala.com/insight).

# Technical data

## DMP80A measurement performance

### Dew point

|                             |   |
|-----------------------------|---|
| Sensor                      | DRYCAP® 180S                                      |
| Measurement range           | -40 ... +60 °C (-40 ... +140 °F) T <sub>d/f</sub> |
| Accuracy                    | Up to ±2 °C (±3.6 °F) T <sub>d/f</sub>            |
| Response time 63 % [90 %]:  |   |
| From dry to wet             | 5 s [10 s]  |
| From wet to dry             | 45 s [5 min]                                      |
| <b>Temperature</b>          |   |
| Measurement range           | 0 ... +60 °C (+32 ... +140 °F)                    |
| Accuracy                    | ±0.2 °C (±0.36 °F) at room temperature            |
| Temperature sensor          | Pt100 RTD Class F0.1 IEC 60751                    |
| <b>Mixing ratio</b>         |   |
| Measurement range (typical) | 0 ... 150 g/kg (0 ... 1050 gr/lbs)                |
| Accuracy (typical)          | ±12 % of reading                                  |
| <b>Absolute humidity</b>    |   |
| Measurement range           | 0 ... 130 g/m <sup>3</sup>                        |
| Accuracy (typical)          | ±10 % of reading                                  |



Dew point accuracy vs. measurement conditions (DMP80A)

## DMP80 series operating environment

|  |  |
|--|--|
| Operating temperature range                        | -10 ... +60 °C (+14 ... +140 °F)   |
| Storage temperature                                | -20 ... +60 °C (-4 ... +140 °F)  |
| Operating pressure of probe head                   | 0 ... 20 bar (absolute)<br>(0 ... 290 psi (absolute))  |
| Measurement environment                            | For air, nitrogen, hydrogen, argon, helium, and oxygen <sup>1)</sup>   |
| Chemical tolerance                                 | Temporary exposure during cleaning: <ul style="list-style-type: none"><li>Deionized water</li><li>Isopropyl alcohol (70 %)</li><li>H<sub>2</sub>O<sub>2</sub> (2000 ppm, non-condensing)</li><li>Acetone</li></ul> |
| IP rating of probe handle:                         |  |
| With probe connection cable connected to the probe | IP66   |
| Without cable                                      | IP55   |

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

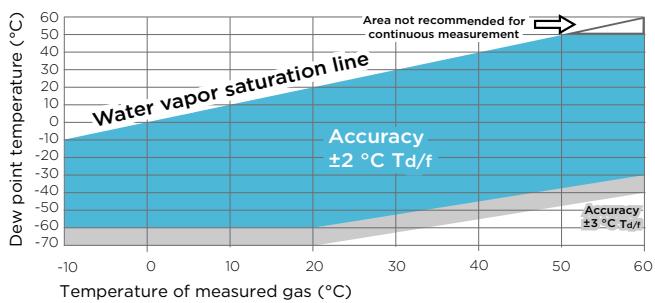
## DMP80 series inputs and outputs

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

## DMP80B measurement performance

### Dew point

|                                      |   |
|--------------------------------------|---|
| Sensor                               | DRYCAP® 180M                                      |
| Measurement range                    | -70 ... +60 °C (-76 ... +140 °F) T <sub>d/f</sub> |
| Accuracy                             | Up to ±2 °C (±3.6 °F) T <sub>d/f</sub>            |
| Response time 63 % [90 %]:           |   |
| From dry to wet                      | 5 s [15 s]  |
| From wet to dry                      | 45 s [8 min]                                      |
| <b>Temperature</b>                   |   |
| Measurement range                    | 0 ... +60 °C (+32 ... +140 °F)                    |
| Accuracy                             | ±0.2 °C (±0.36 °F) at room temperature            |
| Temperature sensor                   | Pt100 RTD Class F0.1 IEC 60751                    |
| <b>Relative humidity</b>             |   |
| Measurement range                    | 0 ... 70 %RH                                      |
| Accuracy (RH < 10 %RH, at +20 °C)    | ±0.004 %RH + 20 % of reading                      |
| <b>Concentration by volume (ppm)</b> |   |
| Measurement range (typical)          | 10 ... 2500 ppm                                   |
| Accuracy (at + 20 °C, 1 bar)         | 1 ppm + 20 % of reading                           |



Dew point accuracy vs. measurement conditions (DMP80B)

## DMP80 series mechanical specifications

|                               |  |
|-------------------------------|--|
| Connector type                | M12 5-pin A-coded male                           |
| Weight                        | 250 g (9 oz)                                     |
| Mechanical connection options | G1/2" ISO 228/1<br>NPT/1/2"                      |
| <b>Materials</b>              |  |
| Probe handle                  | Polyamide (PA) and thermoplastic elastomer (TPE) |
| Probe shaft                   | Stainless steel (AISI 316L)                      |
| Filter                        | Porous stainless steel (AISI 316L) <sup>1)</sup> |

<sup>1)</sup> Vaisala item code: HM47280SP

## DMP80 series output parameters

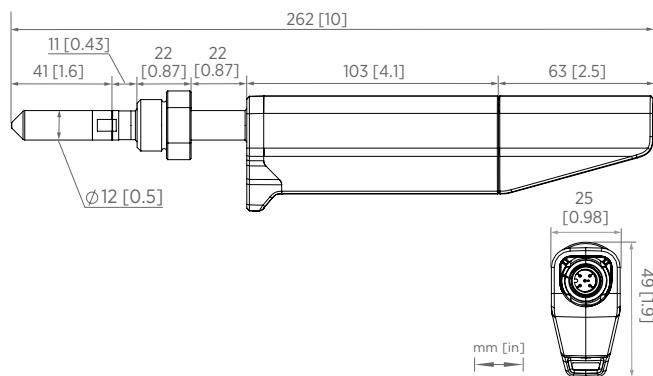
|  |   |
|--|---|
| Absolute humidity (g/m <sup>3</sup> )        | Relative humidity (%RH)                 |
| Absolute humidity at NTP (g/m <sup>3</sup> ) | Relative humidity (dew/frost) (%RH)     |
| Dew point temperature (°C)                   | Temperature (°C)                        |
| Dew/frost point temperature (°C)             | Water concentration (ppmv)              |
| 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)                          |   |

Mixing ratio (g/kg)

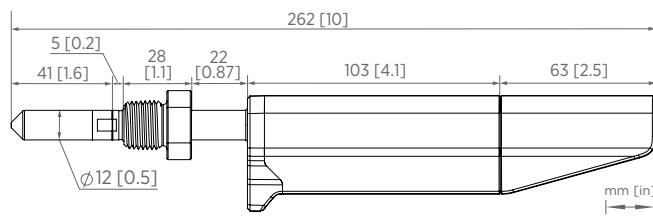
## DMP80 series compliance

|  |  |
|--|--|
| EU directives and regulations                          | EMC Directive (2014/30/EU)<br>RoHS Directive (2011/65/EU)<br>amended by 2015/863 |
| Electromagnetic compatibility (EMC)                    | EN 61326-1, industrial environment   |
| Rough handling<br>(excluding sensor inside probe head) | IEC 60068-2-31   |

Compliance marks CE, China RoHS, RCM, UKCA



Dimensions of DMP80 series probes with G1/2" thread, side and bottom view



Dimensions of DMP80 series probes with NPT1/2" thread

## DMP80 series spare parts and accessories

### Cables

|   |             |
|---|-------------|
| Probe connection cable (M12-M12), 1.5 m (4.11 ft) | 272075SP    |
| Flat cable for probes (M12-M12), 1.0 m (3.4 ft)   | CBL210493SP |

### Accessories for ISO G1/2" thread option

|   |           |
|---|-----------|
| Sampling cell with quick connector and leak screw                   | DSC74     |
| Sampling cell with female connectors, inlet G3/8", outlet G1/4" ISO | DMT242SC  |
| Sampling cell with Swagelok connectors for 1/4" tubing              | DMT242SC2 |
| Two-pressure sampling cell  | DSC74B    |
| Two-pressure sampling cell with coil                                | DSC74C    |

### Other items

|                                 |           |
|---------------------------------|-----------|
| Indigo USB adapter              | USB2      |
| Sintered stainless steel filter | HM47280SP |