

DMP370 Series Intrinsically Safe Dew Point Probes

For HMT370EX transmitters



Features

- Intrinsically safe (Ex i) for operation in up to Zone 0 / 20
- Measures dew point temperature and outputs an extensive range of calculated parameters
- For HMT370EX transmitter information, see [HMT370EX datasheet B211825EN](#)
- Designed for harsh conditions
- Temperature range between $-40 \dots +60 \text{ }^{\circ}\text{C}$ ($-40 \dots +140 \text{ }^{\circ}\text{F}$) depending on the probe option
- Vaisala DRYCAP® sensor features high accuracy, excellent long-term stability, and negligible hysteresis
- Display options: graphical LCD display and non-display model
- Traceable calibration (certificate included)
- Compatible with Vaisala Insight PC software and Vaisala Indigo80 handheld indicator

Vaisala DMP370 series probes for the HMT370EX transmitter are the ideal solution for measuring dew point and trace moisture in hazardous areas. The intrinsically safe and robust transmitter operates safely and reliably even in the most hazardous classifications, such as Zone 0.

Interchangeable probes and detachable probe module

HMT370EX offers several probe options for different dew point measurement applications:

- DMP371 — wall mount
- DMP374 — pressurized spaces
- DMP375 — long probe option
- DMP377 — compact probe option
- DMP378 — pressurized pipelines

Thanks to the detachable probe module, probes can be easily replaced and removed for calibration outside the hazardous area without removing the

entire transmitter. Attaching new probes involves minimal reconfiguration, as up-to-date settings can be restored from the transmitter.

Intrinsically safe and robust

The entire HMT370EX transmitter can be installed directly in hazardous areas. It can withstand continuous exposure to potentially explosive environments that contain flammable gases or dust. Operation in either gas or dust environments requires no additional protective enclosures. A rugged design,

combined with trouble-free operation, ensures a long-term solution for monitoring humidity and dew point in potentially explosive environments.

Typical applications

Typical applications for the DMP370 dew point probes include, for example:

- Trace moisture measurement in hydrogen, natural gas and renewable gas alternatives
- Compressed air and nitrogen drying
- OEM integration into gas drying skids, fuel cell systems, electrolyzers and process analysers

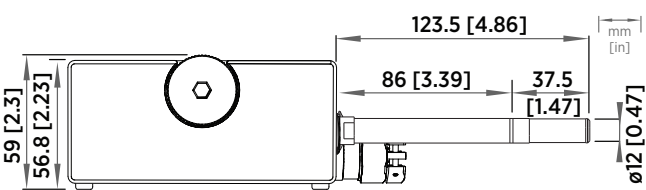
DMP370 series interchangeable probes for HMT370EX intrinsically safe transmitter

DMP371 for wall mounting

Process temperature range	-40 ... +60 °C (-40 ... +140 °F)
Probe diameter	12 mm (0.47 in)



DMP371 probe shown with a stainless steel netting filter



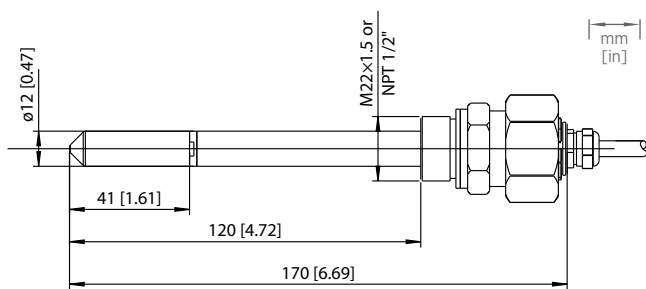
DMP371 dimensions

DMP374 for high pressure

Process temperature range	-40 ... +60 °C (-40 ... +140 °F)
Allowed pressure range for probe head	0–10 MPa
Probe cable length	2, 5, or 10 m (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
Probe diameter	12 mm (0.47 in)
Fitting body M22×1.5	17223
Fitting body NPT1/2	17225



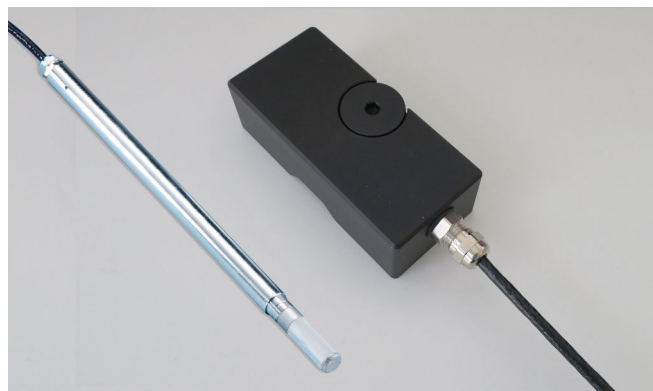
DMP374 is designed for measurement in pressurized spaces or vacuum chambers



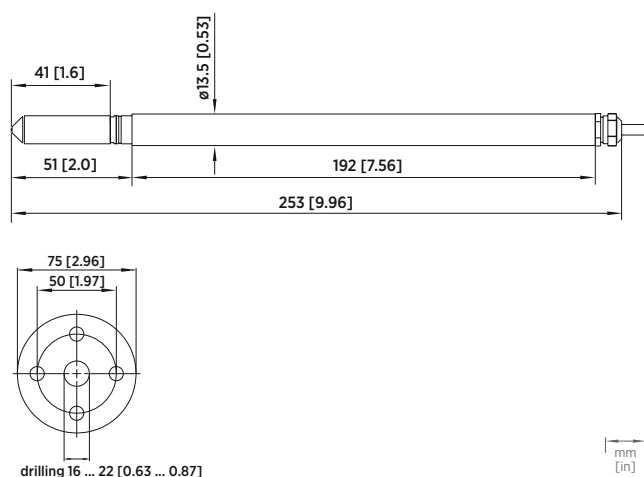
DMP374 dimensions

DMP375 long probe option

Process temperature range	-40 ... +60 °C (-40 ... +140 °F)
Probe cable length	2, 5, or 10 m (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
Probe diameter	13.5 mm (0.53 in)
Installation	
Mounting flange	210696
Cable gland M20x1.5 with splitting seal	HMP247CG



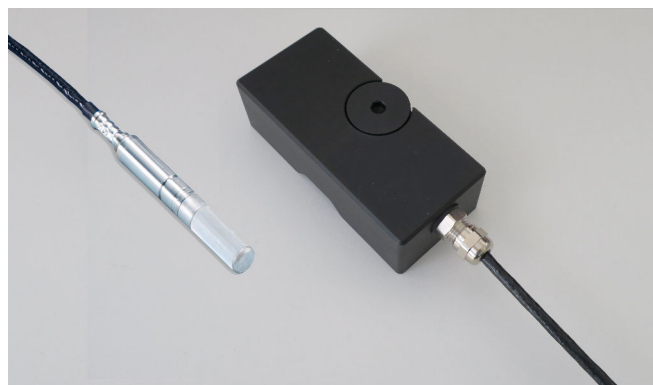
DMP375 long probe option



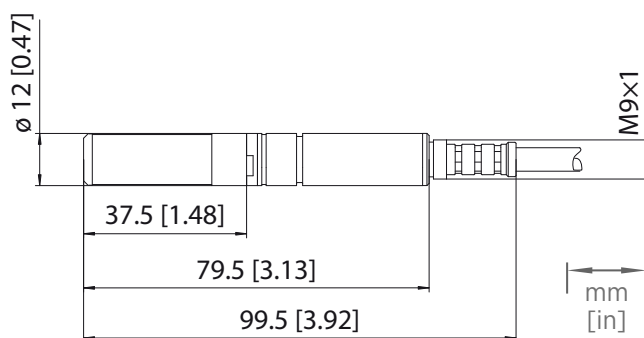
DMP375 probe and stainless steel installation flange dimensions

DMP377 compact probe

Process temperature range	-40 ... +60 °C (-40 ... +140 °F)
Allowed pressure range for probe head	0-1 MPa
Probe cable length	2, 5, or 10 m (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
Probe diameter	12 mm (0.47 in)
Installation	
Duct installation kit	210697
Cable gland M20×1.5 with splitting seal	HMP247CG
Swagelok for 12 mm probe, 3/8" ISO thread	SWG12ISO38
Swagelok for 12 mm probe, 1/2" NPT thread	SWG12NPT12



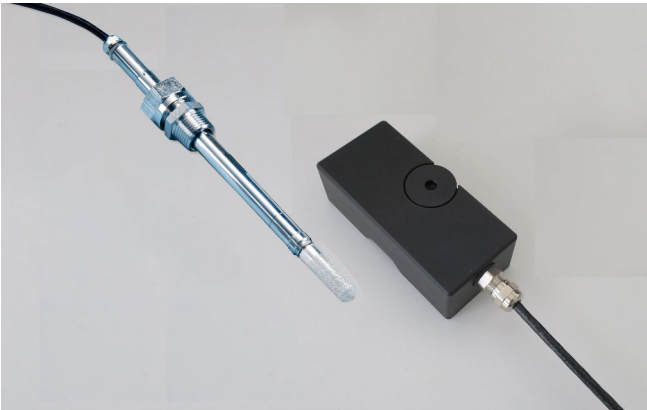
DMP377 is constructed for installation in small spaces



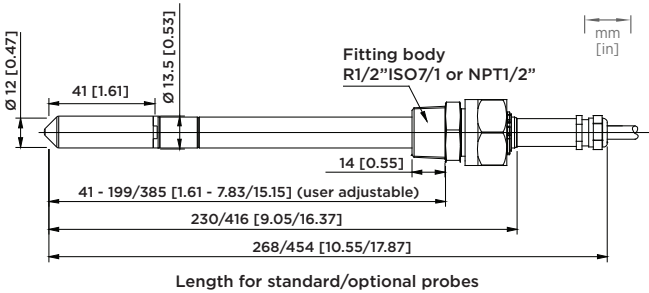
DMP377 dimensions

DMP378 for pressurized pipelines

Process temperature range	-40 ... +60 °C (-40 ... +140 °F)
Allowed pressure range for probe head	0–4 MPa
Probe cable length	2, 5, or 10 meters (6 ft 7 in, 16 ft 5 in, 32 ft 10 in)
Probe diameter	13.5 mm / 12 mm (0.53 in / 0.47 in)
Available probe lengths	262 mm / 448 mm (10.31 in / 17.6 in)
Installation	
Fitting body ISO1/2 solid structure	DRW212076SP
Fitting body NPT1/2 solid structure	NPTFITBODASP
Ball valve ISO 1/2 with welding joint	BALLVALVE-1



DMP378 enables flexible installation in pressurized pipelines



DMP378 dimensions

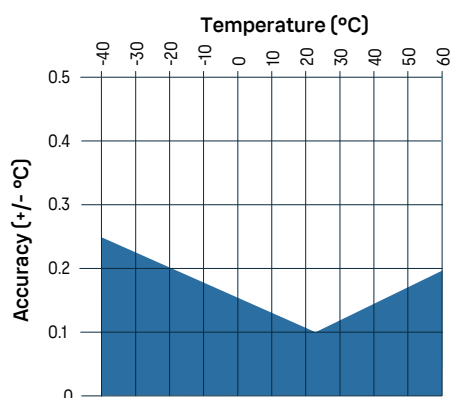
Technical data

Measurement performance

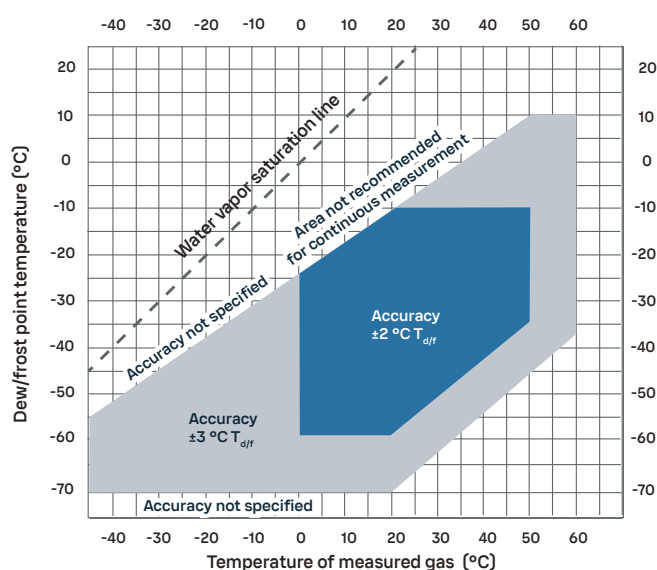
Dew point temperature	
Dew point measurement range	-70 ... +10 °C (-94 ... +50 °F) T _{df}
Accuracy at +23 °C (+73.4 °F) ¹⁾	±2 °C (3.6 °F) T _{df}
Pressure dependency (up to 40 bara)	Less than ±2 °C (3.6 °F) T _{df} (typical)
Factory calibration uncertainty ²⁾	0.9 °C T _{df} (-57...-45 °C T _{df}) 0.2 °C T _{df} (-40...-10 °C T _{df})
Response time (typical)	T63: 28s T90: 4 min
Sensor options	DRYCAP®U
Temperature	
Measurement range	-40 ... +60 °C (-40 ... +140 °F)
Accuracy at +23 °C (+73.4 °F) ¹⁾	±0.1 °C (±0.18 °F)
Factory calibration uncertainty ²⁾	±0.1 °C (±0.18 °F) at +23 °C (+73.4 °F)
Sensor	Pt1000 RTD Class F0.1 IEC 60751
Other available measurement parameters	

Dew point temperature, dew point / frost point temperature, absolute humidity, mixing ratio, wet-bulb temperature, water concentration, water vapor pressure, water vapor saturation pressure, enthalpy, dew point temperature difference, absolute humidity at NTP, water mass fraction

- 1) Defined against calibration reference. Including non-linearity, hysteresis, and repeatability.
2) Defined as ±2 standard deviation limits. Small variations possible; see calibration certificate.



Temperature measurement accuracy over full range



Dew point measurement accuracy as function of temperature

Operating environment

Operating temperature for electronics	-40 ... +60 °C (-40 ... +140 °F)
Operating temperature with display	-20 ... +60 °C (-4 ... +140 °F)
Operating humidity of probe head	Max. +100 °C (212 °F) T _d
Storage temperature	-40 ... +70 °C (-40 ... +158 °F)
Process pressure range	See probe specifications

Note: Do not install the LCD display model in a location where the transmitter is exposed to direct sunlight.

Compliance

Electromagnetic compatibility (EMC)	IEC/EN 61326-1, industrial environment CISPR 11 / EN 55011, Class B FCC part 15 B, Class B ICES-3 / NMB-3 (Class B)
EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863 ATEX Directive (2014/34/EU)
Compliance marks	CE, China RoHS, RCM, KC, KCs

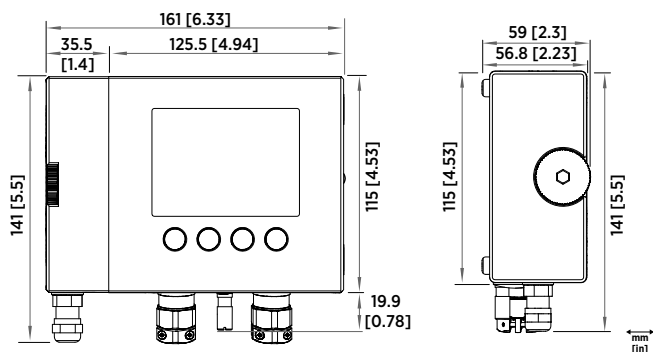
HMT370EX inputs and outputs

Operating voltage	12-28 V
Analog outputs	2 outputs (two-wire, 4-20 mA) Connection via safety barriers
Typical accuracy of analog outputs at +20 °C	±0.0625 % full scale
Typical temperature dependence of analog outputs	0.005 % / °C (0.005 % / °F) full scale
Transmitter service port connection	USB cable 219690
Probe service port connection	USB cable USB2
Display options	Graphical LCD display Model without display ¹⁾

- 1) Recommended when the transmitter is exposed to direct UV light, and for outdoor installations and high-humidity environments.

Mechanical specifications

Connections	Screw terminals, 0.33-2.0 mm ² wires (AWG 14-22)
Cable glands	M20×1.5
Conduit fitting	NPT 1/2" and M16
Housing material	EN AW-6082
Housing weight	LCD transmitter: 1500 g (3.3 lb) LED transmitter: 1520 g (3.35 lb) DMP371 fixed probe: 320 g (0.7 lb)
IP rating	With probe connected to the transmitter: IP66 With probe detached from the transmitter: IP54



HMT370EX transmitter dimensions

Ex classifications by region

NOTE: The Ex classifications show the highest level of compliance. Although lower compliance levels are not shown in the classification, they are also included in the classification. For example, compliance with Division 1 also means compliance with Division 2, and compliance with Zone 0 also means compliance with Zone 1 and Zone 2.

Europe (ATEX)

Gas classification	II 1 G Ex ia IIC T4 Ga
Dust classification	II 1 D Ex ia IIIC T ₂₀₀ 85 °C Da
Safety factors	U _i = 28 VDC, I _i = 100 mA, C _i = 12.1 nF, P _i = 700 mW, L _i = 16 µH

Environmental specifications

T _{amb}	-40 ... +60 °C (-40 ... +140 °F)
P _{amb}	0.8 ... 1.1 bar

International (IECEx)

Gas classification	Ex ia IIC T4 Ga
Dust classification	II 1 D Ex ia IIIC T ₂₀₀ 85 °C Da
Safety factors	U _i = 28 VDC, I _i = 100 mA, C _i = 12.1 nF, P _i = 700 mW, L _i = 16 µH

Environmental specifications

T _{amb}	-40 ... +60 °C (-40 ... +140 °F)
P _{amb}	0.8 ... 1.1 bar

Japan (CML)

Ex classification	Ex ia IIC T4 Ga Ex ia IIIC T ₂₀₀ 85°C Da
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China (NEPSI)

Ex classification	Ex ia IIC T3-T6 Ga
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Korea (KCs)

Ex classification	Ex ia IIC T4 Ga Ex ia IIIC T200 85 °C Da -40 °C ≤ Tamb ≤ +60 °C
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US (FM)

Ex classification	Class I, Zone 0, AEx ia IIC T4 Ga Zone 20, AEx ia IIIC T85°C Da IS Class I, Division 1, Groups A, B, C, and D T4 IS Class II, III, Division 1, Groups E, F, and G T85°C
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CAN (FM)

HMT370EX equipment rating	Intrinsically safe for: Class I, II, III Division 1, Groups A, B, C, D, E, F, and G, T4 Class I, Zone 0, Ex ia IIC T4 Zone 20, Ex ia IIIC Temperature Code T85°C Ta: -40 °C to +60 °C; IP54 (transmitter alone) IP66 (transmitter with the probe body attached)
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Transmitter accessory availability

Accessory	Item code	Compatible models
Cable lead-through accessories		
Cable gland M20×1.5 for Ø 5–11 mm cable	265207SP	All models
Cable gland M20×1.5 for Ø 10–14 mm cable	265208SP	All models
Conduit fitting M16	265243SP	All models
Conduit fitting NPT1/2"	265240SP	All models
Dummy plug (Ex, 2 pcs)	254931SP	All models
Mounting, wiring, cable, and adapter accessories		
HMT360 retrofit mounting plate	DRW253246SP	All models
Turbine mounting kit	HMT300TMK	All models
Outdoor installation kit (weather shield)	215109	All models
USB service cable for transmitter	219690	All models
Indigo80 handheld indicator connection cable (M12-M8) for transmitter	262195SP	All models
Zener barrier for 1 channel (with 2 channels, order 2 pcs)	210664	All models
Galvanic isolator for 1 channel	212483	All models
Galvanic isolator for 1 channel	272886SP	All models
Galvanic isolator for 2 channels	272887SP	All models
Calibration adapter for HMK15	211302	HMP371, HMP373, HMP374, HMP377

Probe spare parts and accessories

Accessory	Item code	Compatible models
M12 Indigo USB Adapter cable accessory for connecting HMT370EX probes to Insight	USB2	All models
Indigo80 handheld indicator connection cable (M12-M12) for probes	272075SP	All models
Ball valve ISO 1/2 with welding joint Pressure range at +100 °C (+212 °F) 0–40 bar (0–580 psi absolute) (during installation max. 10 bar (145 psi absolute))	BALLVALVE-1	DMP/HMP378
Duct installation kit	210697	HMP373, DMP/HMP377
Mounting flange	210696	DMP/HMP375
Washer set for pressure-tight installation (3 pcs)	4PROBESETSP	DMP/HMP374
Cable gland M20×1.5 with split seal	HMP247CG	HMP373, DMP/HMP375, DMP/HMP377
Fitting body M22×1.5	17223SP	DMP/HMP374
Fitting body NPT1/2	17225SP	DMP/HMP374
Fitting body ISO1/2 solid structure	DRW212076SP	DMP/HMP378
Fitting body NPT1/2 solid structure	212810SP	DMP/HMP378
Swagelok fitting for 12 mm probe, 1/2" NPT thread	SWG12NPT12	DMP/HMP377
Swagelok fitting for 12 mm probe, 3/8" ISO thread	SWG12ISO38	DMP/HMP377
Swagelok fitting for 12 mm probe, 1/2" ISO thread	SWG12ISO12	DMP/HMP377
Thread adapter ISO 1/2" to NPT 1/2"	210662SP	All models
Manual press	HM36854SP	DMP/HMP378/F/H
Metallized PPS plastic filter grid with stainless steel mesh, for general use (pore size 15 µm)	DRW010281SP	All models
Stainless steel sintered filter, for general use (pore size 38 µm)	HM47280SP	All models
Metallized PPS plastic filter grid, for fast response in clean environments (6.5 mm gaps)	DRW010276SP	All models
Stainless steel filter for high oil flow applications	220752SP	DMP/HMP378/F/H
Stainless steel filter with PTFE membrane	214848SP	All models
Stainless steel filter for oil and vacuum environments	HM47453SP	All models