

HMT360 Series Dewpoint and Temperature Transmitters for Natural Gas Moisture



The HMT362, HMT364 and HMT368 are innovative and reliable instruments for measuring moisture in natural gas.

The Vaisala HUMICAP® Dewpoint and Temperature Transmitter Series HMT360 is a reliable instrument for measuring moisture in natural gas. An accurate moisture measurement is critical for preventing pipeline failures and ensuring the quality of the gas.

Reliable technology now for natural gas

The Vaisala HUMICAP® polymer sensor technology has been successfully used for decades in industrial moisture measurements. The technology is now optimized for measuring moisture in natural gas.

Low maintenance need

The HMT360 is long-lasting and typically needs calibration only once a year, saving lifetime costs and measurement downtime.

When recalibration is needed, the transmitter or just the probe can

be sent to Vaisala. All calibration coefficients are included in the interchangeable probe unit itself, which means that a calibrated probe can be switched in the field in a couple of minutes.

Intrinsically safe

The whole HMT360 transmitter can be installed into areas classified as having a constant risk of explosion.

Rugged and reliable

The durable design and trouble-free operation of the HMT360 ensure a long-term solution for monitoring moisture in natural gas.

Three models with interchangeable probes

The three probe options allow different measurement setups, for example using a sampling cell, or temporary or permanent installation directly into the pipeline.

Features/Benefits

- Vaisala HUMICAP® Sensor features high accuracy, excellent long-term stability, and negligible hysteresis
- Excellent performance in harsh conditions; tolerates glycol and water spikes
- Measures dewpoint of water, also outputs lb/MMscf, ppm_v and T
- Safe operation with the entire transmitter in hazardous areas: Division 1 and 2 (USA, Canada), Category 1 / Zone 0 (EU)
- One-year maintenance interval saves lifetime costs
- Interchangeable probes
- Direct pipeline installation possible
- Sampling cell option
- NIST traceable (certificate included)

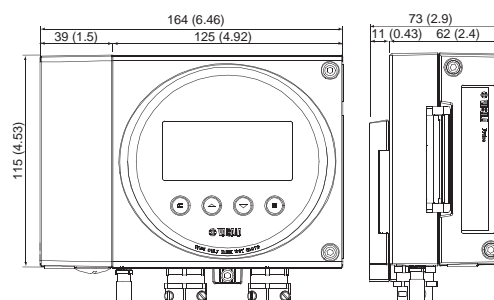


Customized calibration and maintenance contracts for the HMT360 series transmitters for natural gas are available on request.

Dimensions

Dimensions in mm (inches)

HMT360 transmitter body

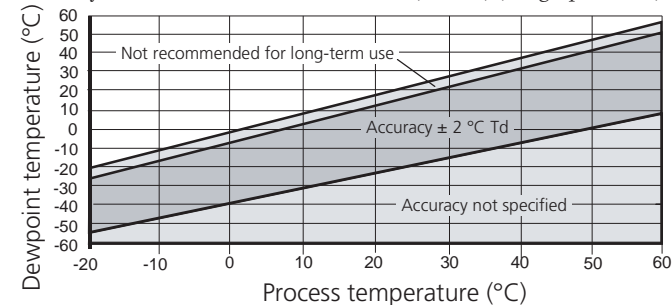


Technical Data

Performance

Water dewpoint measurement

Measurement range -50 ... +50 °C (-58 ... +122 °F) T_d
 Accuracy ±2 °C (±3.6 °F) (see graph below)



Dewpoint accuracy vs. measurement conditions

Response time 63 % [90 %]
 -20 → +10 °C (-4 → +50 °F) 6 s [32 s]
 +10 → -20 °C (+50 → -4 °F) 120 s [370 s]

Sensor Vaisala HUMICAP® 180M

Temperature

Measurement range -40 ... +100 °C (-40 ... +212 °F)
 Typical accuracy at +20 °C (+68 °F) ±0.2 °C (±0.36 °F)
 Sensor Pt 1000 RTD 1/3 Class B IEC 751

Calculated variables (typical ranges)

water content 0 ... 20 lb/MMscf, 0 ... 320 mg/Nm³
 parts per million by volume 0 ... 500 ppm_v

Operating environment

Temperature range
 operating -20 ... +60 °C (-4 ... 140 °F)
 storage -40 ... +70 °C (-40 ... 158 °F)
 Pressure range see probe specifications

Complies with EMC standard EN61326-1, Electrical equipment for measurement, control and laboratory use - EMC requirements; Industrial environment.
 NOTE! IEC 1000-4-5 complies only when using external EXi approved surge arrester on safe area.

Inputs and outputs

Operating voltage 12 ... 28 VDC
 with serial port (service mode) 15 ... 28 VDC
 Analog outputs two-wire 4 ... 20 mA, one standard, one optional
 Typical accuracy of analog outputs at +20 °C ±0.05% full scale
 Typical temperature dependence of analog outputs 0.005% / °C (0.005% / °F) full scale
 Analog outputs connection via safety barriers
 RS232C serial output for service use connector type RJ45
 Display two-line LCD
 character size (1st line/2nd line) 12 mm/10 mm

Classification with current outputs

Europe / CENELEC (PTB)
 EU (94/9/EC, ATEX100a) II 1 G EEx ia IIC T4
 PTB 00 ATEX 2112 X
 Safety factors U_i = 28 V, I_i = 100 mA, P_i = 0.7 W
 C_i = 1 nF, L_i = 0 H

Environmental specifications
 T_{amb} -20 ... +60 °C (-4 ... 140 °F)
 P_{amb} 0.8 ... 1.1 bar

USA (FM) Classes I, II, III, Division 1, Groups A-G and Division 2, Groups A-D, F and G
 FM Project ID: 3010615
 Safety factors: V_{max} = 28 VDC, I_i = 100 mA, C_i = 1 nF, L_i = 0, P_i = 0.7 W, T_{amb} = 60 °C (140 °F), T5

Japan (TIIS) Ex ia IIC T4
 Code number: TC17897
 Safety factors: U_i = 28 VDC, I_i = 100 mA, C_i = 1 nF, P_i = 0.7 W, L_i = 0, T_{amb} = 60 °C (140 °F)

China (PCEC) Ex ia II CT5
 Certificate No. CE042052
 Standard GB3686.1-2000 and GB3836.4-2000

Canada (CSA) Class I, Division 1 and Division 2, Groups A, B, C, D; Class II, Division 1 and Division 2, Groups G and Coal Dust; Class III
 CSA File No: 213862 0 000, CSA Report: 1300863
 Safety factors: T_{amb} = 60 °C, T4, Intrinsically safe when connected as per Installation Drawing DRW213478.
Russia (STV) Ex ia IIC T4
 Certificate No. ROSS FLGB04.V00634
 Safety factors U_i = 28 V, I_i = 100 mA, P_i = 700 mW
 C_i = 1 nF, L_i = 0 H, T_{amb} = -20 °C ... +60 °C

Mechanics

Connections screw terminals, 0.33 ... 2.0 mm² wires (AWG 14-22)
 Cable bushing for 7.5..12mm or 10..15mm cable diameters (M20x1,5)
 Conduit fitting NPT 1/2" (M20)
 Housing material G-AlSi10Mg (DIN 1725)
 Housing classification IP66 (NEMA 4X)
 Housing weight 950 g

Options and accessories

Additional analog output 4 ... 20 mA
 Ball valve ISO 1/2 with welding joint (for HMP368) BALLVALVE-1
 pressure range at +20 °C (+68 °F): 0 ... 40 bar (0 ... 580 psia) (during installation max. 10 bar (145 psia))
 Serial interface cable for PC connectors RJ45 - D9 female 25905ZZ
 Sampling cell for HMP362 HMP302SC
 Rain shield 215109
 Calibration adapter for HMK15 211302
 Sintered stainless steel filter HM47280
 Galvanic isolator (EU) 212483
 Zener Barrier (USA & Canada) 210664



Cable bushing.



Conduit fitting for wire conduits.

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Probe Options



The HMP362 probe is designed for flange mounting and the sampling cell. The HMP362 has the highest pressure tolerance of the optional probes.

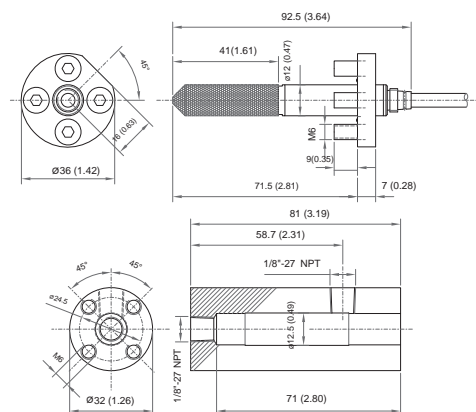
HMP362 small pressure-tight flanged probe

Technical Data

Pressure range	0 ... 16.7 MPa
Probe cable length	2, 5 or 10 meters
Probe diameter	12 mm (0.47")
Installation	
Sampling cell	HMP302SC

Dimensions

Dimensions in mm (inches)



sampling cell HMP302SC for HMP362 probe

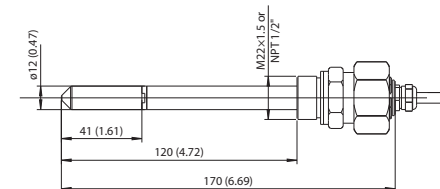


The HMP364 can be installed directly into high-pressure pipelines.

HMP364 for high-pressure pipeline installation

Technical Data

Pressure range	0 ... 10 MPa
Probe cable length	2, 5 or 10 meters
Probe diameter	12 mm (0.47")
Installation	
Fitting body M22x1.5	17223SP
Fitting body NPT1/2"	17225SP



HMP364 probe

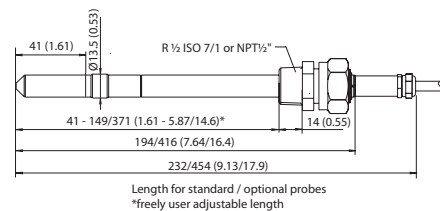


The HMP368 probe enables flexible installation in pressurized pipelines through the ball valve set.

HMP368 for pressurized pipelines

Technical Data

Pressure range	0 ... 4 MPa
Probe cable length	2, 5 or 10 meters
Probe length	194 or 416 mm
Probe diameter	max. 13.5 mm (0.53")
Installation	17225
Fitting body ISO 1/2 solid structure	DRW212076SP
Fitting body NPT 1/2 solid structure	NPTFITBODASP
Ball valve ISO 1/2 with welding joint	BALLVALVE-1



HMP368 probe