

## 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.

### 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, 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.

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.

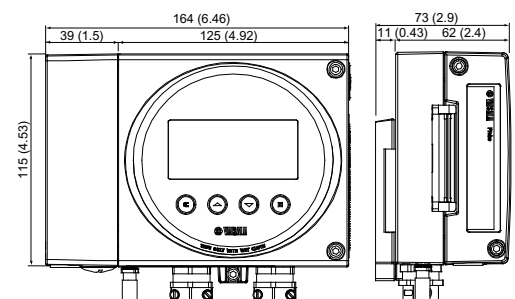
### Three models with interchangeable probes

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

### Dimensions

Dimensions in mm (inches)

HMT360 transmitter body

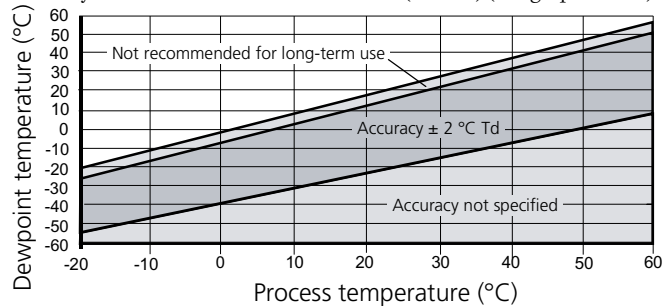


# Technical Data

## Performance

### Water dewpoint measurement

Measurement range -50 ... +50 °C (-58 ... +122 °F)  $T_d$   
 Accuracy  $\pm 2$  °C ( $\pm 3.6$  °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)  $\pm 0.2$  °C ( $\pm 0.36$  °F)

Sensor Pt 1000 RTD 1/3 Class B IEC 751

### Calculated variables (typical ranges)

water content 0 ... 20 lb/MMscf, 0 ... 320 mg/Nm<sup>3</sup>

parts per million by volume 0 ... 500 ppm

## 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  $\pm 0.05\%$  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 FI.GB04.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 mm<sup>2</sup> 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

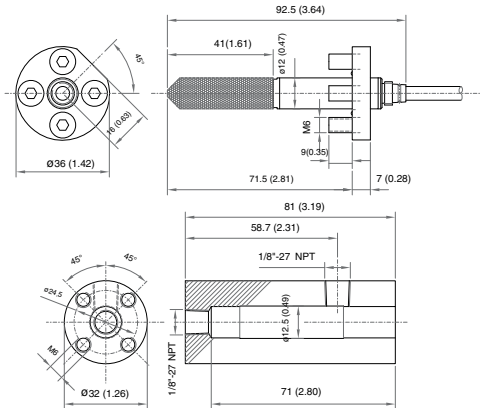
#### Technical Data

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

### Dimensions

Dimensions in mm (inches)

HMP362 probe



sampling cell HMP302SC for HMP362 probe

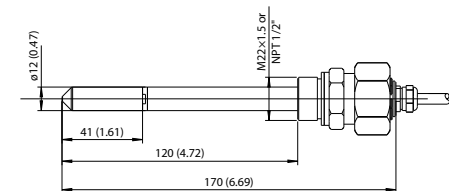


The HMP364 can be installed directly into high-pressure pipelines.

### 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

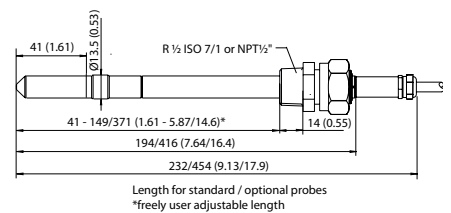


The HMP368 probe enables flexible installation in pressurized pipelines through the ball valve set.

### 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