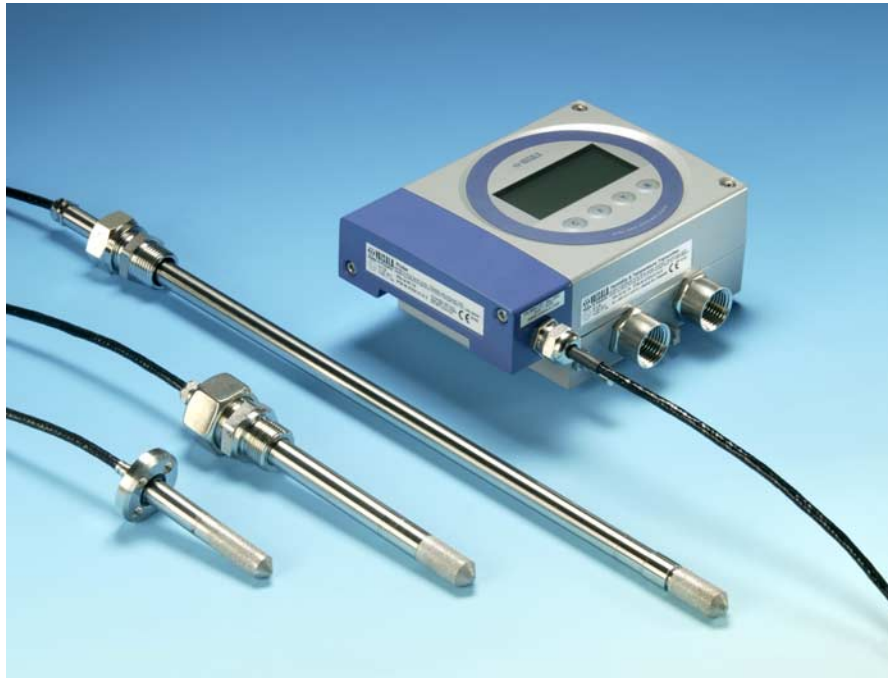


Vaisala HUMICAP® Dewpoint and Temperature Transmitter  
**HMT360 Series**  
for Natural Gas Moisture



Reliable Moisture Measurement for Natural Gas

# 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<sub>v</sub> 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)



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.

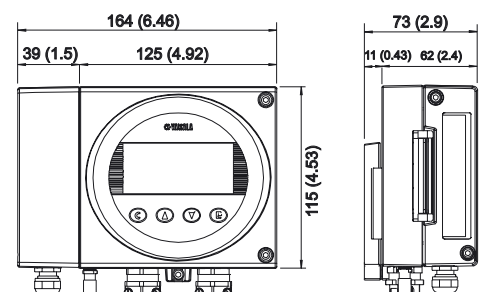
### Three models with interchangeable probes

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

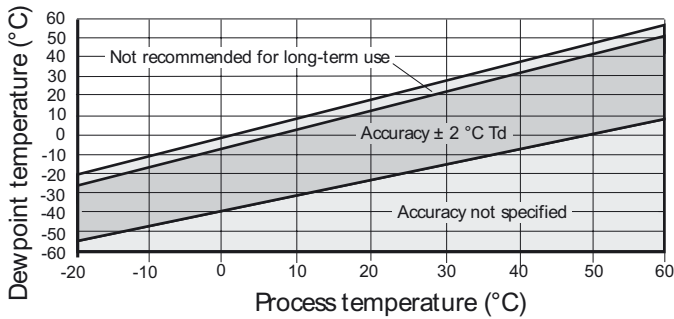


# Technical Data

## 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)



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 of electronics at +20 °C (+68 °F)  $\pm 0.1$  °C ( $\pm 0.18$  °F)  
 Sensor Pt 1000 RTD 1/3 Class B IEC 751

### Calculated variables (typical ranges)

water content 0...20 lb/MMscf, 0...326 mg/Nm<sup>3</sup>  
 parts per million by volume 0...500 ppm<sub>v</sub>

## Operating environment

Temperature range  
 operating -20...+60 °C (-4...140 °F)  
 storage -40...+70 °C (-40...158 °F)  
 Pressure range see probe specifications  
 Electromechanical compatibility  
 Complies with EMC standard EN61326-1:1997 + Am1:1998; 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,  $I_{max} = 100$  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: TC15354  
 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)

### 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.

## Mechanics

Connections screw terminals, 0.33...2.0 mm<sup>2</sup> wires (AWG 14-22)  
 Cable bushing Pg11 (5...12 mm)  
 Conduit fitting Pg11/NPT 1/2"-14  
 Housing material G-AISI10Mg (DIN 1725)  
 Housing classification IP65 (NEMA 4)  
 Housing weight 950 g

## Options and accessories

Additional analog output 4...20 mA  
 Ball valve set (for HMP368) DMP248BVS  
 pressure range at +20 °C 0...40 bar (during installation max. 10 bar)  
 Serial interface cable for PC connectors RJ45 - D9 female 25905ZZ  
 Sampling cell for HMP368 HMP302SC  
 Rainshield HMT360SAR  
 HMK15 adapter fitting for 12 mm probes 211011  
 Galvanic isolator (EU) 212483  
 Barrier (USA&Canada) 210664



Cable bushing.



Conduit fitting for wire conduits.



# 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

HMT362 = HMT360 transmitter + HMP362 probe

Pressure range 0...16.7 MPa

Sensor head cable length 2, 5 or 10 meters

Sensor head diameter 12 mm

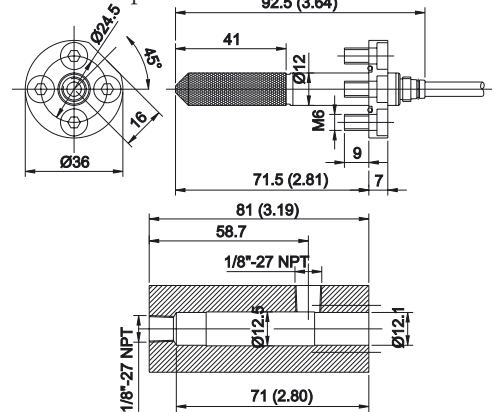
Sensor protection Stainless steel sintered filter

Probe installation mechanics

## Dimensions

Dimensions in mm.

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

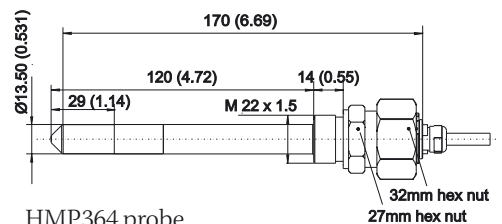
HMT364 = HMT360 transmitter + HMP364 probe

Pressure range 0...10 MPa

Sensor head cable length 2, 5 or 10 meters

Sensor head diameter 13.5 mm

Sensor protection Stainless steel sintered filter



HMP364 probe



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

## HMP368 for pressurized pipelines

### Technical Data

HMT368 = HMT360 transmitter + HMP368 probe

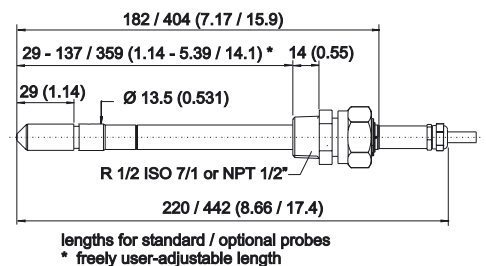
Pressure range 0...4 MPa

Sensor head cable length 2, 5 or 10 meters

Sensor head length 182 or 406 mm

Sensor head diameter 13.5 mm

Sensor protection Stainless steel sintered filter



HMP368 probe

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