Process Insights™
Premium Insights Into Process

RELIABLE DEW POINT METERS

PRODUCT DATASHEET

HDT™-100 & HDT-60

Loop-powered Aluminum Oxide Sensor Dew Point Transmitter

Fast

Accurate

Low Maintenance

- Semiconductor
- Hydrocarbon Processing
- Catalyst Protection
- Refrigerant Dryers
- Industrial Gases
- Dryer Control

HDT

Intrinsically Safe Loop Powered Dewpoint Transmitter for gaseous applications, from instrument air to specialty and hydrocarbon gases, our simple rugged design allows for use in your easiest to toughest applications. With full range reading without the need of temperature or pressure compensation.

Features

- Rugged, Waterproof, Fast, Accurate, HTF™ Aluminum Oxide Sensor Technology
- Loop-powered (two-wire) 5 to 28 VDC
  – Digital (HART Compliant) Output
  – Analog (4-20mA) Output
- Stainless Steel Housing
- IP65 Rated Connector
- Compact Design
- Temperature Compensated Calibration
- Suitable for installations at pressure or ambient

Hyper-Thin-Film (HTF) Al_2O_3 Moisture Sensor Technology

The HDT uses a Hyper-Thin-Film (HTF™) high capacitance aluminum oxide sensor with a measuring range of -100°C to +20°C (-148°F to +68°F)(dp). The HTF sensors provide a degree of accuracy, speed of response and stability unavailable from instruments using conventional aluminum oxide or polymer sensors.

THE HDT is designed to work in tough, high pressure and even in liquid applications. For Liquid applications see our Model HDT-LQ.

HART-Compliant Transmitter

The HDT is a HART compliant dew point transmitter, providing loop powered analog as well as a digital output. Housed in a 32 mm (1.25”) dia. stainless steel housing it has an overall length of 136 mm (5.36”), including the Industrial Standard 9.4mm four pin connector.

Analog Output Loop

The instrument draws 4-20mA from the power supply. The 4-20mA is linear to the factory programmed units, eg. °C(dp) with an output resolution of 0.1°C(dp) or 0.25uA, whichever is greater. The output range is factory programmable, as well as the units of measure °C, °C(t),°F(dp), ppmV, LBS H_2O/mm scf, gm H_2O/M3, ppmW, vapor pressure.

Digital Output Loop

The instrument can supply a digital output by modulating the 4-20mA loop line. The interface is defined by HART. In the digital mode the HDT can be remotely operated and the dew point can be read. In the digital mode multiple units can operate on the same loop cable as a multi-channel instrument. In this configuration each HDT draws a fixed 4mA independent of the measured dew point.

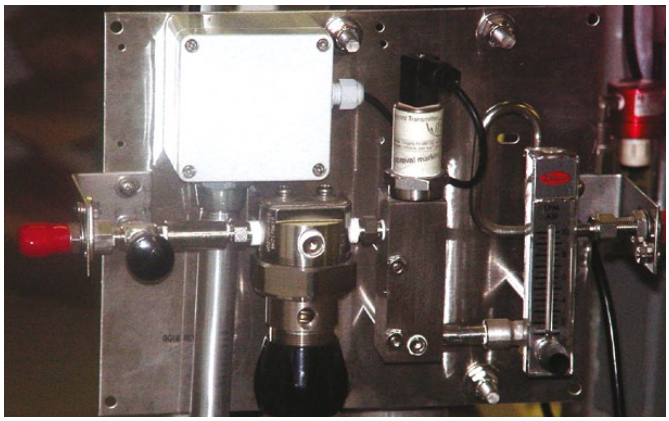
Connections

The HDT interfaces with both metric 14 mm x 1.25 mm threads and unified 3/4"-16 threads. The HDT connects through an inexpensive two-conductor cable over long distances.

Measurement Accuracy/Stability

The HDT transmitter uses a multi-point calibration table which provides temperature compensated dew point readings for temperatures from -10°C to +70°C (+14°F to +158°F). Thus, the HDT provides accurate dew point measurements over its full range even under extreme temperature conditions, such as when installed outdoors or close to heat sources.

Options



Typical sample system for measuring at atmospheric pressure.

Digital display panel meter provides power and display; relays are optional.

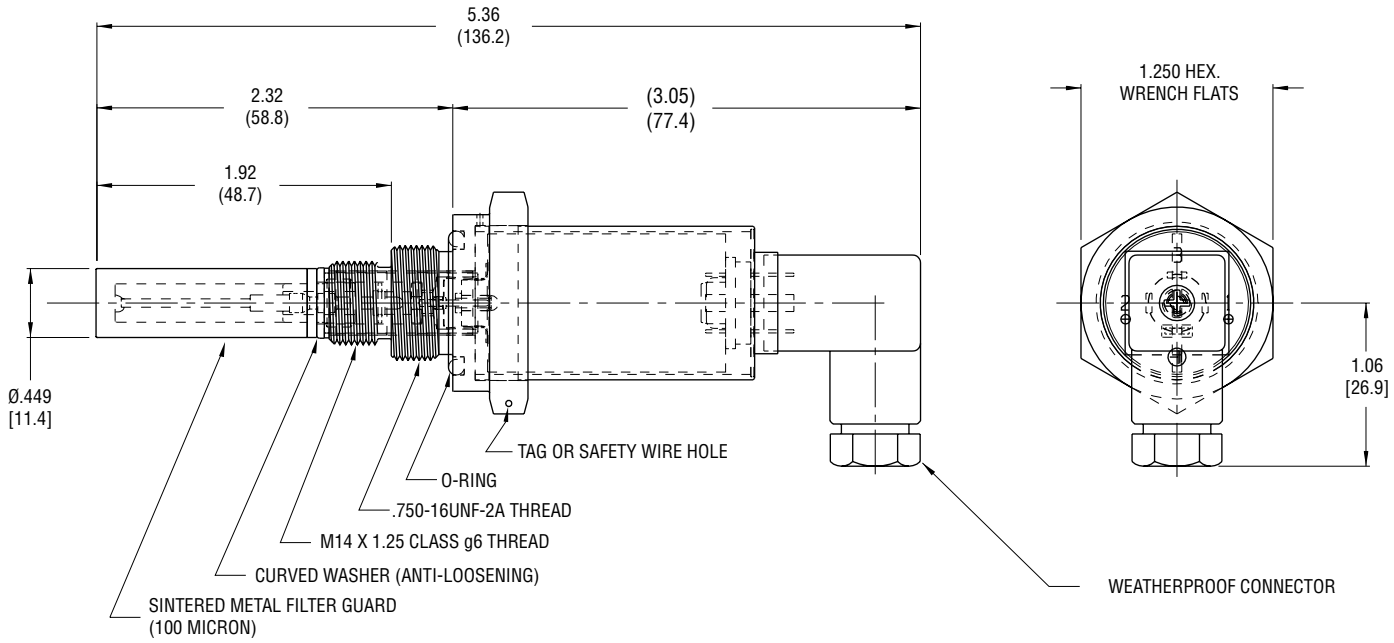
SPECIFICATIONS OF HDT

The HDT is a loop powered HART enabled dew point transmitter	
Housing	Stainless steel, weatherproof
Dimensions & Weight	~32 mm (1.25”) dia. x ~136 mm (5.36”) long including sensor & connector; 227 g (0.5 lbs)
Pressure operating range	Standard: 34 bar (500 psig). Optional: 340 bar (5,000 psig)
Operating Temperature	-10°C to +70°C (+14°F to +158°F)
Mechanical connection	14 mm x 1.25 mm threads, and 3/4”-16 threads
Electrical connections	Industrial Standard 9.4 mm, 4 pin connector. IP65
Cable	Two conductor cable. Min. #24AWG; for total cable length >1500 m (5000’) min. #20AWG (Cable must be shielded to meet CE requirements.)
Power Requirements	5 to 28 VDC, reverse polarity protected, the instrument draws 4-20mA depending on measured dew point.
Input resolution	0.1°C(dp)
Indicators	None
Engineering units	Factory programmed °C(dp), °C(t),°F(dp), ppmV, LBS H2O/mm scf, gm H_2O/M_3, ppmW, vapor pressure
Controls	HART interface, user’s selections are stored in EEPROM
Outputs	Analog and digital outputs are available. A. 4-20mA drawn by the instrument from the power supply. The 4-20mA is linear to engineering units, the range is programmable. Output resolution is 0.1°Cdp or ~ 0.25uA whichever is greater. B. The instrument can supply digital output by modulating the 4-20mA loop line. The interface is defined by HART. In the digital mode the HDT can be remotely operated and the dewpoint can be read. In the digital mode multiple units can operate on the same loop cable as a multi-channel instrument. In this configuration each HDT draws only 4mA independent of the measured dewpoint.
Alarms	The 4-20mA signal may be used by an external device to operate relays.
Isolation	Sensor is connected to the current loop but isolated from the transmitter housing and installation threads
Warranty	One year

Specifications of HTF Dewpoint Sensor Element XTR-100 and XTR-60	
Type	Hyper-Thin-Film (HTF™) high capacitance Al_2O_3
Dewpoint range	XTR-100: -100°C to +20°C (-148°F to +68°F) XTR-60: -60°C to +20°C (-76°F to +68°F)
Capacitance	15nF to 200nF
Accuracy	±3°C (±5.5°F)
Repeatability	±0.2°C (±0.36°F)
Temperature Range	-10°C to +70°C (+14°F to +158°F)
Sample flow range (linear vel. @ 1atm):	Static to 100 m/s
Storage temperature	-40°C to +80°C (-40°F to +176°F)
Calibration method	NIST/NPL traceable multi-point calibration table with temperature compensation over the full range

Approvals/Classifications	
II 1 G	**Ex ia IIC/IIB T6/T4 Ga** **For T6 : -20°C ≤ Ta ≤ +40°C** **For T4 : -20°C ≤ Ta ≤ +85°C**
II 1 D	**Ex ia IIIC T 115°C -20°C ≤ Ta ≤ +85°C**
Intrinsically Safe (Entity) for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; **Temperature Class T4 Ta = 85°C;** **Temperature Class T6 Ta = 40°C in accordance with Control Drawing No. DPT.00.D.7042**	
Intrinsically Safe (Entity) for use in Class I, Zone 0, AEx ia IIC **T4 Ta = 85°C;** **T6 Ta = 40°C; in accordance with Control Drawing No. DPT.00.D.7042;**	
Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; **Temperature Class T4 Ta = 85°C;** **Temperature Class T6 Ta = 40°C;**	
Suitable for use in Class II and III, Division 2, Groups E, F and G; **Temperature Class T4 Ta = 85°C;** **Temperature Class T6 Ta = 40°C;**	

Dimensions


5.36
(136.2)
2.32
(58.8)
(3.05)
(77.4)
1.92
(48.7)
Ø.449
[11.4]
TAG OR SAFETY WIRE HOLE
O-RING
.750-16UNF-2A THREAD
M14 X 1.25 CLASS g6 THREAD
CURVED WASHER (ANTI-LOOSENING)
SINTERED METAL FILTER GUARD
(100 MICRON)
1.250 HEX.
WRENCH FLATS
1.06
[26.9]
WEATHERPROOF CONNECTOR

ProcessInsights™
Premium Insights Into Process

GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights delivers premium analytical sensors, analyzers, instrumentation, software and solutions that are mission-critical to keep your operations, personnel, and the environment safe. Our commitment to customer satisfaction is evident through our diverse range of products, programs, and services, designed to accommodate various budgets and application needs.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

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