Process Insights
Premium Insights Into Process

CosaXentaur

RELIABLE DEW POINT METERS

PRODUCT DATASHEET

Model LPDT

Smallest Loop Powered Aluminum Oxide Sensor Transmitter Dew Point Transmitter with Digital Display

-100°C TO +20°C Dewpoint

Fast

Accurate

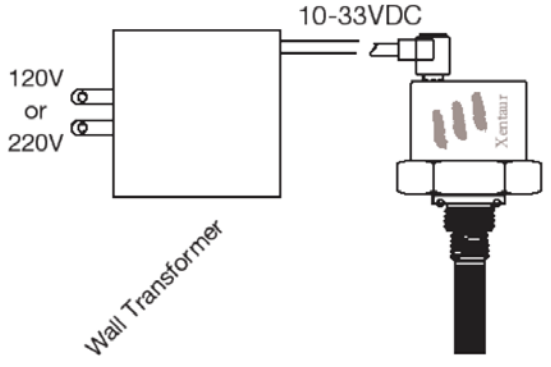
Low Maintenance

- Monitoring and control of air dryers
- Plastic dryers
- Glove boxes
- Welding gases
- Clean room environments

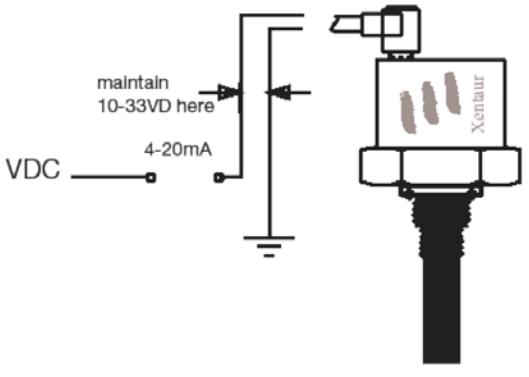
The COSA Xentaur Model LPDT is the world's smallest loop powered (two-wire) dew point transmitter with a display. The compact LPDT is a fully functional instrument operated through a miniature custom LCD display and three push buttons, using the same user friendly interface of all COSA Xentaur hygrometers. The analog output is linear to the engineering units selected for display and is user configurable. A weatherproof cap is available for outdoor NEMA 4X (IP65) applications.

Methods of using and Interfacing the LPDT

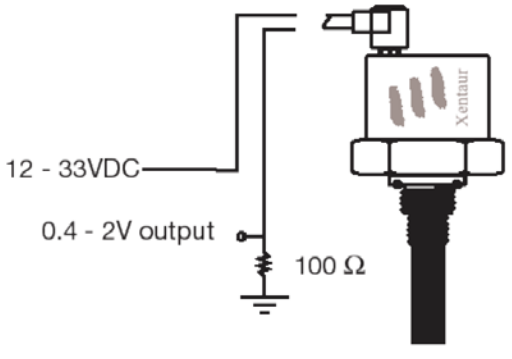
Operation with Wall Transformer Dew Point viewed on Instrument Display



Operation with DC Power Supply Dew Point viewed on Instrument Display and available as 4-20mA output



Operation with DC Power Supply Dew Point viewed on Instrument Display and available as Voltage output

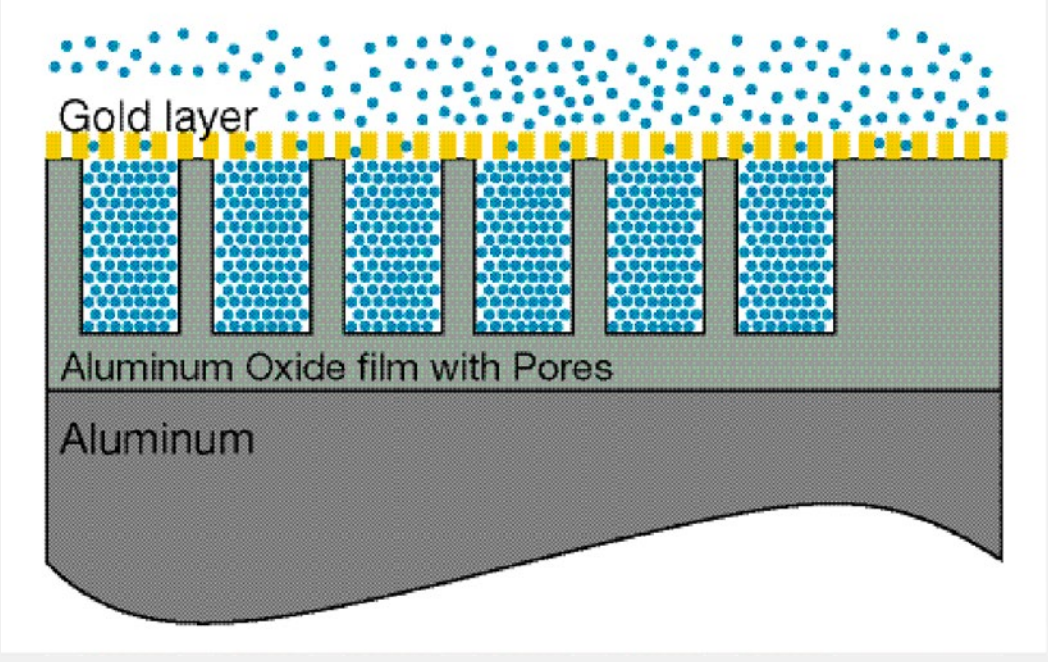


COSA Xentaur Hyper-Thin-Film (HTF) Al_2O_3™ Moisture Sensor Technology

The LPDT uses a COSA Xentaur HTF™ aluminum oxide sensor. The breakthrough HTF™ sensor technology represents advances in thin film and metal oxide sciences and offers significant performance advantages over all other aluminum oxide sensors.

The operating principle of the HTF™ aluminum oxide sensors is that a hygroscopic layer of aluminum oxide adsorbs or releases water molecules within its pores, depending on the water vapor pressure in its environment. The electrical capacitance of the aluminum oxide layer changes with the surrounding water vapor pressure. The electrical capacitance is measured between the aluminum core of the sensor and a porous conductive gold layer on the outside.

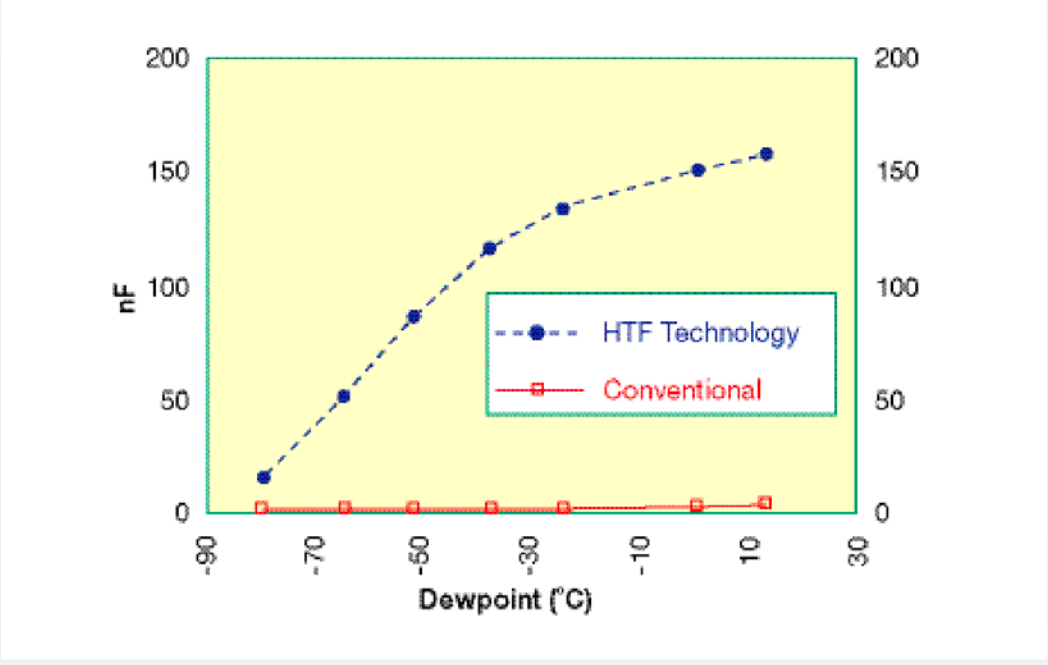
The advantages of the HTF sensor technology are a result of the proprietary manufacturing method in which the aluminum oxide layer is made to be hyper thin as well as extremely hygroscopic. This results in a very sensitive sensor with fast response.



Operating Principle of Al_2O_3 Sensor

High Capacitance Response

HTF sensors have a capacitance change, several orders of magnitude larger than that of conventional aluminum oxide sensors due to the hyper thin film, a sharp transition layer and a special pore geometry. Additionally, this change is quasi linear and its sensitivity to temperature is negligible. The advantages of a linear high capacitance response are: better sensitivity, better repeatability and faster response times. Also, the measurement system is less prone to noise and drift, and signal conditioning is kept to a minimum.



Hyper Thin Film vs. Conventional Al_2O_3 Sensor. Change of Capacitance with Dew Point

TECHNICAL SPECIFICATIONS

Dew Point Sensor Element

Type:	Hyper-Thin-Film high capacitance Al_2O_3 dew point range XTR-100 -100°C to +20°C (-148°F to +68°F) XTR-65 -65°C to +20°C (-85°F to +68°F)
Capacitance:	15nF to 200nF
Accuracy:	±2°C (± 3.6°F) for -100°C to 0°C dew point ±3°C (± 5.5°F) for 0°C to +20°C dew point
Repeatability:	±0.5°C (±0.9°F)
Temperature range:	-10°C to +70°C (+14°F to +158°F)
Sample Flow Range (linear vel. @ 1 atm.):	Static to 100 m/s
Storage Temperature:	-40°C to +80°C (-40°F to +176°F)
Calibration Method:	Field span check, NIST/NPL traceable, multipoint calibration
Temperature Measurement:	The instrument measures the sample temperature with a precision integrated circuit sensor

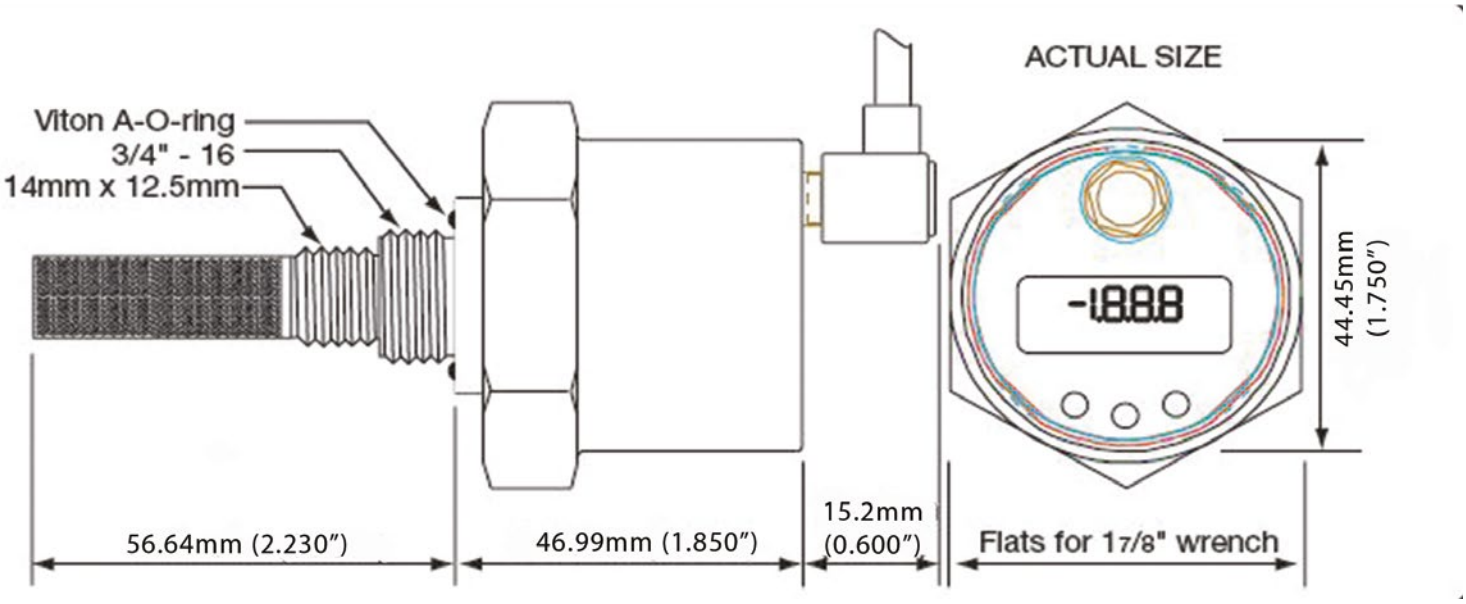
Electronics

Input resolution:	0.1°C (dp)
Indicators:	3.5 digit LCD with custom legends
Engineering units:	°C, °F, ppmv, LBS H_2O/mm scf, gm H_2O/M^3
Controls:	3 push buttons, all settings stored in EPROM
Output:	Analog 4-20mA
Alarms:	The 4-20mA of the digital output may be used by an external device to operate relays
Isolation:	Sensor and case are isolated from the current loop and shunted with 33V transorbs

Mechanical

Enclosure:	Stainless steel (weather proof cover optionally available)
Pressure operating range:	Standard: 34bar (500 PSI) Optional: 340 bar (5,000 PSI)
Electrical connections:	2.1 mm power jack with retainer thread size 3/4”-16, 14 mm x 12.5 mm
Cable:	Two conductor cables
Power Requirements:	10 to 33 VDC, the instrument draws 4-20mA depending on measurement dew point
Warranty:	One year

Dimensions



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PREMIUM INSIGHTS – GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights' products and solutions deliver innovative and differentiated analysis and measurement solutions and technologies that add high value to our customers and protect the environment.

Our commitment is to deliver smart and affordable innovation that optimizes process, improves safety, and transforms our world.

CENTERS OF EXCELLENCE

PROVIDING PROVEN SOLUTIONS FROM A GLOBAL TECHNOLOGY LEADER

MADE IN USA

COSA Xentaur

4140 World Houston Parkway
Suite 180
Houston, TX 77032
USA
+1 713 947 9591
www.cosaxentaur.com
service@cosaxentaur.com

Process Insights – The Americas

4140 World Houston Parkway
Suite 180
Houston, TX 77032
USA
+1 713 947 9591
info@process-insights.com

Process Insights – EMEA

ATRICOM
Lyoner Strasse 15
60528 Frankfurt
Germany
+49 69 20436910
info@process-insights.com

Process Insights – APAC

Wujiang Economic and Technology
Development Zone
No. 258 Yi He Road, 215200 Suzhou
Jiangsu Province China
+86 400 086 0106
info@process-insights.com

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