

PRODUCT BROCHURE

LPDT2

Ultra-Compact, Loop-Powered
Aluminum Oxide Sensor Transmitter



Standard version with display



No display version

NEW

Reliable and Fast

Cost-Effective

Low Maintenance

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

The Model LPDT2 is an ultra-compact, loop-powered (two-wire) dew point transmitter with a display. Model LPDT2 is a fully functional instrument operated through a miniature custom LCD display and four 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. The unit also provides for a 2-wire RS-485 Modbus Interface.

- Loop-powered transmitter with integrated digital display; also available without display
- Versatile and compatible with a wide range of gases and fits wide range of applications

Features & Benefits

- Display version available
- Low-cost and maintenance
- Weatherproof NEMA 4X IP66
- Convenient logging feature
- RS-485 Modbus Interface
- Adjustable analog outputs
- Low cost of ownership and maintenance

Applications

- Glove boxes
- Clean room environments
- Natural gas transmission
- Hydrocarbon processing
- Air dryers and compressors
- Specialty air gases
- Cryogenic
- Air generators

Configurations

- LPDT2-100 – general purpose and CL1 Div 2
- LPDT2-B100 – general purpose and CL1 Div 2
- LPDT2-65 – general purpose and CL1 Div 2
- LPDT2-B65 – general purpose and CL1 Div 2



COSA Xentaur Hyper-Thin-Film (HTF™) Al₂O₃™ Moisture Sensor Technology

The LPDT2 uses a COSA Xentaur HTF aluminum oxide sensor. The breakthrough HTF moisture 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.

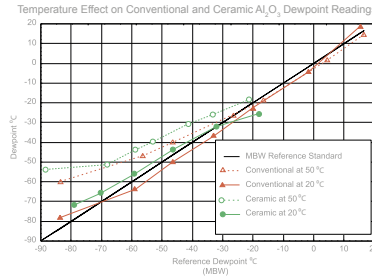
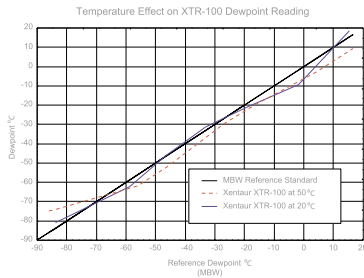
The advantages of the HTF sensor technology are a result of the proprietary manufacturing method in which the aluminum oxide layer is made to be hyper thin as well as extremely hygroscopic. This results in a very sensitive sensor with fast response.

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.

Temperature Coefficient

COSA Xentaur HTF aluminum oxide sensors are completely temperature stable over almost their full range. Only below -70°C (dp) does the measurement become slightly temperature sensitive. Temperature coefficients remain small enough though, to allow for software compensation.



The temperature coefficients of conventional and ceramic sensors relative to their sensitivity are too large to allow for an accurate compensation through software.



Drift

COSA Xentaur HTF sensors do not suffer from drift like conventional sensors. Their response curve remains virtually the same even after six month of operation at an elevated temperature.

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 $\text{H}_2\text{O}/\text{mm scf}$, gm $\text{H}_2\text{O}/\text{M}^3$
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

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