

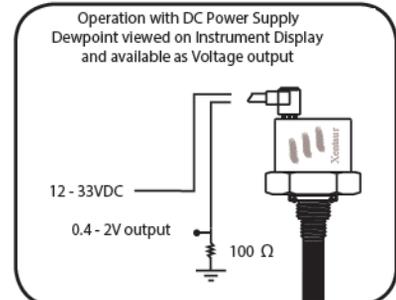
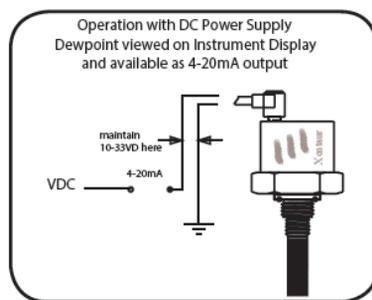
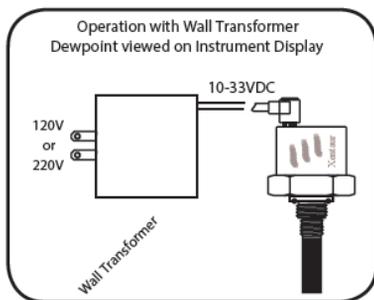
## Loop Powered Transmitter

### LPDT

Model LPDT is the world's smallest loop powered (2-wire) dewpoint transmitter with a display. The compact LPDT is a fully functional instrument operated through a miniature custom LCD display and three push buttons, using a user friendly interface. 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



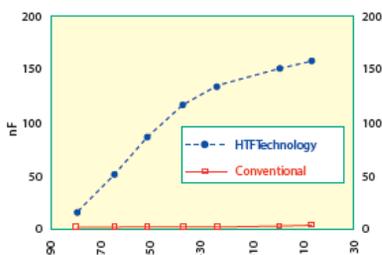
### Hyper Thin Film (HTF) Al<sub>2</sub>O<sub>3</sub> moisture sensor technology

LPDT uses a 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.

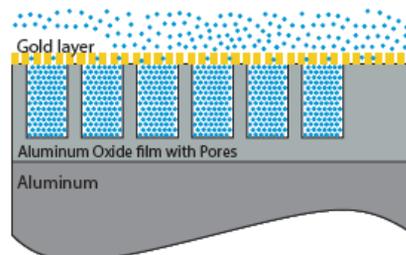
The operating principle of the HTF aluminum oxide sensors is that a hygroscopic layer of aluminum oxide adsorbs or releases water molecules within its pores, depending on the water vapor pressure in its environment. The electrical capacitance of the aluminum oxide layer changes with the surrounding water 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.

Hyper Thin Film vs. Conventional Al<sub>2</sub>O<sub>3</sub> Sensor  
Change of Capacitance with Dewpoint



Operating Principle of Al<sub>2</sub>O<sub>3</sub> Sensor



Technical specifications may change without previous warning

## 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.

## Technical specifications

Dewpoint sensor element	
Type	Hyper Thin Film high capacitance Al <sub>2</sub> O <sub>3</sub>
Dewpoint range of XTR-100	From -100 to +20°C (-148 to +68°F)
Dewpoint range of XTR-65	From -65 to +20°C (-85 to +65°F)
Capacitance	From 15 to 200nF
Accuracy	± 2°C (± 3.6°F) for -100° to 0°C Dewpoint ± 3°C (± 5.5°F) for 0° to +20°C Dewpoint
Repeatability	± 0.5°C (± 0.9°F)
Temperature range	From -10 to +70°C (-14 to +158°F)
Sample flow range	(linear velocity at 1atm) Static to 100m/s
Storage temperature	From -40 to +80°C (-40 to +176°F)
Calibration method	Field span check NIST/NPL traceable multipoint calibration
Electronics	
Input resolution	0.1°C (dp)
Indicators	3.5 digit LCD with custom legends
Engineering units	°C, °F, ppmv, LBS H <sub>2</sub> O/mm scf, gm H <sub>2</sub> O/M3
Controls	3 push buttons, all settings stored in EPROM
Output	Analog 4 – 20 mA
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 (500PSI) Optional: 340bar (5000PSI)
Electrical connections	2.1mm power jack with retainer thread size 3/4" – 16, 14mm * 12.5mm
Cable	Two conductor cable
Power requirements	10 to 33VDC, the instrument draws 4-20mA depending on measurement dewpoint
Warranty	1 year

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## Dimensions

