

Data Sheet

HYBRID DEWPOINT TRANSMITTER



Supplied by

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ON LINE MOISTURE MEASUREMENT in Liquids



THE COMPLETE MOISTURE PACKAGE

PRIMARY LAB STANDARD AND SECONDARY PROCESS MEASUREMENT
FINALLY UNITE!



Xentaur HTF™
Hybrid Dewpoint Transmitter
(HDT) with XTR-LQ Sensor

Measures Water
Concentrations from
<1ppmw to Saturation



Xentaur ESS-LQ
Slip Stream Sample System
Continuous Preparation of "Grab" Sample



Mitsubishi Chemical
Portable Karl Fischer
Titrator, Model CA-21
Validation of Data by Primary
Standard in the Field

APPLICATIONS

LIQUID HYDROCARBON STREAMS in the Most Challenging Conditions

Hexane • Hexene
Benzene • Mixtures
Complex Matrices

OILS AND LUBRICANTS

SOLVENTS

REFRIGERANTS

THEORY OF MEASUREMENT

Al_2O_3 oxide sensors measure changes in partial water vapor pressure (PWVP). They follow complicated principles of physical chemistry. Henry's Law defines the relationship between PWVP and PPMW ($\mu g/g$).

$$\text{Henry's Law} \quad \text{PPMW}(\mu g/g) = \text{PWVP} * K$$

K is Henry's constant. This constant is effected by sample matrix and temperature. Xentaur has developed a sample system with an integral "grab" sample to facilitate the determination of K in the "real" process. The sample system can then be used on a routine basis to validate K.

The procedure required to make a small number of empirical measurement is quite easy. By utilizing the "grab" sample and Karl Fischer titration, K is easily calculated. This is done at 2 critical concentrations. This data is then incorporated into a look-up table. The table is completed utilizing Henry's Law theory. By using this approach PPMW ($\mu g/g$) measurements are possible directly from the sensor.

K has already been computed for many common process streams and COSA offers a service to perform tests and computations for any specified stream.

Registered Address

ABLE Instruments & Controls Ltd
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HDT SPECIFICATIONS

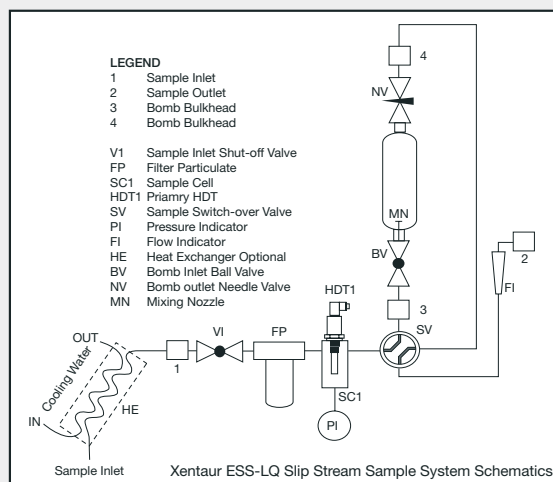
Enclosure	Stainless Steel, IP66 NEMA 4X.
Dimensions & Weight	~1.25" Dia. x ~5.68" long including sensor & connector; 0.5 lbs.
Pressure operating range.....	Standard: 500 PSI (34 bar). Optional: 5,000 PSI (340 bar).
Operating Temperature	14°F to 158°F (-10°C to +70°C).
Mechanical connection.....	14mm x 1.25mm threads, and 3/4"-16 threads.
Electrical connections.....	Industrial Standard 9.4 mm, 4 pin connector. IP66 NEMA 4X
Cable.....	Two conductor cable. Min. #24AWG; for total cable length >5,000 ft. min. #20AWG (Cable must be shielded to meet CE requirements.)
Power Requirements	5 to 28 VDC, the instrument draws 4-20mA depending on measured dewpoint.
Input resolution	0.1°C dewpoint.
Indicators	None.
Engineering units	°F(dp), °C(dp), PWVP(mb), PPMW(µg/g)
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 the specified engineering units, the range is programmable. Output resolution is 0.1°C(dp) 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 as well as temperature 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. In addition, a digital output pin is provided which can be factory (or specially equipped customer) programmed to provide dewpoint alarm indications.
Isolation.....	Sensor is referenced to the current loop negative side, mechanical connection (housing) is isolated from the current loop.
Warranty.....	1 year

HTF™ DEWPOINT SENSOR ELEMENT XTR-LQ SPECIFICATIONS

Type.....	Hyper-Thin-Film (HTF™) high capacitance Al ₂ O ₃
Dewpoint range XTR-LQ.....	-80°C to 25°C
Partial Water Vapor Pressure Range..	0.0005 mb to 31.65 mb
Capacitance.....	5nF to 225nF
Accuracy	±5.5°F (±3°C)
Repeatability	±0.9°F(±0.5°C)
Temperature Range.....	+14°F to +158°F (-10°C to +70°C)
Storage temperature	-40°F to +176°F (-40°C to +80°C)
Calibration method	Multipoint calibration table with temperature compensation over the full range

CA-21 SPECIFICATIONS

Method.....	Coulometric Karl Fischer Titration
Measuring range	10µg-100mgH ₂ O
Repeatability standard deviation	Within ±5µg for 10µg-1mgH ₂ O Within 0.5% of RSD value for 1mgH ₂ O or more
Sensitivity.....	0.1µg H ₂ O
Temperature.....	5°C -40°C
Humidity.....	Under 80%, No moisture condensation
Power supply	AC 100/115/230/240V, 50/50Hz, 30VA
Dimensions	Main Unit (excluding cell & battery unit): Approx. 280(W) x 180(D) x 200(H)mm
Weight	Main Unit : Approx. 4.5 kg Main Unit with battery unit : Approx. 6.3kg



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