

New: Pall WS12/WS13 Series Water Sensor

For measurement of water content in oil

The Pall WS12/WS13 Series water sensors is an ideal, low-cost, in-line, monitoring solution for real-time measurement of dissolved water content in hydraulic, lubricating and insulating fluids, and diesel fuels.

- Specifically designed for use in harsh and often remote industrial environments, the Pall water sensor helps reduce downtime with rapid, accurate, reliable measurement of water contamination
- When connected to the user's control systems, Pall's water sensor provides a key component in the predictive maintenance of the plant and machinery.

Features

- A sensing probe directly immersed in the fluid to monitor dissolved water content and temperature
- Water content output in % saturation
- Temperature in °C or °F
- High pressure option up to 200 bar (2900 psi)
- Simple and flexible installation, simple to operate
- Robust all in-one modular housing and sensing probe design
- Two analogue outputs, 4 - 20 mA, for connections to existing SCADA and DCS systems

The Effect of Water in Oil

Water contamination in fluids can cause numerous problems such as additive depletion, oil oxidation, corrosion, reduced lubricating film thickness, microbial growth, and reduction of dielectric strength. These costly problems can be averted with continuous monitoring of oil water content so that timely action can be implemented.

Hydraulic, lubricating and insulating fluids and diesel fuels should be operated without the presence of free water and with dissolved water levels at 50 % saturation or considerably lower in the case of insulating oils.

Measuring water content in oil Parts per Million (PPM)

A common industry practice is to report water content in oil in terms of parts per million (PPM). Whilst most fluids can tolerate a certain degree of water contamination, acceptable levels vary. 200 PPM of water in a phosphate ester based oil would be excellent. However, the same amount in a transformer oil would be catastrophic.

Measuring % Saturation

A more meaningful way to report water content is as a percentage of the water saturation level of the fluid for a given temperature. This method provides a better measure of how close the water content is to the formation of free water in the fluid. This allows action to be taken to bring the water content to an acceptable level before free water forms.



Pall WS12 Water Sensor

Applications

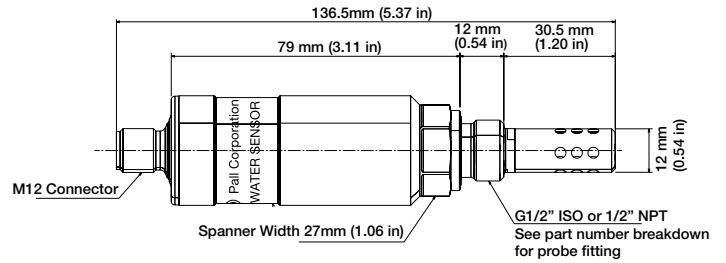
There are numerous applications for the WS12/13 Water sensor, including:

- **Primary Metals**
 - Rod Mill High Speed Lube Systems
 - Cold Mill Tandem Mill
 - Tilt Furnace HPU's
- **Power Generation**
 - Wind Turbine Gear Box Lube
 - Main Turbine Lube Oil
 - Transformer Oil
- **Pulp and Paper**
 - Dryer Section Lube Systems
 - Wet End Lube Systems
 - Press Section Hyd/Lube Systems
 - Powerhouse - Steam Turbine Lube Systems
- **Marine**
 - Main propulsion lubrication
 - Hydraulic active fin stabilization
- **Industrial In-plant**
- **Automotive**
- **Offshore / Petrochemicals**

Specifications

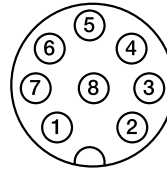
Supply Voltage	21-28 VDC (requires ≥ 200 mA)
Working Temperature Range	
Sensing Probe	- 40 °C to 125 °C (-40 °F to 275 °F)
Electronics	- 40 °C to 80 °C (-40 °F to 176 °F)
Fluid Compatibility	Petroleum based and synthetic fluids. The water sensor is not to be used in water based fluids or aerospace phosphate ester hydraulic fluids.

Pressure Range	
Standard Model	Up to 20 bar (290 psi)
High Pressure Model	Up to 200 bar (2900 psi)
Probe Connector	
Standard model	1/2" NPT (male) or 1/2" BSPP (male)
High Pressure model	3/8" BSPP (male)
Electrical Connector	M12 x 1 8-Pin plug
Measurement Range	0 - 100% RH
Accuracy	at 20° C (68° F)
Humidity Sensor	$\pm 2\%$ 0 to 90 % RH and $\pm 3\%$ 90 to 100 % Traceable to international standards, administered by NIST, PTB, BEV
Temperature Sensor	$\pm 0.2^\circ$ C (0.36° F)
Enclosure	IP65 to IEC60529 (NEMA 4 to NEMA 250)
Weight	0.43 kg (0.95 lb)
Calibration Services	Available from Pall; contact your local representative
Outputs	4-20 mA Load < 500 Ohm OUT 1 = 0 to 100 % RH OUT 2 = -25 to 125 °C (-13 to 257 °F)



Connector Configuration (IEC 61076-2-101)

Plug for 4 - 20mA Connection
(front view on pins)



Description	Connection Assignment
NC	PIN 1
RS485 B	PIN 2
RS485 A	PIN 3
Analogue Output 1 (4-20mA)	PIN 4
Analogue Output 2 (4-20mA)	PIN 5
GND	PIN 6
NC	PIN 7
V+	PIN 8

Ordering Information

Part Number	Pressure Rating	Connection
WS12SC08	20 bar (290 psi)	1/2" BSPP thread to ISO 228
WS12SB08	20 bar (290 psi)	1/2" NPT thread to ANSI/ASME B1.20.1.
WS13SC06	200 bar (2900 psi)	3/8" BSPP thread to ISO 228



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