Pall Corporation

New: Pall WS19 Series Hand-held Water Sensor

For measurement of water content in oil

The Pall WS19 Series portable water sensor is an ideal, low-cost method for measuring dissolved water content in hydraulic, lubricating and insulating oils.

Specifically designed for use in industrial environments, readings are shown on an LCD display and can be used as a key component in the predictive maintenance of plant and machinery.

Features

- A sensing probe directly immersed in the fluid to monitor dissolved water content and temperature
- Water content output in % saturation or PPM
- Temperature in °C or °F
- 'Plug and play' connectivity
- Data logging
- Multiple oil constants for PPM conversion
- Simple to operate and calibrate
- Robust housing and sensing probe designs.

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 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.

Water content measurement in oil PPM

The common industry practice has been to report water content in oil in terms of parts per million (PPM). Most fluids can tolerate a certain degree of water contamination, but at what level is it considered excessive? 200 PPM of water in a phosphate ester based oil would be excellent. However, the same amount would be catastrophic in a transformer oil.

% Saturation

An alternative way to report water content is as a percentage of the water saturation level of the fluid for a given temperature. One advantage of this method is that it provides a better measure of how close the water content is to the water saturation level of the oil and hence, the formation of free water in the fluid. The WS19 water sensor reports the presence of dissolved water in oil in the range of 0 % to 100 % of saturation. If an oil is cloudy due to free water contamination at the measurement temperature, the WS19 Water Sensor will display 100 % saturation, until steps are taken to bring the water content below the saturation point.

The % saturation can be converted to water concentration in PPM by programming the unit with constants that are specific to the fluid. The hand-held unit can hold up to 10 sets of conversion parameters; contact Pall Corporation for details.

Simple use

Specifically designed for industrial environments the WS19 Water Sensor features a color LCD touch screen for simple on-site adjustment and calibration, and interchangeable sensor options.

Applications

There are numerous applications for the WS19 Water sensor, including:

- **Primary Metals**
  Rod Mill High Speed Lube Systems
  Cold Mill Tandem Mill
  Tilt Furnace HPU's
- **Power Generation**
  Gear Box Lube Oil
  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**

Specification

Dimensions	62mm W X 170mm L X 34mm D (2.4” W X 6.7” L X 1.3” D)
Supply Voltage	4X 1.5V Alkali-Manganese Battery IEC LR6 AA.
Optional	5V DC via USB cable
Battery Life	200 Hours
Temperature	
Sensing Probe Tip	-40 °C to 120 °C (-40°F to 248 °F)
Grip of Sensing Probe	0 °C to 50 °C (32°F to 122 °F)
Hand Held Display	0 ºC to 50 ºC (32ºF to 122 ºF)
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.
Probe Cable Length	2 m (6.6 ft)
Accuracy Saturation	± 2 % 0 to 90 % RH and ± 3 % 90 to 100 % Traceable to international standards, administered by NIST, PTB, BEV
Accuracy Temperature	± 0.2°C (±0.36°F) at 20°C (68°F) ± 0.7°C (±0.9°F) at -40°C (-40°F) ± 0.7°C (±0.9°F) at 100°C (212°F)
Enclosure / Protection	ABS /IP 40
Weight	0.21 kg (0.45 lb)
CE Compliance	EN61326-1: 2006 EN61326-2: 2006 IEC61326-1: 2005 IEC61326-2-1: 2005
TFT Touch Screen Display	Liquid Crystal Display, 54 X 41mm (2.1” X 1.6”), Illuminated
Calibration Services	Available from Pall; contact your local representative

The display

Ordering Information

Water Sensor (handheld unit and probe) with case:	**WS19DS**
Water sensor, case and optional calibration kit:	**WS19DSC**
Probe only:	**WS19S**
Calibration kit:	**WSCALK**
Calibration salts only:	**WSCALS**
Connecting cable:	**WS19CABLE**

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