AS 1000 Series
AquaSensor

Description

The AS 1000 series AquaSensor is a stationary, microprocessor based measurement unit for the continuous monitoring of the water saturation level and temperature in hydraulic and lubrication systems. The sensor measures the water content relative to the saturation concentration *(saturation point)* and output the degree of saturation *(saturation level)* in the range of 0 to 100% as a 4 - 20 mA signal. A reading of 0% would indicate fluid that is free of water, while a reading of 100% would indicate a fluid that is saturated with water.

Water in Oil

It is almost certain that there is water present in hydraulic and lubrication systems. These systems should be operated without the presence of free or emulsified water. The most common sources of water entering a system are ambient humidity, “splash” from process water, and new oil. Water contamination will accelerate the aging process of the oil resulting in oil oxidization, additive depletion, reduced lubrication, corrosion and damaged components. Most of these costly problems can be avoided by monitoring the water content of the operating fluids.

Sometimes the water content is difficult to determine, but with the HYDAC AquaSensor, determining the amount of water is easy! The most practical method for monitoring water content in oil is as a percent of the saturation level. Different oils are capable of dissolving varying amounts of water, therefore they have varying water saturation curves. The curve *(below)* is an example of the typical relationship of water saturation level versus fluid temperature in hydraulic and lubrication oils. By looking at the example graph it can be seen that this fluid is capable of holding more water, or has a higher saturation level, as the temperature increases.

Applications

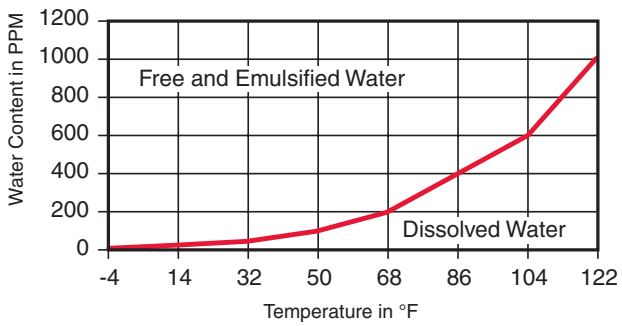
- Hydraulic systems that are sensitive to water
- Gear boxes
- Molding machines
- Turbines
- Transferrers

Technical Details

Input Data	
Measuring range *(temperature)*	-13° to 212°F (-25° to 100°C)
Measuring range *(saturation level)*	0 to 100%
Operating pressure	max. 725 psi (50 bar)
Burst pressure	> 9000 psi (630 bar)
Parts in contact with fluid	Stainless steel, FPM seal, ceramic with evaporated metal
Output Data - Humidity Measurement	
Output level *(saturation level)*	4 to 20 mA
Calibrated accuracy	≤ ± 2% FS max.
Accuracy in media measurements	≤ ± 3% FS typ.
Pressure dependent	+ 0.02% FS / bar
Output Data - Temperature Measurement	
Output signal *(temperature)*	4 to 20 mA
Accuracy	≤ ± 2% FS max.
Nominal temperature range *(measuring saturation level)*	32° to 194°F (0° to 90°C)
Ambient temperature range	-40° to 212°F (-40° to 100°C)
Viscosity range	32 to 23175 SUS (1 to 5000 cSt)
Flow velocity	< 16 ft/sec
Permissible fluids	Fluids based on mineral oil and synthetic and natural esters
CE mark	EN 50081-1, EN 50081-2, EN 50082-1, EN 61000-6-2
Type of Protection acc. DIN 40050	IP67
Other Data	
Supply voltage	12 to 32 V DC
Residual ripple	≤ 5%
Thread connection	G 3/8 BSPP male thread
Torque rating	approx. 18 ft/lbs
Electrical connection Pin 1: +Ub Pin 2: Signal saturation level Pin 3: 0V / GND Pin 4: Signal temperature Pin 5: not connected	M12x1.5 pole (DIN VDE 0627)
Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection	Standard
Weight	approx. 5 oz (145 g)

note: FS (Full Scale) = relative to the full measuring range

Example of a Hydraulic Oil Saturation Curve



Model Code

AS 1 0 0 8 - C - 000

Series
AS = AquaSensor

Measuring Range
1 = Saturation level 0 to 100%; Temperature -13° to 212°F (-25° to 100°C)

Fluids
0 = Mineral oils
1 = Phosphate esters (HFD-R)

Mechanical Connection
0 = G 3/8A DIN 3852

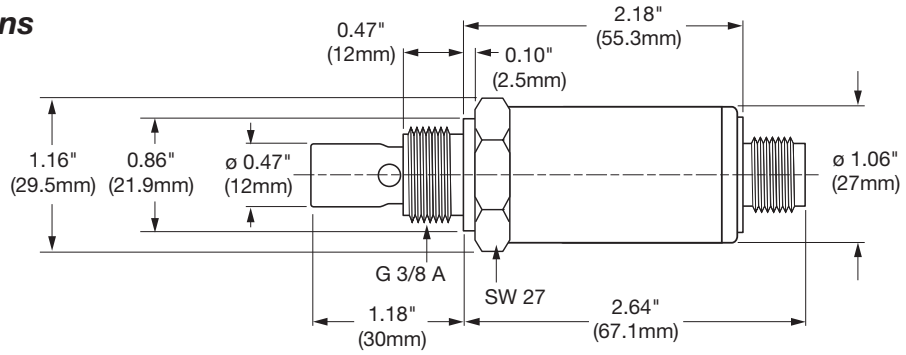
Electrical Connection
8 = Plug M12x1, 5-pole *(connector not included)*

Signal Technology
C = Saturation level 4 to 20 mA (0 to 100%), Temperature 4 to 20 mA (-25° to 100°C)

Modification Number
000 = Standard

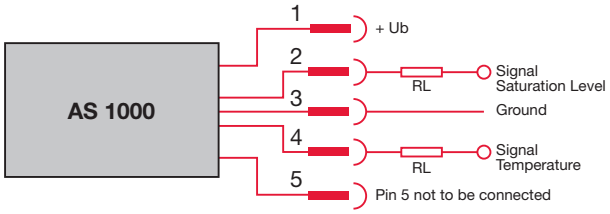
Items supplied
- AquaSensor
- Operation Manual

Dimensions



Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

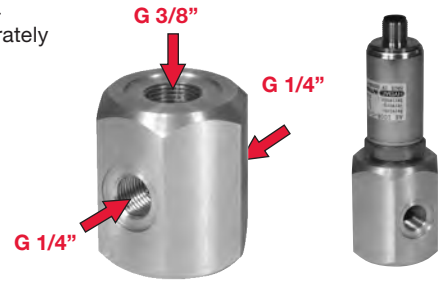
Circuit Connection



Color Codes for connectors with cables:
1 = brown
2 = white
3 = blue
4 = black
5 = gray

AS 1000 G1/4 Housing Block Adapter

Part #03182134
Purchase separately



Accessories

ZBE 08 Connector
5 Pole M12x1 90°

ZBE 08 connector only (IP65)
Part #06006786

ZBE 08-02-4 with 2 meter cable (IP67)
Part #06006792

ZBE 08-05-4 with 5 meter cable (IP67)
Part #06006791

HDA 5500-0-0-AC-000 Display
Part #00908861

HDA 5500-0-0-DC-000 Display
Part #00908862

HDA 5500-1-0-DC-000 Display
Part #00908868

HDA 5500-1-1-AC-000 Display
Part #00908869

HDA 5500-1-1-DC-000 Display
Part #00908870