

CONTAMINATION MONITORS

AS 1200 Series

Aqua Sensor



Description

The AquaSensor AS 1200 is an advancement of the proven AS 1000 series for the online-detection of water in hydraulic oils and lubrication fluids as well as in diesel, especially designed as an OEM sensor for condition monitoring. It measures the degree of saturation and the temperature of the fluid.

In the version with 2 analogue outputs, the AS 1200 transmits the values for the degree of saturation and the temperature as a 4 .. 20 mA signal.

In the version with two switching outputs, the AS 1200 can be configured by the user via the HYDAC service units HMG 2500 and HMG 4000, the Condition Monitoring Unit CMU 1000 and the interface module CSI-B-2. The following parameters can be adjusted:

- Saturation level/temperature
- Switching direction
- Switching points
- Switching delay times
- Switching mode of switch outputs
- Operating temperature range

Water in Oil

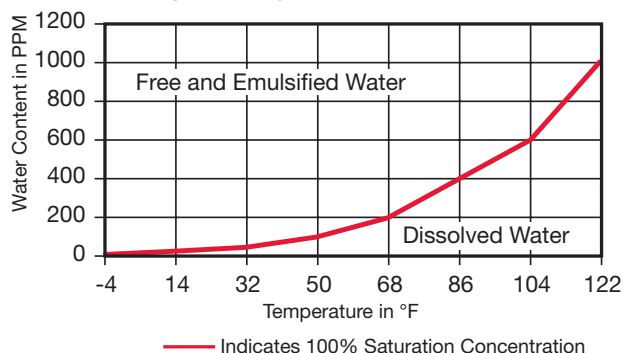
It is almost certain that there is water present in hydraulic and lubrication systems. These systems should be operated without the presence of free or emulsified water. The most common sources of water entering a system are ambient humidity, "splash" from process water, and new oil. Water contamination 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 Aqua Sensor, 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

Example of a Hydraulic Oil Saturation Curve



Technical Specifications

Input Data	
Saturation Level	0 .. 100%
Temperature	-25 .. 100 °C
Operating pressure	-0.5 .. 50 bar
Pressure resistance	≤ 630 bar
Mechanical connection	G3/8 A DIN 3852
Tightening torque, recommended	25 Nm
Parts in contact with fluid	Mechanical connection: Stainless steel, ceramic with vacuum-metallized coating Seal: FKM
Output Data	
Pin 2: Saturation level	
Output signal	4 .. 20 mA (corresponds to 0 .. 100 %); $R_{Lmax} = (U_B - 10 V) / 20 \text{ mA [k}\Omega\text{]}$ or switching output (configurable)
Calibration Accuracy	≤ ± 2% FS max.
Accuracy in media measurements	≤ ± 3% FS typ.
Response time ¹⁾	~ 2 min. in humid oil
Pressure dependence	± 0.025% FS / bar
Pin 4: Temperature	
Output signal	4 .. 20 mA (corresponds to -25 .. 100 °C); $R_{Lmax} = (U_B - 10 V) / 20 \text{ mA [k}\Omega\text{]}$ or switching output (configurable)
Accuracy	≤ ± 2% FS max.
Pin 5:	
HSI (HYDAC Sensor Interface) automatic sensor detection	
Switching outputs	
Design	NPN or PNP transistor outputs (configurable as N/O or N/C)
Switching current	max. 250 mA per output
Environmental conditions	
Compensated temperature range	0 .. +90 °C
Operating temperature range ²⁾	-40 .. +100 °C / -25 .. +100 °C
Storage temperature range	-40 .. +100 °C
Fluid temperature range ²⁾	-40 .. +125 °C / -25 .. +125 °C
Viscosity range	1 .. 5000 cSt
Flow velocity	< 5 m/s
Fluid compatibility ³⁾	Mineral oil-based fluids, diesel or ester-based fluids (HEES, HETG)
CE mark	EN 61000-6-1 / -2 / -3 / -4
Vibration resistance acc. to DIN EN 60068-2-6	7.5 mm (5 Hz ≤ f < 8.2 Hz) 2 g (8.2 Hz ≤ f < 2000 Hz)
Shock resistance acc. to DIN EN 60068-2-27	20 g (11 ms in 3 axes)
Protection type acc. to DIN EN 60529 ⁴⁾	IP 67
Other data	
Supply voltage	12 .. 32 V DC
Residual ripple of supply voltage	≤ 5%
Current consumption	≤ 30 mA without outputs
Weight	~ 145 g

Note: Reverse polarity protection, short circuit protection provided.

FS (Full Scale) = relative to complete measuring range

¹⁾ Response time to a step change in RH. Time for the RH output to change by 63 % of the total RH change, RH = Relative Humidity

²⁾ In the standard up to -25 °C with FKM seal, -40 °C on request

³⁾ Other fluids on request

⁴⁾ With mounted mating connector in corresponding protection type

Model Code

AS 1 2 0 8 - X - 000

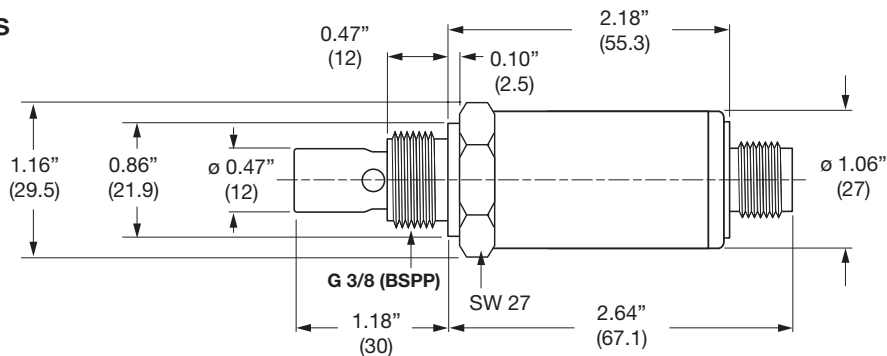
Series	AS	= Aqua Sensor
Fluid ¹⁾	2	= Mineral oil-based fluids, diesel or ester-based fluids (HEES, HETG) ²⁾
Mechanical Connection	0	= G 3/8A ISO 1179-2
Electrical Connection	8	= Plug M12x1, 5-pole (connector not included)
Exit	C	= Output 1 Pin 2 saturation degree (4 .. 20 mA) Output 2 Pin 4 temperature (4 .. 20 mA)
	2	= 2 switching outputs, configurable
Modification Number	000	= Standard

Note:

¹⁾ Special fluids on request

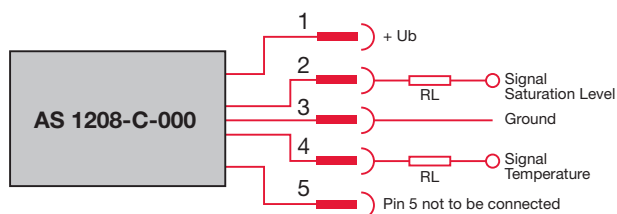
²⁾ FKM is usually compatible with diesel, however, this depends on what additives are used. Please contact your diesel supplier and ask for confirmation of the compatibility in combination with FKM.

Dimensions



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

Circuit Connection

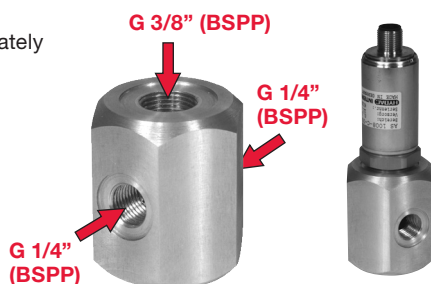


Color Codes for connectors with cables:

- 1 = brown
- 2 = white
- 3 = blue
- 4 = black
- 5 = gray

AS 1200 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 6.5 ft. (2 m) (IP67)
Part #06006792

ZBE 08-05-4 with 16.4 ft. (5 m) 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

