**Description:**
The AquaSensor AS 1000 is the culmination of continued development of the successful AS 2000 series for online detection of water in oils, in particular as an OEM sensor for fluid conditioning monitoring. It measures the degree of saturation and the temperature of the fluid.

In the analogue output version, the AS 1000 transmits the values for the saturation level and the temperature as a 4 .. 20 mA signal.

In the version with two switching outputs, the AS 1000 can be configured by the user via the HYDAC service units HMG 3010 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
- Switch points
- Switching mode of switching outputs
- Switching direction
- Switching delay times

The AS 1000 therefore enables hydraulic and lubrication oils to be monitored accurately, continuously and online. As water problems are detected early on, malfunctions and unnecessary downtime can be reliably avoided.

**Technical data:**

**Input data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturation level</td>
<td>0 .. 100 %</td>
</tr>
<tr>
<td>Temperature</td>
<td>-25 .. 100 °C</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>-0.5 .. 60 bar</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>≤ 630 bar</td>
</tr>
<tr>
<td>Mechanical connection</td>
<td>G3/8 A DIN 3852</td>
</tr>
<tr>
<td>Tightening torque, recommended</td>
<td>25 Nm</td>
</tr>
</tbody>
</table>

**Output data:**

**Pin 2: Saturation level**

- Output signal: 4 .. 20 mA (corresponds to 0 .. 100 %)
- Calibration accuracy: ≤ ± 2 % FS max.
- Accuracy in media measurements: ≤ ± 3 % FS typ.
- Pressure dependence: ≤ 0.025 % FS / bar

**Pin 4: Temperature**

- Output signal: 4 .. 20 mA (corresponds to -25 .. +100 °C)
- Calibration accuracy: ≤ ± 2 % FS max.

**Pin 5:**

- HSI (HYDAC Sensor Interface)
- Automatic sensor recognition

**Switching outputs**

- Type: PNP transistor outputs (configurable as N/O or N/C)
- Switching current: maximum 1 A per switching output

**Environmental conditions**

- Compensated temperature range: 0 .. +90 °C
- Operating temperature range: -40 .. +100 °C / -25 .. +100 °C
- Storage temperature range: -40 .. +100 °C
- Fluid temperature range: -40 .. +125 °C / -25 .. +125 °C
- Viscosity range: 1 .. 5000 cSt
- Flow velocity: < 5 m/s
- Fluid compatibility: Mineral oil based fluids, synthetic and natural esters

**Protection class acc. to DIN EN 60529**

- 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) -25 °C with FKM seal, -40 °C on request
2) Special fluids on request
3) With mounted mating connector in corresponding protection class
Model code:

Fluid
0 = operating fluid mineral oil-based
1 = operating fluid phosphate ester-based

Mechanical connection
0 = G3/8 A DIN 3852

Electrical connection
8 = male M12x1, 5 pole (mating connector not supplied)

Output signal
C = output 1 pin 2 saturation level (4 .. 20 mA)
output 2 pin 4 temperature (4 .. 20 mA)
2 = 2 switching outputs

Modification number
000 = standard

Note:
1) Special fluids on request

Accessories:
Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

Pin connections:

<table>
<thead>
<tr>
<th>Pin</th>
<th>AS 1X08-C</th>
<th>AS 1X08-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Ug</td>
<td>+Ug</td>
</tr>
<tr>
<td>2</td>
<td>Saturation level</td>
<td>SP2</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>Temperature</td>
<td>SP1</td>
</tr>
<tr>
<td>5</td>
<td>HSI*</td>
<td>HSI*</td>
</tr>
</tbody>
</table>

* HSI = HYDAC Sensor Interface (HYDAC’s own communication interface)

Display, read-out and configuration options:

HDA 5500-1-1-xC-000
Digital Display Unit with 2 programmable switching outputs, specifically designed for use with the AS 1000
Order no.: 908869

HDA 5500-1-1-AC-000
Order no.: 908870

HDA 5500-1-1-DC-000
Order no.: 908869

HMG 510
Portable 2-channel measuring instrument, specially designed for use with HSI and SMART sensors
Order no.: 909889

HMG 3010 and HMG 4000
Portable data recorders with fully graphics-capable colour display for displaying, recording and processing measured values as well as for configuring of HSI and SMART sensors
Order no.: 909889

HMG 3010 and HMG 4000
Portable data recorders with fully graphics-capable colour display for displaying, recording and processing measured values as well as for configuring of HSI and SMART sensors
Order no.: 909889

CMU 1000
Electronic evaluation unit for online monitoring of measured value as well as for the configuration of HSI and SMART sensors
Order no. 920718

CSI-B-2
Interface module, enables configuration of HSI and SMART sensors using HYDAC PC software CMWIN
Order no. 920134

Information on other read-out options can be found on our website at www.hydac.com or please contact your HYDAC representative.

Dimensions:

Male connector M12x1, 5 pole

Pin AS 1X08-C AS 1X08-2
1 +Ug +Ug
2 Saturation level SP2
4 .. 20 mA
3 0 V 0 V
4 Temperature SP1
4 .. 20 mA
5 HSI* HSI*

* HSI = HYDAC Sensor Interface (HYDAC’s own communication interface)

Note:
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC ELECTRONIC GMBH
Hauptstr. 27, 66128 Saarbrücken
Germany
Telephone +49 (0)6897 509-01
Fax +49 (0)6897 509-1726
e-mail: electronic@hydac.com
Internet: www.hydac.com