



Oil Condition Sensor HYDACLAB® HLB 1300

Description:

The HYDACLab® HLB 1300 is a multifunctional sensor for online condition monitoring of standard and bio oils in stationary and mobile applications.

The user is thus informed in real time of changes in the fluids and can take immediate action in the case of deteriorating operating conditions.

Assertions can be made about the condition of an oil, e.g. ageing or mixing with other fluids, on the basis of the measured values for the relative change in dielectric constant, the saturation level and the temperature.

These measurements are available as sequential analogue signals and switching signals at the electrical output of the HYDACLab® (e.g. for activating warning devices or alarms).

The measured values can be displayed on various HYDAC display and measurement devices.

Special features:

- Online condition monitoring of oils
- Applications in industrial and mobile sectors
- Analogue output signal for:
 - Saturation level
 - Temperature
 - Rel. change in dielectric constant
- Switching output
- Compact design
- Simple cartridge mounting

Technical data:

Input data	
Rel. humidity	0 .. 100 % saturation
Temperature	-25 .. +100 °C
Dielectric constant (ϵ_R)	1 .. 10
Operating pressure	< 50 bar
Pressure resistance	< 600 bar
Flow velocity	< 5 m/s
Output data - Saturation level	
Output signal	4 .. 20 mA (0 .. 100 %)
Calibration accuracy	$\leq \pm 2$ % FS max.
Accuracy ¹⁾	$\leq \pm 3$ % FS typ.
Output data - Temperature measurement	
Output signal	4 .. 20 mA (-25 .. +100°C)
Accuracy	$\leq \pm 3$ % FS max.
Output data - Relative change in dielectric constant (ϵ_R)	
Output signal	12 mA $\pm$ 8 mA (± 30 % of IV)
Accuracy ²⁾	see below
Switch output	
Signal 1 (N/C)	PNP switching output 0.5 A max. switching level $\geq U_B - 4$ V
Default warning level SP1 Humidity	≥ 85 %
Default warning level SP1 Temperature	≥ 80 °C
Default warning level SP1 Dielectric constant	± 15 % (temperature compensated)
Environmental conditions	
Nominal temperature range	+20 .. +80 °C
Storage temperature	-40 .. +90 °C
Fluid compatibility	Mineral oils HLP (HLP-D on request) Esters: HEES, HETG Seal material: FPM
CE mark	EN 61000 - 6 - 1 / 2 / 3 / 4
Protection class to IEC 60529	IP 67
Other data	
Supply voltage U_B	10 .. 36 V DC
Residual ripple of supply voltage	≤ 5 %
Mechanical connection	G 3/4 DIN 3852 E
Torque value	30 Nm
Electrical connection	M12x1, 5 pole
Housing	Stainless steel
Weight	~ 205 g

Note: Reverse polarity protection, short circuit protection provided.

FS (Full Scale) = relative to complete measuring range **IV (Initial Value)**

¹⁾ The max. accuracy achievable when measuring relative humidity is heavily dependent on the type of fluid or fluid additive. More precise information on this is available on request.

²⁾ The accuracy achievable when measuring the relative change in dielectric constant is dependent on the application, the type of oil and the individual calibration of the sensor. Detailed information on this is available on request.

Model code:

HLB 1 3 0 8 - 1 C - 000 - F 1

Variables

3 = 3 variables

- Relative change in dielectric constant (DK)
- Saturation level
- Temperature

Mechanical connection

0 = G3/4 A DIN 3852

Electrical connection

8 = Male M12x1, 5-pole (connector not supplied)

Type of signal, output 1

1 = Switching output / N/C

Type of signal, output 2

C = 4 .. 20 mA, 3 conductor

Modification number

000= Standard (cannot be adjusted)

Seal material (parts in contact with the fluid)

F = FPM seal

Connection material (in contact with fluid)

1 = Stainless steel

Note:

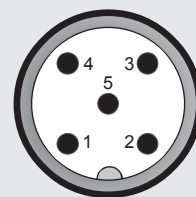
On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

Appropriate accessories, such as electrical connectors, can be found in the Electrical Accessories brochure.

Pin connections:

M12x1



Pin

1	+U _B
2	Signal 1
3	⊥
4	Signal 2
5	HSI* Reset (PLC)

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

Signal 1: PNP switching output
Signal 2: Sequential analogue output (4 .. 20 mA)

Display and read-out options:

HDA 5500-0-2-Zc-006
Digital Display Unit; the HDA 5500 displays the sequential analogue output of the HYDACLAB® and provides the user with 4 programmable switching outputs.

HDA 5500-0-2-AC-006(CM1k)
Order no.: 909925

HDA 5500-0-2-DC-006(CM1k)
Order no.: 909926

HMG 510

Portable 2-channel data recorder, specially designed for use with HSI and SMART sensors
Order no.: 909889

HMG 3010

Portable data recorder with full graphics colour display for indicating, displaying and editing measured values
Order no.: 920930

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

Note:

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

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Dimensions:

