



Fluid Condition Sensor HYDACLab® HLB 1300

Description:

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

The user receives prompt information on changes in the fluid and can take immediate action in the case of deteriorating operating conditions.

Changes in fluid condition that might occur due to ageing or mixing with other fluids, for example, are indicated by measuring the relative change in dielectric constant, the relative humidity and the temperature.

These measurements are available as sequential analogue signals and/or 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 measuring instruments.

Special features:

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

Technical data:

Input data	
Relative humidity	0 .. 100 % saturation
Temperature	-25 .. +100 °C
Dielectric constant (ϵ_R)	1 .. 10
Operating pressure	< 50 bar
Pressure resistance	< 600 bar
Fluid flow velocity	< 5 m/s
Output data - Humidity measurement	
Output signal	4 .. 20 mA (0 .. 100 %)
Calibration accuracy	$\leq \pm 2$ % FS max.
Accuracy	$\leq \pm 3$ % 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	see below **
Switching output	
Signal 1 (N/C):	PNP transistor 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)
Ambient conditions	
Nominal temperature range	+20 .. +80 °C
Storage temperature	-40 .. +90 °C
Fluid compatibility	Mineral oils HLP (HLP-D on request) Esters: HEES, HETG Seals: FPM
CE mark	EN 61000-6-1 / 2 / 3 / 4
Protection class to DIN 40050	IP 67
Other data	
Supply voltage U_B	10 .. 36 V DC
Supply voltage residual ripple	≤ 5 %
Mechanical connection	G 3/4 DIN 3852 E
Torque value	30 Nm
Electrical connection	M12x1, 5 pole
Housing	Stainless steel
Weight	approx. 205 g

Note.: Reverse polarity protection, short circuit protection provided.

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

* 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.

** 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. More detailed information 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 (DC)
 - Relative humidity
 - Temperature

Mechanical connection type

0 = G 3/4 A DIN 3852

Electrical connection type

8 = M12x1, 5 pole (connector not supplied)

Type of signal, output 1

1 = NC switching output

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

Material of connection (parts in contact with the fluid)

1 = stainless steel

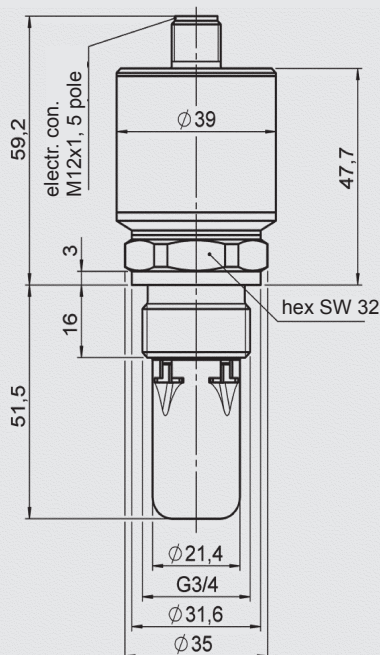
Note:

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

Accessories:

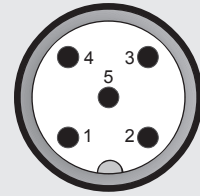
Appropriate accessories, such as electrical connectors, can be found in the Electrical Accessories brochure.

Dimensions:



Pin connections:

M12x1



Pin

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

* **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 to display the measured values from HSI and SMART sensors

Order no.: 909889

HMG 3000

Portable data recorder with full graphics colour display for indicating, recording and editing measured values

Order no.: 909437

Information on further display 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 or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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