

Continuous Oil Condition Monitoring



LubCos H₂Oplus II Lubrication Condition Sensor

Application area

Stationary screw-in sensor for the continuous determination of the **oil condition, humidity** and **temperature** in hydraulic and lubricating oils.

Performance features

Measurement and documentation of changes in hydraulic fluids and lubricants. Data is continuously documented evaluated and stored. In that way deterioration and changes in the oil (e.g. water inleakage, oil change, ...) can be indicated. Through this, damage can be recognized or completely avoided at an early stage. This offers the opportunity to prevent machine failures as well as to prolong maintenance and oil change intervals by means of appropriate measures. Furthermore, by monitoring the lubricant, correctly performed maintenance work and the use of the required lubricant quality may be documented.

Design characteristics

The sensor is provided with a G $\frac{3}{4}$ thread and can be e.g. integrated in a return line or the tank.

The communication with the sensor either takes place over a serial RS232 interface, over two analog outputs (4 ... 20 mA) or CANopen.

In order to also enable a long-term record of data up to half a year, the sensor has a data storage unit which can be read out over the serial interface.

Measuring principle

The sensor records records the following physical oil characteristics as well as its periodic change: Temperature, relative oil humidity and water activity, relative permittivity and conductivity of the fluid respectively.

As especially the conductivity and the relative permittivity show a strong connection to the temperature, next to the characteristic values at current temperature the sensor also sends the data at reference temperature.

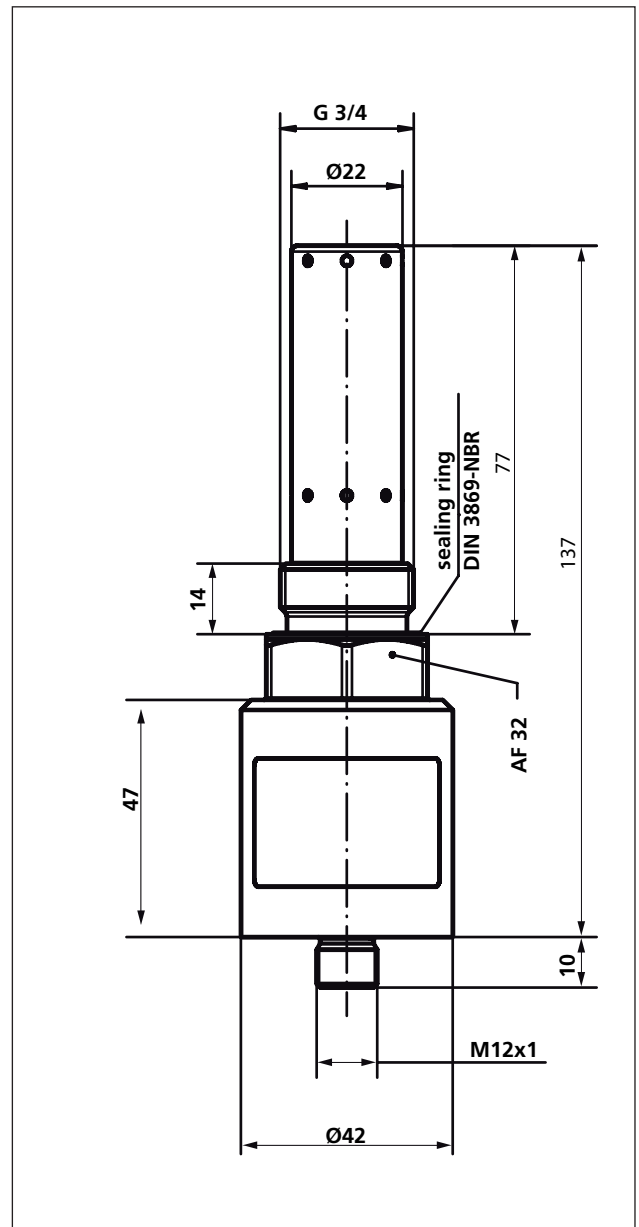
The sensor is able to evaluate condition changes automatically. Alerts, Warnings and errors are sent to the CAN interface or per RS232 as error codes.

Software

A free PC-software for data recording and evaluation of the measured values can be downloaded from our website at www.argo-hytos.com within the download area.



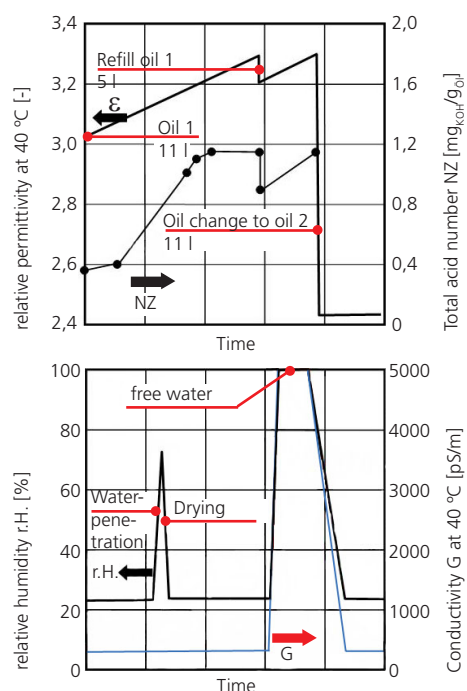
LubCos H₂Oplus II



Technical data / Application example

Application example

By using the sensor different changes of the oil condition can be detected. The following example shows a typical course of relative permittivity, conductivity and relative humidity during various changes of the condition in the system. By means of the characteristics, different oil types may be differed, oil refreshing and oil change can be detected and the relative humidity, free water as well as the deterioration and deterioration rate can be defined respectively.



Order code

LubCos H ₂ Oplus II	SCSO 100-1010
--------------------------------	---------------

Accessories

Screw-in block for mounting in a return line, connection G ³ / ₄	SCSO 100-5070
Complete data cable set, 5 m length	SCSO 100-5030
Data cable with open ends, 5 m length	SCSO 100-5020
Contact box for connection of a data cable	SCSO 100-5010
USB adapter - RS232 serial	PPCO 100-5420
Power supply	SCSO 100-5080
Ethernet - RS232 gateway	SCSO 100-5100
Display and storage device LubMon Visu	SCSO 900-1000

Sensor data	Size	Unit
Max. operating pressure	10	bar
Operating temperature fluid¹⁾	- 20 ... + 100	°C
Ambient conditions, operation, storing		
Temperature	- 20 ... + 80	°C
Humidity	0 ... 95	% r.H.
Protection class	IP 67	
Pressure fluids	Mineral and ester fluids, polyalphaolefins	
Wetted materials	Aluminum, HNBR, polyurethane resin, epoxy resin	
Sealing materials		
Power supply	9 ... 33	VDC
Power input	< 0,2 max.	A
Output		
Power output (2x) ²⁾	4 ... 20	mA
Interface	RS 232, CAN/CANopen	
Connection		
Threaded connection	G ³ / ₄	
Electrical connection	M 12 x 1, 8-pole connector	
Measuring range³⁾		
rel. permittivity	1 ... 7	-
rel. humidity	0 ... 100	% r.H.
Conductivity	0 ... 800 000	pS/m
Temperature	- 20 ... + 120	°C
Measuring resolution		
rel. permittivity	1 * 10 ⁻⁴	-
rel. humidity	0,1	% r.H.
Conductivity	1	pS/m
Temperature	0,1	K
Measuring accuracy⁶⁾		
rel. permittivity ⁴⁾	± 0,015	-
rel. humidity ⁵⁾	± 3	% r.H. FS
Conductivity ⁴⁾	typ. < 10	%
Temperature ⁴⁾	± 1	K

¹⁾ Permanently

²⁾ Output IOut1 and IOut2 are freely configurable (cp. interface and communication command)

³⁾ Additional display of temperature gradient and trend

⁴⁾ Calibrated to n-Pentan at 25°C

⁵⁾ Calibrated to air at 25°C

⁶⁾ Factory calibration