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Application:

SFS Viscosity Sensor for determination of the viscosity, relative dielectric number and temperature in hydraulic and lubricating oils. SFS Viscosity Sensor is a screw-in sensor and immersion sensor respectively and is designed for continuous monitoring of the oil condition.
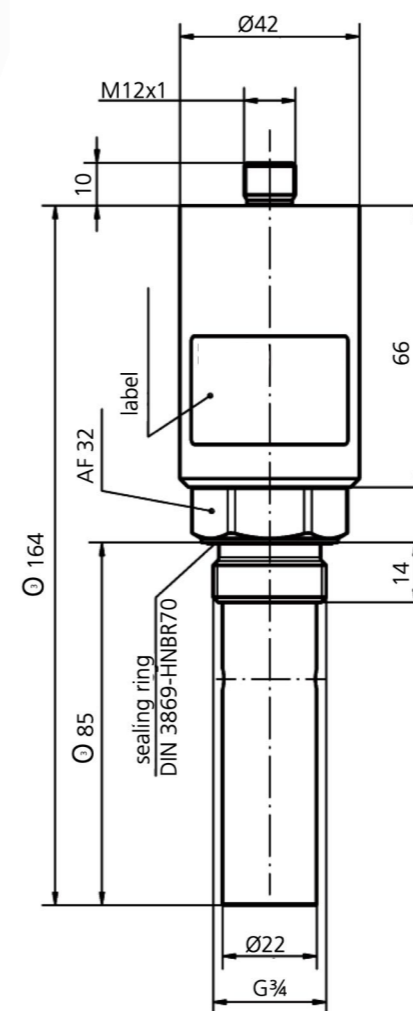
Features:

Measurement and documentation of changes in hydraulic fluids and lubricants. The measured values are continuously documented, evaluated and stored. In that way deterioration and changes in the oil (e.g. viscosity and polarity) can be indicated. Through this, damage can be recognized or completely avoided at an early stage. By monitoring of the lubricant, it is also possible to record service measures and the use of the prescribed lubricant quality.

Measurement Principle:

SFS Viscosity Sensor records the following physical oil characteristics as well as periodic changes: Temperature, SAW-shear viscosity, and the relative dielectric number of the fluid. As the viscosity and the relative dielectric number show a strong connection to the temperature, the sensor additionally sends -after a learning phase - compensated values at a reference temperature (40 °C). The sensor is able to evaluate constitutional changes as well as its own functional condition automatically. Alarm messages, warnings and errors are displayed as error codes.

Design Characteristics:

SFS Viscosity Sensor is provided with a G¾ thread and can be integrated in the return line or the tank. Optionally the sensor can be used as immersion sensor for analyzing of oil samples. The communication with the sensor takes place optionally over a serial RS232 interface, CANopen or over two analogue outputs (4 ... 20 mA). In order to enable a long-term recording of data, the sensor is also provided with an internal storage unit.

Technical data

Sensor data	Size	Unit
Max. operating pressure	50	bar
Operating conditions:		
Temperature[1]	-20 ... +85	°C
Rel. humidity[1]	0 ... 100	% r.H. (non-condensing)
Compatible fluids	mineral oils (H, HL, HLP, HLPD, HVLP), synthetic esters (HETG, HEPG, HEES, HEPR), polyalkylenglycols (PAG), zinc and ash-free oils (ZAF), polyalphaolefins (PAO)	
Wetted materials	aluminium, HNBR, polyurethane resin, epoxy resin, chemical nickel/gold (ENIG), soldering tin (Sn96, 5Ag3CuO, 5NiGe), aluminium oxide, glass (DuPont QQ550) silicon carbide, silicon oxide	
Protection class[2]	IP67	
Power supply[3]	9 ... 33	V
Power input	max. 0,2	A
Output		
Power output (2x)[4]	4 ... 20	mA
Accuracy power output[5]	± 2	%
Interfaces	RS232/CAN	-
Connections		
Threaded connection	G¾	inch
Tightening torque threaded connection	45 ±4,5	Nm
Electrical connection	M12x1, 8-polig	-
Tightening torque M12-connection	0,1	Nm
Measuring range		
SAW-shear viscosity	8 ... 400	mm²/s
Rel. dielectric number	1 ... 7	-
Temperature	-20 ... +85	°C
Measuring resolution		
SAW-shear viscosity	0,1	mm²/s
Rel. dielectric number	1*10⁻³	-
Temperature	0,1	K
Measuring accuracy[6]		
SAW-shear viscosity (8 ... 100 mm²/s)[7]	Typ <±5	mm²/s
SAW-shear viscosity (100 ... 400 mm²/s)[7]	Typ <±5	%
Rel. dielectric number[8]	±0,02	-
Temperature	±0,5	K
Weight	155	g

Ø42
M12x1
10
66
label
AF 32
Ø 164
Ø 85
sealing ring DIN 3869-HNBR70
14
Ø22
G¾

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