Application:

SFS Level Sensor is a stationary screw-in sensor for continuous determination of the oil condition, humidity and temperature in hydraulic and lubricating oils as well as measuring the fluid level.

Features:

Measurement 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.

Measurement Principle:

SFS Level Sensor records the following different physical oil characteristics as well as its periodic change: Temperature, relative oil humidity and water activity, relative dielectric number (relative permittivity), conductivity of the fluid and fluid level respectively. As especially the conductivity and the relative dielectric number show a strong connection to the temperature, next to the characteristic values at current temperature the sensor also sends the data at reference temperature (40 °C / 104 °F). The sensor is able to evaluate condition changes automatically.

Design Characteristics:

SFS Level Sensor is provided with a G¾ thread and can be integrated in the tank. The sensor that measures the oil parameters is at the end of the lance. This ensures that the sensor element is always fully immersed and the oil parameters and their changes may be correctly defined. Above the sensor element there is a special level transducer by which the filling level can be determined. Communication with the sensor either takes place over a serial RS 232 interface, two analogue outputs (4 ... 20 mA) or CANopen. In order to also enable a long-term record of data up to half a year, the sensor is provided with an internal data storage unit
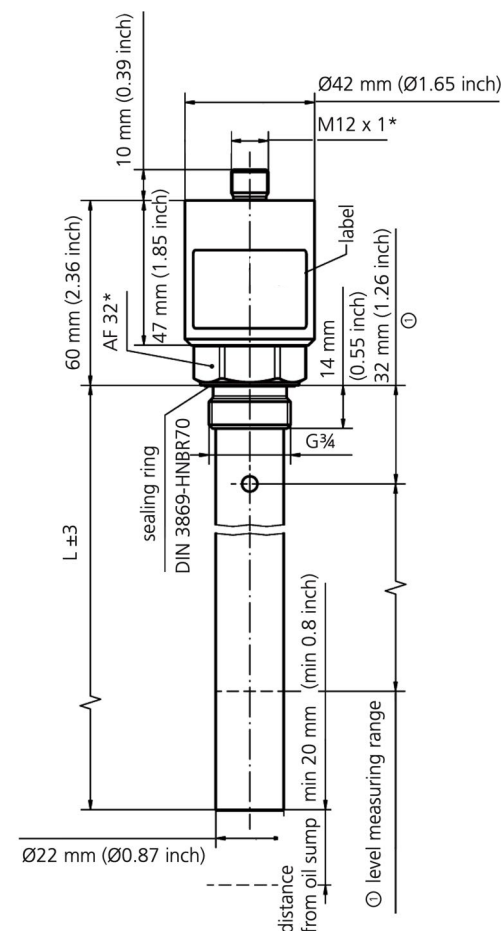
Dimensions
* mm

SFS Level Sensor 200: L = 200 mm (7.87 inch)
measuring range = 115 mm (4.53 inch)

SFS Level Sensor 375: L = 375 mm (14.76 inch)
measuring range = 288 mm (11.34 inch)

SFS Level Sensor 615: L = 615 mm (24.21 inch)
measuring range = 515 mm (20.28 inch)

Technical data

Sensor data	Size	Unit
Max. operating pressure	50 (725)	bar (psi)
Operating conditions		
Temperature[1]	-20 ... +85 (-4 ... +185)	°C / °F
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	aluminum, HNBR, polyurethane resin, epoxy resin, chemical nickel/gold (ENIG), soldering tin (Sn96,5Ag3CuO,5NiGe), aluminum oxide, glass (DuPont QQ550) gold, silver-palladium	
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	RS 232/ CANopen/ (SAE J1939 on request)	-
Connections		
Threaded connection	G¾	inch
Tightening torque of threaded connection	45 ±4.5	Nm
Electrical connection	M12 x 1, 8-pole	-
Tightening torque M12-connection	0.1	Nm
Measuring range		
Rel. dielectric number	1 ... 7	-
Rel. humidity	0 ... 100	% r.H.
Conductivity	100 ... 800,000	pS/m
Temperature	-20 ... +85 (-4 ... +185)	°C / °F
Fluid level	115/288/515 (4.53/11.34/ 20.28)	mm / inch
Measuring resolution		
Rel. dielectric number	1*10⁻⁴	-
Rel. humidity	0.1	% r.H.
Conductivity	1	pS/m
Temperature	0.1	K
Fluid level	0.1	%

Sensor data	Size	Unit
Measuring accuracy[6]		
Rel. dielectric number[7]	±0.015	-
Rel. humidity (10 ... 90%)[8]	±3	% r.H.
Rel. humidity (<10%, >90%)[8]	±5	% r.H.
Conductivity (100 ... 2000 pS/m)	±200	pS/m
Conductivity (2000 ... 800,000 pS/m)	Typ. <±10	%
Temperature	±2	K
Fluid level	Typ. <±5	%
Response time humidity measurement (0 to 100%)	<10	min
Weight	170/210/250	g