

FS-1 Humidity Sensor

for monitoring humidity in the measuring range
of 0–100% relative humidity



Applications:

- Machine tool spindles
- Bearings and gearboxes
- Reservoirs for SKF CircOil circulating oil lubrication systems

FS-1 Humidity Sensor

Fields of application and functional description



The FS-1 Humidity Sensor detects relative humidity in the highly sensitive interior of high quality machine tool spindles. High-pressure coolant is sometimes essential when cutting demanding materials and for increasing productivity. The coolant jets operate at pressures well above 100 bar in order to specifically influence the cutting, temperature control, and cutting control. The lip seals on tool spindles can be subjected to heavy loads in this process. The seals sometimes cannot withstand the load at all times, allowing coolant or coolant vapors to enter the spindle unnoticed. Over time, humidity within the spindle can cause corrosion and significantly shorten the spindle's life cycle.

The FS-1 Humidity Sensor can detect the relative humidity inside the spindle and transmit the reading to the machine tool's control unit as an electrical signal (4–20 mA).

Analyzing this information allows maintenance and servicing to be planned promptly, thereby increasing the process reliability and the spindle's service life. The sensor's sturdy housing can be screwed into the spindle casing using an M18 thread. The electrical connection is established via a standardized M12x1 plug.

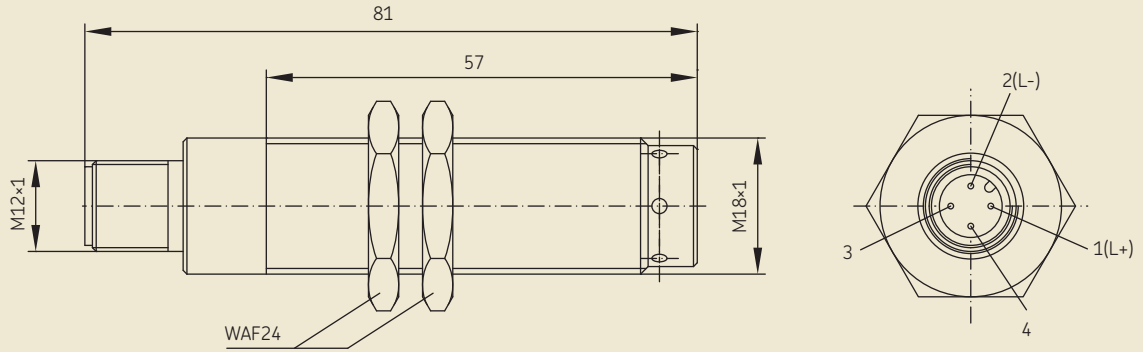
Technical data

Function	Sensor for relative humidity
Measuring principle	Capacitive humidity sensor
Measuring range	0 – 100% RH
Accuracy	±3% RH
Operating temperature range	–25 °C to 80 °C
Operating voltage	10–26 VDC
Power consumption	4–20 mA via two-wire line
Output signal	4–20 mA (0–100% RH)
Housing material	Brass, nickel-plated
Order number	FS-1

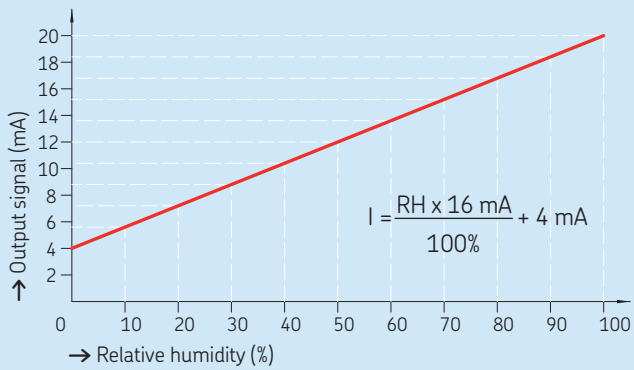
FS-1 Humidity Sensor

Dimensions, sensor signal, and wiring diagram

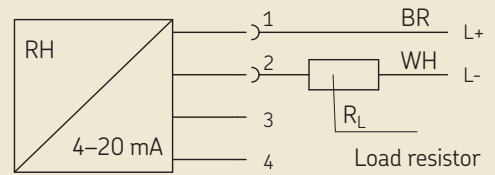
Dimensions



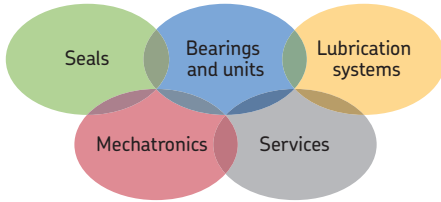
Sensor signal



Wiring diagram



$$R_L = \frac{U_B \times 10V}{20 \text{ mA}}$$



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

Important information on product usage

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems. SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Additional brochures for further information

1-9201-EN *Transport of Lubricants in Centralized Lubrication Systems*

1-1730-EN *Electric Plug and Socket Connectors*

SKF Lubrication Systems Germany GmbH

Berlin Plant
 Motzener Str. 35/37 · 12277 Berlin
 PO Box 970444 · 12704 Berlin · Germany

Tel. +49 (0)30 72002-0
 Fax +49 (0)30 72002-111

This brochure was presented to you by:

© SKF is a registered trademark of the SKF Group.

© SKF Group 2014

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB LS/P2 11249 EN · July 2014 · 1-0972-EN

