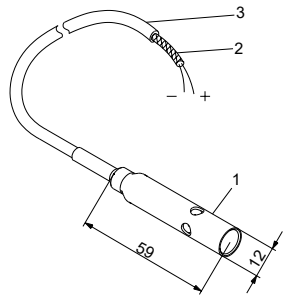
Product introduction

Product description



TM031164

Water-in-oil sensor

Pos.	Designation
1	Steel tube with sensor
2	Screen
3	Cable

Applications

The WIO sensor measures the water content in the oil and converts the value into an analog current signal. The two sensor conductors are for power supply as well as for carrying the signal to the measuring device or controller. The sensor measures the water content from 0 to 20 %. It also sends a signal if the water content is outside the normal range (warning), or if there is air in the oil chamber (alarm). The sensor is fitted in a stainless steel tube for mechanical protection.

It also has also special operation state, if the sensor is in air (no oil detected), or the water content is more than the measurable level (>20%).

Intended use

The sensor is normally used together with the Grundfos IO 113 module, but it can also be used together with other controllers with inputs of 4 to 20 mA.

Operation with standard controllers will miss the special air detection state (3,5mA output from WIO), and over 20% water detected state (22mA).

Together with the IO 113, the sensor filters the signal and provides an easy readout of the actual value. Furthermore, it is possible to set a user-defined warning limit and calibrate the IO 113 and the sensor to the oil .

The IO113 gives special warning signal in case of air detection (blinking yellow indicatior).

Mechanical installation

The mechanical installation depends on the pump type and whether the wiring of the sensor in the pump must be internal or external. See sections Internal wiring, inside pump and External wiring, outside pump.

However, the sensor must always be installed in such a way that it is protected against mechanical damage and the possibility for electrostatic charge. This will typical be in the oil chamber or similar.

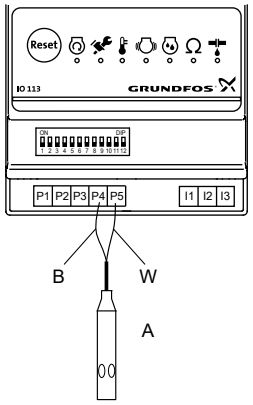
Electrical connections

Carry out the electrical connections according to local regulations.

The conductors must be connected as shown in figs *Connection to the IO 113* and *Connection of conductors*.

+ equals brown.

- equals white.



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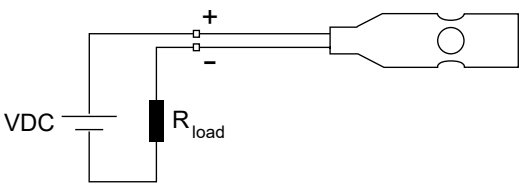
Connection to the IO 113

Pos.	Description
W	White
B	Brown
A	WIO sensor



TM031391

Connection of conductors

R_{load} is the internal resistance of the connected device, for instance IO 113.

The maximum load resistance plus the conductor resistance can be calculated as follows:

$$R_{load} = \frac{VDC - 10}{0.022} [\Omega]$$

Technical data

Operating conditions

Note: Always inform Grundfos if the WIO sensor has been exposed to any harmful external effects or aggressive substances.

Ambient temperature:	0 to 70 °C
Process temperature:	0 to 70 °C
Storage temperature:	0 to 80 °C

Electrical data

Input voltage:	12-24 VDC
Output current:	3.4 - 22 mA
Power consumption:	0.6 W

Sensor signals

4-20 mA	**0-20 % water in oil** **Accuracy better than 2 %**
22 mA	Warning: Water content far outside measuring range
3.5 mA	Alarm: Air in the oil chamber

The sensor signal is only valid when oil and water is mixed, when the pump is running.

The sensor capability has been verified by 10W40 motor oil. Other types of oil may have an impact of the measured value.

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