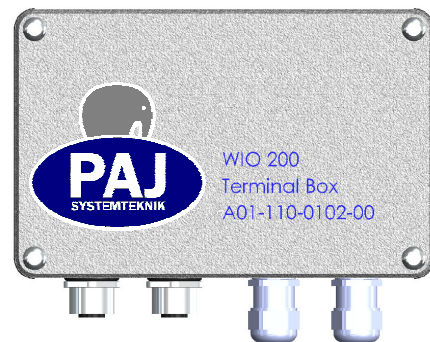
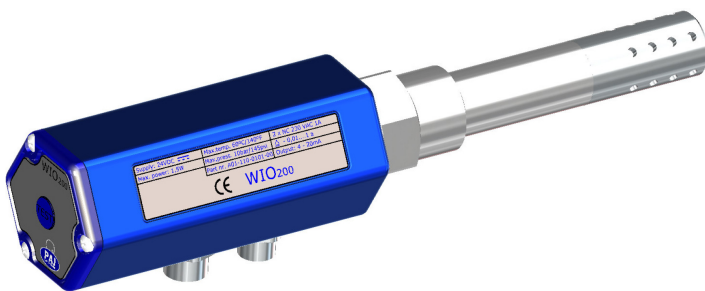




WIO200 Water In Oil measuring instrument



You have made the right decision by choosing a measuring instrument from PAJ Systemteknik. Many customers buy our high standard products every year. There are at least 7 good reasons for doing so:

- 1) Cost-performance ratio. Reliable quality at a fair price.
- 2) Extended warranty times of up to 3 years - depending on instrument.
- 3) We have the ideal solutions for your measuring tasks based on our expert experience gained over many years.
- 4) Our high quality standard is confirmed by the ISO 9001 certificate and GL approval (cert. no 75 956 - 09 HH).
- 5) Of course, our instruments carry the CE symbol required by the EU.
- 6) Calibration certificates for all relevant parameters.
- 7) Our after-sales service. Ask for more details.

PAJ SYSTEMTEKNIK • Grundtvigs Allé 163 • DK-6400 Sønderborg

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APPROVALS: ISO 9001, ISO 14001, ISO 13485, IRIS, IEC 61340-51 & IPC-A-610 CLASS 3



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INTRODUCTION

NOTES ON SAFETY

- The conformity certificate confirms that this product fulfils the guidelines in accordance with 2004/108/EC and 2006/95/EC.
- Please read prior to operation
- Fuse protection of max. 350 mA by the customer if shield is attached.
- Do not exceed pressure range of >40 bar.
- Observe measuring ranges of sensor!
- The probes are damaged if overheated.
- Observe max. storage and transport temperature and max. operating temperature (e.g. protect measuring instrument from direct sunlight).
- Warranty claims no longer apply if the instrument is opened, in the case of inexpert handling or use of force.
- Adjustments or calibrations should be carried out by PAJ Systemteknik.

DESCRIPTION

Adherence to specific maximum water content in lubrication oil is required of motors to ensure long-lasting uninterrupted operation. The high quality standards in modern motor construction and operation require non-stop monitoring of water in oil concentration with alarm.

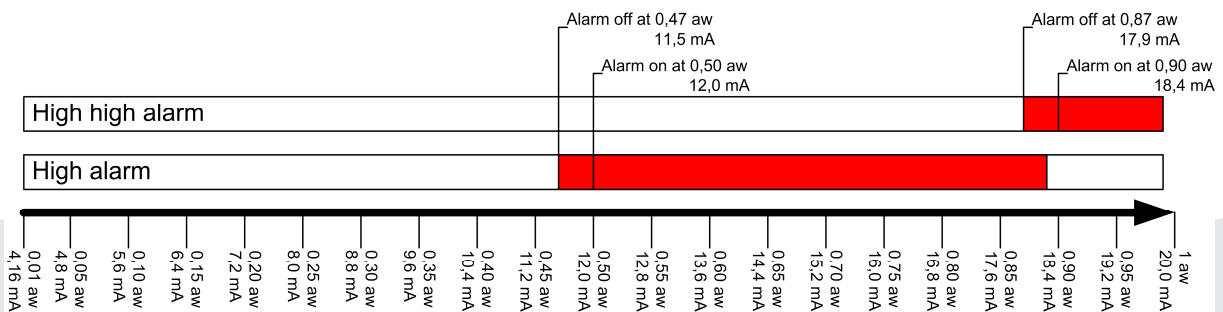


NORMAL OPERATION

Water activity (a_w) provides the relative availability of water in oil where pure oil has an activity of zero and oil saturated with distilled water has an activity of exactly one. Under normal operation the WIO200 continuously supplies an output analogue signal of 4 to 20 mA corresponding to 0.01 to 1.00 a_w . Alarm indications with 0.03 a_w hysteresis via 2 relays are provided for each sensor. These alarm values were specified upon ordering can be found on the sensor serial label.

Default alarm values are 0,5 a_w and 0,9 a_w . Assumes these alarm values:

- High alarm on at 0,50 a_w (12 mA).
- High alarm off at 0,47 a_w (11,5 mA)
- High high alarm on at 0,90 a_w (18,4 mA).
- High high alarm off at 0,87 a_w (17,9 mA).
- High high alarm will disable high alarm, thus only one alarm can be active.





FAILURE INDICATION

Internal function failure will be indicated by activating both alarm relays at the same time, or indicated as defined in the NAMUR NE43.

Internal failures includes:

- Sensor reading out of range.
- Sensor reading CRC error.
- Unstable Sensor reading.

NAMUR NE43 is a German fault detection standard for 4-20mA analogue signals. It allows the user to know if there is a fault within the instrument, by sending analogue signal below 4mA and/or above 20mA. In accordance with NAMUR NE, the failure is indicated if:

- Fault indicated by analogue output $\leq 2,0$ mA
- Fault indicated if both relays are activated simultaneously

SELF TEST FOR ALARM FUNCTIONS

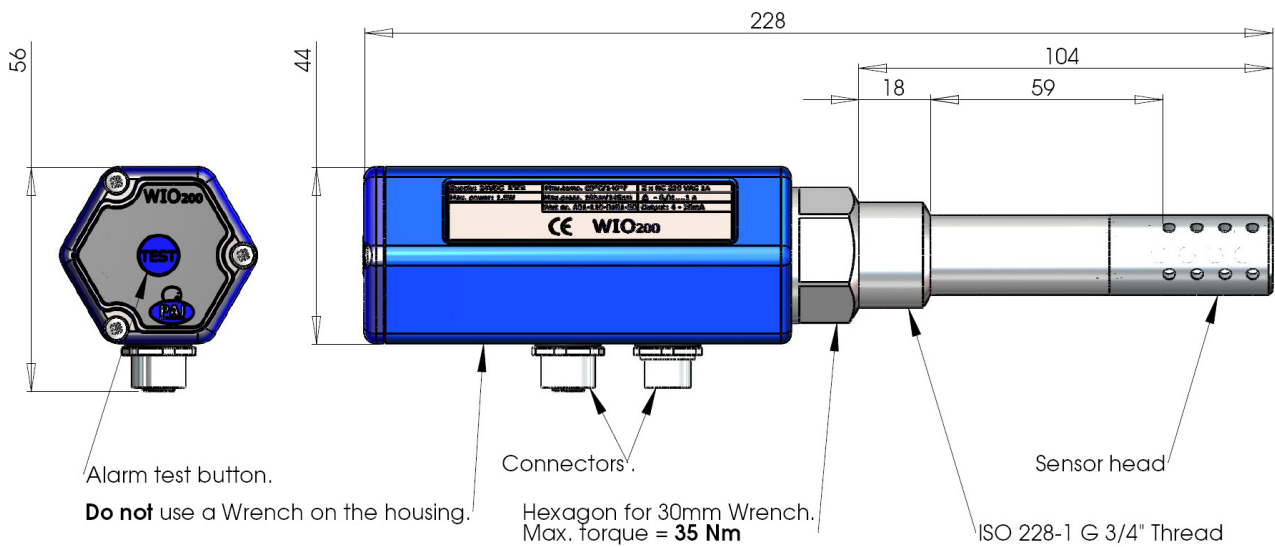


Alarm test button.

On the WIO Sensor there is a button for testing the alarm functions. By pushing the button for 5 sec the high alarm relay turns on, and by pushing the button for 10 sec the high high alarm turns on. The alarms turn off 5 sec after they are activated.

Test Button	Mode	Output Relay	Analogue Output
Un-pressed	Normal operation	Normal	Normal
Pressed >5 sec	Test of high alarm	Relay 1 high Relay 2 low	Normal
Pressed >10 sec	Test of high high alarm	Relay 1 low Relay 2 high	Normal

DIAGRAM OF INSTRUMENT



All measures are in mm.

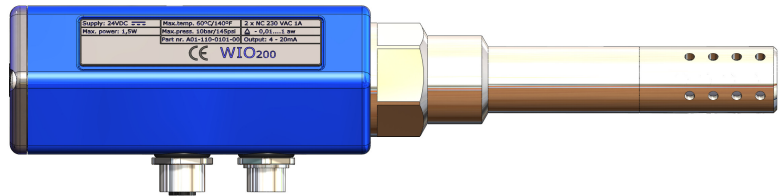
INSTALLATION



Screw in probe with ISO 228-1 G $\frac{3}{4}$ " thread pressure-tight directly in the centre of the oil pipe where the measurement is to take place. The threads should be sealed with Loctite® 271. The sensor should be mounted with max. 35 Nm momentum. Connect the cables from the WIO sensor to the Terminal box.



Connections (Electrical) :



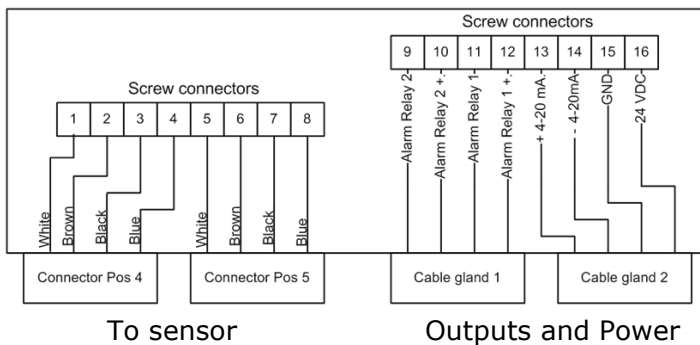
Connectors on Terminal Box:

2 x Connectors.

2 x metal Cable gland for 4,5 – 10mm Cables.

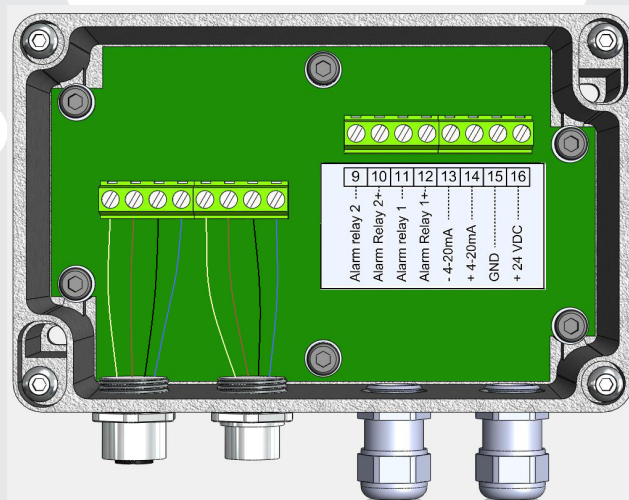
Connectors on WIO Sensor:

2 x Connectors



To Terminal Box

Inside the terminal box:

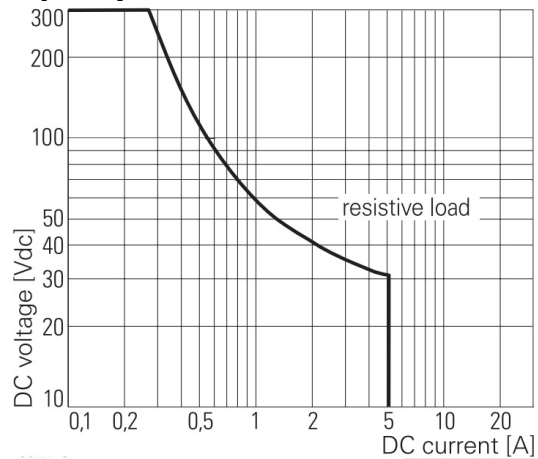


Notice : It is allowed (but not necessary) to connect screw terminal 13 "- 4-20 mA" to screw terminal 15 "GND", thus creating common ground for the output and the power.



TECHNICAL DATA

Measuring range:	0,01 to 1,00 a _w water content.
Accuracy:	±0,03 a _w for the range 0.....1 a _w water content.
Resolution:	< 0,004 a _w
Analogue output:	4 to 20 mA (galvanic isolated) 0,01 to 1 a _w water content linear.
Max. Load (analogue outp.)	< 500Ω.
Alarm indications.	Alarm indication via 2 x Alarm relays (NC).
Relay Maximum DC Load breaking capacity:	



Self test:	On the WIO Sensor there is a button for testing the alarm functions. By pushing the button for 5 sec the high alarm relay turns on, and by pushing the button for 10 sec the high high alarm turns on. The alarms turn off 5 sec after they are activated.
Protection class:	IP66.
Cables:	2 x Shielded cables with plugs on both ends, 2 meter long.
Calibration:	Calibration made by manufacturer, in accordance to new oil, type Grade SAE 30/TBN 5-10. Re-calibration recommended with maximum 3 years interval.
Power supply:	Nominal supply 24 VDC ± 20%, max. ripple 10%.



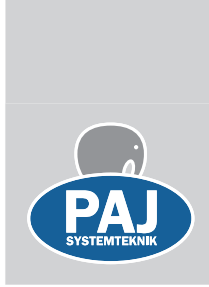
Media for measurement:	Lubrication oil: Grade SAE 30/TBN 5-10
Service temperature of media:	10 to 80 °C.
Pressure range:	0 to 40 bar.
Ambient temperature:	0 to 85 °C
Storage/transport ambient temperature:	-20 to 85 °C
Connection (mechanical):	ISO 228-1 G ¾ male thread.
After installation:	The sensor has to be fully covered in oil for more than 5 minutes, before secure measurement is achieved.
Startup time:	30 seconds.
Reaction time:	10 minutes for 10% to 90% rise in water concentration.
Warranty:	2 years. The warranty expires if the device has been opened.
Approvals:	Germanischer Lloyd (cert. no 75 956 – 09 HH).



EC Declaration of conformity
PAJ Systemteknik, Grundtvigs Allé 163,
6400 Sønderborg, herewith declares that the product of
type WIO200 complies with the following directives:

- 2004/108/EC Electromagnetic compatibility
- 2006/95/EC Low voltage directive

I/O:	Level:	Precision:
Power	Nominal 24 V DC	±20%, max. ripple 10% RMS.
2x Relay	NC 1A 230VAC	none
Measurement out	4-20mA/ DC	±0,1mA max load < 500Ω.
Button	On/off	none

**Order item no:**

WIO Sensor system

Order nr: [A01-110-0100-00](#)**Consists of:**

WIO Sensor

Order nr: [A01-110-0101-00](#)

Terminal Box

Order nr: [A01-110-0102-00](#)

Sensor cables 2 pcs.

Order nr: [A01-110-0103-00](#)

Manual

Order nr: [D80-105-0008-00](#)

Test certificate

Order nr: Serial number on the sensor

ORDERING DATA

PAJ Systemteknik
Grundtvigsallé 163
DK-6400 Sønderborg
Tel: (0045) 74437181
Mail: paj@paj.dk

Instruction manual en 111197-920 Rev. 1.09

**D80-105-0008-00****PAJ SYSTEMTEKNIK** • Grundtvigs Allé 163 • DK-6400 SønderborgTel: +45 74 43 71 81 • Fax: +45 74 43 71 91 • CVR: 2046-0946 • www.paj.dk • e-mail: paj@paj.dk

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