Water in Oil Sensor

Model WIO

Application

- Monitors moisture content in the engine’s lubricating oil

Key benefits

- Local indication
- Real-time measurement of Water Activity (aw) and Parts Per Million (ppm)
Water in Oil Sensor - WIO

Water in oil monitoring

- The sensor is installed in the main lube oil line at the inlet to the engine

Humidity measurement in oil

Similar to the humidity in the air, the water content in oil can be indicated by the relative value \( a_w \):

- \( a_w \) (actual water content as a fraction of the water content in saturated oil)
- \( a_w = 0 \) corresponds to water-free oil
- \( a_w = 1 \) indicates saturated oil

Dimensions

Water In Oil Junction Box

![Diagram of Water In Oil Junction Box]

- View of lid only
- Side view
- Box assembly
- Dimensions in mm
- Cable length 5m
- Minimum installation depth
- Maximum installation depth
- 200mm probe length

Datasheet_WIO_Water_in_Oil_Sensor_0411_rev1
### Specification

<table>
<thead>
<tr>
<th>Water activity sensor:</th>
<th>Measuring range</th>
<th>0 ... 1 aw</th>
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</thead>
<tbody>
<tr>
<td>Accuracy:</td>
<td>Including hysteresis and non-linearity and repeatability, traceable to international standards administered by NIST, PTB, BEV)</td>
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<tr>
<td></td>
<td>-15...40°C (5...104°F) &lt;0.9 aw ± (0.013 + 0.3%*mv) aw</td>
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<tr>
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<td>-15...40°C (5...104°F) &gt;0.9 aw ± 0.023 aw</td>
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<td></td>
<td>-25...70°C (-13...158°F) ± (0.014 + 1%*mv) aw</td>
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<tr>
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<td>-40...180°C (-40...356°F) ± (0.015 + 1.5%*mv) aw</td>
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</tbody>
</table>

| Temperature dependence of electronics: | Typ. ± 0.0001 [1/°C] (typ. ± 5.6 * 10^-5 [1/°F]) |
| Temperature dependence of sensing probe: | Typ. ± (0.00002 + 0.0002 x aw) x ΔT [°C] ΔT = T - 20°C |
| Response time: | With stainless steel filter at 20°C / t90 typ. 10min in still oil |
| Temperature sensing element: | Pt1000 (tolerance class A, DIN EN 60751) |
| Working range sensing probe: | -40...180°C (-40...356°F) |
| Accuracy of electronics: | Temperature dependant typ. ± 0.005°C/°C |
| Pressure range sensing probe: | 0.01...20bar (0.15...300psi) |
| Sensor protection: | Stainless steel filter |
| Operating temperature range of electronics: | -40...60°C (-40...140°F) |
| Working and storage temperature range: | -40...60°C (-40...140°F) |
| Electromagnetic compatibility: | EN 61000-6-2 EN 61000-6-3 ICES-003 Class B EN 61326-1+A1+A2 FCC Part15 Class B |

Datasheet_WIO_Water_in_Oil_Sensor_0411_rev1 page 3
Europe, Middle East and Africa

AMOT
Western Way
Bury St Edmunds
Suffolk, IP33 3SZ
England
Tel +44 (0) 1284 762222
Fax +44 (0) 1284 760256
Email info@amot.com

AMOT Controls GmbH
Rondenbarg 25
22525 Hamburg
Germany
Tel +49 (0) 40 8537 1298
Fax +49 (0) 40 8537 1331
Email germany@amot.com

AMOT Russia
#34 Shabolovka Street
Building 2
Moscow 115419
Russia
Tel +7 495 617 12 93
Fax +7 495 913 97 65
Email russia@amot.com

Americas

AMOT USA
8824 Fallbrook Dr
Houston, TX 77064
USA
Tel +1 (281) 940 1800
Fax +1 (713) 559 9419
Email general: sales@amotusa.com
orders: orders@amotusa.com
customer service: cs@amotusa.com

Asia and Australasia

AMOT Shanghai
Rm 308, Building No A8
Jiahua Business Center
808 Hongqiao Road
Shanghai 200030
China
Tel +86 (0) 21 6447 9708
Fax +86 (0) 21 6447 9718
Email shanghai@amot.com

AMOT Singapore
10 Eunos Road 8 #12-06
Singapore Post Centre
Singapore 408600
Tel +65 6408 6265
Fax +65 6293 3307
Email singapore@amot.com

For technical support contact:
xtswsupport@amot.com

www.bearingwear.com