# DO Sensor

User manual

Revision 1.1 (16.06.25)

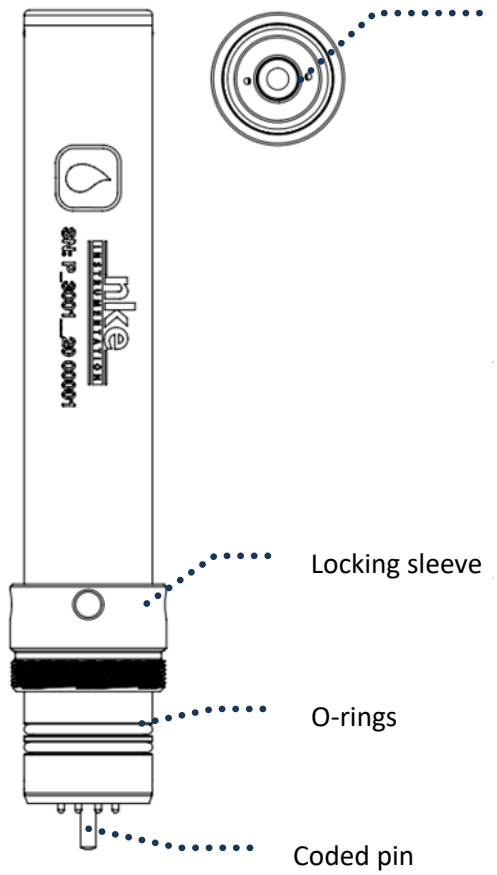
## 1 Description

The WiMo oxygen sensor measures dissolved oxygen in water (DO). The measurement principle is optical. It is based on a LED that excites an oxygen-reactive foil and detects its oxygen-dependent luminescence emission through a photodiode. Lights are transmitted by an optical fiber between the sensor and the reactive membrane.

The wavelength of the LED is in the red (specifically: orange-red at a wavelength between 610-630 nm) and causes the foil to react to an oxygen-dependent luminescence in the near infrared (NIR, 760- 790 nm).

The oxygen sensor, integrated into a WiMo probe and coupled to a CT sensor, benefits from automatic compensation for temperature and salinity (available since version V2.0.2 of the WiMo probe). y. In the absence of a CT sensor, the oxygen sensor uses its own temperature sensor to ensure automatic compensation of measurements as a function of temperature.

The DO sensor is also compatible with Mosens Modbus




Concentration

| | |
|---|---|
| Technologie / Technology | Optique |
| Gamme / Range | 0 – 23 mg/L |
| Exactitude / Accuracy | ± 0.1 mg/L |
| Résolution / Precision | 0, 025 mg/L |

Saturation

| | |
|---|---|
| Technologie / Technology | Optique |
| Gamme / Range | 0 - 250% |
| Exactitude / Accuracy | ± 1 % |
| Résolution / Precision | 0,25% |

Temperature

| | |
|---|---|
| Technologie / Technology | Thermistance |
| Gamme / Range | -2 à 35°C |
| Exactitude / Accuracy | ± 0,1 °C |
| Résolution / Precision | ± 0,01 °C |

The oxygen sensor will be cleaned if a cleaning system is connected to the probe.

## 2 Sensor response time

The response time of a sensor is the time required for the sensor to respond to a known change in its measurement and reach a percentage of its final value. A response time of 63% (T63) or 90% (T90) of the final value is often mentioned. In order to compare response times between sensors it is essential to know what percentage of the final value has been calculated.

| ***Response Time*** | ***Type*** | ***Value*** |
|---|---|---|
| Dissolved Oxygen | T90 | < 15 sec |

## 3 Adjustment

Sensor adjustment is a simple process requiring the use of adjustment standards.

nke Instrumentation will provide you with the procedure to perform this adjustment.

You will also need the "Metrology Interface" tool and the dedicated "WiMo_Calibration-Tool" to perform this adjustment.

https://nke-instrumentation.fr/produit/wimo-calibration-tool-2/

We recommend to contact our sales department for more information.

## 4 Sensor compensation

On delivery, the sensor is adjusted by nke instrumentation according to the following indications:

- Oxygen measurement is temperature-corrected. The sensor has its own temperature sensor. This compensation can be changed during adjustment to a predefined fixed temperature..
- By default, the oxygen measurement is corrected for atmospheric pressure up to 1013 hPa. However, this reference value can be adjusted when configuring the product, if required.
- There is no compensation applied to the Salinity parameter (default value of zero).

When used in conjunction with a CT sensor mounted on a WiMo probe, oxygen measurements will automatically benefit from the temperature and salinity compensations provided by the CT, which offers better thermal responsiveness and an accuracy of ± 0.02°C..

# 5 Recommandations

The sensor must always be kept clean, especially in the area around the membrane and the optical part. Deposits can lead to measurement errors.

For measurement, it is recommended to remove bubbles.

The membrane is vulnerable to chemicals (solvents, acids) and mechanical treatment (shocks, abrasion, tearing).

**Replace the membrane every 12 months to guarantee the performance of this sensor.**

If the membrane is damaged (scratched, torn), it must be replaced immediately to guarantee the conformity of the measurement.

To avoid sensor drift, always store the DO sensor in a water-saturated environment. If the sensor has been left dry for more than 8 hours, it must be rehydrated.

If the sensor is taken out of service, it should be cleaned and stored with its protective cap fitted with a damp absorbent cotton pad to ensure that the membrane is moistened.

The use of this sensor coupled with our WIPER system is recommended.

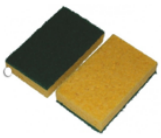
# 6 Maintenance

Regular maintenance of the equipment will ensure maximum longevity.

A thorough visual inspection should be performed regularly and any damaged parts should be replaced.

## 6.1 Routine maintenance

Deposits such as biofilm (or silt), silt and mud must be carefully removed.



Use a sponge with warm soapy water (such as dishwashing liquid) to clean the sensor body. Never use abrasive agents (e.g. a scouring sponge).

In case of heavy contamination with barnacles (or calcifying organisms), rinsing the sensor with water may not be sufficient. Depending on the degree of contamination, we recommend removing the heaviest contamination with a plastic scraper. Then use a soft sponge with a 5% acetic acid solution (white vinegar), preferably with warm water, and rinse the sensor with fresh water.

Wipe and dry the sensor with a soft cloth or optical wipes.

## 6.2 O-rings maintenance

The O-rings seal the probe. Any O-rings damaged can affect the reliability of the sonde. A visual inspection must be done each time a sensor is plugged or unplugged and also when battery compartment is opened. Check that no hair-type, particle-like elements are found on the O-rings. If the surface has impurities, gently clean them with a non-fluffy wipe and lightly grease the O-rings with molykote grease. Any damaged O-rings must be changed.

# 7 Return a product to the factory

For a consideration of your product by our after-sales service it is essential to follow the RMA procedure. Any material returned without an RMA number will not be taken into account.

- In case of shipment for repair or expertise, obtain an RMA number by using the procedure available on the website:
  https://nke-instrumentation.com/product-return-form/

- Pack the product in its original shipping box to prevent damage in transit.