

## Getting started guide & Unisense standard specifications for **Nitric Oxide (NO) Sensors**

This sensor has been successfully tested prior to shipping, however some sensors suffer from rough transportation. Therefore, it is important that you test the sensor upon arrival!

Our NO sensors are designed to give the highest possible signal in order to optimize signal-to-noise ratio. Therefore, the tip membrane is very thin and vulnerable to static electricity and you must always use the provided grounding cable when testing, calibrating and measuring. Connect the grounding cable to the ground connector on the amplifier and immerse the cable in the liquid before immersing the sensor. Consult the sensor manual for further information.

### Replacement of Defective Sensors

Unisense will replace the sensor if it does not meet the specifications below, provided that:

1. A test is performed upon receipt without breaking the seal. (Note! No seal on MR-sensors for testing purposes)
2. The complaint is given to Unisense *within two weeks* from receipt of the equipment.

### Guaranteed Lifetime

Unisense guarantees the nitrous oxide sensor a minimum lifetime of 3 months on condition of correct storage and use according to the manual.



### Individual Sensor Calibration is required

Our sensors are handmade and as the sensor signal relies on the exact geometry of the sensor tip (micrometer scale), some variation between sensors must be expected.

### Signal Amplification

Unisense NO sensors should be connected to a Unisense amplifier such as a UniAmp series instrument or the Field Microsensor Multimeter.

### Standard NO sensors are functioning correctly if (at room temperature):

- It has an immediate response when exposing the tip to NO
- The 90 % response time is within the specified range (see table below)
- The zero signal is less than the specified value (see table below)

	NO-15	NO-50	NO-100	NO-500	NO-MR	NO-NP
90% response time (sec.)	<3	<10	<10	<10	<10	<15
Zero-signal less than	3 mV	25 mV	25 mV	30 mV	30 mV	30 mV
Signal increase from baseline for 1 $\mu$ M dissolved NO	>50%	>50%	>50%	>50%	>50%	>50%

\* The sensor signal in pA is converted to an instrument signal in mV. The default setting of this Pre-Amp range is 1 pA = 1 mV. However, this can be changed by the user (see the instrument manual).

# Getting started with Nitric Oxide Sensors

## 1. Unpacking

- Remove the grey shock-absorbing plastic net and inspect the sensor visually. Leave the sensor in the protection tube for testing, and do not break the seal.

## 2. Connect the sensor to the amplifier

- On a UniAmp series amplifier the polarization is automatically set to +1250 mV.
  - For other amplifiers, set the polarization manually to +1250 mV.
- NOTE: Incorrect polarization may destroy the sensor!

## 3. Grounding

- Connect a grounding to the ground connector on the amplifier and dip the other end into the liquid where the sensor will be immersed. This *must* be done *before* the sensor is immersed!

## 4. Wait for the sensor to stabilize

- The signal will be very high right after the sensor is connected and will decrease over time.
- The period of decreasing signal will normally be at least 2 hours.
- Once the signal is stable, calibration can be performed.

## 5. Calibrate the sensor

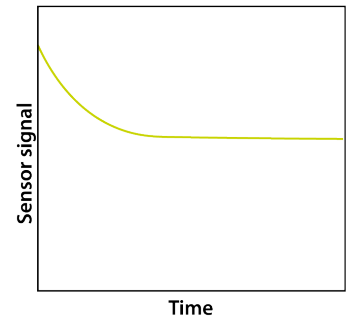
- Obtain the low calibration point in air saturated water. This is easily done by placing the sensor in the CAL300 calibration chamber with continuous bubbling.
  - The high calibration point is obtained by placing the sensor in liquid with a known concentration of NO. Wait for the sensor to respond.
- NOTE: NO reacts spontaneously with O<sub>2</sub> and NO calibration solution should be prepared in anoxic water (see sensor manual for details).

## 6. Approve the sensor

- Compare the calibration points to the specifications given on the previous page. If necessary, see Troubleshooting in the NO Microsensor manual or contact support.

## 7. Storage

- When not in use, store the sensor with the protection tube mounted at 10 - 30°C. If the sensor is used regularly, keep it polarized and connected to the amplifier.



*A typical decrease in sensor signal over time for a sensor that has just been plugged in.*



*CAL300 with microsensors and bubbling with air.*

## Useful tools



NO Microsensor Manual



Full manual for all sensors



uSense Solutions Manual



Contact information for support

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