

Getting started guide & Unisense standard specifications for **Nitrous Oxide 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!

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 2 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 nitrous oxide sensors should be connected to a Unisense amplifier such as a UniAmp series instrument or the Field Microsensor Multimeter.

Standard Nitrous Oxide Sensors are functioning correctly if (at room temperature):

- The 90% response time is <30 sec. for N₂O-50 and N₂O-100, <35 sec. N₂O-500, and <65 sec. for all other N₂O sensor versions.
- The zero signal is less than 20 mV*.

* The sensor signal in pA is converted by the instrument to a signal in mV. The 20 mV limit is for the default setting of the Pre-Amp range of 1 pA = 1 mV. This can be changed by the user (see the instrument manual).

Patent information

This product is covered by the following patents:

Patent issued in China: CN 104937405 A

Patent issued in USA: 9921178

Patent issued in Japan: JP6275744B2

Patent pending in several other jurisdictions.

Getting started with Nitrous 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.

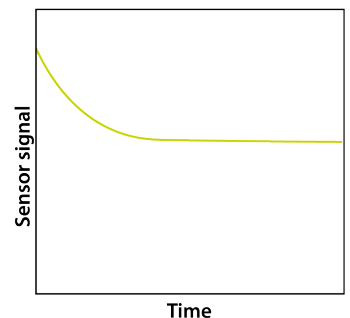
NOTE: Sensors for the Microrespiration System are shipped unassembled and the glass sensor and the blue aluminium guide must be assembled as described in the delivery note and Appendix 2 of the sensor manual. Test the sensor before assembly.

2. Connect the sensor to the amplifier

- Set the polarization voltage to -1.3 V for pre-activation of the sensor.
- For UniAmp series instruments, adjust the polarization in the calibration window in the uSense Solutions software.
- For Multimeter, Monometer, and Field Multimeter adjust the polarization on the instrument.
- For other amplifiers, set the polarization manually to -1.3 V.

3. Wait for the sensor to stabilize

- Leave the polarization at -1.3 V for 30 min, then change it to -0.8 V.
 - The signal will first fluctuate and then decrease over time for at least 2 hours. If possible, leave the sensor to stabilize overnight.
 - Once the signal is stable, calibration can be performed.
- NOTE: Incorrect polarization may destroy the sensor!



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

4. Calibrate the sensor

NOTE: Exposure to concentration above its measuring range may destroy the sensor!

- Use air saturated water as one calibration point. This is easily done using the CAL300 calibration chamber. The sensor may be dipped directly into the calibration chamber or the air saturated water may be injected into the protection tube using the calibration cap.
- Use the Unisense N_2O solution as the second calibration point. Inject the N_2O solution into the calibration cap (incl. in calibration kit) and wait for the sensor to respond.
- For alternative calibration method, see the N_2O Microsensor manual.

5. Approve the sensor

- Compare the sensor signals to the specifications given on the previous page. If necessary, see Troubleshooting in the N_2O Microsensor manual or contact support (see below).

6. Storage

- When not in use, store the sensor with the protection tube mounted at room temperature or in a fridge (approx. $4^\circ C$) for longer lifetime. If the sensor is used regularly, keep it polarized and connected to the amplifier.



Injecting calibration liquid into protection tube using the calibration cap.

Useful tools



N_2O Microsensor Manual



Calkit- N_2O Manual



uSense Solutions Manual



Contact information for support

Version: April 2026

