

Instruction Manual

innoSens 450

Optical Dissolved Oxygen Sensor

The innoSens 450 probe is used for the optical measure of oxygen in pure and process waters. The principle of measurement is based on the effect of dynamic luminescence quenching by molecular oxygen.

Applications

- Measure of oxygen in wastewater
- Measure of oxygen in primary, industrial, recirculating water

Features and benefits

- Reliable concentration measurement using optical measuring process
- Dynamic luminescence measuring method
- AISI 316 or Black rigid PVC sensor body
- Interchangeable cap for luminophore's replacement
- No mechanically moving parts
- Immediate installation and easy maintenance
- Ability to set salinity and barometric pressure for the compensation of the oxygen value

Electric installation

Turn off the instrument, connect the cables of the probe to the terminal block of the meter. Please observe the colors shown on the sticker located under the electronic cover of instrument or refer to chart below.

Cable Connection

RED	+12V ...24V
BLACK	GROUND
YEOLLOW	A+ RS485
GREEN	B- RS485

Installation

Together with the probe holder is provided a device for positioning the probe at 45°, and this avoids the presence of air bubbles that could distort the measurement of oxygen.

Precautions and warnings

Remove the black rubber protection cap from the probe before installing. Warning: it is strictly recommended not to remove the interchangeable cap from the probe unless there is a malfunction of the probe itself due to the luminophore and is absolutely necessary to replace the glass containing the polymer (see figure below):



Precautions and warnings

Furthermore, it is necessary to pay particular attention to the substances with which the part of the probe deputed to measurement can come into contact: for example, organic acids such as acetic acid does not affect the sensor. However, avoid the exposure of the luminophore in organic solvents such as acetone, chloroform, benzene and toluene. Chlorine gas can even destroy the sensor or otherwise affect the measurements. Pay special attention to the formation of air bubbles: these may interfere with the oxygen measure. To overcome this problem, use the kit of inclination of 45° of the probe, so that the bubbles can slip upward.

Operating principle

The collision between the luminophore in its excited state and the quencher (oxygen) results in radiationless deactivation and is called collisional or dynamic quenching. After collision, energy transfer takes place from the excited indicator molecule to oxygen which consequently is transferred from its ground state (triplet state) to its excited singlet state. As a result, the indicator molecule does not emit luminescence and the measurable luminescence signal decreases.

A relation exists between the oxygen concentration in the sample and the luminescence intensity as well as the luminescence lifetime which is described in the Stern-Volmer-equation.

Calibration of the sensor

This program step allows the calibration of the oxygen sensor.

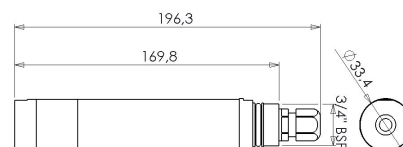
The calibration must necessarily be carried out:

- Every time the sensor cap is replaced
- When starting after a long period of non-use
- Whenever discrepancies occur, according to a know value

For proper operation it is necessary, in addition to the cases mentioned above, to verify calibration or recalibrate the probe periodically. The frequency of this operation will be determined by the user, taking into account the type of application and the type of electrode used

TECHNICAL DATA
Materials: AISI 316 Body (PVC Body optional) Special Glass Optics NBR and Sylicon O-Rings
Thread: 3/4" BSP
Measuring ranges: 0,00 to 20,00 mg/L 0-200%
Measuring method: Optical measure by luminescence
Accuracy: +/-0,1mg/L or +/-1%
Response: 90% of the value in less than 60 seconds
Maximum refreshing time: < 1 second
Working Temperature: -10÷60°C
Max Working Pressure: 5 bar
Mechanical Protection: IP68 Sensor+cable
Cable: 10m integral
Power Supply: 12...24Vdc
Signal interface: RS-485 Modbus RTU Protocol
Water move: No necessary move
Compensation of temperature: Via internal NTC
Luminophore diameter: 10mm
Connector IP67: yes

DIMENSIONS



Order no.

35-0450-00 innoSens 450 Optical Oxygen and Temperature Probe

35-0450-10 Luminescent membrane with AISI316 support for innoSens 450