

Electro-Optical Module for Measuring Oxygen OXY Nor

1. Overview

The **OXY Nor** is a single channel module for measuring oxygen. It consists of a phase detection board for luminescence lifetime detection integrated in a 12 mm stainless steel fitting (length 106 mm).

The small outer dimensions and low power consumption enable a simple integration into custom monitoring & control systems.

As a digital interface it uses RS-485 Modbus RTU (option RS-485 ASCII proprietary). A serial communication protocol is offered for data exchange between a PC or another host unit and the **OXY Nor Unit**



2. Features

- Simple integration (12 mm steel fitting)
- Low power consumption
- Luminescence lifetime detection via a precise phase detection board

1. Technical Specification

OXY Nor Series	
Specification	
Oxygen sensor OXYBase WR	Optical technology based on luminescence quenching
Dynamic range ^a	0 – 200% oxygen
Resolution ^a	1 ± 0.02 %O ₂ 20.9 ± 0.1 %O ₂ 50 ± 0.4 %O ₂
Limit of Detection ^a	0.03% O ₂ ; 20 ppb DO
Deviation from certified gas mixtures at 20°C	1 ± 0.05% O ₂ ; 20.9 ± 0.2 % O ₂ ;
Application	Gaseous and dissolved oxygen
Response time in liquid, t ₉₀ ^b	< 30s
Response time in gas, t ₉₀ ^c	< 10s
Temperature compensation of the oxygen concentration	0 to 50°C
Maximum pressure	3 Bar
Oxy Nor is not resistant against	- Pure Chlorine gas - Organic solvents (CHCl ₃ , toluene, acetone, ...) - Steam Sterilization (121°C)
Storage stability of the sensor cap ^d	5 years

Oxygen Consumption	None
Calibration	Two-point calibration exposing the sensor to an oxygen free (cal0) environment (e.g. nitrogen 5.0, or 1% sodium sulfite solution) and cal2nd standard (20.9% oxygen, or air-saturated water)
Sampling rate	1 s up to 9 min 59 s
Temperature sensor	NTC
Temperature performance	Better than $\pm 1^\circ\text{C}$
Supply voltage	5 – 30 VDC for OXY NOR WR(M); 7 – 30 VDC for OXY NOR WR-AO
Power consumption in active mode	max. 1 W
Power consumption in stand-by mode	< 0.15 W
Temperature: operating / storage	0 °C to 50 °C / - 10 °C to 70 °C
Housing	Stainless steel, 1.4404, PE
Dimensions	12 x 106 mm for OXY NOR WR(M); 135 mm for OXY NOR WR-AO
Cable length	5 m (other cable length on request)
Digital interface	OXY NOR-RS485-L5: RS485 Modbus RTU OXY NOR-RS485-L5: RS485 ASCII proprietary, half duplex (Baud rate: 19200, Data bits: 8, Parity: No, Stop bits: 1, handshake: No)
Analog out	OXY NOR RS485-AO-L5, additional 4-20 mA output

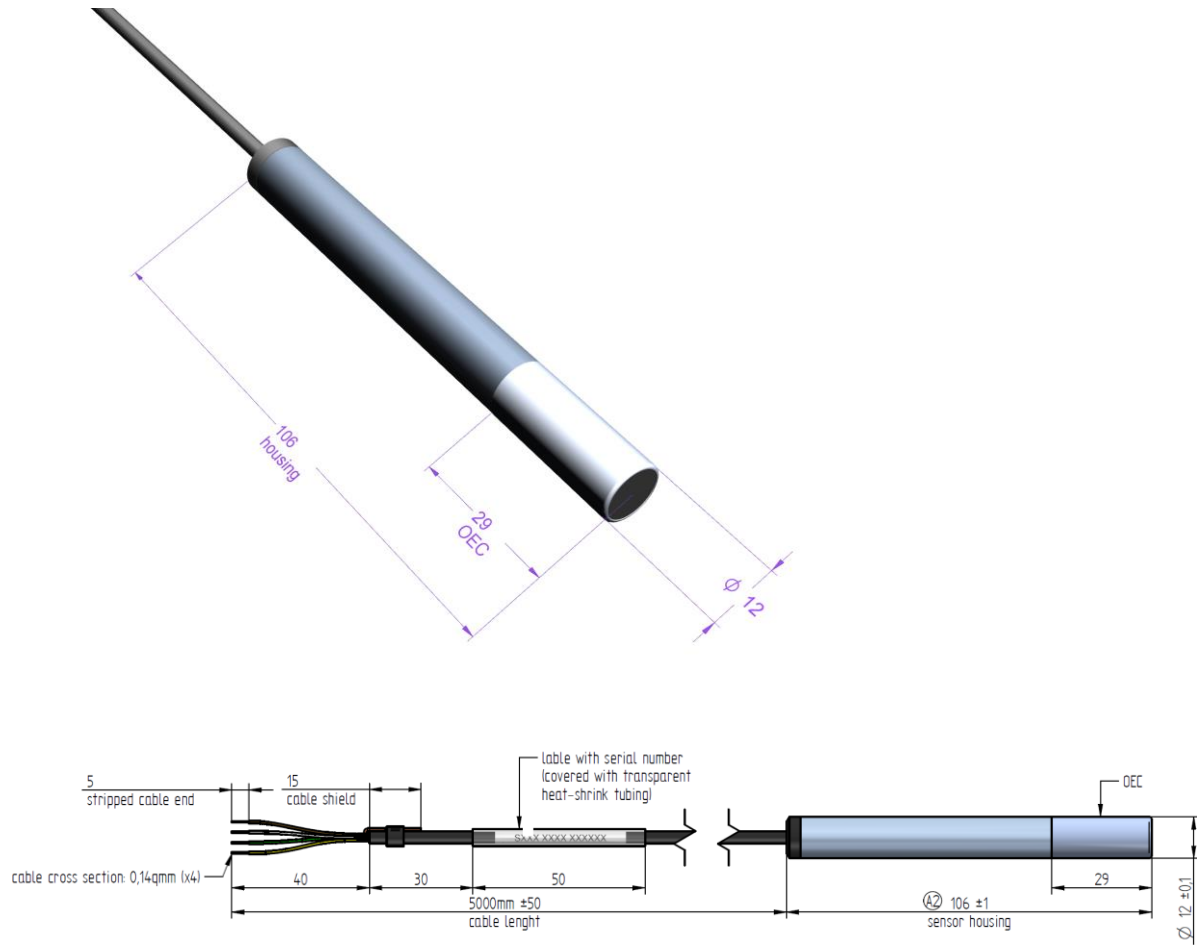
^a: at 20 °C, 960-980 hPa; humidified gas mixtures

^b: The response time in liquid was determined changing from air saturated water to a freshly prepared 1% sodium sulfite solution containing CoCl_2 as catalyst;

^c: The response time in gas was determined changing from 20.9% oxygen gas to nitrogen 5.0;

^d: storage conditions: dry at 20 °C, excluding the sensor spots from light.

2. Dimensions of OXY NOR RS485-L5 and OXY NOR RS485M-L5



3. Dimensions of OXY NOR RS485-4AO-L5

