

DISSOLVED OXYGEN SENSOR COG-1

The dissolved oxygen sensor COG-1 is designed for periodical measurements of oxygen dissolved in water and in water solutions in laboratory and field measurements it can also be used for measurements of oxygen in the air.

The measurements of dissolved oxygen are mainly used in following cases:

- water management (ex. measurement and controlling the dissolved oxygen level in fish ponds),
- water treatment and water control stations, biological waste water treatment plants (BOD and ChOD)
- industrial and municipal water treatment stations for measurements of contaminated water, sewage etc.
- environmental studies, ex. monitoring of river, lakes and sea water contamination,
- industry (wine production, protection of the installations against corrosion – boiler water etc.).

- The sensor ensures good accuracy of the measurement for a very competitive price in comparison with other manufacturers.

- Easy maintenance and short calibration time make working easier

- This sensor may work for many years, just the user has to remember about simple periodical maintenance operations.

- The COG-1 sensor works on the galvanic cell principle. It consists of silver cathode and zinc anode. The electrodes are placed in container with electrolyte separated from the measured solution by Teflon membrane, which is liquid-proof, but it enables the gas diffusion. After immersing the probe in the water solution the dissolved oxygen gets to the electrolyte and is reduced on the cathode. At the same time on the anode a zinc oxidising reaction is observed.

The electric signal from the cell in constant temperature is proportional to the pressure of oxygen dissolved in water.

The sensor is characterised by following features:

- may measure oxygen concentration in water but also in the air.

- has a wide measuring range which enables its use both in de-oxygenated water (boiler water) and in highly oxygenated water (supersaturated).

- it is characterised by long term stable signal what makes using it much easier and lowers the costs of maintenance and use.

- may be calibrated in % of saturation in 1 point – for the measurement of oxygen in the air to value of 20.9% and in 1 or 2 points in case of measurements in water (in 0% solution and in the air for 100%).

- During the measurements of dissolved oxygen in mg/l it is necessary to take into consideration the influence of temperature, salinity and atmospheric pressure (meters made by Elmetron enable automatic or manual introduction of amendments).

- High accuracy and repeatability of the measurements may be obtained by ensuring slow flow of the sample in the area of membrane (few cm/s). Lack of flow will result in slow drop of the displayed result caused by progressive using up the oxygen close to the membrane surface.

- Using the zinc as an anode material is less harmful for the environment than using a lead and it enables fulfilling the RoHS directive requirements.

- Negatively loaded silver cathode has higher resistance to contamination with sulphides, what makes this sensor very useful in measurements of heavily contaminated liquids like industrial and municipal waste water.
- Gases like chlorine, sulphur dioxide, hydrogen sulphide, amines, ammonia or carbon dioxide may cause interferences in the measurements.
- The sensor is equipped with Teflon foil membrane with great chemical resistivity, high selectivity and good oxygen permeability. The membrane is mounted in easy to replace cap.
- To increase the accuracy sensor is equipped with internal module for compensation of temperature dependence of the membrane permeability.
- COG-1 requires cooperation with additional temperature sensor adequate for the used type of meter.
- The sensor is prepared for cooperation with all types of the meters made by ELMETRON.

TECHNICAL DATA

Measuring range	0 ÷ 100% oxygen in air 0 ÷ 60 mg/l (0 ÷ 600%) oxygen in water
Accuracy	±0.1 mg/l (±1%)
Acceptable temperature of measured solution	0 – 40 °C
Temperature compensation range	0 – 40 °C
Signal of the probe for solutions (in 20 °C)	
in 100% O ₂ saturation	20 - 25 mV
in 0% O ₂ saturation	max 0.3 mV
Signal drift	1%/24h
Time of response T ₉₀	below 1 minute
Internal compensation	yes (thermistor)
Cathode material	silver
Anode material	zinc
Membrane material	Teflon foil
Body and membrane cap material	PVC
Electrolyte	KCl 0.5 mol/l
Body diameter	12,0 ± 0,5 mm
Body length	155 ± 5 mm
Minimal depth of immersing	20 mm
Body material	epoxy
Membrane material	Teflon
Cable length	1 m
Connector	BNC-50



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