

DISSOLVED OXYGEN SENSORS COG-1, COG-1t

COG-1 and **COG-1t** oxygen sensors are designed for measurement of oxygen concentration in natural water, sewage or saline water in laboratory and field. It can also be used for measurements of oxygen in the air.

COG-1t is equipped with built-in temperature sensor.

Characteristic features:

- Wide measuring range enables measurement in both low oxygen content water (ex. boiler water) and in highly oxygenated (supersaturated) water.
- Both models ensure high measurement accuracy at affordable price and low maintenance costs.
- Easy maintenance and short calibration time make working easier.
- The sensor may work for many years if simple periodical maintenance operations are made.



COG-1 oxygen sensor



Cap with membrane

- In case of measurement in mg/l the temperature, salinity and atmospheric pressure influence need to be taken into consideration. The Elmetron meters enable manual or automatic adjustment and corrections.
- The teflon foil membrane provides great chemical resistivity, high selectivity and good oxygen permeability. The membrane is mounted in a cap, which is easy to replace.
- Negatively charged silver cathode has higher resistance to contamination with sulphides, what makes this sensor very useful for measurements of heavily contaminated liquids like industrial and municipal waste water.
- The sensor is equipped with internal temperature compensation system, which is dependent on the membrane permeability.
- High accuracy and repeatability of readings may be obtained by a flow of the sample in close proximity to the membrane (a few cm/s). Lack of the flow will result in lowering the reading value due to gradual oxygen consumption in proximity to the membrane. In vessels without flow a slow, circular movement imitates it and provides stability of reading, using a stirrer may also solve the problem.
- The sensor is characterised by long term stable signal what makes using it much easier and lowers the costs of maintenance and use.

- For oxygen measurement in air: one point calibration at 20,9 %; for oxygen measurement in water: one- and two- point calibration - at 0 %, and next in air – at 100 %.
- Gases such as chlorine, sulphur dioxide, hydrogen sulphide, amines, ammonia or carbon dioxide may cause interference in the measurements.

The principle of operation:

The **COG-1** sensor works on the galvanic cell principle. It consists in silver cathode and zinc anode placed in the electrolyte solution, separated from the measured solution by the membrane, which is permeable for oxygen. The oxygen diffuses through the membrane and is reduced on the cathode, what generates voltage proportional to the partial pressure of the oxygen at the current temperature.

TECHNICAL DATA

Measuring range	0 ÷ 100% in the air 0 ÷ 600% water 0 ÷ 60 mg/l water
Accuracy	at calibration temperature: $\pm 1 \%$ *
Temperature measurement accuracy	in range 0 ÷ 40 °C: $\pm 0.5 \text{ }^\circ\text{C}$
Acceptable temperature of measured solution	0 ÷ 40 °C
Temperature compensation range	0 ÷ 40 °C
Signal of the probe for solutions (at 20 °C)	In 100 % O ₂ saturation: 20 ÷ 25 mV in 0 % O ₂ saturation: max 0.3 mV
Signal drift	0.7 % / 24h
Time of response T ₉₉	below 1 minute
Internal compensation	yes (thermistor)
Built in temperature probe	yes, Pt-1000B (COG-1t)
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 (to handle)	120.0mm ± 5 mm
Cable length	about 1 m
Connector	BNC-50 (+ RCA "chinch" in COG-1t)

* By the difference $\pm 5 \text{ }^\circ\text{C}$ accuracy: $\pm 3\%$, by the difference $\pm 10 \text{ }^\circ\text{C}$ accuracy: $\pm 5\%$.