

S423 Oxsens

Dissolved Oxygen and Temperature Sensor Amperometric system

Measurement principle

The oxygen content in liquids is best measured with cells using Clark's principle. These cells generate an electrical current proportional to the oxygen partial pressure which can be evaluated with a suitable measurement converter.

In order to prevent interference effects, the Clark's cell is covered with a gas-permeable membrane. The PTFE membranes typically used, however, are mechanically very fragile, with the result that they must be frequently changed to allow reliable measurement. It is difficult to handle such fragile membranes.

As a solution, S423 use the OPTIFLOW membrane. This membrane is very mechanically stable and is manufactured as a laminate around a steel mesh. OPTIFLOW membranes are stable under harsh ambient conditions as well as high pressures. This ingenious design allows fast response times to be combined with unusually low flow dependence.

In addition to the PG 13.5 versions with their various lengths, they are now also available as 25 mm versions. The OXYSENS sensors have

been developed as 100% maintenance-free, low cost sensors for water management and fish farming.

Outstanding performance

Short response times: The outstanding properties of the new membrane material result in fast response times of 30 to 60 seconds.

Short stabilization time: The OXYSENS stabilization time is typically less than 15 minutes.

Low flow sensitivity: Many other oxygen sensors show a clear dependence on the flow rate especially with slowly flowing samples. This can lead to excessively low or erratic readings. As a result of the OXYSENS design, the effect of the flow rate on the reading is negligible.

Maintenance free : No membrane or electrolyte substitution is requested. Replace the sensor if it can no longer be calibrate.

Technical Data

- Electrode type: silver-platinum combination
- Electrolyte: alkaline electrolyte solution
- Membrane: OPTIFLOW™
- Temperature sensor: NTC 22 kOhm Oxsens;
- Polarization voltage: -670 +/- 50 mV
- Sensitivity: 40 ... 80 nA at 25 °C in air
- Stabilizing time: typ. 15 min., max. 1 h
- Working temperature: 0 ... 60 °C
- Storage temperature: -10 ... 60 °C, with water containing watering cap
- Pressure: 0 ... 4 bar inserted; max. 0.5 bar totally immersed
- Shaft diameter: 12 mm
- Mounting: PG 13.5 thread
- Immersed materials on mounted sensor: stainless steel 1.4435, PEEK, Silicone, NBR
- Regeneration: not required
- Response time $t_{98\%}$: max. 60 s at 25 °C, from air to nitrogen
- Temperature response: ca. 3.1%/K
- Flow: min. 0.03 m/s
- Flow dependence: < 5% at 25°C
- Oxygen consumption: ca. 20 ng/h in air at 25°C
- Residual current: < 0.5% of current in air
- Zero shift: < 0.5% of current in air every 2 months at 25°C in water under stable conditions
- Sensitivity shift: < 10% every 2 months at 25°C in water under stable conditions

