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Shallow Water Micro-sensor for Dissolved Ozone

For very fast depth profiling with probe systems

The amperometric micro-sensor for shallow water has been developed for the fast *insitu* determinations of dissolved ozone with probe systems in natural waters, industry waters and oceans. Because of the partial pressure of the gaseous O_3 , the analyte is separated by permeation through the membrane. Inside the sensor the ozone reacts first chemically with the electrolyte to form an electrochemically active compound which moves by diffusion to the working electrode. At the electrode the compound is oxidized. This causes a current corresponding to the partial pressure of the dissolved ozone. The sensor has a very short response time of approx. 4,5 seconds for $t_{90\%}$ and streaming as it is well-known from all the other membrane covered electrochemical sensors is not necessary, so that profiling with very high local resolution is possible. Both turbid and coloured solutions do not interfere with the signal. For measuring the ozone concentration the sensor has to be combined with a temperature measurement. The ozone micro-sensor is available for *insitu* measurements of pressures of up to 10 bar and for laboratory use. All sensors are delivered with sensor slope, temperature compensation data and mathematical formulas for calculating the ozone concentration. The exchange of sensor heads is very easy and could be done by the customer itself. The alternative exchange tip for dissolved oxygen extends the sensors flexibility.



Technical data of the micro-sensor:

measuring principle:	amperometry
power supply:	9 ... 30 VDC (others on request)
output:	0 ... + 3 VDC (others on request)
dimensions:	diameter: 24 mm, length: approx. 235 mm
connector:	SUBCONN BH-4-MP (others on request)
housing:	titanium, with integrated electronic device
measuring range:	0,02 ... 10 mg/l or dissolved oxygen sensor tip
resolution:	10 $\mu\text{g/l}$...25 $\mu\text{g/l}$ per mV (output signal)
accuracy:	2% (measuring value)
pressure range:	up to 10 bar or laboratory version
response time:	< 4,5 s for $t_{90\%}$
average life time:	5...10 months