

Shallow Water Micro-sensor for Dissolved Hydrogen

For very fast depth profiling with probe systems

The amperometric micro-sensor for shallow water has been developed for the fast *insitu* depth profiling of dissolved hydrogen with probe systems in natural waters and oceans. Because of the partial pressure of the gaseous H₂, the analyte is separated by permeation through the membrane. Inside the sensor the hydrogen reacts electrochemically at the working electrode. This causes a current corresponding to the partial pressure of the dissolved hydrogen. The sensor has a very short response time of approx. 2 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 hydrogen concentration the sensor has to be combined with a temperature measurement. The hydrogen micro-sensor is available for *insitu* measurements of depths of up to 100 m and as laboratory version. All sensors are delivered with sensor slope, temperature compensation data and mathematical formulas for calculating the hydrogen 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:	0,0002 ... 1 mg/l (others on request) or dissolved oxygen sensor tip
resolution:	7,5 µg/l...0,5 µg/l per mV (output signal)
accuracy:	2% (measuring value)
pressure range:	up to 10 bar or laboratory version
response time:	< 2 s for t _{90%}
average life time:	5...10 months