Shallow Water H₂ Probe Amperometry

Submarine connector and analog output



Applications

- · Monitoring and protection of wastewater networks
- · Control at start-up of power plants
- · Industrial process management
- · Monitoring of the natural environment
- · Closed circuit H, dosage

Advantages

- · Measurement without sampling directly in the field
- · No interference with turbidity or colors
- · Maximum immersion depth. 100 meters
- · Analog output signal without external controller
- · Submarine connector

Support probe and micro sensor H₂

The H₂ probe was developed for in situ measurement of changes in dissolved hydrogen concentrations in natural and industrial waters.

Mounted on multi-parameter systems such as CTD probes, this sensor is composed of a waterproof connector, a probe body incorporating an electronic signal transformation card and a micro $\rm H_2$ sensor installed at the tip.

The amperometric measurement allows fine and fast measurements, approximately 2 seconds for 90% of the measurement even for concentrations of the order of a few micrograms, moreover the turbidity and the color of the water have no influence, on measure.

For the determination of dissolved $\rm H_2$ concentrations, the data from the probe must be combined with a temperature measurement of the sample or medium.

Add the sensor to your installations

This equipment is delivered with telectrode calibration slope and temperature compensation data with calculation formulas to obtain the hydrogen concentration in mg / l. The exchange of the micro sensor installed at the tip could be done easily by users.

The shallow water $\rm H_2$ probe also allows the integration of a micro $\rm O_2$ sensor for dissolved oxygen measurements, replacing the micro $\rm H_2$



The dissolved hydrogen passes through the gas permeable membrane. It diffuses to the working electrode where an electrochemical oxidation reaction takes place. The current generated, proportional to the partial pressure of dissolved hydrogen, is measured by the probe.

This current of 0 to 400 pico-amperes is then converted by the electronic card in the probe body into an analog signal of 0 to 3 VDC.

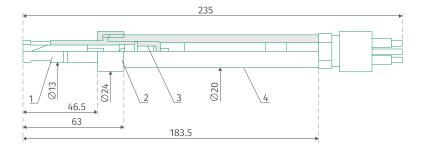


H₂ Probe Amperometry

Technical specifications

Measuring principle		Amperometric measurement
Technology		Micro membrane sensor with redox catalyst - interchangeable
Temperature compensation		Required - not included
Electrical polarization time		Automatic approx. 45-60 min wait for first use, lower for short stops
Measurement ranges	Type I	0,0002 0,5 mg/l H ₂
	Type II	0,0004 1 mg/l H ₂
	Type III	0,0008 2 mg/l H ₂
	Type IV	0,001 3 mg/l H ₂
Measurement resolution	Type I	0,1 µg/l H ₂
	Type IV	0,4 µg/l H ₂
Response time		T 90% 2 seconds
Measurement accuracy		2% of the measured value
H ₂ consumption		Negligible
Materials		Titanium (housing), silicone (membrane), glass (electrode), epoxy resin
Dimensions (d x L)		24 mm x 235 mm
Power supply		9 30 VDC
Consumption		
·		approx. 0,5 mA with 12 VDC, approx. 0,25 mA with 24 VDC
Output signal Connector		analog 0 3 VDC SubConn BH-4-MP
Connector		SUDCONN BH-4-INIP
Micro H ₂ sensor lifetime		6 months in portable use, 10 months continuously (depends on stress by pH variations)
Interferences on measurement		No interference in salt water up to 40 g / l salt
Sensitivity to H ₂ S		May lead to measurement errors and / or reduction of the life of the micro sensor
Maintenance		Cleaning the measuring membrane with distilled water after each use
Temperature of the medium / sample		0 + 30 °C (40 °C possible with a specific calibration on request)
Ambient temperature		0 + 40 °C

0 ... + 40 °C



Storage temperature