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## Simple Measuring Instrument for H<sub>2</sub>S/O<sub>2</sub>/O<sub>3</sub>/H<sub>2</sub>/H<sub>2</sub>O<sub>2</sub>

### A new measuring instrument for innovative electrochemical micro-sensors for the *in-situ* determination in aqueous solutions

The new Piko04 is a high-quality Voltmeter for interfacing to the AMT micro-sensors for the low-cost laboratory and simple field use. In combination with a separate temperature measurement or pH/temperature measurement several parameters like H<sub>2</sub>S/ O<sub>2</sub>/O<sub>3</sub>/H<sub>2</sub> or H<sub>2</sub>O<sub>2</sub> can be measured by simple manual calculation according to the AMT formulas.

The battery- or power supply operated voltmeter is equipped with a lot of measuring functions, automatic and manual range switch, RS 232 interface (optional) and a software package. It can be used both in the laboratory and in the field for mobile measurements. For this purpose the instrument contains a box for cables, a grip and strap (optional). The measuring values are displayed on the extra large monitor (68x47 mm) with background lighting. It is also possible to compensate the sensor's residual current electronically. By means of the Windows based software package the data can be transmitted to the PC. The software allows the display of the datas, printing and storage. Apart from this several functions are integrated into the software like Minimum/Maximum storage, average of datas, hold function scope, programming of alarms, start and stop.

#### Technical Data of the Voltmeter

Measuring ranges:	0,4/4/40/400/1.000 V
Input resistance:	10 MΩ
Instrument batteries:	6x Mignon AA (or net power supply)
Sensor battery:	9 Volt
Dimensions:	220 x 84 x 230 mm
Weight:	approx. 1,300 g



## Parts of the measuring system

The basic equipment of the measuring system consists of the voltmeter, software, necessary sensors and cables. Options are the RS 232 interface, interface cable, cable for external loggers (banana plugs) with 1 or 2 m cable or BNC cable.

## Available sensors

All the following sensors require a separate temperature sensor as minimum. The H<sub>2</sub>S sensor requires additionally an pH-sensor (combined pH/T sensor is recommended), if the measuring range is between pH=5...8,5

1. Amperometric H<sub>2</sub>S sensor
2. Amperometric H<sub>2</sub>O<sub>2</sub> sensor
3. Galvanic dissolved oxygen sensor
4. Ozone sensor
5. Dissolved hydrogen sensor

The sensor electronics allows an exchange between the tips for H<sub>2</sub>S/DO/H<sub>2</sub>O<sub>2</sub>, DO/Ozone and DO/Hydrogen. That means, that only the sensor tip has to be changed. If the combination Ozone/H<sub>2</sub>S, Ozone/Hydrogen, Ozone/H<sub>2</sub>O<sub>2</sub> or H<sub>2</sub>S/Hydrogen is required, a second sensor housing with electronic device is necessary.



Fig.: Electrochemical micro-sensor with titanium housing

## Technical data of the sensors

Feature	H <sub>2</sub> S-micro-sensor	O <sub>2</sub> -micro-sensor	O <sub>3</sub> -micro-sensor	H <sub>2</sub> -micro-sensor	H <sub>2</sub> O <sub>2</sub> -micro-sensor
Measuring principle	amperometry	galvanic	amperometry	amperometry	amperometry
Measuring range	0,01...3 mg/l H <sub>2</sub> S 0,05...10 mg/l H <sub>2</sub> S 0,5...50 mg/l H <sub>2</sub> S others on request	0,01...20 mg/l 0,1...150 mg/l others on request	0,02...10 mg/l	0,0002...3 mg/l others on request	0,02...10% H <sub>2</sub> O <sub>2</sub> 0,1 bis 35% H <sub>2</sub> O <sub>2</sub> others on request
Accuracy	2%	2%	2%	2%	2%
Resolution	0,0075 mg/l 0,025 mg/l 0,125 mg/l	0,01 mg/l 0,1 mg/l	0,0025 mg/l	0,0075 mg/l	0,015%
Response time (t <sub>90%</sub> )	< 3 s	< 0,5 s	< 2 s	< 2 s	< 2 s