



# WaterSulf™ H<sub>2</sub>S/Sulphides in Water Analyser

- **Measures dissolved H<sub>2</sub>S and calculates Total Dissolved Sulphides (TDS)**  
Principle based on electrochemical H<sub>2</sub>S micro-sensor at a pH range 0 ... 8.5
- **Electrochemical (amperometric) detection**  
Unlike ion-selective electrodes which detect sulphide ions only, electrochemical detection detects TDS concentrations
- **Responds to rapid changes in TDS concentrations in seconds**  
Ion-selective electrodes can take many hours to respond
- **Reports both dissolved H<sub>2</sub>S and total dissolved sulphide (TDS)**  
Analog outputs available for both measurements
- **Measurement Compensation**  
Real-time compensation for pH, pressure and temperature
- **Unaffected by pH changes in the process sample**  
Measures specific sulphur compound (HS<sup>-</sup> / H<sub>2</sub>S)
- **Optional measurement outputs**  
In addition to TDS, analog outputs for H<sub>2</sub>S, temperature, pressure or pH are available (maximum four outputs).



## PRINCIPLE OF OPERATION

Process water flows through a sensor equipped with a propriety membrane. Due to the partial pressure effect, the membrane is only pervious to gases, not to liquids or solids.


The sensor contains a buffer solution with a redox catalyst and 3 electrodes. A polarisation voltage is applied to the electrodes to give a ratio of the oxidised/reduced redox catalyst. The H<sub>2</sub>S reacts, first chemically in presence of the redox catalyst to form a reaction product. Then, the electrochemical oxidation of the reaction product takes place at the measuring electrode.

Due to the polarization voltage effect, the system adjusts the concentration ratio. The resulting current is proportional to the dissolved molecular amount of H<sub>2</sub>S present in the sample.

The measurement is compensated for pH, pressure and temperature changes on a real time basis, and these can be reported as separate 4-20mA outputs (optional) if required.



## SPECIFICATIONS ANALYSER:

Measurement principle	Henry's Law. Measurement of H <sub>2</sub> S and calculation of (TDS) using an electrochemical cell with pH, temperature and pressure compensation TDS = sum of dissolved H <sub>2</sub> S + HS <sup>-</sup> ion + other sulphides	
Software	C++ Windows XPe based	
Electronics	PC104, AMD Geode LX800 processor 500MHz performance, 256Mb SDRAM, soldered on RAM for high reliability	
Typical ranges	0 - 100 mg/l TDS. Other ranges on request	
Repeatability	± 2.0% full scale	
Response time	T90 <10 seconds	
Output	4 x 4-20 mA TDS (optional analog outputs for H <sub>2</sub> S, P, T or pH)	
Alarms	1 x measurement alarm, 1 x instrument failure alarm, 1 x process alarm	
Area classification	ATEX approved:  II 2 GD Exd IIC T4 Ex tD A21 IP66 T 85°C, T. amb. -20°C to +55°C	
Ambient limits	5°C - 40°C	
<b>CROSS SENSITIVITY</b>	Unaffected: (max concentrations): CO <sub>2</sub> 25%      H <sub>2</sub> 0.5%      Methane 5% Ammonia 1000 ppm      CO 92ppm      CS <sub>2</sub> 5%	
	Affected: SO <sub>2</sub> (100ppm SO <sub>2</sub> = to 1ppm H <sub>2</sub> S), amines, HCl and light olefins	
<b>UTILITIES</b>		
Power	120 / 240 VAC    50 / 60 Hz    40 VA	
Process sample	Max pressure 1.5 – 10.0 bar, flow rate 0.20 to 0.5 l/min , 40°C max temp	
<b>INSTALLATION</b>		
Process connections	1/8" OD inlet, 1/4" NPT female vent (to atmospheric vent)	
Weight	35 Kg approx.	
Dimensions	550(w), 1100(h), 235(d) mm	
<b>APPLICATIONS</b>	<ul style="list-style-type: none"> <li>- Ethylene quench towers      - Coke oven quench towers</li> <li>- Steel plant scrubbers          - Well injection</li> </ul>	

## ORDERING INFORMATION:

Application:                      Range:  
 Process specification/conditions  
 Configuration:  
 Safe area – Model 1000  
 Hazardous area – Model 4000

## REPRESENTED BY: