EC Sense
Easy Gas Sensors

ECtox

Hydrogen Sulfide Gas Detection Device

Preliminary Technical Data

ECtox Hydrogen Sulfide Gas Detection Device Preliminary Datasheet

Easy Gas Detection Device Innovations

Product Overview

The H2S Gas Detection Device, in combination with the principle of coulometry, delivers a high-precision gas detection technology. The higher and lower concentration the faster the sensor will be drained. Therefore the sensor lifetime will deteriorate rapidly and more maintenance will be needed.

The H2S gas concentration in the Biogas and other process industry Continuous monitoring of the gas concentration for analyze is very important.

ECtox's big advantage, while continuously working on 200°C of high temperature and in low concentration conditions, is its long lifetime. A pump easily transports the gas to the sensor, without the need for calibration. The sensor can be used in the chemical indus- try for chlorine disinfection. The output signal, RS485(Modbus), will effortlessly connect with the gas detector, DCS, PLC or wireless systems.

Features

- Coulometric measuring system
- Works on continue mornitoring
- Combined with intelligent algorithms it has betier adaptability to the environment
- Higher accuracy in detection and stable zero point
- With pump, no calibration with span gas needed
- New microcircuit design, strong anti-electromagnetic interference ability
- No temperature and humidity influence
- RS485 output, 5-12V DC power
- Stainless steel housing, water and dust proof, anti-corrosion
- The detection range is automatically adjusted to the concentration range of the measured gas, from ppb to higher ppm level
- Continuously monitors its own fault conditions, Sensor, Pump, Power etc.
- RoHS eco-friendly design
- Self-monitoring of the sensor function

Application

- Industrial leakage detection
- High concentration monitoring
- Biogas monitoring
- Process H2S gas monitoring

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Principle

Coulometric electrochemical sensing technology is a revolutionary innovation in the field of electrochemical detection. Based on the principle of electrochemical reaction, this technology is able to detect all electrochemical active gases and accurately measure the gas concentration through the signal amount. The sensor is composed of three catalytic electrodes, liquid electrolyte and gas diffusion holes. The gas reaches the working electrode of the sensor by a pump with a certain volume, which is always constant. An electrochemical redox reaction occurs on the porous micro-surface of the electrode, the liquid electrolyte conducts ion transfer and generates a current peak signal as an output. The integrated current peak signal is proportional to the gas concentration.

The sampling system is good for different densities, the speed of diffusion and convection is usually slow or depends on the environment, and temperature and different concentration influenced the speed of molecular motion. Sampling System let gas easy going to sensor.

Cross Sensitivity

Gas	Formula	Concentration (ppm)	Response(ppm)
Hydrogen fluoride	HF	3	0
Carbon monoxide	CO	50	3
Chlorine	Cl_2	10	-1.5
Hydrogen	H_2	100	3
Methane	CH_4	1%vol.	0
Carbon Dioxide	CO_2	1000	0
Hydrogen Cyanide	HCN	10	0
Ammonia	NH_3	50	0
Nitrogen Dioxide	NO_2	10	-2.2
Isopropanol	C3H7OH	1000	n.e
Sulfur dioxide	SO_2	5	n.e

Note:

1) The above interference factors may differ from sensor to sensor and service life, please refer to the actual test results.

2) This table is not complete for all gases, and the sensor may be sensitive to other gases.

Order Informations

Product Name	Part Number	Range	Resolution
Hydrogen Sulfide Gas Detection Device	05-ECtox-H_2S-5-01	0-5ppm	0.001ppm
Hydrogen Sulfide Gas Detection Device	05-ECtox-H_2S-500-01	0-500ppm	0.1ppm
Hydrogen Sulfide Gas Detection Device	05-ECtox-H_2S-5000-01	0-5000ppm	1ppm
Hydrogen Sulfide Gas Detection Device	05-ECtox-HT- H_2S-5000-01	0-5000ppm	1ppm
Cable	02-LEMO-HXT-1423-01		
Fixed Assembly	02-ECtox-Fix-C45-01		

Note: 05-ECtox-HT in above order information are for higher temperature application.

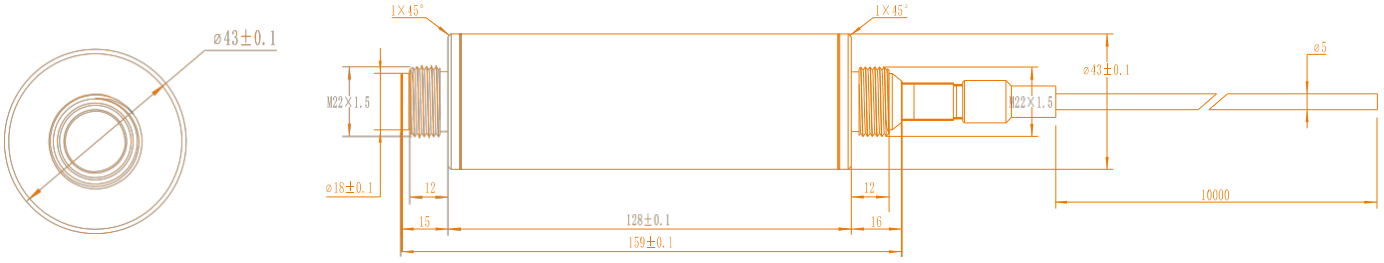
Specification

Principle	Coulometric Solid Polymer Electrochemical Detection Technology
Detection of gas	Hydrogen Sulfide
Detection Range	0-5ppm; Resolution: 0.001ppm Lowest Detection Limit: 0.1ppm 0-500ppm; Resolution: 0.01ppm Lowest Detection Limit: <1ppm 0-5000ppm; Resolution: 0.01ppm Lowest Detection Limit: <5ppm
Full-scale accuracy error	±5% F.S
Repeatability	≤2%
Settling time	Store under measurement condition power for the first 60 min become to stable
Response time	Dependent on the selected measuring period, between 1 to 10min
Sensor expected life time	≥2 years
Output	RS485(Modbus), Baud rate: 9600, 4Pin Leomo Cable with 10m (Other length by request
Get data command	See ECtox protocol document for details
Working Voltage	5- 12V DC
Maximum Current Consumption	1A
Maximum Power Consumption	5W
Working temperature	-20- 55℃
Optimal working temperature	25℃
Working humidity	5-95% RH. Non-condensing
Optimum working humidity	50% RH.
Working pressure	Atm ± 10% Keep Stable Pressure
Temperature and humidity range	-20- 200℃, 5-95% RH. Non-condensing
Size	159x 43（mm）
Weight	ECtox: 450g, Lemo with 10m cable: 400g
Temperature and humidity sensor data	Temperature Range: -40- 85℃ Relative error: ± 0.2 ℃ Humidity measurement range: 10- 95% RH. non-condensing Relative error: ± 2%
Warranty	12 months from the date of shipment

Structure Diagram (unit: mm)

Hydrogen Sulfide Gas Detection Device Standard Version

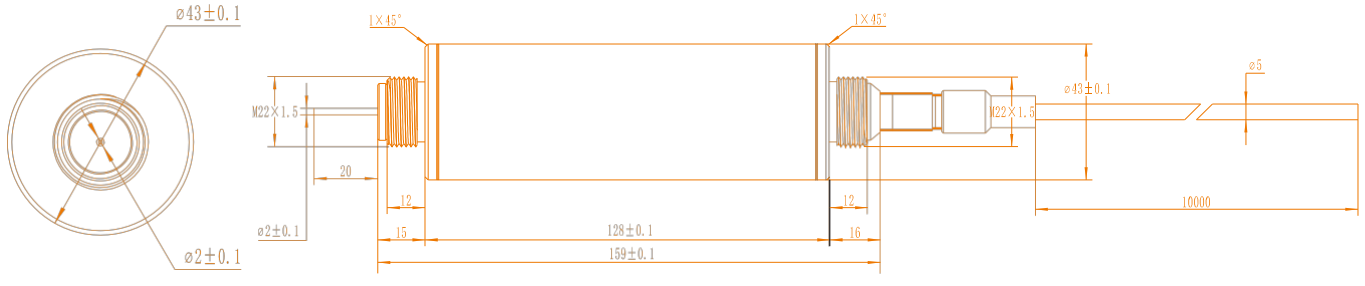
05-ECtox-H_2S-5-01, 05-ECtox-H_2S-500-01, 05-ECtox-H_2S-5000-01



Front View Side View

Hydrogen Sulfide Gas Detection Device High Temperature Version

05-ECtox-H_2S-5000-01



Front View Side View

Disclaimer

EC Sense Performance data stated is based on test conditions with new sensors at 25°C, 55%rH and 1 atm, using EC-Sense calibration Systems and AQS Testing System. Cross sensitivity gases are not target gases. Relations and performance can change, also with ageing of the sensor. In the interest of continued product improvement, EC-Sense reserves the right to change design features and specifications without prior notification. We do not accept any legal responsibility for customer applications of our sensors. EC-Sense accepts no liability for any consequential losses, injury or damage resulting from the use of this document, the information contained within or from any omissions or errors here in. This document does not constitute an offer for sale and the data contained is for guidance only and may not be taken as warranty. Any use of the given data must be assessed and determined by the user there of to be in accordance with federal, state and local laws and regulations. All specifications outlined are subject to change without notice.

Warning

The EC-Sense sensor is designed to be used under various environmental conditions. During storage, assembly and operation, due to the principle and characteristics of the liquid electrochemical sensor, in order to ensure normal use, users should strictly follow this article when using this module. General-purpose PCB circuit board application methods and illegal applications will not be covered by the warranty. Although our products have high reliability, we recommend checking the module's response to the target gas before use to ensure on-site use. At the end of the product's service life, please do not discard any electronics in household waste. Please dispose it in accordance with local government regulations on electronic waste recycling.

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