Ultima® MOS-5 H_2S Sensors and Accessories

Ultima MOS-5 H_2S Sensor

Description

MSA's hydrogen sulfide (H_2S) sensors are solid state devices, designed and manufactured for long life and fast response. They are selective to H_2S and remain unaffected by high concentrations of other substances like hydrogen, sulfur dioxide, and gasoline vapors, which are often present in facilities that process sour gas and crude oil.

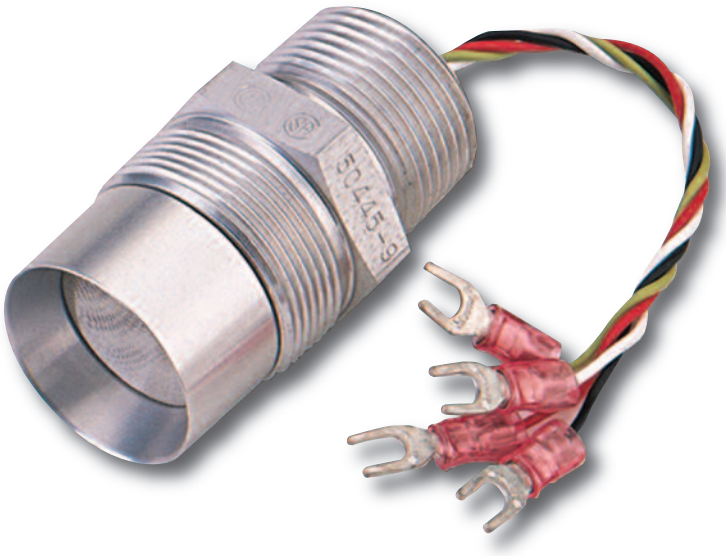
A semiconductor device measures changes in electrical conductivity in a thin metal-oxide film as a result of gas exposure. The change in conductivity is logarithmically correlated to the target gas concentration and used to supply a signal to the controller. The surface temperature of the film is maintained well above 100˚C to reduce the effects of ambient temperature and humidity, and to improve selectivity.

The metal oxide semiconductor (MOS) sensors are easy to install and can be conveniently calibrated by using ampoules or disposable canisters of pre-mixed H_2S with dry air. Several accessories extend the usefulness of these sensors by protecting them against water and dust or facilitating their installation in ducts and sampling systems.

A high tolerance to a broad range of temperatures and humidity enables these sensors to operate in rugged environments, as does their capacity to withstand exposure to high H_2S concentrations over short periods.

These MOS sensors have been installed in extreme environments from the Saudi Arabian desert to the North Slope of Alaska.

Global sensor certifications include CSA and FM approvals. Additionally, specific sensors conform to performance standard ISA-92.0.01.



Features and Benefits

Solid-state operation functions in the harshest environments
High selectivity — does not respond to hydrocarbons — enables a low risk of false alarms
Unaffected by over-range exposure, which reduces the need for sensor replacement
Robust mechanical design is vibration and shock resistant
Resistance to high humidity and a wide range of ambient temperatures makes the sensor suitable for worldwide use
Specific sensors meet ISA-92.0.01 performance standard

Applications

- Chemical Plants
- Compressor Stations
- Gas Turbines
- LNG Plants
- Oil and Gas Exploration and Production
- Oil Refining
- Sulfur Recovery Plants

MSA
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H_2S Sensors

Sensor Selections

MSA's semiconductor sensors are available in three concentration ranges. The sensors' ambient temperature ranges vary according to regulatory approval.

Part Number	*Range (ppm)*	*Material*	*Certifications*
50445-1	0-100	Aluminum	CSA, FM
50445-5	0-50	Aluminum	CSA, FM
50445-9	0-20	Aluminum	CSA, FM

Sensor Specifications	
Type	Metal Oxide Semiconductor (MOS)
Response Time	With wire screen flame arrestor: T_{50} ≤10 seconds With sintered stainless steel flame arrestor: T_{50} ≤30 seconds On application of full scale gas according to ANSI/ISA-92.0.01
Temperature Range	CSA -40°F to +167°F (-40°C to +75°C) FM -40°F to +140°F (-40°C to +60°C)
Life	3 - 5 years
Electrical Classification	Class I, Div. 1, Groups B, C, and D; Ex d IIC
Warranty	Two years

Sensor Housings

P/N 10252-1, CSA, FM approved, explosion-proof housing

Ultima MOS-5 H_2S Intelligent Gas Detector

Accessories

Splash Guard (P/N 10395-1)

The Splash Guard prevents water from entering the sensor cavity and affecting the element response and also acts as an effective windscreen. Constructed of rugged ABS plastic and threaded for simple screw-on installation, the Splash Guard has a series of internal baffles to deflect water down and away from the sensor.

Dust Guard (P/N 10110-1)

The MSA Dust Guard Assembly prevents dust and other particulate matter from reaching the sensor flame arrestor and affecting the sensor response. The Dust Guard is also available in a kit with twelve disposable screens (P/N 10044-1).

Ampoules of H_2S (P/N 50004-x)

These glass ampoules are manufactured under strict quality control for use with the field calibrator and are available in a range of concentrations.

Sintered Stainless Steel Dust Guard (P/N 1800822)

The MSA Sintered Stainless Steel Dust Guard protects the sensor from fine particulates. It should be used only in dry environments because the sintered disc has a tendency to absorb water and act as a gas diffusion barrier until it dries out. For accurate calibration, the sensor should be calibrated with the guard in position.

Sensor Flow Chamber (P/N 10066)

The Sensor Flow Chamber is constructed of aluminum and is designed to be inserted into a sampling system.

Duct Mounting Plate (P/N 10041-1)

The Duct Mounting Plate is ideally suited to mount sensors to monitor ducted air in living quarters in large offshore modules.

Field Calibrator (P/N 50000)

The MSA Field Calibrator (also referred to as a breaker bottle) provides a simple and efficient means of calibrating H_2S in the field. It consists of a plastic jar fitted with a removable lid and a seal which fits over the sensor. After an H_2S ampoule is placed in the ampoule holder, the screw assembly acts as a vice and breaks the ampoule, releasing the gas for calibration purposes.

Field Calibrator and Ampoules

Duct Mounting Plate

Splash Guard

Dust Guard

Sensor Flow Chamber

Sintered Stainless Steel Dust Guard

H_2S Portable Purge Calibrator

The H_2S Portable Purge Calibrator is a compact, practical, accurate and safe system for field calibration of H_2S sensors. The cylinder is filled with an H_2S in air mixture in one of six separate parts per million (ppm) levels of concentration (10, 20, 25, 35, 50, or 100). Using a known air/gas mixture reduces the possibility of error in field calibration.
The Portable Purge Calibrators are lightweight assemblies that are easy to carry. However, an optional carrying case is available for those desiring to carry more than 1 assembly at a time. The case can hold up to 2 complete assemblies and facilitates transporting them in the field.

Note: *MSA recommends using ampoules for calibrating H_2S gas detection instruments. The H_2S Portable Purge Calibrator is available for applications where a calibration method of flowing H_2S gas to the sensor might provide a better calibration source (e.g. high humidity environments).*

Specifications	
Regulator Flow Rate	200 milliliters per minute (12.2 cubic inches per minute)
Temperature Range	-40°F to 130°F (-40°C to 54°C)
Storage Humidity Range	5% to 100% RH non-condensing
Weight	Assembly 5 lbs. Cylinder 3 lbs. Case 4 lbs
Cylinder Length	13.5 inches
Cylinder Diameter	3.5 inches

Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.

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