AMETEK®
PROCESS INSTRUMENTS

MEASURES: $H_2S$, COS, $CH_3SH$ ($H_2$ and $CO_2$ optional)

# PRODUCT DATA SHEET

## 9933 Gas Analyzer

**Measures natural gas impurities, such as hydrogen sulfide, carbonyl sulfide, and methyl mercaptan. Analysis of hydrogen and carbon dioxide concentrations optional.**

The 9933 builds upon the proven success and performance of the 933 line of gas analyzers, while providing fully redesigned enclosures and user interfaces.

The analyzer is wall mountable, with integrated heater and sample conditioning system, designed to operate within a wide ambient temperature range.

It is capable of measuring additional components that may be present in traditional natural gas streams, including hydrogen and carbon dioxide.

**Interference free measurements**
The 9933 utilizes a unique, proprietary frontal elution chromatography to separate hydrogen sulfide ($H_2S$), carbonyl sulfide (COS), and methyl mercaptan ($CH_3SH$) from interfering components in natural gas. Two long-life columns are employed in the 9933. While the first column is conditioning the gas sample, the standby column is automatically regenerated.

**Accurate performance**
Non-dispersive, dual-beam hollow cathode ultraviolet (UV) photometric detection of $H_2S$ (optional COS and $CH_3SH$) provides accuracy better than ±0.25 ppm. Infrared and TCD technology are used to provide optional $CO_2$ and $H_2$ measurements.


## KEY BENEFITS

- $H_2S$ Range minimum 0 to 3 parts per million
- Measurement of other sulfur compounds
- Integrated sample system
- Direct measurement of $H_2S$
- Fast response to changing $H_2S$
- No carrier gas or stripping media
- Designed for outdoor installation (IP66 and -20 to 50°C rated , with 60°C option available)
- Optional $H_2$ & $CO_2$ measurements

## APPLICATIONS

- Natural gas processing/transmission/storage
- Hydrogen addition
- Biogas/Biomethane
- Carbon Dioxide purity

## KEY MARKETS

- Natural gas
- Refining and Petrochemical

# PERFORMANCE SPECIFICATIONS

| | |
|---|---|
| **Methodology** | Proprietary frontal elution chromatography; nondispersive UV analysis for $H_2S$, COS and $CH_3SH$; optional $H_2$ measurement via thermal conductivity (TCD) and $CO_2$ via infrared (IR). |
| **Measurement units** | ppm measuring units are standard; mg/Nm³ and other units are available; contact factory for custom measurement unit(s) |
| **Standard range** | $H_2S$: 0 to 25 ppm min. to 0 to 100 ppm max.<br>COS option: 0 to 100 ppm min. to 0 to 500 ppm max.<br>$CH_3SH$ option: 0 to 50 ppm min. to 0 to 250 ppm max.<br>$H_2$ option: 0-10%<br>$CO_2$ option: 0-5%<br>Other ranges are available upon request. Please contact AMETEK. |
| **Extra Low range** | $H_2S$: 0 to 3 ppm min. to 0 to 15 ppm max.<br>COS option: 0 to 15 ppm min. to 0 to 50 ppm max.<br>$CH_3SH$ option: 0 to 9 ppm min. to 0 to 30 ppm max. |
| **Accuracy** | Standard range: ±2% of full scale. Extra Low range: ±5% of full scale, with best accuracies of ±0.25ppm $H_2S$, ±1ppm COS, ±0.75ppm $CH_3SH$. $H_2$ option: application dependent. $CO_2$ option: ±5% full scale range |
| **Repeatability** | Standard range: ±2% of full scale |
| **Zero drift** | Standard range: Less than ±2% of full scale in 24 hours. Low range: Less than ±5% of full scale in 24 hours |
| **Response time excluding sampling system** | $H_2S$: Less than 30 seconds to 90% response. COS option: Less than 60 seconds to 90% response.<br>$CH_3SH$ option: Less than 180 seconds to 90% response |
| **Zero gas** | UHP: Nitrogen, carbon dioxide, or methane |
| **Sample pressure** | Minimum 690 kPag (100 psig); maximum 10,342 kPag (1,500 psig) |
| **Typical flow** | 2.5 L/min. (5 SCFH) |
| **Outputs** | Up to four isolated 4-20 mA, self-powered. Five (5) Form A (SPST), Normally Open (NO), user configurable as Status alarms and Process Alarms. Switching: Maximum 240 VDC, 0.5 ADC, limited to 10 W. Carry: Maximum 1.2 ADC |
| **Data communication** | RJ-45 Ethernet; one port, 10/100BaseT(X), (Modbus TCP). RS485: one port, 2 or 4 wire (Modbus RTU) |
| **Enclosure** | 304 Stainless Steel is standard. 316 Stainless Steel is optionally available. |
| **Ingress Protection** | IP66 & NEMA 4X |
| **Power Requirement (standard heater)** | 120 VAC ±10%, 50/60 Hz, maximum 400 W. 240 VAC ±10%, 50/60 Hz, maximum 400 W |
| **Ambient temperature** | -20 to 50°C (-4 to 122°F); 60°C (140°F) configuration available for some applications. Contact AMETEK for more information. |
| **Dimensions (W x H x D)** | 839 x 1169 x 318 mm (33" x 46" x 12.5") – with standard back panel |
| **Weight** | Approximately 100 kg (220 lbs) – with standard back panel |
| **Certifications** | IECEx / ATEX / UKEx Zone 2<br>IECEx / ATEX Zone 1 (type-y purge)<br>cETLus Class 1, Division 2, Groups A, B, C, D<br>CE mark |
| **Options** | Gas/liquid (glycol) separating filter, other measuring ranges, COS, $CH_3SH$, $H_2$ and $CO_2$ measurements. |

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One of a family of innovative process analyzer solutions from AMETEK Process Instruments.
Specifications subject to change without notice.