

PRODUCT DATA SHEET

933 Hydrogen Sulfide Analyzer

The 933 is a unique UV-based photometric analyzer system for hydrogen sulfide in natural gas

The 933 uses AMETEK's proprietary frontal elution chromatography sampling technique, combined with the exceptionally high-resolution, multi-wavelength 900 Series ultraviolet (UV) optical bench. These combine to provide an accurate, interference-free measurement of hydrogen sulfide (H₂S). The result is a unique low-level H₂S analyzer that is designed for unattended operation for an extended time period.

- Fast response, fast recovery
- Ranges from 0-3 to 0-100 parts per million (ppm)
- Optional measurement of carbonyl sulfide (COS) and methyl mercaptan (CH₃SH)
- Direct measure of H₂S, no scrubbing

Self-recovery

Two self-regenerating columns are employed in the 933. While one column is conditioning the gas sample, the other is automatically regenerated.

Interference free measurements

The 933 utilizes unique, proprietary frontal elution chromatography to separate H₂S, COS and CH₃SH from interfering components in natural gas.

Accurate performance

Non-dispersive, dual-beam hollow cathode UV photometric detection of H₂S (optional COS and CH₃SH) provides accuracy better than ±0.25 ppm.



KEY BENEFITS

- Extended, unattended operation
- Fully integrated analyzer and sample system
- Self-recovery after high concentration H₂S events
- Fast response time to increasing or decreasing H₂S concentrations
- Concentration measurements of COS and CH₃SH optionally available
- No consumables, reagents, or disposables other than zero gas



APPLICATIONS

- Natural gas sweetening
- Amine contactor overhead
- Natural gas custody transfer stations
- Natural gas pipelines
- Synthetic natural gas (SNG)
- Natural gas blending stations
- Carbon dioxide (CO₂) purity
- Biogas



KEY MARKETS

- Natural gas
- Refining
- Chemical and petrochemical
- Industrial gas

PERFORMANCE SPECIFICATIONS

Methodology	Proprietary auto-carrier frontal elution sampling; non-dispersive ultraviolet analysis for H ₂ S, COS and CH ₃ SH
Standard range	H ₂ S: 0 to 25 ppm, up to 100 ppm; secondary higher ranges available COS option: 0 to 100 ppm min. to 0 to 500 ppm max. CH ₃ SH option: 0 to 50 ppm min. to 0 to 250 ppm max. CO ₂ option: 0 to 5% Higher ranges are available upon request
Low range	H ₂ S: 0 to 3 ppm, up to 50 ppm; secondary higher ranges available COS option: 0 to 15 ppm, up to 250 ppm CH ₃ SH option: 0 to 9 ppm, up to 100 ppm CO ₂ option: 0 to 5%
Accuracy	Standard range: ±2% of full scale Low range: ±5% of full scale
Repeatability	Standard range: ±2% of full scale
Zero drift	Standard range: Less than ±2% of full scale in 24 hours Low range and extra low range: Less than ±5% of full scale in 24 hours
Response time, excluding sampling system	H ₂ S: Less than 30 seconds to 90% response COS: Less than 60 seconds to 90% response CH ₃ SH: Less than 180 seconds to 90% response
Process pressure requirement	830 kPag to 13790 kPag (120 psig to 2000 psig)
Typical flow	2.5 L/min. (5 SCFH)
Outputs	Up to four isolated 4-20 mA, loop or self-powered Four non-isolated 1 to 5 VDC Five independent sets of SPDT, Form C, potential free alarm relay contacts, 2 A at 240 VAC
Digital communication	Modbus RTU RS485 and optional Modbus TCP Fast Ethernet – network connection Modbus RTU RS485 and optional Modbus TCP Fst Ethernet - network connection; RS232/RS485 service port
Power	104 to 132 VAC, 47 to 63 Hz, <3A 207 to 264 VAC, 47 to 63 Hz, <2A
Ambient temperature	0 to 50°C (32 to 122°F)
Dimensions (W x H x D)	780 x 1185 x 254 mm (30.7 x 46.65 x 9.97 in.)
Weight	Approximately 100 kg (220.5 lb). Will vary based on configuration and options selected.
Approvals and certifications	Meets various ATEX, IECEx, CSA, NEC and GOST hazardous area requirements. Consult AMETEK for specific details.

SALES, SERVICE & MANUFACTURING

USA - Pennsylvania

150 Freeport Road
Pittsburgh PA 15238
Tel: +1 412 828 9040
Fax: +1 412 826 0399

USA - Delaware

455 Corporate Blvd.
Newark DE 19702
Tel: +1 302 456 4400
Fax: +1 302 456 4444

Canada - Alberta

2876 Sunridge Way NE
Calgary AB T1Y 7H9
Tel: +1 403 235 8400
Fax: +1 403 248 3550

WORLDWIDE SALES AND SERVICE LOCATIONS

USA

Tel: +1 713 466 4900
Fax: +1 713 849 1924

Brazil

Tel: +55 19 2107 4100

Germany

Tel: +49 2159 9136 0
Fax: +49 2159 9136 39

India

Tel: +91 80 6782 3200
Fax: +91 80 6780 3232

Singapore

Tel: +65 6484 2388
Fax: +65 6481 6588

China

Beijing
Tel: +86 10 8526 2111
Fax: +86 10 8526 2141
Chengdu
Tel: +86 28 8675 8111
Fax: +86 28 8675 8141
Shanghai
Tel: +86 21 5868 5111
Fax: +86 21 5866 0969



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