

PRODUCT DATA SHEET

931 Single-Gas Analyzer

Sophisticated UV-VIS photometer measures any single UV-absorbing gas species for process monitoring and control

This rugged, single-ultraviolet (UV) component photometric gas analyzer is housed in an explosion-proof package. Typically measuring hydrogen sulfide (H₂S), the 931 is designed for a variety of gas monitoring and process control applications and is a "hot-wet" analyzer with a heated cell oven to avoid hydrocarbon or water condensation. A fully integrated sample system ensures reliable dew point control without running the risk of plugging, contaminating, or flooding the analyzer.

Many process applications require the detection of species which do not absorb in the ultraviolet spectrum. The 931 may optionally be provided with a thermal conductivity detector (TCD) for the measurement of hydrogen (H₂). The unit can also be configured for sulfur dioxide (SO₂), carbonyl sulfide (COS), carbon disulfide (CS₂) or ammonia (NH₃) as the primary measurement. No matter what the need is, this flexible, low-maintenance analyzer design is the answer to many of today's complex process control requirements.

Fixed optical configuration

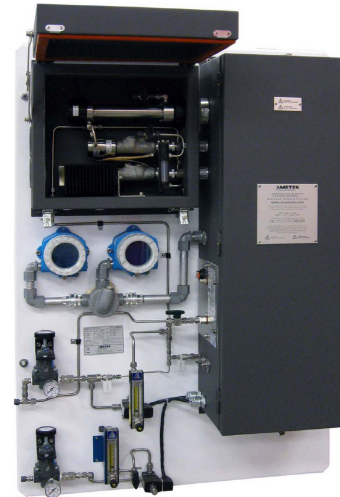
Instead of using a filter/chopper wheel to alternate between measure and reference wavelengths, the 931 uses a fixed optical configuration and pulsed UV lamps. This design leads to increased light throughput, reduced noise levels, and reduced maintenance.

Unparalleled linearity

Resolution of better than 0.02 nm is achieved with high-intensity, low-energy hollow cathode UV source lamps. These lamps emit UV radiation at precise wavelengths. The construction of the UV lamp determines the wavelength of interest, making it possible to configure this analyzer to measure many components that absorb UV/VIS energy. This high-resolution design enables unparalleled linearity over a wide dynamic range (less than 1% deviation over three to four orders of magnitude), which leads to simple, robust data analysis.

Application flexibility

Whether it's reliable high concentration H₂S, monitoring of sour gas pipelines, or process control of SRU tail gas treating units, this single-gas analyzer is the best choice for reliable, field proven, and rugged single-species measurement applications.



KEY BENEFITS

- No moving-parts design
- Measurement of additional species optionally available (thermal conductivity detector)
- Sample can be returned to process (with HAG probe option)
- Low-maintenance design
- Minimal span drift
- Stream-switching capability

APPLICATIONS

- Amine-based tail gas treating (optional H₂)
- SRU feed gas analysis
- Well head gas
- Sour gas pipelines

KEY MARKETS

- Sulfur recovery
- Tail gas treating
- Sour gas pipeline

PERFORMANCE SPECIFICATIONS

Methodology	Dual-wavelength, high-resolution, non-dispersive UV/VIS
Full scale ranges	ppm and % vol
Standard range	H ₂ S: 0 to 4,000 ppm min. to 0 to 100% max Other components and ranges are available upon request Other measurements include COS, CS ₂ , NH ₃ , SO ₂ , H ₂ , CO ₂
Accuracy	Standard range (UV): ±1% of full scale Optional (TCD) H ₂ sensor for TGTU applications: ±2% on a 0-10% range
Repeatability	Better than ±0.5% of full scale
Linearity	Better than ±1% of full scale for H ₂ S
Zero drift	Better than ±2% of full scale, with auto zero disabled over 24-hour period
Speed of response	Typically less than 30s to T90 (excluding sample system)
Number of measured gases (UV detector)	One
Zero gas	Nitrogen or instrument air
Minimum sample cell pressure	6.9 barg (100 psig)
Maximum sample cell temperature	165°C (329°F)
Typical sample flow	2.5 L/min (5 SCFH)
Sample transport	Application dependent (options include Heated Acid Gas Probe)
Outputs	Up to four isolated 4-20 mA analog outputs, loop or self-powered, 30 VDC Max; 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	RS485 Modbus port; RS232/RS485 service port
Utility requirements	120 VAC (104 to 132 VAC), 47 to 63 Hz, <3A 240 VAC (207 to 264 VAC), 47 to 63 Hz, <2A
Power consumption	500 W max. (with heated probe and cell)
Ambient temperature	0 to 50°C (32 to 122°F)
Physical dimensions (W x H x D)	1185 X 780 X 254 mm (46.5 X 30 X 9.97 in.)
Weight	Approximately 145 kg (320 lbs)
Approvals and certifications	CEC Class I, Division 1, Groups B, C, D; Ex d IIB+H ₂ T3 NEC Class I, Division 1, Groups B, C, D; Class 1, Zone 1, AEx d IIB+H ₂ T3 CEC/NEC Class I, Division 2, Groups B, C, D; ExP (unit verification) ATEX: II 2G Ex db IIB+H ₂ T3 Gb IECEX: DEK 12.0035x, Ex db IIB+H ₂ T3 Gb, Russian: 1ExdIIBT3 X Russian Ex Proof Certification; 1ExdIIBT3 X Russian Gosstandart Pattern Approval Complies with all relevant European Directives

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