

Model 931 Single Gas Analyzer

THE NEED

The Model 931 is a rugged, single-component photometric gas analyzer housed in an explosion-proof package designed for a variety of gas monitoring and process control applications. Whether it's reliable high concentration H₂S analysis for feed-forward control of modern SRU plants, monitoring of sour gas pipelines, or process control of SRU tail gas treating plants, this single gas analyzer is the best choice for reliable, field-proven, and rugged single-species measurement applications.

The Model 931 analyzer system is available with a heated cell option to avoid any hydrocarbon or water condensation. A fully integrated AMETEK Process Instruments sample system ensures reliable dew point control without running the risk of plugging, contaminating, or flooding the analyzer. Additional sensors capable of detecting non-UV absorbing species, such as CO₂ (for H₂S/CO₂ measurements in SRU feed gas) or H₂ (for H₂S/H₂ measurement in SCOT-type contactor overhead applications) can be incorporated into the design of the Model 931.

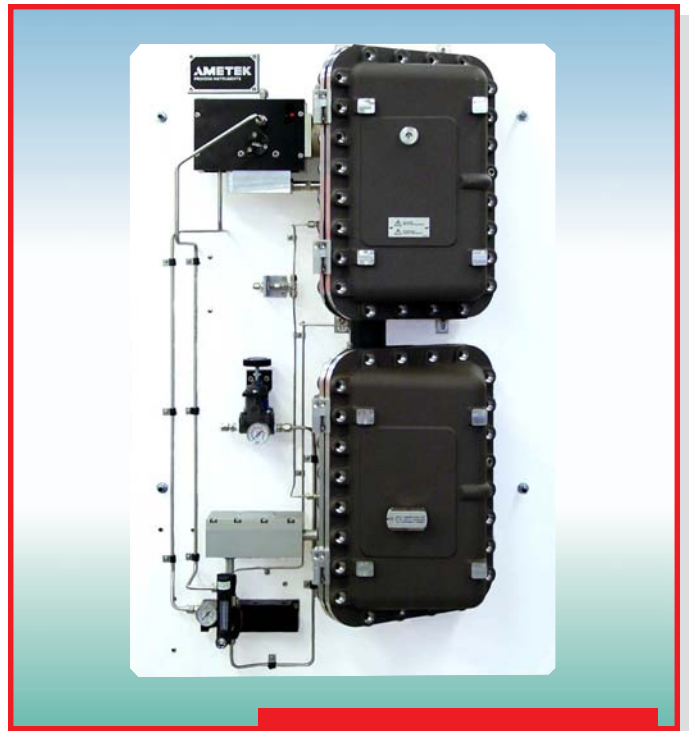
No matter what the need is, this flexible, low-maintenance analyzer design is the answer to many of today's complex process control requirements.

THE MEASUREMENT

The Western Research® Model 931 uses AMETEK's proprietary high-resolution UV technology in a dual-beam, dual-wavelength configuration and no-moving-parts design. Instead of using a filter/chopper wheel to alternate between measure and reference wavelengths, the Model 931 uses a fixed optical configuration and pulsed UV lamps. This design leads to increased light throughput, reduced noise levels, and reduced maintenance. The dual-beam configuration, combined with the reference measurement, ensures low noise performance with minimal baseline and span drift.

Resolution of better than 0.02nm is achieved with high-intensity, low-energy hollow cathode UV source lamps. These lamps emit UV radiation at precise wavelengths, providing great measurement stability. Cathode 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 3 to 4 orders of magnitude), which leads to simple, robust data analysis.

The Model 931 analyzer utilizes two onboard micro-processors that provide concentration calculations, data processing, temperature control, calibration and sophisticated self-diagnostics.



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APPLICATIONS

- SRU feed gas analysis
- Acid gas
- Well head gas
- Sour gas pipelines
- Amine-based tail gas treating contactor overhead

BENEFITS

- No-moving-parts design
- Class I, Division 1, or ATEX II 2 G Hazardous Area Rating
- Direct measurement
- Provision to return sample to process (with heated acid gas probe option)
- Minimal sample conditioning
- Dual-beam, dual-wavelength design
- Optional detectors available (IR/thermal conductivity)

PERFORMANCE SPECIFICATIONS

Methodology: Dual wavelength, high resolution, non-dispersive UV

Full Scale Ranges: ppm and % vol are standard, other ranges are available

Standard Range

H₂S: 0 to 4,000 ppm min. to 0 to 100% max.
Other components and ranges are available upon request
Other components may include NH₃, COS, CS₂ and SO₂

Accuracy

Standard range: ±1% of full scale

Repeatability

Standard range: ±0.5% of full scale

Linearity: ±1% of reading for H₂S

Zero Drift

Standard range: ±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 Gases: 1

Zero Gas: Nitrogen or instrument air

Typical Sample Flow: 5 SCFH (2.5 l/min)

Sample Transport: Aspiration (with heated acid gas option)

Outputs: One (1) isolated 4 – 20mA, loop or self-powered; 4 non-isolated 1 to 5V; 5 independent sets of SPDT, Form C, potential-free relay contacts, 2A at 250VAC

Digital Communication: RS485 Modbus port; RS232 / RS485 service port

Utility Requirements: 115 VAC ±10%, 47 to 63 Hz; 230 VAC ±10%, 47 to 63 Hz

Power Consumption: 500W maximum (with heated probe and cell)

Ambient Temperature: 0 to 50 °C (32 to 122 °F)

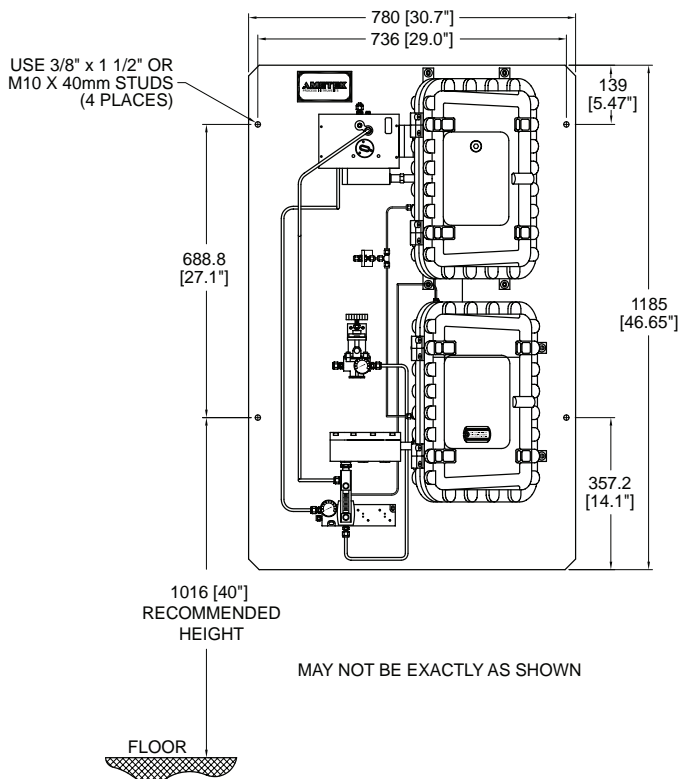
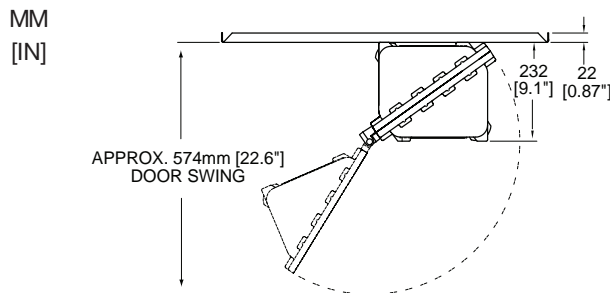
Physical Dimensions: 1194 x 788 x 2540 mm (47 x 31 x 10 in.)

Approvals and Certifications

CEC Class I, Division 1, Groups C & D; Ex d IIB T3
NEC Class I, Division 1, Groups C & D; AEx d IIB T3
ATEX II 2 G EEx d IIB T3
Russian Ex Proof Certification; 1ExdIIBT3 X
Russian Gosstandart Pattern Approval
Complies with all relevant European directives

Options

- Fully integrated, heated acid gas probe comes with heated aspirator and integrated sample and vent valves
- Pressure compensation
- Additional V/I outputs (up to 4 maximum)
- Unheated cell option available



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

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