

## Model 931 Single Gas Analyzer

### 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)

### 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 H<sub>2</sub>S 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 CO<sub>2</sub> (for H<sub>2</sub>S/CO<sub>2</sub> measurements in SRU feed gas) or H<sub>2</sub> (for H<sub>2</sub>S/H<sub>2</sub> 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<sup>®</sup> 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.

### Applications

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



# Model 931 Single Gas Analyzer

## Performance Specifications

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

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

### Standard Range

H<sub>2</sub>S: 0 to 4,000 ppm min. to 0 to 100% max.

Other components and ranges are available upon request

Other components may include NH<sub>3</sub>, COS, CS<sub>2</sub> and SO<sub>2</sub>

### Accuracy

Standard range: ±1% of full scale

### Repeatability

Standard range: ±0.5% of full scale

**Linearity:** ±1% of reading for H<sub>2</sub>S

### 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:** 2.5 L/min (5 SCFH)

**Sample Transport:** Application dependent

**Outputs:** Up to 4 isolated 4-to-20 mA, loop or self-powered, 30 VDC Max; 4 non-isolated 1 to 5 VDC; 5 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 maximum (with heated probe and cell)

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

**Physical Dimensions:** 1185 x 780 x 254 mm (46.65 x 30.7 x 9.97 in.)

**Weight:** Approximately 145 kg (320 lbs)

### 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

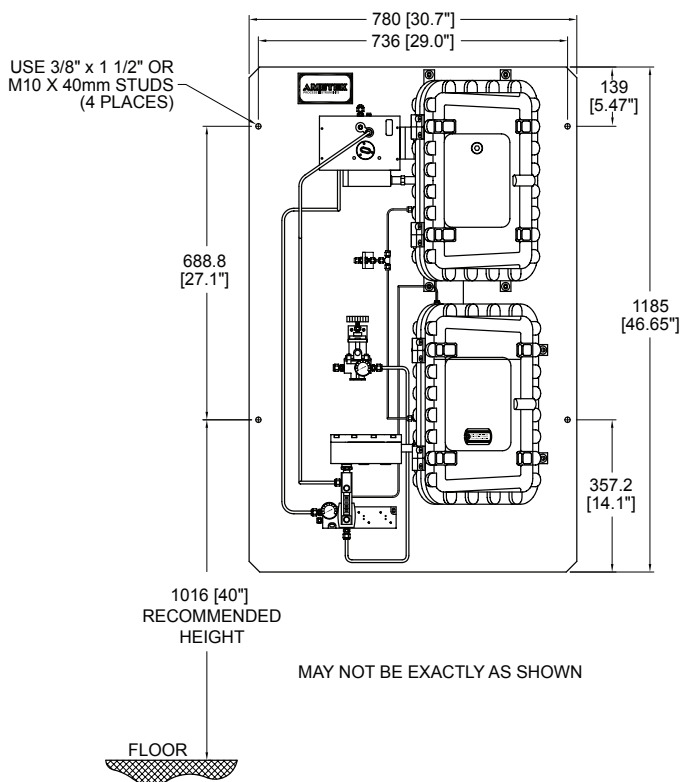
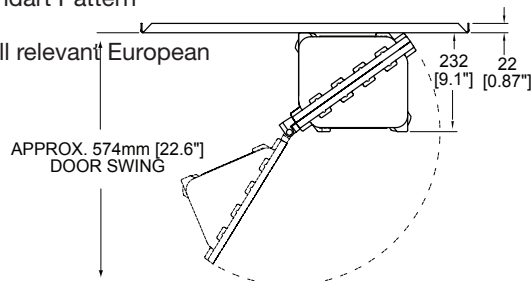
### Options

■ 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



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

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