

Model 900 Air Demand Analyzer

Benefits

- || Measures up to five species simultaneously
—H₂S, SO₂, Sv, COS, CS₂
- || Uniquely capable of monitoring off-ratio applications
- || Reliable, trouble-free sampling
- || Automated zero gas calibration
- || Provides Modbus serial interface with plant DCS

The Need

In the past, conventional Claus sulfur recovery processes were adequately controlled on the basis of ratio or excess process air. However, the development of new and modified sulfur recovery processes has dramatically changed the analytical requirements placed on the tail gas analyzer. These applications require accurate chemical concentration data over wide dynamic ranges. Selective oxidation processes may require the analyzer to control the H₂S/SO₂ ratio at values ranging from 1:7 to greater than 10:1. In addition, there is an increased need to provide reliable process data during upset conditions (to 5% H₂S or SO₂), to ensure correct response to such conditions. Data on COS and CS₂ concentrations are also increasingly used to monitor catalyst and overall sulfur plant performance.

AMETEK's Western Research® Model 900 Air Demand Analyzer was specifically designed to meet the more demanding analytical requirements of these new processes. Used in conjunction with the ASR 900 sampling probe, which provides trouble-free sampling, the Model 900 ensures maximum data availability for optimum operation of all sulfur recovery processes.

The Measurement

The Western Research® Model 900 uses our proprietary high resolution UV technology in a dual beam, multiple wavelength configuration. Resolution better than 0.02 nm is provided by high intensity, line source lamps. These sources emit at a fixed wavelength providing great measurement stability, and emit low total power removing the potential for sample photolysis. The high resolution enables unparalleled linearity over a wide dynamic range (less than 1% deviation over 4 to 5 orders of magnitude) which, in turn, leads to simple, robust data analysis. A six-position filter wheel enables one reference and five measure wavelengths. The dual beam configuration, combined with the reference measurement, ensures

low noise performance with minimal baseline and span drift.

When combined with the ASR 900 sample probe, the Model 900 is a complete analytical system providing maximum performance and minimal maintenance. The ASR 900 probe incorporates a temperature-controlled sulfur condenser providing sulfur vapor control at the sample point and ensuring that no plugging will occur in the sample lines and analyzer. An integrated shut-off valve allows servicing without removal of the probe.

Applications

- || Conventional Claus processes
- || Selective oxidation processes
- || Coke ovens



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Performance Specifications

Methodology: Multiple wavelength, high resolution, nondispersive UV

Species Measured	Minimum Full Scale	Maximum Full Scale
H ₂ S	5000 ppm	10%
SO ₂	2500 ppm	10%
CS ₂	5000 ppm	10%
COS	5000 ppm	10%
Sv	50 ppm	500 ppm

Accuracy¹: Better than 1% full scale

Repeatability¹: Better than 0.5% full scale

Linearity¹: Better than 1% full scale

Response Time: Typically less than 30s to T90 (excluding sample system)

Number of Gases: Up to 5 simultaneously (refer to AMETEK for possible combinations)

Sample Transport: Air aspiration

Typical Sample Flow: 3 to 5 L/min (0.1 to 0.2 CFM)

Temperature Control: Independent control of four zones (oven, sample line, probe, vent line)

Ambient Temperature: 5° to 50°C (41° to 122°F)

Instrument Air: Minimum 413.6KPa (60 psig), 120 L/min (4.24 CFM), instrument quality air

Power: 120 VAC ±10%, 47-63 Hz or 240 ±10%, 47-63 Hz; 600 W for analyzer only excluding sample and vent line and ASR probe

Analog Outputs: 4 to 20 mA self-powered (optional loop-powered), maximum of 4

Communications:

RS422 with Modbus protocol

RS485 optional

Ethernet optional

Relays 3 independent sets of SPDT relays alarm conditions

Physical Dimensions:

1553.6 x 1117.6 x 306 mm (61.17 x 44 x 12 in.)

Weight: Estimated minimum 160 kg (350 lbs)

Approvals and Certifications:

NEC/CEC Class I, Division 2, Groups C & D

ATEX II 2 G Ex d e px IIB T3 Gb

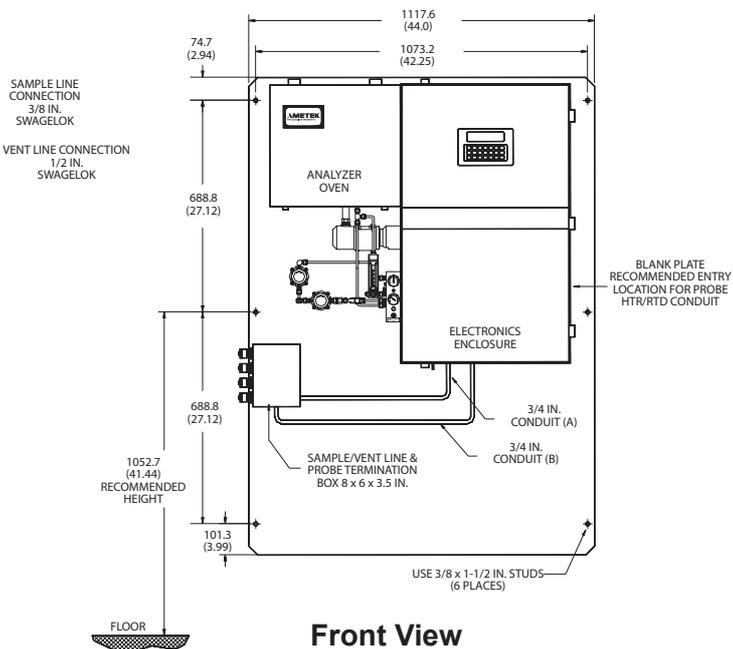
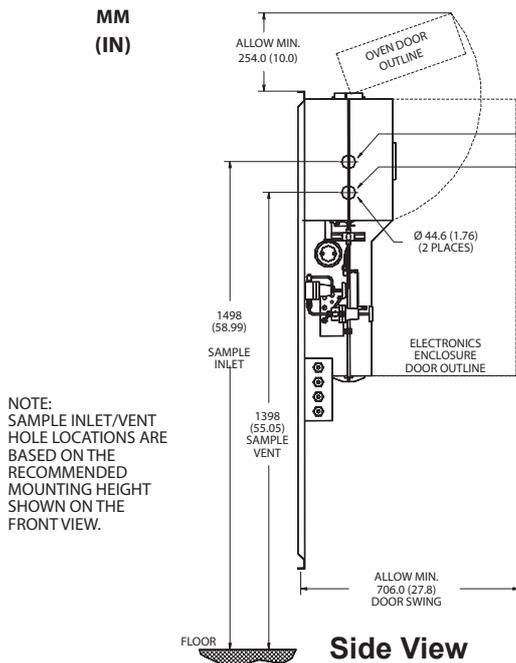
IECEX Ex d e px IIB T3 Gb

Russian Ex Proof Certification; 1ExpydIIBT3

Russian Gosstandart Pattern Approval

Complies with all relevant European Directives

1. States specifications apply to SO₂ and H₂S only. Please consult factory for specifications on other species.



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F-0174 Rev 5 (0814)

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

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