

Model 920 Multi-Gas Analyzer

Benefits

- Hot/wet analysis prevents errors associated with:
 - Correcting for water vapor
 - Absorption losses in driers
- Multi-component analysis (up to five species)
- Multi-range SO₂
- Simultaneous, independent NO and NO₂ measurement
- No H₂O or CO₂ interference
- Automated zero and span calibration
- Serial communication with plant DCS

The Need

The Western Research® Model 920 has been specifically designed to meet the requirements of the most challenging process and emissions monitoring applications in a cost effective fashion. The Model 920 is a multi-component analyzer capable of measuring up to five different gases simultaneously. It, therefore, performs analyses typically requiring two or more separate analyzers. The Model 920 is a complete system with a sample extraction and transport system designed for maintaining sample integrity. Housing options for the analyzer unit include a cabinet or walk-in shelter built to client specifications.

The simple and robust design of the Model 920 is complemented by powerful data processing capabilities. Both analog and digital outputs are available, with serial communications via Modbus protocol being an available option. An optional oxygen sensor can be included.

In process and emission streams, as a stand-alone system from probe to output, the Model 920 is the standard of excellence and versatility.

The Measurement

The Western Research® Model 920 uses our proprietary high resolution

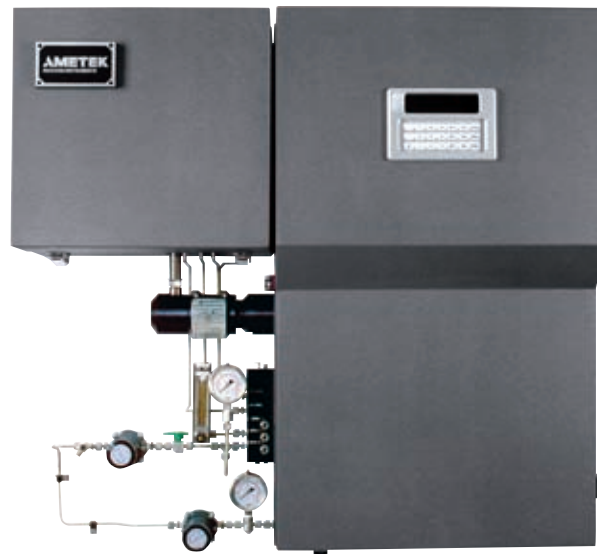
UV technology in a dual beam, multiple wavelength configuration. Resolution better than 0.02 nm is provided by high intensity, line source lamps. These sources emit at a fixed wavelength, providing great measurement stability, and emit low total power, removing the potential for sample photolysis. The 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.

UV measurements do not suffer from H₂O and CO₂ interference as these species are transparent in the UV. This greatly simplifies sample handling. The Model 920 is a fully extractive, heated wet-basis analyzer. The sample cell and all components in contact with the sample are heated above the dew points of all gases in the sample stream. This results in a simpler and more accurate calculation of gas concentrations, requiring

no corrections for condensed and dissolved components. It also results in a simpler analytical system as there is no need for sample drying or conditioning. The Model 920 has built-in zero and span calibration and four zone temperature control.

Typical Applications

- Power boiler emissions monitoring (SO₂ and NO_x)
- Sulfur plant stack and feed gas monitoring (SO₂, H₂S, COS)
- Multiple range SO₂ monitoring in sulfuric acid plants (low ppm to >10%)
- Process monitoring in nitric acid plants (NH₃ and NO_x)
- Smelter stack monitoring
- Sulfuric acid plant control
- SCR De-NO_x (NO_x and ammonia slip)
- SRU tail gas clean-up (H₂S and SO₂)
- SRU feed gas (H₂S and NH₃)
- TiO₂ production and stack gas (H₂S, Cl₂, COS)



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Performance Specifications

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

Species Measured	Minimum Full Scale (see note)	Maximum Full Scale
SO ₂	250 ppm	100%
NO	300 ppm	100%
NO ₂	300 ppm	100%
NO _x	300 ppm	100%
H ₂ S	500 ppm	100%
NH ₃	125 ppm	100%
Cl ₂	500 ppm	100%
COS	1000 ppm	100%
CS ₂	2500 ppm	100%

Optional O₂: Integral Zirconium Oxide

Accuracy¹: Better than 1% full scale

Repeatability: Better than 0.5% full scale

Linearity: Better than 1% full scale

Response Time: Typically less than 30 s to T90 (excludes 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)

Sample Gas Temperature: Ambient to 150°C (302°F)

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

Pressure and Temperature Compensation: Standard

Ambient Temperature²: 5° to 50°C (41° to 122°F)

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

Power: 120 VAC ±10%, 47-63 Hz or 220 VAC ±10%, 47-63 Hz, 600 W for analyzer only

Communications:

Analog: 4 x 4-to-20 mA self-powered

Digital: One RS232 port for service diagnostics

One RS422 with Modbus protocol

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

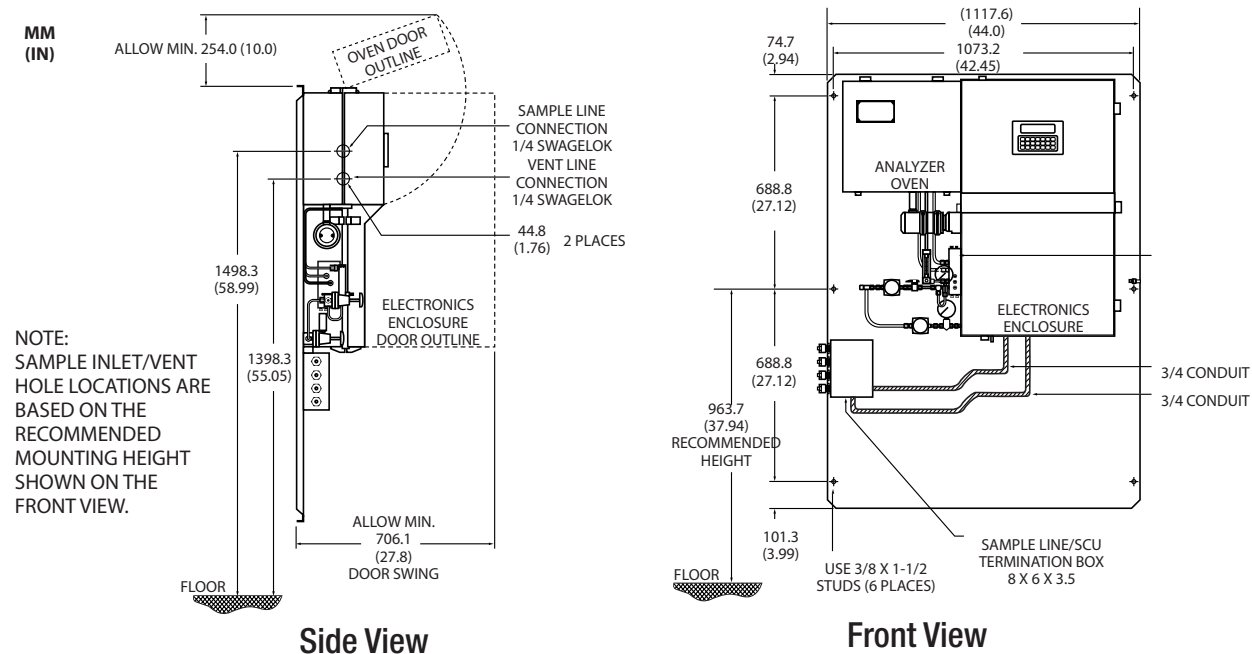
NEC/CEC Class I, Division 2, Groups C & D

ATEX II 2G EEx pd IIB T3

Russian Ex Proof Certification; 1ExpydIIIBT3

Russian Gosstandard Pattern Approval
Complies with all relevant European Directives

1. Accuracy may vary on some applications where multi-species measurement is required.
2. Temperature drift is approximately 1 ppm/°C for the species listed. To achieve maximum accuracy and stability, you can either install the analyzer in a temperature-controlled environment or zero the analyzer more frequently.



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Specifications subject to change without notice.

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