

Model 910 Hot/Wet Multi-Gas CEM

Benefits

- ▶ Hot/wet analysis prevents errors associated with:
 - Correcting for water vapor
 - Absorption losses in driers
- ▶ Multi-component gas analysis (up to five species)
- ▶ Multi-range SO₂ measurement
- ▶ Independent NO and NO₂ measurement
- ▶ No H₂O or CO₂ interference
- ▶ Automated zero and span gas calibration
- ▶ Provides serial interface with plant DCS
- ▶ Incorporates flow measurement for emission rate calculations

Introduction

The Model 910 is a version of the Model 920 specifically configured for monitoring stack emissions on a mass rate basis. The standard configuration measures stack effluent temperature and velocity in addition to pollutant concentrations at stack conditions, enabling mass emission rates to be reported. With the addition of an optional zirconium oxide sensor, the Model 910 is capable of monitoring oxygen and providing oxygen-corrected measurements.

The Model 910 is a multi-component analyzer capable of measuring up to five different gases simultaneously. The Model 910 is a complete system with a sample extraction and transport system designed for maintaining sample integrity. Housing options for the field unit include a cabinet or walk-in shelter built to your specifications.

The Model 910 performs analyses typically requiring two or more separate analyzers, making it an economical alternative when several gases must be monitored. The Model 910 performs all necessary sample gas and calibration gas flow

management, and probe and sample line temperature control. The Model 910 is a full-function continuous emissions monitoring system (CEM) which requires the addition of only a sample probe and sample line to be fully operational.

The Measurement

The Western Research® Model 910 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 910 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 910 has built-in zero and span calibration and four zone temperature control.

Applications

- ▶ CEM applications in:
 - Sulfur plants
 - Smelters
 - Coal, oil, and gas-fired power plants
 - Industrial boilers



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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%
NOx	300 ppm	100%
H ₂ S	500 ppm	100%
NH ₃	500 ppm	100%

Note: Minimum full scale is based on +1% full scale accuracy over 24 hours with auto zero disabled.

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 (excl. sample system)

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

Sample Transport: Air aspiration

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

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

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

Power: 120 VAC ±10%, 47 to 63 Hz or 240 VAC ±10%, 47 to 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: 1555.3 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

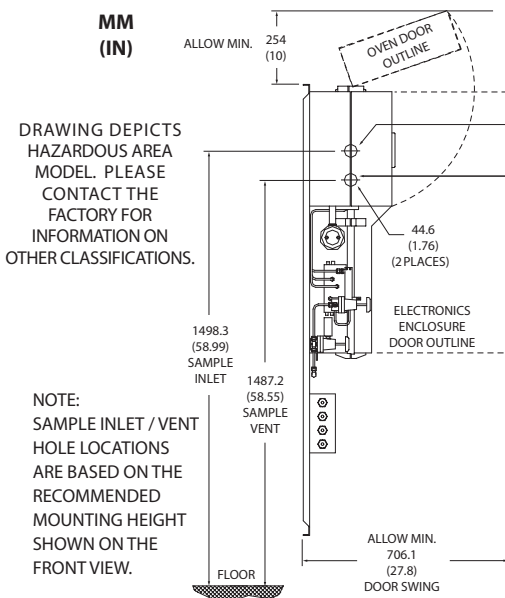
ATEX II 2G EEx pd IIB T3

Russian Ex Proof Certification; 1ExpydIIIBT3

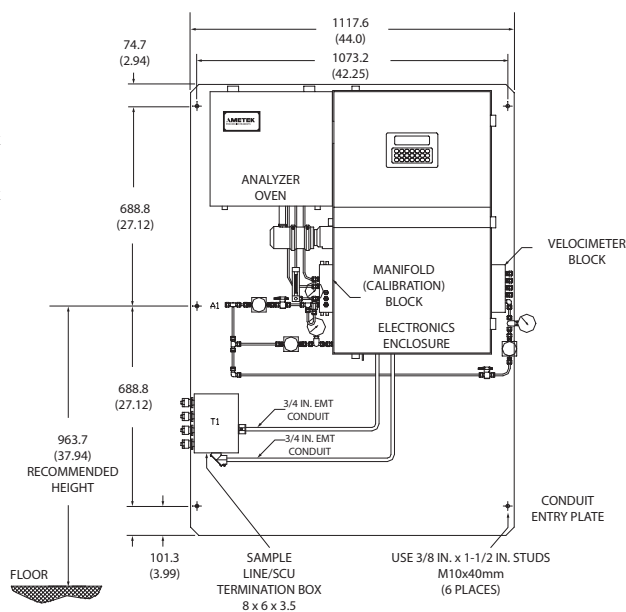
Russian Gosstandard Pattern Approval

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.



Side View



Front View

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F-0176 Rev 4 (0312)

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Specifications subject to change without notice.

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