PROCESS

WESTERN RESEARCH®
PROCESS INSTRUMENTS

BULLETIN 909

ANALYZER SOLUTIONS FOR *YOUR* PROCESS!

Model 909 Hot/wet Single Gas Mass Flow CEM

THE NEED

The AMETEK Western Research® Model 909 is a single gas version of our Model 910 Continuous Emissions Monitor. The analyzer is specifically configured for monitoring stack emissions on a mass rate basis. It 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 909 is capable of monitoring oxygen.

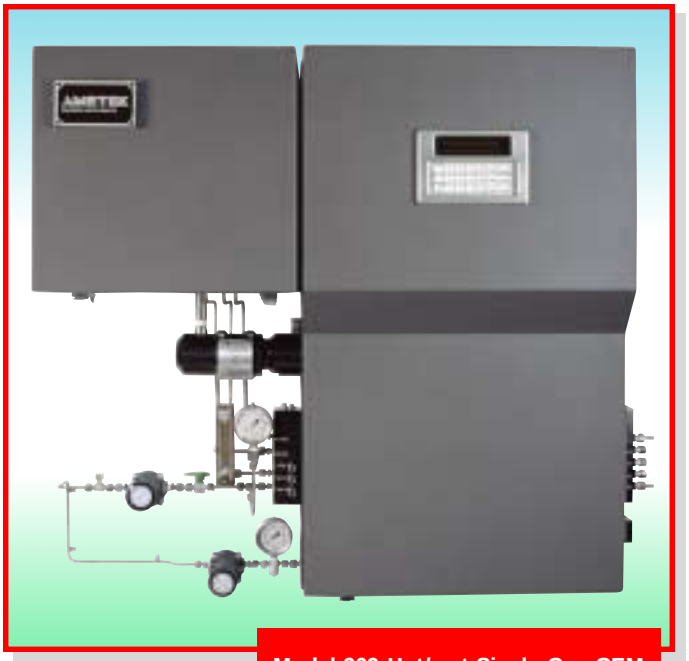
The Model 909 features a no-moving-parts design for maximum reliability and durability. It is a complete system with a sample extraction and transport system designed to ensure sample integrity. Housing options for the analyzer include a cabinet or walk-in shelter built to your specifications.

The Model 909 performs all necessary sample gas and calibration gas flow management, and probe and sample line temperature control. The Model 909 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 Model 909 uses our proprietary high resolution UV technology in a dual beam dual wavelength configuration. Resolution better than 0.02 nm is provided by high intensity, line source lamps. These sources emit at fixed wavelengths, 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, which in turn leads to simple, robust data analysis. 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 H_2O and CO_2 interference, as these species are transparent in the UV. This greatly simplifies sample handling. The Model 909 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, more reliable analytical system as there is no need for sample drying. The Model 909 has built-in zero and span calibration and three zone temperature control.



Model 909 Hot/wet Single Gas CEM

BENEFITS

- **High reliability and reduced maintenance requirements through a no-moving-parts design**
- **Hot/wet analysis prevents errors associated with:**
  —Correcting for water vapor
  —Absorption losses in driers
- **Accuracy better than 2.5 ppm SO_2**
- **Able to measure SO_2, NO, NO_2, H_2S, NH_3, or a number of other chemicals.**
- **No H_2O or CO_2 interference**
- **Automated zero and span gas calibration**
- **Provides serial interface with plant DCS**
- **Incorporates flow measurement for emission rate calculations**

APPLICATIONS

- **CEM applications in:**
  —Sulfur plants
  —Smelters
  —Coal, oil and gas fired power plants
  —Industrial boilers and process heaters

AMETEK®

PERFORMANCE SPECIFICATIONS

Methodology: Dual beam, high resolution, nondispersive UV

Species Measurable	Minimum Full Scale†	Maximum Full Scale
SO_2	250 ppm	100%
NO	300 ppm	100%
NO_2	300 ppm	100%
H_2S	500 ppm	100%
NH_3	500 ppm	100%
Cl_2	500 ppm	100%

† Minimum full scale is based on ±1% full scale accuracy over 24 hours with auto zero disabled.

Accuracy: Better than 1% full scale

Linearity: Better than 1% full scale

Reproducibility: Better than 0.5% full scale

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

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

Communications:

Analog: 4 x 4 to 20 mA self powered
Digital: One RS-232 port for service diagnostics
One RS-422 with Modbus protocol
Relays: 3 independent sets of SPDT relays alarm conditions

Instrument Air: Minimum 30 psig, 1 CFM; instrument quality air

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

Pressure and Temperature Compensation: Standard

Physical Dimensions: 61 x 44 x 12 in. (1554 x 1118 x 305 mm)

Sample Transport: Air aspiration

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

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

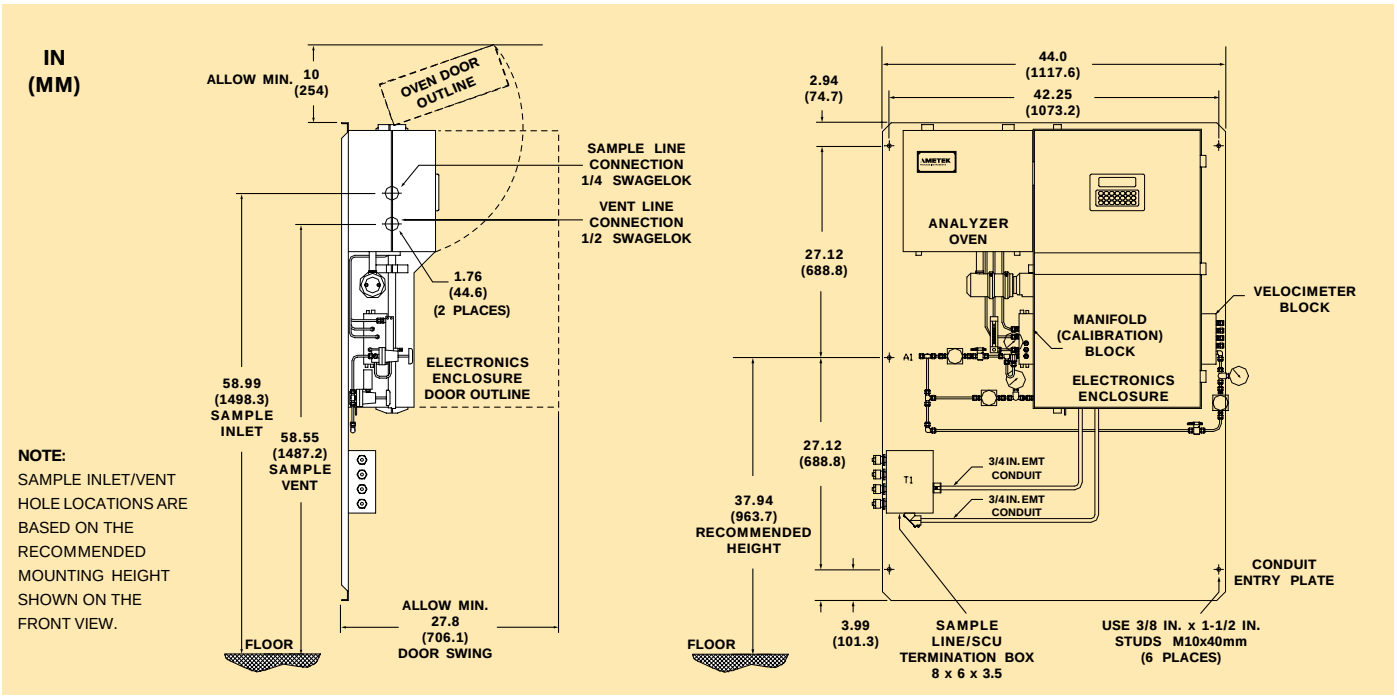
Weight: approximately 160 lbs. (72 kg)

Approvals and Certifications:

NEC/CEC Class I, Division 2, Groups C & D
CENELEC EEx pd IIB T3
GOST 1ExpdIIBT3 (certification pending)
Complies with all relevant European Directives
GOST Pattern Approval

Optional O_2: Integral zirconium oxide

** Temperature drift is approximately 1 ppm/°C for the species listed. To achieve maximum accuracy and stability, the analyzer should be installed in a temperature-controlled environment or be zeroed more frequently.*



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

AMETEK®
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