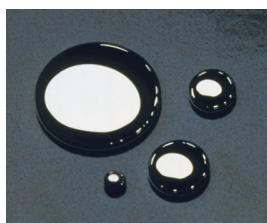


Complete, integrated mercury
emissions monitoring solution

Product Specifications

Thermo Scientific Mercury Freedom System



Key Features

- Meets U.S. EPA 40 CFR Part 75 requirements
- Complete integrated solution comprised of an analyzer, calibrator, probe controller and probe/converter
- iSeries platform advantages provide ease of use & simple maintenance
- Reduced operating costs
- Fits a standard EIA rack

The Thermo Scientific Mercury Freedom System is a complete, integrated solution that includes a probe and internal converter at the stack, plus control, analysis and calibration modules. Data outputs are compatible with existing plant control and data systems. The simple design results in maximum ease of use, lower installation and operating costs, high reliability, easy maintenance and smaller space requirements.

The Mercury Freedom System offers an easy to use, highly reliable interface including a fast, intuitive navigation and simple, menu-driven programming. All iSeries components are easily accessible for maintenance or quick change-out.

Model 80i Mercury Analyzer

- Advanced cold vapor atomic fluorescence analysis
- Detection limits down to 1 ng/m³ allow high sample dilution (100:1) reducing moisture and heat requirements.

Model 81i Mercury Calibrator

- Vapor generator performs standard calibration upstream of the inertial filter with a range of 1 µg/m³ to 50 µg/m³
- Peltier cooler vapor pressure control and mass flow control regulate mercury output for maximum accuracy

Model 82i Probe Controller

- Controller connects by an umbilical to the stack probe and mercury converter
- Automates key system functions as well as confirming auto dilution

Model 83i Probe/Converter

- Consists of a dilution probe and proprietary dry converter
- Specifically designed to monitor mercury emissions from environments with high dust, temperature and moisture
- Automated blow-back clears the filter for trouble-free continuous operation

Product Specifications

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific air quality products.

Thermo Scientific Mercury Freedom System

Available speciation	Elemental, ionic and total mercury
Measurement range	0-600 $\mu\text{g}/\text{m}^3$
Power requirements	
<i>Model 80i, Model 81i and sample pump</i>	120 VAC or 220 VAC, 15 Amps
<i>Model 82i</i>	220 VAC, 10 Amps
System operating temperature	20° - 30°C
Instrument air	6 CFM @ 90 PSIG (contaminant free)
Estimated heat dissipation	1200 Watts
System Options	
<i>Dilution air</i>	Zero air or nitrogen generator
<i>Mercuric</i>	Optional
Sample line options	
<i>Heater voltage</i>	220 VAC, 30 Amps per 200 feet
<i>Custom length</i>	Up to 1000 feet
Probe options	
<i>Mantle assembly</i>	Hastelloy of Teflon-coated or Silco steel coated, 36" or 60"
<i>Intel stinger</i>	Hastelloy of Teflon-coated, standard (72") or custom lengths
<i>Automatic blow-back frequency</i>	1 minute to 99 days

Additional Information

Less space in the shelter - The simple design of the Mercury Freedom System means less space is needed than with wet conversion systems which require the installation of water lines and room for maintenance-intensive peristaltic pumps and no argon carrier gas is required.

Lower operating costs - To avoid extra components and the potential costs for the disposal of mercury & caustic contaminated waste water, the Mercury Freedom System features a unique direct measurement, atomic fluorescence design eliminating the need for expensive gold amalgamation. In addition, commonality of components with other *iSeries* instruments means lower spare parts inventory costs.

High reliability - With fewer major components and a simplistic design, there is less to go wrong than in more complex alternative systems.

High sensitivity - The standard system offers an MDL of 0.04 $\mu\text{g}/\text{m}^3$. For low emitters with total stack Hg below 1.0 $\mu\text{g}/\text{m}^3$ can order an optional nitrogen generator which reduces the system MDL to 0.008 $\mu\text{g}/\text{m}^3$, resulting in a 5x increase in sensitivity.

Ease of maintenance - The Mercury Freedom System is built on the *iSeries* instrument platform which features optimized component layouts, easy-access, slide-apart housings and a similar design across the series with many common components. Remote diagnostics capabilities also help to reduce travel time when maintenance is needed.

DAS compatibility -Maximum flexibility in communication protocols enables easy interface with new or pre-existing Data Acquisition Systems (DAS). An Ethernet port, RS-232 connectors and 4-20 mA analog outputs are built right into the analyzer. Major DAS providers already have protocols for interfacing with *iSeries* instruments.

Integration services - A step-by-step integration process leads from proposal through drawings, checklist, factory acceptance, training, installation and startup.

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This product is manufactured in a plant whose quality management system is ISO 9001 certified.

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