

Thermo Scientific Mercury Freedom System

Complete, integrated mercury emissions monitoring solution

The Thermo Scientific™ Mercury Freedom System offers high measurement sensitivity, fast response times and robust operation in harsh environments.

- Meets U.S. EPA requirements for continuous mercury monitoring
- Complete integrated solution comprised of an analyzer, calibrator, probe controller, permeation source and probe/converter
- iSeries platform advantages provide ease of use and simplified maintenance
- Reduced operating costs



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Complete Integrated Solution

The Thermo Scientific Mercury Freedom System is a complete, integrated solution that includes a probe and internal converter at the stack, plus control, analysis, calibration and permeation source modules.

The simple design results in maximum ease of use, lower installation and operating costs, high reliability, easy maintenance and smaller space requirements.

iSeries Platform Advantage

The Mercury Freedom System offers an easy to use, highly reliable interface and 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 Calibrators

- Choose from three calibrators to meet unique regulatory needs
- Vapor generator performs standard calibration upstream of the inertial filter

- 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

Model 84i Permeation Source

- Automated and manual trigger audits available
- Approved method for meeting interim protocol QC requirements

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Available speciation	Elemental, ionic and total mercury
Measurement range	0-600µg/m ³
Power requirements	Model 80i Analyzer, Model 81i Calibrator and sample pump 120 VAC or 220 VAC, 15 Amps; Model 82i Probe Controller 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	
Dilution air	Zero air or nitrogen generator
Mercuric Chloride Generator	Optional
Sample line options	
Heater voltage	220 VAC, 30 Amps per 200 feet
Custom length	Up to 1000 feet
Probe options	
Mantle assembly	Hastelloy of Teflon-coated or Silco steel coated, 36" or 60"
Inlet stinger	Hastelloy of Teflon-coated, standard (72") or custom lengths
Automatic blow-back frequency	1 minute to 99 days

Simple Design

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. 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.

Low Cost of Ownership

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 & Sensitivity

With fewer major components and a simplistic design, there is less to go wrong than in more complex alternative systems. The standard system offers an MDL of 0.04 µg/m³. For low emitters with total stack Hg below 1.0 µg/m³ can order an optional nitrogen generator which reduces the system MDL to 0.008 µg/m³, resulting in a 5x increase in sensitivity.

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.

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.

For more information, visit our website at thermoscientific.com/mercury

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

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