

## **Air Sampler, Partisol® 2000-FRM**

Single-filter sampler for the collection of airborne particulate matter



### Key Features

- US EPA PM-2.5, PM-10 and PM-Coarse Reference Sampler
- Choice of sample inlets for PM-1, PM-2.5, PM-10 and TSP
- ActiVol™ flow control and long-life pump
- Quick flow audit/calibration with software support for Streamline FTS
- Convenient in-field data retrieval using RPCOMM software

The Thermo Scientific Air Sampler, Partisol 2000-FRM is based upon the innovative original Partisol Sampler that Thermo Fisher Scientific introduced in 1993. The US EPA incorporated in its PM-2.5 performance and design requirements many of the features first introduced in the original Partisol device.

Users routinely implement the Partisol family platform in a wide variety of ambient conditions. These range from hot and dry areas such as southern California, to hot and moist areas such as Southeast Asia, as well as in extremely cold climates.

Reliable and quiet operation, low maintenance requirements and ease of filter exchange have made this sampling platform attractive to end-users worldwide.

The Partisol-FRM Sampler contains a filter exchange mechanism that allows for a "single-action" filter change by pulling the mechanism's handle forward. Removal of the US EPA designed PM-2.5 WINS impactor is also quick and convenient.

In systems configured for the sampling of PM-10 or TSP, the WINS impactor is replaced with a straight-through adapter in conjunction with an appropriate size-selective inlet. A Sharp Cut Cyclone (SCC) or USEPA approved Very Sharp Cut Cyclone (VSCC) can also be used in place of the WINS impactor for measuring PM-1 or PM-2.5 respectively.

RPCOMM, a Windows®-based program for personal and palmtop computers, provides a convenient means of downloading and reviewing data in the field. The PC version also supports data transfer by modem.

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.

## Product Specifications

### Regulatory Designations

- RFPS-0509-175: US EPA PM-Coarse Reference Sampler
- RFPS-0498-117: US EPA PM-2.5 Reference Sampler
- RFPS-1298-126: US EPA PM-10 Reference Sampler
- Candidate equivalent manual sampling method for European PM-10 Norm EN12341.

### Safety/Electrical Designations

- CE: EN61326:1997 (Emissions and Immunity), EN61010-1:1995 (Safety)
- ETL: UL- and CSA-equivalent approval

### System Configuration

The Partisol-FRM PM-2.5 Sampler is a single-filter, stand-alone unit for the manual sampling of PM-2.5 in ambient air. For PM-2.5 US EPA reference method sampling, the system is equipped with the US EPA designed PM-2.5 inlet system, which includes the PM-2.5 WINS impactor or the Very Sharp Cut Cyclone (VSCC). For PM-10 US EPA reference method sampling, the system is equipped with the classical Thermo PM-10 inlet. High-quality, molded filter cassettes house 47 mm filters, and are installed in a convenient filter cassette carrier.

### User Interface

Embedded, field-proven microprocessor system provides the platform for the sampler's operating program and a large internal data storage buffer. Menu-driven software and soft function keys, password protection.

### Sampling Program

The user specifies the starting and ending date and time of sample collection. The software stores user default settings to simplify the definition of sampling programs. Soft function keys provide a number of step-saving selections.

### Sample Flow Control and Reporting

- Air flow through the sampler is provided by a proven low maintenance vacuum pump.
- Activo<sup>TM</sup> flow control system uses a mass flow sensor and the measured ambient temperature and pressure to maintain a constant volumetric flow rate. The US EPA specified flow rate is 16.7 volumetric l/min (1 m<sup>3</sup>/h); the unit can also control at rates ranging from 5 to 18 volumetric l/min.
- The sampler displays the current volumetric flow rate (l/min). For each filter exposed, the unit stores the total volume in volumetric m<sup>3</sup>.

### Temperature/Pressure Measurements and Control

- The ambient temperature measured continuously by an externally-mounted temperature sensor housed in a solar radiation shield.
- The temperature of the collection filter is measured continuously within one cm of the center of the 47 mm collection filter.
- The ambient pressure is measured continuously by a sensor built into the sampler.
- The current and averaged values of the temperature and pressure may be viewed on the instrument display.
- The filter compartment is ventilated continuously to ensure that the filter temperature is within 5 °C of the ambient temperature.

### Interval Data Storage

- One record of interval data is stored every five minutes, and includes the time and date, and five-minute averages of the ambient and filter temperature, ambient pressure, and sample flow rate.
- Interval data is recorded continuously, even when the unit is not sampling.
- These records may be viewed on the display screen or downloaded directly into a PC through the RS232 connector.
- The device has a capacity of 14 days of interval data.

### Filter Data Storage

- One record of filter data is stored for each filter exposed in the Partisol-FRM Sampler. Each record includes a large amount of filter-related information, and exceeds USEPA requirements. This includes (but is not limited to) the filter-based minimums, averages, and maximums for temperatures and pressure. Flow is recorded as average flow rate, total volume and the flow's percentage coefficient of variation. It also includes the largest temperature difference (with time and date stamp) between the ambient and filter temperatures; status condition(s); two 32-character filter ID's; and a listing of up to 10 power interruptions.
- These records may be viewed on the display screen or downloaded directly into a PC through the RS232 port.
- The device has a capacity of 25 records of filter data.

### Data Output

- Display screen, analog output (0-5 Vdc) of status and flow, RS232.

### Operating Range, Dimensions and Power Requirements

- Temperature: -40 to +50 °C. Conditions below -25 °C require optional insulating jacket.
- Dimensions & Weight: 16" (41 cm) W x 24" (61 cm) H x 13" (33 cm) D, inlet system adds 31" to height; 61 lb (28 kg).
- Stand: 42" (108 cm) W x 32" (82 cm) H x 18" (46 cm) D.
- Power Requirements: 2.2 A @ 120 VAC, 1.1 A @ 240 VAC

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