

The Thermo Scientific TEOM 1405-D is a continuous dichotomous ambient air monitor. The one-piece system provides three measurements: PM-10, PM-2.5 and PM-Coarse all in one instrument.

Thermo Scientific TEOM® 1405-D



Key Features/Benefits

- Real time measurement of three particle sizes.
- Touch screen user interface
- Embedded FTP server, ethernet, USB, RS-232 and RS485 communications
- Activol™ flow control

Quality

The Thermo Scientific TEOM 1405-D Monitor simultaneously measures PM-10, PM-2.5 and PM-Coarse (PM10-2.5) mass concentration with the same short term precision as the 1400ab. The 1405-D system is composed of two TEOM mass sensors housed in a single cabinet, network-ready configuration that includes the control system with touch screen user interface.

Technology

The system is designed to provide representative short and long term reading of the ambient PM concentration. The system's default data output consists of a 10 minute average mass concentration which can be changed to 30 minutes or up to 24 hours. The three simultaneous measurements are accomplished by the

use of one PM-10 inlet combined with a virtual impactor that splits the flow. The touch screen outputs all three measurements for easy viewing while the micro-processor based instrument accommodates advanced internal data storage.

Total Certainty

The 1405-D provides a self-referencing, NIST-traceable true mass measurement using Thermo Scientific's proven high reliability TEOM technology. The system differentiates itself from other PM measurement methods by utilizing a direct mass measurement that is not subject to measurement uncertainties found in surrogate techniques such as beta attenuation, light scattering and pressure drop.

TEOM 1405-D Ambient Particulate Monitor

Safety/Electrical Designations

Designed to meet:

- CE: EN 61326:1997 + A1:1998 + A2:2001 + A3:2003, EN:61010-1
- UL: 61010-1:2004
- CSA: C22.2 No. 61010-1:2004
- FCC: Part 15 Subpart B, Class B

Standard System Configuration

- Menu-driven software for user interaction via 1/4 VGA display with touch screen
- Connecting and Interface Cables, and Vacuum Pump
- Consumables for average first year's operation (ambient)
- RPCOMM and ePort Software for Local or Remote Communication

Instrument Performance (3 l/min, 1s, stable conditions)

- Measurement Range: 0 to 1,000,000 $\mu\text{g}/\text{m}^3$ (1 g/m^3)
- Resolution: 0.1 $\mu\text{g}/\text{m}^3$
- Precision: $\pm 2.0 \mu\text{g}/\text{m}^3$ (1-hour ave), $\pm 1.0 \mu\text{g}/\text{m}^3$ (24-hour ave)
- Accuracy for Mass Measurement: $\pm 0.75\%$

Data Averaging and Output

- Real-time Mass Conc Average: 10min default, 10 to 3600 sec
- Long-Term Averaging: 30 min, 1, 8 and 24hr
- Data Output Rate: Every 2 seconds

Operating Range

- The temperature of the sampled air may vary between -40 and 60 °C. The TEOM Sensor and Control Units must be weather protected within the range of 8 to 25 °C. An optional Complete Outdoor Enclosure provides complete weather protection.

Sample Flow

- Activol flow control system uses the mass flow sensors and the measured ambient temperature and pressure to maintain constant volumetric flow rates.
- Main Flow Rate: Fine PM filter: 3.0 l/min; Coarse PM filter: 1.67 l/min
- Bypass Flow Rate: 12.0 l/min

Data Storage

- Internal data logging of user-specified variables; capacity of 500,000 records.

Filter Media

- Sample Filter: Pallflex TX40, 13 mm effective diameter

Data Output and Input

- ePort software to view and change system operation from PC
- Touch screen user interface
- Ethernet with embedded FTP server, USB, RS232, RS485
- 8 User-Defined Analog Outputs (0-1 or 0-5 VDC)
- 2 User-Defined Contact Closure Alarm Circuits
- 4 Averaged Analog Inputs (0-5 VDC) with user-defined conversion to engineering units

Power Requirements

- Model 1405: 100-240 VAC, 440 VA, 47-63 Hz
- Pump: 120 VAC/60 Hz: 4.25 A; 240 VAC/50 Hz: 2.25 A

Physical Dimensions

- W: 17" (43.2 cm) x D: 19" (48.3 cm) x H: 29.5" (75 cm)
- Weight: 40lbs (18 kg)

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