Sentinel PRO 710 environmental mass spectrometer

Precise real time gas analyzer for toxic volatile organic compounds

The Thermo Scientific™ Sentinel PRO Environmental Mass Spectrometer is a highly reliable and versatile gas analyzer ideal for reporting the presence of toxic VOCs from fugitive emissions in industrial settings to ensure worker safety.

- Touchscreen User Interface for ease of use and advanced diagnostic functions
- Capable of monitoring up to 127 sample points at ~10s per point
- Membrane inlet for enhanced sensitivity to VOCs
- Scanning magnetic sector technology

Fugitive emissions of toxic VOCs

Wherever there is potential danger for fugitive emissions of toxic organic vapors from a chemical production unit, regulating authorities often require plants to keep records of ambient vapor concentrations to protect workers from exposure. Various forms of capture include evacuated vessels, organic vapor monitors, or purge and trap devices, all of which require samples to be sent for analysis. Alternatively, electrochemical sensors or open path FT-IR spectroscopy can provide more immediate results. However, none of these technologies are capable of providing the spatial and temporal resolution required to qualify as actionable information.

Analytical platform

The primary feature of the Sentinel PRO mass spectrometer is the magnetic sector analyzer. This field-proven technology has demonstrated the strongest performance for industrial on-line gas analysis. Magnetic sector technology offers precision, accuracy, long intervals between calibrations. The new touchscreen interface further enhances usability, providing intuitive in-person operation, simplified maintenance, and real-time data viewing. Multi-role user permissions ensure security and control allowing operators to customize settings based on their specific needs.

Comprehensive data collection

With speed and precision, the Sentinel PRO analyzer monitors all the critical areas for short-term exposure levels of toxic VOCs, and also provides accurate and time-weighted average exposure data. With a high number of sample points available, many can be located close to potential leak points such as valve stems, etc., enabling leak detection and correction before any toxic hazard is created.

Membrane inlet mass spectrometry

The analyzer is fitted with a membrane inlet to reduce the pressure of the sample air from atmospheric to the working pressure of the enclosed ion source. This allows a method of sample introduction that greatly enhances the system's sensitivity to VOCs. Since the membrane is more permeable to VOCs than to major air gases, it provides enrichment by several orders of magnitude, enabling detection as low as 5 ppb (species dependent) permits easy membrane replacement during annual routine maintenance to minimize downtime and increase productivity.

Specifications

Ion source	Enclosed electron impact with dual filaments, temperature controlled (settable over range 120-200°C, to ± 0.1°C)
Analyzer type	Scanning, laminated electromagnet, 6 cm radius, 80° deflection
Mass range	1-150 amu at 1000V ion energy; 1-300 amu at 500V ion energy
Resolution	Switchable between two collector resolving slits, resolving powers of 60 (1mm) and 20 (4 mm) are standard. Optionally 140/85 (0.36 mm/0.69 mm) or 100/45 (0.56 mm/1.45 mm) or 140/45 (0.36 mm/1.45 mm) may be fitted
Mass scale stability	Measured at mass 28 < 0.013 amu over 24 hours
Peak shape	At 60 resolution, the ratio of the width of the flat-top (99% height width) to the base peak width (5% height width) 0.5
Detector	Faraday and optional Faraday/SEM dual detector
Inlet	Temperature controlled micro-capillary with Molecular leak and bypass (standard configuration)
Vacuum system	Turbo-molecular pump and external rotary pump
Sample streams	Up to 127
Analysis time	0.3-1.0 sec/gas component
Ambient temperature	Installation at 12-40°C
Lower Detection Double SEM	5 ppb typical (application dependent)
Lower detection faraday	10 ppm typical (may vary with gas matrix)
Precision	All readings within 0.5 ppm of calibrated value (24 hours)
Linearity	<1% relative over a decade change in concentration (typical, application dependent)
Dynamic range	1000 ppm (theoretical, application dependent)
Stability	Better than 10% relative over one month
Power requirements	115/230 VAC, consumption ~2000 VA (configuration dependent)
Serial connections	RS232/422/485
Communications protocols	Modbus (RTU or ASCII master or Slave , Modbus Ethernet TCP/IP Profibus DP, OPC UA (consult factory for all communications options)
Physical dimensions	65 cm (26") L × 150cm (59") H × 70 cm (28in) W 300 kg (660lbs) configuration dependent
Local Control	Front Panel access for calibration, analysis, and data display
User Interface	Touchscreen color graphical user interface enables access to analyzer functions
Area classification options	General Purpose; ATEX/IECEx/UKEx pxb (Zone 1): II 2 G Ex pxb IIC T3 Gb or II 2 G Ex op pr pxb IIC T3 Gb

USA
27 Forge Parkway
Franklin, MA 02038
Ph: (713) 272-0404
Fax: (713) 272-2273
orders.process.us@thermofisher.com

India
C/327, TTC Industrial Area
MIDC Pawane
New Mumbai 400 705, India
Ph: +91 22 4157 8800
india@thermofisher.com

China
8/F Bldg C of Global Trade Ctr, No.36
North 3rd Ring Road
Dong Cheng District
Beijing, China 100013
Ph: +86 10 84193588
info.eid.china@thermofisher.com

Europe
Ion Path, Road Three
Winsford, Cheshire
CW73GA UK
Ph: +44 1606 548700
Fax: +44 1606 548711
sales.epm.uk@thermofisher.com

Find out more at **thermofisher.com/sentinel**