

225-MS Ion Trap Mass Spectrometer

THE FIRST TRUE BENCHTOP GC/MS SYSTEM



The Varian 225-MS is the first fully integrated MS system, including a compact, built-in vacuum module. The 225-MS along with the Varian 450-GC provides the highest level of flexibility, performance and convenience in an easy-to-use system.

225-MS Specifications

Mass Analysis

- Mass range: 10 to 650 Da; scan range is time programmable throughout the run
- Resolution: Unit mass, measured as 10% valley, over the entire range
- Mass calibration stability: RF-only field is stable for weeks to several months at constant analyzer temperature and helium flow
- Scan rate: Fixed at 5600 Da/s to maximize spectral acquisition
- Selected Ion Storage (SIS): Stores up to five ranges of ions; ejects matrix, column bleed
- Linear dynamic range: 10^3 to 10^4 (compound dependent based upon analytical methods)
- Filament assembly: Dual filament
- Transfer line temperature: Independent control; maximum 350 °C
- Manifold temperature: Independent control; maximum 120 °C
- Analyzer temperature: Independent control; anodized block; maximum 250 °C
- Electrode surface: Chrome (standard)
- Power fail protection: Solenoid closes septum purge line and supplies supplemental helium flow through the column to vent MS

Integrated Pumping System (IPS)

- Single replaceable module that includes a MacroTorr turbomolecular pump, foreline pump and controller.
- IPS has a 77 L/s capacity, resulting in a 10^{-5} Torr (1.3 mPa) vacuum pressure in the manifold.

Optional MS Features

- MS/MS or MS^n : For SRM (single reaction monitoring) or MRM (multiple reaction monitoring) modes; CID using frequency modulated resonant or non-resonant energy
- Positive Chemical Ionization (PCI): Clean, low pressure PCI compatible with gas or liquid reagents; kit for single liquid reagent included
- SilChrom™ electrodes: Silica-coated electrodes for maximum chromatographic inertness
- Ion gauge: Bayer-Alpert gauge tube with burnout resistant, thoria-coated iridium (ThO-Ir) filaments
- Spectral databases (libraries): National Institute of Standards and Technology (NIST), Wiley and Pfleger Maurer Weber (PMW) libraries are available

NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to www.agilent.com/chem.



Agilent Technologies

225-MS Ion Trap Mass Spectrometer

Optional MS Features (continued)

- Selection of custom software:
 - EnviroPro™ for general and EPA specific report requirements
 - ToxPro™ Plus includes three-ion ratio reports for toxicology applications
 - MultiCompound for general extended reporting
 - Quick Access™ optimizes workflow for multi-user, high-throughput laboratories
 - Access control and audit trail software for 21 CFR Part 11 compliance

450-GC Features

Column Oven

- Dimensions: 28 cm (w) x 28 cm (h) x 20 cm (d) (11 in. x 11 in. x 8 in.)
- Temperature range: Ambient +4 °C to 450 °C; -100 °C to 450 °C with liquid N₂; -60 °C to 450 °C with liquid CO₂
- Temperature-programmed ramps: 24 ramps with 25 isothermal holds
- Maximum temperature ramp rate: 120 °C/min for all voltages
- Cool-down rate: 400 °C to 50 °C in 4.5 min

Injectors

1177 Split/Splitless Injector (S/SL)

- Maximum temperature: 450 °C isothermal

1079 Programmable Temperature Vaporizing Injector (PTV)

- Temperature range: -100 °C to 450 °C with liquid N₂; -60 °C to 450 °C with liquid CO₂
- Maximum temperature ramp rate: 200 °C/min
- Temperature ramps: 24

Injector EFC

- Pressure: 0.1 % Full Scale
- Flow: 0.5 % Full Scale and 3% Measured Value
- Resolution: 0.1 psi or 0.1 mL/min

Optional GC features

- Injectors: Up to three (one required); 1177 Split/Splitless or 1079 PTV
- Detectors: Up to three; full range of Varian detectors including the FID, ECD, PFPD, TSD and TCD; maximum of two PFPDs
- ChromatoProbe™ device: For solids, large volume liquids or slurries; requires a 1079 PTV Injector
- QuickSwitch™ Valve: Automated switching between different columns
- Valves: Custom plumbed valves for a wide range of applications

GC/MS Utilities and Environment

Power Requirements MS

- 90-132 V ac, 60 Hz ± 3 Hz, 12 A, 1.5 kW
- 180-264 V ac, 50 Hz ± 3 Hz, 6 A, 1.5 kW

Power Requirements GC

- 101 V ac ± 10%, 50 or 60 Hz ± 2%, 25 A, 2.5 kW
- 120 V ac ± 10%, 60 Hz ± 2%, 20 A, 2.4 kW
- 230 V ac ± 10%, 50 Hz ± 2%, 10 A, 2.3 kW

Environmental Requirements

- Humidity: 40% to 80% relative humidity (without condensation)
- Temperature: 18 °C to 27 °C

Dimensions

225-MS — including foreline pump

- 24 cm (w) x 45 cm (h) x 68 cm (d) (9 in. x 18 in. x 27 in.)
- 34 kg (74 lb)

450-GC

- 66 cm (w) x 53 cm (h) x 56 cm (d) (26 in. x 21 in. x 22 in.)
- 43 kg (95 lb)

Performance Specifications with standard chrome electrodes*

Mode	Test Standard	S/N
El full scan	1 pg octafluoronaphthalene	400:1
Cl full scan	5 pg benzophenone	20:1

* 1 pg octafluoronaphthalene (OFN) on SilChrom electrodes in full scan will generate a S/N of 200:1

Varian, Inc.
www.varianinc.com
North America: 800.926.3000, 925.939.2400
Europe The Netherlands: 31.118.67.1000
Asia Pacific Australia: 613.9560.7133
Latin America Brazil: 55.11.3238.0400

Other sales offices and dealers throughout the world—
check our Web site.