

220-MS Ion Trap Mass Spectrometer



A powerful, flexible GC/MS for any application

The Varian 220-MS along with the Varian 450-GC provides the highest level of flexibility and performance in an easy-to-use system.

220-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

- Turbomolecular pump: Varian V-81 pump, air cooled, and thermostatically protected; 81 L/s capacity; pumping at 81 L/s supplies a vacuum of approximately 10^{-5} Torr (1.3 mPa) in the manifold

Foreline Pump

- DS-42, dual stage, rotary vane
- Voltage: 120, 230 V
- Pumping speed greater than 38 L/min (2.3 m³/hr)
- Weight: 11 kg (24 lb)

Pump Options

- Oil mist eliminator

Optional MS Features

- MS/MS or MSⁿ: 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 burn-out resistant, thorium-coated iridium (ThO-Ir) filaments
- Spectral databases: National Institute of Standards and Technology (NIST), Wiley and Pfleger Maurer Weber (PMW) libraries are available



VARIAN

220-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

Power Requirements

- 100-130 Vac, 60 Hz ± 3 Hz, 12 A, 1.5 kW
- 200-260 Vac, 50 Hz ± 3 Hz, 6 A, 1.5 kW

Environmental Requirements

- Temperature: 15 °C to 30 °C
- Humidity: 20% to 80% relative humidity (without condensation)

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; -99 °C to 450 °C with liquid N₂; -65 °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: -99 °C to 450 °C with liquid N₂; -65 °C to 450 °C with liquid CO₂
- Maximum temperature ramp rate: 200 °C/min
- Temperature ramps: Four

Injector EFC

- Accuracy: ±0.1 psi, 5% full scale flow
- 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

Utilities and Environment

Power Requirements for MS

- 90-130 Vac, 60 Hz ± 3 Hz, 12 A, 1440 VA
- 180-260 Vac, 50 Hz ± 3 Hz, 6 A, 1440 VA

Environmental Requirements

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

Dimensions

220-MS

- 24 cm (w) x 45 cm (h) x 62 cm (d) (9 in. x 18 in. x 24 in.)
- MS: 23 kg (50.7 lb), DS-42: 11 kg (24.3 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

Mode	Test Standard	S/N
El full scan	1 pg octafluoronaphthalene	50:1
Cl full scan	5 pg benzophenone	20:1

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



VARIAN

GC • LC • MS • GPC/SEC • AA • ICP • ICP-MS • UV-Vis-NIR • FT-IR • Fluorescence • Dissolution • NMR • MRI • FTMS • Consumables • Data Systems

Varian, Inc. reserves the right to revise these specifications without notification.

SilChrom, EnviroPro, ToxPro, Quick Access, ChromatoProbe, QuickSwitch, Varian and the Varian logo are registered or unregistered trademarks in the U.S. and other countries. © 2008 Varian, Inc.

SI-1397 04/08 Printed in U.S.A.

210-MS Ion Trap Mass Spectrometer



A capable and reliable GC/MS for routine application

The Varian 210-MS along with the Varian 431-GC provides great performance and reliability for routine applications in a small footprint. The system's simplicity, robustness, and affordability make it an excellent choice for high-throughput laboratories.

210-MS Specifications

- Mass range: 10 to 650 Da; scan range is time programmable throughout the run
- Selected Ion Storage (SIS): Stores up to five ranges of ions; ejects matrix, column bleed
- Scan rate: Fixed at 5600 Da/sec (s) to maximize spectral acquisition
- 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
- 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
- Turbomolecular pump: Varian V-81 pump, air cooled, and thermostatically protected; 81 L/s capacity; pumping at 81 L/s supplies a vacuum of approximately 10–5 Torr (1.3 mPa) in the manifold

Foreline Pump

- DS-42, dual stage, rotary vane
- Voltage: 120, 230 V
- Pumping speed greater than 38 L/min (2.3 m³/hr)
- Weight: 11 kg (24 lb)



VARIAN

210-MS Ion Trap Mass Spectrometer

Pump Options

- Oil mist eliminator

Optional MS Features

- SilChrom™ electrodes: Silica-coated electrodes for maximum chromatographic inertness
- Ion gauge: Bayer-Alpert gauge tube with burn-out resistant, thoria-coated iridium (ThO-Ir) filaments
- Spectral databases: National Institute of Standards and Technology (NIST), Wiley and Pfleger Maurer Weber (PMW) libraries are available
- 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

Power Requirements

- 100-130 Vac, 60 Hz ± 3 Hz, 12 A, 1.5 kW
- 200-260 Vac, 50 Hz ± 3 Hz, 6 A, 1.5 kW

Environmental Requirements

- Temperature: 15 °C to 30 °C
- Humidity: 20% to 80% relative humidity (without condensation)

431-GC Features

Column Oven

- Dimensions: 28 cm (h) x 23 cm (w) x 11 cm (d) (11 in. x 9 in. x 4 in.)
- Temperature range: 450 °C
- Temperature-programmed ramps: Seven ramps with eight isothermal holds
- Maximum temperature ramp rate: 100 °C/min for all voltages
- Cool-down rate: 450 °C to 50 °C in 5.2 min

Injectors

1177 Split/Splitless Injector (S/SL)

- Temperature range: 50 °C to 450 °C isothermal

Injector EFC

- Accuracy: ±0.1 psi, 5% full scale flow
- Resolution: 0.1 psi or 0.1 mL/min

Utilities and Environment

Power Requirements

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

Environmental Requirements

- Humidity: 5% to 95% relative humidity (without condensation)
- Temperature: 10 °C to 40 °C operating

Performance Specifications

Mode	Test Standard	S/N
El	1 pg octafluoronaphthalene	50:1



VARIAN

GC • LC • MS • GPC/SEC • AA • ICP • ICP-MS • UV-Vis-NIR • FT-IR • Fluorescence • Dissolution • NMR • MRI • FTMS • Consumables • Data Systems

Varian, Inc. reserves the right to revise these specifications without notification.

SilChrom, EnviroPro, ToxPro, Quick Access, Varian and the Varian logo are registered or unregistered trademarks in the U.S. and other countries. 2008 Varian, Inc.

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