



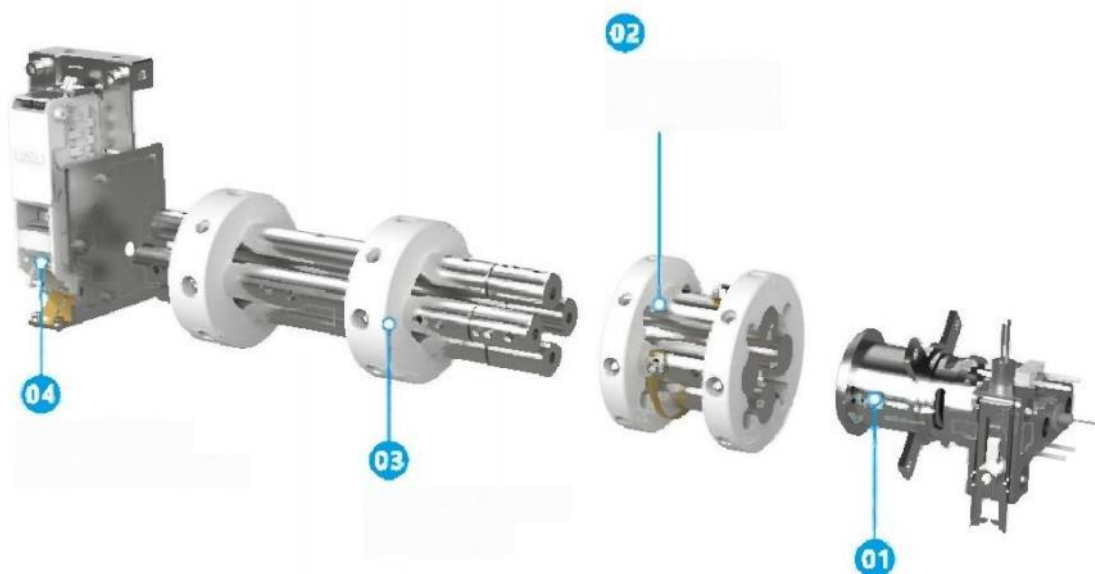
产品手册

PRODUCTS SELECTION

XPOMATPOH 8000 MSD

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Single Quadrupole Gas
Chromatography-Mass Spectrometry (GC-MS)



01 High-Temperature Inert Ceramic Ion Source

Efficient ionization, reduced pollution, equipped with two long-lasting filaments made of special materials, two times of use time. All lenses are precisely temperature-controlled, making disassembly and cleaning of the ion source convenient.

02 Independent Pre-Quadrupole Guide Rod

By applying RF voltage and incorporating pre-quadrupole technology, it effectively eliminates neutral fragment interference and reduces noise. At the same time, it optimizes the transition electric field between the ion source and the quadrupole rod.

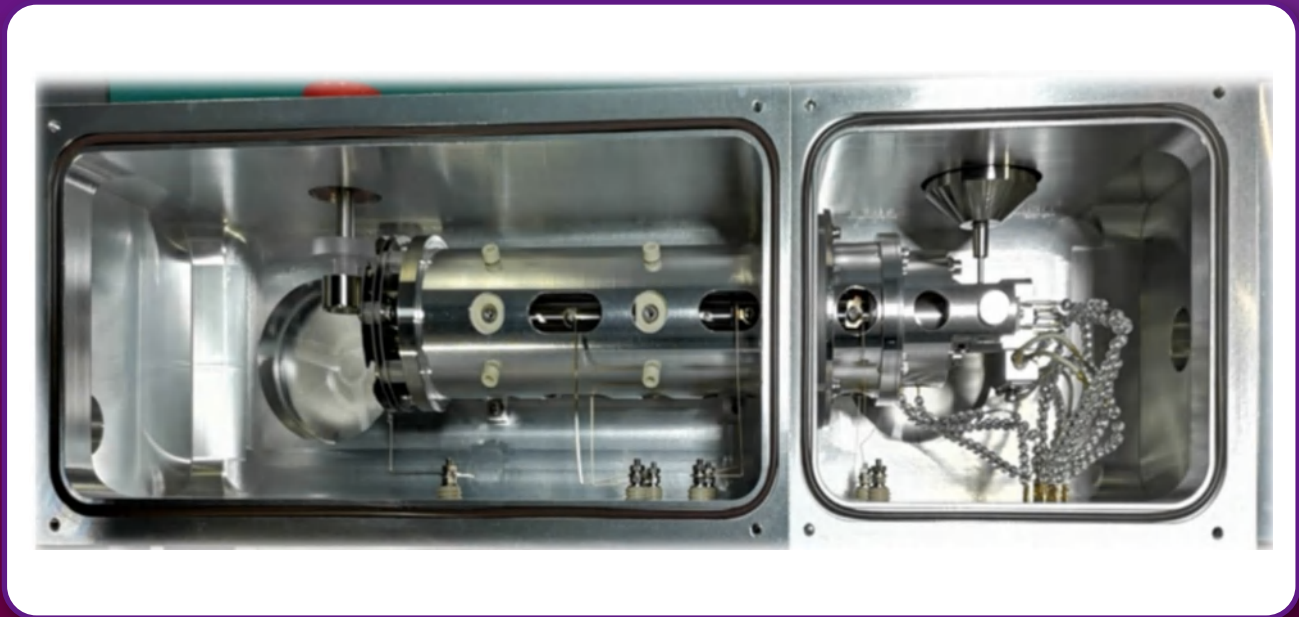
03 Fully Metallic Conjugated Quadrupole Rod

The cold rod design requires no heating and is maintenance-free for life. It utilizes the most advanced segmented design, equipped with a detachable pre-quadrupole that can automatically adjust DC voltage, eliminate edge field effects, and prevent ion spillover, thus achieving higher ion transmission efficiency.

04 Non-Continuous Discrete Electron Multiplier

With an exceptionally long service life, it is highly resistant to contamination and water.

Standard Configuration of Unique Ultra-Powerful and Efficient Dual Chamber High Vacuum System



High-performance dual chamber single quadrupole GC-MS system featuring a dual vacuum chamber structure with separate exhaust for ion source and quadrupole mass analyzer to achieve higher vacuum degrees. The ultra-powerful and efficient vacuum system boasts the following advantages:

A: Ensures a high vacuum degree in MS system, effectively reducing ion source contamination, and minimizing maintenance operations for the ion source.

B: Enables rapid instrument startup, allowing sample analysis within 30 minutes after power-on.

C: Supports a maximum column flow rate of 5 mL/min (with flagship versions supporting up to 10 mL/min), enabling the connection of wide-bore capillary columns and fulfilling high-throughput and high-expansion requirements for large-volume sample injection.

D: The electron multiplier operates in a high vacuum state, conducive to achieving ultra-high sensitivity detection. With direct gas chromatography injection, the detection limit for octafluoronaphthalene method is better than 10 fg.

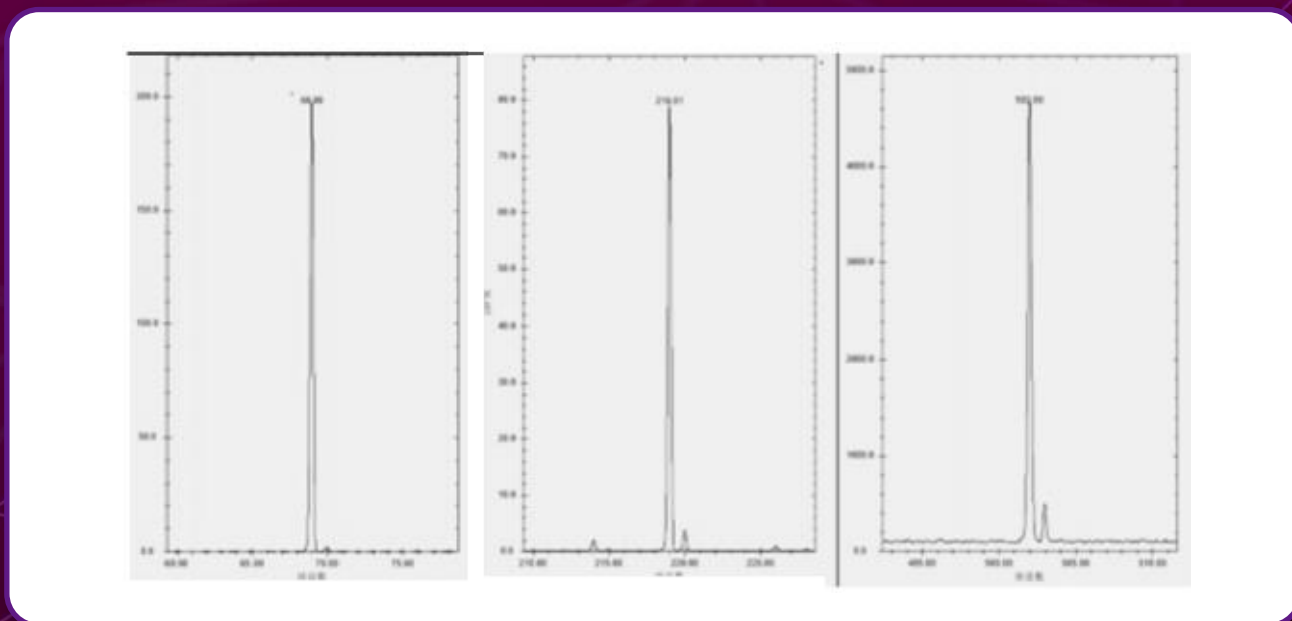
Performance Characteristic: Resolution

Ionic state FC43			
Ions	Half peak width	intensity	proportion[%]
69	0.25	198152	100.0
131			
219	0.24	79754	40.2
264			
414			
502	0.25	4629	2.3

Half peak width of characteristic ions of perfluorotributylamine

Ionic state FC43 isotope			
Ions	Half peak width	intensity	proportion[%]
69	70	720	1.2
219	220	1789	4.2
502	503	485	0.8

Isotope ratios m/z70, m/z220, m/z503



Perfluorotributylamine characteristic ions m/z69, m/z219, m/z502 and their isotopes

Technical Parameter

01 Operating Environment

- 1.1 Ambient temperature: 15-35 °C;
- 1.2 Relative humidity: ≤85%;
- 1.3 Applicable power supply: 220V (±10%), 50Hz (±2%);

01 Parameters of Single Quadrupole Mass Spectrometer

2.1 Main Performance Indicators

- 2.1.1 Sensitivity: 1 pg Octafluoronaphthalene (OFN) with a signal-to-noise ratio (S/N) of ≥1500:1; instrument detection limit (IDL) better than 10 fg OFN;
- 2.1.2 Mass Range: 4-1200 amu (able to observe the peak of m/z 4 in the helium spectrum and the peaks of m/z 1166 amu or m/z 1185 for trans-Perfluorotripropylamine);
- 2.1.3 Mass Stability: ±0.10 amu/24 hours (based on two tuning results within 24 hours, with ambient temperature fluctuations <2 °C);
- 2.1.4 Mass Accuracy: ±0.10 amu;
- 2.1.5 Maximum Scanning Speed: 20,000 amu/s, adjustable throughout the entire speed range;
- 2.1.6 Resolution: 1.0 amu;
- 2.1.7 Dynamic Range: 10⁶;
- 2.1.8 Peak Area Reproducibility: <3% RSD;
- 2.1.9 Scanning Modes: Full scan, selected ion monitoring, simultaneous full scan and selected ion monitoring, alternating scan;

2.2 Ion Source

- 2.2.1 Ion Source Type: Electron Impact (EI);
- 2.2.2 Ion Source Configuration: Inert ceramic ion source with dual filament software switching;
- 2.2.3 Filament Current: 0-300 μA;
- 2.2.4 Ionization Energy: 5-100 eV;
- 2.2.5 Ion Source Temperature: 50 °C-350 °C;
- 2.2.6 The ion source and quadrupole are located in separate chambers, allowing maintenance of the ion source and filament without exposing the quadrupole;
- 2.2.7 Equipped with a filament observation window for intuitive determination of the filament's operating status;
- 2.2.8 Interface Temperature: 50-350 °C;

2.3 Mass Analyzer

2.3.1 Mass Analyzer: Equipped with a high-precision all-metal quadrupole rod with a pre-quadrupole, ensuring mass stability without the need for temperature control of the quadrupole rod.

2.3.2 The pre-quadrupole is removable and washable, preventing contamination of the main quadrupole rod.

2.4 Detector

2.4.1 Long-lifetime 13-stage discrete dynode electron multiplier.

2.4.2 Equipped with a 10kV switching dynode and a lens system for removing neutral noise.

2.5 Vacuum System

2.5.1 Pumping speed of the backing pump: 4 m³/h.

2.5.2 Equipped with a high-performance turbo molecular pump with a pumping speed of 250 L/s.

2.5.3 Maximum allowable chromatographic column flow rate: 5 ml/min (helium).

03 Parameters of Gas Chromatograph

3.1 Oven

3.1.1 Temperature range: 5°C-450°C above room temperature;

3.1.2 Temperature control accuracy: ≤ 0.01 °C;

3.1.3 Programmed temperature rise: 30 stages and 31 platforms;

3.1.4 Heating rate: the maximum heating rate of the furnace is 120°C/min;

3.1.5 Cooling rate: When the room temperature is 20°C, the furnace cools from 450°C to 50°C in ≤ 6 min;

3.2 Injection Port

3.2.1 Split/Splitless capillary column injection port;

3.2.2 Maximum operating temperature: 450°C;

3.2.3 High-precision electronic pressure/flow control;

3.2.4 Pressure setting range: 0-100 psi, with a control accuracy of 0.001 psi;

3.2.5 The injection port features four modes: pulsed split, pulsed splitless, split, and splitless;

3.2.6 Column control modes: constant flow, constant pressure, programmed flow, programmed pressure, etc.;

3.2.7 Maximum split ratio ≥ 7500 ;

3.2.8 Total flow setting range: 0-1000 mL/min (helium);

04 Liquid Automatic Sampler

- 4.1 Equipped with a 24-position sample tray;
- 4.2 Adjustable sampling depth and injection depth;
- 4.3 Automatic syringe cleaning function before and after injection: automatic cleaning with solvents A and B;

05 Software Workstation

- 5.1 Full English integrated control for MS and GC, with manual/automatic tuning;
- 5.2 Synchronous scanning function allows obtaining both Scan and SIM data from a single injection, improving analysis efficiency; alternating scanning function enables alternating between Scan and SIM, expanding analytical capabilities;
- 5.3 The ability to set time intervals to turn off the filament and electron multiplier during operation to protect them from solvents or other easily saturated substances that peak in the middle;
- 5.4 The software can automatically select characteristic ions of target compounds based on full scan data, group them, automatically set ion dwell times, and save them to analysis methods without manual input;
- 5.5 Data format is deconvolution AMDIS readable, directly used for co-eluting peak analysis;
- 5.6 Chromatographic flow monitoring; automatic temperature reduction protection for the MS ion source and transmission line, and MS shutdown in case of chromatographic gas cutoff;
- 5.7 Real-time monitoring of molecular pump speed and current, with abnormal prompts and one-click automatic shutdown.
- 5.8 Selected ion monitoring (SIM) time grouping with 100 groups, each group can select up to 108 ions, with a minimum dwell time of 6ms.
- 5.9 Ability to set different electron multiplier voltage values at different time intervals.
- 5.10 Data analysis software with NIST spectral library search function and self-built library function, supporting self-built libraries.
- 5.11 Equipped with quantitative batch processing function and report editor;
- 5.12 Automatic completion of quantitative calculations and generation of quantitative reports after instrument acquisition.



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