Thermo Polaris Q GC/MS Ion Trap

Thermo PolarisQ GC/MS Benchtop Ion Trap Mass Spectrometer. Use the power of MS ion trap technology to target specific compounds in complex matrices. The Polaris Q offers Unparalleled sensitivity in full scan, plus the power of MS/MS, the PolarisQ provides dependable performance for routine application plus the added horsepower to go further enabling lower detection in complex matrices.

Stop Matrix Interference with the Power of MS*n*

The Finnigan Polaris*Q* external source ion trap mass spectrometer makes high quality GC/MS affordable for every laboratory. It is available as an EI-only GC/MS configuration or as an MS/MS system with positive and negative chemical ionization, solids probes, and liquid or headspace autosampler. The Polaris*Q* truly offers the performance, versatility and reliability chemists are looking for.

See the difference in your data. An ultra-high temperature ion source ensures superior chromatography and minimal routine maintenance. Digital reagent gas flow control provides chemical ionization precision and accuracy far superior to any other ion trap MS. Simultaneous MS and MS/MS scanning capability and unmatched performance for popular EPA Methods set the Polaris*Q* apart from the competition.

Finnigan Polaris*Q* Mass Spectrometer

External Ion Source

• Optimally designed to eliminate ion-molecule reactions
• EI and optional CI or EI/CI sources, with exchangeable ion volumes, maximizing performance in EI, positive ion CI, and negative ion CI
• Electron beam collimating magnets provide highest ionization efficiency
• Electron energy adjustable between 0 and 130 eV and emission current up to 850 µA
• Unique electron lens improves filament efficiency and increases lifetime
• Independently-controlled heating from 125°C to 300°C for stable operation and superior chromatographic integrity
• GC interface temperature up to 350°C
• Computer-controlled CI reagent gas flow control for high quantitative accuracy and day-to-day calibration stability

Quadrupole Ion Trap Mass Analyzer

• Unit mass resolution throughout the mass range of 10 – 1000 amu
• Scan rate of 5555 amu/sec
• Patented Automatic Gain Control (AGC) means the ion trap is always filled with the optimum number of ions
• Offers full-scan, segmented scanning, SIM, and MS*n* (n=1–5) modes of mass analysis
• Independently pressurized for stable operation
• No tools required for analyzer maintenance
• Durable materials guarantee long life and simple maintenance
• Computer-controlled variable damping gas option for improved sensitivity
• Meets USEPA tune requirements

Detection System
• Post-acceleration ± 10 kV conversion dynode for efficient positive and negative ion detection
• Off-axis, continuous dynode electron multiplier with extended dynamic range
• Digital electronic noise discrimination
• Centroid or profile data acquisition with 15 samples/amu
• Pulsed Positive Ion/Negative Ion Chemical Ionization PPINICI option to acquire positive CI and negative CI spectra in alternating scans

Inlet/Vacuum Interlock Option
• Standard with CI, optional for EI systems
• Allows easy removal of ion volumes for fast switching from EI to CI, from GC to probe analysis, and for routine source maintenance

Vacuum System Options
• 70 L/s maintenance-free, turbomolecular pump for fast vent and pumpdown (0 to 90% speed in 190 sec)
• 250 L/s turbomolecular pump allows greater flexibility in GC flow rate and column selection (recommended for CI)
• Air-cooled, 100 L/s diffusion pump with Peltier (electronically cooled) pump baffle ensures no contamination
• Optional ion gauge with internal vacuum protection safety

Finnigan TRACE™ GC Ultra Gas Chromatograph
• Multiple-level temperature program with seven ramps and eight levels settable from 0.1°C to 120°C/min
• Eight independent heated zones for individual control of injectors and detectors plus auxiliary zones
• Superior oven cooldown for increased sample throughput – typically 450°C to 50°C in 250 seconds
• Capillary split/splitless injectors with Digital Pressure and Flow Control (DPFC) including gas saver
• Maximum oven temperature 450°C

Gas Chromatographic Options

• Sub-ambient cooling to -99°C with LN2 or -55°C with CO2
• Programmable Temperature Vaporizer (PTV) for split, cold split, splitless and large volume injection
• Cold on-column injector for true on-column and large volume injections
• Additional GC detector(s)
• Liquid or headspace autosampler(s)
• Purge and Trap and other autosampler options available

Xcalibur™ Data System
• Uniform platform for system control of Finnigan Polaris*Q*, Finnigan FOCUS DSQ, Finnigan TRACE DSQ, and autosamplers
• Real-time plot of TIC and mass spectrum
• Auto-tune or manual tune in EI and CI
• Data processing in manual, concurrent, or batch reprocessing
• Merlin Report Writer Wizard for simple customizable reports to meet all general laboratory reporting requirements
• Qual Browser for quick extracted ion or full scan views
• Quan Browser for easy evaluation of calibration curves and integration
• NIST Library Browser facilitates library searching
• Auto-optimization software for MS/MS experiments in either EI or CI mode
• GLP audit trail and system suitability testing
• Optional Data Dependent™ scanning to collect MS*n* spectra automatically for rapid identification of unknown samples
• Extended Xcalibur Development Kit allows data processing and instrument control from your custom written programs

Data System Software Options
• NIST library
• Wiley library
• Pfleger-Maurer-Weber library
• Small Pesticide library

Direct Probe System Option
• Quick, simple method for sample introduction directly into mass spectrometer source
• Switch to probe in two minutes with GC interface undisturbed
• Powerful screening technique
• Analysis of highly polar, thermally labile, or solid compounds
• Compatible with all modes of ionization and mass analysis
• Available in two styles: rapid heating filament Direct Exposure Probe (DEP) or slower volatilization Direct Insertion Probe (DIP)

Standard Installation Specifications
All evaluations performed using an Rtx® - 5MS, 30 m x 0.25 mm ID (0.25 micron film thickness) fused silica capillary column.

Electron Ionization
Hot splitless injection of 10 pg decafluorobenzophenone (DFBZ) in methylene chloride produces a signal to noise of 25:1 for m/z 362 with a mass scan of 60-400 amu at 2 scans per second.

Positive Chemical Ionization
Hot splitless injection of 100 pg of DFBZ in methylene chloride produces a signal to noise of 10:1 for m/z 363 with a mass scan of 60-400 amu at 2 scans per second using methane as a reagent gas. Methane adduct ion [M+ 29]+ must be present.

Negative Chemical Ionization
Hot splitless injection of 1 pg of DFBZ in methylene chloride produces a signal to noise of 50:1 for m/z 362 with a mass scan of 60-400 amu at 2 scans per second using methane as a reagent gas.

Installation Requirements

Supplies
• Power: 120 Vac +6%/-10% or 230 Vac ± 10%, 50/60 Hz
• Helium: purity 99.999% with less than one ppm each of water, oxygen, and total hydrocarbons
• CI reagent gases: methane, isobutane,ammonia or carbon dioxide with purity 99.99%

System Dimensions/Weights
Complete GC/MS system requires 2 m (6') of workbench space. Allow 16 cm (6") of clearance behind the instrument.
Mass Spectrometer:
(height x width x depth)
44 x 33 x 68 cm (17 x 13 x 27 in)
Weight: 45 kg (98 lbs)
Finnigan TRACE GC Ultra:
44 x 61 x 65 cm (17 x 24 x 25.5 in)
Weight: 55 kg (120 lbs)
Computer CPU:
42 x 16.5 x 44.5 cm (16.5 x 6.5 x 17.5 in)
Monitor:
42 x 40 x 43 cm (16.5 x 16 x 17 in)
Keyboard:
2.5 x 47 x 18 cm (1 x 18 x 7 in)
Total data system weight approximately
34 kg (75 lbs)