

**Unparalleled sensitivity in full scan, plus the power of MS/MS, the Finnigan™ PolarisQ provides dependable performance for routine application plus the added horsepower to go further enabling lower detection in complex matrices**

## Finnigan PolarisQ GC/MS<sup>n</sup> Benchtop Ion Trap Mass Spectrometer

Use the power of MS<sup>n</sup> ion trap technology to target specific compounds in complex matrices



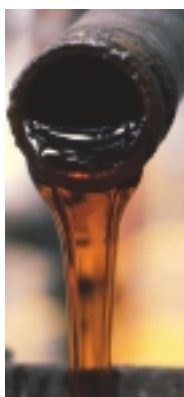
### Stop Matrix Interference with the Power of MS<sup>n</sup>

The Finnigan PolarisQ 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 PolarisQ 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 PolarisQ apart from the competition.



Finnigan PolarisQ's rugged ion source is designed for high throughput with the most difficult sample matrices. A source temperature of up to 300°C minimizes contamination. Hundreds of samples can be analyzed between routine source maintenance.



## 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  $\mu$ A
- 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<sup>n</sup> (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  $\pm$  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

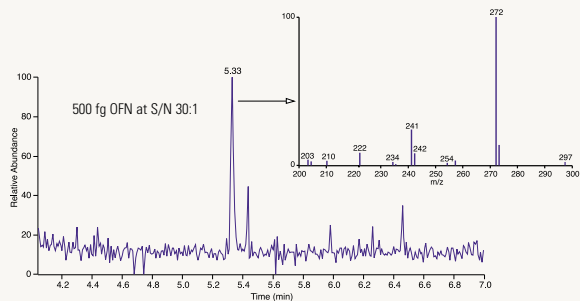
### Finnigan TRACE™ GC Ultra Gas Chromatograph

- 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 LN<sub>2</sub> or -55°C with CO<sub>2</sub>
- 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

Enhanced Performance with Variable Damping Gas Option

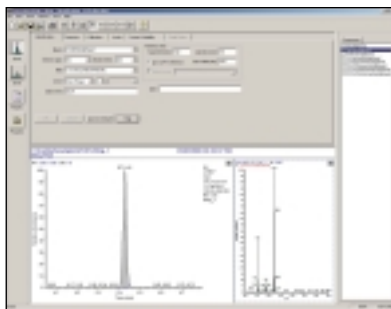


Hot splitless injection of 500 fg octafluoronaphthalene in iso-octane with a mass scan of 200-300 amu at one scan per second. 15% RSD for six replicate injections.



## Xcalibur™ Data System

- Uniform platform for system control of Finnigan Polaris Q, Finnigan FOCUS DSO, Finnigan TRACE DSO, 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<sup>n</sup> spectra automatically for rapid identification of unknown samples
- Extended Xcalibur Development Kit allows data processing and instrument control from your custom written programs



Automatic data processing and reporting setup is quick and easy with Xcalibur software.

### 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)



Add a versatile direct sample probe for non-GC sample introduction.

**Choose from a wide range of analysis options including proprietary injectors, liquid and headspace autosamplers and purge and trap concentrators for your specific application.**



## 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]<sup>+</sup> 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\*

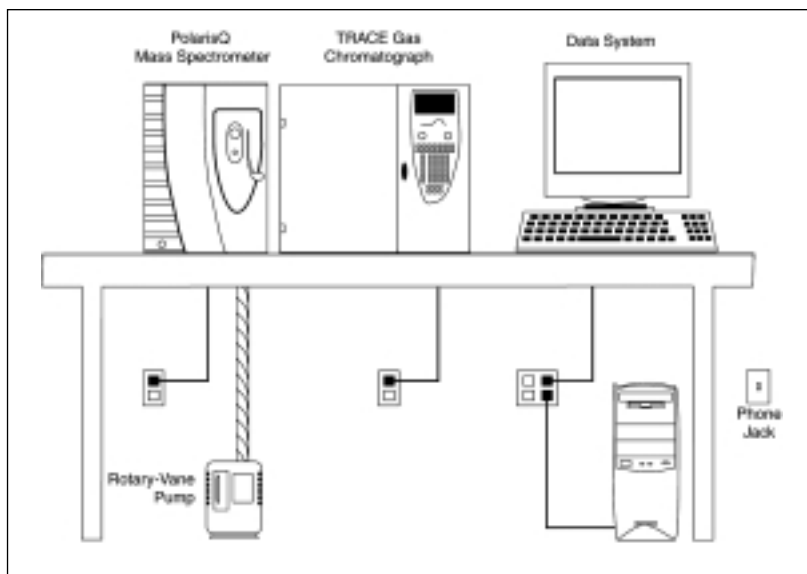
### Supplies

- 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%

### Environment

- Complete system averages 3940 W (13,450 Btu/h) output when considering air conditioning needs
- Operating environment must be 15–31°C (59–88°F) and relative humidity must be 40–80% with no condensation. Optimum operating temperature is 18–26°C (65–78°F)

\* Detailed installation requirements can be found in the Finnigan PolarisQ Preinstallation Guide P/N #120011.



## 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)

## Data System Specifications†

- 2.4 GHz Pentium® 4 with 512K Cache
- 256 MB, 333 MHz DDR SDRAM
- 64 MB NVIDIA GeForce 4 MX Graphics
- 40 GB 7200 RPM ATA/100 Hard drive
- 3.5" 1.44 MB diskette drive
- 48X Max CD-RW
- 17" high resolution SVGA color monitor
- Microsoft® Windows® XP with Office XP
- Gigabit Ethernet NIC 10/100/1000
- Two USB, two serial, and one parallel port

† Minimum specifications change frequently, call for latest. Special upgrade options are available to meet customer requirements.

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