

Thermo Scientific ITQ Series GC/MS Ion Trap Mass Spectrometers

Mass spectrometer performance that meets
your lab's needs – now and in the future

The Thermo Scientific ITQ Series of ion trap mass spectrometers comprises a family of fully upgradeable systems designed to provide high performance and high specificity. Developed for a wide range of applications from routine GC/MS to research-grade ion trap MS, these new GC/MS systems address your lab's analytical needs now, while providing clear pathways for upgrading to meet your future needs.



ITQ™ Series of Ion Trap Mass Spectrometers

Thermo Scientific ITQ 700 GC/MS

- Rugged performance for routine full scan applications
- Combined with Thermo Scientific TRACE 1300 GC to create a system perfect for labs with small spaces and tight budgets
- TRACE™ 1300 GC: Intuitive, single-button start/stop instrument for ease of use with minimal local instrument interaction
- Standard with best full scan EI performance – upgrade to MSⁿ, chemical ionization, vacuum interlock, direct sample probe

Thermo Scientific ITQ 900 GC/MS

- Expanded mass range extends the number of compounds that can be analyzed
- Step up to the Thermo Scientific TRACE 1310 GC gas chromatograph for versatile options for injection and detection
- TRACE 1310 GC: Complete icon-driven touch-screen user interface for direct local instrument control
- Standard with best full scan EI performance – upgrade to MSⁿ, chemical ionization, vacuum interlock, direct sample probe

Thermo Scientific ITQ 1100 GC/MSⁿ

- Mass range to 1100 amu in full scan mode covers GC amenable compounds
- Standard with the best full scan EI performance, plus MSⁿ, vacuum interlock, and Data Dependent™ scanning
- Features advanced MSⁿ modes new for the ITQ Series – Automated Collision Energy (ACE) and our proprietary Pulsed Q Dissociation Mode (PQD)
- Upgrade to chemical ionization, variable damping gas and direct sample probe
- TRACE 1310 GC: Complete icon-driven touch-screen user interface for direct local instrument control



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External Ion Source

- External ionization standard on all ITQ systems
- EI and optional CI or EI/CI sources, with exchangeable ion volumes
- Electron energy adjustable between 0 and 130 eV and emission current up to 850 μ A
- Independently-controlled heating from 125 °C to 300 °C for stable operation and superior chromatographic integrity

Quadrupole Ion Trap Mass Analyzer

- Unit mass resolution throughout the mass range
- Scan rate of 5555 amu/sec
- Automatic Gain Control (AGC) – the ion trap is always filled with the optimum number of ions
- Durable, inert materials guarantee long life and simple maintenance
- No tools required for analyzer maintenance
- Independently pressurized for stable operation

Detection System

- Post-acceleration ± 10 kV conversion dynode for efficient positive and negative ion detection
- Off-axis, discrete dynode electron multiplier with extended dynamic range
- Digital electronic noise discrimination
- Proprietary Pulsed Positive Ion/Negative Ion Chemical Ionization option to acquire positive and negative CI spectra on alternating scans in the same injection

Inlet/Vacuum Interlock Option

- Standard with ITQ 1100, optional with ITQ 700 and 900 systems
- Easily remove ion volumes for fast switching from EI to CI, from GC to probe analysis, and for routine source maintenance

Direct Probe System Option

- Switch to probe in under three minutes with GC interface undisturbed
- Available in two styles: rapid heating filament Direct-Exposure Probe (DEP, capable of flash vaporization or pyrolysis at up to 1000 °C) or slower volatilization Direct-Insertion Probe (DIP, capable of accommodating powders and solid samples in a quartz crucible)

Gas Chromatograph Features (TRACE 1300 GC or TRACE 1310 GC)

Please refer to GC and autosampler specification sheets for additional details. The ITQ 700 is paired with the TRACE 1300 GC, and the ITQ 900 and ITQ 1100 are paired with the TRACE 1310 GC.

Instant Connect Injector Modules

- Ability to swap or replace entire injector assembly in less than 5 minutes.
- Split/Splitless and multi-mode (including on-column) PTV available
- Integrated backflush optional for both S/SL and PTV
- 1000 kpa digitally controlled carrier gas with gas saver and septum purge

Autosampler

- Thermo Scientific AI/AS 1310, TriPlus RSH, and more

Oven Temperature

- Operating temperature Range: Ambient +3 °C to 450 °C
- Cryogenic Option Minimum Temperature: -100 °C with LN₂; -50 °C with liquid CO₂

Oven Ramps/Plateaus Cool down

- Number of ramps/plateaus: 32/33
- Maximum heating rate: 125 °C/min

T Range °C	Heating Rate °C/min	
	Model: 220 Volts	Model: 110 Volts
50 to 70	125	90
70 to 115	100	65
115 to 175	80	50
175 to 300	50	30
300 to 450*	35	20

GC Analytical Performance

- Retention time repeatability: <0.0008 min
- Peak area repeatability: <0.5 % RSD

Hydrogen Sensor Option

- Optional hydrogen sensor required for use with hydrogen carrier gas on both TRACE 1300 and TRACE 1310 GC

Data System Software & Options

- Thermo Scientific Xcalibur Data system, common platform for all MS systems
- Thermo Scientific TraceFinder Software for routine GC-MS quantification
- TraceFinder™ Software for Environmental and Food Safety
- TraceFinder Software for Clinical Research
- NIST, Wiley, Pfleger-Maurer-Weber and Pesticide libraries
- Instrument control and data connection via Ethernet
- Computer supplied with instrument equipped with three Ethernet (8P8C RJ-45) ports

Standard Installation Specifications

Electron Ionization

Hot splitless injection of 1 pg octafluoro-naphthalene (OFN) in isooctane produces a signal-to-noise of 100:1 for m/z 272 in full scan.

Negative Chemical Ionization

Hot splitless injection of 1 pg of decafluoro-benzophenone (DFBZ) in methylene chloride produces a signal-to-noise of 1000:1 for m/z 362 in full scan using methane as a reagent gas.

Positive Chemical Ionization

Hot splitless injection of 100 pg of DFBZ in methylene chloride produces a signal-to-noise of 100:1 for m/z 363 in full scan using methane as a reagent gas. Methane adduct ion [$M+29$]⁺ must be present.

Installation Requirements

Supplies

- Power: 120 Vac +6%/-10% or 230 Vac \pm 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)

System Dimensions/Weights

Total width of the connected GC/MS system is 80 cm (31 in). Allow 16 cm (6 in) of clearance behind the instrument (32 cm if using autosampler). Additional space should be allotted for data system and printer.

Mass Spectrometer

(height \times width \times depth)

44 \times 33 \times 63 cm (17.5 \times 13 \times 24.5 in)

Weight: 43 kg (94 lbs)

TRACE 1300 GC

45 \times 44 \times 60 cm (18 \times 17 \times 24 in)

Weight: 35 kg (77 lbs)

TRACE 1310 GC

45 \times 44 \times 67 cm (18 \times 17 \times 26 in)

Weight: 35 kg (77 lbs)

* Helium standard specifications are performed using a 15 \times 0.25 mm i.d. \times 0.25 mm System Qualification Column (SQC).

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