

# Thermo Scientific TRACE 1300 Series Gas Chromatograph



## Performance Specifications

- Typical retention time repeatability: <0.0008 min
- Typical peak area repeatability: <0.5 % RSD

## Oven Specifications

- Column oven (H × W × D):  
27 × 27 × 17.7 cm; 12.9 L
- Operating temperature range:  
ambient +3 °C to 450 °C
- Cryogenic option minimum temperature:  
-100 °C with liquid nitrogen; -50 with liquid CO<sub>2</sub>
- Temperature set point resolution: 0.1 °C
- Number of ramps/plateaus: 32/33
- Maximum heating rate: 125 °C/min
- Oven cool-down (22 °C ambient): 450 °C to 50 °C in  
less than 4 minutes
- Ambient rejection: < 0.01 °C per 1 °C

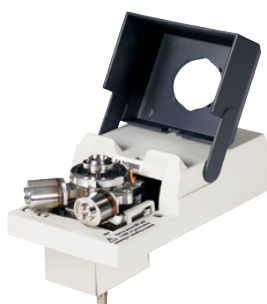
## Maximum Heating Rate

T Range °	Heating Rate °C/min
	Model: 110 Volts
50 to 70	90
70 to 115	65
115 to 175	50
175 to 300	30
300 to 450	20

## Instant Connect Split/Splitless Injector

- Suitable for all capillary columns  
(50 µm to 530 µm i.d.)
- Supports CSR large volume injection  
(concurrent solvent recondensation)
- Compatible with 1/8" and 1/16" packed  
column using adapters
- Supports P&T/TD/HS by special adapter.
- Compatible with Merlin Microseal™ septum
- Maximum temperature: 400 °C
- Dedicated Split/Splitless injector with integrated  
concurrent backflush capabilities, offering the  
same specifications, is also available

Instant Connect  
SSL Module



## IEC (Integrated Electronic Control) Gas Specification

- Up to 18 channels of integrated electronic gas  
control
- Pressure set points minimum increments: 0.01  
kPa-0.001 psi in all ranges

## Carrier Gas Control Common to all Injectors

- Split ratio: Up to 12500:1
- Pressure range: 0–1000 kPa (0–145 psi)
- Modes: Constant and programmed pressures and  
flows with gas saver and septum purge
- Total flow setting:
  - Control of split flow in 0.1 mL/min increments;  
split flow OFF or from 5 to 1250 mL/min
  - Purge flow: OFF or from 0.5 to 50 mL/min in 0.1  
mL/min increments

# Thermo Scientific TSQ 8000 Evo

## TSQ 8000 Evo Triple Quadrupole Mass Spectrometer

### Mode (MS)

- Electron Impact Ionization (EI), with full scan (FS), SIM, and FS/SIM simultaneous within sample injection, timed acquisition (t-SIM), and FS/t-SIM

### Modes (MS/MS)

- Multiple/Selected Reaction Monitoring (MRM/SRM), timed acquisition (t-SRM), combined SRM/FS, combined t-SRM/FS, product ion scan, precursor ion scan, neutral loss scan
- Ability to convert timed acquisition method (t-SIM/t-SRM) into general mode (segmented) method

### Ion Source Type

- Thermo Scientific™ ExtractaBrite™ Electron Impact Ionization (EI) source (standard)
- Chemical Ionization (CI) with Positive Ion Chemical Ionization (PCI) and Negative Ion Chemical Ionization (NCI) source (optional)
- Combination EI/PCI/NCI source used without interchange (optional)
- Ion source includes ion volume, repeller, source lenses, RF lens and dual filaments in all ionization modes, programmable from 50 °C to 350 °C

### Source Access

- Remove entire ion source or change to CI source in under 2 minutes without venting

### Software Features

- Automated SRM Development (AutoSRM)
- SIM Bridge – a tool to import SIM and SRM acquisition tables in comma-separated-values (CSV) formats into AutoSRM and instrument method
- Automated acquisition window adjustment based on retention time
- Compound based acquisition method setup
- Customizable automated tuning

### Mass Analyzer

- Heated, off-axis ion guide for noise reduction and solid, homogeneous, non-coated, maintenance-free quadrupole rods
- Fast quadrupole scanning, up to 20,000 u/s

### Mass Resolution and Mass Stability

- Automatic tuning down to 0.4 u and manual tuning below 0.4 u
- Selectable SRM resolution settings in method at autotune preset values of 0.7 u, 1.5 u and 2.5 u
- Mass Stability better than 0.1 u/ 48 hours/  $\Delta T \leq 2$  K

### Collision Energy Range

- 0–60 eV

### Mass Range

- 1.2–1100 u

### Detector

- Thermo Scientific™ DynaMax™ XR detection system, with off-axis 10 kV dynode, discrete dynode electron multiplier and electrometer, linear range of  $>10^7$  (0–68  $\mu$ A)

### Scanning Capabilities

- Up to 20,000 u/s
- Ability to acquire more than 97 scans/s in FS when scanning over a range of 125 u
- 0.5 ms minimum SRM dwell times
- Up to 800 SRM transitions/s

### Pumping Systems

- High-capacity ( $>300$  L/s), dual-stage turbomolecular pump
- Mechanical rotary vane 3.3 m<sup>3</sup>/h oil pump
- Foreline convection gauge
- Optional oil-free scroll pump
- Ion gauge (optional)

### Electron Energy

- Adjustable from 0 eV to 150 eV

### Emission Current

- Up to 350  $\mu$ A

### Transfer Line Temperature

- Up to 400 °C

## Standard Installation Specifications\*

(Helium as carrier gas)

### Electron Ionization SRM

- 1  $\mu$ L of 100 fg/ $\mu$ L octafluoronaphthalene (OFN) will produce the following minimum signal-to-noise for the transition from  $m/z$  272 to  $m/z$  222: 12,000:1

### Positive Ion Chemical Ionization SRM

- 1  $\mu$ L of 5 pg/ $\mu$ L benzophenone (BZP) will produce the following minimum signal-to-noise for the transition from  $m/z$  183 to  $m/z$  105: 2,500:1

## Reference Specifications†

### Electron Ionization Full Scan

- 1  $\mu$ L of 1 pg/ $\mu$ L OFN will produce the following minimum signal-to-noise for  $m/z$  272 when scanning from 50–300 u: 1,500:1

### Positive Ion Chemical Ionization SRM

- 1  $\mu$ L of 100 fg/ $\mu$ L BZP-D10 will produce the following minimum signal-to-noise for the transition from  $m/z$  193 to  $m/z$  110: 200:1

### Negative Ion Chemical Ionization Full Scan

- 1  $\mu$ L of 1 pg/ $\mu$ L OFN will produce the following minimum signal-to-noise for  $m/z$  272: 10,000:1

### Negative Ion Chemical Ionization SIM

- 1  $\mu$ L of 100 fg/ $\mu$ L OFN will produce the following minimum signal-to-noise for  $m/z$  272: 4,000:1

### Instrument Detection Limit

- In EI SRM mode, with helium carrier gas and the AI/AS 1310, TriPlus 100 LS, or TriPlus RSH autosampler (required and configured for liquid injections), eight sequential 2 fg OFN splitless injections monitored for SRM 272:222 produce the following instrument detection limit (IDL), calculated from the chromatographic peak area with 99% confidence interval:  $IDL \leq 0.5$  fg

## System Dimensions/Weights

Total width of the connected GC-MS system is 80 cm (31 in). System can be operated with back of MS pushed directly against wall or other object. Additional space should be allotted for data system and printer.

	System Dimensions (height $\times$ width $\times$ depth)	Weight
Mass Spectrometer	44 $\times$ 40 $\times$ 89 cm (17.5 $\times$ 16 $\times$ 35 in)	61 kg (135 lbs)
TRACE 1300 GC	45 $\times$ 44 $\times$ 60 cm (18 $\times$ 17 $\times$ 24 in)	35 kg (77 lbs)
TRACE 1310 GC	45 $\times$ 44 $\times$ 67 cm (18 $\times$ 17 $\times$ 26 in)	35 kg (77 lbs)

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

† Reference specifications are typical performance specifications and not confirmed at install.