Agilent 7000D Triple Quadrupole GC/MS System

Data Sheet

The Agilent 7890B Gas Chromatograph combined with an Agilent 7000D Mass Spectrometer is the best choice for routine GC/MS/MS analysis with a low 4 fg Octafluoronaphthalene Instrument Detection Level (IDL) specification. The 4 fg IDL is demonstrated at installation, verifying total system performance: the ALS, GC, and MS.

The Agilent rich tradition of innovation and quality is embodied in the 7000D GC/TQ system, making it ready to join the tens of thousands of Agilent GC/MS systems delivered over the past 50 years.

Agilent 7000D Triple Quadrupole Mass Spectrometer

Mode of operation	EI standard, CI optional
Ion source material	Noncoated, proprietary inert source
Ion source temperature	150 to 350 °C
Filaments	Dual filaments for EI
Source cleaning	Automated and vent-free with patented (or proprietary) JetClean option
Electron energy	10 to 300 eV
Mass filters (2)	Proprietary monolithic hyperbolic gold-coated quadrupole
Mass axis stability	< ± 0.10 u over 24 hours (10 to 40 °C)
Quadrupole temperature	106 to 200 °C
Mass range	*m/z* 10 to 1,050
Resolution	Selectable, 0.7 to 2.5 Daltons, default tune Settable, 0.4 to 4.0 Daltons, custom tune
Scan rate	Up to 20,000 u/s
Tuning	Autotune or manual
Detector	Triple-Axis HED-EM with extended-life EM and dynamically ramped iris
MRM speed	800 transitions/sec
Minimum MRM dwell	0.5 msec
Collision cell	Linear hexapole
Collision cell gas	Nitrogen with helium quench gas
Collision energy	Selectable up to 60 eV
Vacuum system	Dual stage turbomolecular pump Total gas flow up to 8 mL/min
Software	Agilent MassHunter acquisition, data handling (quant/qual) and reporting
	Pesticides and Environmental Pollutants MRM database with over 8,000 optimized transitions (optional)

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Gas Chromatograph: Agilent 7890B GC

For more specifications refer to the GC Data Sheet

Injector	Split/splitless, Multi-mode inlet, PTV and others
Autosampler	Agilent 7693 ALS, CTC PAL3, Agilent 7697A Headspace Sampler
Oven temperature	Ambient + 4 to 450 °C
Oven ramps/plateaus	Supports 20 oven ramps and 21 plateaus Negative ramps are allowed
Ramp rate	120 °C/min (200 +V), 75 °C/min (120 V)
Capillary Flow Technology	Effluent splitting, backflushing, column switching
Retention Time Locking (RTL)	RTL-ready, constant flow or pressure

Integrated GC/MS System Features

Early Maintenance Feedback (EMF)	Monitors GC and MS resources: injection counter, operation times, and electronic logs to aid planned maintenance
Parts Finder	Easy, convenient access to pertinent consumables part numbers
Quick Vent	Automated, rapid venting of the MS
Eco-friendly operation	User scheduled Sleep-Wake mode saves carrier gas and power
Integrated calculators	Vapor volume calculator, solvent vent calculator, method translator, and so forth

Instrument Dimensions

Agilent 7000D MS	35 cm (w) × 86 cm (d) × 47 cm (h); Weight: 59 kg Additional space for the data system and optional printer
Mechanical pump	18 cm (w) × 35 cm (d) × 28 cm (h); Weight: 21.5 kg
Agilent 7890B GC	58 cm (w) × 54 cm (d) × 57 cm (h); Weight: 45 kg

Installation Checkout Specifications

Instrument Detection Limit (IDL) is a more accurate indication of true sensitivity (minimum detectable quantity) than signal-to-noise (S/N), particularly when background noise levels are very low, as with MS/MS measurements when only standard is injected.

IDL verification is a more extensive (eight consecutive injections versus one, in the case of S/N) and reliable test that is performed at installation to assure proper system qualification.

EI MRM IDL	4 fg or less octafluoronaphthalene (OFN) Statistically derived at 99% confidence level from the area precision of eight sequential splitless injections[1] of 1µL, 10 fg/µL OFN standard. MS/MS transition of *m/z* 272 → 222, 100 msec dwell time.
PCI MRM S/N	1 µL of 5 pg/µL Benzophenone (BZP) produces > 2,500:1 RMS S/N for the MS/MS transition of *m/z* 183 → 105 (CH_4)

All tests are carried out on a 30 m × 0.25 mm, 0.25 µm column

Reference Specifications[2]

EI MRM S/N	To be determined (tbd)
PCI MRM S/N	1 µL of 100 fg/µL BZP produces > 50:1 RMS S/N for the transition of *m/z* 183 → 105 (CH_4)
EI scan S/N	tbd
NCI SIM S/N	1 µL of 100 fg/µL OFN produces > 2,000:1 RMS S/N for *m/z* 272 (CH_4)

1. IDL specification is only demonstrated if an autosampler is part of the installed system. If an autosampler is not present, the EI MRM S/N spec is performed.
2. Reference specifications represent typical performance and are not confirmed at installation.

www.agilent.com/gc-ms-ms

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