

Specification Sheet

GCMS-TQ8050 NX

Gas Chromatograph Mass Spectrometer



Equipped with a new, highly efficient detector and three forms of noise-reduction technologies, the GCMS-TQ8050 NX is capable of performing unprecedented quantitative analyses of ultra-trace amounts, down to the femtogram level.

Moreover, with its ultra-high sensitivity and high mass resolution, a whole new realm of quantitative analysis is offered, with reduced long-term operational costs and greater uptime.

Gas Chromatograph

Model	Nexis™ GC-2030	Injection Port Temperature	Ambient to 450 °C
Oven Temperature	Ambient + 2 to 450 °C	AFC Pressure Range	0 to 1035 kPa
Retention Time Repeatability	<0.0008 min* ¹	Peak Area Repeatability	<1% RSD* ¹
Flow Control	Constant flow, constant pressure, constant liner velocity	Oven Ramp Rate	Max 120 °C/min* ²

Mass Spectrometer

GCMS Interface

Type	Direct connection with capillary column
Temperature	50 to 350 °C

Ion Source

Features	Inert Front access for easy maintenance
Ionization	El (standard) 1.5.1 El, PCI, NCI (optional)
Filament	1.5.3 Dual, automatic switching with shield placed between filament and source box (patented)
Electron Energy	10 to 200 eV 1.5.2
Emission Current	5 to 250 µA

Vacuum System

Main Pump	Dual inlet turbo molecular pump 1.5.8 190 L/second + 170 L/second (He)
Fore Pump	1.5.8 Oil rotary pump, 30 L/minute (60 Hz) (Oil free pump, 110 L/minute (60 Hz))
Column Flow	10 mL/minute (He)
Carrier Gas	Helium, hydrogen, nitrogen

DI Probe (Option)

Temperature	Room temperature to 500 °C
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Mass Analyzer and Detector

Mass Analyzer	Metal quadrupole mass filter with 4.1 pre-rods
Collision Cell	UfSweeper™, 0 to 60 eV 1.5 Argon collision gas
Mass Range	m/z 10 to 1090 1.5.4
Mass Resolution	0.4 to 3.0 u (FWHM)
Mass Axis Stability	±0.1 u/48 hours (under specified conditions)
High-speed Scan Control	ASSP™: Advanced Scanning Speed Protocol
Scan Rate	20000 u/second 1.5.6
Minimum Event Time	3 msec (maximum 333 scans/second) 4.4
Maximum Transitions	16 transitions/event
Maximum Events	2048 Events
Minimum Dwell Time	< 0.5 msec
Maximum MRM Speed	800 MRM transitions/second
Detector	Secondary electron multiplier with patented Overdrive Lens and conversion dynode 1.5.5 8 × 10 ⁸ dynamic range

Software

[GCMSsolution™ Ver. 4] [LabSolutions™ GCMS] 1.6
[LabSolutions DB GCMS] [LabSolutions CS]

Operation Modes:	Q1 Scan, Q3 Scan, Product Ion scan, Precursor Ion scan, Neutral Loss scan, 1.5.9 Q1 SIM, Q3 SIM, MRM, Scan/SIM and Scan/MRM FASST (simultaneous Scan/SIM measurements)
Energy Savings:	Ecology mode
Insert Replacement:	Easy sTop
Method Wizard:	Smart MRM/SIM*4 (Automatic SIM, MRM table creation) AART (Automatic Adjustment of Retention Time)
Library Search:	1.7 Similarity searches using retention indices Compatible with multiple retention index groups*3
Instrument Tuning:	Automatic (EI, CI, NCI)
Quality Control:	Accuracy control QA/QC function, instrument control system check function, user control security function
Measurement Data Control:	Optimal compound structure format for GLP
Maintenance Support:	MSNAVIGATOR™
Report:	Flexible report creation, templates
Multisample Quantitation Assistance:	LabSolutions Insight™
1.7 Library (optional):	NIST, Wiley, FFNSC Library*3 (Flavor and Fragrance)
Database (optional):	Smart Pesticides Database™ Smart Forensic Database™ Smart Metabolites Database™ Smart Environmental Database™ Smart Aroma Database™*3
Semi-quantitative database (optional):	Quick-DB™ for residual pesticide analysis Quick-DB™ for forensic toxicological analysis*3 Off-Flavor Analyzer*3
Composition Estimation (optional):	MassWorks*3

*1 Auto Injector AOC™-20i Plus; FID as the detector; tetradecane (2.5 ng to the column) split injection.

*2 230V type.

*3 Available with GCMSsolution.

*4 Smart SIM uses Excel®.

*5 When using Boosted Efficiency Ion Source (BEIS)

GCMS-TQ, Nexis, UFsweeper, ASSP, GCMSsolution, LabSolutions, Smart MRM, Smart SIM, MSNAVIGATOR, LabSolutions Insight, Smart Pesticides Database, Smart Forensic Database, Smart Metabolites Database, Smart Environmental Database, Smart Aroma Database, Quick-DB and AOC are trademarks of Shimadzu Corporation or its affiliated companies in Japan and/or other countries.
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Demonstration of Performance

EI MRM IDL:

2 fg Octafluoronaphthalene

m/z 272 → 222 IDL ≤ 0.5 fg

1 fg Octafluoronaphthalene

m/z 272 → 222 IDL ≤ 0.3 fg⁵ 1.5.12

- IDL (Instrument Detection Limit) is statistically calculated from peak area repeatability of 8 times sequential analyses at 99% confidence level.
- Demonstration of Performance can be confirmed at installation upon request. IDL will be tested only with the auto injector.

Installation Checkout Criteria

EI Scan S/N:

1 pg Octafluoronaphthalene

m/z 272

S/N ≥ 2000 4.5

EI MRM S/N: 1.5.11

100 fg Octafluoronaphthalene

m/z 272 → 222

S/N ≥ 40000

CI MRM S/N:

1 pg Benzophenone- d_{10}

m/z 193 → 110

S/N ≥ 5000

NCI SIM S/N:

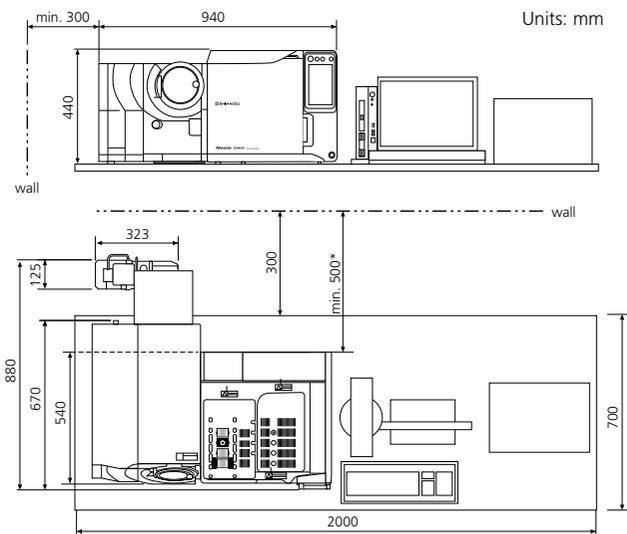
100 fg Octafluoronaphthalene

m/z 272

S/N ≥ 10000

Typical Installation

Weight: GC-MS unit 110 kg and auxiliary pump 10 kg



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