

Specification Sheet

GCMS-TQ8040

Gas Chromatograph Mass Spectrometer



GC-MS/MS systems can effectively measure even trace quantities of various chemical substances contained in a diverse range of samples. To do so, however, requires setting a number of parameters and creating appropriate methods.

The new GCMS-TQ8040 triple quadrupole gas chromatograph mass spectrometer automates the troublesome preparation of complex methods. This enables high-sensitivity multicomponent simultaneous analysis, achieves high productivity, and results in exceptional instrument performance.

Gas Chromatograph

Model	GC-2010 Plus
Oven Temperature	Ambient + 4 to 450 °C 230 VAC model has rapid heating rate compatible with fast GCMS

Injection Port Temperature	Ambient to 450 °C
AFC Pressure Range	0 to 970 kPa

Mass Spectrometer

GCMS Interface

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

Ion Source

Type	Front access for easy maintenance
Ionization	EI (standard) EI, PCI, NCI (option)
Temperature	140 to 300 °C
Filament	Dual, automatic switching
Electron Energy	10 to 200 eV
Emission Current	5 to 250 μ A

Vacuum System

Main Pump	Dual inlet turbo molecular pump 179 L/second + 185 L/second (He)
Fore Pump	Oil rotary pump, 30 L/minute (60 Hz)
Column Flow	10 mL/minute (He)

DI Probe (Option)

Temperature	Room temperature to 500 °C
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Mass Analyzer and Detector

Mass Analyzer	Metal quadrupole mass filter with pre-rods
Collision Cell	UFSweeper™, 0 to 60 V Argon collision gas
Mass Range	m/z 10 to 1090
Mass Resolution	0.5 to 3.0 u (FWHM)
Mass Axis Stability	± 0.1 u/48 hours (constant temperature)
High-speed Scan Control	ASSP™: Advanced Scanning Speed Protocol
Scan Rate	20,000 u/second (Q3 Scan)
Minimum Event Time	3 msec (maximum 333 scans/second)
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 8 $\times 10^6$ dynamic range

Software

GCMSSolution Version 4.2

Operation Modes	Q1 Scan, Q3 Scan, Product Ion scan, Precursor Ion scan, Neutral Loss scan, Q1 SIM, Q3 SIM, MRM, Scan/SIM, and Scan/MRM	Tuning	Automated tuning for all ionization modes (EI, PCI, and NCI)
Method Wizards	Smart MRM* ¹	Energy and Gas Saving	Ecology mode
	Automatic optimization of MRM condition* ¹	Insert Replacement	Easy sTop
	COAST: Creation of Automatic SIM and MRM Tables	Maintenance	MSNAVIGATOR for guided maintenance operations
	AART : Automatic Adjustment of Retention Time		Easy sTop insert replacement

*¹ Excel® is necessary for Smart MRM and optimization of MRM condition. Excel® is registered trademark of Microsoft®.

Installation Checkout Criteria

The following values will be confirmed during installation and validation.

Helium carrier gas

EI Scan Sensitivity	1 pg OFN <i>m/z</i> 272	S/N ≥ 600:1
EI MRM Sensitivity	100 fg OFN <i>m/z</i> 272 → 222	S/N ≥ 4000:1
EI MRM Precision	100 fg OFN <i>m/z</i> 272 → 222 <i>n</i> = 8	RSD ≤ 4% IDL ≤ 12 fg
CI MRM Sensitivity	1 pg BZP-d10 <i>m/z</i> 193 → 110 CH ₄ reagent gas	S/N ≥ 2000:1
NCI SIM Sensitivity	100 fg OFN <i>m/z</i> 272 CH ₄ reagent gas	S/N ≥ 4000:1

Demonstration of Performance

Demonstration of Performance can be confirmed at installation upon request.**

Helium carrier gas

EI Scan Sensitivity	1 pg OFN <i>m/z</i> 272	S/N ≥ 1500:1
EI MRM Sensitivity	100 fg OFN <i>m/z</i> 272 → 222	S/N ≥ 8000:1
EI MRM Precision	10 fg OFN <i>m/z</i> 272 → 222 <i>n</i> = 8	RSD ≤ 13% IDL ≤ 4 fg
CI MRM Sensitivity	100 fg BZP d10 <i>m/z</i> 193 → 110 CH ₄ reagent gas	S/N ≥ 200:1
NCI SIM Sensitivity	10 fg OFN <i>m/z</i> 272 CH ₄ reagent gas	S/N ≥ 400:1

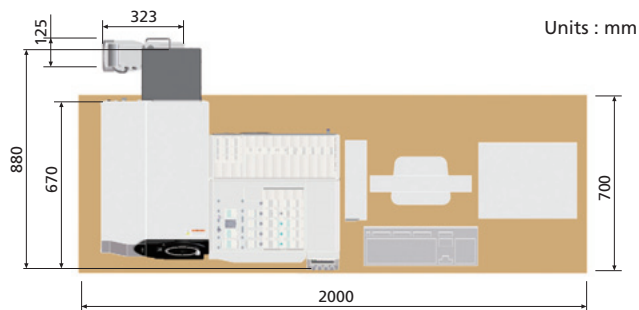
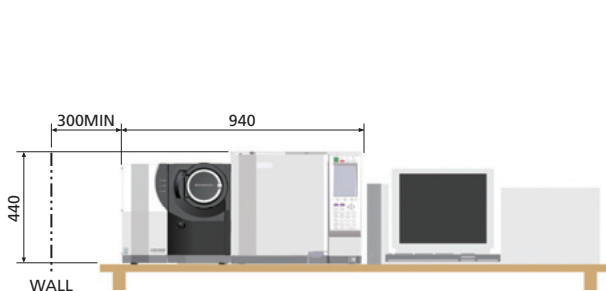
Physical Requirements

Power	Frequency 50/60 Hz GC: 1800 VA (115 VAC), *2600 VA (230 VAC) MS: 1000 VA (100-230 VAC)
Environment	Constant temperature 18 to 28 °C Humidity 40 to 70% (no condensation)
Weight	GC-MS : 100 kg Rotary pump: 10 kg

Hydrogen carrier gas

EI Scan Sensitivity	1 pg OFN <i>m/z</i> 272	S/N ≥ 300:1
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OFN: octafluoronaphthalene
BZP : benzophenone
IDL : Instrument Detection Limit
*high-power oven
**Additional charges may apply, new instrument installations only, only one gas (He or H₂) will be tested.



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