

# Specification Sheet

Liquid Chromatograph Mass Spectrometer

## LCMS-8050



Triple Quadrupole Mass Spectrometry is the method of choice for definitive identification and reproducible quantification of trace-level analytes in complex samples for a variety of applications including clinical research, forensic toxicology, pharmacokinetics, environmental analysis, and food and beverage testing. Combined with the chromatographic resolving power of our world-leading UHPLC systems, and maintaining Shimadzu's proprietary ultrafast technologies (UF Technologies), which include high-speed MRM transitions, MS/MS acquisition, and ultra-high speed polarity switching, the LCMS-8050 can dramatically improve analytical throughput with ultra-high-speed performance. In addition, the newly designed ion source and collision cell, Heated-ESI and UFsweeper™ III collision cell technology, yield higher sensitivity and expand the potential range of LC/MS/MS applications.

### Instrument

Model	LCMS-8050
Mass range	$m/z$ 2 to 2,000
Sensitivity	ESI positive: 1 pg reserpine, S/N > 250,000:1 (RMS) ESI negative: 1 pg chloramphenicol, S/N > 250,000:1 (RMS)
Resolution	$R < 0.7$ u FWHM
Mass stability	0.05 u/12 hr
Cross-talk	< 0.003 %
Minimum pause time	1 msec
Minimum dwell time	0.8 msec
Scan speed	Max 30,000 u/sec (in all modes of scanning) (0.1 u step: 300,000 data points/sec)
Polarity switching time	5 msec
Interface	ESI (Standard), APCI (Optional), DUIS (Optional)
Applicable LC flow rate	ESI 1 $\mu$ L/min to 2 mL/min
MRM transition speed	Max 555 channels/sec
DL maximum temperature	300 °C
Block heater maximum temperature	ESI/DUIS: 500 °C APCI: 300 °C
Interface maximum temperature	ESI/DUIS: 400 °C APCI: 500 °C

Analysis mode	Q1 Scan/SIM Q3 Scan/SIM MRM Precursor ion scan Product ion scan Neutral loss scan
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### Mass Analyzers and Detector

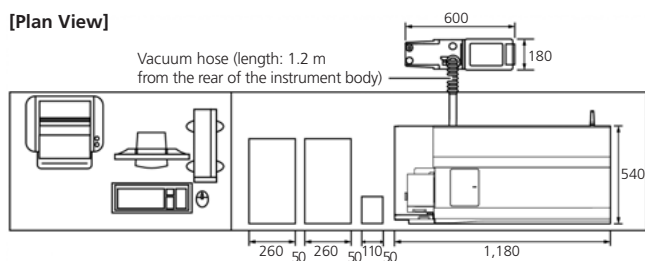
Mass analyzers	Q1 & Q3 are molybdenum hyperbolic mass filters with pre-rods; Q1 includes post-rods
Collision cell	Tapered multipole type ultra-high-speed collision cell (UFsweeper™ III collision cell)
Detector	Secondary electron multiplier with off-axis conversion dynode
Ion optics	Q-array focus optics operating in Field-Flow mode, multipole transfer optics
Digital detection system	Operates in pulse counting mode for fastest operation
Detection mode	Ultra-fast positive/negative ion switching
Dynamic range (pulse counting)	$2 \times 10^7$ cps
Vacuum system	Rotary pump: 1 unit Vacuum pumping speed: 28 m <sup>3</sup> /hr Triple-inlet turbo molecular pump: 1 unit 40 L/sec, 260 L/sec, 210 L/sec

## Software

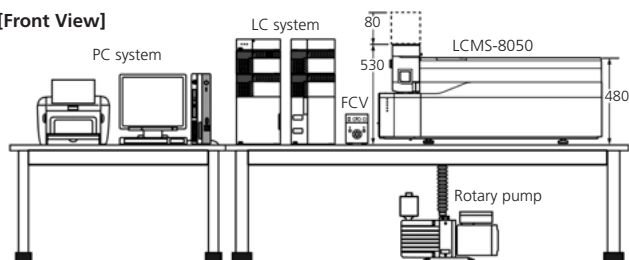
Workstation	LabSolutions LCMS
Operating system	Windows 7 32 Bit, 64 Bit
Instrument control	Prominence and Nexera series
MS acquisition mode	Scan (Max. 1,000 events), SIM (Max. 1,000 events × 32 channels)
MS/MS acquisition mode	MRM (Max. 1,000 events × 32 channels) Product ion scan Precursor ion scan Neutral loss scan
Auto-tuning	Possible to optimize sensitivity, resolution, and mass calibration in both positive and negative ionization mode

## Installation Example

### [Plan View]



### [Front View]



Units: mm

## Installation Conditions

Temperature	18 to 28 °C
Humidity	20 to 70 % (Non-condensing)
Size	1,180 mm (W) × 540 mm (D) × 610 mm (H)
Weight	140 kg
Power supply	MS unit: AC 230 V 15 A (50/60 Hz) Single-phase
Gas requirements	Nitrogen gas: Maximum 24.4 L/min, Purity greater than 97 % Argon: Purity greater than 99.99% as CID gas Dry air: Maximum 20 L/min, oil/water-free Total nitrogen plus air: 25L/min maximum

The above are not standard installation specification. All LCMS-8050 instruments will be installed and tested in accordance with standard performance tests as detailed in the Shimadzu document ZEAH-0467, Shimadzu High-Performance Liquid Chromatograph Mass Spectrometer LCMS-8050 Installation Standard.



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