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C146-E194K

Specification Sheet

Liquid Chromatograph Mass Spectrometer

LCMS-8040

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 such as pharmacokinetics in pharma/CRO, food, environmental, forensic/toxicology and newborn screening. Combined with chromatographic resolving power of our world leading UHPLC systems and maintaining Shimadzu's proprietary ultrafast technologies (UF Technologies) which includes high-speed MRM transitions, MS/MS acquisitions, and ultra-high speed polarity switching, the LCMS-8040 can dramatically improve analytical throughput with ultra-high speed performance. In addition, the newly improved ion optical system, UF-Lens™ and unique UFsweeper™ II collision cell technology yield higher sensitivity and expand the potential range of LC/MS/MS applications.

Instrument

Model	LCMS-8040
Mass range	*m/z* 2 to 2,000
Sensitivity	ESI positive: 1 pg reserpine, S/N>50,000:1 (RMS) ESI negative: 1 pg chloramphenicol, S/N>50,000:1 (RMS)
Resolution	R < 0.7 u FWHM and adjustable to 0.5 u
Mass stability	0.05 u / 24 hr
Mass accuracy	0.1 u
Cross talk	< 0.0005%
Minimum pause time	1 msec
Minimum dwell time	0.8 msec
Scan speed	Max 15,000 u/sec (0.1 u step: 150,000 data points/sec)
Polarity switching time	15 msec
Interface	ESI (Standard), APCI (Optional), DUIS™ (Optional)
Applicable LC flow rate	ESI 1 µL/min to 2 mL/min
MRM transition speed	Max 555 channels/sec
Ion source temperature	500 °C

Analysis mode	Q1 Scan/SIM Q3 Scan/SIM MRM Precursor ion scan Product ion scan Neutral loss scan Synchronized Survey Scan™

Mass Analyzers and Detector

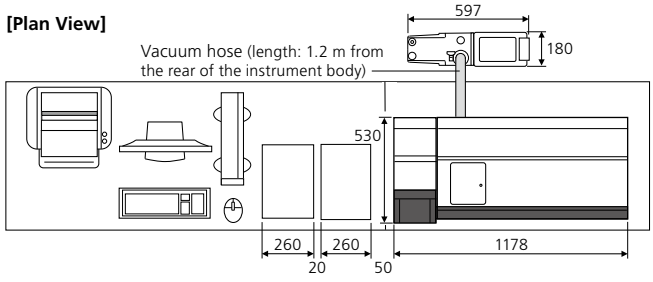
Mass analyzers	Q1 & Q3 are molybdenum hyperbolic mass filters with pre-rods; Q1 includes post-rods
Collision cell	Tapered multipole type ultra-high-speed collision cell (UFsweeper II collision cell)
Detector	Secondary electron multiplier with off-axis conversion dynode
Ion optics	Q-array focus optics 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	7 orders
Vacuum system	Rotary pump: 1 unit Vacuum pumping speed: 28 m^3/hr Triple-inlet turbo molecular pump: 1 unit 40 L/sec, 260 L/sec, 210 L/sec

Software

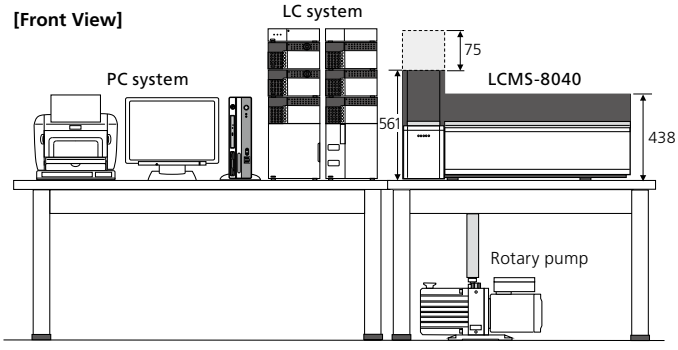
Workstation	LabSolutions™ LCMS, LabSolutions Insight™ (Optional)
Instrument control	Prominence™ and Nexera™ series
MS acquisition mode	Scan (Max. 1,000 events), SIM (Max. 1,000 events × 32 channels)
MS/MS acquisition mode	MRM (Max. 1,000 events × 32 channels) Product ion scan Precursor ion scan Neutral loss scan Synchronized Survey Scan
Auto-tuning	Possible to optimize sensitivity and resolution in both positive and negative ionization mode as well as mass calibration

Installation Example

[Plan View]



[Front View]



Units: mm

Installation Conditions

Temperature	18 to 28 °C
Humidity	20 to 70 % (Non-condensing)
Size	1,178 mm (W) × 530 mm (D) × 636 mm (H)
Weight	130 kg
Power supply	MS unit: AC 230 V 15 A (50/60 Hz) Single-phase
Gas requirements	Nitrogen gas: Maximum consumption 25 L/min, Purity greater than 97 % Argon: Purity greater than 99.99 % as CID gas

The above are not standard installation specification. All LCMS-8040 instruments will be installed and tested in accordance with standard performance tests as detailed in the Shimadzu document ZEAH-0450, Shimadzu High-Performance Liquid Chromatograph Mass Spectrometer LCMS-8040 Installation Standard.

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