

Waters Xevo G2-S QToF

Xevo® G2-S QToF incorporates StepWave™ ion optics for unsurpassed levels of durable sensitivity and proven quantitative time-of-flight (QuanTof™) technology to deliver superior UPLC®-compatible mass resolution, matrix-tolerant dynamic range, quantitative performance, mass accuracy, and speed of analysis – simultaneously.

Xevo G2-S QToF delivers not only conventional MS and MS/MS methods of data acquisition, it also has the ability to perform UPLC®/MS^E to collect the maximum amount of data from a single analysis. UPLC/MS^E datasets provide a comprehensive digital record of your sample. The system incorporates IntelliStart™ Technology, for automated system optimization and status monitoring, ensuring that the highest quality data is routinely available to all levels of operator.



SYSTEM HARDWARE SPECIFICATIONS

API sources and ionization modes	<p>High performance ZSpray™ dual-orthogonal API sources:</p> <ol style="list-style-type: none"> 1) Multi mode source – ESI/APCI/ESCI® (optional) NB – Dedicated APCI requires an additional probe (optional) 2) APCI IonSABRE II probe (optional) 3) Dual mode APPI/APCI source (optional) 4) nanoFlow ESI source (optional) 5) ASAP ion probe (optional) 6) APGC ion source (optional) 7) TRIZAIC™ ion source (optional) <p>Tool-free source exchange Vacuum isolation valve Tool free access to customer serviceable elements Plug and play probes De-clustering cone gas Software control of gas flows and heating elements</p>
Mass analyzer	<p>The instrument is equipped with a high resolution, high stability quadrupole analyzer (MS1), plus pre-filters to maximize resolution and transmission while preventing contamination. The instrument is also equipped with a high performance oaTof mass analyzer (MS2) with a mass range up to m/z 100,000 and a resolving power of >32,500 FWHM.</p>
Collision cell	<p>T-Wave enabled for optimal MS/MS performance at high data acquisition rates; Software programmable collision energy control.</p>
Detector	<p>Ultra-fast electron multiplier and hybrid ADC detector electronics to provide outstanding sensitivity and quantitative performance.</p>
Vacuum system	<p>Differentially pumped, automated vacuum system comprising air-cooled turbomolecular pumps and one backing pump (either one rotary pump or one oil free pump). Vacuum read backs and system vent/pump cycles are digitally monitored and controlled, to provide total software control and ensure fail-safe operation in the event of power failure.</p>

Dimensions	Width: 69.2 cm (27.2 in.)
	Height: 152.0 cm (59.8 in.)
	Depth: 101.8 cm (40.1 in.)

Regulatory approvals	CE and NRTL
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SYSTEM SOFTWARE SPECIFICATIONS

Software	Systems supported on MassLynx™ 4.1 or later, and on UNIFI Scientific Information System version 1.6 or later.
IntelliStart Technology	System parameter checking and alerts Integrated sample/calibrant delivery system + programmable divert valve Automated mass calibration LC/MS System Check – automated on-column performance test

PERFORMANCE SPECIFICATIONS

Acquisition modes	MS scanning MS/MS product ion scanning UPLC/FastDDA (rapid, automated MS to MS/MS scan function switching): UPLC/MS ^E Ionization mode switching (ESCI) External contact start/stop/events Analogue channel acquisition via an e-SAT/IN module
Mass range	The TOF mass range is m/z 20 to 100,000 The quadrupole mass range is m/z 20 to 16,000 in non-resolving mode and m/z 20 to 4,000 in resolving mode A high mass quadrupole option is available with a mass range up to m/z 100,000 in non-resolving mode and m/z 32,000 in resolving mode
Mass measurement accuracy	The mass measurement accuracy of the instrument, in resolution mode, will be better than 1 ppm RMS, based on 10 consecutive repeat measurements of the $[M + Na]^+$ ion of raffinose (m/z 527.1588), using a suitable choice of lock mass.
Dynamic range	The dynamic range, defined as the range of peak intensities that will give better than 3 ppm RMS for 10 sec of data, is at least four orders of magnitude when measured on the m/z 556.2771 peak from leucine enkephalin. This can be increased with use of programmable dynamic range enhancement (pDRE) technology.
Mass resolution	Resolution Mode: >32,500 FWHM measured on the $(M + 6H)^{6+}$ isotope cluster from bovine insulin (m/z 956) at a data acquisition rate of 30 spectra per second. Sensitivity Mode: >22,500 FWHM measured on the $(M + 6H)^{6+}$ isotope cluster from bovine insulin (m/z 956) at a data acquisition rate of 30 spectra per second.

MS sensitivity (ESI+)

The peak at m/z 556 from a solution of 50 pg/ μ L leucine enkephalin in 50/50 acetonitrile/water + 0.1% formic acid, will have an intensity of greater than 6,400 counts per sec. The instrument will be tuned to >32,500 FWHM resolution (as demonstrated on bovine insulin) and the mass range will be set to m/z 1200.

The peak at m/z 556 from a solution of 50 pg/ μ L leucine enkephalin in 50/50 acetonitrile/water + 0.1% formic acid, will have an intensity of greater than 32,000 counts per sec. The instrument will be tuned to >22,500 FWHM resolution (as demonstrated on bovine insulin) and the mass range will be set to m/z 1200.

MS sensitivity (ESI-)

The peak at m/z 503 from a solution of 500 pg/ μ L raffinose in 70/30 acetonitrile/water (no additives), will have an intensity of greater than 7,200 counts per second. The instrument will be tuned to >32,500 FWHM resolution (as demonstrated on bovine insulin), and the mass range will be set to m/z 1200.

The peak at m/z 503 from a solution of 500 pg/ μ L raffinose in 70/30 acetonitrile/water (no additives), will have an intensity of greater than 36,000 counts per second. The instrument will be tuned to >22,500 FWHM resolution (as demonstrated on bovine insulin), and the mass range will be set to m/z 1200.

MS/MS sensitivity

Using a [Glu¹] -Fibrinopeptide B solution of 100 fmol/ μ L with the instrument tuned for 32,500 resolution (as demonstrated on bovine insulin), the intensity of the most intense y'' sequence ion from the MS/MS spectrum of the doubly charged precursor ion (785.8 Da) will be greater than 500 counts per second.

It should be noted that the above are not standard installation specifications. All Xevo G2-S QToF instruments will be installed and tested in accordance with standard performance tests as detailed in the relevant Waters Installation Checklist document. Test criteria are routinely reviewed to ensure quality is maintained and are therefore subject to change without notice. See Site Preparation Guide and Product Release Notes for additional product and specification information.

Related Patents:

1. The traveling wave device described here is similar to that described by Kirchner in US Patent 5,206,506; 1993.
2. ZSpray (US Patent 5,756,994).
3. StepWave (Patent WO 2009/037483)

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