Waters
THE SCIENCE OF WHAT'S POSSIBLE.™

Xevo TQ-XS

Xevo™ TQ-XS is an ultimate performance benchtop tandem quadrupole mass spectrometer which expands the scope of ultimate sensitivity analysis. It features StepWave™ XS ion transfer optics delivering enhanced sensitivity, robustness, and reliability; passively removing gas load and undesirable neutral contaminants while actively transferring ions into the mass analyzer.

Sensitivity benefits are more accessible as the Xevo TQ-XS also features a tool-free probe design which allows users much easier maintenance, optimization and improved reproducibility between operators. Method transfer onto the Xevo TQ-XS is made simple by the Xtended Dynamic Range (XDR™) Detector which allows six orders of linear dynamic range. Wider compound coverage without changing ionization technique is delivered by the revolutionary UniSpray™ source option.

In addition to these benefits, users can combine quantitative MRM with qualitative MS data acquisition through RADAR™ with the click of a button in the method editor. This allows users to see everything in a sample whilst performing a targeted quantitative experiment.

SYSTEM HARDWARE SPECIFICATIONS

API sources and ionization modes	High performance ZSpray™ dual-orthogonal API sources: 1) Multi-mode source – tool free ESI/APCI/ESCi™* (standard) NB – Dedicated APCI requires an additional probe (optional) 2) UniSpray™ ion source (optional) 3) Tool-free APCI probe (optional) 4) nanoFlow™ ESI source* (optional) 5) ASAP* (optional) 6) APGC ion source* (optional) 7) ionKey™ source* (optional) Optimized gas flow dynamics for efficient ESI desolvation (supporting LC flow rates up to 2 mL/min) Tool-free source exchange Vacuum isolation valve Tool-free access to user serviceable elements Plug-and-play probes De-clustering cone gas Software control of gas flows and heating elements

** Not available with waters_connect.™*

UniSpray ion source option	UniSpray is an ionization technique designed to broaden the scope of compounds which can be analyzed in a single run, including those which typically optimize in ESI, APCI or APPI. Enhanced ionization efficiency and desolvation allow the potential to combine several methodologies into one, or simply enable the operator to keep the same source for multiple methods, requiring less time performing set-up and routine maintenance, and more time delivering results
Ion source transfer optics	StepWave XS ion transfer optics delivering class leading UPLC™-MS/MS sensitivity. The unique off-axis design and segmented quadrupole second stage dramatically increases the efficiency of ion transfer from the ion source to the quadrupole MS analyzer at the same time as actively eliminating undesirable neutral contaminants.
Mass analyzer	Two high-resolution, high-stability quadrupole analyzers (MS1/MS2), plus pre-filters to maximize resolution and transmission while preventing contamination of the main analyzers
Collision cell	T-Wave™ enabled for optimal MS/MS performance at high data acquisition rates; Software programmable gas control
Detector	Low-noise, off-axis, long-life photomultiplier XDR detector
Vacuum system	Three air-cooled turbomolecular vacuum pumps One vacuum backing pump
Dimensions	Width: 61.0 cm (24.0 in.) Height: 70.7 cm (27.8 in.) Depth: 99.5 cm (39.0 in.)
Regulatory approvals/marks	CE, CB, NRTL (CAN/US), RCM

SYSTEM SOFTWARE SPECIFICATIONS

Software	Systems supported on waters_connect™ and MassLynx version 4.2 or later
System setup and method development	System parameter checks and alerts Integrated sample/calibrant delivery system + programmable divert valve Automated mass calibration Automated sample tuning Automated MRM method development UPLC-MS/MS System Check – on-column performance test
Automated MRM scheduling (acquisition rate assignment)	Dwell time, inter-channel delay time and inter-scan delay time for individual channels in a Multiple MRM experiment can be automatically assigned (using the Auto-Dwell feature) to ensure that the optimal number of MRM data points per chromatographic peak are acquired. The Auto-Dwell feature dynamically optimizes MRM cycle times to accommodate retention time windows that overlap. This greatly simplifies MRM method creation, irrespective of the number of compounds in a single assay, while at the same time ensuring the very best quantitative performance for every experiment

waters_connect Software	The waters_connect Software provides a modern user experience with a HUB design and apps that provide a consistent connected user experience across all applications. It is built for applications with convenient access to scientific apps allowing accelerated time-to-results and result quality. There are common utilities that complete the end-to-end workflow and help increase productivity and efficiency. Confidently report results with accurate, reliable, regulation-standard data from application-focused quantitative workflows with built in traceability for utmost integrity

PERFORMANCE SPECIFICATIONS

Acquisition modes	Full scan MS Product ion scan Precursor ion scan Constant neutral loss scan Multiple reaction monitoring (MRM) Simultaneous full scan and MRM (RADAR)
RADAR	An information rich acquisition approach that allows you to collect highly specific quantitative data for target compounds while providing the ability to visualize all other components
Mass range	2 to 2048 *m/z*
Scan speed	Up to 20,000 Da/s Examples of achievable acquisition rates: 20 scans per second (*m/z* 50 to 1000) 40 scans per second (*m/z* 50 to 500)
Mass stability	Mass assignment will be within +/-0.05 Da over a 24 hour period (the instrument must be operated in conformance with the laboratory environmental guidelines given in the Xevo TQ-XS site preparation guide)
Linearity of response	The linearity of response relative to sample concentration, for a specified compound, is six orders of magnitude from the limit of detection
Polarity switching time	15 ms to switch between positive and negative ion modes
MS to MS/MS switching time	3 ms
ESCi mode switching time	20 ms to switch between ESI and APCI
MRM acquisition rate	Maximum acquisition rate of 500 MRM data points per second Minimum dwell time of 1 ms per MRM channel Minimum inter-channel delay of 1 ms
Inter-channel cross talk	The inter-channel cross talk between two MRM transitions, acquired using an MRM dwell time of 1 ms and an inter-channel delay time of 1 ms, is less than 0.001%.
Number of MRM channels	Over 32,000 MRM channels can be monitored in a single acquisition
Mass resolution	Automatically adjusted to desired resolution (0.50 Da, 0.75 Da or 1.00 Da FWHM)

MRM sensitivity (ESI+)	A 1 pg on-column injection of reserpine will give a chromatographic signal-to-noise greater than 1,500,000:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.8 mL/min, MRM transition *m/z* 609 > 195). The Instrument Detection Limit (IDL) from ten replicate injections has been calculated to be less than 0.4 fg reserpine
MRM sensitivity (ESI-)	A 1 pg on-column injection of chloramphenicol will give a chromatographic signal-to-noise greater than 1,000,000:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.8 mL/min, MRM transition *m/z* 321 > 152). The Instrument Detection Limit (IDL) from ten replicate injections has been calculated to be less than 1 fg chloramphenicol
MRM sensitivity (APCI+)	A 1 pg on-column injection of of 17-α-hydroxyprogesterone will give a chromatographic signal-to-noise greater than 300:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.8 mL/min, MRM transition *m/z* 331 > 109)
MRM sensitivity (GC/MS)	A 500 ag on-column injection of 2,3,7,8 Tetrachlorodibenzo-p-dioxin (TCDD) will give a chromatographic signal to noise greater than 20:1, using raw unsmoothed data (1 µL Pulsed Splitless injection, Helium flow rate of 2 mL/min, MRM transition *m/z* 322 > 259 and *m/z* 320 > 257)

It should be noted that the above are not standard installation specifications. All Xevo TQ-XS instruments will be installed and tested in accordance with standard commissioning tests as detailed in Waters document (Xevo TQ-XS Installation Checklist). Performance specifications given in this document and installation 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.

For patent information, please see waters.com/patents

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

Waters Corporation
34 Maple Street
Milford, MA 01757 U.S.A.
T: 1 508 478 2000
F: 1 508 872 1990
waters.com