

## Xevo TQD

The Waters™ Xevo™ TQD is an advanced benchtop tandem quadrupole mass detector designed for ultra high performance LC-MS/MS applications. With a wide range of ionization options including Atmospheric Pressure Photo Ionization (APPI), Atmospheric Pressure GC (APGC), and the Atmospheric Solids Analysis Probe (ASAP), the Xevo TQD is ideally suited to a variety of qualitative and quantitative applications.

Xevo TQD also features T-Wave™ collision cell technology to provide the very best high-speed MRM and a valuable, information-rich acquisition mode known as RADAR.™ 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 operators.



### SYSTEM HARDWARE SPECIFICATIONS

API sources and ionization modes	<p>High performance ZSpray™ dual-orthogonal API sources:</p> <ol style="list-style-type: none"> <li>1) Multi-mode source – ESI/APCI/ESCI™ (standard) NB – Dedicated APCI requires an additional probe (optional)</li> <li>2) UniSpray ion source (optional)</li> <li>3) APCI UniSpray™ IonSABRE II probe (optional)</li> <li>4) nanoFlow ESI source (optional)</li> <li>5) ASAP (optional)</li> <li>6) APGC ion source (optional)</li> </ol> <p>Optimized gas flow dynamics for efficient ESI desolvation (supporting LC flow rates up to 2 mL/min)</p> <p>Tool-free source exchange</p> <p>Vacuum isolation valve</p> <p>Tool-free access to user serviceable elements</p> <p>Plug-and-play probes</p> <p>De-clustering cone gas</p> <p>Software control of gas flows and heating elements</p>
UniSpray ion source option	<p>UniSpray is a novel 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.</p>
Ion source transfer optics	High efficiency stacked ring ion guide

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
Detector	Low-noise, off-axis, long-life photomultiplier detector
Vacuum system	Single, split-flow air-cooled vacuum turbomolecular pump evacuating the source and analyzer One rotary backing pump
Dimensions	Width: 35.6 cm (14.0 in.) Height: 60.0 cm (23.6 in.) Depth: 93.0 cm (36.6 in.)
Electrical safety/EMC testing	CE and NRTL
Regulatory approvals/marks	CE, CB, NRTL (CAN/US), RCM

## SYSTEM SOFTWARE SPECIFICATIONS

Software	Systems supported on MassLynx™ version 4.2; OpenLynx™ and TargetLynx™ XS Application Managers are included as standard
IntelliStart Technology	System parameter checks and alerts Integrated sample/calibrant delivery system + programmable divert valve Automated mass calibration Automated sample tuning Automated SIR and MRM method development LC-MS System Check – automated 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
Automated MRM scheduling (acquisition window assignment)	Multiple MRM experiments can be scheduled (manually or automatically using the Quanpedia™ database) using retention time windows to optimize the cycle time for each MRM channel monitored. If required, MRM retention time windows can overlap partially or completely, ensuring that MRM data acquisition rates will be optimal for the quantification of all analytes in a given assay

## PERFORMANCE SPECIFICATIONS

Acquisition modes	<p>Full scan MS</p> <p>Product ion scan</p> <p>Precursor ion scan</p> <p>Constant neutral loss scan</p> <p>Selected ion recording (SIR)</p> <p>Multiple reaction monitoring (MRM)</p> <p>Simultaneous full scan and MRM (RADAR)</p>
Survey scan modes	<p>Full scan MS triggered product ion scan</p> <p>Precursor ion scan data acts as an automatic trigger for the collection of product ion spectra</p> <p>Constant neutral scan data acts as an automatic trigger for the collection of product ion spectra</p>
Product ion confirmation (PIC) mode	MRM data acts as an automatic trigger for the collection of product ion spectra, activated with a single check box
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	<p>Up to 10,000 Da/s</p> <p>Examples of achievable acquisition rates:</p> <p>10 scans per second (<math>m/z</math> 50 to 1000)</p> <p>20 scans per second (<math>m/z</math> 50 to 500)</p>
Mass stability	Mass drift is <0.1 Da over a 24 hour period
Linearity of response	The linearity of response relative to sample concentration, for a specified compound, is up to five orders of magnitude from the limit of detection
Polarity switching time	20 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	Minimum dwell time of 1 ms per MRM channel; Minimum inter-channel delay of 3 ms
Number of MRM channels	Up to 32,768 MRM channels (1,024 functions, 32 channels per function) can be monitored in a single acquisition; up to 1,024 MRM channels when operating in GLP/secure mode (32 functions, 32 channels per function)
Mass resolution	Automatic set up by IntelliStart (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 30,000:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.4 mL/min, MRM transition $m/z$ 609 > 195)

MRM sensitivity (ESI-) A 1 pg on-column injection of chloramphenicol will give a chromatographic signal-to-noise greater than 10,000:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.8 mL/min, MRM transition  $m/z$  321 > 152)

MRM sensitivity (APCI+) A 100 pg on-column injection of 17- $\alpha$ -hydroxyprogesterone will give a chromatographic signal-to-noise greater than 200:1, using raw unsmoothed data (Gradient separation, LC mobile phase flow rate of 0.8 mL/min, MRM transition  $m/z$  331 > 109)

*It should be noted that the above are not standard installation specifications. All Xevo TQD instruments will be installed and tested in accordance with standard performance tests as detailed in Waters Xevo TQD System Installation Checklist. 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 [www.waters.com/patents](http://www.waters.com/patents)

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