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 High performance ZSpray™ dual-orthogonal API sources:
1) Multi-mode source – ESI/APCI/ESCiR (standard)
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 (optional)
6) APGC ion 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
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;
Digital dynamic range of 4 x 106
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

SYSTEM SOFTWARE SPECIFICATIONS

Software Systems supported on MassLynx™ version 4.1; OpenLynx™ and TargetLynx XS™ Application
Managers are included as standard
IntelliStart Technology System parameter checks and alerts
(acquisition rate assignment) 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 Dwell time, inter-channel delay time and inter-scan delay time for individual
channels in a
(acquisition rate assignment) 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 Multiple MRM experiments can be scheduled (manually or automatically using
the Quanpedia
(acquisition window assignment) database) using retention time windows to optimize the cycle time for each
MRM channel 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 Full scan MS
Product ion scan
Precursor ion scan
Constant neutral loss scan
Selected ion recording (SIR)
Multiple reaction monitoring (MRM)
Simultaneous full scan and MRM (RADAR)

Survey scan modes Full scan MS triggered product ion scan
Precursor ion scan data acts as an automatic trigger for the collection of product ion spectra
Constant neutral scan data acts as an automatic trigger for the collection of product ion spectra
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 Up to 10,000 Da/s
Examples of achievable acquisition rates:
10 scans per second (m/z 50 to 1000)
20 scans per second (m/z 50 to 500)
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 (0.75 Da or 1.00 Da FWHM)

Manual set up for higher resolutions ($\geq$0.5 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 of 17-α-hydroxyprogesterone 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 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.

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