

ACQUITY QDa Detector

The ACQUITY® QDa® Detector is a mass detector designed as a synergistic element of a chromatographic separations system. The ACQUITY QDa Detector is purposefully designed for analytical scientists who need mass spectral data without the complexity of a mass spectrometer, to confirm compound identity and quantify compounds with no UV response or at levels not accessible by optical detection. With the on/off simplicity that analytical scientists have long wanted from mass spectrometry, the ACQUITY QDa Detector fully automates sample analysis and eliminates sample-specific adjustments, for certainty in sample results, from user to user and system to system. With the robustness and reliability demanded for use in routine laboratories, the ACQUITY QDa Detector brings the high quality mass spectral data expected from a traditional single quadrupole mass spectrometer in a mass detector no bigger than the familiar PDA detector.



SYSTEM HARDWARE SPECIFICATIONS

API Source and ionization modes	<p>Adjustment-free high performance ZSpray™ dual-orthogonal atmospheric pressure ionization (API) electrospray (ES) interface for robustness and reliability</p> <p>Ion polarity switching for comprehensive compound coverage</p> <p>Integrated adjustment-free plug and play probe for reduced dispersion and reliability</p> <p>De-clustering cone gas</p> <p>Disposable sample aperture for minimized maintenance and repeatability</p> <p>Tool free access to customer serviceable elements</p> <p>Automated control of gas flows and heating elements</p>
Ion source transfer optics	Dual off-axis ion guides for elimination of neutral noise with increased sensitivity and robustness. Includes high efficiency conjoined stacked ring ion guide and second stage quadrupole ion guide
Mass analyzer	Automated mass calibration and resolution verification for constant data quality. Single high resolution quadrupole analyzer, plus pre-filter to maximize resolution and transmission while preventing contamination of the mass analyzer
Detector	<p>Low noise, off axis, long life photomultiplier detector</p> <p>Digital dynamic range up to 4×10^6</p>
Dimensions	<p>Width: 35.3 cm (13.9 in.)</p> <p>Height: 20.0 cm (7.9 in.)</p> <p>Depth: 65.0 cm (25.6 in.) or 75.0 cm (29.5 in.) including integrated diaphragm backing pump</p> <p>Weight: 26.4 kg (58 lbs) or 29.4 kg (65 lbs) including integrated diaphragm backing pump</p>

Power supply	110-240 V ac 50/60 Hz
Regulatory approvals/marks	CE, CB, NRTL (CAN/US), RCM

SYSTEM SOFTWARE SPECIFICATIONS

Software	Systems supported on Empower® 2 and 3 and MassLynx® 4.1 Automated mass calibration, mass resolution control and mass calibration, and resolution verification Automated diagnostics, checks, and alerts
Automated full scan MS acquisition	Automatically-optimized for enhanced data quality at required data rate as MS spectra per second (Hz), simplifying full scan MS acquisition
Automated SIR acquisition	Automatically-optimized for enhanced data quality at required data rate as MS data points per second (Hz), simplifying SIR acquisition. Automated scheduling of SIR acquisition windows for optimized data quality

PERFORMANCE SPECIFICATIONS

Acquisition modes	Full scan MS Selected Ion Recording (SIR)
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	30 to 1250 <i>m/z</i>
Scan speed	Automatically-optimized for enhanced data quality for acquisition rates of up to e.g. 10Hz for <i>m/z</i> 100 to 1000 or 20 Hz for <i>m/z</i> 50 to 500
Mass accuracy	Mass accuracy is better than ± 0.2 Da over full mass range
Mass stability	Mass drift is less than 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 four orders of magnitude from the limit of detection
Ion polarity switching time	25 ms to switch between positive and negative ion modes
SIR acquisition rate	Automatically-optimized for enhanced data quality for acquisition rates of up to 100Hz
Number of SIR channels	Up to 1024 SIR channels (32 functions, 32 channels per function) can be monitored in a single acquisition
Mass resolution	Automated mass resolution control (0.7 Da) for constant data quality
SIR sensitivity (ESI+)	A 100 pg on column injection (5 μ L of 20 pg/ μ L) of sulfadimethoxine, with a mobile phase flow rate of 800 μ L/min will give a chromatographic signal-to-noise for <i>m/z</i> 311 greater than 2000:1 (400:1 with integrated diaphragm backing pump)

SIR sensitivity (ESI-)	A 50 pg on column injection (5 μ L of 10 pg/ μ L) of chloramphenicol, with a mobile phase flow rate of 800 μ L/min will give a chromatographic signal-to-noise for m/z 321 greater than 300:1 (60:1 with integrated diaphragm backing pump)
SIR signal-to-noise definition	Signal is defined as the height of the chromatographic peak of interest and noise is defined as the RMS of a continuous section of the mass chromatogram

It should be noted that the above are not standard installation specifications. All ACQUITY QDa Detectors will be installed and tested in accordance with standard performance tests as detailed in ACQUITY QDa Detector 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.

Waters

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