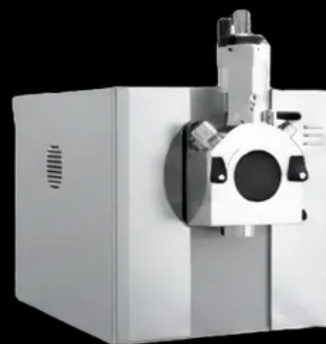


AQUA-MS-SQ

Single Quadrupole LC-MS

Versatile, Robust, and Cost-Effective Mass Spectrometry



WHY CHOOSE AQUA-MS-SQ

01

ESI / APCI DUAL IONIZATION

Dual orthogonal ion source with right-angle spray. ESI and APCI modes switch in under 30 seconds, covering polar to semi-polar compounds.

02

EXCEPTIONAL SENSITIVITY

Double-cone vacuum interface with 0.3 mm orifice delivers 10 pg reserpine sensitivity at S/N $\geq$ 400:1 in positive ESI mode.

03

6-ORDER DYNAMIC RANGE

Gold-plated Mo quadrupole (≥ 200 mm) with RF pre-filter provides linear dynamic range spanning 10^6 orders of magnitude.

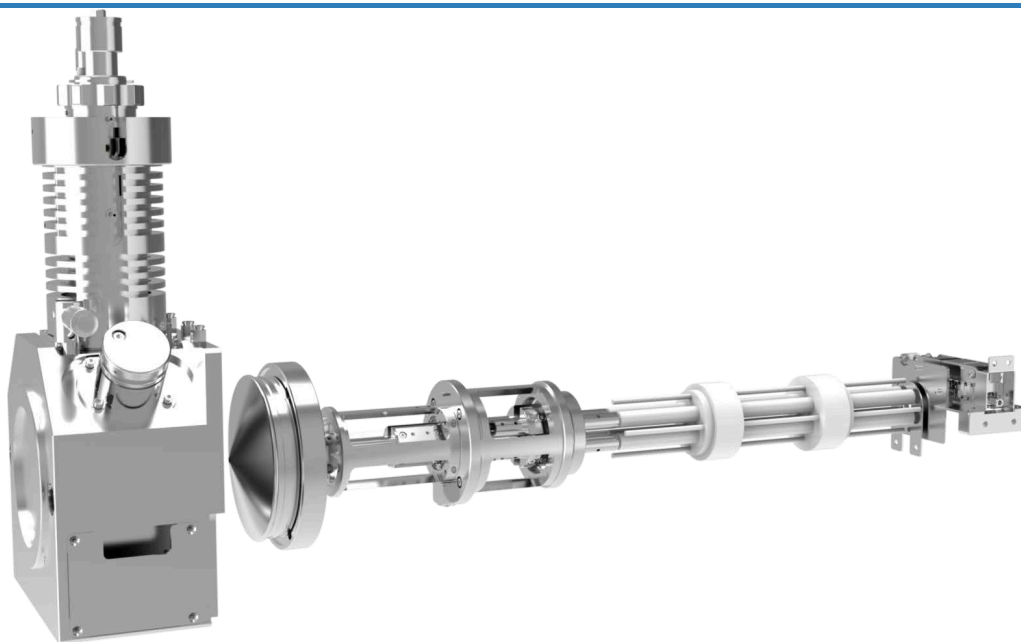
04

INTEGRATED LC SOLUTION

Binary gradient HPLC: 10,500 psi pump, 108-position autosampler, column oven to 85°C. Single software platform control.

KEY ADVANTAGES

- Dual ESI / APCI — Orthogonal spray, <30 s switching
- Double-Cone Interface — 0.3 mm orifice, robust vacuum
- RF-Only Pre-Filter — Blocks contamination from quadrupole
- Gold-Plated Mo Quadrupole — ≥ 200 mm, room temp operation
- Discrete Dynode Multiplier — Patented, 5x+ longer lifetime
- 180° Curved Collision Cell — High transmission, low noise
- m/z 5 – 2000 amu — Wide mass coverage
- Dynamic Range 10^6 — Six orders of magnitude
- 10,000 amu/s Scan Speed — Fast data acquisition
- Binary Gradient LC — 10,500 psi, 0.001–10.00 mL/min
- 108-Position Autosampler — 2 trays, $\leq 0.004\%$ carryover
- Column Oven to 85°C — 4x300 mm capacity
- Single Software Platform — Unified LC-MS control
- 7 Macrolides $r^2 > 0.9978$ — Validated performance



01 ESI/APCI

Dual ionization, <30 s switching

02 DOUBLE-CONE

0.3 mm orifice, robust vacuum

03 PRE-FILTER

RF-only, blocks contamination

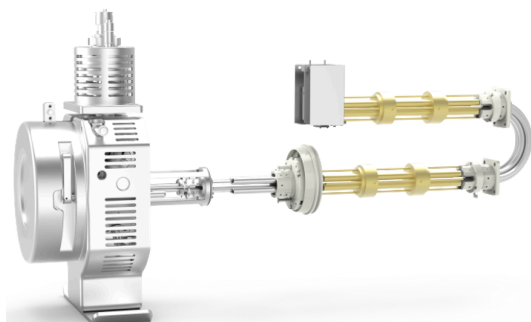
04 MO QUADRUPOLE

Gold-plated, ≥200 mm

05 DYNODE DETECTOR

Patented, 5x+ lifetime

LC-MS-SQ CORE TECHNOLOGY



Tandem Metal Quadrupole uses front and rear pre-rods to eliminate edge field effects. Gold-plated molybdenum rods work at room temperature with zero heating, delivering exceptional ion transmission and mass stability.

180° Curved Collision Cell achieves both high transmission speed and efficiency through its unique curved path design. Axial acceleration minimizes cross-talk for superior quantitative precision.

KEY PERFORMANCE ADVANTAGES

S/N ≥ 400:1

EXCEPTIONAL SENSITIVITY

10 pg reserpine detection in positive ESI mode. Double-cone vacuum interface with heated gas curtain maximizes ion transfer while minimizing solvent interference.

10⁶ Orders

ULTRA-WIDE DYNAMIC RANGE

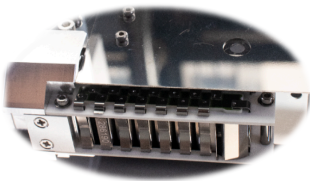
Six orders of linear dynamic range from pg to μg levels. Simultaneously quantify trace impurities and major components in a single injection.

5x+ Longer

LOW COST OF OWNERSHIP

Room-temperature quadrupole needs no heating. Patented discrete dynode detector delivers 5x+ operational life with stable response even in air and moisture.

PATENTED DISCRETE DYNODE MULTIPLIER



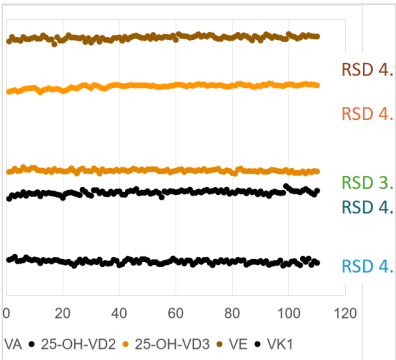
Jointly Developed Technology

Extended service life without sacrificing sensitivity. Each dynode stage works independently with high-energy secondary electron emission, delivering 5x+ longer lifetime.

5X+ LIFETIME

NO SENSITIVITY LOSS

RELIABILITY TEST RESULT



12-Compound Vitamin Stability

Consecutive injection stability test of 12 vitamins demonstrates excellent retention time and peak area reproducibility. All compounds show RSD <3%, validating the AQUA-MS-SQ for routine QC analysis

7 MACROLIDE DRUGS — LINEARITY VALIDATION (R > 0.9978)

All 7 macrolide antibiotics demonstrate outstanding quantitative performance for veterinary drug residue screening with excellent linear correlation coefficients.

Compound	RT (min)	Linear Range (ng/mL)	LOD (ng/mL)	r
Lincomycin	1.410	0.2 – 200	0.2	0.9978
Clindamycin	1.659	0.5 – 200	0.5	0.9985
Oleandomycin	1.767	0.2 – 200	0.2	0.9991
Erythromycin	1.808	0.2 – 200	0.2	0.9991
Josamycin	2.065	0.2 – 200	0.2	0.9981
Roxithromycin	1.982	0.2 – 200	0.2	0.9994

8 QUINOLONE DRUGS — LINEARITY VALIDATION (R > 0.9963)

All 8 quinolone antibiotics demonstrate excellent linear correlation coefficients r > 0.9963, validating reliable quantitative analysis for pharmaceutical quality control and residue screening.

Compound	RT (min)	Linear Range (ng/mL)	LOD (ng/mL)	r
Nalidixic Acid	2.438	0.5 – 200	0.5	0.9986
Pipemidic Acid	1.427	1.0 – 200	1.0	0.9980
Lomefloxacin	1.709	1.0 – 200	1.0	0.9969
Fleroxacin	1.518	1.0 – 200	1.0	0.9981
Sarafloxacin	1.792	1.0 – 200	1.0	0.9981
Sparfloxacin	1.741	0.5 – 200	0.5	0.9968
Orbifloxacin	1.733	0.5 – 200	0.5	0.9979

APPLICATION AREAS

FOOD SAFETY

Veterinary drug residues, pesticide screening, mycotoxin detection, food additive analysis

ENVIRONMENTAL

Water quality monitoring, soil contaminant analysis, pollutant trace detection

PHARMACEUTICAL

Drug QA/QC testing, impurity profiling, stability studies, formulation analysis

CLINICAL

Therapeutic drug monitoring, biomarker quantification, metabolite analysis

CHEMICAL

Synthetic product characterization, reaction monitoring, purity verification

FORENSIC

Toxicology screening, controlled substance identification, DUID testing

MASS SPECTROMETER

Mass Range	5 – 2000 amu
Mass Resolution	Unit mass (FWHM ≤ 0.7 amu)
Mass Stability	±0.2 amu / 24 h
Mass Accuracy	±0.1 amu
Scan Speed	≥ 10,000 amu/s
Dynamic Range	10 ⁶ (six orders)
Sensitivity (ESI+)	10 pg reserpine, S/N ≥ 400:1
Sensitivity (APCI+)	10 pg cortisone, S/N ≥ 200:1
Ion Source	Dual ESI / APCI, orthogonal spray
ESI/APCI Switching	< 30 seconds
Quadrupole Rods	Mo, gold-plated, ≥ 200 mm
Collision Cell	180° curved design
Detector	Discrete dynode electron multiplier

VACUUM SYSTEM

Fore Pump	40 m³/h rotary vane
Turbopump 1	30 L/s
Turbopump 2	60 L/s
Vacuum Interface	Double-cone, 0.3 mm orifice
Sample Cone	Replaceable aperture

PERFORMANCE HIGHLIGHTS

5 – 2000

Mass Range (amu)

10,000

Scan Speed (amu/s)

S/N ≥ 400:1

10 pg Reserpine (ESI+)

10⁶

Dynamic Range

±0.2 amu

Mass Stability / 24 h

LIQUID CHROMATOGRAPH

Pump Type	Binary gradient
Max Pressure	10,500 psi (72 MPa)
Flow Range	0.001 – 10.00 mL/min
Flow Accuracy	±0.1%
Flow Precision	< 0.05% RSD
Gradient Accuracy	±0.5%
Autosampler	108 positions (2 × 54 vials)
Carryover	≤ 0.004%
Injection Precision	< 0.3% RSD (at 10 µL)
Column Oven	RT + 5°C to 85°C
Column Capacity	Up to 4 × 300 mm columns

SOFTWARE & DATA SYSTEM

Control Platform	Integrated LC-MS single platform
Acquisition Modes	Full scan, SIM, Scan+SIM
Data Processing	Peak integration, calibration curves
Batch Processing	Automated sequence analysis
Compliance	GLP/GMP, Audit Trail

ELECTRICAL & ENVIRONMENT

Power Supply	220V ±10%, 50/60 Hz
Power Consumption	< 2,500 W
Ambient Temperature	15 – 30°C
Relative Humidity	≤ 80% (non-condensing)