



# Agilent 500 Ion Trap LC/MS

## Data Sheet

### Introduction

The Agilent 500 Ion Trap LC/MS is an ion trap based LC/MS system. The 500 Ion Trap's exceptional sensitivity, mass stability, resolution and enhanced charge capacity (ECC) make this instrument the system of choice for food safety, natural product, environmental, and other applications.

### Technical Specifications

#### Analyzer

Mass range	50–2000 u
Resolution	< 0.5 u FWHM over the entire range
Mass axis stability	± 0.1 u over 24 hours at constant temperature (± 3 °C or ± 6 °F)
Scan rates	250, 5000, and 15000 Da/sec
Scan range	50–2000 m/z, 100–3500 m/z
Max ion time	500,000 µsec
Triple resonant scanning	Yes
Data dependent scanning	Yes
Unidirectional mass ejection	Yes
Enhanced charge capacity (ECC)	Yes
He damping gas	0.1–7.0 mL/min, typical 0.8 mL/min
Linear dynamic range	Up to 10 <sup>5</sup> , compound-dependent based upon analytical methods
Modes	Full scan and MS <sup>n</sup> (n=10) scanning using non-resonant or frequency modulated resonant CID, time programmable in all modes during the analytical run



#### Atmospheric Pressure Ionization (API) Interface

SelecTemp allows temperature programming of the drying gas throughout the analysis.

Drying gas temperature	400 °C max, time programmable
Drying gas flow rate	4.5 L/min typical
Spray chamber temperature	65 °C max
Spray needle	Off-axis from the capillary axis
Spray needle	Wide range of adjustments for x-y positioning; independent adjustment of the inner liquid capillary needle to the outlet of the nebulizing gas
Hexapole ion guide	6 degrees off-axis from the capillary axis
Deflector gating optics	



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#### Electrospray ionization source (ESI)

LC flow range	1–500 $\mu\text{L}/\text{min}$
Needle voltage	6 kV max
Nebulizing gas	1.5 L/min typical

#### Built in syringe pump and diverter valve

Accommodates syringe volumes from	100 $\mu\text{L}$ –10 mL
Flow range	0.05–1 mL/min (Depending on syringe size)

#### Performance specifications

+ESI MS/MS (full scan)	250 fg reserpine S/N 100:1, based on RMS noise
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#### Detection system

Detector	Off-axis design, $\pm 15$ kV HED and electron multiplier
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#### Vacuum system

Dual turbo molecular pumps, 280 L/sec each	
Ion gauge, manifold	Bayard-Alpert gauge tube with burn-out resistant, thoria-coated iridium (ThO-Ir) filaments
Thermal vacuum gauge	Foreline
MS40+	Foreline Pumps
Single stage	Rotary vane
Voltage	200–240 V
Pumping speed	40 $\text{m}^3/\text{hr}$

## Option - Atmospheric Pressure Chemical Ionization (APCI) Source

#### Easy switching

The APCI option is a separate needle/chamber assembly that uses the same hinge/clip mounting system as the ESI chamber.

A switch from ESI to APCI takes a few minutes to disconnect and connect the appropriate electrical, gas and LC lines. Switching back to ESI is just as fast. The use of separate chambers guarantees that the optimized position for each needle assembly is maintained during the changeover.

#### APCI specifications

SelectTemp allows temperature programming of the drying gas throughout the analysis.

LC flow range	100 $\mu\text{L}/\text{min}$ –2 mL/min
Nebulizing gas	1.5 L/min typical
Auxiliary gas flow rate	4 L/min typical
Auxiliary gas temperature	550 °C max; optimum is compound, mobile phase and flow dependent
Drying gas flow rate	2 L/min typical
Corona current	–50 to + 20 $\mu\text{A}$
Spray chamber temperature	65 °C max
Spray needle	Off-axis from the capillary axis; adjustable distance from spray plate

## Utilities and Environment

#### Lab specifications

Power requirements for the MS and mechanical pumps	200–240 Vac, $\pm 10\%$ , 50/60 Hz, 3200 VA (steady state)
Venting for the API spray chamber	Up to 20 L/min
Venting for the foreline pumps	Up to 2 L/min
He damping gas	Up to 7 mL/min
Nitrogen (+ESI) nebulizing and drying gas	Up to 5 L/min, regulated at 80 psi
Air (-ESI) nebulizing gas	Up to 5 L/min, regulated at 80 psi
Humidity	20–80% relative humidity (without condensation)
Temperature range	16–30 °C, it is recommended to maintain the operating environment within $\pm 3$ °C ( $\pm 6$ °F).



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