# 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 $10^5$, compound-dependent based upon analytical methods |
| Modes | Full scan and $MS^n$ (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 µL/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 µL–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 |

| Detection system | |
|---|---|
| Detector | Off-axis design, ± 15 kV HED and electron multiplier |

| 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 $m^3$/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.

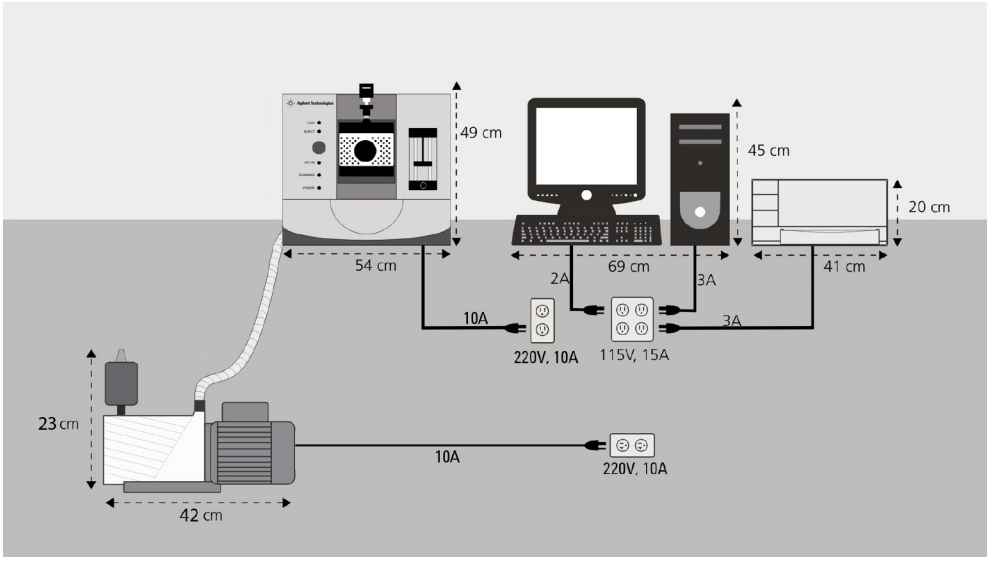
| APCI specifications | |
|---|---|
| SelecTemp allows temperature programming of the drying gas throughout the analysis. | |
| LC flow range | 100 µL/min–2 mL/min |
| Nebulizing gas | 1.5 L/min typical |
| Auxiliary gas flow rate | 4 L/min typical |
| Auxiliary gas temperature | 550 °C max; optimum is compound, mobile phase and flow dependent |
| Drying gas flow rate | 2 L/min typical |
| Corona current | –50 to + 20 µA |
| 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, ± 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 ± 3 °C (± 6 °F). |

| Dimensions | |
|---|---|
| First number is basic footprint size, second number is maximum hardware dimension. Additional space is required for hoses and cables. See pre-installation manual for detailed space requirements. | |
| Height | 46 cm (18 in)<br>9 cm (19 in) with needle |
| Width | 49 cm (20 in)<br>4 cm (21 in) with vacuum ports |
| Depth | 82 cm (32 in)<br>4 cm (33 in) with gas connectors |

| Weight | |
|---|---|
| MS | 62 kg (135 lb) |
| Foreline Pump | 33 kg (73 lb) |



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