



Agilent 7800 Quadrupole ICP-MS

FAST-TRACK YOUR METALS ANALYSIS WITH SOLUTION-READY ICP-MS

The Measure of Confidence



Agilent Technologies

TAKE A NEW LOOK AT ROUTINE METALS ANALYSIS

The new, Solution-Ready Agilent 7800 ICP-MS combines proven, robust hardware, auto-optimization tools, and Pre-set Methods to simplify routine analysis, making your laboratory more productive, and your results more reliable.

What's more, with high matrix tolerance, wide dynamic range, and effective control of polyatomic interferences, the 7800 ICP-MS takes the uncertainty out of analyzing complex or variable sample matrices.

The 7800 ICP-MS is extraordinarily easy to set up and use, so you can quickly produce reliable results in the widest range of sample types.

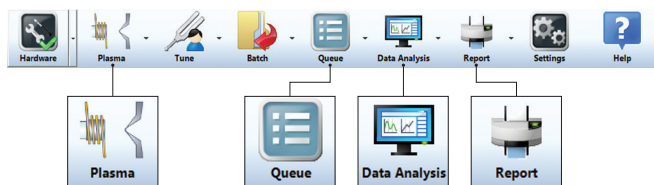
Fast track your ICP-MS method development

- New ICP-MS MassHunter software provides fast system setup, robust auto-optimization tools and extensive system status monitoring, to ensure consistent high performance.
- Many common methods can simply be loaded and run, with settings – from plasma conditions to analyte integration times and internal standards – predefined in a Pre-set Method. Where a specific new method is needed, the Method Wizard simplifies the setup process.
- The software includes performance, tune, QC, and sample report templates with operator tutorials for refresher or new-user training.
- Standard operating procedures (SOPs) for several common applications, guide new users in system setup and routine operation, setting you on the fast track to accurate analysis.



Solution-Ready ICP-MS

The 7800 ICP-MS includes SOPs for common applications, including drinking water, environmental waste analysis, and Elemental Impurities in pharmaceutical products.



Simplify your method setup

ICP-MS MassHunter software uses an intuitive layout with graphical toolbar Gadgets, making it easy to learn and use. The innovative Method Wizard builds a fully functional method based on your sample type and application.

LET THE AGILENT 7800 ICP-MS STREAMLINE YOUR ANALYTICAL WORKFLOW

Maximize throughput and productivity

The optional Integrated Sample Introduction System (ISIS 3), shown, and new SPS 4 autosampler lower your cost per analysis, without compromising data quality.

Reduce sample preparation and minimize suppression

Agilent's unique High Matrix Introduction (HMI) technology, standard on the 7800 ICP-MS, lets you analyze samples containing up to 3% total dissolved solids (TDS) without dilution, reducing sample preparation and saving time.

HMI also reduces signal suppression, so high matrix samples can be measured accurately without requiring matrix matched calibration standards.

Ensure accurate data with effective interference removal

Helium (He) collision mode simplifies method development and routine operation by removing all polyatomic ion interferences under a single consistent set of conditions.

He mode avoids the need for matrix-specific or analyte-specific reaction cell conditions.

Analyze major and trace analytes in a single run

The wide dynamic range orthogonal detector system (ODS) enables direct analysis of major elements (100s or 1000s of ppm) and trace level analytes (single- or sub-ppt) in a single run, simplifying methodology.

The high upper concentration limit reduces sample reruns caused by overrange results.



For more information

Learn more

www.agilent.com/chem/7800icpms

U.S. and Canada

1-800-227-9770

agilent_inquiries@agilent.com

Europe

info_agilent@agilent.com

Asia Pacific

inquiry_lsca@agilent.com

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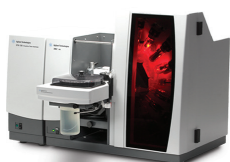
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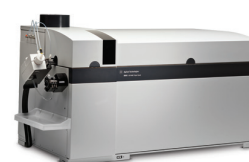
Agilent MP-AES



Agilent ICP-OES



Agilent ICP-MS



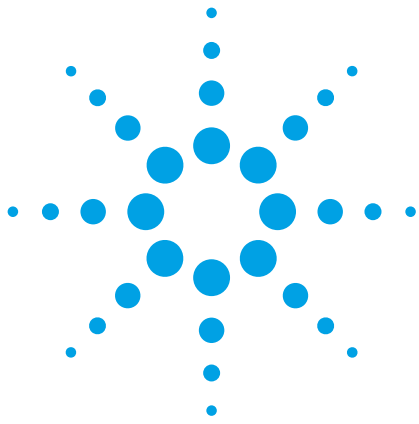
Agilent ICP-QQQ

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Agilent 7800 ICP-MS

Specifications and Typical Performance



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What's more, with high matrix tolerance, wide dynamic range, and effective control of polyatomic interferences, the 7800 ICP-MS takes the uncertainty out of analyzing complex or variable sample matrices.

The 7800 ICP-MS is extraordinarily easy to set up and use, so you can quickly produce reliable results in the widest range of sample types.



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Specifications

Sample introduction system	Peristaltic pump	10-roller, 3 channels
	Nebulizer	MicroMist (borosilicate glass)
	Spray chamber	Scott-type double-pass (quartz) Controlled temperature range: $-5\text{ }^{\circ}\text{C}$ to $+20\text{ }^{\circ}\text{C}$
	High Matrix Introduction system (HMI)	Included
Plasma	RF generator	Solid state digital drive 27 MHz Variable-frequency impedance matching 500 W to 1600 W
	Torch	One-piece (quartz) 2.5 mm id injector ShieldTorch system
	Torch position	Horizontal and vertical position: $\pm 2\text{ mm}$, in 0.1 mm steps Sampling depth: 3 to 28 mm, in 0.1 mm steps
	Mass flow controllers (Ar)	4: Plasma, Aux., Carrier, Make up/Dilution
	5th gas line for alternative carrier gas	Optional
Interface	Sampling cone	1 mm diameter orifice Standard: Ni-tipped with Cu base Optional: Pt-tipped with Cu base
	Skimmer cone	0.4 mm diameter orifice Standard: Ni Optional: Pt-tipped with Cu base
Ion lens	Lens system	Extraction lens Off-axis Omega lens
Octopole Reaction System (ORS)	He (collision) cell gas line	Included
	H ₂ (reaction) cell gas line	Optional
	3rd cell gas line (low- or high-flow rate)	Optional
Mass analyzer	Quadrupole	Frequency: 3 MHz Hyperbolic rod profile
	Mass range	2–260 u
	Mass resolution	Variable from 0.3 u to 1.0 u
	Typical mass calibration stability	$< 0.05\text{ u per day}$ $< 0.1\text{ u per 6 months}$
	Abundance sensitivity (at Cs)	Low mass side: $\leq 5 \times 10^{-7}$ High mass side: $\leq 1 \times 10^{-7}$

Detector	Configuration	Orthogonal Detector System (ODS)
	Detector	Dual-mode discrete dynode electron multiplier
	Dynamic range	10 orders (0.1 cps to 4 Gcps)
	Minimum integration time	100 μ s
	Minimum dwell time (TRA mode)	3 ms
Vacuum system	Configuration	Three-stage differential vacuum system
	Vacuum pump	Single split-flow turbo molecular pump Single external rotary pump
	Vacuum pump hose length	1.5 m, 3 m (optional)
Software	Instrument control software	ICP-MS MassHunter Workstation software
	User access control software	Optional
	Chromatographic software	Optional
	Single nanoparticle application module	Optional
	Intelligent sequencing software	Optional
	Three offline user licenses	Optional

Accessories and Peripherals

Autosamplers	Agilent SPS 4 Autosampler Agilent Integrated Autosampler (I-AS)
Sample introduction	Integrated Sample Introduction System 3 PFA Inert Sample Introduction Kit Organic Solvent Introduction Kit Humidifier
Speciation kits	LC-ICP-MS Speciation Kits Arsenic Speciation Kit Chromium Speciation Kit Capillary LC Interface Kit GC-ICP-MS Interface
Peripherals	Water recirculator Water chiller Optional hood Quiet cover for rotary pump

Instrument Performance

The factory shipping specifications that are confirmed at the factory represent minimum requirements for shipping approval. The actual performance of the Agilent ICP-MS is invariably much higher. The two tables below provide the typical performance of the Agilent 7800 ICP-MS, together with the factory shipping specifications.

No Gas mode		7800 Factory Specifications ¹	7800 Typical Performance ²
Sensitivity (Mcps/ppm)	⁷ Li	50	110
	⁵⁹ Co		180
	⁸⁹ Y	160	270
	¹¹⁵ In		320
	²⁰⁵ Tl	80	340
	²³⁸ U		540
Background	<i>m/z</i> 9	<1 cps	<0.3 cps
Detection limits	⁹ Be	<0.5 ppt	<0.1 ppt
	¹¹⁵ In	<0.1 ppt	<0.04 ppt
	²⁰⁹ Bi	<0.1 ppt	<0.04 ppt
Oxide	CeO/Ce	<1.5%	<1.8%
Doubly charged	Ce ²⁺ /Ce	<3%	<2.5%
Stability	20 min	<2.0% RSD	<1.0% RSD
	2 hr	<3.0% RSD	<1.2% RSD
Isotope ratio precision	¹⁰⁷ Ag/ ¹⁰⁹ Ag	<0.1% RSD	<0.1% RSD

He Gas mode		7800 Typical Performance ²
Sensitivity (Mcps/ppm)	⁵⁹ Co	47
Background	<i>m/z</i> 9	<0.2 cps
Interference reduction factor ³	⁵⁹ Co/ ⁵¹ ClO	>30
Oxide	CeO/Ce	<0.5%
Detection limits ³	⁷⁵ As	<10 ppt

1. 7800 Factory Shipping Specifications. These specifications are detailed in the Agilent publication: Agilent 7800 ICP-MS. Specifications (Publication number: 5991-5927EN).

2. The typical performance values are not checked during the standard installation.

3. Performed in a matrix of 2% HNO₃ + 0.5% HCl.

Site Requirements and Safety

Dimensions

Mainframe	Width	730 mm (main cabinet, excluding peri-pump)
	Depth	600 mm (main cabinet, excluding power cord)
	Height	595 mm (main cabinet, excluding exhaust chimney)
	Weight	100 kg
Largest shipping container	Width	1,020 mm
	Depth	1,120 mm
	Height	1,000 mm
	Weight	148 kg

Environmental

Operating temperature	Range	15–30 °C
	Rate of change	<2 °C/hr (max. change 5 °C)
Operating humidity	Range	20-80% (non-condensing)

Utilities

Electricity supply	Voltage	Single Phase, 200-240 V, 50/60 Hz
	Current	30 A
Cooling water	Inlet temperature	15-40 °C
	Minimum flow rate	5 L/min
	Inlet pressure	230-400 kPa
Argon gas supply	Minimum purity	99.99 %
	Maximum flow rate	20 L/min
	Supply pressure	500-700 kPa
Cell gas supply	Minimum purity	99.999%
	Maximum flow rate	12 mL/min for He and 10 mL/min for H ₂
	Supply pressure	90-130 kPa for He 20-60 kPa for H ₂
Exhaust duct	Vent Type	Single vent, 150 mm diameter
	Flow rate	5-7 m ³ /min

Regulatory Compliance

Safety	IEC 61010-1:2001 / EN 61010-1:2001
	IEC 61010-2-061:2005 / EN 61010-2-061:2003
	IEC 61010-2-081:2001+A1:2003 / EN 61010-2-081:2002+A1:2003
	Canada: CAN/CSA C22.2 No. 61010-1-04
	Canada: CAN/CSA C22.2 No. 61010-2-061-04
EMC	IEC 61326-1:2012 / EN 61326-1:2013
	Canada: ICES-001:2006
	USA: UL 61010-1 (2nd Edition)
ISO	Manufactured at an ISO 9001 and ISO 14001 certified facility

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