

7700 Series ICP-MS – Site Preparation Checklist

Thank you for purchasing an Agilent **instrument**. To get you started and to assure a successful and timely installation, please refer to this specification or set of requirements.

Correct site preparation is the key first step in ensuring that your instruments and software systems operate reliably over an extended lifetime. This document is an **information guide AND checklist** prepared for you that outlines the supplies, consumables, space and utility requirements for your equipment for your site.

Customer Responsibilities

Make sure your site meets the following prior specifications before the installation date. For details, see specific sections within this checklist, including:

- The necessary laboratory or bench space is available
- The environmental conditions for the lab as well as laboratory gases and plumbing
- The power requirements related to the product (e.g., number & location of electrical outlets)
- The required operating supplies necessary for the product and installation
- Please consult Other Requirements section below for other product-specific information.
- Please follow the site preparation instructions provided in Site Preparation Guide, part number G3280-90010. This document is only an overview of the main requirements.
- Agilent Technologies service providers will not install your Agilent 7700 ICP-MS system until an adequate exhaust system is present and functioning. See Environmental Conditions section.

If Agilent is delivering installation and familiarization services, users of the instrument should be present throughout these services; otherwise, they will miss important operational, maintenance and safety information.

- This checklist includes information on these products: G3281A, G3282A, and G5700A.

Important Customer Information

1. If you have questions or problems in providing anything described as a Customer Responsibilities above, please contact your local Agilent or partner support/service organization for assistance prior to delivery. In addition, Agilent and/or its partners reserve the right to reschedule the installation dependent upon the readiness of your laboratory.
2. Should your site not be ready for whatever reasons, please contact Agilent as soon as possible to re-arrange any services that have been purchased.
3. Other optional services such as additional training, operational qualification (OQ) and consultation for user-specific applications may also be provided at the time of installation when ordered with the system, but should be contracted separately.

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Dimensions and Weight

Identify the laboratory bench space before your system arrives based on the table below.

Pay special attention to the **total height and total weight requirements for all system components you have ordered and avoid bench space with overhanging shelves**. Also pay special attention to the total weight of the modules you have ordered to ensure your laboratory bench can support this weight.

Special Notes

1. The Agilent 7700 Series ICP-MS, its data system and accessories will be delivered to your site in large and small shipping containers. Note the size of the largest shipping container below.
2. The containers will be delivered in a large truck. You must furnish a forklift, or other suitable lifting device, and make arrangements to unload the truck and transport the containers to your site. All doorways, hallways, floors and elevators must be able to accommodate the largest, heaviest container. Do not open any of the shipping containers unless a representative of Agilent Technologies is present.
3. At least 60 cm or 2 feet on all sides of the instrument must be kept clear for maintenance access.

| Instrument Description | Weight | | Height | | Depth | | Width | |
|----------------------------|--------|-----|--------|------|-------|------|-------|------|
| | Kg | lbs | cm | in | cm | in | cm | in |
| Largest shipping container | 157 | 347 | 85 | 34 | 100 | 40 | 100 | 40 |
| 7700 ICP-MS Mainframe | 115 | 254 | 59.5 ❶ | 23.4 | 62 ❷ | 24.4 | 73 | 28.7 |

❶ Height is 65.5 cm or 25.8 inches including the duct collar on top.

❷ Depth is 72.5 cm, 28.5 inches including the power connector projecting at rear.

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Environmental Conditions

Operating your instrument within the recommended temperature ranges insures optimum instrument performance and lifetime.

Special Notes

1. Performance can be affected by sources of heat and cold (e.g., direct sunlight, heating/cooling from air conditioning outlets, drafts and/or vibrations). The site's ambient temperature conditions must be stable for optimum performance. Less than 2°C/hour change and total change less than 5°C.
2. The ambient temperature around the heat exchanger must not exceed 30°C for normal ICP-MS operation.
3. Maximum altitude up to 2000 m.
4. **Recommended exhaust and venting requirements** include:
 5.0 m³/min > flow < 7.0 m³/min. (>4.7 m/s <6.6 m/s) for 15cm diameter ducting
 Exhaust flow must be continuous as long as the plasma is ON.
 Exhaust flow must be stable: maximum fluctuation of ±5% of target flow.
 The backpressure of the instrument is approximately 40 Pa.
 The ventilation ducting must have an ID of 150mm (5.9 inches).
 Flexible ducting must be used for easy removal during instrument maintenance.
5. User safety requires that the exhaust gases from the plasma and vacuum systems be vented externally to the building and not re-circulated by the environmental control system. Health hazards include chemical toxicity of solvents, samples, and foreline pump fluid vapor.
6. The customer is responsible for supplying the ductwork between the instrument and the lab extraction system.

| Instrument Description | Operating temp range °C (F) | Operating humidity range (%) | Heat Dissipation (Watts) | Heat Absorbed (Watts) |
|------------------------------------|-----------------------------|--------------------------------------|--------------------------|-----------------------|
| 7700 ICP-MS | 15-30 (59-86) | 20-80, non-condensing, non corrosive | 2,900 | |
| Foreline Pump | | | 500 | |
| PC / Monitor | | | 430 | |
| Agilent Chiller (G3292A) (50/60Hz) | | | 3,200 max | 1,600 (2,000 maximum) |
| Heat Exchanger (50/60Hz) | | | 2,000 max | 1,600 (2,000 maximum) |
| Extraction Vent | | | | 1,600 (2,500 maximum) |

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Power Consumption

Special Notes

1. If a computer system is supplied with your instrument, be sure to account for those electrical outlets.
2. Installation requires an isolated, noise free ground.
3. Instrument ships with NEMA L6-30P twist lock power plug for the following countries: Japan, Korea, Taiwan, US, and all Americas (North, Central and South American countries).
4. Instrument ships with IEC 60309 power plug for all other countries.
5. Do not use extension cords with Agilent Technologies equipment. They cannot provide enough power to the system and can be a safety hazard. If the desired location of equipment does not permit its standard power cord to reach an electrical outlet, your electrician should install additional outlets. Otherwise, you should relocate the equipment closer to existing electrical outlets.

| Instrument Description | Line Voltage & Frequency (V, Hz) | Current Rating (amps) | Maximum Power Consumption (W) |
|-------------------------------------|--|-----------------------|-------------------------------|
| 7700 ICP-MS, for the U.S. and Japan | 200 - 219Vac, 50/60Hz | 24 | |
| 7700 ICP-MS, for Europe | 220 - 240Vac, 50/60Hz | 24 | |
| PC/Monitor/Printer | 100-127Vac 200-240Vac | 15 8 | |
| Agilent Chiller (G3292A) | 208-230Vac, 60Hz 240Vac, 50Hz | 12.2 12.2 | 2900 2900 |
| Agilent Chiller (G3159A) | 200Vac, 50/60Hz | 20 | |
| Agilent Heat Exchanger (G1879B) | 200-240Vac, 50Hz 100-120Vac, 50/60Hz | 2.75 5.5 | |
| Integrated Autosampler (I-AS) | 100-120Vac, 50/60Hz 200-240Vac, 50/60Hz | 1 0.5 | |
| ASX-500 Series Autosampler | 85-264Vac | <1 | 40 |

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Cooling Water Requirements

Special Notes

1. The preferred cooling system is the Agilent Chiller (G3292A), or Heat Exchanger (G1879B), filled with Poly-Clear Fluid (G3292- 80010).
2. If you are not using the preferred system, and another type of water re-circulator is used, the reservoir should be filled with distilled water having a conductance in the range of 50 to 150 μs .
3. Distilled water will keep the system clean. Do not use tap water as it will contaminate the system and do not use deionized water as it will corrode the system.

| Cooling Water Parameter | Specification |
|---------------------------|---|
| Heat to be absorbed | 1,600 W approximately |
| Flow Rate | > 5L/min (1.32 us gallons/min); Inlet pressure 230-400kPa (33-58psi) |
| Temperature | 15-40°C at water inlet of ICP-MS |
| Conductivity ^❶ | 50-150 μs at the chiller reservoir |
| Connections | Hose 1 \times 10m long, ID=12mm (7/16inch); Male PT 1/2inch fittings on the 7700 ICP-MS end |
| Water Filter | <100 microns particle size |

^❶ If you are not using the preferred system.

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Gas Requirements
Special Notes

- The Argon gas regulators should be within 5 meters of the 7700 ICP-MS. It is strongly recommended that the cell gas cylinder, regulator with pressure gauge and shutoff valve are within 3 m of the 7700 ICP- MS.

Argon Gas

| Compressed gas | Purity | Compressed Gas Assoc. Standard | Typical Working Pressure kPa (psi) | Consumption (L/min) |
|--|-------------------------------------|--------------------------------|------------------------------------|---------------------|
| Argon | ≥99.99% | CGA 580 | 500-700 (73-102) | 20 |
| Option Gas (If required for application) | Oxygen 20% Argon 80% ≥99.999% | CGA 540 | 10-100 (1.5-14) | 1.0 |

Cell Gas

| Compressed gas | Purity | Compressed Gas Assoc. Standard | Typical Working Pressure kPa (psi) | Max Consumption (mL/min) |
|-------------------------------|------------|--------------------------------|------------------------------------|--------------------------|
| Helium | ≥99.999% | CGA 580 | 90-130 (13-18.8) | 12 |
| Hydrogen ❶ | ≥99.999% | CGA 350 | 20-60 (2.9-8.7) | 10 |
| Xenon ❷ | ≥99.999% | CGA 580 | 20-60 (2.9-8.7) | 1 |
| NH ₃ /He 10%/90% ❷ | ≥99.999% ❸ | CGA 705 | 20-60 (2.9-8.7) | 10 |

❶ Hydrogen gas is an option (G3289A) with the 7700x ICP-MS.

❷ 3rd Cell Gas Line is an option.

❸ Both the NH₃ and He gases used to prepare the gas mix must be ≥99.999% pure. For NH₃/He Gas, Agilent recommends use of CONCOA Regulators and Protocol Station. To find a Concoa representative in your area please visit Concoa on the web at <http://www.concoa.com>.

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Essential Requirements for Cell Gas Installation
Special Notes

1. The cell gas pathway from the source to the mass spectrometer must be as short and as clean as possible to ensure correct operation of the ORS.
2. Only dedicated cylinders of 99.999% pure gas are to be used.
3. House gas supplies are not allowed, and sharing of gas supplies with other instruments (except another Agilent ORS (single quad or triple quad) ICP-MS) is not allowed.
4. The Agilent ancillary parts detailed below should be used to ensure the highest quality supply of He and H₂ cell gas.
5. Only the Agilent stainless steel tubing (Part# G3270- 65035 should be used to connect the He, H₂, (or other cell gases) cell gas cylinders to the Agilent 7700 ICP- MS, and the length of the tubing must be less than 3m.
6. No other valves, fittings or connections are to be inserted along the length of the cell gas supply lines.

| Agilent Part Number | Description |
|---------------------|--|
| CP17976 ❶ | Filter x 2, single position base plate (for He and/or H ₂) |
| CP7988 | Single-position base plate |
| CP7981 | Wall mount bracket |
| 8710-1709 | Tube cutter |
| G3270-65035 | 1/8" Stainless steel tubing, 6 m |

❶ Do not use for NH₃/He

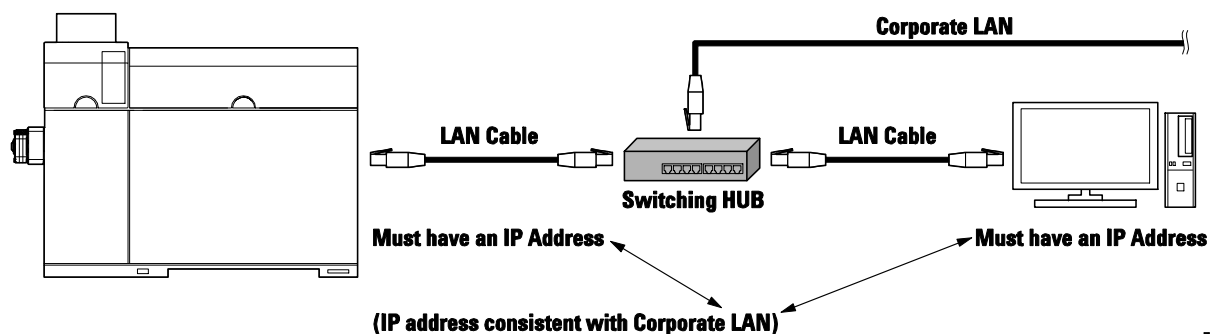
7. Consult your local supplier for regulators detailed below.

| Description | Quantity | Note |
|---|----------|--|
| Two stage regulator, must be fitted with stainless steel diaphragms, 100 – 200kPa (14 – 28 psi) For use with: He | 1 | These regulators must be ordered in the country of use. Gas cylinder – regulator connections vary throughout the world and are not compatible. |
| Two stage regulator, must be fitted with stainless steel diaphragms, 100 – 200kPa (14 – 28 psi) For use with: H ₂ | 1 | |

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Other Requirements
Special Notes

1. Customer must create Microsoft Account when the Excel 2013 package arrives.
2. A network connection to the company LAN is not required for instrument operation.
3. If you need to connect the ICP-MS computer to your company LAN, we only recommend connection via a switching HUB. A small 10/100 6 port switch can be obtained from many sources at low cost.
4. When connecting via a switching hub your IT department **must reserve two fixed (static) IP addresses** that share the same subnet mask and are dedicated to the 7700 ICP-MS.
5. The Agilent ICP-MS system **does not** support the use of a computer with two network interface cards. It has been observed that the use of two network cards frequently results in crosstalk between the cards. This crosstalk can cause communication failures.


Important Customer Web Links

- For additional information about our solutions, please visit our web site at <http://www.chem.agilent.com/en-US/Pages/HomePage.aspx>
- Need to get information on your product?
Literature Library - <http://www.agilent.com/chem/library>
- Need to know more?
Customer Education - <http://www.agilent.com/chem/education>
- Need technical support, FAQs? - <http://www.agilent.com/chem/techsupp>
- Need supplies? - <http://www.agilent.com/chem/supplies>

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