R990 MicroGC

Installation prerequisites

Version 1.3

Dear user,

Thank you for choosing this SRA Instruments product.

This manual contains all the necessary information for the good installation of your instrument. Should you need further information or if you encounter any problems, please contact our After Sales Service:

Hotline: +33 (0)4 78 44 22 09
E-mail : service@sra-instruments.com

SRA INSTRUMENTS ANALYTICAL SOLUTIONS	SRA Instruments 210 rue des Sources 69280 Marcy l'Etoile FRANCE	Tel : +33 (0)4 78 44 29 47 info@sra-instruments.com www.srainstruments.com

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1. Safety information

1.1 Information

To prevent injury to the user or damage to the unit, it is essential to read the information contained in this chapter.

If this manual is not in your native language and you have problems understanding the text, we recommend that you contact SRA Instruments. SRA Instruments cannot be held responsible for any damage or injury caused by misunderstanding the information contained in this manual.

1.2 Operating instructions

This instruction manual is provided to help you establish the operating conditions, which will allow safe and efficient use of your equipment.

Special considerations and precautions are also described in the manual, which appears as **NOTES**, **CAUTIONS** and **WARNINGS** as described below.

It is important that you use your equipment in accordance with this instruction manual and any additional information that may be provided by SRA Instruments. Questions regarding the safe and proper use of your equipment should be directed to your local SRA Instruments distributor.

Information to help you get the best performance from your device.

Alerts you about situations that may cause minor injury or moderate damage to the unit, and how to avoid these situations.

Alerts you about potentially dangerous situations that can lead to severe injuries, and how to avoid these situations.

2. Installation prerequisites

To ensure quick, safe, and simple installation, we recommend that you make the following arrangements before the SRA Instruments technician installs your unit.

2.1 Environmental requirements

- Air pollution degree : 2
- Relative humidity : 0 % to 95 %
- Working temperature : 0 to 50 °C
- The R990 MicroGC is designed for indoor use.
- The R990 MicroGC must be protected from corrosive gases or chemicals, dust and particle accumulation, and direct ventilation from air conditioners, heating systems, ovens, or fans.

2.2 Space needed

- Allow sufficient space for the analyzer and its peripherals or accessories to be installed. The table below lists the dimensions and weight of the R990 MicroGC.
- Ensure 10 to 20 cm of free space at the rear of the R990 MicroGC to allow free air circulation and the necessary connections.
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	Height mm	**Width** mm	**Depth** mm	**Weight** Kg
R990 MicroGC 4 modules + OBC	222 (5U)	449	496	24
R990 MicroGC 3 modules + OBC	222	449	496	22
R990 MicroGC 2 modules + OBC	222	449	496	20
R990 MicroGC 1 modules + OBC	222	449	496	18

2.3 Power supply

- Mains voltage from 100 to 240 Vac, frequency between 50 and 60 Hz.
- The power supply unit used must be reserved exclusively for the devices.
- The power supply must be properly grounded.
- Installation category (overvoltage category) : II

2.4 Alimentation

The R990 MicroGC requires 12V Vdc, 300 W maximum. For details, refer to the R990 MicroGC User Manual.

2.5 Gas supply

2.5.1 Carrier gas supply

Carrier gas cylinder(s) supplied with a 2-stage regulator to correctly adjust the gas pressure to 5.5 ± 0.1 bar (550 ± 10 kPa or 80 ± 2 psi).

2.5.2 Carrier gas purity

Gases supplied to the instrument must have a minimum purity of 99.9995 % (ideally 99.9999 % for trace analysis). We therefore recommend using a filter cartridge to remove traces of oxygen, moisture and hydrocarbons when the carrier gas is grade 5.0 (99.999 %). For this purpose, the Agilent CP17976 kit is the one recommended by SRA Instruments.

2.5.3 Safety

Gas cylinders must be fixed to a table or wall.

Warning regarding the use of hydrogen:

Hydrogen is a carrier gas commonly used in GC. When mixed with air, hydrogen can form explosive mixtures and has other dangerous characteristics.

When using hydrogen (H_2) as the carrier gas, be aware that hydrogen gas can create a fire or explosion hazard. Be sure that the supply is turned off until all connections are made.

Hydrogen is flammable. Leaks, when confined in an enclosed space, may create a fire or explosion hazard. In any application using hydrogen, leak test all connections, lines, and valves before operating the instrument. Always turn off the hydrogen supply at its source before working on the instrument.

- Hydrogen is combustible over a wide range of concentrations.
- At atmospheric pressure, hydrogen is combustible at concentrations from 4 % to 74.2 % by volume.
- Hydrogen has the highest burning velocity of any gas.
- Hydrogen has a very low ignition energy.
- Hydrogen that is allowed to expand rapidly from high pressure into the atmosphere can self-ignite.
- Hydrogen burns with a nonluminous flame which can be invisible under bright light.
- If hazardous gases are used, make sure there is adequate ventilation.

2.6 Gaseous samples

- Never analyze liquid samples !
- Type of samples : non-condensable gases.
- Samples other than non-condensable gases (with moisture, vapors, particles, or polymers) must first be filtered.
- State of the sample : non-condensable gas between 0 and 110 °C.
- Sample pressure between 0 and 1 relative bar (100 kPa).
- The sample inlets of the analyzer are 1/8" male stainless steel tube fittings located at the back.

2.7 Carrier gas connection

The gas inlets are 1/8" male stainless steel tube fittings located at the back. We strongly recommend that you do not use plastic tubing. Use only properly cleaned copper or stainless steel tubing.

The optional gas filters for the R990 MicroGC are filled with nitrogen. If you are not using nitrogen as a carrier gas, purge the filters and gas lines after installing a new filter.

Possible carrier gases :
Helium (He), Hydrogen (H2), Argon (Ar) and Nitrogen (N2).

If you use hydrogen as a carrier gas, pay particular attention to possible leaks in the internal and external connections of the R990 MicroGC (use an electronic leak detector).

2.8 Standard gas

The R990 MicroGC is an analyzer designed for gas and vapor analysis only. We recommend that you prepare a standard sample for a routine check of the instrument. The sample pressure must be between 0.1 and 1 relative bar (10 and 100 kPa), its temperature between 0 and 100 °C and the sample must be filtered through a 5 to 7 µm filter.

Where possible, remove moisture from samples for analysis with the R990 MicroGC.

2.9 Procedure after long-term storage

Follow the procedure below if your MicroGC has been stored for a long time!

- Supply the MicroGC with carrier gas.
- Switch on the MicroGC.
- Switch off the TCD detectors using the software.
- Set the temperature of the columns to the maximum (110, 160 or 180 °C depending on the module).
- Condition the module, preferably overnight. This will ensure that all water has been removed from the module and that there will be no damage to the TCD detectors.

2.10 Outputs

The MicroGC has different output ports for interfacing with a computer system: 1 Ethernet port, 3 USB ports, 1 VGA output.

2.11 R990 MicroGC computer requirements

- Intel core i3 Processor
- 8 GB RAM
- 256 GB SSD
- Windows 10 Pro, IOT or Entreprise
- Recommended 1024x768x65536 color video display.
- At least 1 USB port.
- The customer's network must conform to the Ethernet standard (IEEE 802.3).
- The MicroGC can be connected to any 10BASE-T or 10/100BASE-TX compatible HUB or Switch.
- TCP-IP must be used on the network.

2.12 Initial operation

A test method was provided. This method has been designed to determine if the instrument is operating correctly and provides test chromatograms on which the conditions are indicated.

If you have ordered a CP-Molsieve column module, make sure it is packaged before use.