

Agilent CrossLab Start Up Services

Agilent InfinityLab LC Series SFC

Site Preparation Checklist

Thank you for purchasing an instrument from **Agilent Technologies**. CrossLab Start Up is focused on helping customers shorten the time it takes to start realizing the full value of their instrument investment.

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, space, and utility requirements for the system set up in your lab.

Introduction

Customer Information

- If you have questions or problems in providing anything described as part of Customer Responsibilities below, 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.
- Should your site not be ready for whatever reasons, please contact Agilent as soon as possible to re-schedule any services that have been purchased.
- 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.
- Please refer to the other peripheral products (ie, samplers etc.) for site preparation requirements.
- The availability of pressurized CO₂ and an exhaust line is not typical for LC installations, but is critical for the installation of the SFC System. The required pressure is 40 – 70 bar. **The customer must provide a connector of appropriate size. The CO₂ Gas Cylinder Connector must be an SST adapter with PTFE seal (especially for SFC MSD Systems).** The CO₂ Gas Cylinder Connection is not supplied by Agilent, as there are many different cylinder connections worldwide.
- Do not to open/unpack boxes until an Agilent representative is present.
- If applicable, the Network Assessment Tool can be used to verify the network environment.

Customer Responsibilities

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

- The necessary laboratory or bench space is available.
- The required **environmental conditions for the lab** as well as laboratory gases, tubing.
- The **power requirements** related to the product (e.g. **number & location** of electrical outlets).
- The **required operating supplies** necessary for the product and installation.
- While Agilent is delivering **Installation and Introduction** services, users of the instrument should be present throughout these services; otherwise, they will miss important operational, maintenance and safety information.
- Please consult the **Special Requirements and Other Considerations** section below for other product-specific information.
- HPLC grade (or better) solvents needed for installation (acetonitrile, isopropanol, and water).

Important Customer Web Links

- To access Agilent training and education, visit <https://www.agilent.com/chem/training> to learn about training options, which include online, classroom and onsite delivery. A training specialist can work directly with you to help determine your best options.
- To access the **Agilent Resource Center** web page, visit <https://www.agilent.com/en-us/agilentresources>.

The following information topics are available:

- Sample Prep and Containment
- Chemical Standards
- Analysis
- Service and Support
- Application Workflows
- The **Agilent Community** is an excellent place to get answers, collaborate with others about applications and Agilent products, and find in-depth documents and videos relevant to Agilent technologies. Visit <https://community.agilent.com/welcome>
- Videos about specific preparation requirements for your instrument can be found by searching the **Agilent YouTube** channel at <https://www.youtube.com/user/agilent>
- **Need to place a service call?**
<https://www.agilent.com/en/promotions/flexible-repair-options>

Site Preparation

Module List

Module identification: The module identifier (e.g. G7114A) can be found on the lower right side of the module front cover.

The information in this document applies to Infinity II and Infinity III modules.

Module	Instrument Description
G4782A	1260 SFC Binary Pump
G4767A	1260 SFC Multisampler
G7167-60201	InfinityLab Sample Thermostat
G7116A	1260 Multicolumn Thermostat
G7116B	1290 Multicolumn Thermostat
G7114A	1260 Variable Wavelength Detector
G7114B	1290 Variable Wavelength Detector
G7115A	1260 Diode Array Detector WR
G7165A	1260 Multiple Wavelength Detector
G4260B	1260 Evaporative Light Scattering Detector
G7102A	1290 Evaporative Light Scattering Detector
G4301A	1260 SFC Control Module

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

The following table provides dimensions and weight requirements.

Instrument Description	Weight		Height		Depth		Width	
	kg	lbs	mm	in	mm	in	mm	in
G4782A	17.8	39.2	180	7.1	436	17.2	396	15.6
G4767A	22 ¹	< 48.5 ¹	320	12.6	468	18.4	396	15.6
G7167-60201	< 6	< 13.2	205	8.1	370	14.6	340	13.4
G7116A, G7116B	12.5	27.6	160	6.3	436	17.2	435 (460 ² , 472 ³)	17.1 (18.1 ² , 18.6 ³)
G7114A, G7114B	11	24.3	140	5.5	436	17.2	396	15.6
G7115A	12	26.5	140	5.5	436	17.2	396	15.6
G7165A	12	26.5	140	5.5	436	17.2	396	15.6
G7102A, G4260B	11 ⁴ , 13 ⁵	24.3 ⁴ , 28.7 ⁵	420	16.5	450	17.7	200	7.9
G4301A	26	56	600	23	480	18	260	10

1 width without sample thermostat

2 width with the left column ID tag reader

3 width with two column ID tag readers

4 non-cooled

5 cooled

Equipment Positioning on the Bench

- The module dimensions and weight allow you to place the module on almost any desk or laboratory bench. It needs an additional 2.5 cm (1.0 inches) of space on either side and approximately 8 cm (3.1 inches) in the rear for air circulation and electric connections.
- The ELSD needs an additional approximately 15 cm (5.9 inches) of space in the rear for air circulation and electric connections.
- The autosampler module especially with a sample cooler or sample thermostat installed should be operated in a proper horizontal position. Use a bubble level to check the leveling of the sampler.

Environmental Conditions

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

Special notes

- Performance can be affected by sources of heat & cold, e.g. direct sunlight, heating/cooling from air conditioning outlets, drafts and/or vibrations.
- The bench or supporting surface must be vibration free.
- Heat, cold, or vibration generated from other InfinityLab LC Series modules, which are installed according to instructions provided by Agilent Technologies, do not affect the performance of the LC system.
- The site's ambient temperature conditions must be stable for optimum performance.

The following table summarizes some key physical specifications. For the complete set of physical specifications, please refer to the corresponding module's manual.

Instrument Description	Operating Temperature Range °C (°F)	Operating Humidity Range %
G4260B	10 - 35 °C (50 - 95 °F), constant temperature	< 10 – 80 % r.h., non-condensing
G7102A	10 - 35 °C (50 - 95 °F), constant temperature	< 10 – 80 % r.h. at 35 °C (95 °F), non-condensing
G4301A	15 - 30 °C (59 - 86 °F), constant temperature	< 95 %, at 25 – 40 °C, non-condensing
G4782A, G7114A, G7114B, G7115A, G7116A, G7116B, G7165A	4 - 55 °C (39 - 131 °F), constant temperature	< 95 % r.h. at 40 °C (104 °F), non-condensing
G4767A	4 - 40 °C (39 - 104 °F), constant temperature	< 95 % r.h. at 40 °C (104 °F), non-condensing ⁶
G7167-60201	4 - 40 °C (39 - 104 °F) For sample cooling, ambient temperature >= 10 °C	< 95 % r.h. at 40 °C (104 °F), non-condensing

⁶ If a sample thermostat is included the upper value for humidity can be reduced. Please check your lab conditions to stay beyond dew point values for non-condensing operation.

Power Consumption

Special notes

- If a computer system is supplied with your instrument, be sure to account for those electrical outlets.
- The heat dissipation can be calculated from the active power, using the following equation:
 $1 \text{ W} = 3.413 \text{ BTU/h}$

Instrument Description	Line Voltage and Frequency V, Hz	Maximum Power Consumption VA	Maximum Power Consumption W
G4782A	100 - 240 V (AC), 50 or 60 Hz	90 VA	74 W
G4767A	100 - 240 V (AC), 50 or 60 Hz	180 VA	180 W
G7116A, G7116B	100 - 240 V (AC), 50 or 60 Hz	150 VA	150 W
G7114A, G7114B	100 - 240 V (AC), 50 or 60 Hz	80 VA	70 W
G7115A, G7165A	100 - 240 V (AC), 50 or 60 Hz	110 VA	100 W
G4260B, G7102A	100 - 120 V / 220 - 240 V (AC), 50 or 60 Hz	N/A	150 W, 2 A (max)
G4301A ⁷	100 - 240 V (AC), 50 or 60 Hz	700 VA	N/A

- Use the correct power cord.

⁷ A dedicated 15 A 100 - 120 V or 10 A 200 - 240 V AC power outlet is recommended for the SFC Control Module. The SFC Control Module should be located within 1 m (3 feet) of this outlet.

Required Operating Supplies by Customer for Installation

Special notes

- For information on Agilent consumables, accessories, and laboratory operating supplies, please visit: <https://www.agilent.com/en-us/products/lab-supplies>

Special Requirements and Other Considerations

G4301A

Gas Selection

The SFC Control Module can accept either liquid or vapor phase CO₂ at its inlet. Both phases must be clean and substantially free of other entrained liquids, vapors or solids. It is highly recommended that CO₂ delivered from high pressure cylinders be delivered as vapor [i.e. no dip tube]. The Control Module contains a CO₂ supply valve that will fail if inlet pressure exceeds 80 bar (1200 psi). As a result, large CO₂ supply systems may require pressure regulation to prevent overpressure. The maximum recommended inlet pressure is 70 bar (900 psi). The minimum inlet pressure is 40 bar (600 psi). A listing of suitable and unsuitable CO₂ supplies appears below.

Suitable CO₂ Supplies

- Beverage Grade CO₂ (> 99.98 % bulk purity; to be used for SFC-UV systems only, not pure enough for SFC-MSD systems) delivered as a vapor from high pressure cylinders.
- SFC Grade CO₂ (> 99.998 % bulk purity) delivered as a vapor or liquid from high pressure aluminum cylinders.
- High purity CO₂ (> 99.9998 % bulk purity) delivered from a distributed high capacity CO₂ delivery system.

NOTE

The CO₂ may be delivered as either a vapor or liquid. The user is responsible for providing lubricant-free shutoff valving to isolate the SFC control module from the supply system. Also adequate pressure regulation must be supplied to prevent exceeding the maximum inlet pressure specification.

Unsuitable CO₂ sources

Unsuitable CO₂ sources include:

- Cryogenic Dewar Cylinders or tanks. The vapor from these vessels is of insufficient pressure
- Helium padded high pressure CO₂ cylinders
- Premixed CO₂/organic liquid cylinders

The customer must provide a means of interfacing a supplied 1/8" steel tube with (Swagelok type) compression fitting to the gas supply or bottle. A 6 ft [~2 m] 1/8" od inlet transfer line is included with the system. The user supplied CO₂ system must be located within range of this line. Alternately, the line may be extended by the user using appropriate compression fittings, and pressure rated stainless steel transfer tubing.

Conversions: 1 psi = 6.8947 kPa = 0.068947 bar = 0.068 ATM

Since the inner pressure of a CO₂ cylinder is dependent on the ambient temperature. The CO₂ cylinder need to be stored in an area with temperature range between 15 °C to 30 °C (59 F to 86 F).

Exhaust Venting Requirements

The SFC control module's exhaust must be vented outside of the laboratory environment. This can be done by placing the outlet of the waste bottle into the air stream inside a chemical fume hood or into a sealed vent to the outside. The exhaust vent system should not be part of an environmental control system that recirculates air inside of a building.

Exhaust venting requirements need to comply with all local, state and federal environmental and safety codes. Venting Capacity: Not less than 1 L/min.

A 2 m (66 ft) length of 1/4 inch i.d., 3/8 o.d. tubing is included for venting the gaseous exhaust. A small plastic bottle is provided to separate liquid components from gaseous exhaust. The vent line may be easily extended by a 1/4" o.d. PTFE extension tube. The customer is responsible for collection and disposal of all waste streams and maintenance of the waste collection system.

Safety

The SFC control module is equipped with several safety devices:

- Pressure sensors monitor inlet and outlet CO₂ pressure
- RTD-style Temperature sensors monitor proper function of the CO₂ conditioning system and BPR
- A system leak sensor monitors for flow stream and condensation liquid leaks into the drip tray
- A CO₂ supply shutoff valve is included which shuts off the supply CO₂ when the pump is idle, in the event of a system error or a power failure

These safety devices as well as critical system fans and pumps are monitored for suitable operation by the SFC control module electronics. In the event of a failure, the controller will initiate an error routine which will perform a controlled shutdown of the local module and notify the HPLC system via hardware status lines. Hardware status lines are also monitored for HPLC system failure, which also cause a shutdown of the system. Safety devices must be maintained in good working order. A software diagnostic program is supplied with the SFC control module to assist in this task.

G7102A ELSD, G4260B ELSD

Gas requirements

A supply of inert gas (typically nitrogen) is required to operate these detectors. The gas supply needs to be free of oil, humidity and particles, as such contaminations will create background noise in the chromatograms and may damage the built-in pressure sensor. In case of such noise, flush the gas lines for sufficient time (might take days) and use additional filters of 0.5 µm or less. The typical gas pressure is 4 bar (60 psi) and must be set by an external pressure regulator. Pure gas is not required as the gas is only used as a carrier for the solid sample particles. The gas inlets of the detector have an outer diameter of 4 mm (0.157 inches). The lab installation must therefore allow the installation of a tubing with 4 mm (0.157 inches) outer diameter. Gas consumption is typically 0.9 SLM to 3.25 SLM, depending on the detector settings

Item description, (including dimensions etc.)	Vendor/Part Number (if applicable)	Recommended quantity
G7102A, G4260B ELSD Gas Nitrogen (typical)	N/A	N/A

Precautions: Solvent Vapors

Vapor sensors are used inside and outside the enclosure of the Agilent 1290 ELSD to alert the operator to solvent leaks. Liberal use of organic solvents in close proximity to the instrument may activate the vapor sensor, causing the instrument to shutdown.

Exhaust venting and drain requirements

The exhaust from the detector must be directed into a fume hood or exhaust vent. If a vacuum is used, it should be moderate so as to avoid turbulence in the optical chamber leading to a much reduced sensitivity of the detector. The potentially hazardous exhaust of evaporated solvent and sample must not be allowed to enter the laboratory atmosphere and any appropriate accessory like solvent filters should be disposed according to local environmental requirements.

If the extraction tube provided with the instrument is to be extended it is recommended that the diameter of the extension is increased to at least 50 mm (2 inches) diameter tubing so the extraction quality is not inhibited.

NOTE

Do not connect the exhaust vent directly to the detector.

This might cause either positive pressure or negative back pressure, both of which will impact the quality of your measurement results.

The drain tube must be directed to a waste container. The user is responsible for decontamination or recycling of any residue, according to local environmental requirements.

Further requirements

The 1290 ELSD (G7102A) and the 1260 ELSD (G4260B) can be controlled either via RS232 or via LAN. If the RS232 interface is used for control, the ELSD must be installed close to the control PC unless special data transmission systems are used. The length of the straight female/female RS232 cable supplied with both detectors is 2.9 m.

G7167-60201 Sample Thermostat

The Sample Thermostat uses isobutane (R600a) as refrigerant, which is environmentally friendly but flammable. Therefore, make some special considerations for the safe operation of the device:

- Keep open fire or sources of ignition away from the device.
- Ensure a room size of 1 m³ for every 8 g of R600a refrigerant inside the Sample Thermostat (total refrigerant loading is 30 g).
- Ensure adequate ventilation: typical air exchange of 25 m³/h per m² of laboratory floor area.
- Do not use mechanical devices or other means to accelerate the defrosting process.
- Keep the ventilation openings on the housing clear of any obstruction or blockage.

Stack Configurations

Recommended Stacking Configuration

NOTE It is possible to place the SFC control module either at the right or left side of the stack.

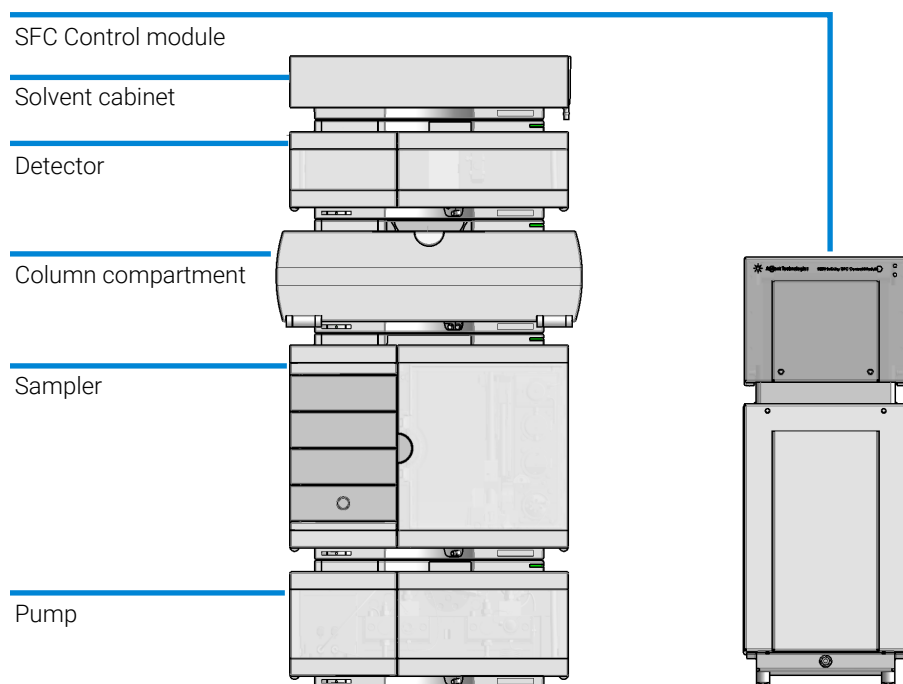


Figure 1: Exemplary stack configuration for an Agilent 1260 SFC System

Minimum PC Requirements

Minimum PC Requirements:

- Support of Agilent OpenLab CDS Software
- USB 2.0 port available

Tools

Your Agilent instrument comes with a few basic tools and consumables which are relevant to the specific configuration of your system.

Service Engineer Review (Optional)

Service Engineer Comments

If the Service Engineer completed a review of the Site Preparation requirements with the customer, the Service Engineer should complete the following Comments section.

If there are any specific points that should be noted as part of performing the site preparation review or other items of interest for the customer, please write in this box.

Site Preparation Verification

Service Request Number:

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Date of Service Completion:

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Service Engineer Name:

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Customer Name:

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Service Engineer Signature:

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