

## FTS LyoStar™ 3 Install Requirements

For units with water-cooled refrigeration systems.

To ensure a successful installation and efficient operation, the following utilities and pre-installation requirements must be in place at your facility.

### Placement / Positioning

Position the LyoStar™ 3 in an area providing adequate air circulation. 24 inches (61 cm) of obtainable clearance is recommended on all sides of the unit for serviceability and efficient operation. If multiple machines are being operated in a single area, position them so that the hot exhaust from one does not blow into the intake of another. If machines are placed side-by-side, increase the minimum clearance to 48 inches (121.9 cm).

### Electrical Requirements

The LyoStar™ 3 is offered with the following standard voltage configurations:

- 208/230 VAC, 50/60Hz, 1 phase, 40 A
- 220 VAC, 60 Hz, 1 phase, 40 A
- 240 VAC, 50 Hz, 1 phase, 40 A
- 400 VAC, 50 Hz, 3 phase, 30 A
- 480 VAC, 60 Hz, 3 phase, 30 A

**Note:** LyoStar™ 3 units are highly customizable and SP Scientific can configure any unit to conform to the service requirements of a wide range of international voltage and phase configurations.



Voltage requirements are critical. A line voltage indicator is included in the lyophilizer's software. Please refer to this reading during initial powering and operation of the lyophilizer.

### Workstation Voltage Configurations:

- 115 VAC, 60 Hz, 1 phase
- 230 VAC, 50 Hz, 1 phase

### Sample Extractor Assembly Voltage Configurations (Optional Item):

- 115 VAC, 60 Hz, 1 phase
- 230 VAC, 50 Hz, 1 phase

**Note:** Sample Extractor Assembly voltage requirements apply to the vacuum pump used to operate the Sample Extractor Assembly. This vacuum pump is independent of the vacuum pump installed on the lyophilizer.

### Electrical Plugs

The LyoStar™ 3 is not shipped with a plug due to the wide variety of plugs that may be used. SP Scientific recommends installing a NEMA 6-50P plug on the machine line cord and connecting it to a NEMA 6-50R receptacle.

**Note:** Other plugs may be used, however, they must be 2-pole, 3-wire.

### Compressed Air

The pneumatic isolation valve, a standard feature of The LyoStar™ 3, shall require a water-free compressed air source capable of delivering 1 scfm when regulated at a minimum of 100 psig for operation of the pneumatic isolation valve.

Utility Connection: 1/4-inch male quick-connect

### Ambient Temperature

The LyoStar™ 3 is designed for installation and operation in a room with a controlled temperature of between 19 and 25 °C (66 and 77 °F).



Do not allow the intake air for the LyoStar™ 3 to exceed 30 °C. If the ambient room temperature exceeds 30 °C, do not operate the lyophilizer until adequate cooling or ventilation is established.

### Heat Output

Heat emissions in the room may vary, depending on the product load and the current step of an automatic cycle. Suitable ventilation or conditioning of the room is required to keep unit performance at the specified level. The system shall add approximately 3,000 to 5,000 BTU/h at steady state to your room. Peak demand could be as high as 10,000 BTU/h.

### Cooling Water

The water-cooled refrigeration system requires a filtered water supply of 5 to 25 °C (41 to 77 °F) capable of providing 2 to 4 gpm at 30 to 60 psi. The water supply must be filtered with size 50 mesh or better to prevent heat exchanger fouling (SP Scientific recommends using a McMaster-Carr T-Strainer, part 98775K45). Utility Connection: 1/2-inch female NPT

### Inert Gas (Backfilling)

Nitrogen or other inert gas may be used to backfill the product chamber prior to stoppering. If used, the inert gas source should be capable of delivering 2 scfm when regulated between 3 and 5 psig.

Utility Connection: 1/4-inch OD male hose barb

### Inert Gas (ControlLyo™)

LyoStar™ 3 lyophilizers equipped with ControlLyo™ nucleation technology shall require an inert gas source for system pressurization. Argon, nitrogen or other suitable inert gasses should be supplied with the gas pressure capable of delivering 4 scfm when regulated between 50 and 60 psig (Argon gas is preferred).

Utility Connection: 3/4-inch male NPT

### Room Ventilation (ControlLyo™)

Without proper ventilation, operation of ControlLyo™ may cause the oxygen concentration of ambient air to drop below acceptable levels. To ensure that ventilation is adequate for the depressurization process, the volume to vent percentage ratio ( $V_V/V_R$ ) must be less than 6.5%.  $V_V$  equals the product chamber volume multiplied by 10 and  $V_R$  equals the total volume of the room in which the lyophilizer is located. In addition, SP Scientific recommends the use of an  $O_2$  sensor to monitor oxygen concentration while operating ControlLyo™. *Need to monitor*

**Note:** The volume of a standard LyoStar™ 3 chamber is 3.99 ft<sup>3</sup> / .113 m<sup>3</sup>. *REM*

### Noise Level

Under normal operating conditions, noise from the equipment shall not exceed 85 dBA when measured at any point 3 feet away from the equipment.

**Note:** Lyophilizers equipped with ControlLyo™ shall exceed the specified noise level rating for approximately 3 to 5 seconds during depressurization. SP Scientific recommends the use of both hearing and eye protection during the ControlLyo™ process.

Name

*Mark Voorhis*

Title

*Building Manager*

Signature

*Mark Voorhis*

Date

*11/17/17*

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Complete the following information and return to SP Scientific. A signature shall indicate that all utilities are in place and installation may be scheduled. If facilities are not in place upon technician's scheduled arrival, additional charges incurred will be billed as a Field Service Visit.



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