

FTS Systems LyoStar™ II

Research and Development Tray Freeze Dryer



Key Features

- Optional SMART technology for cycle optimization.
- Scroll compressors.
- Additional chamber ports.
- Optional cleanroom and isolator configurations.

Electrical Requirements

Voltage (VAC)*	200	230	400
Hertz*	50	60	50
Phase*	1	1	3
Breaker Amperage	40	40	20

Performance Specifications

Shelf Temperature Control Range (°C)†	-70 to 60
Shelf Temperature Control Range Tolerance (°C)†	± 0.5
Lowest Shelf Temperature (°C)	-70
Lowest Condenser Temperature (°C)	-85
Maximum Condenser Capacity (L)	30
Condenser Surface Area (in ² / cm ²)	850 / 5481
Maximum Ice Condensing Capacity in 24 hours (L)‡	20
Maximum Deposition Rate (L/hour)‡	0.83
Condenser Pull-Down from 20 °C to -75 °C (minutes)	≤ 10
Shelf Pull-Down from 25 °C to -40 °C (minutes)	≤ 25
Number of Compressors	2
Compressor Horsepower	3.5 , 2
System Refrigerant	R404A, R290/R508B
Vacuum Time to 100 Millitorr (minutes)	≤ 20
Vacuum Rate of Rise (mT/hour)	≤ 30
Volume-Based Leak Rate (mbar·L/sec)	≤ .0019
Lowest System Vacuum (mT)	≤ 10
Temperature Uniformity (°C)§	± 1.0

Note: Performance specifications are based on SP Scientific test data from units operating at an ambient room temperature of approximately 20 °C. SP Scientific recommends an operating range of 19-25 °C (66-77 °F).

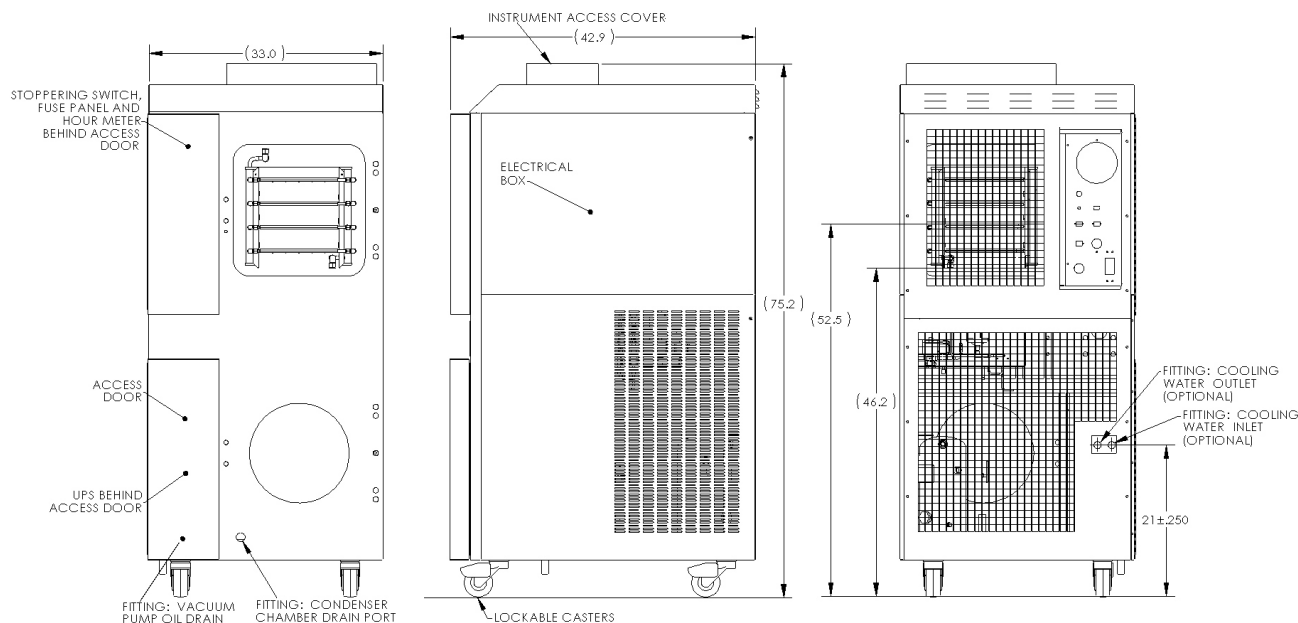
Utility Requirements

Compressed Air (psig)¶	90-100
Ambient Room Temperature (°C)	19-25
Cooling Water Usage (gpm /lpm)¶¶	2-4 / 8-15
Inert Gas (optional)	2 SCFM @ 3-5 psig

Utility Considerations

Approx. Peak Heat Generated (air-cooled units) (BTU/h)	25,000
Approx. Peak Heat Generated (water-cooled units) (BTU/h)	10,000

Standard Configuration



Dimensional Data

Width (in / cm)	33 / 84
Depth (in / cm)	43 / 109
Height (in / cm)	75 / 190
Approximate Weight (lb / kg)	1300 / 590
Minimum Clearance on All Sides (ft / cm)	2 / 61

Shelf Configuration

Number of Shelves	Shelf Area Bulk and Stopping** (ft ² / cm ²)	Shelf Clearance Bulk and Stopping** (in / mm)	Shelf Clearance with Optional Shelf Latching	
			1 Shelf Latched (in / mm)	2 Shelves Latched (in / mm)
1 Shelf	1.5 / 1394	9.5 / 241	-	-
2 Shelves	3.1 / 2880	4.5 / 114	9.25 / 235	-
3 Shelves	4.6 / 4274	2.8 / 71	4.25 / 108	8.5 / 216
4 Shelves	6.1 / 5667	2.0 / 51	2.6 / 66	4.0 / 102
5 Shelves	7.6 / 7061	1.5 / 38	-	-

Shelf Size (W x D, in / cm): 11 x 20 / 30 x 51

Additional Information

Construction	316L Stainless Steel Shelves, Product Chamber, Condenser Chamber and Condenser Coil
Vacuum Pump	Two-Stage Rotary Vane
Stopping (optional)	Bottom-Up Hydraulic
Defrost Type	Hot Gas
Isolation Valve	Butterfly, Electric or Pneumatic
Refrigerant Type	CFC-Free
Vapor Port	Four (4) Inches

* Do not operate your equipment outside of the specified service ranges.

[†] Shelf temperature is controlled to within ± 0.5 °C of the shelf temperature setpoint only when the setpoint is within the Shelf Temperature Control Range.

[‡] The specified Maximum Ice Condensing Capacity in 24 Hours and Maximum Deposition Rate are based on the process of freeze-drying water as aggressively as possible. The freeze dryer's ability to collect ice at an hourly rate or over a specified period will always be application dependent.

[§] Shelf temperature deviations shall not exceed the specification relative to the mean of the highest and lowest temperature readings.

[¶] Compressed air is required for operation of the optional pneumatic isolation valve only.

^{||} Cooling water must be supplied at 5-25 °C and 30-60 psi.

** Available with up to four shelves.