

VirTis VirTual™ 50L

Pilot Lyophilizer



VirTual 50L

Key Features

- Ideal for product development and small production requirements.
- Order with optional hydraulic stoppering system.
- Available with a Wizard 2.0 or LyoS™ control system.
- Condense up to 20 liters of ice over 24 hours.
- Equipped with a high capacity, 50-liter internal coil condenser.
- Customize to accommodate up to 10 shelves.

Standard Electrical Requirements

Voltage*	208/ 230 VAC	208/230 VAC	400 VAC
Hertz*	60 Hz	50 Hz, 60 Hz	50 Hz
Breaker Amperage*	50 A	40 A	30 A
Phase*	1 Φ	3 Φ	3 Φ
Receptacle	6-50R	N/A	N/A

Performance Specifications

	EL
Lowest Shelf Temperature (50 Hz / 60 Hz)	≤ -67 °C / -70 °C
Shelf Temperature Control Range [§]	-55 to 65 °C
Shelf Pull-Down from 20° C to -40 °C [¶]	≤ 50 minutes
Temperature Uniformity	± 1.0 °C
Lowest Condenser Temperature (50 Hz / 60 Hz)	≤ -82 °C / -85 °C
Condenser Pull-Down from 20° C - -45° C (minutes)	≤ 25 minutes
Maximum Condenser Capacity	≥ 50 L
Maximum Ice Condensing Capacity in 24 hours [†]	≥ 20 L
Maximum Deposition Rate [†]	≥ 0.83 L/hour
Vacuum Rate of Rise ^{**}	≤ 30 mT/hour (≤ 0.08 mbar/hour)
Vacuum Time to 100 Millitorr (minutes) ^{**}	≤ 20 minutes
Volume-Based Leak Rate (mbar L/sec) ^{**}	≤ .0027 mbar L/sec
Number of Compressors	2
Compressor Horsepower	3.5 hp, 1.5 hp
System Refrigerant	R508B, R407C
Lowest System Vacuum (mT) ^{**}	≤ 15 mT
Condenser Surface Area (ft ² / m ²)	10 ft ² / 0.93m ²

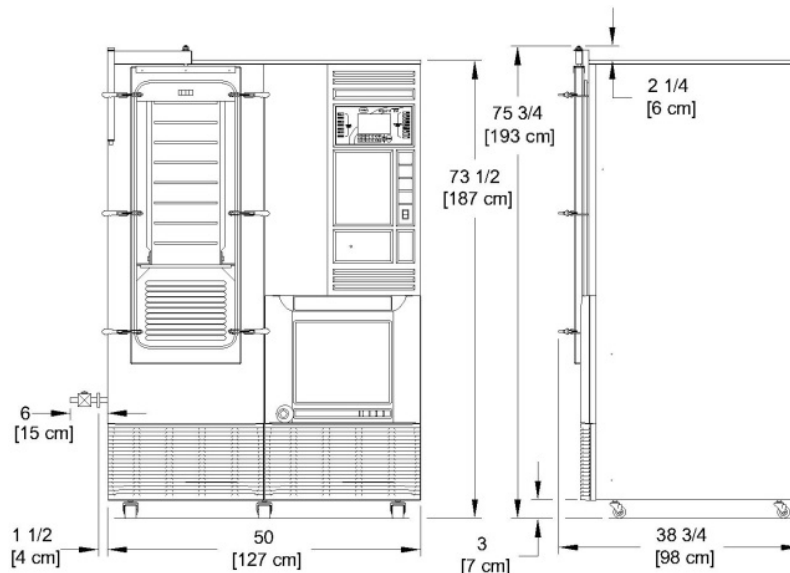
Note: Performance specifications are based on SP Scientific test data from units operating at an ambient room temperature of approximately 20 °C. SP Scientific recommends an operating range of 18-25 °C (64-77 °F) and a Relative Humidity of ≤ 80 % at sea level.

Utility Requirements

	Air-Cooled	Water-Cooled Units
Ambient Room Temperature (°C)	18-25 °C (64-77 °F)	18-25 °C (64-77 °F)
Approx. Peak Heat Generated (BTU/h)	22,900 BTU / hr	5,400 BTU / hr
Cooling Water Usage [‡]	N/A	2-5 gpm / 8-29 lpm

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Dimensional Data

	Standard Configuration (in / cm)	Cleanroom Configuration (in / cm)
Width	50 / 127	25 / 64
Depth	38.75 / 98	77 / 196
Height	75.75 / 193	75.75 / 193
Approx. Weight (lb/kg)	1700 / 773	1700 / 773
Minimum Clearance on All Sides (in / cm)	10 / 25.4	10 / 25.4

Note: SP Scientific recommends a 24-inch (61 cm) clearance around all sides of the unit for serviceability. When placed side by side, increase clearance to 48 inches (122 cm).

Shelf Configuration

Number of Shelves	Shelf Area (ft ² / m ²)	Shelf Clearance (in / mm)
4 Shelves	6.12 / 0.57	5.25 / 113
5 Shelves	7.65 / 0.71	4.12 / 104
6 Shelves	9.18 / 0.85	3.37 / 85
7 Shelves	10.71 / 1.00	2.84 / 72
8 shelves	12.24 / 1.14	2.43 / 61
9 Shelves	13.77 / 1.28	2.12 / 53
10 Shelves	15.30 / 1.42	1.87 / 47

Shelf Size (W x D, in / mm): 10.75 x 20.5 / 273 x 521

Additional Information

Construction	316L Stainless Steel Shelves, Product Chamber and Internal Condenser Coil
Vacuum Pump	Two-Stage Rotary Vane
Stoppering (optional)	Bottom-Up Hydraulic
Defrost Type	Hot Gas
Refrigerant Type	CFC-Free

* VirTis 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. Contact SP Scientific for more information.

† 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.

‡ Cooling water temperatures should not exceed 24 °C.

¶ Shelf Pull-Down times are based on a unit with ten (10) shelves. Units with fewer shelves may achieve -40 °C at a faster rate.

§ Shelf fluid temperature controlled to within ± 0.5 °C of the setpoint within the Shelf Temperature Control Range (PLC-based controllers only). Lyophilizers equipped with Wizard 2.0 microprocessor-based controllers shall be capable of controlling at shelf temperatures within ± 1.0 °C of the setpoint within the Shelf Temperature Control Range when at 100 mTorr

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

** Vacuum specifications are based on SP Scientific test data from similar units equipped with a Leybold D16B two-stage rotary vane vacuum pump. Units equipped with other vacuum pumps may yield different results.