

VirTis Ultra 35L

Pilot Lyophilizer



(Standard configuration Ultra 35L shown)

Key Features

- Compact design for easy installation.
- Single product chamber design allows for larger batches and product uniformity.
- Available with a Wizard 2.0, Encore™ or LyoS™ control system.
- Optional hydraulic stoppering system available.
- Narrow, cleanroom configuration available.

Electrical Requirements

	208 / 240 VAC	208 / 230 VAC	400 VAC
Voltage ^{ll}	208 / 240 VAC	208 / 230 VAC	400 VAC
Hertz ^{ll}	50 Hz, 60 Hz	50 Hz, 60 Hz	50 Hz
Phase ^{ll}	1 Φ	3 Φ	3 Φ
Breaker Amperage ^{ll}	40 A	30 A	30 A
Recommended Outlet	NEMA L6-50R	NEMA L15-30R	N/A

Performance Specifications

	XL	EL
Lowest Shelf Temperature (50 Hz / 60 Hz)	-57 °C / -60 °C	-67 °C / -70 °C
Shelf Temperature Control Range*	-40 to 65 °C	-55 to 65 °C
Shelf Pull-Down from 20 °C to -40 °C [†]	≤ 90 minutes	≤ 60 minutes
Lowest Condenser Temperature (50 Hz / 60 Hz)	-67 °C / -70 °C	-82 °C / -85 °C
Maximum Condenser Capacity	35 L	35 L
Condenser Surface Area	750 in ² (4838 cm ²)	750 in ² (4838 cm ²)
Condenser Pull-Down from 20 °C to -45 °C	≤ 25 minutes	≤ 25 minutes
Maximum Ice Condensing Capacity in 24 hours [‡]	20 L	20 L
Maximum Deposition Rate [‡]	0.83 L/hour	0.83 L/hour
Number of Compressors	1	2
Compressor Horsepower	1.5 hp	1.5 hp, 1.5 hp
System Refrigerant	R245fa, R508B	R508B, R407C
Vacuum Time to 100 Millitorr [§]	≤ 30 minutes	≤ 30 minutes
Vacuum Rate of Rise [§]	≤ 30 mT/hour	≤ 30 mT/hour
Volume-Based Leak Rate [§]	≤ .0036 mbar-L/sec	≤ .0036 mbar-L/sec
Lowest System Vacuum [§]	≤ 15 mT	≤ 15 mT
Temperature Uniformity [¶]	± 1.0 °C	± 1.0 °C

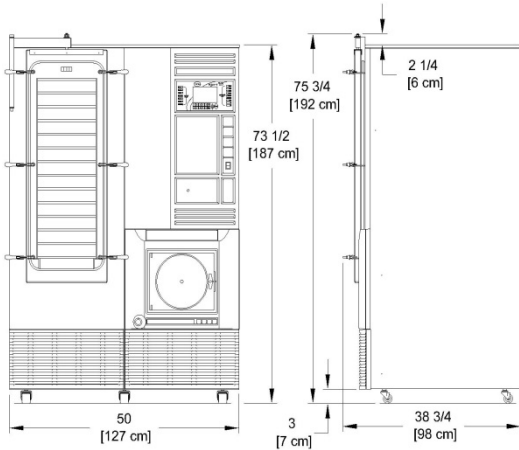
Note: Performance specifications are based on SP Scientific test data from units operating at an ambient room temperature of approximately 20 °C. SP Scientific recommends an operating range of 15-25 °C (59-77 °F) and a Relative Humidity of ≤ 80 % at sea level.

Utility Requirements

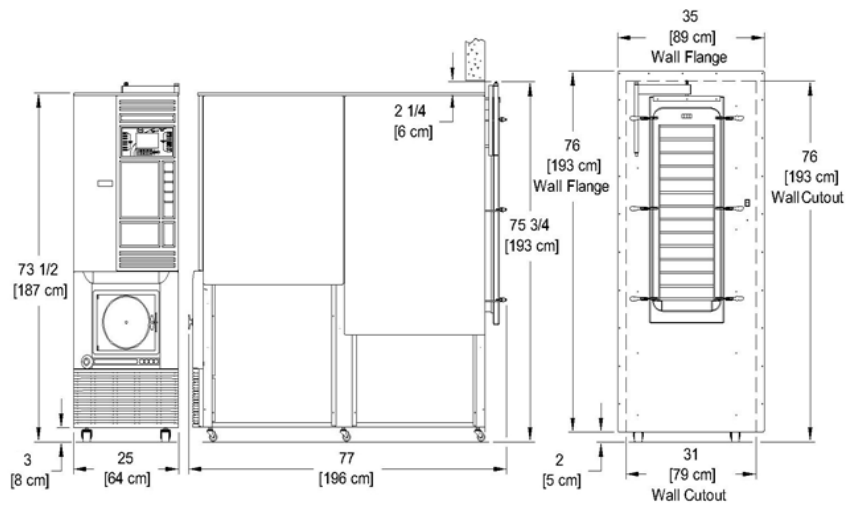
	XL	EL
Compressed Air	80 psig (5.5 bar)	80 psig (5.5 bar)
Ambient Room Temperature	15-25 °C (59-77 °F)	15-25 °C (59-77 °F)
Approx. Peak Heat Generated (Air-Cooled Units)	14,000 BTU/h	17,800 BTU/h
Approx. Peak Heat Generated (Water-Cooled Units)	4,500 BTU/h	4,900 BTU/h
Cooling Water Usage**	1 - 3 gpm (4 - 12 Lpm)	1 - 3 gpm (4 - 12 Lpm)

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Standard Configuration



Cleanroom Configuration

Dimensional Data

	Standard Configuration	Cleanroom Configuration
Width	50 in (127 cm)	25 in (64 cm)
Depth	38.75 in (98 cm)	77 in (196cm)
Height	75.75 in (192 cm)	75.75 in (192 cm)
Maximum Weight	2000 lb (909 kg)	2000 lb (909 kg)
Minimum Clearance	10 in (25.4 cm)	10 in (25.4 cm)

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

	Shelf Area	Shelf Clearance	
		Bulk Drying	Stoppering
4 Shelves	Bulk Drying and Stoppering 6.12 ft ² (5686 cm ²)	8.88 in (225 mm)	8.44 in (214 mm)
5 Shelves	7.65 ft ² (7107 cm ²)	7.03 in (178 mm)	6.68 in (169 mm)
6 Shelves	9.18 ft ² (8528 cm ²)	5.79 in (146 mm)	5.51 in (139 mm)
7 Shelves	10.71 ft ² (9950 cm ²)	4.91 in (124 mm)	4.67 in (118 mm)
8 Shelves	12.24 ft ² (11371 cm ²)	4.25 in (107 mm)	4.04 in (102 mm)
9 Shelves	13.77 ft ² (12793 cm ²)	3.74 in (107 mm)	3.55 in (89 mm)
10 Shelves	15.3 ft ² (14214 cm ²)	3.33 in (84 mm)	3.15 in (79 mm)
11 Shelves	16.83 ft ² (15636 cm ²)	2.99 in (75 mm)	2.83 in (71 mm)
12 Shelves	18.36 ft ² (17057 cm ²)	2.71 in (68 mm)	2.56 in (64 mm)
13 Shelves	19.89 ft ² (18478 cm ²)	2.47 in (62 mm)	2.34 in (59 mm)
14 Shelves	21.43 ft ² (19909 cm ²)	2.27 in (57 mm)	2.14 in (54 mm)
15 Shelves	22.96 ft ² (21331 cm ²)	2.09 in (53 mm)	1.97 in (50 mm)

Shelf Size (W x D): 10.8 x 20.5 in (274.3 x 520.7 mm)

Additional Information

Construction	316L Stainless Steel Shelves, Product Chamber and Condenser Chamber
Stoppering	Bottom-Up Hydraulic
Defrost Type	Hot Gas
Refrigerant Type	CFC-Free
Vapor Port	6 in (15.2 cm)

¹Shelf 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.

²Shelf Pull-Down times are based on units with one (1) to eight (8) shelves. The increased mass of stainless steel and additional heat transfer fluid required for nine (9) or more shelves increases pull-down time. Use the following multipliers when determining the pull-down time specification for the following shelf configurations:

9-shelf units, standard pull-down time x 1.13	12-shelf units, standard pull-down time x 1.5	15-shelf units, standard pull-down time x 1.88
10-shelf units, standard pull-down time x 1.25	13-shelf units, standard pull-down time x 1.63	
11-shelf units, standard pull-down time x 1.38	14-shelf units, standard pull-down time x 1.75	

³The 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.

⁴Vacuum specifications are based on SP Scientific test data from similar units equipped with an Alcatel 2015SD two-stage rotary vane vacuum pump. Units equipped with other vacuum pumps may yield different results (e.g., a Varian TriScroll 300 dry pump will yield a Lowest System Vacuum of ≤ 50 mT).

⁵Shelf temperature deviations shall not exceed the specification relative to the mean of the highest and lowest temperature readings.

⁶VirTis 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.

⁷Cooling water temperatures should not exceed 24 °C.