

# VirTis Ultra 25L

## 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 <sup>¶</sup>	208 / 240 VAC	208 / 230 VAC	400 VAC
Hertz <sup>¶</sup>	50 Hz, 60 Hz	60 Hz	50 Hz
Phase <sup>¶</sup>	1 $\Phi$	3 $\Phi$	3 $\Phi$
Breaker Amperage <sup>¶</sup>	40 A	40 A	30 A
Recommended Outlet	NEMA L6-50R	N/A	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 <sup>†</sup>	≤ 90 minutes	≤ 60 minutes
Lowest Condenser Temperature (50 Hz / 60 Hz)	-67 °C / -70 °C	-82 °C / -85 °C
Maximum Condenser Capacity	25 L	25 L
Condenser Surface Area	506 in <sup>2</sup> (3264 cm <sup>2</sup> )	506 in <sup>2</sup> (3264 cm <sup>2</sup> )
Condenser Pull-Down from 20 °C to -45 °C	≤ 25 minutes	≤ 25 minutes
Maximum Ice Condensing Capacity in 24 hours <sup>‡</sup>	12 L	12 L
Maximum Deposition Rate <sup>‡</sup>	0.5 L/hour	0.5 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 <sup>§</sup>	≤ 30 minutes	≤ 30 minutes
Vacuum Rate of Rise <sup>§</sup>	≤ 30 mT/hour	≤ 30 mT/hour
Volume-Based Leak Rate <sup>§</sup>	≤ .0035 mbar·L/sec	≤ .0035 mbar·L/sec
Lowest System Vacuum <sup>§</sup>	≤ 15 mT	≤ 15 mT
Temperature Uniformity <sup>¶</sup>	± 1.0 °C	± 1.0 °C

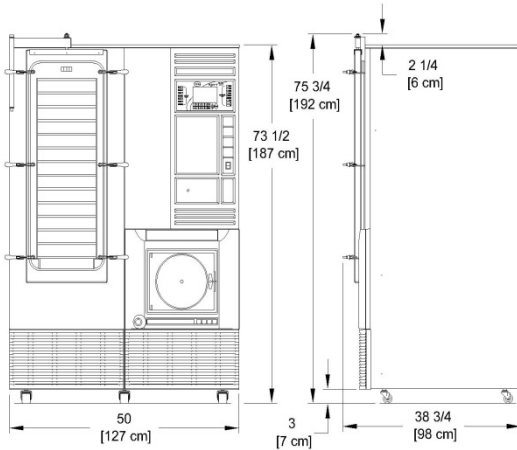
**Note:** Performance specifications are based on SP Scientific test data from units operating at an ambient room temperature of approximately 20 °C. SP Scientific recommends an operating range of 15-25 °C (59-77 °F) and a Relative Humidity of ≤ 80 % at sea level.

### Utility Requirements

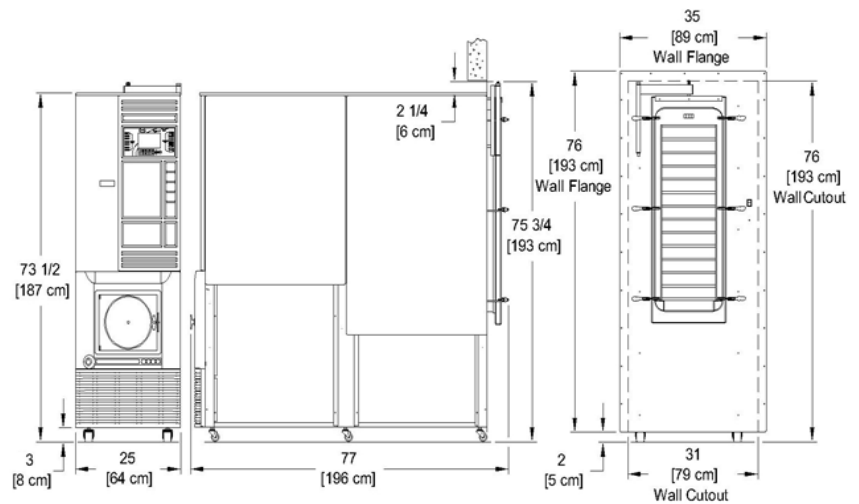
	XL	EL
Compressed Air	80 psig (6.5 bar)	80 psig (6.5 bar)
Ambient Room Temperature	15-25 °C (59-77 °F)	15-25 °C (59-77 °F)
Approx. Peak Heat Generated (Air-Cooled Units)	14,000 BTU/h	17,800 BTU/h
Approx. Peak Heat Generated (Water-Cooled Units)	4,500 BTU/h	4,900 BTU/h
Cooling Water Usage**	1 - 3 gpm (4 - 12 Lpm)	1 - 3 gpm (4 - 12 Lpm)

# VirTis Ultra 25L

## Pilot Lyophilizer



**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 and Stoppering		Bulk Drying	Stoppering
4 Shelves	6.1 ft <sup>2</sup> (5667 cm <sup>2</sup> )		8.9 in (226 mm)	8.4 in (213 mm)
5 Shelves	7.7 ft <sup>2</sup> (7154 cm <sup>2</sup> )		7 in (178 mm)	6.7 in (170 mm)
6 Shelves	9.2 ft <sup>2</sup> (8547 cm <sup>2</sup> )		5.8 in (147 mm)	5.5 in (140 mm)
7 Shelves	10.7 ft <sup>2</sup> (9941 cm <sup>2</sup> )		4.9 in (125 mm)	4.7 in (119 mm)
8 Shelves	12.2 ft <sup>2</sup> (11334 cm <sup>2</sup> )		4.3 in (109 mm)	4 in (102 mm)
9 Shelves	13.8 ft <sup>2</sup> (12821 cm <sup>2</sup> )		3.7 in (94 mm)	3.6 in (91 mm)
10 Shelves	15.3 ft <sup>2</sup> (14214 cm <sup>2</sup> )		3.3 in (84 mm)	3.2 in (81 mm)
11 Shelves	16.8 ft <sup>2</sup> (15608 cm <sup>2</sup> )		2.7 in (68.6 mm)	2.8 in (71 mm)
12 Shelves	18.4 ft <sup>2</sup> (17094 cm <sup>2</sup> )		3 in (76 mm)	2.6 in (66 mm)
13 Shelves	19.9 ft <sup>2</sup> (18488 cm <sup>2</sup> )		2.5 in (64 mm)	2.3 in (58 mm)
14 Shelves	21.4 ft <sup>2</sup> (19881 cm <sup>2</sup> )		2.3 in (58 mm)	2.1 in (53 mm)
15 Shelves	23 ft <sup>2</sup> (21368 cm <sup>2</sup> )		2.1 in (53 mm)	2 in (51 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)

\* Shelf temperature controlled to within  $\pm 0.5$  °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  $\pm 1.0$  °C of the setpoint within the Shelf Temperature Control Range.

<sup>†</sup> Shelf 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	

<sup>‡</sup> 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.

<sup>§</sup> Vacuum 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  $\leq 50$  mT).

<sup>¶</sup> Shelf temperature deviations shall not exceed the specification relative to the mean of the highest and lowest temperature readings.

<sup>||</sup> 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.

<sup>∞</sup> Cooling water temperatures should not exceed 24 °C.