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**ENVIRONMENTAL  
EQUIPMENT & TEST LAB**

## TEMPERATURE+HUMIDITY S/SM-SERIES ENVIRONMENTAL TEST CHAMBERS

**Note: Data Sheet For Reference Only - Actual Chamber May Vary Depending on Model Year, Options, Controllers, and Individual Configuration**



## THE TESTING STANDARD

Thermotron's S-Series Environmental Test Chambers deliver the quality and accuracy you expect from a premier worldwide environmental test equipment manufacturer. Featuring the 8200+ Controller, wide temperature and humidity ranges, and multiple chamber sizes and performance configurations, Thermotron's S-Series Environmental Test Chamber is the ideal choice for quality and customizable simulated environmental testing.

S-Series Environmental Test Chambers are designed

in multiple sizes, ranging from 4-32 cubic feet, and performance configurations. Both temperature only (S models) and temperature humidity (SM models) chambers utilize hermetically sealed compressors that provide moderate temperature change rates while consuming less power than comparable test chambers. Advanced features, such as an Electronic Humidity Sensor and Product Temperature Control, add value, increase efficiency, and reduce test chamber maintenance.

# Benefits of Environmental Testing

-  Introduce new products to market faster and more confidently while meeting important required industry specifications (IEC, Mil Std, RTCA, SAE, etc)
-  Increase long term product reliability and safety
-  Determine expected ruggedness and resistance to extreme temperature and humidity conditions in expected transportation, storage, and use environments
-  Stand above the competition by avoiding burdensome warranty costs and bad reputation associated with product failures and recalls
-  Reduce costs and improve profitability, while exceeding customer expectations

- Features & Benefits ..... 4
  - Additional Optional Features* ..... 4
- 8200+ Controller ..... 5
- Chamber Highlights ..... 6
  - Additional Optional Features* ..... 6
- Chamber Interior ..... 7
  - Inside the Workspace* ..... 7
- Modular Humidity System ..... 8
  - Humidity Specifications* ..... 8
- Single-Stage System Specifications ..... 9
- S/SM Series ..... 10
  - Specifications* ..... 10
- S/SM Performance Series ..... 12
  - Specifications* ..... 12
- XS Series ..... 14
  - Specifications* ..... 14

# Thermotron's Key Advantages

## Variety of Sizes

S/SM Chamber workspaces range from 42 to 906 liters to accommodate many product sizes.

## Multiple Performance Options

By utilizing multiple compressors in multiple size configurations, S/SM Chambers can achieve the change rates you require. Thermotron offers cascade (two compressors) and single-stage (one compressor) chamber models.

## Superior, Optimized Airflow

Direct airflow over the product under test improves product temperature change rates, helping achieve superior testing results.

## Continuous Monitoring

Thermotron offers multiple features that assist in monitoring the product under test to maximize test results, including innovative data acquisition and Product Temperature Control.

## Unparalleled Control System

The 8200+ Controller is standard on all S/SM-Series Chamber models. The controller is intuitive, robust, and secure. The controller's hardware and software is designed in-house, specifically for environmental testing.

## Unique Humidity System

The humidity system provides a wide range of humidity conditions. Its unique design allows for quick access and convenience on our SM Series Chambers.

## Custom Solutions

Can't find an S/SM-Series Chamber to match your exact testing requirement? Thermotron provides custom chambers to meet individual size or performance needs.

For more than 55 years, Thermotron has provided quality environmental test equipment. We've worked to establish a trusted reputation among our peers, and when people hear the name *Thermotron*, they have confidence in the testing of their own product. We've been building our name since 1962; now it's your turn.

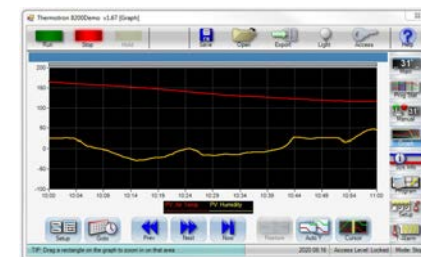
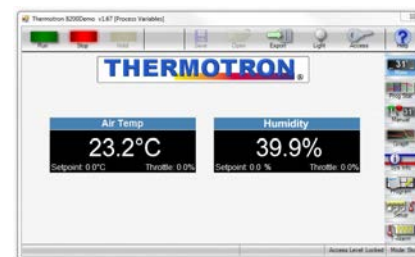
QUALITY. TRUST.  
CONFIDENCE.  
— BUILD YOURS WITH A —  
THERMOTRON.



## Powerful, Reliable & Flexible

Your testing chamber should be able to handle quick change rates, dynamic temperature fluctuations, over and over again. The S/SM-Series chambers are engineered to give you best performance through a wide range of temperatures without worry.

## Take Full Control from Anywhere



S-Series Environmental Test Chambers feature the robust and intuitive 8200+ Controller. The controller's software and hardware are designed by Thermotron engineers, specifically for programming and controlling environmental chambers. Operation and data collection are easy with a 7-inch color touchscreen display and familiar Windows® look and feel. Test data can be exported securely, quickly, and easily with a USB port. Built-in ethernet capabilities give the 8200+ Controller network-wide accessibility.

*Visit [thermotron.com](http://thermotron.com) for an Interactive Demo*

## 8200+ Controller

The enhanced 8200+ Controller features an intuitive touchscreen display, with quick and efficient performance. Users can securely and easily enter and monitor test data with a familiar Windows®-based interface.



### Built-in Graphing Capabilities

users pinpoint the exact data they wish to see



### Ethernet Connection

easy and secure data export and remote PC access



### Password-Based Security

multi-level, system protects sensitive data



### Quick Step Wizards

easy program entry, test setup, and product monitoring



### Transferable Spreadsheet Data

test data can be exported to commonly used spreadsheet formats and transferred via USB



### Web Server

view the controller status from any computer connected to the network

## INTERIOR FEATURES



Stainless Steel Interior

Inner Glass Window

Plenum Airflow System

### Inside the Workspace

#### 4-6" Thick Door and 4-6" Thick Walls

The chamber is well insulated and stays cool to the touch, protecting the user.

#### Interior Light

Illuminate the workspace during a test and while the door is open.

#### Product Temperature Control (PTC) Thermocouple

Attaches to the product under test to control and monitor its temperature.

#### ThermAlarm®

Prevents temperature from exceeding user-defined limits.

#### Electronic Humidity Sensor (humidity models)

Eliminates the need for thermocouple wicks, producing more repeatable, dependable humidity tests with less downtime.



**Interior light.** See the inside of your chamber and how your product is functioning with the push of a button



**Adjustable shelves.** Whether testing rows of semiconductors, or multiple brake pads, adjustable shelves can improve your testing experience.



#### Floor drain system.

On humidity models, the floor is sloped slightly to allow condensated water to drain.

## EXTERIOR FEATURES

### Customized Port



Customized ports allow easy access to your product being tested, without affecting the entire environment. Size and location is customizable.

### Refrigeration Gauges



Check your testing performance without needing a device. Visible gauges can help you monitor your chamber with a simple glance

### Emergency Stop\*



Immediately stop a test for any reason and save your product and chamber with the Emergency Stop button

### LN2 Boost\*



Adding a Liquid Nitrogen Boost can help you achieve lower temperatures quickly with your current system.

### GN2/Dry Air Purge\*



A GN2 or dry air purge system can help you to minimize frosting on the product or chamber.

### Exterior Colors Options



Chamber Blue™



Lab Gray™

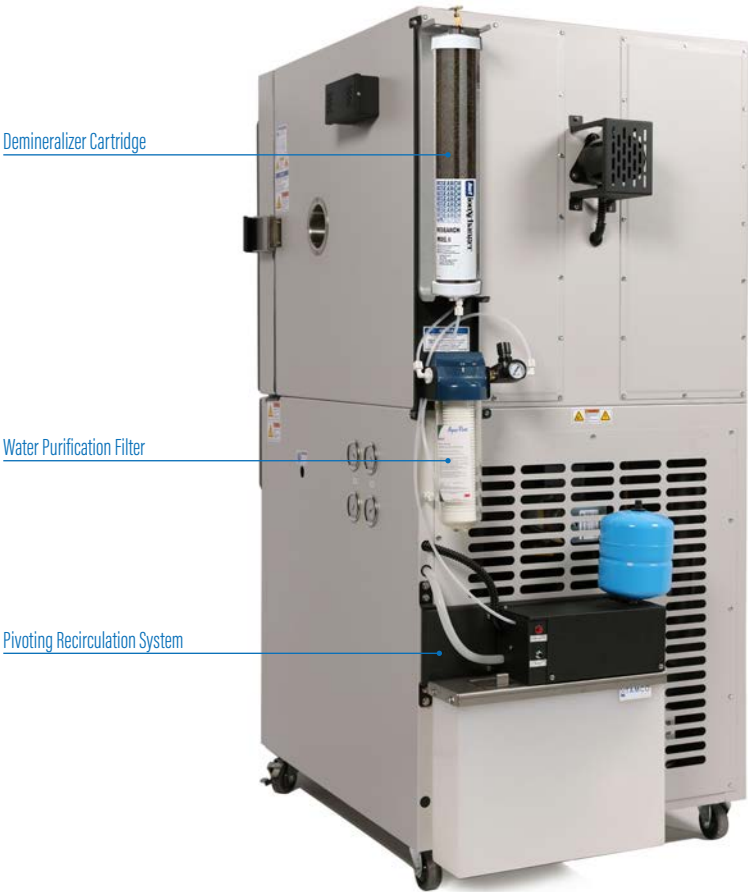


Your Choice of Color\*

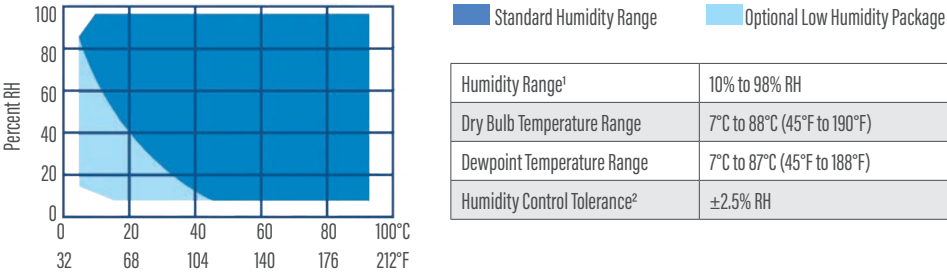


Humidity Water Purification and Recirculation System\*

Achieving the proper humidity can help you test your products to the fullest extent. Using Thermotron's Water Purification and Recirculation System, you can improve the quality of water used, while recirculating excess liquid. If your lab does not have water in the proper range or a floor drain, the S-series is available with the optional purification/recirculation system to allow the use of tap water



Humidity Specifications



<sup>1</sup> Limited by a 7°C (45°F) minimum dewpoint temperature and a maximum dry bulb temperature of 88°C (190°F).

<sup>2</sup> At a dry bulb temperature above 20°C (68°F).

Model	S-4S	SM-4S	S-8S	SM-8S
Workspace Dimensions — W x D x H	20 x 20 x 20 Inches 51 x 51 x 51 Centimeters		24 x 24 x 24 61 x 61 x 61 Centimeters	
Exterior Dimensions — W x D x H	31 x 42 x 68 Inches 79 x 107 x 173 Centimeters		35 x 49 x 73 89 x 124 x 185 Centimeters	
Volume	4 Cubic Feet 113 Liters		8 227	

Temperature Range	Temperature Only (S Models)	Temperature and Humidity* (SM Models)
	-40°C to 180°C (-40°F to 356°F)	

Model	S-4S	SM-4S	S-8S	SM-8S
Compressor Sizes: Hp Single Stage	2			
Temperature Control Tolerance	±0.3°C (±0.5°F)			
Temperature Uniformity**	±0.7°C (±1.3°F)			
Cooling Change Rates — Minutes 85°C to -20°C (185°F to -4°F) 180°C to -35°C (356°F to -31°F)	14 40	14 40	20 50	20 50
Heating Change Rates — Minutes -20°C to 85°C (-4°F to 185°F) -35°C to 180°C (-31°F to 356°F)	8 22	8 22	13 34	13 34
Electrical Service — Full Load Amps 208/1/60 208/3/60 230/1/60 230/3/60 460/3/60 400/3/50	26 23 25 23 12 15	33 23 33 23 12 15	26 23 25 23 12 15	33 23 33 23 12 15
Noise Level† — dBA Heating Cooling	60 68			
Shipping Weight (Approx.) Pounds Kilograms	700 318	775 350	800 363	875 397

\*Relative humidity indication at or near the physical limits may be affected by sensor accuracy and control tolerance. An optional humidity package can be added for applications requiring humidity levels lower than those covered by the full-range humidity system.

Performance is based on 60Hz and 23.9°C (75°F) ambient air, and may vary slightly at other ambient temperatures. Chambers are designed for use under normal laboratory conditions. For other applications, please consult Thermotron.

\*\*Standard deviation from mean, measured at -25°C (-13°F) or at +100°C (212°F).

†Noise Level: A-weighted sound pressure level measured at a distance of 1.0 meter (39.4 inches) from the surface of the equipment at a height of 1.6 meters (63 inches) from the floor in free-field conditions using a calibrated instrument.

Specifications subject to change without notice.



The S/SM Series is the perfect addition to any testing lab. With various sizes and options, you can construct your own S/SM Series chamber today.



Key Benefits

- 1

**Moderate Change Rates.** Get all the Thermotron quality and performance at an affordable price.
- 2

**8200 Controller.** Record and utilize your data easier than ever. Our 8200 Windows-based controller makes controlling and data collection a walk in the park.
- 3

**Centered Observation Window.** Check on your product under test directly. The centered window gives you a full view of your products during test.
- 4

**Standard Size.** Fit your S/SM chamber easily in your lab. Designed with your needs in mind.

DIMENSIONS

Model	S-4	S-8	SM-8	S-16	SM-16	S-27	SM-27	S-32	SM-32
Workspace Dimensions — W x D x H									
Inches	20 x 20 x 20	24 x 24 x 24		30 x 30 x 30		36 x 36 x 36		38 x 38 x 38	
Centimeters	51 x 51 x 51	61 x 61 x 61		76 x 76 x 76		91 x 91 x 91		97 x 97 x 97	
Exterior Dimensions — W x D x H									
Inches	31 x 42 x 68	35 x 49 x 73		45 x 59 x 81		51 x 65 x 88		53 x 68 x 90	
Centimeters	79 x 107 x 173	89 x 124 x 185		114 x 150 x 206		130 x 165 x 224		135 x 173 x 229	
Volume									
Cubic Feet	4	8		16		27		32	
Liters	113	227		453		764		906	

The Testing Standard

As the testing lab essential, the S/SM-Series chambers provide robust temperature change rates in a trusted design. No matter what you're testing, the S/SM-Series is there for you.

Temperature Range	Temperature Only (S Models)					Temperature and Humidity* (SM Models)			
	-70°C to 180°C (-94°F to 356°F)					-68°C to 180°C (-90°F to 356°F)			
Model	S-4	S-8	SM-8	S-16	SM-16	S-27	SM-27	S-32	SM-32
Compressor Sizes	1-1			2-2					
Temperature Control Tolerance	±0.3°C (±0.5°F)								
Temperature Uniformity**	±0.7°C (±1.3°F)								
Cooling Change Rates — Minutes									
180°C to -65°C (356°F to -85°F)	50	66	72	68	80	85	98	93	106
71°C to -65°C (160°F to -85°F)	30	44	54	50	54	58	64	65	71
85°C to -40°C (185°F to -40°F)	14	26	32	28	31	39	42	45	48
Heating Change Rates — Minutes									
-65°C to 180°C (-85°F to 356°F)	27	42	43	52	54	66	68	71	73
-65°C to 71°C (-85°F to 160°F)	11	16	17	22	22	27	28	30	31
-40°C to 85°C (-40°F to 185°F)	10	15	16	20	21	25	26	28	29
Electrical Service — Full Load Amps									
208/1/60	30	29	29	50	50	50	50	50	50
208/3/60	22	22	22	35	35	35	35	35	35
230/1/60	30	30	30	49	49	49	49	49	49
230/3/60	23	23	23	35	35	35	35	35	35
460/3/60	—	—	—	15	17	15	17	15	17
220/1/50	25	24	27	—	—	—	—	—	—
400/3/50	12	11	11	17	21	17	21	17	21
Live Load Capacity — Watts									
-18°C (0°F)	600	550	1,000						
-40°C (-40°F)	400	350	700						
-54°C (-65°F)	300	200	400						
Noise Level† — dBA									
Heating	60			60					
Cooling	68			70					
Shipping Weight (Approx.)									
Pounds	700	800	875	1,320	1,395	1,800	1,875	1,975	2,050
Kilograms	318	363	397	599	633	816	851	896	930

<sup>†</sup> Limited by a 7°C (45°F) minimum dewpoint temperature and a maximum dry bulb temperature of 88°C (190°F).

<sup>\*</sup> At a dry bulb temperature above 20°C (68°F).

<sup>\*</sup>Relative humidity indication at or near the physical limits may be affected by sensor accuracy and control tolerance. An optional humidity package can be added for applications requiring humidity levels lower than those covered by the full-range humidity system.

<sup>\*\*</sup>Standard deviation from mean, measured at -25°C (-13°F) or at +100°C (212°F).

<sup>†</sup>Noise Level: A-weighted sound pressure level measured at a distance of 1.0 meter (39.4 inches) from the surface of the equipment at a height of 1.6 meters (63 inches) from the floor in free-field conditions using a calibrated instrument.

Performance is based on 60Hz and 23.9°C (75°F) ambient air, and may vary slightly at other ambient temperatures. Chambers are designed for use under normal laboratory conditions. For other applications, please consult Thermotron.

Specifications subject to change without notice.



*Worn with a badge of honor, Thermotron's High Performance Series of environmental test chambers are equipped to exceed the industry standard. Faster tests mean quicker results and improved reliability for your products.*



Key Benefits

- 1

**Larger Compressors.** When normal change rates just won't do, the Performance Series will push your products to the limit with 5°C/min change rates
- 2

**Similar Styling, Superior Performance.** The Performance Series does not cut corners. Larger compressors in the standard design means no extra space needed for superior results.
- 3

**Quicker Results.** Larger compressors mean more testing can be done in less time. Increase your throughput with more tests in your day.
- 4

**Increased Performance & Reliability.** The Performance Series is ready to handle the toughest testing you can perform again, again, and again.

DIMENSIONS

Model	S-16	SM-16	S-27	SM-27	S-32	SM-32
Workspace Dimensions — W x D x H						
Inches	30 x 30 x 30		36 x 36 x 36		38 x 38 x 38	
Centimeters	76 x 76 x 76		91 x 91 x 91		97 x 97 x 97	
Exterior Dimensions — W x D x H						
Inches	45 x 59 x 81		51 x 65 x 88		53 x 68 x 90	
Centimeters	114 x 150 x 206		130 x 165 x 224		135 x 173 x 229	
Volume						
Cubic Feet	16		27		32	
Liters	453		764		906	

Change Rates in Excess of 5°C/min down to -40°C

Push your products to be tougher and stronger. Thermotron's Performance Series is ready to bring your testing to a whole new level.

Temperature Range	Temperature Only (S Models)		Temperature and Humidity* (SM Models)			
	-70°C to 180°C (-94°F to 356°F)		-68°C to 180°C (-90°F to 356°F)			
Model	S-16	SM-16	S-27	SM-27	S-32	SM-32
Compressor Sizes	2-3					
Temperature Control Tolerance	±0.3°C (±0.5°F)					
Temperature Uniformity*	±0.7°C (±1.3°F)					
Cooling Change Rates — Minutes						
180°C to -65°C (356°F to -85°F)	49	53	63	68	68	74
71°C to -65°C (160°F to -85°F)	34	36	43	46	48	51
85°C to -40°C (185°F to -40°F)	16	17	19	20	21	23
Heating Change Rates — Minutes						
-65°C to 180°C (-85°F to 356°F)	27	29	35	37	38	40
-65°C to 71°C (-85°F to 160°F)	9	10	11	12	12	13
-40°C to 85°C (-40°F to 185°F)	8	9	9	10	10	11
Electrical Service — Full Load Amps						
208/1/60	N/A	N/A	N/A	N/A	N/A	N/A
208/3/60	49	55	49	55	49	55
230/1/60	N/A	N/A	N/A	N/A	N/A	N/A
230/3/60	47	53	47	53	47	53
460/3/60	24	27	24	27	24	27
220/1/50	N/A	N/A	N/A	N/A	N/A	N/A
400/3/50	24	24	24	24	24	24
Live Load Capacity — Watts						
-18°C (0°F)	1,000	1,000	1,000	1,000	1,500	1,500
-40°C (-40°F)	700	700	700	700	1,050	1,050
-54°C (-65°F)	400	400	400	400	600	600
Noise Level† — dBA						
Heating	60					
Cooling	70					
Shipping Weight (Approx.)						
Pounds	1320	1395	1,800	1,875	1,975	2,050
Kilograms	599	633	816	851	896	930

\*Relative humidity indication at or near the physical limits may be affected by sensor accuracy and control tolerance. An optional humidity package can be added for applications requiring humidity levels lower than those covered by the full-range humidity system.

\*\*Standard deviation from mean, measured at -25°C (-13°F) or at +100°C (212°F).

†Noise Level: A-weighted sound pressure level measured at a distance of 1.0 meter (39.4 inches) from the surface of the equipment at a height of 1.6 meters (63 inches) from the floor in free-field conditions using a calibrated instrument.

Performance is based on 60Hz and 23.9°C (75°F) ambient air, and may vary slightly at other ambient temperatures. Chambers are designed for use under normal laboratory conditions. For other applications, please consult Thermotron.

Specifications subject to change without notice.





Created as engineered solutions, Thermotron's XS Series chambers put power where you need it most. Test the limits of your products in record time today.



Key Benefits

- 1

**Increased Stress Capabilities**  
Designed to withstand the toughest temperature change rates, the XS-Series chambers are ready to exceed your expectations.
- 2

**Decreased Testing Time**  
Less time testing means more products and data completed. Don't let your work and productivity suffer.
- 3

**Range of Sizes: 1.5 to 32 ft³ (42.5 to 906 Liters)**  
Size is no issue for the XS Series. Our wide range of chambers are ready to suit your needs.
- 4

**Full Range Humidity System**  
Whether you're looking for rainforest-like humidity, arctic cold, or desert heat, the XS-Series chambers are here to help.

DIMENSIONS

Model	XS-1.5	XS-4	XSM-4	XS-8	XS-16	XSM 16	XS-32	XSM-32
Workspace Dimensions — W x D x H								
Inches	20 x 11 x 12 /	20 x 20 x 20 /		24 x 24 x 24 /	30 x 30 x 30 /		38 x 38 x 38	
Centimeters	51 x 28 x 31	51 x 51 x 51		61 x 61 x 61	76 x 76 x 76		97 x 97 x 97	
Exterior Dimensions — W x D x H								
Inches	34 x 22 x 41/	31 x 42 x 47 /		45 x 49 x 73/	45 x 59 x 81 /		53 x 68 x 90	
Centimeters	86 x 56 x 104	79 x 107 x 119		114 x 124 x 185	114 x 150 x 206		135 x 173 x 229	
Volume								
Cubic Feet	1.5	4		8	16		32	
Liters	42	113		227	453		906	

Engineered Solutions For Your Testing Needs

Thermotron's high performance XS-Series Environmental Test Chambers provide superior results, streamlined engineering, increased power, and less time spent testing. XS-Series chambers offer multiple sizes, reliability, and control accuracy required for rapid temperature and change rates up to 10°C/min (18°F/min). Thermotron's exclusive Windows®-based 8200+ Controller gives each XS-Series chamber an unmatched simplicity of program entry and control accuracy.

Temperature-Only Model	XS-1.5	XS-4	XS-8	XS-16	XS-32
Temperature Range	-70°C to 180°C (-94°F to 356°F)				
Compressor Size	(2) 3/4 HP		(2) 4 HP	(2) 6 HP	
Cooling Performance <sup>1</sup> — Minutes					
71°C to -65°C (160°F to -85°F)	30	70	20	19	30
85°C to -40°C (185°F to -40°F)	19	40	12.5	12	17
180°C to -65°C (365°F to -85°F)	45	100	30	35	48
Heating Performance <sup>1</sup> — Minutes					
-40°C to 85°C (-40°F to 185°F)	14	28	10	6	9
-65°C to 71°C (-85°F to 160°F)	16	31	11	7	11
-65°C to 180°C (-85°F to 356°F)	35	65	22	18	28
Live Load Capacity — Watts					
0°C (32°F)	250	-	750	1500	2250
-40°C (-40°F)	175	175	600	1250	1800
-54°C (-65°F)	150	150	500	1000	1500
Electrical Service — Full Load Amps					
208/3/60	17	16	47	69	69
230/3/60	16	16	36	66	66
460/3/60	16	-	24	31	31
400/3/50	-	16	25	36	36
Shipping Weight (approx.) — Pounds / Kg	400 / 181	700 / 317	1000 / 454	1380 / 626	2035 / 923

Temperature-Humidity Model	XSM-4	SM-16	SM-32
Temperature Range	-68°C to 180°C (-90°F to 356°F)		
Humidity Range <sup>2</sup>	20% to 95% RH	10% to 98% RH	10% to 98% RH
Humidity Control Tolerance <sup>3</sup>	±2.5% RH	±2.5% RH	±2.5% RH
Compressor Size	(2) 3/4 HP	(2) 6 HP	(2) 6 HP
Cooling Performance <sup>1</sup> — Minutes			
71°C to -65°C (160°F to -85°F)	70	20	31
85°C to -40°C (185°F to -40°F)	40	13	18
180°C to -65°C (356°F to -85°F)	100	37	50
Heating Performance <sup>1</sup> — Minutes			
-40°C to 85°C (-40°F to 185°F)	28	7	10
-65°C to 71°C (-85°F to 160°F)	31	8	12
-65°C to 180°C (-85°F to 356°F)	65	20	30
Live Load Capacity — Watts			
0°C (32°F)	-	1500	2250
-40°C (-40°F)	175	1250	1800
-54°C (-65°F)	150	1000	1500
Electrical Service — Full Load Amps			
208/3/60	16	69	69
230/3/60	16	66	66
460/3/60	-	31	31
400/3/50	-	36	36
Shipping Weight (approx.) — Pounds / Kg	700 / 317	1455 / 660	2110 / 957

<sup>1</sup> Average

<sup>2</sup> Limited by a 7°C (45°F) minimum dewpoint and a max dry bulb of 85°C (185°F). SM-1.0-8200 and SM-3.5-8200 are limited by 15°C (59°F) minimum dewpoint. SM-15-8200 is limited by a 6°C (43°F) minimum dewpoint and max dry bulb of 88°C (190°F).

<sup>3</sup> At a dry bulb temperature above 20°C (68°F).

<sup>\*</sup>20 Amp minimum service/20 Amp plug on a 6 ft cord.

Temperature Control Tolerance is ±1.1°C (2°F)

The addition of accessories may impact performance or increase exterior dimensions.

Performance is based upon 60 Hz and 23.9°C (75°F) ambient air. Chambers are designed for normal, non-hazardous laboratory operating conditions. If hazardous materials are involved, please consult the factory.

Specifications subject to change without notice. Custom options are available.