

# THERMOTRON®

## SE-2000 SERIES TEST CHAMBERS

**Engineered to provide the most reliable test results in the marketplace, the SE Series Chambers extend our reputation for exceptional reliability and long life.**

### ■ High Performance Product Testing

Thermotron's SE-2000 Series Environmental Test Chambers incorporate a wide range of application-specific compressor selections ranging from 3 to 15 Hp and are capable of providing very rapid product temperature change rates. Faster product temperature transitions reduce test cycle times and boost lab productivity. Providing conditioning in the center of the workspace where it is needed most, Thermotron's optimized airflow system improves gradient control providing tighter uniformity, greater accuracy, and better performance on products being tested.

### ■ 8800 Programmer Controller

With a brilliant 12" color touch screen display, the powerful 8800 Programmer Controller is *Thermotrak II™* and *Direct Link* ready, making operations and data collection easier and



more reliable than ever before. Our controller has a Windows look and feel to support familiar and robust operations. The 8800 is ethernet-compatible and web-enabled with an Internet-ready front end for virtual anytime/anywhere access. Multi-level, password-

based security protects sensitive data. The 8800 can be easily retrofitted on-site to existing chambers.

### ■ Innovative Universal Port *patent pending*

The versatile universal port in the sidewall of our popular SE-Series Chambers interfaces with slide-up modules expanding your chamber's ability to perform thermal shock tests, HALT and HASS, product test system integration and remote conditioning applications. The universal port can be added to new or



existing SE-Series Chambers, increasing the flexibility and productivity of your investment.



### Standard Features for all Models

- USB Port with Flash Drive Replaces Floppy Disk.
- 40 Gigabyte Hard Drive.
- Paperless Recorder Generates Tamper-Proof Data.
- Pre-Programmed Test Profiles (IEC, MIL STD, etc.).
- Electronic Refrigeration Gauges and Pressure Switches.
- Product Temperature Control Software.
- System Monitor Provides Continual Diagnostics.
- Clean Top and Sides, Nothing Mounted Externally.
- Top Exhaust for Cooling Air.
- Lift-Off Panels For Easy Access.
- Extensive Direct Factory-Trained Service Force.
- Electronic Humidity Sensor Requires Minimal Maintenance and Increases Accuracy (Humidity Models Only).
- Main Power Disconnect Switch.
- Therm-Alarm™ Over/Under Temperature Protection Instrument.
- Casters for Mobility Into and Throughout Lab.
- Humidity Water Recirculation System (Humidity Models Only).
- Humidity Water Purification System (Humidity Models Only).

### Optional Features

- Modular Humidity System.
- Low Humidity System.
- Remote Conditioning Blower.
- Universal Port.
- Product Loading Carts.
- Dry Air Purge System.
- Liquid Nitrogen Boost and Extra Heat.
- Air or Water-Cooled Condenser.
- 2 Ports for Convenient Access to Test Items, One Each Side.
- Adjustable Stainless Steel Shelf Increases Product Loading Capacity.

*All features subject to change without notice. CE compliant models available.*

## SE-2000 SERIES SPECIFICATIONS SINGLE STAGE CHAMBERS

Interior Dimensions — W x D x H Inches / Centimeters					All Models <b>48 x 48 x 52 / 122 x 122 x 132</b>					
Volume — Cubic Ft / Liters					All Models <b>69 / 1,965</b>					
Exterior Dimensions — W x D x H Inches / Centimeters					All Models <b>56 x 92 x 95 / 142 x 234 x 241</b>					
Temperature Range					<b>180°C to -40°C (356°F to -40°F); 180°C to -35°C (SE-2000-3)</b>					
Temperature Control					All Models <b>±0.3°C (±0.5°F)</b>					
Temperature Uniformity <sup>1</sup>					All Models <b>±0.7°C (±1.3°F)</b>					
Airflow					All Models <b>1,000 cfm</b>					
Window Size — W x H Inches / Centimeters					All Models <b>15 x 19 / 38 x 48</b>					
Compressor Size — Hp					3.5	5	10	15		
Noise Level <sup>2</sup> — dBA					60 / 74	60 / 76	60 / 76	60 / 76		
Heating / Cooling					60 / 74	60 / 76	60 / 76	60 / 76		
Approximate Shipping Weight — Lbs / Kg					1,975 / 896	2,175 / 986	2,380 / 1,079	2,430 / 1,102		
Cooling Performance Capacity — Minutes Air Temperature (Empty Chamber)										
180°C to -35°C (356°F to -31°F)					88	65	42	39		
71°C to -35°C (160°F to -31°F)					56	43	26	25		
85°C to -20°C (185°F to -4°F)					42	28	14	12		
Cooling Product Temperature — Minutes 50Lb / 23Kg Aluminum										
71°C to -35°C (160°F to -31°F)					80	62	38	37		
85°C to -20°C (185°F to -4°F)					62	50	31	29		
Heating Performance Capacity — Minutes Air Temperature (Empty Chamber)										
-35°C to 180°C (-31°F to 356°F)					44	44	24	12		
-35°C to 71°C (-31°F to 160°F)					18	18	10	6		
-20°C to 85°C (-4°F to 185°F)					18	18	10	6		
Heating Product Temperature — Minutes 50Lb / 23Kg Aluminum										
-35°C to 71°C (-31°F to 160°F)					40	40	27	25		
-20°C to 85°C (-4°F to 185°F)					40	40	27	25		
Live Load Capacity — Watts, Temp. Mode										
0°C (32°F)					2500	3000	3000	3000		
-20°C (-4°F)					1500	2000	2000	2000		
Electrical Service — No Humidity / Humidity										
208 / 3 / 60 (Full Load Amps)					39 / 55	45 / 61	53 / 65	71 / 83		
230 / 3 / 60 (Full Load Amps)					37 / 55	42 / 60	48 / 61	67 / 80		
460 / 3 / 60 (Full Load Amps)					19 / 28	21 / 30	24 / 30	51 / 57		
400 / 3 / 50 (Running Load Amps)					19 / 28	24 / 32	27 / 33	49 / 56		
Inlet Water — Gal / Liters per Minute										
29°C / 85°F					Air-Cooled	Air-Cooled	16 / 60	24 / 91		
24°C / 75°F					Air-Cooled	Air-Cooled	9 / 34	14 / 53		
18°C / 65°F					Air-Cooled	Air-Cooled	7.5 / 28	11 / 42		
13°C / 55°F					Air-Cooled	Air-Cooled	6 / 23	8 / 31		
Model					SE-2000-3	SE-2000-5	SE-2000-10	SE-2000-15		

## SE-2000 SERIES SPECIFICATIONS CASCADE CHAMBERS

Interior Dimensions — W x D x H Inches / Centimeters					All Models <b>48 x 48 x 52 / 122 x 122 x 132</b>					
Volume — Cubic Ft / Liters					All Models <b>69 / 1,965</b>					
Exterior Dimensions — W x D x H Inches / Centimeters					All Models <b>56 x 92 x 95 / 142 x 234 x 241</b>					
Temperature Range					All Models <b>180°C to -70°C (356°F to -94°F)</b>					
Temperature Control					All Models <b>±0.3°C (±0.5°F)</b>					
Temperature Uniformity <sup>1</sup>					All Models <b>±0.7°C (±1.3°F)</b>					
Airflow					All Models <b>1,000 cfm</b>					
Window Size — W x H Inches / Centimeters					All Models <b>15 x 19 / 38 x 48</b>					
Compressor Size — Hp					Two 3.5	Two 6	Two 10	Two 15		
Noise Level <sup>2</sup> — dBA					60 / 74	60 / 76	60 / 76	60 / 76		
Heating / Cooling					60 / 74	60 / 76	60 / 76	60 / 76		
Approximate Shipping Weight — Lbs / Kg					2,355 / 1,070	2,395 / 1,089	2,655 / 1,207	2,730 / 1,241		
Cooling Performance Capacity — Minutes Air Temperature (Empty Chamber)										
180°C to -65°C (356°F to -85°F)					100	70	40	31		
71°C to -65°C (160°F to -85°F)					65	44	25	20		
85°C to -40°C (185°F to -40°F)					45	34	17	13		
Cooling Product Temperature — Minutes 50Lb / 23Kg Aluminum										
71°C to -65°C (160°F to -85°F)					79	60	37	31		
85°C to -40°C (185°F to -40°F)					62	53	29	27		
Heating Performance Capacity — Minutes Air Temperature (Empty Chamber)										
-65°C to 180°C (-85°F to 356°F)					51	51	25	14		
-65°C to 71°C (-85°F to 160°F)					24	24	12	10		
-40°C to 85°C (-40°F to 185°F)					23	23	11	9		
Heating Product Temperature — Minutes 50Lb / 23Kg Aluminum										
-65°C to 71°C (-85°F to 160°F)					52	52	30	28		
-40°C to 85°C (-40°F to 185°F)					48	48	29	27		
Live Load Capacity — Watts, Temp. Mode										
0°C (32°F)					2500	3000	3000	3000		
-54°C (-65.2°F)					1500	2000	2000	2000		
Electrical Service — No Humidity / Humidity										
208 / 3 / 60 (Full Load Amps)					54 / 58	63 / 63	87 / 87	125 / —		
230 / 3 / 60 (Full Load Amps)					51 / 57	58 / 60	75 / 75	119 / —		
460 / 3 / 60 (Full Load Amps)					26 / 29	29 / 30	39 / 39	76 / —		
400 / 3 / 50 (Running Load Amps)					24 / 27	35 / 35	48 / 48	61 / —		
Inlet Water — Gal / Liters per Minute										
29°C / 85°F					Air-Cooled	Air-Cooled	16 / 60	24 / 91		
24°C / 75°F					Air-Cooled	Air-Cooled	9 / 34	14 / 53		
18°C / 65°F					Air-Cooled	Air-Cooled	7.5 / 28	11 / 42		
13°C / 55°F					Air-Cooled	Air-Cooled	6 / 23	8 / 31		
Model					SE-2000-3-3	SE-2000-6-6	SE-2000-10-10	SE-2000-15-15		



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

The addition of accessories may impact performance.

Specifications subject to change without notice.

### THERMOTRON INDUSTRIES

291 Kollen Park Drive  
Holland, Michigan, USA 49423  
Mktg: (616) 393-4580  
Main: (616) 392-1491  
Fax: (616) 392-5643  
E-mail: info@thermotron.com

### THERMOTRON INDUSTRIES, U.K.

Newton House  
Winch Road  
Sittingbourne Research Centre  
Sittingbourne, Kent  
ME9 8EF England  
Phone: 01795 436333  
Fax: 01795 436777  
Email: sales@thermotron.co.uk

### Visit us on the Internet

www.thermotron.com

### FULL RANGE HUMIDITY SPECIFICATIONS\*

Humidity Range <sup>3</sup>	<b>10% to 98% RH</b>
Dry Bulb Temperature Range	<b>7°C to 88°C (45°F to 190°F)</b>
Dewpoint Temperature Range	<b>7°C to 87°C (45°F to 188°F)</b>
Extended Dewpoint Condition	<b>-10°C</b>
Humidity Control <sup>4</sup>	<b>±2.5% RH</b>
Humidity Uniformity <sup>5</sup>	<b>±1.5% RH</b>

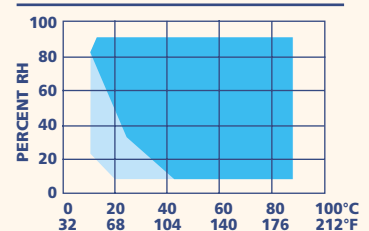
\* Except 15hp Cascade Chamber models

A full range, modular humidity system can be added to SE-Series Test Chambers either at the time of purchase or as a field retrofit. Performance specifications for the humidity module are characterized by a wide range, precise uniformity and tight control.

- 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.
- Limited by a +7°C (+45°F) minimum dew point temperature and a maximum dry bulb temperature of +88°C (+190°F).
- At a dry bulb temperature above +20°C (+68°F).
- Based upon temperature uniformity specifications.

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.

### 2000 SERIES HUMIDITY RANGE



STANDARD HUMIDITY RANGE

-10°C (14°F) DEWPOINT