SE-SERIES ENVIRONMENTAL TEST CHAMBERS

Taking Environmental Product Testing to the Next Level

Thoroughly testing products prior to consumer use is vital to the success of your business. Thermotron's SE-Series Chambers expose products to a variety of temperatures and humidity levels, offering a complete and comprehensive way to improve product reliability.

SE-Series Chambers provide accurate and reliable test results. With more standard features and better performance capabilities than comparable chambers on the market, SE-Series Chambers improve products through dynamic testing solutions.

CONTENTS

Advantages: At A Glance

Variety of Sizes
SE-Series Chamber workspaces range from 300 to 3,300 liters to accommodate many product sizes.

Diverse Compressor Sizes
By utilizing high-performance compressors in multiple size configurations, SE-Series 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.

Product 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 8800 Controller is standard on all SE-Series Chamber models. The controller is intuitive, robust, and secure. The controller's hardware and software are designed in-house, specifically for environmental testing.

Humidity System
The patented humidity system provides a wide range of humidity conditions. Its modular design allows for future upgrades of temperature-only SE-Series Chambers.

Custom Solutions
Can't find an SE-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.

FEATURES

Heated, Centered Window
Reduces condensation

8800 Controller
Secure and easy to use

Serial Communication Panel
Provides computer and network connections

Humidity System (*optional*)
Full range reaches dewpoints between -10ºC and 87ºC

Universal Port*
Diversifies test lab utilization

Access Port
Adaptable size and location

Data Acquisition Panel (*optional*)
Collects and monitors data

Compressors
High-performance rapidly cools chamber

Leveling Pads and Casters
Facilitates mobility

Inside the Workspace

4" thick door and 4.5" thick walls
The chamber is well insulated and stays cool to the touch, protecting the user.

Advanced Air Baffle Design
Forces air directly over the product for better temperature change rates.

Electronic Humidity Sensor (humidity models)
Eliminates the need for thermocouple wicks, producing more repeatable, dependable humidity tests with less downtime.

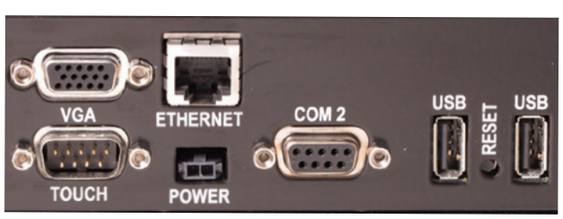
Interior Lights
Illuminate the workspace during a test and while the door is open.

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.

Serial Communications Panel

Stay connected with the Serial Communications Panel, featuring computer, internet, Ethernet, and USB connections, all while powering the 8800 Controller. The Serial Communications Panel provides the ability to securely export and transfer sensitive test data, including graphs and reports. Included in the serial communications panel are:



- 2 USB Ports
- Ethernet
- RS-232
- GPIB/IEEE-488 (*optional*)

Optional Features

A Quiet Package
Sound deadening material inside the chamber base incorporated to minimize noise levels.

Additional Access Ports
Allows cables to attach to a product inside the chamber and connect to outside monitoring equipment. A plug is provided to seal the port.

Cable Notch
A recess in the door frame that enables easy cable routing from the product under test to the exterior of the chamber.

Data Acquisition Panel (DAQ)
Collects and monitors product data while it's being tested.

Door Lock
Prevents the chamber door from opening during a test.

E-stop Button
Shuts down the chamber immediately in case of emergency.

Extended Temperature Range
Increases chamber performance to 232°C or below -70°C, with the help of LN_2.

Extended Warranty
Available on the parts and/or labor of your equipment.

Extra Access Ports
Choose from 2", 4", and 6" ports to be placed on the side wall of the chamber.

Extra Heat
Accelerates the chamber's heating capabilities in order to improve air and product temperature change rates.

Glove Ports
Allows users to safely handle products under test inside the workspace.

Inner Glass Door Ports
Allows product handling without releasing conditioned air.

Liquid Nitrogen (LN_2) Boost
Enables faster temperature pull-downs and provides back-up cooling in the unlikely event of a mechanical refrigeration failure.

Liquid Nitrogen (LN_2)-only Chamber
Availeble in certain models only. Bypasses mechanical refrigeration for a simplified, LN_2-only operation.

Oxygen Monitor
Analyzes ambient oxygen levels outside of the chamber to protect users.

Preventive Maintenance and Calibration Agreements
Keeps equipment in optimal condition, minimizing chamber downtime.

Product Dewpoint Control
Prevents condensation by maintaining the product at a higher temperature than the dewpoint of the surrounding air.

Purge: Dry Air & Gaseous Nitrogen (GN_2)
Minimizes moisture in the workspace.

Reinforced Floors
Supports heavy product loads.

Remote Air-cooled Condenser
Transfers heat from the chamber to outside the facility.

Remote Conditioning Blower
Allows the chamber to condition remote enclosures through the use of a blower in the chamber ceiling.

Shelves
Increases product loading capacity, allowing for more effective use of testing space.

The Universal Port
Located in the side wall of a SE-Series Chamber, diversifies test lab utilization.

SE-2000

**patented, optional*

ENHANCED PERFORMANCE

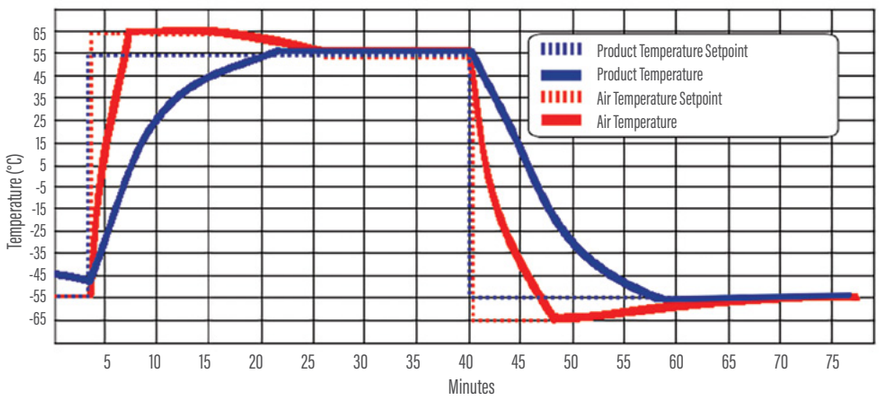
Air Baffle

Maximizing airflow in the workspace is critical to a successful test. Repeat tests and maintain consistent, accurate results with Thermotron's innovative air baffle. It is designed to evenly and forcefully distribute air directly over the product,* ensuring the entire product is conditioned.

The superior airflow the air baffle provides enhances product temperature change rates, tightens temperature gradients, and improves uniformity throughout the chamber's entire workspace.

The air baffle forces airflow directly on the product under test, improving product temperature change rates and workspace conditioning.

Product Temperature Control



Product Temperature Control (PTC) is a software and thermocouple system used to increase product temperature ramp rates with user-defined temperature offsets. This feature is set up and controlled through the 8800 Controller.

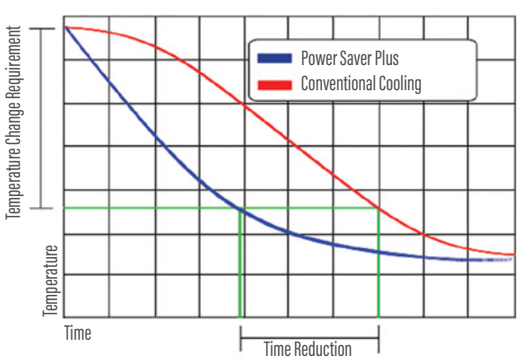
During conventional environmental testing, the workspace air temperature setpoint is achieved before the product temperature reaches it. The product temperature will lag behind and approach the air temperature at an exponentially decreasing rate. PTC reduces product ramp times by up to 50% by over-driving the chamber's conditioning system until the product temperature achieves the desired setpoint.

In the above example, the workspace air temperature reaches 65°C and holds until the desired product temperature setpoint of 55°C is achieved. Once the product temperature approaches the setpoint, the air temperature converges with the product temperature so both are at 55°C. This ensures accurate test results for your product during environmental testing. PTC works for both heating and cooling.

Power Saver Plus (*optional*)

This innovative feature boosts cooling performance and reduces chamber energy consumption. The Power Saver Plus mode works with the 8800 Controller to determine whether to operate in single-stage or cascade mode, based on temperature setpoint, humidity mode, and cooling throttle.

Single-stage refrigeration systems perform faster in higher temperature ranges, while cascade refrigeration systems perform faster in lower temperature ranges. Power Saver Plus combines the benefit of both systems. It uses a sophisticated control logic to enable switching between systems, thus increasing cooling ramp times by up to 30%, all while reducing power consumption.



**in chambers with a workspace width less than 48"*

SE-300

Boost Cooling and Heating (*optional*)

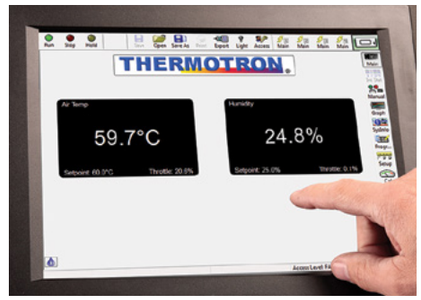
Additional features enhance the chamber's cooling and heating performance.

LN_2 Boost and CO_2 Boost
Liquid nitrogen (LN_2) boost and carbon dioxide (CO_2) boost are cooling injection systems that enable faster pull-downs and dissipation of heat from the product under test.

Extra Heat
This add-on feature accelerates the chamber's heating capabilities to improve air and product temperature change rates.

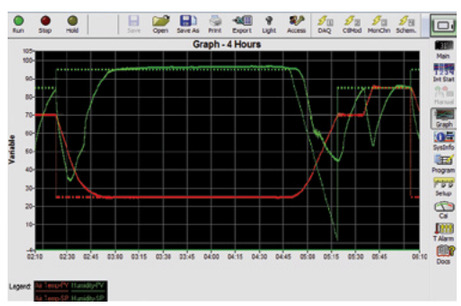
8800 CONTROLLER

Intuitive, Robust, Secure

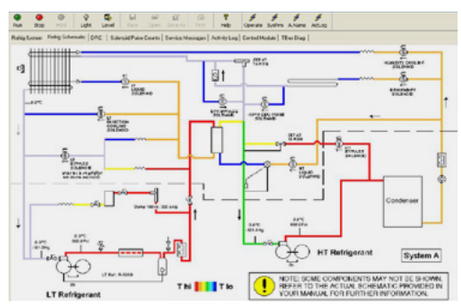


Thermotron's exclusive Windows®-based 8800 Controller, with 12" color touchscreen, makes chamber operation and data collection easy and reliable. Quick navigation buttons provide shortcuts to user-selected screens. The 8800 Controller is standard on all SE-Series Chambers. With this Controller, receive:

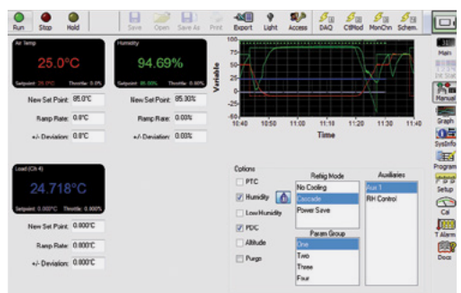
- Multi-level, password-based security system to protect data
- Test data that can be downloaded to spreadsheet formats
- An Activity Log: record and retain 15+ years of chamber history
- Product Temperature Control to improves product change rates by over-compensating the air temperature to control the product temperature
- The System Monitor to detect excessive refrigeration pressures and temperatures and notify users when problems occur
- The Product Dewpoint Control to prevent condensation by maintaining the product at a higher temperature than the dewpoint of the surrounding air (*optional*)
- ThermoTrak II™ to connect up to 32 controllers to one PC (*optional*)



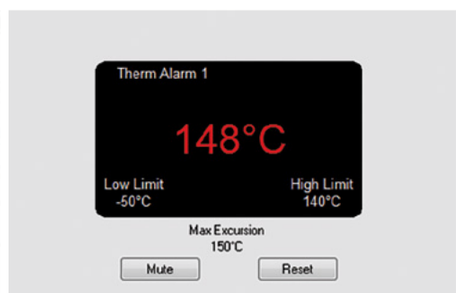
Graphing Screen expands capabilities with enhanced test monitoring and reporting.



Refrigeration Schematic Screen assists with electronic refrigeration monitoring and troubleshooting.



Program Entry allows users to load, view, and edit profiles manually or with step-by-step assistance.



Therm-Alarm® prevents temperatures from exceeding user-defined limits.

MODULAR HUMIDITY SYSTEM

Temperature-humidity SE-Series Chamber models include a patented, modular, full-range humidity system. Precise uniformity and tight control characterize the high-performance specifications of this humidity system.

With excellent low-humidity accuracy, the electronic humidity sensor (located in the workspace) eliminates the need for thermocouple wicks and float tanks. A steam generator achieves high volumes of moisture with consistent water vapor levels and more repeatable test results.

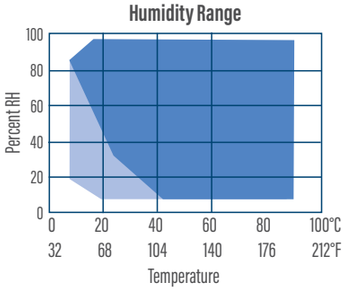
The humidity system can be configured with a direct-feed facility hook-up or a self-contained refillable water reservoir. If using the water reservoir, the humidity water purification and recirculation system is recommended to keep the water within the working limits of the chamber.

A demineralizer cartridge viewing window allows users to see the cartridge without opening the doors.

The low humidity option incorporates dry air purge and a bubbler humidity system to control humidity at ultra-low dewpoints. This eliminates the two problems associated with adding hot steam to a cold environment: heat that needs to be taken out of the system and steam generator oscillation, both of which negatively affect the test results.

Humidity test numbers can be viewed, monitored, and controlled through the 8800 Controller. If you have a temperature-only chamber, the modular humidity system can be added as a field retrofit.

Humidity Range



Standard Humidity Range

-10°C (14°F) Dewpoint

Full-Range Humidity Specifications*

Humidity Range[1]	10% to 98% RH
Dry Bulb Temperature Range	7°C to 88°C (45°F to 190°F)
Dewpoint Temperature Range	7°C to 87°C (45°F to 188°F)
Extended Dewpoint Condition	-10°C (14°F)
Humidity Control[2]	±2.5% RH

**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.*

[1] Limited by a 7°C (45°F) minimum dewpoint temperature and a maximum dry bulb temperature of 88°C (190°F).

[2] At a dry bulb temperature above 20°C (68°F).

UNIVERSAL PORT

The patented Universal Port can be installed in the side wall of SE-Series Chambers, expanding their capabilities by diversifying equipment utilization, increasing lab productivity, and reducing capital investment costs.

The Universal Port interfaces with interchangeable modules and accessories that characterize different stress testing and simulation techniques, allowing the chamber to serve multiple purposes.

With the Universal Port, a temperature chamber can become a HALT chamber, thermal shock chamber, or a remote conditioner without needing to purchase an additional chamber.

The height of the Universal Port, modules, and accessories are consistent across all SE-Series Chamber models. The stainless steel port reduces moisture migration and heat leak. A full-sealing structural plug fills the portal with a pressurized fit when the port is not in use.

Universal Port Module and Accessory Options

Adding the Universal Port option to your chamber diversifies your capital equipment purchase and allows you to be prepared for future growth and ever-changing testing needs. The following modules and accessories are currently available for purchase with your SE-Series Chamber with the Universal Port option.

- RSL-16 Portable Shaker
- AST Module
- Remote Blower Package
- Thermal Shock Module
- Walk-In Conditioning Module
- Workspace Add-on Module
- Workspace Extension Module
- Bulkhead ESS Connector Plate
- Workspace Extension Enclosures
- Additional Window
- Glove Ports
- Test Station Platform

Universal Port is available on SE-600 or larger.

Universal Port Size: 32"H x 18"W. Custom sizes available.

SE-600 with RSL-16 Portable Shaker

CHAMBER SPECIFICATIONS

From workspaces to compressors, Thermotron SE-Series Chambers come with a variety of choices. The following pages outline the most common sizes offered for cascade, single-stage, and accelerated performance models according to chamber size, compressor(s), humidity capabilities, and airflow. All SE-Series Chambers can be custom designed, engineered, and manufactured to meet specific testing needs.

	Interior Dimensions WxDxH	Volume	Exterior Dimensions WxDxH	Airflow	Temperature Uniformity*
SE-300	24x26.25x28 in 61x67x71 cm	10.2 ft³ 289 L	35x70x78 in 89x178x198 cm	500 CFM	±0.5°C (±0.9°F)
SE-400	32x26.25x28 in 81x67x71 cm	13.6 ft³ 385 L	43x70x78 in 109x178x198 cm	750 CFM	
SE-600	40x26.25x34 in 102x67x86 cm	20.7 ft³ 586 L	49x70x83 in 124x178x211 cm	1,000 CFM	
SE-1000	40x39.25x38.25 in 102x100x97 cm	34.8 ft³ 986 L	49x83x87 in 124x211x221 cm	1,000 CFM	
SE-1157	48x33.25x44.25 in 122x84x112 cm	40.9 ft³ 1,157 L	56x83x87 in 142x211x221 cm	2,500 CFM	±0.7°C (±1.3°F)
SE-1200	40x39.25x46 in 102x100x117 cm	41.8 ft³ 1,184 L	49x83x95 in 124x211x241 cm	1,000 CFM	±0.5°C (±0.9°F)
SE-1400	48x39.25x44.25 in 122x100x112 cm	48.2 ft³ 1,366 L	56x83x87 in 142x211x221 cm	2,000 CFM	±0.7°C (±1.3°F)
SE-1700	48x42x52 in 112x107x132 cm	60.7 ft³ 1,718 L	56x92x95 in 142x234x241 cm	2,500 CFM	
SE-2000	48x48x52 in 122x122x132 cm	69.3 ft³ 1,965 L	56x92x95 in 142x234x241 cm	2,000 CFM	
SE-2700	48x66x52 in 122x168x132 cm	95.3 ft³ 2,700 L	56x116x95 in 142x295x241 cm	2,500 CFM	
SE-3000	48x72x52 in 122x183x132 cm	104 ft³ 2,945 L	56x116x95 in 142x295x241 cm	2,000 CFM	
SE-3027	48x74x52 in 122x188x132 cm	107 ft³ 3,027 L	56x124x95 in 142x315x241 cm	2,500 CFM	
SE-3300	48x80x52 in 122x203x132 cm	116 ft³ 3,272 L	56x124x95 in 142x315x241 cm	2,000 CFM	

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

All chamber windows are 15x19 in / 38x48 cm.

Custom window sizes available.

Temperature Control: ±0.3°C (±0.5°F)

Cascade Utilities Definitions >>

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

Air-cooled indicates that an onboard condenser is standard and a water-cooled condenser is optional. Chambers with listed water requirements can be built with remote air-cooled condensers.

CASCADE UTILITIES

-70° to 180°C (-94° to 356°F)

		Approx. Shipping Weight lbs / kg	Electrical Requirements Full Load Amps				Inlet Water Gal / Liters per Minute				Noise Level (dBA) Heating/ Cooling
			208/3/60	230/3/60	460/3/60	400/3/50	29°C / 85°F	24°C / 75°F	18°C / 65°F	13°C / 55°F	
SE-300	SE-300-2-2	1,330 / 603	46	46	23	24	Air-Cooled				60 / 68
	SE-300-4-4	1,410 / 640	57	55	28	29					60 / 76
	SE-300-6-6	1,450 / 658	65	62	31	33	12 / 46	7 / 26	5 / 19	3.5 / 13	
	SE-300-10-10	1,660 / 753	103	94	47	50	16 / 60	9 / 34	7.5 / 28	6 / 23	
SE-400	SE-400-6-6	1,575 / 714	68	65	33	35	Air-Cooled				60 / 76
	SE-400-10-10	1,785 / 810	92	83	42	44	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-400-15-15	1,860 / 844	121	112	56	59	24 / 91	14 / 53	11 / 42	8 / 31	
SE-600	SE-600-3-3	1,680 / 762	56	55	28	29	Air-Cooled				60 / 74
	SE-600-6-6	1,740 / 789	66	63	32	34					60 / 76
	SE-600-7.5-7.5	1,800 / 816	82	72	36	38					
	SE-600-10-10	2,040 / 925	89	81	41	42	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-600-15-15	2,115 / 959	122	110	55	58	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1000	SE-1000-3-3	1,840 / 834	56	55	28	29	Air-Cooled				60 / 74
	SE-1000-6-6	1,900 / 862	66	63	32	34					60 / 76
	SE-1000-7.5-7.5	1,960 / 889	82	72	36	38					
	SE-1000-10-10	2,200 / 998	89	81	41	42	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1000-15-15	2,275 / 1,032	122	110	55	58	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1200	SE-1200-3-3	1,930 / 875	56	55	28	29	Air-Cooled				60 / 74
	SE-1200-6-6	1,990 / 902	66	63	32	34					60 / 76
	SE-1200-7.5-7.5	2,050 / 930	82	72	36	38					
	SE-1200-10-10	2,290 / 1,039	89	81	41	42	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1200-15-15	2,365 / 1,073	122	110	55	58	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1400	SE-1400-3-3	1,980 / 898	63	61	31	33	Air-Cooled				60 / 74
	SE-1400-6-6	2,040 / 925	73	70	35	37					60 / 76
	SE-1400-7.5-7.5	2,100 / 952	89	79	39	42					
	SE-1400-10-10	2,340 / 1,061	96	88	44	46	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1400-15-15	2,415 / 1,095	129	117	58	61	24 / 91	14 / 53	11 / 42	8 / 31	
SE-2000	SE-2000-3-3	2,155 / 977	63	61	31	33	Air-Cooled				60 / 74
	SE-2000-6-6	2,215 / 1,005	73	70	35	37					60 / 76
	SE-2000-7.5-7.5	2,275 / 1,032	89	79	39	42					
	SE-2000-10-10	2,515 / 1,141	96	88	44	46	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-2000-15-15	2,590 / 1,175	129	117	58	61	24 / 91	14 / 53	11 / 42	8 / 31	
SE-3000	SE-3000-6-6	2,715 / 1,231	73	70	35	37	Air-Cooled				60 / 76
	SE-3000-7.5-7.5	2,775 / 1,259	89	79	39	42					
	SE-3000-10-10	3,015 / 1,367	96	88	44	46	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-3000-15-15	3,090 / 1,401	129	117	58	61	24 / 91	14 / 53	11 / 42	8 / 31	
SE-3300	SE-3300-6-6	2,885 / 1,308	73	70	35	37	Air-Cooled				60 / 76
	SE-3300-7.5-7.5	2,945 / 1,336	89	79	39	42					
	SE-3300-10-10	3,185 / 1,444	96	88	44	46	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-3300-15-15	3,260 / 1,478	129	117	58	61	24 / 91	14 / 53	11 / 42	8 / 31	
	SE-3300-20-20	4,170 / 1,891	173	157	79	82	40 / 151	22 / 83	18 / 68	14 / 53	

CASCADE PERFORMANCE

-70° to 180°C (-94° to 356°F)

		Cooling Performance						Heating Performance						IEC Performance+		Cooling Product Temp		Heating Product Temp	
		Measured at the supply air*														Measured on the product**			
		Minutes & °C/Minute						Minutes & °C/Minute						°C/Minute		Minutes			
		180° to -65°C		71° to -65°C		85° to -40°C		-65° to 180°C		-65° to 71°C		-40° to 85°C		Cooling	Heating	71° to -65°C	85° to -40°C	-65° to 71°C	-40° to 85°C
SE-300	SE-300-2-2	75	3.2°C	48	2.8°C	35	3.5°C	36	6.8°C	17	8°C	16	7.8°C	3.6	6.5	90	72	40	38
	SE-300-4-4	45	5.4°C	26	5.2°C	17	7.4°C	22	11.1°C	9	15.1°C	8	15.6°C	6.2	10.5	52	36	33	31
	SE-300-6-6	33	7.4°C	21	6.4°C	12.5	10°C	22	11.1°C	9	15.1°C	8	15.6°C	8.7	10.5	39	28	33	31
	SE-300-10-10	20	12.3°C	13	10.5°C	6	20.8°C	11	22.3°C	5	27.2°C	4	31.3°C	15.4	22	36	26	32	30
SE-400	SE-400-6-6	42	5.8°C	24	5.6°C	15	8.3°C	30	8.1°C	14	9.7°C	12	10.4°C	6.6	8.0	42	33	30	28
	SE-400-10-10	25	9.8°C	15	9°C	9	13.8°C	18	13.6°C	7.5	18.1°C	6.5	19.2°C	11.7	12.5	27	23	25	24
	SE-400-15-15	17	14.4°C	9	15.1°C	5	25°C	9	27.2°C	4.5	30.2°C	4	31.3°C	22.0	28.0	24	21	24	23
SE-600	SE-600-3-3	68	3.6°C	41	3.3°C	28	4.4°C	37	6.6°C	17	8°C	16	7.8°C	3.8	5.8	60	48	40	38
	SE-600-6-6	50	4.9°C	30	4.5°C	22	5.6°C	37	6.6°C	17	8°C	16	7.8°C	5.5	5.8	48	40	40	38
	SE-600-7.5-7.5	40	6.1°C	26	5.2°C	18	6.9°C	19	12.8°C	9	15.1°C	8	15.6°C	6.6	13.3	42	35	26	25
	SE-600-10-10	28	8.7°C	17	8°C	11	11.3°C	19	12.8°C	9	15.1°C	8	15.6°C	10.0	13.3	30	25	26	25
	SE-600-15-15	22	11.1°C	13	10.4°C	9	13.8°C	11	22.2°C	7	19.4°C	6	20.8°C	13.3	22.0	26	23	24	23
SE-1000	SE-1000-3-3	78	3.1°C	50	2.7°C	35	3.5°C	43	5.6°C	20	6.8°C	19	6.5°C	3.1	4.9	68	53	44	41
	SE-1000-6-6	56	4.3°C	36	3.7°C	26	4.7°C	43	5.6°C	20	6.8°C	19	6.5°C	4.6	4.9	53	46	44	41
	SE-1000-7.5-7.5	47	5.2°C	32	4.3°C	22	5.7°C	21	11.6°C	10	13.6°C	9	12.8°C	5.4	10.5	46	39	27	26
	SE-1000-10-10	34	7.2°C	21	6.4°C	13	9.6°C	21	11.6°C	10	13.6°C	9	12.8°C	7.7	10.5	32	26	27	26
	SE-1000-15-15	27	9°C	16	8.5°C	11	11.3°C	12	20.4°C	8	17°C	7	17.8°C	11.7	20.0	28	24	25	24
SE-1200	SE-1200-3-3	84	2.9°C	55	2.4°C	40	3.1°C	47	5.2°C	22	6.1°C	21	5.9°C	2.8	4.4	72	56	48	44
	SE-1200-6-6	62	3.9°C	40	3.4°C	30	4.1°C	47	5.2°C	22	6.1°C	21	5.9°C	4.0	4.4	56	49	48	44
	SE-1200-7.5-7.5	52	4.7°C	35	3.9°C	25	5°C	23	10.6°C	11	12.3°C	10	12.5°C	4.9	9.5	48	41	28	27
	SE-1200-10-10	37	6.6°C	23	5.9°C	15	8.3°C	23	10.6°C	11	12.3°C	10	12.5°C	6.9	9.5	34	27	28	27
	SE-1200-15-15	29	8.4°C	18	7.5°C	12	10.4°C	13	18.8°C	9	15.1°C	8	15.6°C	10.5	18.0	29	25	26	25
SE-1400	SE-1400-3-3	95	2.6°C	61	2.2°C	43	2.9°C	49	5°C	23	5.9°C	22	5.7°C	2.5	4.2	76	59	50	46
	SE-1400-6-6	66	3.7°C	42	3.2°C	32	3.9°C	49	5°C	23	5.9°C	22	5.6°C	3.7	4.2	58	51	50	46
	SE-1400-7.5-7.5	55	4.5°C	37	3.7°C	27	4.6°C	24	10.2°C	11	12.3°C	10	12.5°C	4.5	9.0	50	43	29	28
	SE-1400-10-10	39	6.2°C	24	5.6°C	16	7.8°C	24	10.2°C	11	12.3°C	10	12.5°C	6.4	9.0	36	29	29	28
	SE-1400-15-15	30	8.1°C	19	7.1°C	12	10.4°C	14	17.5°C	8	17°C	7	17.8°C	9.5	18.0	30	26	27	26
SE-2000	SE-2000-3-3	100	2.4°C	65	2°C	45	2.7°C	51	4.8°C	24	5.6°C	23	5.4°C	2.3	4.0	79	62	52	48
	SE-2000-6-6	70	3.5°C	44	3°C	34	3.6°C	51	4.8°C	24	5.6°C	23	5.4°C	3.3	4.0	60	53	52	48
	SE-2000-7.5-7.5	58	4.2°C	39	3.5°C	29	4.3°C	25	9.8°C	12	11.3°C	11	11.3°C	4.0	8.7	52	45	30	29
	SE-2000-10-10	41	5.9°C	25	5.4°C	17	7.4°C	25	9.8°C	12	11.3°C	11	11.3°C	6.4	8.7	37	31	30	29
	SE-2000-15-15	31	7.9°C	20	6.8°C	12	10.4°C	14	17.5°C	8	17°C	7	17.8°C	8.3	16.6	31	27	28	27
SE-3000	SE-3000-6-6	85	2.9°C	54	2.5°C	42	2.9°C	64	3.8°C	31	4.3°C	29	4.3°C	2.8	3.3	70	61	58	54
	SE-3000-7.5-7.5	70	3.5°C	47	2.9°C	35	3.6°C	30	8.1°C	14	9.7°C	13	9.6°C	3.4	7.1	60	51	34	32
	SE-3000-10-10	50	4.9°C	30	4.5°C	21	5.9°C	30	8.1°C	14	9.7°C	13	9.6°C	5.2	7.1	42	35	34	32
	SE-3000-15-15	38	6.4°C	25	5.4°C	16	7.8°C	17	14.4°C	9	15.1°C	8	15.6°C	6.6	13.3	35	31	31	30
SE-3300	SE-3300-6-6	90	2.7°C	57	2.4°C	45	2.8°C	68	3.6°C	33	4.1°C	31	4°C	2.7	3.2	73	63	61	57
	SE-3300-7.5-7.5	74	3.3°C	50	2.7°C	38	3.3°C	32	7.6°C	15	9.1°C	14	8.9°C	3.2	6.6	63	53	36	34
	SE-3300-10-10	53	4.6°C	32	4.3°C	23	5.4°C	32	7.6°C	15	9.1°C	14	8.9°C	5.0	6.6	44	37	36	34
	SE-3300-15-15	40	6.1°C	27	5°C	17	7.4°C	18	13.6°C	10	13.6°C	9	13.9°C	6.4	12.5	36	32	32	31
	SE-3300-20-20	30	8.2°C	17	8°C	11	11.4°C	19	12.9°C	10	13.6°C	9	13.9°C	10.5	11.7	33	29	32	31

Air temperature (empty chamber)

***SE-300 and SE-400s are tested with 25 lbs/11 kg of aluminum sheets, all other models are tested with 50 lbs/23 kg aluminum sheets.*

SE-2000-3-3 limited to -68°C.

Performance is based upon laboratory ambient conditions of 23.9°C, and may vary slightly.

+IEC specification 600-68-3-5. Based on the time the chamber takes to pass through the middle 80% of the full temperature range when conducting a transition over this range.

Thermotron equipment is not designed to process hazardous materials. Consult an application engineer if hazardous materials are involved.

Additional accessories may impact performance. Specifications subject to change without notice.

HIGH HORSEPOWER SERIES

-70° to 180°C (-94° to 356°F)

Accelerated Perfomance SE-Series Chambers are paired with specific compressors for superior performance in order to achieve the testing results you expect from Thermotron.

Performance

	Cooling Performance						Heating Performance						IEC+		Cooling Product Temp		Heating Product Temp	
	Measured at the Supply Air*														Measured on the Product**			
	Minutes & °C/Minute						Minutes & °C/Minute						Minutes		Minutes			
	180° to -65°C		71° to -65°C		85° to -40°C		-65° to 180°C		-65° to 71°C		-40° to 85°C		Cooling	Heating	71° to -65°C	85° to -40°C	-65° to 71°C	-40° to 85°C
SE-1157-30-30	14	17.5°C	8	17°C	5	25°C	11	22.3°C	5	27.2°C	4.5	27.8°C	10	8	27	23	26	25
SE-1400-20-20	21	11.7°C	12	11.3°C	7	17.9°C	15	16.3°C	8	17°C	7	17.9°C	13	14	28	24	27	26
SE-1700-30-30	16	15.3°C	9	15.1°C	7	17.9°C	12	20.4°C	6	22.7°C	5	25°C	12	9	28	24	27	26
SE-2000-20-20	23	10.7°C	13	10.5°C	8	15.6°C	16	15.3°C	8	17°C	7	17.9°C	15	15	29	25	28	27
SE-2700-30-30	19	12.9°C	11	12.4°C	8	15.6°C	13	18.8°C	7	19.4°C	6	20.8°C	14	10	31	27	30	29
SE-3000-20-20	28	8.8°C	16	8.5°C	10	12.5°C	19	12.9°C	9	15.1°C	8	15.6°C	18	18	32	28	31	30
SE-3027-30-30	20	12.3°C	11	12.4°C	8	15.6°C	13	18.8°C	7	19.4°C	6	20.8°C	14	10	32	28	31	30

** Air temperature (empty chamber)*

***SE-300 and SE-400s are tested with 25 lbs/11 kg of aluminum sheets, all other models are tested with 50 lbs/23 kg aluminum sheets.*

+IEC specification based on the time the chamber takes to pass through the middle 80% of the full temperature range when conducting a transition over this range.

Utilities

	Approx. Shipping Weight lbs / kg	Electrical Requirements Full Load Amps				Inlet Water Gal / Liters per Minute				Noise Level (dBA) Heating / Cooilng
		208/3/60	230/3/60	460/3/60	400/3/50	29°C / 85°F	24°C / 75°F	18°C / 65°F	13°C / 55°F	
SE-1157-30-30	3,825 / 1,735	249	226	113	117	65 / 246	32 / 121	22 / 83	16 / 60	60 / 76
SE-1400-20-20	3,325 / 1,508	173	157	79	82	40 / 151	22 / 83	18 / 68	14 / 53	
SE-1700-30-30	4,000 / 1,814	249	226	113	117	65 / 246	32 / 121	22 / 83	16 / 60	
SE-2000-20-20	3,500 / 1,587	173	157	79	82	40 / 151	22 / 83	18 / 68	14 / 53	
SE-2700-30-30	4,500 / 2,041	249	226	113	117	65 / 246	32 / 121	22 / 83	16 / 60	
SE-3000-20-20	4,000 / 1,814	173	157	79	82	40 / 151	22 / 83	18 / 68	14 / 53	
SE-3027-30-30	4,670 / 2,118	249	226	113	117	65 / 246	32 / 121	22 / 83	16 / 60	

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

SINGLE-STAGE PERFORMANCE

-40° to 180°C (-40° to 356°F)

		Cooling Performance						Heating Performance						IEC Performance+		Cooling Product Temp		Heating Product Temp	
		Measured at the Supply Air*														Measured on the Product**			
		Minutes			°C/Minute			Minutes				°C/Minute		°C/Minute		Minutes			
		180° to -35°C		71° to -35°C		85° to -20°C		-35° to 180°C		-35° to 71°C		-20° to 85°C		Cooling	Heating	71° to -35°C	85° to -20°C	-35° to 71°C	-20° to 85°C
SE-300	SE-300-2	60	3.6°C	38	2.8°C	25	4.2°C	32	6.7°C	13	8.1°C	13	8°C	4.6	6.7	60	46	30	30
	SE-300-4	42	5.1°C	28	3.7°C	17	6.1°C	18	11.9°C	7	15.1°C	7	15°C	6.2	11.0	50	40	25	25
SE-600	SE-600-4	54	3.9°C	35	3°C	23	4.5°C	31	6.9°C	13	8.1°C	13	8°C	4.9	6.2	56	39	31	31
	SE-600-6	43	5°C	26	4°C	18	5.8°C	31	6.9°C	13	8.1°C	13	8°C	6.0	6.2	44	33	31	31
	SE-600-7.5	35	6.1°C	23	4.6°C	16	6.6°C	16	13.4°C	7	15.1°C	7	15°C	7.3	12.5	40	31	24	24
	SE-600-10	27	8°C	18	5.8°C	10	10.5°C	16	13.4°C	7	15.1°C	7	15°C	10.3	12.5	34	28	24	24
	SE-600-15	22	9.8°C	14	7.6°C	7	15°C	9	23.8°C	4	26.5°C	4	26.2°C	12.5	29.3	31	27	22	22
SE-1000	SE-1000-4	67	3.2°C	46	2.3°C	32	3.2°C	36	5.9°C	15	7°C	15	7°C	4.0	5.1	66	48	33	33
	SE-1000-6	52	4.1°C	33	3.2°C	22	4.7°C	36	5.9°C	15	7°C	15	7°C	4.9	5.1	49	39	33	33
	SE-1000-7.5	43	5°C	29	3.7°C	19	5.5°C	20	10.8°C	8	13.2°C	8	13.1°C	6.0	10.3	45	36	25	25
	SE-1000-10	30	7.2°C	20	5.3°C	12	8.7°C	20	10.8°C	8	13.2°C	8	13.1°C	8.8	10.3	36	29	25	25
	SE-1000-15	25	8.6°C	16	6.6°C	9	11.7°C	10	21.5°C	5	21.2°C	5	21°C	10.3	22.0	35	28	23	23
SE-1200	SE-1200-4	75	2.9°C	53	2°C	36	2.9°C	40	5.3°C	17	6.2°C	17	6.1°C	3.7	4.6	72	55	36	36
	SE-1200-6	60	3.5°C	39	2.7°C	26	4°C	40	5.3°C	17	6.2°C	17	6.1°C	4.4	4.6	55	44	36	36
	SE-1200-7.5	47	4.6°C	32	3.3°C	22	4.8°C	22	9.7°C	9	11.7°C	9	11.6°C	5.5	9.2	49	40	26	26
	SE-1200-10	32	6.7°C	22	4.8°C	13	8°C	22	9.7°C	9	11.7°C	9	11.6°C	8.0	9.2	37	30	26	26
	SE-1200-15	28	7.7°C	18	5.9°C	10	10.5°C	11	19.5°C	5	21.2°C	5	21°C	9.2	19.5	36	28	24	24
SE-1400	SE-1400-4	80	2.9°C	54	2°C	38	2.8°C	41	5.2°C	17	6.2°C	17	6.2°C	3.5	4.5	74	57	37	37
	SE-1400-6	62	3.5°C	40	2.7°C	26	4°C	41	5.2°C	17	6.2°C	17	6.2°C	4.0	4.5	57	45	37	37
	SE-1400-7.5	49	4.4°C	33	3.2°C	22	4.8°C	22	9.8°C	9	11.8°C	9	11.7°C	5.1	9.2	51	41	26	26
	SE-1400-10	34	6.3°C	23	4.6°C	13	8.1°C	22	9.8°C	9	11.8°C	9	11.7°C	7.6	9.2	37	30	26	26
	SE-1400-15	29	7.4°C	19	5.6°C	10	10.5°C	11	19.5°C	5	21.2°C	5	21°C	8.8	19.5	36	28	24	24
	SE-1400-20	25	8.6°C	16	6.6°C	7	15°C	12	17.9°C	5	21.2°C	5	21°C	12.5	17.6	35	27	24	24
SE-2000	SE-2000-4	88	2.4°C	56	1.8°C	40	2.6°C	44	4.8°C	18	5.8°C	18	5.8°C	3.1	4.2	80	62	40	40
	SE-2000-6	65	3.3°C	43	2.4°C	28	3.7°C	44	4.8°C	18	5.8°C	18	5.8°C	3.9	4.2	62	50	40	40
	SE-2000-7.5	52	4.1°C	35	3°C	24	4.4°C	24	8.9°C	10	10.6°C	10	10.5°C	4.9	8.3	54	45	27	27
	SE-2000-10	37	5.8°C	25	4.2°C	14	7.5°C	24	8.9°C	10	10.6°C	10	10.5°C	7.0	8.3	38	31	27	27
	SE-2000-15	31	6.9°C	21	5°C	11	9.5°C	12	17.9°C	6	17.6°C	6	17.5°C	8.3	17.6	37	29	25	25
	SE-2000-20	27	8°C	17	6.2°C	8	13.1°C	14	15.4°C	6	17.6°C	6	17.5°C	11.7	14.6	36	28	25	25
SE-3000	SE-3000-6	80	2.7°C	52	2°C	34	3.1°C	53	4.1°C	23	4.6°C	23	4.6°C	3.2	3.5	71	58	46	46
	SE-3000-7.5	66	3.3°C	44	2.4°C	28	3.8°C	28	7.7°C	12	8.8°C	12	8.8°C	4.0	6.7	62	52	31	31
	SE-3000-10	48	4.5°C	32	3.3°C	18	5.8°C	28	7.7°C	12	8.8°C	12	8.8°C	5.3	6.7	44	36	31	31
	SE-3000-15	37	5.8°C	25	4.2°C	14	7.5°C	15	14.3°C	7	15.1°C	7	15°C	7.0	13.5	42	33	29	29
	SE-3000-20	32	6.7°C	21	5°C	10	10.5°C	17	12.6°C	7	15.1°C	7	15°C	9.7	11.7	41	32	29	29
SE-3300	SE-3300-6	85	2.5°C	55	1.9°C	36	2.9°C	57	3.8°C	25	4.2°C	25	4.2°C	3.0	3.2	75	61	49	49
	SE-3300-7.5	70	3.1°C	47	2.3°C	30	3.5°C	30	7.2°C	13	8.2°C	13	8.1°C	3.7	6.2	65	55	33	33
	SE-3300-10	51	4.2°C	34	3.1°C	19	5.5°C	30	7.2°C	13	8.2°C	13	8.1°C	5.0	6.2	46	38	33	33
	SE-3300-15	39	5.5°C	27	3.9°C	15	7°C	16	13.4°C	8	13.3°C	8	13.1°C	6.7	12.5	43	34	30	30
	SE-3300-20	34	6.3°C	22	4.8°C	11	9.5°C	18	11.9°C	8	13.3°C	8	13.1°C	9.2	11.0	42	32	30	30

*Air temperature (empty chamber)

**SE-300 and SE-400s are tested with 25 lbs/11 kg of aluminum sheets, all other models are tested with 50 lbs/23 kg aluminum sheets.

SE-2000-4 limited to -35°C.

Performance is based upon laboratory ambient conditions of 23.9°C, and may vary slightly.

+IEC specification 600-68-3-5. Based on the time the chamber takes to pass through the middle 80% of the full temperature range when conducting a transition over this range.

Thermotron equipment is not designed to process hazardous materials. Consult an application engineer if hazardous materials are involved.

Additional accessories may impact performance. Specifications subject to change without notice.

SINGLE-STAGE UTILITIES

-40° to 180°C (-40° to 356°F)

		Approx. Shipping Weight lbs / kg	Electrical Requirments Full Load Amps				Inlet Water Gal / Liters per Minute				Noise Level (dBA) Heating / Cooilng
			208/3/60	230/3/60	460/3/60	400/3/50	29°C / 85°F	24°C / 75°F	18°C / 65°F	13°C / 55°F	
SE-300	SE-300-2	1,260 / 571	47	46	23	24	Air-Cooled				60 / 68
	SE-300-4	1,300 / 590	57	55	28	29					60 / 74
SE-600	SE-600-4	1,500 / 680	54	53	27	28	Air-Cooled				60 / 74
	SE-600-6	1,550 / 703	61	59	30	31					60 / 76
	SE-600-7.5	1,600 / 726	69	65	33	34					
	SE-600-10	1,835 / 832	69	67	33	34	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-600-15	1,885 / 855	93	89	44	46	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1000	SE-1000-4	1,660 / 753	54	53	27	28	Air-Cooled				60 / 74
	SE-1000-6	1,710 / 776	61	59	30	31					60 / 76
	SE-1000-7.5	1,760 / 798	69	65	33	34					
	SE-1000-10	1,995 / 905	69	67	33	34	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1000-15	2,045 / 927	93	89	44	46	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1200	SE-1200-4	1,750 / 794	54	53	27	28	Air-Cooled				60 / 74
	SE-1200-6	1,800 / 816	61	59	30	31					60 / 76
	SE-1200-7.5	1,850 / 839	69	65	33	34					
	SE-1200-10	2,085 / 946	69	67	33	34	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1200-15	2,135 / 986	93	89	44	46	24 / 91	14 / 53	11 / 42	8 / 31	
SE-1400	SE-1400-4	1,800 / 816	61	60	30	32	Air-Cooled				60 / 74
	SE-1400-6	1,850 / 839	68	66	33	35					60 / 76
	SE-1400-7.5	1,900 / 862	76	71	36	37					
	SE-1400-10	2,135 / 968	78	73	37	38	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-1400-15	2,185 / 991	102	95	48	50	24 / 91	14 / 53	11 / 42	8 / 31	
	SE-1400-20	2,675 / 1,213	122	113	57	59	40 / 151	22 / 83	18 / 68	14 / 53	
SE-2000	SE-2000-4	1,975 / 896	61	60	30	32	Air-Cooled				60 / 74
	SE-2000-6	2,025 / 918	68	66	33	35					60 / 76
	SE-2000-7.5	2,075 / 941	76	71	36	37					
	SE-2000-10	2,310 / 1,048	78	73	37	38	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-2000-15	2,360 / 1,070	102	95	48	50	24 / 91	14 / 53	11 / 42	8 / 31	
	SE-2000-20	2,850 / 1,293	122	113	57	59	40 / 151	22 / 83	18 / 68	14 / 53	
SE-3000	SE-3000-6	2,525 / 1,145	68	66	33	35	Air-Cooled				60 / 76
	SE-3000-7.5	2,575 / 1,168	76	71	36	37					
	SE-3000-10	2,810 / 1,274	78	73	37	38	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-3000-15	2,860 / 1,297	102	95	48	50	24 / 91	14 / 53	11 / 42	8 / 31	
	SE-3000-20	3,350 / 1,519	122	113	57	59	40 / 151	22 / 83	18 / 68	14 / 53	
SE-3300	SE-3300-6	2,695 / 1,222	68	66	33	35	Air-Cooled				60 / 76
	SE-3300-7.5	2,745 / 1,245	76	71	36	37					
	SE-3300-10	2,980 / 1,351	78	73	37	38	16 / 60	9 / 34	7.5 / 28	6 / 23	
	SE-3300-15	3,030 / 1,374	102	95	48	50	24 / 91	14 / 53	11 / 42	8 / 31	
	SE-3300-20	3,520 / 1,596	122	113	57	59	40 / 151	22 / 83	18 / 68	14 / 53	

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

Air-cooled indicates that an onboard condenser is standard and a water-cooled condenser is optional. Chambers with listed water requirements can be built with remote air-cooled condensers.

SERVICE AND SUPPORT

Thermotron's comprehensive service department supports your equipment purchase for years after the sale.

Factory-trained Field Service Engineers are located across the United States and throughout the world to assist with equipment start-up, after-delivery service, and preventive maintenance and calibration agreements. Thermotron provides field calibrations accredited to the ISO 17025 and ANSI/NCSL Z-540-1 calibration standards by A2LA under certificate number 1917.01.

Our Parts Department is available for regular and overnight delivery of important parts for your equipment.

Technical Advisors are available to answer questions and offer advice regarding start-up, service, operation, troubleshooting, and repair of your equipment.

Training Specialists are available to perform comprehensive on-site training at your facility or at our headquarters in Holland, Michigan. Training sessions are customized to ensure proper instruction in the principles of your equipment's operation.

No matter what your service needs are, our worldwide service professionals are available and ready to help over the phone or in person.

CUSTOM SOLUTIONS

SE-Series Chambers can be fully customized to fit unique product sizes or to meet special performance requirements. Customers can specify chamber size and performance, as well as additional features such as extended temperature ranges, minimal spark packages, and product fixtures. Contact Thermotron to learn more about our custom solutions.

SE-1504 with bi-parting doors

NOTES

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.

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