For Information and to Order
Contact Us At:
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LR
ENVIRONMENTAL
EQUIPMENT & TEST LAB

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

THERMOTRON®

FA SERIES ALTITUDE TEST CHAMBERS

Accuracy and Flexibility for Altitude Testing

Thermotron's FA Series Altitude Test Chambers allows you to control the temperature while subjecting the product to various altitude up to 100,000 feet standard with optional humidity. This combination of elements allows you to precisely simulate the real-life conditions a product might face and allows for a wide range of test profiles to be performed.

THERMOTRON®

■ **Standard temperature range from -73°C to +177°C (-100°F to +350°F)**

■ **Humidity range from 20% RH to 95% RH** *(optional)*

■ **Altitude range from ambient to 100,000 feet (8.28 torr) or higher**

■ **8800 Programmer Controller with ethernet interface**

Accurately Simulate Environmental Conditions

Thermotron's FA Series of Altitude/Vacuum test chambers allows for combined testing of environmental conditions indicative of commercial and military aerospace applications. This combination of elements allows you to precisely simulate the real-life conditions a product might face and allows a wide range of test profiles to be performed.

Temperature and Humidity Performance

The FA Series is capable of reaching temperatures from -73°C to +177°C (-100°F to +350°F). The optional humidity system is able to produce humidity levels from 20% to 95% RH. Heavy-duty, semi-hermetic compressors are used with most models to ensure reliable performance. Continuously balanced, non-cycling operation of the refrigeration compressor assures long component life and precise humidity control.

Flexibility in Models and Configurations

Thermotron's FA Series are reach-in models with capacities from 4 to 96 cubic feet (113 to 2,718 liters). Custom walk-in models with greater capacities are also available. In offering multiple sizes and different configurations, Thermotron provides flexibility and ensures the right altitude/vacuum chamber to fit your testing requirements.

Built-In Safety

The FA Series has a variety of safety features incorporated into the chamber design to protect the product, the chamber and the operator. Interlocked heaters are used in order to prevent burn-out conditions while the chamber is in vacuum. Relief valves protect the systems against excessive pressures. Optional viewing window features an extra thick inner panel and is protected by an external guard.

8800 Programmer Controller

With a brilliant 12" color touch screen display, the powerful 8800 Programmer Controller is *Thermotrak II™* ready, making operations and data collection easier and more reliable than ever before. Our controller has a Windows look and offers easy-to-follow prompts through the programming process. The computer's three-channel control automatically manages all variables: temperature, humidity, and altitude/vacuum, eliminating the need for manual adjustments and assuring more accurate repetition of tests. 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.

Industries & Applications

Thermotron's FA Series of test chambers are used by a diverse group of industries including military, aerospace, automotive, avionics and electronics and meet a variety of test applications such as:

- ■ Flight Simulation
- ■ Mountainous Conditions Testing
- ■ Electronic Assemblies
- ■ Hard Drive Testing
- ■ LCD Displays
- ■ Accelerated Life Testing

Features and Benefits

■ Brilliant 12" Color Touch Screen Display

Thermotron's 8800 Programmer Controller offers the largest LCD color display on the market, for easy touch screen entry and increased data access on a single display.

■ Heavy-Duty Construction

Braced with a heavy-duty structural channel, the interior liner acts as a pressure vessel capable of withstanding any pressure below ambient. The exterior uses welded angle framework and sheet metal panels for structural strength.

■ Vapor-Tight Interior Liner

Constructed from stainless steel, the interior liner is heliarc welded for hermetic sealing preventing a loss of moisture during humidity testing.

■ Thermotron-Patented Cascade Refrigeration System

Simplified chamber maintenance and maximized performance with heavy duty, semi-hermetic, water-cooled compressors.

■ Nichrome Heating

Open coil nichrome heating elements provide instant heat and are configured to ensure close temperature control. Baffling provides direct ration protection for products under test.

■ Optional Humidity System for Combined Testing

Humidity system features an external vapor generator which injects moisture directly into the conditioning plenum and air steam for optimum control.

■ Robust, High Power Vacuum System

High capacity, highly efficient heavy duty vacuum pumps feature high pumping speeds with low noise and vibration. The pumps rugged and compact design make them suitable for a multitude of altitude/vacuum applications.

■ Cam Action Lock

A specially designed latch is edge mounted and employs a cam action for maximum door sealing pressure and locked in humidity.

Additional Options/Benefits

■ Humidity Water Purification System

A five-micron pre-filter and demineralizer for purifying the humidity inlet water. Water recirculation systems are also available.

■ Dry Air Purge / GN2 Purge

Reduces condensation from humidity within chamber and on product under test.

■ Customizable Altitude and Pressurization

Chamber can be designed to achieve extended altitude of 200,000 feet (.169 Torr).

■ Remote Air-Cooled Condenser

An air-cooled condenser package can be remotely located up to 50 line feet from the chamber.

■ Heat-Tempered, Multi-Pane Window & Interior Light

A multi-pane 12" x 12" (30cm x 30cm) window with protection bars and interior light allows for workspace viewing.

■ Shelving

Adjustable stainless steel shelf increases product loading capacity.

■ Access Ports

Access ports, plugs and aluminum covers made of stainless steel and welded to interior liner are available in 3" to 6" sizes.

■ Casters

Enabling ease of mobility around the laboratory, the installed casters are heavy duty for strength and durability.

■ Refrigeration Quiet Package

Reduces noise levels produced by the machinery. Available in both internal and external configurations.

■ Electrical Disconnect Switch

In order to comply with any local electrical codes and for extra safety, an optional electrical disconnect is available.

■ Chart Recorder

One or two pen chart recorder for hard copy documentation.

■ GPIB, IEEE-488 Computer Converter

As an interconnection between instruments and controllers, a standard IEEE-488 converter is available for easy connections.

■ Therm-Alarm™ Safety Controls

Thermotron's Therm-Alarm™ protects against temperature extremes using its built-in self diagnostics to continually monitor operating systems, tracing problems before they occur and reducing troubleshooting time.

TEMPERATURE AND ALTITUDE TESTING

Model	Interior Dimensions W x D x H Inches / Centimeters	Exterior Dimensions W x D x H Inches / Centimeters	Volume Cubic Feet / Liters	Temperature Change Rates*	Approximate Shipping Weight lbs / kg
FA-4-CH-1-1	20 x 20 x 20 51 x 51 x 51	32 x 34 x 82 82 x 86 x 209	4 / 113	-73°C to +177°C (-100°F to +350°F)	1,500 / 680
FA-10-CH-3-3	24 x 24 x 32 61 x 61 x 81	48 x 54 x 88 122 x 137 x 224	10 / 283	-73°C to +177°C (-100°F to +350°F)	2,500 / 1,137
FA-10-CH-5-5	24 x 24 x 32 61 x 61 x 81	48 x 54 x 88 122 x 137 x 224	10 / 283	-73°C to +177°C (-100°F to +350°F)	3,000 / 1,361
FA-16-CH-3-3	24 x 38 x 32 61 x 97 x 81	48 x 68 x 88 122 x 173 x 224	16 / 453	-73°C to +177°C (-100°F to +350°F)	3,500 / 1,588
FA-16-CH-5-5	24 x 38 x 32 61 x 97 x 81	48 x 68 x 88 122 x 173 x 224	16 / 453	-73°C to +177°C (-100°F to +350°F)	4,000 / 1,814
FA-35-CH-3-3	38 x 38 x 42 97 x 97 x 107	60 x 70 x 102 153 x 178 x 261	35 / 991	-73°C to +177°C (-100°F to +350°F)	5,000 / 2,268
FA-35-CH-5-5	38 x 38 x 42 97 x 97 x 107	60 x 70 x 102 153 x 178 x 261	35 / 991	-73°C to +177°C (-100°F to +350°F)	5,500 / 2,495
FA-35-CH-705-705	38 x 38 x 42 97 x 97 x 107	60 x 70 x 102 153 x 178 x 261	35 / 991	-73°C to +177°C (-100°F to +350°F)	6,000 / 2,722
FA-46-CH-5-5	38 x 50 x 42 97 x 127 x 107	60 x 82 x 102 153 x 208 x 261	46 / 1302	-73°C to +177°C (-100°F to +350°F)	6,500 / 2,948
FA-46-CH-705-705	38 x 50 x 42 97 x 127 x 107	60 x 82 x 102 153 x 208 x 261	46 / 1302	-73°C to +177°C (-100°F to +350°F)	7,000 / 3,176
FA-64-CH-705-705	48 x 48 x 48 122 x 122 x 122	72 x 84 x 108 183 x 214 x 275	64 / 1812	-73°C to +177°C (-100°F to +350°F)	8,500 / 3,856
FA-64-CH-15-15	48 x 48 x 48 122 x 122 x 122	72 x 84 x 108 183 x 214 x 275	64 / 1812	-73°C to +177°C (-100°F to +350°F)	9,000 / 4,082
FA-96-CH-705-705	48 x 72 x 48 122 x 183 x 122	72 x 120 x 108 183 x 305 x 275	96 / 2718	-73°C to +177°C (-100°F to +350°F)	9,500 / 4,310
FA-96-CH-15-15	48 x 72 x 48 122 x 183 x 122	72 x 120 x 108 183 x 305 x 275	96 / 2718	-73°C to +177°C (-100°F to +350°F)	10,000 / 4,536

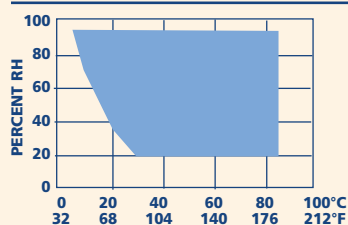## TEMPERATURE/HUMIDITY AND ALTITUDE TESTING

Model	Interior Dimensions W x D x H Inches / Centimeters	Exterior Dimensions W x D x H Inches / Centimeters	Volume Cubic Feet / Liters	Temperature Change Rates*	Approximate Shipping Weight lbs / kg
FA-10-CHM-3-3	24 x 24 x 32 61 x 61 x 81	48 x 54 x 88 122 x 137 x 224	10 / 283	-73°C to +177°C (-100°F to +350°F)	2,500 / 1,134
FA-10-CHM-5-5	24 x 24 x 32 61 x 61 x 81	48 x 54 x 88 122 x 137 x 224	10 / 283	-73°C to +177°C (-100°F to +350°F)	3,000 / 1,361
FA-16-CHM-3-3	24 X 38 X 32 61 x 97 x 81	48 x 68 x 88 122 x 173 x 224	16 / 453	-73°C to +177°C (-100°F to +350°F)	3,500 / 1,588
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FA-64-CHM-15-15	48 x 48 x 48 122 x 122 x 122	72 x 84 x 108 183 x 214 x 275	64 / 1812	-73°C to +177°C (-100°F to +350°F)	9,000 / 4,082
FA-96-CHM-705-705	48 x 72 x 48 122 x 183 x 122	72 x 120 x 108 183 x 305 x 275	96 / 2718	-73°C to +177°C (-100°F to +350°F)	9,500 / 4,310
FA-96-CHM-15-15	48 x 72 x 48 122 x 183 x 122	72 x 120 x 108 183 x 305 x 275	96 / 2718	-73°C to +177°C (-100°F to +350°F)	10,000 / 4,536

* Performance based on 60 Hz operation and +23.9°C (+ 75°F) ambient air.

SUBJECT TO CHANGE WITHOUT NOTICE

THERMOTRON®

ALTITUDE HUMIDITY RANGE

PERCENT RH

| 0 | 20 | 40 | 60 | 80 | 100°C |
| 32 | 68 | 104 | 140 | 176 | 212°F |

■ STANDARD HUMIDITY RANGE

FULL RANGE HUMIDITY SPECIFICATIONS

Humidity Range[1]	20% to 95% RH
Dry Bulb Temperature Range	7°C to 85°C (45°F to 185°F)
Dewpoint Temperature Range	7°C to 85°C (45°F to 185°F)
Humidity Control[2]	±5% RH

1 Limited by a +7°C (+45°F) minimum dew point temperature and a maximum dry bulb temperature of +85°C (+185°F).

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

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.

Used Refurbished - Warranted Test Chambers Available at LR Environmental 323-770-0634 800-574-2748
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