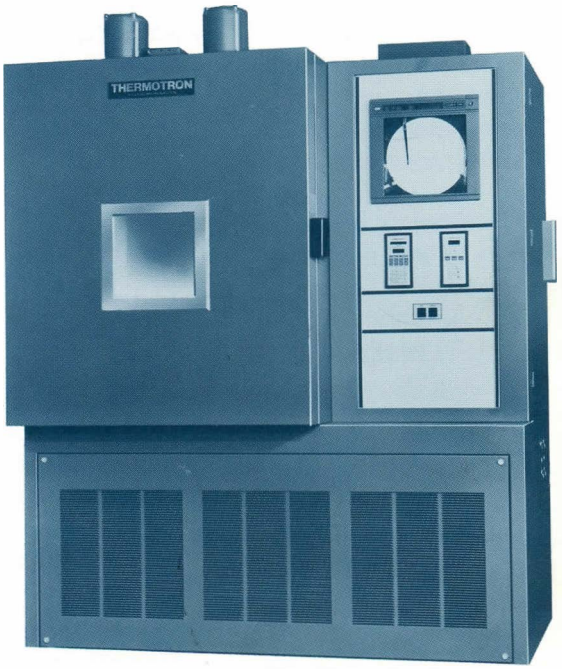
THERMOTRON

THERMOTRON MODEL HPS-16 TEMPERATURE TEST CHAMBER

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

- **Temperature range: −100°F to +350°F (−73°C to +177°C)**
- **5°C/minute average air temperature change rate for most applications**
- **16 cubic feet of workspace**
- **Immediate operation with suitable power connection**
- **Microprocessor-based Programmer/Controller**
- **Six-pane thermal window**
- **Interior light**
- **Cascade refrigeration system**
- **Stainless steel access port with thermal plug**
- **High-volume air circulation fans**
- **Casters**



Cabinet

- The entire chamber is built of high quality steel. No wood, fiberboard, plastic or similar materials are used in the construction.
- The interior is constructed of 304 Series, high-nickel content, non-magnetic stainless steel with 2B finish. The liner is heliarc welded for hermetic sealing to prevent moisture migration to insulation space.
- A floating liner allows minimum thermal contact between the interior and the exterior of the chamber.
- Breaker strips are all stainless steel.
- The exterior shell is constructed of die-formed, 16 gauge galvaneal, then finished in "Thermotron Blue" lacquer, Federal Standard #595-25184, sprayed over a cleaned and primed surface.
- Nonsettling insulation has a low "K" factor of .26. It is capable of being exposed to temperatures in excess of +350°F (+177°C).
- Gaskets are extruded, and designed with seamless corners. Two separate gaskets are installed to insure minimum heat loss from the chamber—a silicone inner gasket and a vinyl outer gasket.
- The circulator motor is located outside the chamber. It has a solid stainless steel shaft; no extensions are used. Ball bearings are lubricated for life and located out of the conditoned area.
- A hinged instrument compartment door makes service and calibration easier.
- All hardware is adjustable.
- **Instrumentation - Has Watlow F-4 Programmer - Can Be Upgraded To Model F-4T Touchscreen Control**

Electrical System

- The chamber has a solid state, photo-isolated, zero-voltage-switch-ing, heat-power relay.
- All wires are identified.
- The chamber has a fusible link for heater cut out which trips at 460°F (238°C). Product safety devices

are also available as options.

- All motor electrical components, switches, and fuses are located in a self-contained panel.
- Channel wiring is contained in "panel channel" and is accessible without unlacing or unthreading.
- Master heat contactor is provided.
- A step-down transformer provides 115 volts for the control circuit.
- Wiring meets the National Electrical Code.

Refrigeration

- Our cascade system has all silphosed or silver soldered joints- no soft solder is used.
- The system is air cooled and capable of starting under various ambient conditions.
- The cascade condensers are manufactured by us and meet our exacting standards.
- Cooling coils are heavy-duty copper tubing with specially designed aluminum fins.
- The system is sealed and balanced to achieve the ultimate in performance and reliability.
- Standard Refrigerants 13 and 502 are used. These are available at any refrigeration supply house.
- The liquid-injection circuit cools the compressor to insure long compressor life.

Safety Features:

- Overload protection inherent, preventing the compressors from exceeding specification limits.
- Over temperature runaway protection provided by way of a fusible link which trips at +460°F (+238°C).
- An independent high heat limit is also provided.
- All machinery is enclosed for personal safety.
- A fan guard prevents contact with the circulator fan.

Specifications

- Workspace Volume: 16 cu. ft. (457 liters)
- Workspace Dimensions: 30"W x 31"D x 30"H
- Overall Dimensions: 70-1/2"W x 42-1/2"D x 88-1/2"H
- Input Power: 460/3/60
- Recommended Minimum Service: 30 amps at 460/3/60
- Approximate Shipping Weight: 2,050 pounds (930 KG)
- Chamber Heater: 6 KW
- Refrigeration: (2) 5 HP Compressors in Cascade, air cooled
- Air Flow: 350 CFM
- Casters: (2) 3" rigid, (2) 3" with brake
- Window: 12" x 12"; (30 x 30 cm)
- Access Port: (1) 4" left side, center of workspace

Chamber Options:

— Refrigeration Gauges
— Electrical Disconnect Switch
— LN_2 Injection System
— CO_2 Injection System
— GN_2 Purge
— Access Ports with Plugs (additional or substituted for standard)
— Glove Ports
— Shelves
— Transformer Packages (for other than 460 volt power)
— Water-Cooled Condenser

(The addition of accessories may impact performance.)

Programmer/Controller Options:

— Multi-Option Board, including:
  Digital Printer Output
  Real Time Clock
  Analog Output for Recording
— Relay Output Board with Relays
— IEEE-488 or RS-232 Computer Interface
— Memodyne Printer

Instrumentation Options:

— Therm-Alarm Digital Temperature Alarm/Limit
— Circular Chart Recorder

Specifications subject to change without notice.

TRANSITION TIME IN MINUTES

	FROM	TO	EMPTY CHAMBER	50# ALUMINUM LOAD
COOLING	+75°F (+23°C)	−40°F (−40°C)	7	8
	+75°F (+23°C)	−65°F (−54°C)	10	11
	+75°F (+23°C)	−100°F (−73°C)	21	27
	+160°F (+71°C)	−65°F (−54°C)	16	18
	+350°F (+177°C)	+75°F (+23°C)	13	16
HEATING	+75°F (+23°C)	+240°F (+116°C)	10	11
	+75°F (+23°C)	+350°F (+177°C)	17	21
	−65°F (−58°C)	+160°F (+71°C)	13	14
	−100°F (−73°C)	+75°F (+23°C)	11	12

LIVE LOAD CAPACITY

TEMPERATURE	WATTS
0°F (−18°C)	1500
−40°F (−40°C)	1500
−65°F (−54°C)	1500

Performance:
Performance is based upon operation at 60 Hz and 75°F (23.9°C) ambient air and may vary slightly at other ambient temperatures. This Chamber is designed for use under normal laboratory conditions. For other applications, please consult factory. Operation at 50 Hz will decrease performance by approximately 20%.

Temperature Control:
The chamber conditioning and circulating equipment will enable a temperature stability with ±2°F dry bulb temperature from control point after stabilization at the control sensor.