

# TC-1.5 Rapid Thermal Chamber Specifications



**NEW IMPROVED! Design**  
**TC-1.5 Chamber**



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## System Features

### **Thermal Chamber:**

This new and improved system is based on 15 years of continuous development and is capable of rapid thermal cycling of products under test.

### **High Rate™ Liquid Nitrogen Cooling System:**

3 Phase Solid-State Infitrol™ proportional control of balanced electric heaters wire balanced system.

- Optional Solid Rod Heaters for extended high temperature testing.

### **HighRate™ Liquid Nitrogen Cooling System:**

Direct atomization in control plenum, solenoid control and redundant solenoid safety valve.

### **Adjustable Air Flow Plenum:**

For directing airflow to product. Multiple 3" round ports on each side of the chamber for distributed air flow to product.

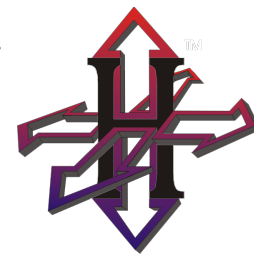
### **System Warranty:**

Three (3) year warranty for Controller, and Heater SCR.



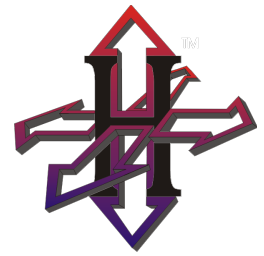
## Summery of Hanse Chamber Features

| CHAMBER FEATURES                                             | Hanse |
|--------------------------------------------------------------|-------|
| Pressurized plenum                                           | X     |
| Proportional heating, vibration 4-20ma, Cooling Solenoid     | X     |
| SCR heater control and breaker isolated                      | X     |
| Breakers on all 3 phases lines                               | X     |
| All instruments and related board on breakers                | X     |
| Watch Dog circuit available on request                       | X     |
| Front Panel Display and manual control                       | X     |
| Programable maintenance PLC optional                         | X     |
| Interlocked safeties doors, fans, heat, cool                 | X     |
| Balanced heater system                                       | X     |
| 3 Phase monitored for phase loss and balance                 | X     |
| Fans monitored and interlocked for running                   | X     |
| Heaters and LN2 interlocked to fans running                  | X     |
| Timer to hold heat, and cool, until fans running             | X     |
| Electrical meets all NEC code with UL / CE marked components | X     |
| Chamber vented by one 4" vent on rear                        | X     |
| Positive dry air purge in chamber, can be changed to GN2     | X     |
| One 12" x 12" Window                                         | X     |
| Optional window on side                                      | X     |
| Halogen 120VAC adjustable lights                             | X     |
| FM approved High/Low Limit control with user set able        | X     |
| Multi point manual door latch points                         | X     |
| Galvanneal Paintlok™ external liner                          | X     |
| Over sized hinges for door stability                         | X     |
| All wires and terminals clearly labeled                      | X     |
| Full set of wiring and air schematics                        | X     |



## Summery of Hanse Rapid Thermal Features

| THERMAL FEATURES                                      | Hanse |
|-------------------------------------------------------|-------|
| Range of Thermal -70° to 175° C                       | X     |
| 70° C Per minute change rate                          | X     |
| Optional floor plug to reduce chamber size            | X     |
| One shelf and mount included, Optional shelf mounting | X     |
| Optional Humidity                                     | X     |



## Performance

### 1.1 Temperature

- 1.1.1. **Range:** -75° to +175° C (-100° to +200° Optional)
- 1.1.2. **Air Change Rate:** 70° C/min (-65° to 100° C)
- 1.1.3. **Stabilization:** ± 1° C after stabilization. (Stabilization < 2 minutes).
- 1.1.4. **Cooling:** Liquid Nitrogen (LN2) direct injection.
- 1.1.5. **Heating:** 30 KW SCR Controlled (Optional Solid Rod heaters)
- 1.1.6. **Thermocouples:** One (1) air, one (1) for specimen.

## Chamber Construction

### 2.1 Interior

- 2.2 **Work Space:** 24"W x 24"D x 45"H (610mm x 610mm x 1143mm)
- 2.3 **Exterior:** 40"W x 42"D x 81"H (1098mm x 889mm x 2057mm)
- 2.4 **Doors:** One (1). One full opening
- 2.5 **Windows:** One (1) Tempered Multi-pane. 12" x 12" (305mm x 305mm) in door.
- 2.6 **Light:** Two (2) lights adjustable.
- 2.7 **Ports:** Two (1) 6"dia. (152mm) for customer use.
- 2.8 **Insulation:** Hanse's exclusive multilayer staggered insulation for superior thermal and noise insulation.
- 2.9 **Weight:** 1000 lbs (453 kg)

## Instrumentation

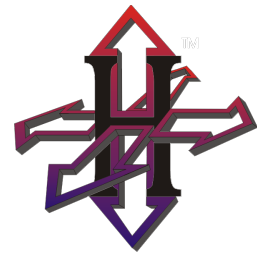
- 3.1 **HanseView™ Programmable Temperature and Control:** Programmable temperature ramps. Closed loop cascade temperature control of product under test including RS232/485 serial interface. HALT step-stress templates included for easy HALT chamber programming.
- 3.2 **Thermocouples:** One (1) for temperature control and one (1) for product response.

## Software

- 4.1 **HanseView™:** For temperature control, and data logging control sensors.

## Safety

- 5.1 **Door Interlocks:** Door Interlocks shut off system operation.
- 5.2 **Emergency Power Off (EPO):** EPO activation shuts off system operation
- 5.3 **Over/Under Limit:** FM approved limit with stand-alone sensor placed in air.



## Utilities

- 6.1 Electric:** 480V 3 Ph 50 FLA (Other Voltages on Request)
- 6.2 Liquid Nitrogen:** 3/8" (9mm) Supply 40/50 psig
- 6.3 Compressed Air:** 1/2" (13mm) Supply 100 psig, 25 SCFM (Purge)
- 6.4 Exhaust Ports:** One (1) 4" (102mm) dia. vented to outside.

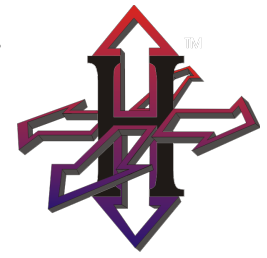
## Installation

- 7.1** The customer is responsible for unloading system and rigging into place.
- 7.2** Utilities and services necessary for system operation, electrical, LN2, compressed air, exhausts, etc. shall be provided by customer and connected to the system.
- 7.3** Any leasehold improvements or building alterations are the responsibility of the customer.

## Options

- 8.1 Humidity:** Direct Injection, 10 to 85% RH from 25° to 65° C, Capacitance Sensor.
- 8.2 Additional 14 thermocouples:** Total of 16 monitored (1 dedicated plenum air, 1 specimen). Data is integrated into HanseView™ Control or Analyzer.
- 8.3 Anti Condensate:** Heaters to assist in frost or condensation on door and external surface of chamber and windows.
- 8.4 Communication Ports:** Optional Ethernet TCP/IP.
- 8.5 LN2 System:** Complete installation, piping and controls.
- 8.6 Stand-Alone:**
  - 8.6.2** Six- degree-of-vibration (6dof) Vibration Tables Systems
- 9.9 Upgrades**
  - 9.9.1 Temperature Range:** Range increased to -100° to + 200°.  
Chamber insulation type and wall thickness.

Note: Specifications are subject to change without notice.  
Any Hanse chamber can be modified to fit your requirements.



## Hanse TC Series Stander Chambers Offerings

[WWW.HanseEnv.com](http://WWW.HanseEnv.com)

+1-269-673-8638

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## HANSE TC-SERIES CHAMBERS SPECIFICATIONS 2015 (THERMAL CHAMBERS)

| Model                            | TC-1                | TC-1.5              | TC-4                | TC-6                | TC-9                      | TC-9 Eco            | TC-16                     | TC-18                     | TC-25                     | TC-32                     | TC-36                     |
|----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Internal Workspace<br>WxDxH Inch | 18x18x18            | 24x24x45            | 30x30x48            | 36x36x48            | 42x42x62                  | 42x42x50            | 54x54x62                  | 42x42x62                  | 66x66x62                  | 54x108x62                 | 76x76x62                  |
| External Inch                    | 28x30x70            | 40x42x81            | 60x44x95            | 66x49x96            | 72x55x107                 | 72x55x96            | 84x67x-107                |                           | 96x79x107                 |                           | 106x89x107                |
| Max Load lbs.                    | 100                 | 250                 | 700                 | 700                 | 700                       | 700                 | 500                       | 500                       | 500                       | 500                       | 500                       |
| Doors                            | Front               | Front               | Front and Rear      | Front and Rear      | Front and rear Bi Parting | Front and Rear      | Front and rear Bi Parting | Front and rear Bi Parting | Front and rear Bi Parting | Front and rear Bi Parting | Front and rear Bi Parting |
| Windows                          | 1                   | 1                   | 2                   | 2                   | 4                         | 2                   | 4                         | 4                         | 4                         | 4                         | 4                         |
| Temperature Range                | -60° to 175° C      | -75° to 175° C      | -100° to 200° C     | -100° to 200° C     | -100° to 200° C           | -100° to 200° C     | -100° to 200° C           | -100° to 200° C           | -100° to 200° C           | -100° to 200° C           | -100° to 200° C           |
| Change Rate                      | 60° C/Min           | 70° C/Min           | 70° C/Min           | 70° C/Min           | 70° C/Min                 | 70° C/Min           | 70° C/Min                 | 70° C/Min                 | 70° C/Min                 | 70° C/Min                 | 70° C/Min                 |
| Ports                            | 2 x 4"              | 1 x 6<br>1 x 1"     | 2 x 6"<br>1 x 1"    | 2 x 6"<br>1 x 1"    | 3 x 6"<br>1 x 1"          | 2 x 6"<br>1 x 1"    | 3 x 6"<br>1 x 1"          | 6 x 6"<br>2 x 1"          | 3 x 6"<br>1 x 1"          | 6 x 6"<br>2 x 1"          | 3 x 6"<br>1 x 1"          |
| Liquid Nitrogen<br>40-50 psig    | 3/8" Inch NPT       | 3/8" Inch NPT       | 1" Inch NPT         | 1" Inch NPT         | 1" Inch NPT               | 1" Inch NPT         | 1" Inch NPT               | 1" Inch NPT               | 1" Inch NPT               | 1" Inch NPT               | 1" Inch NPT               |
| Compressed Air***                | 120 psig<br>8.3 Bar | 120 psig<br>8.3 Bar | 120 psig<br>8.3 Bar | 120 psig<br>8.3 Bar | 120 psig<br>8.3 Bar       | 120 psig<br>8.3 Bar | 120 psig<br>8.3 Bar       | 120 psig<br>8.3 Bar       | 120 psig<br>8.3 Bar       | 120 psig<br>8.3 Bar       | 120 psig<br>8.3 Bar       |
| Compressed Air<br>Inlet NPT***   | 1/2"                | 1/2"                | 3/4"                | 3/4"                | 1"                        | 1"                  | 1"                        | 2 x 1"                    | 1.25" (1.5")              | 2 x 1"                    | 1.25" (1.5")              |
| Air Flow SCFM***                 | 15                  | 15                  | 15                  | 15                  | 15                        | 15                  | 15                        | 15                        | 15                        | 15                        | 15                        |
| FLA 480V 3 PH                    | 30**                | 50                  | 60                  | 125                 | 125                       | 125                 | 125                       | 150                       | 175                       | 250                       | 245                       |
| FLA 380V 3 PH                    | 20                  | 65                  | 75                  | 160                 | 160                       | 160                 | 160                       | 190                       | 220                       | 315                       | 310                       |
| Weight lbs.                      | 611                 | 915                 | 1770                | 2335                | 3711                      | 3211                | 3796                      | 3450                      | 5294                      | 6842                      | 6150                      |

Note:

\*\* 240V 3 Phase

\*\*\* TC models Compressed air Inlet is 1/2" NPT 100 PSI 10 SCFM

All Specifications subject to change.