



PSYCHROMETRIC TEST ROOMS



Psychrometric Test Rooms are designed for use in the research and development of unitary air conditioners and heat pumps.

The psychrometric test facility consists of two rooms, in an end to end configuration where dry bulb temperature and humidity are independently controlled. One of the two rooms simulates indoor temperature and humidity conditions while the second room simulates outdoor temperature and humidity conditions. Airflow measurements are provided by Code Testers (Air Enthalpy Tunnels) as specified in the ASHRAE Standard 37. One code tester is located in the indoor room for indoor Unit Under Test (UUT) airflow measurement and for smaller systems, an outdoor code tester is located in the outdoor room for outdoor airflow measurement. As system tonnage increases, a refrigerant flow meter is provided in lieu of the outdoor tunnel to provide a confirming method for capacity calculation.

Performance Specifications:*

Room Dry bulb Temperature	
Dry Bulb Temperature Range	10 to 45°C
Control	±0.5°C
Temperature Gradient	Vertical gradient from 50 mm above floor to 2.286m not to exceed 0.9°C/m
Control Type	Single Point PID
Sensor Type	100- Ω, 3-Wire Platinum RTD
Sensor	Location Center of Room
Room Relative Humidity	
Relative Humidity Range	up to 90%RH
Dew point Limits	10°C to 20°C
Indoor Room Airflow	
Indoor room UUT airflow	Up to 20,000 CFM (Up to 34,000 m3/hr)
Control Parameter	UUT ΔP
Control Range	-1.0 to +1.0 inch of WC (-250 to +250 Pa)
Control	±0.02 inch of WC
UUT Airflow measurement	ASHRAE Nozzles with pneumatic selector switches
Outdoor Room Dry bulb Temperature	
Dry Bulb Temperature Range	-20 to 131°F (-26 to 55°C)
Control	± 0.2°F (0.1°C)
Outdoor Room Wet bulb Temperature	
Dew Point Temperature Range	5 to 95°F (-15 to 35°C)
Control	± 0.2°F (0.1°C)
Outdoor Room Airflow	
Outdoor room UUT airflow	Up to 20,000 CFM (Up to 34,000 m3/hr)
Control Parameter	UUT ΔP
Control Range	-1.0 to +1.0 inch of WC (-250 to +250 Pa)
Control	±0.02 inch of WC
UUT Airflow measurement	ASHRAE Nozzles with pneumatic selector switches
UUT Voltage Transformer	
UUT Voltage Range	90 to 600V
Voltage Control	±2.0 VAC
Control Type	Micro-Processor
Transformer Type	Motorized

System Standards

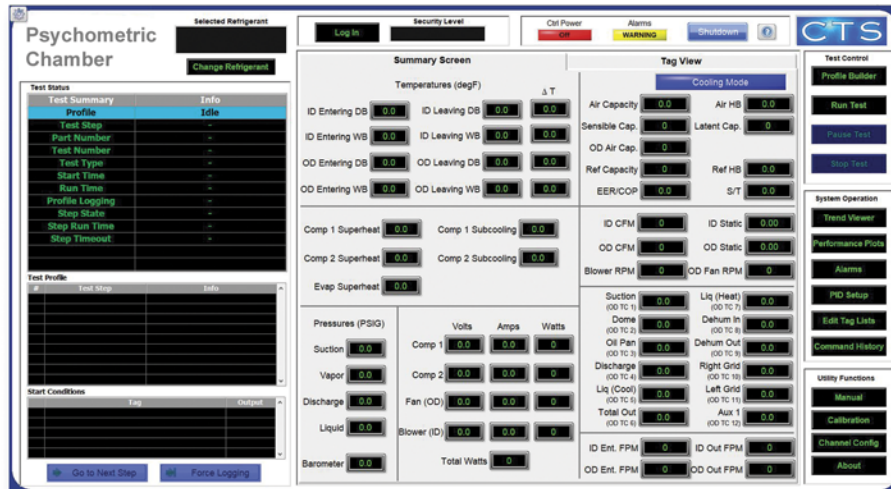
- > Indoor/Outdoor Room Design
- > Full Conditioning Capability in each room, removing need for reversal of UUT in partition wall
- > Cost efficient central refrigeration system
- > Re-circulating air blowers in each room to maintain temperature uniformity during low airflow testing
- > Indoor Room Code Tester
- > Outdoor Room Code Tester
- > Microprocessor Controlled Variable Voltage Transformer to control power to UUT
- > Computerized Data Acquisition and Control System using LabView
- > Conformance with ASHRAE 37 and AHRI 210/240 and AHRI 340/360

(Over for more information)

* other ranges available

Control System

- > Control System: Allen-Bradley PLC
- > Operator Interface: Labview Based Application
- > Control Station: Windows Based PC



Software Features

- > Editing of test programs
- > Automatic test sequencing
- > Loop calibration and calibration reports
- > Hardware checkout routine
- > Stability monitoring
- > Real Time tolerance adjustments
- > Real time-history graphing capability
- > Automatic Test Report Generation
- > Data File Management

Performance Measurement

- > 3% agreement or better, indoor side to outdoor side
- > 1% repeatability of test results



Bringing the Desired Climate to Your Doorstep

Climatic Testing Systems

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