

ENVIRONMENTAL CHAMBER



APPLICATIONS

1. Biological & Life Sciences Research

- Plant growth and seed germination studies under controlled conditions.
- Microbial culture incubation and biological reaction studies.
- Tissue culture experiments requiring precise environmental settings.

2. Material & Polymer Testing

- Evaluation of aging, corrosion, and environmental stress effects on materials.
- Quality assurance tests for rubber, plastic, and composite materials.

3. Electronics & Semiconductor Industry

- Testing thermal stability and humidity resistance of components and PCBs.
- Reliability and endurance testing of sensors and assemblies.

4. Aerospace & Automotive Components

- Assessing thermal cycling, humidity tolerance, and material durability under simulated environments

KEY FEATURES

Precise Environmental Control

- Maintains accurate temperature and humidity levels for reliable testing and conditioning.
- PID or microprocessor-based digital controller ensures high precision and stability.

Temp Operating Range

- Temperature range typically from -20°C to $+60^{\circ}\text{C}$ (extendable to -40°C / $+80^{\circ}\text{C}$).
- Humidity adjustable from 20% RH to 95% RH, suitable for multiple test standards.

Uniform Air Circulation System

- Forced air convection system with balanced blowers ensures uniform conditions throughout the chamber.
- Prevents hot/cold spots and ensures reproducibility of test results.

Robust Construction

- Inner chamber made of stainless steel (SS 304) for corrosion resistance.
- Outer body powder-coated or optional SS finish for durability and easy maintenance.

High-Efficiency Insulation

- PUF (Polyurethane Foam) insulation prevents heat exchange and reduces energy consumption.

Advanced Control & Monitoring

- Digital/LCD/ PLC-HMI display for real-time monitoring of temperature, humidity, and time.
- Programmable cyclic operations for day/night or varying condition studies.

Refrigeration & Heating System

- CFC/HCFC-free compressor with eco-friendly refrigerant (R134a/R404a).
- Nichrome wire or ceramic heater controlled via SSR for smooth heating response.

Humidity Generation System

- Steam injection or ultrasonic humidifier with automatic water level control.
- Dehumidifier system for precise RH balance.

Safety & Reliability

- Over-temperature and humidity deviation alarms.
- Power failure protection and auto-restart feature.
- Circuit overload and short-circuit protection.

TECHNICAL MATRIX

Model No	PTE-EC-615 A	PTE-EC-615 B	PTE-EC-615 C	PTE-EC-615 D	PTE-EC-615 E
Interior Size	450 x 410 x 610	400 x 500 x 845	560 x 570 x 870	570 x 650 x 900	650 x 700 x 900
Capacity	4 cu.ft	6 cu. ft	10 cu. ft	12 cu. ft	15 cu. ft
Approx Volume (Ltr)	113 ltrs	170 ltrs	284 ltrs	340 ltrs	425 ltrs
No. of Shelves	2	2	2	3	3
Temperature Range	5°C above ambient to 60°C (Resolution 0.1°C)				
Temp. Controller	By Microprocessor Based PID Digital LED/ LCD // PLC-HMI Display 7 inch Colour Screen				
Temp. Accuracy	±1°C				
Humidification	By steam injection process.				
Humidity Range	5% above ambient from 40% to 95% RH				
Humidity Accuracy	± 3% RH				
Relay	Solid state electronic relay with protective heat sink.				
Air Circulation	By forced convection system				
Safety	By safety thermostat to prevent overheating				
Illumination	Exterior illumination with fluorescent tubes/lamps.				
Insulation	By High density PUF insulation				
Operations	Nearly silent operation with ultra-low vibration				
Voltage Indicator	By Digital Volt Meter fitted on Panel				
Electric Supply	220/230V AC, 50/60Hz				

OPTIONAL ADD ONS

- CO₂ and O₂ control system for tissue culture or cell growth studies.
- Programmable multi-step temperature/humidity cycles.
- Touchscreen PLC with SCADA compatibility.
- Double-glazed viewing window with internal LED light.
- Photostability setup (UV/visible light exposure).
- GMP/ICH compliance package with documentation (DQ/IQ/OQ/PQ).