



## **Temperature Humidity Calibration chamber**

Temperature Range: 5 °C to 50 °C

Humidity range : 10 % RH to 90 % RH\*.



# **THTC-01B Instruction Manual**

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## **Preface**

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Congratulation on purchase of “Tunix” make Temperature humidity calibration chamber Model : THTC-01B. This instruments is one of the best available in its class.

We have taken enough care in designing and manufacturing to give you trouble free performance for longer period. Before starting the instrument, we suggest you to go through the instruction manual.

## **On Arrival**

Please check for following Standard accessories

- 1) Product is not physically damaged.
- 2) Operating manual With Warranty certificate
- 3) Power Chord.
- 4) 17025 Accredited Calibration Certified( optinal to be ordered separately).

## Technical Specification

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- 1) Temperature Range: 5 °C to 50 °C @25°C.
- 2) Humidity range : 10 % RH to 90 % RH\* @25°C.
- 3) Display Resolution: 0.1 °C , 0.1% RH.
- 4) Control accuracy: Better than  $\pm 0.1$  °C, 0.1 % RH ( All set point for relative humidity are to be set in the interval of  $\pm 10$ % RH to get desired result).
- 5) Thermal in-stability:  
 $\pm 0.2$ °C (after stabilization time of 10 minutes).
- 6) Humidity Instability..  
 $\pm 0.3$ % RH (after stabilization time of 10 minutes).
- 7) Thermal Non-uniformity:  
 $\pm 0.5$  °C ( after stabilization time of 10minutes)  
Humidity Non uniformity  
 $\pm 0.6$ % RH (after stabilization time of 10 minutes).
- 8) Stabilization Time/settling time: 10 minutes after set point is achieved.
- 9) Time to reach to 0 °C from ambient temperature: 35 minutes @25°C.
- 10) Time to reach 50 °C from ambient temperature: 30 minutes @25°C.
- 11) Time to reach 90%RH from 50 % RH: 10 minutes @25°C.
- 12) Time to reach 10%RH from 50 % RH: 7 minutes @25°C.
- 13)Power supply: 230 VAC @50-60 Hz, single phase.
- 15) Current : 6A(Maximum).
- 16) Power Consumption: single phase ,1500 Watt maximum.
- 17) Calibration chamber capacity: 350mm(W) X 450 mm(L) X 120mm(H), 19 Liter.
- 18) Inner Cabinet Anodised Aluminium.
- 19) Weight: 37 Kg
- 20) Over All dimension : 650mm(L)X 570(W) X800mm(H)

## Operating Principle

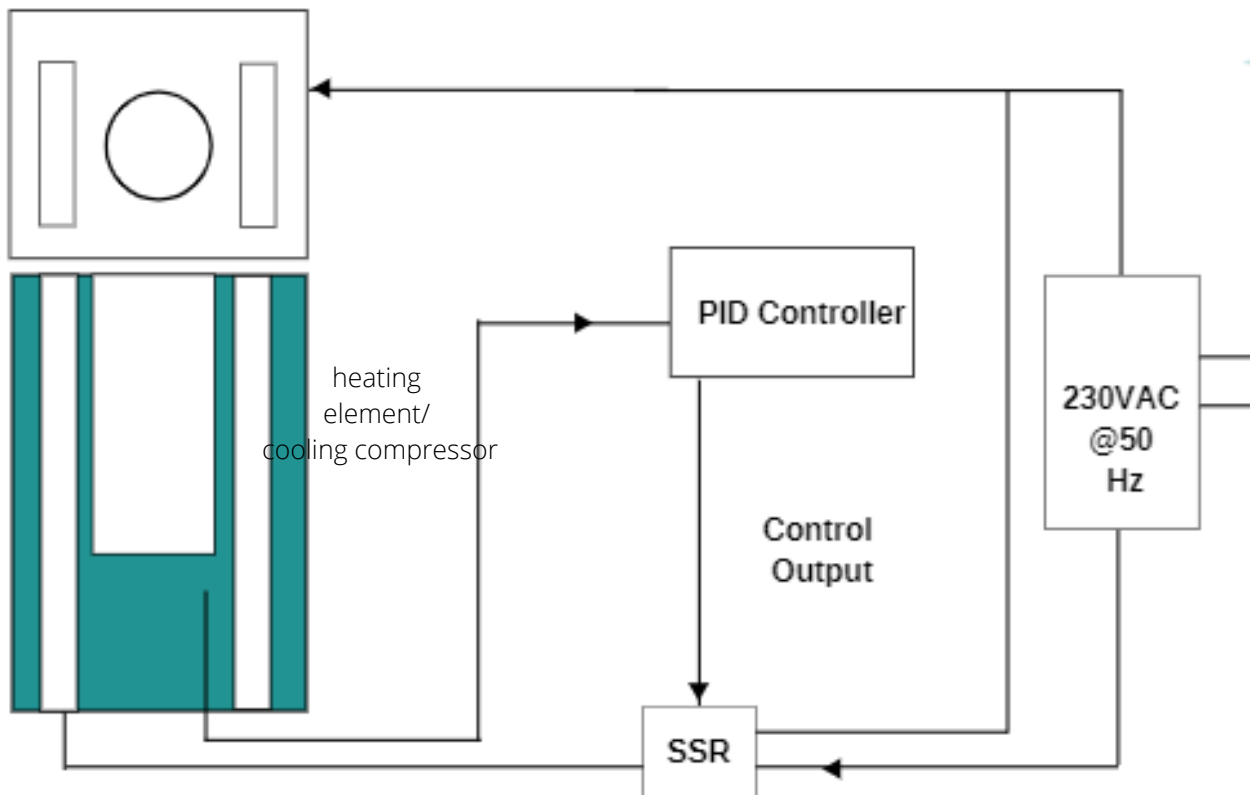
You require a stable dry and wet gas source along with temperature controlling mechanism to achieve good hygro-thermal calibration.

The certainty of the calibration depends on

- 1) Stability of the source.
- 2) Uniformity to which the stable Humidity-temperature are known.

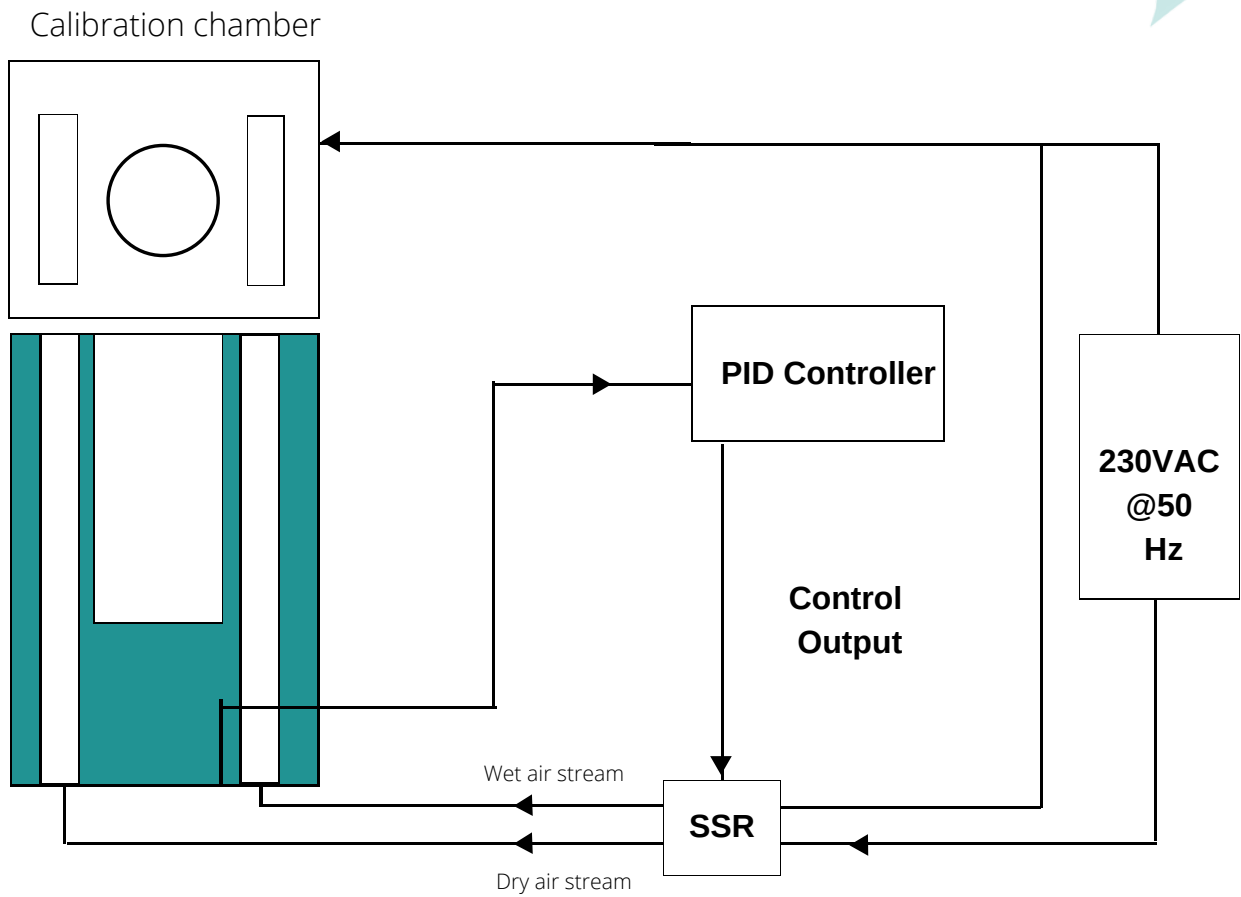
Designed block diagram of THTC-01 is given below.

Calibration chamber



Block diagram of temperature controlling systems

# Operating Principle



Block diagram of Humidity controlling systems

## Operating Principle

01. Maintain Environmental Condition @25°C.
02. Connect dry gas cylinder with help of pneumatic push fit assembly to controlling unit and set the pressure On cylinder 2 bar.
03. Fill the water in Water reservoir by Injection until it overflow.
04. Connect the power supply to controlling unit.
05. Clean the walls of working chamber with help of tissue paper.
06. Insert the UUC Instruments, and reference master instruments In Chamber.
07. Place all the UUCs in such a way that they maintain a sufficient distance between each other so as not to block the air circulation inside the chamber.
08. It is strongly recommended to set relative humidity set point in the interval of  $\pm 10\%$  RH to get the coated specification.
09. Firstly Set the all RH required calibration Set points from lower to higher Points and perform calibration.
10. After the achieving set point kindly wait for 10 minutes for stabilization. after 10 minutes take the observation.
11. After the RH, Set Temperature Calibration points.

### PRECAUTIONS

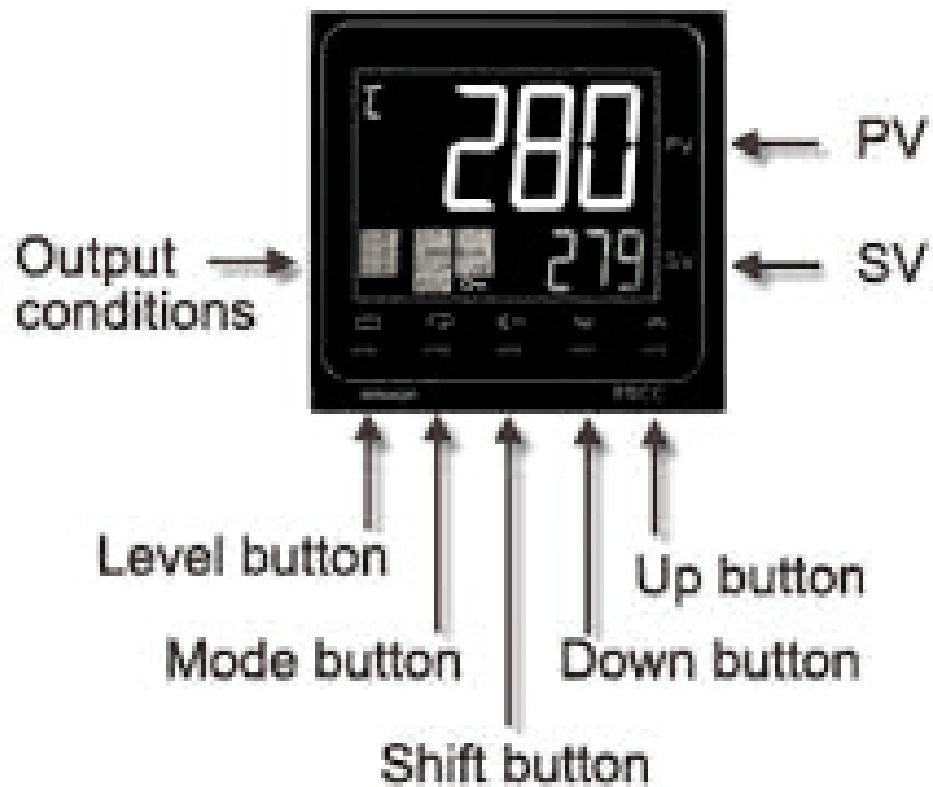
01. Pressure input of Dry gas should not be more than 2 Bar.
02. Power supply should be off at the time of Filling water in water reservoir in chamber.
03. Fill the water until water drain from drain nozzle at bottom of the chamber.
04. At the start of calibration it is advisable to perform calibration points with low relative humidity (RH) Points as it will take very long time if calibration at high RH point are performed before calibrating low RH points.
05. At end of the calibration open the Glass Door at ambient environment to remove the all moisture inside the chamber.
06. For fast performance of calibration Use Temperature and RH calibration mode separately.

## Operating Principle

### IMPORTANT INSTRUCTION FOR OPTIMUM PERFORMANCE

- 1) Use 10 Amp glass fuse as supplied with instrument.
- 2) 3 Pin Plug used should have 15 amp capacity.
- 3) Cooling fan at the backside of controlling unit should be always on .  
This is required to cool the electronics. Ensure the air passage is not blocked.

### PID Controller

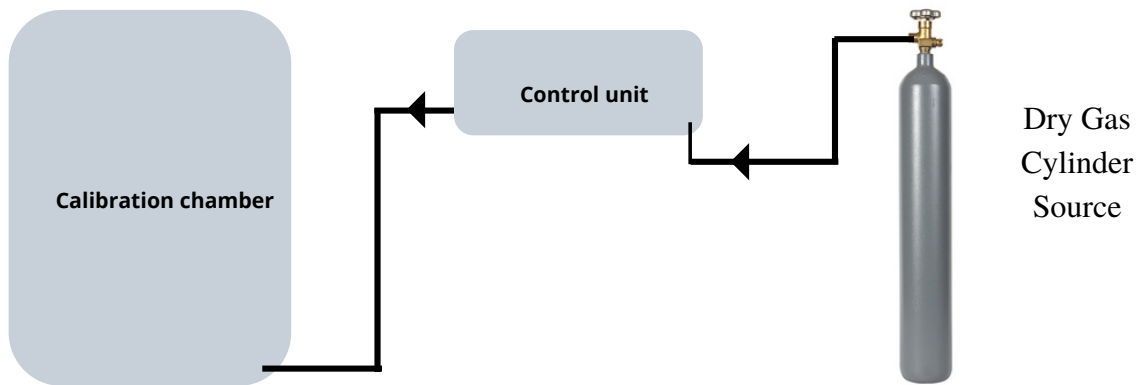




## Safety Measures & Precautions

**Please check for following before you switch on the product**

- Never start the system without connecting dry air line and without filling water in reservoir
- Fill 60 ml water in reservoir using a syringe provided along the product, Never fill water more then the capacity of reservoir.



- Always use correct platform to keep the instrument, Incorrect level may increase the vibrations.
- Never carry/transport the product with filled water reservoir.
- Never carry/transport the product when it is hot/ cool. Allow it to come down to normal ambient temperature.
- Always use de-ionized/ Demineralised water.

## Safety Measures & Precautions

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- A Glass fuse is used in the supply line to prevent any problem due to failure of heating element. In case of fuse being fused to frequently kindly consult factory.
- In the event of SSR failure temperature gets run away above set value. If it cross the set point by more than 15 °C/ 15 % RH. Switch off the power immediately and consult factory.
- Do not temper wiring as it may be safety hazard.

## Trouble Shooting

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- 1) Calibrator is not reaching set value.  
Check mains for full voltage.
- 2) Calibrator temperature is running over.  
Check terminal 1 & 2 of SSR for getting short for ever. If it is short replace it.  
Check for correct polarity in your mains plug. Phase should go through SSR as per design. If phase is not routed through SSR It may not control the temperature.
- 3) Chamber is not not getting on.  
Check mains.  
Check fuse.  
Check tightness of all terminals on controller & main terminal strip.
- 4) Chamber temperature not getting stable.  
Check fan at the bottom cover it should be running.  
Need turning off controller.