



SUZUKI INSTRUMENTS

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STABILITY CHAMBER-WITH PLC, HMI TOUCH SCREEN & 21 CFR SOFTWARE-REFRIGERATED-INNER S.S.-45X45X45 CM-

Construction Details:

1. CE Certified
2. Designed as per ICH guidelines to meet, WHO and USFDA requirement
3. Fulfills storage conditions of **25° C - 60% RH, 40° C - 75% RH, 30° C - 65% RH, 25° C - 40% RH, 30° C - 35% RH**
4. Chamber equipped with PLC & Touch screen HMI system
5. Highly accurate Individual control Loop for precise control of temp and humidity
6. Interior fabricated from **mirror polished stainless steel (S.S. - 304)**.
7. Exterior body is fabricated from dull finished **Mild steel material, Powder coated in attractive shades**
8. Full size polycarbonate sheet inner door to inspect samples without affecting the chamber temperature.
9. Properties of polycarbonate sheet door (**Unbreakable, Un-scratchable, High temperature resistant, Robust, Air tight and Transparent**)
10. Sponge - type silicon gasket for air-tight sealing to avoid leakage of chamber uniformity
11. Electrical wiring as per CE Compliance
12. Chamber illumination by LED light with door switch.
13. User friendly and tactfully designed chamber door and locking mechanism
14. Aesthetic outer appearance and high quality
15. Unit mounted on castor wheels for easy movement.



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Following advance features are available:

1. Equipped with 7" Touch screen HMI Controller and PLC System
2. Equipped with **Magnetic Door Lock Mechanism**
3. Password protected door access system
4. Supplied complete with **21-CFR (PART-11) Compliance PC Software**
5. Audit trail generation in PC Software
6. Monitor Low water level status
7. Facilitates automatic water filling system
8. Auto resume after power failure
9. Provision for Standby refrigeration and Standby humidity system(**shall be procured at extra cost**)
10. Provision for GSM MODULE (Mobiler alert configuration) system for parameter deviation(**shall be procured at extra cost**)
11. Provision for In-Built Data logger (Uniformity module) system (**shall be procured at extra cost**)
12. Provision for 4 Temp + 4 RH Sensor for data logging purpose(**shall be procured at extra cost**)

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Salient Features of 21-CFR Compliance Software:

1. Multi Chamber data - Acquisition Software
2. Generates graphical analysis of DATA as per - 21 CFR Compliance guidelines
3. File encryption Facility
4. Secure login facility
5. Password protected. System access is controlled by the system supervisor
6. Limit system access
7. Limit module access
8. Password expiration
9. Bilateral user ID and password identification
10. Access failure lock out
11. System access logs
12. System audit trail report.
13. System Input / Output logs
14. Mean kinetic temperature calculation
15. Maintains log of user activities like users logged in, login/logout time, and changes made by the user in software settings
Audit Trail Reports.
16. Ensure Gap-free Records
17. Schedule Reports via Email
18. Meet Tough Standards
19. View Environments in Real-Time
20. Flexible Alarm Management
21. Consistent Alarm Acknowledgements
22. Highly Secure & Temper proof
23. Protection From Data Loss

Air Circulation:

Temperature is maintained by a quiet running blower circulation throughout the chamber. Forced air circulated vertically down and re-circulated throughout the chamber for uniform temperature and humidity distribution.

Humidity Generation:

Humidity created by steam injection method. The boiler tank is fitted in the back side of the chamber for better servicing. Electromagnetic switch is provided for controlling the wet heater from burning off, if water level is not adequate. Float valve is provided to automatically control & maintain water level in the boiler tank.

Heating & Cooling System:

Long lasting SS tubular heaters used as heating element. The stainless steel fins provided to ensure better heat transfer. Hermetically sealed compressor CFC free compressor (134 A gas) coupled with evaporation coil and condenser. All refrigeration components like expansion valve, driers, oil separators, pressure gauges and vibration eliminators provided. Reputed company make refrigeration system such as Emerson/Kirloskar Make

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Door & Gasket:

Robust type hinges fitted on the right hand side of the chamber with front opening single door. Leak proof double lined silicon gasket will be provided. The inner surface of the door will be provided with pre-polished stainless steel and will be mounted such that conduction is avoided.

Trays for samples:

1. Removable Stainless steel rod trays
2. Strong enough to withstand heavy load of test specimens
3. Such trays will also facilitate better air circulation.
4. The distance between trays will be 15-20 centimeters.
5. Number of tray supplied : **02 Numbers**

Electrical controls:

Relays, Contactors, SSR, MCB, Mains Switch, Fan control switch, compressor ON/OFF switch with indicator, Dry heater switch with indicator for safe and ease of operation.

Electrical Circuitry Wires:

CE Certified : Inner circuitry wires with individual number tags for ease of servicing and maintenance

Safety Provisions:

1. Over temperature thermostat & thermal fuses provided for Heating system.
2. Low water level boiler cut off
3. Electrical overload cut off
4. Time delay for compressor switch ON
5. Electrical circuit breaker

Note

For these range of Equipment, the installation and demonstration at site by our technician is a prerequisite for availing free servicing during the guarantee period of 12 months from the date of sale. On site demonstration is essential and mandatory to avail warranty claim. Warranty void in case on site demonstration not availed.

Technical Specification

•Chamber Size	: 45 x 45 x 45 cm (W x D x H)
•Chamber volume	: 92 Liters
•Inner chamber	: Mirror polished stainless steel S.S. - 304 Grade
•Exterior body	: Mild steel

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•Exterior Body Paint	: Powder coated in attractive shades
•Insulation	: Puff insulation
•Insulation thickness	: 75mm
•No of trays	: 02 Numbers
•Temperature range	: 10° C to 60° C
•Temperature accuracy	: $\pm 0.5^{\circ}\text{C}$ or better
•Temperature sensor	: Pt - 100 sensor
•No. of Temperature Sensors	: 05 Nos (01 Main + 04 For data logging purpose)
•Humidity Range	: 40% RH to 90% RH
•Humidity Accuracy	: $\pm 3\%$ RH
•Rh sensor	: Capacitance type RH Sensor
•No. of Rh Sensors	: 05 Nos (01 Main + 04 For data logging purpose)
•Controlling System	: Highly advanced Touch screen HMI & PLC Control system
•Display	: Digital LCD Display (7" Screen Size)
•Validation port hole	: 150 mm diameter, port hole provided with removable sealed cap.
•Observation door	: Polycarbonate sheet door to inspect test samples without disturbing chamber operation
•Illumination	: LED Light
•Time & Date	: User adjustable Date & Time settings
•PC Software	: 21-CFR (Part-11) compliance software as per USFDA Guidelines
•Communication	: RS - 232/RS - 485 communication port
•Magnetic door lock	: Password protected entry levels for Operator, Supervisor etc
•IQ, OQ, PQ	: IQ, OQ, DQ, Documents as per USFDA Guidelines, Validation Report and Instruction Manual.
•Mobility	: On castor wheels
•Blower	: For uniform temp & humidity distribution
•Power Consumption	: 2000 Watts (2 KW)
•Power Supply	: 230 Volts, 50 HZ, Single Phase, AC Supply

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Stability Chamber (Environment Test Chamber)

**Humid it, Warm it & Stabilize it
for Intensive Research**

- Drug and Drug Substance Testing
- Plant & Vegetable Testing
- Electronic Chips & Components Testing
- Paint Testing
- Cement testing
- Chemical Testing

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Construction Details

- CE Certified.
- Double wall construction.
- Interior fabricated from high grade stainless steel (S.S.304).
- Exterior body made of Mild steel-which is duly powder coated in attractive shades
- 70mm PUF/ fiberboard insulation to prevent thermal loss.
- Forced air circulation through quiet running blower vertically down and re circulated throughout the chamber for uniform temperature and humidity.
- Full size polycarbonate sheet inner door to inspect samples without affecting the chamber temperature.
- Properties of polycarbonate sheet door (Unbreakable, Un-scratchable, High temperature resistant, Robust, Air tight and Transparent).
- Outer double walled metal door with sponge - type silicon gasket for air-tight sealing.
- Non condensing steam injection type humidity system with stand by heater.
- Electromagnetic switch for controlling the wet heater from burning off if water level is not adequate. Float valve provided to control water level in the boiler tank.
- Electrical wiring as per CE Compliances.
- Chamber illumination is accomplished by Fluorescent light with door switch.
- Cord wire duly tested and inspected with stress factor as per CE standard
- Electric Motor located at back side of unit, which is protected with safety cover to avoid accident
- Standard motor of reputed companies - such as CG, GODREJ or GE Make
- User friendly and tactfully designed chamber door and locking mechanism
- Aesthetic outer appearance and high quality
- Unit mounted on castor wheels for easy movement.

Technical Specifications

- Temp. Measurement : By PID Controller.
- Rh Measurement : By capacitance type Rh sensor.
- Temperature Range : 10 °C to 70 °C,
- Temperature Accuracy : $\pm 0.5^{\circ}\text{C}$
- Humidity Range : 35 % RH to 95 % RH
- Humidity Accuracy : $\pm 2\%$ RH

Safety Features

- High temperature safety cut off
- Low water level boiler cut off
- Electrical overload cut off
- Time delay for compressor switch ON
- Electrical circuit breaker

Heating & Cooling System

Long lasting SS tubular heaters used as heating element. The stainless steel fins ensure better heat transfer. Cooling is accomplished by Hermetically sealed compressor CFC free compressor (134 A gas) coupled with evaporation coil and condenser.

Trays for samples

- Removable perforated trays are part (made of S.S. wire mesh) of the standard supply.
- The trays of the Humidity cabinet will be manufactured from strong Stainless steel rods - strong enough to with-stand heavy load of test specimens which should be equally distributed among trays.
- Such trays will also facilitate better air circulation.
- The distance between trays will be 15-20 centimeters.

Selection of Humidity Chamber

WORKING CHAMBERS W X D X H (cm)	OVERALL DIMENSION W X D X H (cm)	CAPACITY (LITERS)	NOS. OF TRAYS	NET WEIGHTS IN KG	SHIPPING WEIGHT KG
45 X 45 X 45	66 X 74 X 119	92.00	2	115.00	190.00
50 X 50 X 70	71 X 76 X 145	175.00	2	135.00	205.00
60 X 60 X 60	81 X 84 X 135	216.00	3	150.00	225.00
60 X 60 X 90	81 X 84 X 165	3124.00	3	157.00	232.00
60 X 60 X 125	81 X 84 X 201	450.00	4	175.00	250.00
80 X 80 X 125	101 X 104 X 201	800.00	4	220.00	295.00

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(RHMI) Humidity Chamber

Construction Details

- Designed as per ICH guidelines to meet, WHO and USFDA requirement
- Fulfills storage conditions of 25° C - 60% RH, 40° C - 75% RH, 30° C - 65% RH, 25° C - 40% RH, 30° C - 35% RH
- Temperature Accuracy : $\pm 1.0^{\circ}$ C
- Temperature resolution : 0.1° C
- Humidity Range : 30% RH to 80% RH,
- Humidity Fluctuation : Maximum 3% RH
- Chamber Illumination : With 2 or 4 LED lights for lesser power consumption
- Compressor Watts : 1.5 KW
- Dry Heater Watts : 2.0 KW
- Wet heater watts : 3.0 KW
- Overall Power consumption : 2.5 KW Per phase (For 3 - phase connection)
- Power consumption : 7.0 KW (For single phase connection)
- Capacitance type Humidity sensor enables direct display of RH and temperature
- (ASI - PLC) Application Specific Integrated Programmable Logic Controller with Touch screen HMI for precise control of temperature and humidity parameters - fully protected with password
- Colour graphic HMI System
- Auto change over to standby systems through PLC - Change over from Main set to Redundant Set and Vice Versa
- Multipurpose Temperature and Humidity logger with printout facility
- In-built data logger for selected number of channels (4, 8, 12, 16, 32) within the LCD colour Graphic controller
- ASIC system with HMI having capacity of inbuilt storage upto 2 GB - 38,00,000 Storage readings (Nearly unlimited storage) - this is the controller storage capacity
- 21 CFR compliance software - part 11 USFDA guidelines
- 10 - 20 different Humidity chambers can be connected to EIE - 21 CFR Compliance software
- Highly ergonomic door handle with unique key lock
- Built up with 80 mm Puff Insulation for maximum thermal protection.



PLC hardware configuration

- 1) Analog inputs : 4 (Universal)
- 2) Analog outputs : 2 (mA / V)
- 3) Digital Inputs : 12 (Contact closure)
- 4) Digital Output : 12 (12V/ 40mA short circuit protected Pulse output)
- 5) Serial Port (HMI) : One RS485 half duplex Serial Port for HMI connectivity
- 6) Serial Port (PC) : One RS485 half duplex Serial Port for PC connectivity or Ethernet : 10/100T-Base Ethernet port for PC connectivity
- 7) Power Supply : 24V / 1A DC

Selection of Humidity Chamber

WORKING CHAMBERS W X D X H (cm)	OVERALL DIMENSION W X D X H (cm)	CAPACITY (LITERS)	NOS. OF TRAYS	NET WEIGHTS IN KG	SHIPPING WEIGHT KG
45 X 45 X 45	98 X 74 X 110	92.00	2	115.00	190.00
50 X 50 X 70	103 X 76 X 135	175.00	2	135.00	205.00
60 X 60 X 60	113 X 88 X 126	216.00	3	150.00	225.00
60 X 60 X 90	113 X 88 X 156	312.00	3	157.00	232.00
60 X 60 X 125	113 X 88 X 186	450.00	4	175.00	250.00
80 X 80 X 125	133 X 108 X 186	800.00	4	220.00	295.00

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Dedicated HMI & PLC System

- Resistive Touch Panel for Scrolling Screens and Setting Parameter Values
- An operator can store and operate multi-user profile
- Software calibration with encrypted password
- Company Name & Logo on welcome screen
- User adjustable Date & Time settings
- Password protected entry levels for Operator, Supervisor etc.
- Two independent PID loops for Temperature and Humidity Control
- Generates Alarm if chamber Temperature and/or % RH value cross user defined High/Low Limits
- Cuts off system operation in case of gadget failures



- Intelligent control for door opening detection
- Auto resume after power failure feature
- Monitor Low Water Level status for alerting user through Alarm
- Facilitates automatic water filling system
- Facilitates auto change over from main refrigeration system to standby refrigeration system and from main heating system to standby heating system
- Checks and displays gadget health for both the redundant sets on home screen, thereby eliminating the erroneous performance
- Generates Process Value & Event Status Records, duly date/time stamped, and store in non-volatile flash memory

- Soft touch on screen Help Menu
- In-built memory for Storing Process Data Records such as Temperature, Humidity, Time etc
- RS - 485 / RS-232 Communication Port for Remote Data Access via Host PC
- Audio Buzzer for Alarm Annunciation
- Provide easy transfer of stored records, in CSV format, to Pen-Drive for direct reading and processing through Excel Sheet
- Improved reliability, accuracy and control for all processing applications
- Following Self-Diagnostics Messages will be displayed On-Screen

- 1) Sensor opens
- 2) Low water level
- 3) Door open
- 4) Main set active
- 5) Gadget Health OK



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