



THERMAL SHOCK CHAMBER

[AUTOMATIC TRANSMISSION]

Model No : SRL / TSC/A-02



Construction : [Dual Chamber]

MOC of the Chamber will be: Double walled Chamber with Inner of stainless steel 304 grade & outer of CRCA duly powder coated, PUF + Ceramic wool Insulation in between two walls.

- (i) Double door, inner door of glass with frame & silicon gasket sealing, outer door metallic with PUF insulation.
- (ii) The unit will be made of double walled leak proof metal door with lock, with a provision of opening door from inside.
- (iii) Forced air circulation for uniform temperature.
- (iv) Lockable & Movable PU wheels for easy movement.

Insulation of Walls, ceiling and floor : 100-120mm thick puff panels with puff in-place density of minimum of 1kg per cubic foot. Exterior metal surface of insulation puff panels or its equivalent shall be of minimum 19 gauge embossed white stainless steel or its equivalent. Interior metal surface of insulation puff panels or its equivalent shall be of minimum 19 gauge stainless steel with baked white enamel finish or its equivalent. Exterior and interior metal surface shall not have metal-to- metal bonding. 5 inches non-burning, non-settling ceramic wool for hot zone & high density PUF for the cold zone. In this case there shall be no condensation on the outer walls during long duration test.

Chamber Zone Design: A single vertical, air to air type thermal shock chamber with two zones, hot & cold. Test articles in the Hot zone shall be cooled back down to ambient condition & unloaded. Re-loading the next batch of test articles & resuming the heat cycle shall limit the buildup of moisture during cold zone transfer.

Door : Flush type doors of metal surfaces (as per above specification of metal) with proper puff insulation of above mentioned standard or its equivalent. Doors shall have magnetic snap-in perimeter gasket or its equivalent, self-closing cam lift gravity hinges or its equivalent, a posi-seal door closure or its equivalent. Door shall have key lockable latch handle. Doorjamb shall be made fiberglass reinforced plastic or any other suitable material compatible with constructed door. Suitable doors with together glass window with organ gas Coating to Prevent Condensation on glass with its appropriate shutter.

Viewing Window: (As per size) Multilayered tempered glass with heated window in each compartment.

Drain system in the floor: Insulated floor shall be provided with center drain exiting to drain out the condensed water or any spill over liquids/solvents.

Application :

These equipments are used for climatic & durability tests of electrical & electronic components, corrosion test on mechanical assemblies, materials for simulated tropical & extreme tropical conditions.

Ecocentric System :

Chamber runs on the basis of Dewpoint control. Less deviations during short-term door opening & power failure. Less utility area Increased storage area. Low operating cost. Minimum power & water consumption. Reduced deviations. Less breakdowns due to standby refrigeration & humidification system. Due to PLC HMI & controlling through microprocessor based PID Temp. & RH operations the on time of both Temp. & RH system is reduced & efficiency of this system is increased with reduced energy consumption.

Salient Features : [Optional]

First time in **India** developed by **SR Lab Instruments**. Standby Refrigeration, Standby Humidification & Standby safety controller with auto changeover, In case of failure of the main system, To run the system for a longer with uninterrupted operation.

Also USFDA approved 21 CFR compliance software, where in case of temp. & RH fluctuation, SMS & Email alert shall be sent to registered user nos and minute details of operation of the chamber can be downloaded weekly, Monthly or Quarterly.

Hot Zone :

Encolite SS 304 heater up to 5 KW.

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Controller : [PLC with HMI TFT screen]

[Single for the both chamber]

PID Action : Provides Precise Temperature, Maintain Uniform And Accurate Growth Environment, Timer, Alarm, Auto-Tuning And Auto Start Stop Function. Technical Design and Construction Silent Fan Motor to Maintain Uniform Temperature Over Temperature and Current Protection Capability Ensure User Safety, Adjustable Sliding Rack, Alert Unexpected Interruption Of Electrical Power Or Unauthorized Change.

PLC-HMI Control system with touch screen display & HMI for data Storage, Stepwise Programmable Controller with 50 or more programs Provides Automatic Operation of Variable Temperature, Humidity Value, 100 Or More Cycles with Minimum 100 Sections in Each Cycle. Data logger with RS 485/232 port for logging & transfer of data. Auto restart, power failure event logging, memory protection S.M.A.R.T/ SELF diagnostics system. Control system shall have audio/audiovisual warning/alarm when set temperature/RH is below or above the set values. Ethernet communication port. Ambient temp. Monitoring. Over Temperature and Current Protection Capability Ensure User Safety, Adjustable Sliding Rack, Water Level Sensor Alert Control System. Total no of output: 23 channels. Alert Unexpected Interruption of Electrical Power or Unauthorized Change. 4 digit Password lock.

Transfer :

Programmed automatic defrost cycle & self-contained hydraulic or equivalent system to transfer within 10-30 seconds between the zones as well as transfer programmable.

Dry Air Purging : [Optional]

Provision for dry air purging for removing the moisture.

LN2 Injection System : [Optional]

Automatically operated from the PLC with 0-100% capacity adjustment with sensors, cylinders & regulators.

Chiller to be provided for cold zone if required.

Cold Zone Refrigeration system : (Air Cooled)

Refrigerant: R23 / R404 A / SUVA-95 / 508B

Bitzer / Emerson / Danfoss/Tecumseh: make compressors, 2 stage cooling system with Cascade system for ULTRA LOW TEMP. Range & Single stage system for Humidity Control. All accessories such as HPCO/LPCO, Oil Separators, Dryers, Relays, OLP etc. of **Danfoss/Tecumseh Emerson** Make. CFC free refrigerant to be used to comply with the New Environmental Regulation. Will have suitable tonnage compressor for maintain temperature with lights on. Will have hermetically sealed condensing unit compressor coupled with Evaporation coil and condenser, safe guarded by time delay circuit. Cabinet shall be supplied with air-cooled condensing unit with extended compressor life and close temperature control. Cooling system will be split type to place condenser unit in a ventilated area to avoid hot air in growth chamber. Cooled air shall be delivered in such a way to reduce or eliminate condensation within media dishes and to provide maximum uniformity In different research vessels. This may be through silent and durable fan motors or through any kind of advanced air diffusers. Air Cooled Condenser with solenoid & LP to pass hot gas to the chamber for uniformity & long life of compressor for continuous usage. Phenolic coating for cooling & condensing coils (All weather proof).

Air Circulation : [Dual Laminar Type]

Chamber shall be with internal Air circulation, and all the heaters and cooling coil shall be located behind/ below the false sheet of the chamber and outside the working space. The conditioning shall be done by air circulation to maintain uniform temperature by means of low noise fan by externally mounted motors air circulation by fan shall be sucking to avoid direct air strike on specimen.

The Thermal stock chamber is provided with best air circulation to give better temperature uniformity this is achieved by using one set of motor & blower in baffle wall Compartment to push treated air in working chamber. This system gives better than 1 deg c. temperature uniformity in working chamber, evaporator, heaters & steam injection system is from back side, behind baffle wall, the air circulation blower is also fitted in this compartment only.

Temp. Range : [Hot & Cold]

Temp. Range (Hot Chamber) : +50°C to +200°C

Temp. Range (Cold Chamber) : Ambient to -80°C

Temperature Stability/Time : ±0.2°C

Temperature Homogeneity/Spore: ±2°C

Heating Rate for Hot chamber: Up to 10°C/min

Cooling Rate for Cold chamber: Up to 10°C/min

Transfer Basket load capacity : Maximum 100 kg

Safety Features :

- 2 minute compressor "on" delay timer to safeguard the compressor. Compressors overload relay protector. Electronic low water level cut off device to cut off the supply to boiler heater in case of low water level. Safety Temp. Controller. MCB for mains.
- (i) Unit will be provided with safety devices for temperature and humidity overshoot in case of malfunction.
 - (ii) Built-in temp. Deviation, audio/visual alarms. Safety thermostat for over shooting of temp. Safety circuit to cut off the whole system.
 - (iii) OLP (Overload Protector) & Time delay Circuit for safety of compressors.
 - (iv) HRC fuses for compressors, Heaters & Mains.

Secondary Safety Features :

Supervisory Safety Monitoring System has been introduced for additional Safety measures. Individual additional micro-controller is used for this supervisory system. If the Temperature &/or Humidity value crosses set Hi & Lo limits for either or both parameters, safety control action will be taken over by this controller. If the parameter sets within the limit value, main control action will resume automatically.

Optional: The system offers AUDIO MESSAGE alert (Alarm) for any variation in Temperature &/or RH (beyond the ICH limits).

Additional Safety Features:

In case of failure of Second Safety Control System, the third safety system will activate to PUT-OFF all other Control System overriding main & Supervisory Control System so as to preserve the samples at ambient condition. All indications & Alarms will be functional for Operator's ease and intervention. The system will restart Only after Manual acknowledgment.

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Power Supply :

Single Phase 230V AC, 50Hz / Three Phase 440V AC, 50Hz

Certification :

MSME Award For Best Manufacturing Practices 2023.

ISO 9001:2015 Certified Co. D&B registered

CE mark product.

ISO 14001:2015 & WHO-GMP.

ISO 45001:2018.

ISO/IEC 17025: 2017

Electrical Safety IEC 61010

USFDA Certificate.

ROHS Certificate.

UL Certificate.

NSIC & MSME registered.

Documentation :

To comply with the documentation requirements, we provide IQ, OQ & PQ protocols to be executed before taking the chamber in to for regular use, and support the supply with the following documents with the detail operational and service manual.

Standard Operating Procedure (SOP)

Operational Manual for Controller

IQ,PQ,OQ protocols certificate.

Calibration certificate of all controlling modules with traceable to NABL / ERTL accredited labs.

Certificate of MOC.

Test Report of chamber prior to supply with mapping certificate.
wiring diagram for ease of service maintenance.



Due to continuous development & improvements in design, we reserve the right to change the specification without notice.