SR
LAB INSTRUMENTS

THERMAL SHOCK CHAMBER

AN ISO 9001 : 2015 CERTIFIED CO. & CE MARK PRODUCT

Model No : SRL-TSC-02

Construction :

The chamber shall be of mono block structure construction, comprising three cabinet placed one above the other (Hot cabinet at top, ambient cabinet at middle and cold cabinet at bottom).

Exterior : The exterior housing must be made from lightweight, self-supporting, corrosion resistant, galvanized steel-sheet of suitable thickness. The outside surface of the exterior wall shall be primed and painted to a standard finish with high quality materials.

Interior : Complete construction of the inner test spaces shall be made of stainless steel AISI 304 or equivalent materials. All the joints shall be continuous seam welded to form a hermetically sealed unit in order to prevent external moisture migration.

Door :

The chamber shall have door at front side. The door shall be fully open able (180^{0}C or more) to facilitate test article loading and unloading. Heaters shall be provided at the door at appropriate place to avoid moisture condensation on the outside surface. Suitable numbers of locks / clamps shall be provided to ensure the uniform pressure and air tightness of the chamber test space.

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.

Test Specimen Recovery Time :

≤ 5 minutes to cool from +150℃ to -65℃
(By refrigeration cooling in cold cabinet)

≤ 5 minutes to cool from +250℃ to -180℃
(By LN2 cooling in cold cabinet)

≤ 5 minutes to heat from -65℃ to +150℃
(Heating in hot cabinet)

≤ 5 minutes to cool from +150℃ to +25℃
(cooling in ambient cabinet)

≤ 5 minutes to heat from -65℃ to +25℃
(Heating in ambient cabinet)

Test Space :

Upper test cabinet shall be hot cabinet and equipped with fan, heaters, temperature sensor, thermostat etc. Middle test cabinet shall be ambient cabinet and equipped with fan, heaters, temperature sensor, thermostat etc. The lower test cabinet shall be cold cabinet and shall equipped with fan, heaters, temperature sensor, thermostat etc. All the fan motors shall be placed outside the test space with suitable protection. If cooling by LN 2 injection method an appropriately sized port shall be provided at the center of the cold cabinet wall to vent the vaporized LN 2 so as to avoid over pressurization in the test space. Materials used in test space conditioning shall not generate any corrosive elements like sulphur, chlorine etc. Temperature sensor or any other items in the test cabinet shall not protrude into the usable test space volume of specimen carriage basket.

Travelling Cable Port :

The chamber shall be provided with traveling cable port at test specimen carriage basket for the usage of temperature sensors & signal wires external from the test package. Any part of the traveling cable port shall not protrude into the usable test space volume of the basket. Traveling port inside shall be Teflon sleeved and clear inside dia shall be ≥50mm.

THERMAL SHOCK CHAMBER

Window & Interior Light :

The chamber door shall have multi-pane observation window of size ≥ 0.3m x 0.3m to view/inspect the test specimen in the ambient cabinet. the test space shall have proper lighting for functional inspection.

Condensation Water Drain :

A backpressure free automatic drain shall be provided at cold cabinet and ambient cabinet to remove humidity / condensation water.

Software :

Licensed operating system with CD media. Licensed GUI based software for control, monitoring with visual flow diagram for chamber parameters (Temperatures of all three cabinet) visualization (Installation software to be provided on CD media). Computer communication, networking, data-logging software. All parametric data of temperature should be logged preferably in a database for archival and analysis.

Programming :

Program management for production cycles and test. Easy creation of test programs. Looping features to allow repeating complete or partial programs. Guaranteed soak feature to let process variable reach set point before going to the next step. Operation of the chamber shall be by entering set points for immediate execution or by entering sequence of steps (set points, times, rates etc.) for timed automatic operation.

Electrical Wiring :

All the wires shall be suitably numbered or labeled for easy identification and documentation. The wires shall be strapped / bundled and routed through the ducts. All electrical circuits shall have reliable safety device like fuse or circuit breaker. Power connection terminal block and ground lugs shall be provided for easy utility connection. Complete wiring shall meet International Standard Code.

Electrical Control System :

Electric connection according to IEC specification. Smooth starting of electrical system. Electrical protection against load faults such as short circuit, overload etc. Electrical protection against supply faults such as single phasing, low voltage and negative phase sequence. Safety push button in case of emergency.

Certification :

ISO 9001:2015 Certified Co. D&B registered & CE mark product.

Calibration & validation certificates traceable to NABL / ERTL accredited labs.

Special Care :

Please note that this equipment has to be operated at an ambient temperature of +25ºC +/- 2ºC & suitable rating Servo Controlled Voltage Stabilizer has to be installed in case of voltage fluctuations.

Safety Features :

- Peak power consumption of the chamber : 12 amps / phase
- Drain line connection : ¼" Nozzle.
- Noise Level : 75 db
- Date acquiring software with electronic form
- Additional software : 1 copy

Operating Environment : The chamber must be operational continuously under the ambient condition ranging from +20^{0}C to 35^{0}C.

Noise Level : Noise level of the chamber shall be less than 75 db (A). (typically at 1 m distance from chamber.)

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