SR
LAB INSTRUMENTS

ARABIDOPSIS GROWTH CHAMBER

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

Model No : SRL / PGC-11

Controller :

Solid state microcontroller architecture, single board electronic controller, run manual, diurnal, 24 hrs ramping mode and non-ramping mode and elapsed time. Multiple program link to simulate natural condition, dual experiment protection tempe. limit shutdown. Two calibration off set light on and light off, light lifetime alarm and reset. RTD temperature sensor, visible and audible alarm, additional ambient temperature sensor on Control Panel for monitoring, 10 key Industrial keypad with VFD display and LED indicator. Four levels password protection, diagnostic menu, view set point, process value, alarm, alarm setting. Shall be equipped with delay start timer, power fail event logging, 90 + program storage facility.

[PLC with HMI touch screen]

PLC Control system with touch screen display & HMI for data Storage, data logger reading & audit trail, Door access & SMS records, Email alert. Data Logger 1 temp + 1 RH & lights. Data Logger with LCD display window capable to store non volatile data memory up to 5000 readings with audit trail facility complies 21 CFR Part 11. Change over to stand by system automatically as per schedule or on detecting fault with current system Temperature & Humidity overshoot and under shoot protection Mobile Alarm system, Door Access, system setting reset , Graph, SMS, Email alert, etc. In built PC port for connectivity for PC base operation of data management. Protection of ups system in built with the controller for safe and uninterrupted functioning.

Applications :

This chamber product is frequently used for research application such as lighting for plant pathology research and seedling germination and development.

Airflow/Circulation :

Uniform forced air circulate across the shelf via air diffusers on the top wall. Uniform horizontal or vertical airflow shall be provided for maintaining uniform temperature and RH in the room. System for adjustable forced air exchange shall be provided with up to 20 air exchanges per hour of fresh air to the room or its equivalent and an option to shut it down when not required.

Lighting System :

0-300 µmoles/m²/sec (0-21000 LUX)

(a)PAR (Photosynthetic Active Radiation) Light intensity

(i)Minimum light intensity 300 micromoles or more measured @ 6 inch from light bank.

(ii)Shall be equipped with THREE light canopies in the same intensity, horizontally placed with cool white LED light array panel fixed below barriered metal plate.

(iii) Dimmable light in 1% increment. Real time clock time-controlled lights

(iv) PAR light spectra of LED to cover range 430 to 780 nm. Light spectra shall be provided. Fixture efficiency of 2.5 umole/J

(v)Programmable ON/OFF lights for day/night effect.

TECHNICAL SPECIFICATIONS

Model SRL-PGC-11	Internal Dimension (W X D X H)(cms)	Capacity Ltrs
PGC-A	45 x 45 x 50	100
PGC-B	50 x 50 x 80	200
PGC-C	55 x 55 x 100	300
PGC-D	60 x 60 x 110	400
PGC-E	60 x 60 x 140	500
PGC-F	70 x 60 x 145	600
PGC-G	80 x 65 x 135	700
PGC-H	75 x 75 x 145	800
PGC-I	80 x 75 x 150	900
PGC-J	80 x 80 x 155	1000
PGC-K	85 x 80 x 160	1100
PGC-L	90 x 83 x 160	1200

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Cabinet Construction & Insulation :

MOC of the Chamber will be: Double walled Chamber with Inner of stainless steel 304 grade & outer of CRCA duly powder coated, PUF 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.
(v) Lockable caster shall enable the chamber to be moved. The bidder must be ensure in the design of chamber itself that shelves steel should with stand

Insulation of Walls, ceiling and floor (4"): 100mm thick puff panels with puff in-place density of minimum of 1kg per cubic foot or its equivalent. Insulation with expended polystyrene or any equivalent material having R factor of minimum 34. Insulation material shall maintain its dimensional stability in an operating temperature range of 5°C to +60°C Insulation puff.

Refrigeration :

Shelf contained air cooled condensing unit with hot gas bypass system to be placed on TOP of the chamber for ease of service. Continuous running compressor with solenoid valve, ceiling mounted cooling coil, Adjustable expansion valve. 1/3 hp compressor for optimum performance & power consumption. Please specify the power consumption of unit (without humidity & dehumidify should be below 2 KW) & current consumption on START & RUNNING for complete system should be mentioned in BID Compressor over temperature & over pressure protection, compressor relay start, temperature deviation alarm. Redundant temp sensor should cut off for safety. Compressor over temperature & over pressure protection, compressor relay start, temperature deviation alarm. Redundant temp sensor should cut off for safety.
(a) Emerson /Danfoss/Tecumseh: make compressors, 1 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.

Doors :

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. Doorjambs shall be made fiberglass reinforced plastic or any other suitable material compatible with constructed door

Temperature Range :

Temp. Range: +4°C to +40°C (lights ON) and +2°C to +40°C (lights OFF)
Resolution : 0.1°C Accuracy : ±0.2°C, Uniformity : ± 1°C

Relative humidity from 40% to 95%,
Resolution : 0.1% , Accuracy : ± 1% , Uniformity : ± 3%.

Humidification & Dehumidification :

Will consist of humidifier tank fitted with boiler heaters, and give alarm if fault occurs or Ultrasonic Humidification System. Water reservoir tank will be connected to the humidifier. De-humidification coils are installed below the cooling coils for lower humidity. 40-85% humidity with dehumidification pan type humidification system.

Power Supply :

Single phase 230V AC, 50 Hz / Three phase 440V AC, 50 Hz.

Shelves & Trays :

Shelves/ Trays : Rod type stainless steel trays & can be lifted easily for cleaning. Adjustable up to 0.5 inch increment/decrement. Qty: 3 Nos
1.8m^2 on three shelf, minimum plant growth height 36 cm between each shelf. Shelves shall be modular in design where one shall be able to take extra shelves out and shall be able to insert them keeping the growth height of Arabidopsis as well as other plant species. White epoxy coated three steel wire shelves, vertically adjustable on ½ inches System shall have featured also: field upgrade with 300µmole shelve, to make it 5 TIER systems with 300µmole lamp bank.

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.

Certification :

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

ISO 14001:2015 & WHO-GMP

NSIC & MSME registered

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

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.