Containment Facility

KS/ME/PGWCHAMBER

Technical Specification of Plant Growth chamber:
LED Light four tier properly spaced in horizontal shape for uniform light intensity over entire shelf (LED Tube not accepted). The LED light shall be broad spectrum.
In 2026, the best choice for most houseplants is full-spectrum LED grow lights that mimic natural sunlight with balanced white light (typically 4000K–6500K)
The Light Intensity shall be programmable from 10 to 100% dimmable through only controller. The Light Intensity shall be programmable up to 400 (no any additional device adds for dimming) µmoles /m2 /s or higher of each tier light measured @ 6" from lamps bank.
Light intensity shall be digitally adjustable and displayed on the controller interface.
Uniform light distribution shall be ensured across each tier for optimal plant growth performance.
The lighting system shall be suitable for controlled environment applications such as seed germination, tissue culture, and plant growth studies.
Temperature 10° to 40°C lights on or higher range (±0.5°C)

Temperature safety alarm, the controller shall shut down the chamber and restart when the temperature returns to normal. The system shall restart automatically when the internal temperature is normal.
An audible and visual alarm shall be activated during the fault condition.
Once the internal chamber temperature returns to the normal programmable set range for plant growth conditions, the system shall automatically restart and resume normal operation without manual intervention.
The safety system shall be fully integrated with the main programmable controller, and no external protection device shall be required.
The protection mechanism shall ensure continuous plant safety during power fluctuation or abnormal thermal conditions.
Air circulation inside chamber is from a specifically designed, adjustable air diffuser conditioned air travels along the entire back wall, over the shelves and returns to the ceiling fans through an opening between the light fixtures and the doors.
The airflow shall pass evenly over the shelves and plant samples, maintaining uniform temperature and humidity conditions across each tier.

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Air shall return to the ceiling-mounted circulation fans through a dedicated opening located between the light fixtures and the chamber doors.
The airflow design shall minimize temperature stratification and eliminate dead air zones inside the chamber.
The air circulation system shall ensure homogeneous environmental conditions suitable for controlled plant growth experiments.
One door providing full access to chamber interior, magnetic gasket.

Air-cooled condensing unit with hot gas bypass system for continuous compressor operation, Used for cooling and bypass-based heating. Solenoid valves, Ceiling mounted evaporator coil with air circulation fans.
The hot gas bypass arrangement shall be utilized for both precise cooling control and bypass-based heating, ensuring stable temperature regulation within the chamber.
High-quality solenoid valves shall be provided for accurate refrigerant flow control and system safety.
The chamber shall be fitted with a ceiling-mounted evaporator coil, designed for uniform cooling distribution.
Integrated air circulation fans shall be provided with the evaporator unit to ensure even temperature distribution throughout the chamber.
The complete refrigeration system shall be designed for stable, energy-efficient, and uniform environmental control suitable for plant growth applications.

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Growing area and height, A minimum work area25-30ft2. Shall have a minimum plant growth height of 26-30 cm or more each tier, shelve and light canopy shall be adjustable and Removable as per research need without any tool.

One or more access port/fresh air-port, Floor drain, casters assembly and adjustable leveling legs
Machine shall be ISO certified and Electrical Safety certificate UL-508A/CE

Android Based Touch Screen for real time graphing.

Programs can be configured to run Manual, real time or elapsed time. Continuous, Diurnal and multi-step program feature. Multiple programs storage with multistep feature. Two calibrations offset to be provide, Light life time maintenance alarm audio & visible, graphic display actual and set value, view program stapes and sequence time duration.

Dual experiment protection via integrated yet independent temp limit shutdown.

Trouble shooting with on board diagnostics redundant controller must be provide.

Temperature low and high deviation alarm, Alarm (audio and visual), Ambient temperature monitoring.
Minimum four level protection for controller operation/ safety & security,

Minimum Two-year warranty

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Clean room compatible Bio-Safety Cabinet Technical Specifications:

4 ft wide Bio-Safety Cabinet with 10" sash opening and smart coat steel interior
7" touch screen GUI displaying safety, performance & maintenance data including total operating hours, UV hours, UV install date, filter runtime, residual HEPA life & filter install date
Dual DC motors
Automatic airflow speed adjustment without damper
Pressure sensor to detect pressure drop across supply HEPA filter (not anemometer-based)
Audible & visual alarms for down flow, inflow, blower failure & incorrect sash position
Front angled at 10º to minimize glare
Noise level < 63 dB(A) for 4 ft cabinet
Power consumption < 200 watts with lights ON and fan at operating speed
Automatic fan speed reduction to 30% when sash closed
Programmable UV light (0–24 hours preset sterilization)
LED light >120 fc with brightness adjustment
Provision for Vacuum, Water & Non-combustible gas taps
NSF certified and listed on NSF website
HEPA filter H14 (EN 1822) or better with ≥99.995% efficiency @ 0.3 µm
Exhaust & inflow air volume approx. 300–350 CFM
Fixed/Adjustable height stand, UV light, detachable arm rests & 1/2 electrical outlets
Stainless steel drain pan (not painted/powder coated)
CE & UL certified; Declaration of MOC provided
Side port provision for vacuum tubing & cable routing
Warranty: 3 years; 2 years AMC optional

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