FIDELS SCIENCE

A UNIT OF FIDELS EYE N SCIENCE PVT. LTD.

Plant Growth Chamber

Model: FIDELS/PGC-500

About the Company

With a vast experience of 10 Years, Fidels Science is a leading laboratory equipment manufacturer and supplier dedicated to providing high-quality and innovative solutions for scientific research and analysis. With a commitment to excellence, we aim to empower laboratories worldwide by delivering state-of-the-art equipment and unmatched customer support.

About The Application

The Plant Growth Chamber is designed for precise control of temperature, humidity, light, and airflow, making it ideal for a wide range of plant research and growth studies. It is widely used for seed germination, plant cultivation, and physiological studies under controlled environmental conditions. The chamber supports research on crops such as Arabidopsis, Brassica, leafy vegetables, and other plant varieties requiring stable and repeatable growth environments. It is suitable for use in agricultural research institutes, biotechnology laboratories, universities, and R&D facilities involved in plant science, crop improvement, and controlled environment studies.

Cabinet Construction

Chamber Capacity

The Plant Growth Chamber is designed to offer a compact yet functional internal workspace that supports controlled plant growth and research applications. The usable chamber volume allows efficient placement of trays and samples while maintaining uniform environmental conditions throughout the chamber.

- Usable chamber capacity: 300 liters.

Interior Construction

The internal chamber is constructed to ensure high durability, corrosion resistance, and hygienic conditions suitable for plant growth applications. The double-walled design enhances thermal stability while providing a robust and long-lasting internal structure.

Internal Dimensions: 577 (W) × 577 (D) × 901.1 (H) mm.

- Double-walled chamber construction.
- Inner chamber made of Stainless Steel 304 grade.
- Smooth, corrosion-resistant internal finish.

Exterior Construction

The exterior body is designed to provide mechanical strength, surface protection, and long-term durability under continuous laboratory use. Multiple material and finish options allow flexibility based on application requirements.

External Dimensions: 677 (W) × 677 (D) × 1001.1 (H) mm.

- CRCA powder-coated exterior body designed to provide long-lasting durability, corrosion resistance, and a clean professional finish suitable for laboratory environments.

Timing Cycle

24×7 Timing Cycle

The advanced timing system enables precise scheduling of operational cycles, making it suitable for complex and extended plant growth protocols that require continuous operation.

- An advanced weekly digital timer is provided to enable precise scheduling of operational cycles. The system supports up to 99 programmable cycles, with each cycle capable of handling 30-segment programs. The timer is designed for reliable, continuous round-the-clock operation, making it suitable for long-duration and complex plant growth protocols.

Temperature System

The Plant Growth Chamber is designed to provide stable and precise temperature regulation essential for controlled plant growth studies. The temperature control system ensures uniform distribution throughout the chamber, supported by reliable sensing and PID-based control for consistent performance during continuous operation.

- 2°C to 60°C with lights OFF.
- 5°C to 60°C with lights ON.
- PID-based temperature control system.
- PT-100 temperature sensor for accurate sensing.

Humidity Control & Regulation

The humidity control system is engineered to maintain controlled moisture levels within the chamber, supporting optimal growth conditions for various plant applications. Integrated sensors and automatic generation mechanisms ensure reliable regulation and uniform humidity across the chamber volume.

- Humidity control range from 40% to 90% RH, suitable for a wide variety of plant growth and research applications.
- Digital PID–based humidity control system ensures precise regulation and stable moisture conditions inside the chamber.
- High-accuracy capacitive humidity sensor provided for reliable sensing and continuous monitoring of humidity levels.
- Automatic humidity generation system designed to maintain uniform and consistent humidity throughout the chamber.

Humidity Control System

A dedicated humidity control system ensures accurate regulation and real-time monitoring of humidity levels, contributing to stable and repeatable experimental conditions.

- Digital PID humidity controller for accurate and stable regulation of chamber humidity.
- SV and PV display provided for clear monitoring and easy control of set and actual humidity values.

Refrigeration System

The refrigeration system is built for efficient and environmentally responsible temperature control. It ensures stable cooling performance while complying with current environmental safety regulations.

- CFC-free compressor with integrated condenser, motor, and relay.
- Uses environmentally compliant CFC-free refrigerant.
- Designed for consistent cooling efficiency and long-term reliability.
- Supports continuous operation with minimal maintenance requirements.

Illumination & Lighting system

Illumination System

The chamber incorporates a multi-directional illumination system engineered to deliver consistent and uniform lighting for plant growth studies. The lighting system is integrated with an automated timing mechanism to support uninterrupted operation during long experimental cycles, while also allowing easy replacement of light modules.

- Triple-side plant growth lighting system designed to provide uniform and consistent illumination throughout the chamber.
- Cyclic digital timer integrated for reliable 24×7 continuous lighting operation.
- User-replaceable light modules for easy maintenance and long-term usability.

Light Placement

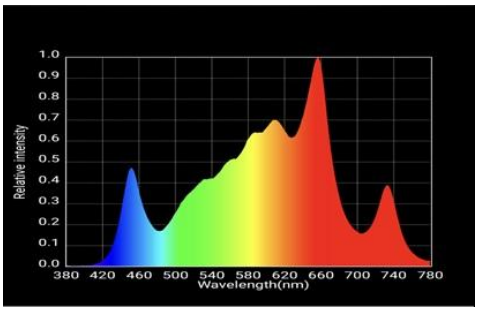
The lighting arrangement is strategically designed to ensure uniform exposure of light to all samples placed inside the chamber. The top-mounted configuration promotes even light distribution across trays and minimizes shadowing.

- Growth lights mounted above the trays to ensure direct and effective illumination of plant samples.
- Uniform top-down light distribution provided across all samples for consistent growth conditions.

Light Intensity

The chamber is equipped with an LED-based plant growth lighting system that provides adjustable illumination suitable for different plant growth stages and experimental requirements.

- Light intensity 220 µmol/m²/s,



Shelving

Shelves
The chamber is equipped with 2 adjustable shelving to provide flexibility in sample arrangement and to accommodate different tray sizes and experimental setups.

- Two adjustable shelves provided to allow flexible arrangement of trays and samples.
- Shelves manufactured from stainless steel or chrome-plated material, offering durability and ease of cleaning.

Controller

The chamber is equipped with a microprocessor PID controller featuring with LCD display for clear and user-friendly operation. The controller enables precise and reliable control of temperature, relative humidity, and lighting parameters, ensuring stable and repeatable chamber performance.

Key Features:
- Microprocessor PID controller .
- LCD display for clear monitoring.
- Accurate control of temperature, RH, and lighting.
- Flexible system architecture supporting scalability and customization.
- Simultaneous management of up to seven environmental parameters.
- Built-in system diagnostics and experiment protection features.
- User-oriented layout for easy setup and routine monitoring.
- Designed for stable performance during continuous operation cycles.

UV Sterilization

The in-built UV sterilization system helps maintain a clean internal environment by reducing microbial contamination between experimental cycles.

- In-built UV sterilization system provided to support internal chamber hygiene.
- Effective chamber decontamination to help reduce microbial contamination between operating cycles.

Operational Design & Mobility

The chamber is designed for fully automatic operation, offering ease of use and flexibility in laboratory environments. Its mobility features allow convenient repositioning without compromising stability.

- Fully automatic operational mode.
- Single-door configuration for easy access.
- Mounted on lockable & movable PU castor wheels.
- Forced air circulation system for uniform temperature distribution.

Safety Features

Adjustable high and low temperature alarms with audible and visible alarms, which automatically reset when temperature returns to normal after a power shutdown. On board diagnostics aid troubleshooting, and dual-experiment protection is provided via integrated but independent temperature limit shutdowns. It is also equipped with a circuit breaker to protect against electrical overload alerts on temperature deviation.

Electricity

The Plant Growth Chamber is designed for reliable operation on a standard electrical power supply. All electrical components are safely integrated to ensure stable performance during continuous operation.

- Power Supply: 220 V AC.
- Phase: Single Phase.
- Frequency: 50 Hz.
- Designed for continuous and stable operation.
- Electrical system compliant with laboratory safety standards.

Options Features

Optional enhancements are available to extend the functionality of the chamber, allowing customization based on application-specific needs.

- Adjustable airflow regulator
- Integrated CO_2 control system
- PLC-operated CO_2 cylinders and regulators.
- Digital CO_2 measurement using NDIR sensors.
- Closed-loop dimmable lighting with PAR sensor.
- Open-loop dimmable lighting per tier.
- Lighting up to 2100 µmol/m²/s.
- Additive CO_2 control.
- CO_2 removal system.
- Extended temperature range option.
- Self-contained water-cooled condensing unit.
- Dry alarm contacts.
- Convenience receptacles.
- expansion ports.
- monitoring accessories.

Parameter	Specification
Temperature Range	5–60°C (±0.5°C) with Light on, 2-60 °C (±0.5 °C) with light off
Volume	300 L
Maximum Growing Height	12.8 inch
Interior Dimensions (W × D × H)	577 (W) × 577 (D) × 901 (H) mm
Exterior Dimensions (W × D × H)	677 (W) × 677 (D) × 1001 (H) mm
Light Intensity (6" from lamps)	220 µmol/m²/s,
Number of Tiers	2

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Why Choose Us

FIDELS Science has earned the trust of customers across the country through a strong commitment to quality, consistency, and customer satisfaction. Our laboratory instruments are manufactured using premium-quality materials and the latest technologies, ensuring compliance with the highest industry standards. We strictly follow delivery timelines and believe in building long-term partnerships by actively welcoming customer feedback and suggestions. The proven performance, durability, and reliability of our products speak for their quality and have helped us serve several prestigious clients nationwide, supported by dependable after-sales service.

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GeM Government e Marketplace

M-1 Basement, M Block, Lajpat Nagar-3, New Delhi-110024
Contact 7042040439, 9319272252
Mail: fidelsscience2022@gmail.com Web: https://fidels-scs.com/