

MULTI APPLICATION APGC-1500

Environmental Chamber

PRODUCT OVERVIEW

Apex chamber has a unique ability to fit various research applications and is flexible in its design. The Basic 1500 series can be fitted with various mix and match upgrades kits to suit a variety of applications.

Some of which are Plant Growth, and other many application.

APPLICATIONS

Plant Growth Chamber: This chamber is frequently used for soybean, Rice, Tomato, cotton or other short to medium height plants.

Arabidopsis Chamber: This chamber is frequently used for Arabidopsis Thaliana, Tobacco and other plants.

Algae Chamber: This chamber is specifically designed for Algae research.

Tissue Culture chamber: This chamber is frequently used for Plant Tissue culture in Petri plates / dished or flask.

Biological Incubator (with Light): This chamber is frequently used for Cyanobacteria, insects and simple low-cost Seed Germination.

Biological Incubator (without Light): This chamber is frequently used for c-elegans, nematodes, yeast/ fungi, insects, bacteria and BOD.

Many other applications exist for the chambers. Please compare your own requirement to the specification listed.

CONTROLLER

Apex has built a reputation of providing reliable customized options for research scientists around the world. We have collaborated with Apex to bring their new controller integrated in our chamber. Now choose from the level of functionality that meets your research needs.

Control System, features include

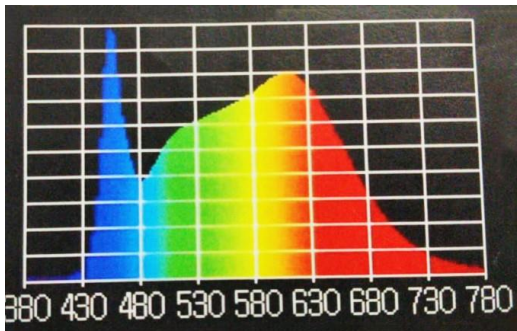
- Industrial Grade, highly reliable, solid state microcontroller architecture.
- Dual Experiment protection via integrated yet independent temperature limit shutdown.
- Ambient temperature monitoring.
- Power fail event logging.
- Single Board Electronic Solid state design.
- Durable 10-key industrial keypad with VFD display and LED indicators.
- Three programming styles: Diurnal, 24 hour, and non-24 hour (elapsed time)
- Daily light integral programming Mode.
- Programs can be run in ramping or non-ramping modes.
- Programs are created and run in real time.
- Multiple programs can be linked together to simulate natural conditions.
- RTD temperature sensor inputs.
- Three point temperature calibration.
- Two calibrations offset per input channel (one for light ON and one for lights OFF)
- Light lifetime maintenance. The controller maintains the accumulated hours that each light output has been activated. The accumulated hours can be reset for each output.
- Available programmable outputs (23) allow for user specific control requests (i.e. programmable electrical outputs).
- Highly visible alarm display with audible buzzer.
- Controller can be secured with four -level password protection.
- Field upgradable I/O expansion modules.
- Firmware updated easily uploaded via included USB thumb drive.
- Industrial grade membrane key-pad overlay for service.
- Improve troubleshooting with Systems diagnostics menu.
- Scalable analog and digital control outputs.
- Digital addressable lighting interface (DALI) control allows for light remapping without the need for rewiring.
- View current set points and process values, alarm status, alarm settings, program operation mode,
- program steps and controller time.
- Program Storage: 100+
- Date and Time clock.

LIGHTING SYSTEM

Each Lamp bank shall consist of LED tiles with Photo synthetically active radiation (PAR) spectra.

- **Type:** LED
- **LED Control:** System controlled via open loop diming as a percentage of total output in 1% increments
- **Programming:** Via real time Controller.
- **LED output color:** Cool white
- **Intensity:** @ 6" from source, 25°C (ambient)
- **Light Fixture efficacy:** 2.5 μ moles/J
- **PAR Light Range:** 430-780nm

Maximum Intensity varies according to the chamber model number.



CABINET CONSTRUCTION

- Interior -26 gauge smooth galvanized white side walls and top reinforced with 24 gauge backer plates.
- Interior floor constructed of 24 gauge #304-4 stainless steel.
- Exterior -24-gauge smooth white galvanized.
- NSF compliant seam design.
- Overall wall thickness 2" (5.1cm)
- Foamed in place non-CFC insulation (refer to insulation section)
- One 1 1/4" diameter access port on right hand wall.
- Chamber floor equipped with floor drain and hose assembly
- Contains castors, assembly and adjustable leveling legs to compensate for floor unevenness in the lab.
- Interior Volume: 1500 Liter

AIRFLOW/CIRCULATION

- Air Circulation inside chamber is from a specifically CFD designed perforated rear plenum (air is drawn at the TOP mounted unit cooler and discharged uniformly across each shelf). Horizontal Air Flow/ Vertical Air flow configurable, as per your research need.

INSULATION

- Woodless construction using 2" (5.1cm) thick foamed in place non-CFC urethane insulation with 93% closed cell, R-value of 12.5, K-value of 0.16 and density of 2.2lbs/ft³.

DOOR

- One door opening provides full access to the chamber.
- Width: 93.5cm
- Height: 146.1cm
- Magnetic Perimeter gasket provides a tight seal to door frame.
- Lock and Key

FINISH

- Interior and exterior painted with highly reflective, environmentally friendly high temperature baked white powder coating.

SHELVING

- White epoxy coated steel wire shelving. Each shelf is 100cm Width x 70 cm Depth.
- Shelving are supported by shelf clips allowing 1/2" vertical adjustment.
- Number of shelves and maximum clearance between shelves depends on model number.

WORK AREA

- 7ft² per shelf
- Total work area depends on model number and number of shelves.
- For models with multiple shelves shall be removable and adjustable such that the work space can be modified by the owner.

Refrigeration Overview

- Air cooled condensing unit.
- Continuous running condensing unit with hot gas bypass.
- Ceiling mounted, copper coil, aluminum fin evaporator coil.
- System cycle between heat and cool for precise temperature control around the temperature set point.
- Adjustable expansion valve provided.
- Solenoid valve cycle between hot gas and cooling loops.
- Extended stem-type for long and quiet operation.
- Self contained condensing unit located on top of each chamber for best performance and cleaner operation.
- 1/3 Hp condensing unit.

Temperature Control

- **Working Temperature maximum:** +45°C
- **Working Temperature minimum:** 2°C with lights OFF.
- **Setting accuracy:** 0.1°C
- **Temperature stability @ all set temp- (Lights ON/OFF):** 0.5°C
- **Temperature stability @ 25°C:** ± 0.3°C
- Dual (redundant) adjustable high and low temperature safety controls, audible alarms and visual indicators are provided. The controls shutdown all power to the chamber, activates alarms and automatically controls the temperature at the safety value. When the temperature returns to the normal range, the system will automatically reset.
- Compressor over temp protection
- Over pressure protection
- Compressor Delay starts (Power ON).
- Temperature Deviation alarm.
- Multiple Day/Night Offset for Temp.

HUMIDITY CONTROL (OPTIONAL)

- The section outlines the H3 PAN type humidity option having Humidifier and Dehumidifier with Electronic RH sensor.
- Additive humidity control of 40-85% for set temperature between 15-30°C (Light OFF)
- Extended Humidity ranges available. (See other specification sheet or consult for additional information)
- If a humidity option is selected, a de-mineralized water supply is required which terminates to a ½" MPT connector.
- The Performance of Humidity control is dependent upon the laws of thermodynamics.

ACCESSORIES

- One access Port with cover.
- One (2Amps) convenience outlet.

ELECTRICAL REQUIREMENT

- 230 VAC, Single Phase, 50Hz.
- Power consumption, Basic unit (without any optional/other load): Less than 1650 watts (all models)
- Power varies according to model and options ordered.

OPTIONS (MOST POPULAR)

- Glass Door
- Connect with Android based Touch screen controller
- Pan Type Humidifier with Electronic RH sensor
- Ultrasonic Humidifier with Electronic RH sensor
- Ultrasonic Humidifier with Dehumidifier with Electronic RH sensor
- Door with observation Window and cover
- Additional Steel Wire Shelves
- Stainless Steel shelf

(Consult for optional and accessories for any specific need)

UPGRADE KIT

- Single Tier of 600umole Lamp bank
- Single Tier of 300umole Lamp Bank

Disclaimer: Specification subject to change without notification.

Date Issued: May 2020 Version: APGC-1500
Trademarks are property of respective owner.

SPECIFICATION

Model	Light Intensity 6" from lamps	Temperature Range with all lights on	Interior Space volume	Total Shelving Floor Area	Maximum Growing Height	Exterior Dimensions			Tiers
						width	depth	height	
	μmoles/m ² /s	°C	m ³	m ²	cm	cm	cm	cm	
Plant Growth									
						41 (in)	33.6 (in)	77.2 (in)	
APGC-1500 L3PG	600	10-45±0.5	1.5	2	36.8	104.1	85.4	196.1	3
APGC-1500 L2PG	600	10-45±0.5	1.5	1.4	57.4	104.1	85.4	196.1	2
APGC-1500 L1PG	600	10-45±0.5	1.5	0.7	119.9	104.1	85.4	196.1	1
Algae									
APGC-1500 L4AL	350	10-45±0.5	1.5	2.8	25.7	104.1	85.4	196.1	4
APGC-1500 L3AL	350	10-45±0.5	1.5	2	36.8	104.1	85.4	196.1	3
Arabidopsis									
APGC-1500 L5AR	300	07-45±0.5	1.5	3.5	20.6	104.1	85.4	196.1	5
APGC-1500 L4AR	300	05-45±0.5	1.5	2.8	25.7	104.1	85.4	196.1	4
APGC-1500 L3AR	300	04-45±0.5	1.5	2	36.8	104.1	85.4	196.1	3
Tissue Culture									
APGC-1500 L5TC	200	07-45±0.5	1.5	3.5	20.6	104.1	85.4	196.1	5
APGC-1500 L4TC	200	05-45±0.5	1.5	2.8	25.7	104.1	85.4	196.1	4
Incubators									
APGC-1500 L5IN	100	04-45±0.5	1.5	3.5	20.6	104.1	85.4	196.1	5
APGC-1500 NL	No Light	02-45±0.5	1.5	3.5	20.6	104.1	85.4	196.1	5
APGC-1500SG	No Light	02-45±0.5	1.5	9.6	6.7	104.1	85.4	196.1	15

- Requires 8" clearance right and back side for air circulation and 37" for front door opening.
- **Environment condition:** Room Temp - 24°C, RH – 50% for optimum performance.



MULTI APPLICATION APGC-1500 Chamber

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