

# MULTI APPLICATION CHAMBER

## MODEL: AMG650-C

### Plant Growth Chamber

#### APPLICATIONS:

Designed for precision-controlled plant research, this versatile Plant Growth Chamber is optimized for a wide range of species, including soybeans, *Arabidopsis*, tomato, chickpea, rice, cotton, and many other models and crop plants. It provides highly stable environmental conditions-temperature, humidity, photoperiod, and light intensity.

#### CONTROLLER:

Control System Key Features:

- Industrial-grade, highly reliable solid-state microcontroller architecture.
- Single-board PID based controller, high-durability 10-key industrial control keypad.
- Dual experiment protection with integrated and independent temperature-limit shutdown.
- Ambient temperature monitoring capability.
- Event logging for power failures.
- Three programming styles: Manual, **Diurnal (Light/Dark)**.
- Daily Light Integral (DLI) programming mode.
- Supports 24-hour multi-step operation with selectable ramping and non-ramping modes.
- Allows non-24-hour operation using the elapsed-time mode.
- Programs are created and executed in real time.
- Multiple programs can be linked to simulate natural environmental conditions.
- RTD temperature sensor inputs for high-accuracy measurement.
- Three-point temperature calibration for precise control.
- Dual calibration offsets both light ON and Off, light lifetime alarm.
- Light lifetime tracking: controller records total operating hours per light output with individual reset options.

- Up to **23 programmable outputs** for user-specific control requirements.
- Highly visible alarm display with an audible buzzer.
- Four-level password-protected access for enhanced controller security.
- Field-upgradable I/O expansion modules.
- Firmware easily updated via included USB flash drive.
- Industrial-grade membrane keypad overlay for long service life.
- Advanced diagnostics menu for improved troubleshooting. Event logging for failure.
- DALI (Digital Addressable Lighting Interface) support for light remapping without rewiring.
- Real-time view of set points, process values, alarm status, alarm settings, program mode, and min/max values. Program steps & controller time.
- Program storage capacity of **100+ programs**.
- Integrated date and time clock.
- VFD display with LED indicators.

#### WORK AREA:

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

#### DOOR:

- The chamber allows full access through its One opening doors. Magnetic gasket provides a tight seal to door frame, Lock and Key.

<b>MODEL</b>	<b>AMGC650-C</b>
<b>Temperature Range</b>	0-45+/-0.5°C
<b>Temperature accuracy</b>	0.1°C
<b>Shelves</b>	2 tiers
<b>Total Shelving Area</b>	2m <sup>2</sup>
<b>Volume</b>	1200 Liters
<b>Growing height</b>	60.2 cm per tier
<b>Light intensity</b>	450 μmol/m <sup>2</sup> /s
<b>Exterior dimension (mm)</b>	W 1010 x D 850 x H 1920
<b>Electrical supply</b>	Single phase, 220V 50Hz

### FINISH:

- The interior and exterior surfaces are finished with a highly reflective, environmentally friendly white powder coating, cured at high temperatures.

### Temperature control:

- Temperature: 2-45°C +/-0.5°C Light ON, 0-45°C +/-0.5°C with lights OFF. Setting accuracy: 0.1°C
- Dual (redundant) adjustable high and low temperature safety controls, audible alarms and visual indicators are provided. The controls shut down all power to the chamber, activate alarms, and automatically control 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). Multiple Day/Night cycle.

### SHELVING:

- White epoxy coated steel wire shelving. Each shelf is 94 cm x 70 cm (W x D). Two tiers which are supported by shelf clips allowing ½” vertical adjustment.

### REFRIGERATION OVERVIEW:

- Air cooled condensing unit. Cooling coils are suitable for various applications.
- 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. Heating and Cooling with precise temperature regulation

(CFC/HCFC free Urethane) accomplishment through the top mounted inbuilt compressor.

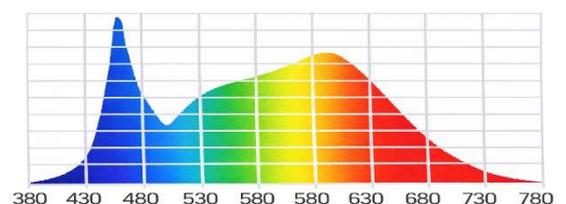
- Adjustable expansion valve provided.
- Solenoid valve cycles between hot gas and cooling loops.
- Extended stem-type for long and quite Operation.
- Self-contained condensing unit located on top of each chamber for best performance.

### 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 discharge.)
- Chamber floor equipped with floor drain and hose assembly.
- Contains castors, assembly and adjustable leveling legs to compensate for floor unevenness in the lab.
- Overall wall thickness 5.1 cm
- One 1 1/4” diameter access port on right hand wall. Exterior 24-gauges smooth white galvanized.
- Polyurethane foam insulation, woodless construction using 5.1cm thick foamed in place CFC Free insulation.

### LIGHTNING SYSTEM:

- Illuminated growth chamber with horizontal LED lightening system (With PAR spectrum) top mounted in each tier. Intensity programmable through controller, Growth chambers with diurnal settings for studying day and night cycle.
- Light intensity 450 μmol/m<sup>2</sup>/s for each tier measured from 15 cm from source with 0-100% Dimmable features and 1% light setting.



### **HUMIDITY CONTROL [Optional]**

- Ultrasonic humidifier up to 95% ( $\pm 3\%$ ), Ultrasonic humidifier and dehumidifier 40-95% ( $\pm 3\%$ ), PAN Humidifier up to 95% ( $\pm 3\%$ ), PAN Humidifier and dehumidifier 40-95% ( $\pm 3\%$ ).

### **CABINET CONSTRUCTION:**

- Made with smooth 26-gauge galvanized white side panels and top, reinforced with 24-gauge backing plates.
- The floor inside is constructed from 24-gauge #304-4 galvanized stainless steel and finished with a white reflective coating.
- Exterior made of smooth 24-gauge white-galvanized steel.

### **OPTIONS:**

- Additive CO<sub>2</sub> Control.
- Co<sub>2</sub> removal system, Co<sub>2</sub> cylinder. Co<sub>2</sub> regulator.
- Dry alarm contacts, Door with viewing window.
- Dimmable lightning with PAR light sensor, dimmable lightning only.
- Dimmable light each tier.
- Temperature ranges available up to 60 °C.
- Power points inside the plant growth chamber
- Computer connection.
- Voltage stabilizer, water purification system.
- Light intensity extension available up to 2100 $\mu\text{mol}/\text{m}^2/\text{s}$  for enhanced performance.
- Additional lighted tiers can be added according to requirement

