



# GENEVA SCIENTIFIC

LAB EQUIPMENT SOLUTIONS

## WALK IN PLANT GROWTH CHAMBER - PGW-40



|                                 |                        |
|---------------------------------|------------------------|
| Model                           | PGW-40                 |
| Exterior Dimensions (WxDxH)     | 120" x 70" x 102"      |
| Temp. Range (w/ lights on)      | 10-44C +/- 1.0C        |
| Interior Space                  | 378 cu.ft.             |
| Total Shelving Floor Area       | 43 sq.ft.              |
| Maximum Growing Height          | 79"                    |
| Light Intensity (6" from lamps) | 1000 micromoles/m2/sec |
| Number of Tiers                 | 1                      |

### CONTROL SYSTEM

- \*IntellusUltra control system
- \*Single-board electronic solid-state design (all of the input, output and Ethernet communication components are integrated on the controller)(a durable membrane keypad is utilized for data entry)
- \*Controller utilizes a simple menu-driven method for inputting programs and settings
- \*Three programming styles, Diurnal, 24-hour programming and Non 24-hour programming (elapsed time)
- \*Highly visible display shows settings and chamber conditions
- \*RTD temperature sensor input
- \*Programs are created and run in real time
- \*Ramping and non-ramping program methods available
- \*Multiple programs can be linked together to simulate natural conditions
- \*Two calibration offsets per input channel must be provided
- \*Available programmable outputs allow for user specific control requests (i.e. programmable electrical outlets)

- \*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)
- \*Help system provides assistance with setting and programs
- \*Controller can be secured with four-level password protection
- \*Ethernet port provides communications via a local network or Internet (controller can be accessed directly from the network or Internet)
- \*The following are some key features:
  - View current set points and process values, alarm status, alarm settings, program operation mode, program steps and controller time
  - Modify and run manual settings
  - Modify alarm settings
  - Configure defrost settings (if applicable)
  - View and reset light lifetime for lamp maintenance
  - Configure, modify and run diurnal program
  - Configure, modify and run multi-step programs
  - Sequence multi-step programs
  - Modify calibration offsets
  - Configure security logins/passwords
  - Configure email addresses for alarm and current chamber status notifications (Note: Requires customer supplied email server [email server must allow unauthenticated email to be sent from the server])

## WALK IN PLANT GROWTH CHAMBER - PGW-40

### CONSTRUCTION

\***Exterior Dimensions:** 120"W x 70"D x 102"H

(Control box adds 7" to chamber depth and roof mounted condensing unit adds 24" to chamber height)

\***Interior Dimensions:** 99.3"W x 62"D x 84"H

\***Growth Area:** 42.7 sq.ft.

\***Growth Height:** 84" between perforated aluminum channel floor and the lamp bank barrier

\***Light Fixture:** Fixed light fixture is separated from the chamber growth space via a thermal barrier (light fixture has an independent temperature control system from the chamber [lamp heat exchangers are provided to dissipate lamp heat])

\***Insulation:** The insulation shall be "foamed-in-place" polyurethane with 97% closed cell structure and in-place density of 2.2 lbs per cubic foot. Overall thickness shall be 4" with an R factor of 32. The polyurethane insulation must retain dimensional stability in an operating temperature range of -40C to 121.1C.

\***Door:** The room has two front doors (each door is a flush type for a 32" x 78" door opening). Provided with a magnetic snap-in perimeter gasket, self-closing cam lift gravity hinges, a Posi-Seal door closure and a key lockable latch handle with an inside safety release. Door jambs are made of fiberglass reinforced plastic. Doors include an interior safety release. Both doors are also provided with a thermal pane window and hinged, gasketed cover.

\***Observation Window:** A thermal-pane 14" x 14" window is provided for interior viewing. A light tight cover is provided.

\***Cabinet Construction:** All rooms are built in panel sections.

-Each section consists of 4" thick urethane insulation, metal interior and exterior surfaces, cam-type fasteners and vinyl gaskets

-Panels are manufactured in one-foot increments up to a maximum of four feet wide

-Standard corner sections are 90 degree angles with either 12"x6" or 6"x12" sides

-Panel edges are made by molding tongue and groove to facilitate assembly

-A balloon type, NSF-listed PVC gasket is permanently foamed in place on opposite sides of tongue edges to accomplish an air-tight seal between panels

-Panels are joined by engaging Posi-Locs embedded into the insulated panel edges (Posi-Loc access holes are covered with vinyl snap caps)

-All interior corners and floor-wall-ceiling joints shall have a 3/8" radius for ease of cleaning

\***Finish:** Standard metal exterior is 26-gauge embossed white galvanized steel, interior wall and ceiling surfaces are 24-gauge smooth steel with a baked white enamel finish (other optional metals are available upon request) (standard exterior ceiling metal is 26-gauge galvalume steel)

\***Floor:** Insulated floor provided with center drain exiting either at front or rear of chamber

\***Instrument Ports:** Two 1" diameter ports provided through front wall

### LIGHTING

\***Light Intensity:** Up to 1000 micromoles/m<sup>2</sup>/sec at 6" from lamps

\***Lamps:** Balance spectrum for plant growth using T-5 fluorescent lamps plus extended life tungsten incandescent lamps

\***Programming and Control:** Photoperiod is programmable via real time controller (five programmable levels of fluorescent lighting and two programmable levels of incandescent lighting)

\***Canopy Barrier:** A transparent barrier, located between the lamp canopy and growing space is provided to promote temperature uniformity within the growing space. Barrier is optimized to allow light into the growing space, while containing a majority of the heat produced by the lamps within the canopy. Barriers may easily removed for cleaning or replacement.

\***Light Reflector:** Specular aluminum light reflectors

\***Light Fixture Temperature Control:** Patent pending lamp bank that is specifically designed to optimize energy efficiency by managing the heat inside the lamp bank. Design produces a constant light irradiance throughout the chamber's temperature range. Lamp heat exchangers are provided to dissipate lamp heat. An independent temperature controller will keep the lamp bank at the bulb's optimal operating temperature.

\***Light Fixture Design:** Patent Pending Design (filed January 9, 2007, U.S. Serial No. 11/621,412)

### COOLING/HEATING SYSTEM

\*Chamber provided with hot gas bypass refrigeration system to provide heating and cooling.

\***Condensing Unit:** Water-cooled, located on chamber roof

\***Refrigeration Valves:** Solenoid type with extended stem for long life and quiet operation

\***Compressor Type:** Scroll

\***Refrigerant Type:** R-134a

\***Heat:** Via hot gas and electric heaters

\***Chamber Growth Space Evaporators:** Dual evaporator's designed (one coil in each side wall of the chamber to maximize chamber performance)

\***Light Fixture Evaporators:** Two lamp heat exchangers are provided to dissipate lamp heat. Heat exchangers are independent from the chamber growth space evaporators. An independent temperature controller and valves will keep the lamp bank at the bulbs optimal operating temperature.

## WALK IN PLANT GROWTH CHAMBER - PGW-40

### AIRFLOW

\***Air Flow:** Uniform vertical (upward) airflow through the perforated aluminum channel false floor

\***Fresh Air:** Adjustable forced air exchange system to provide up to 20 air exchanges per hour of fresh air to the room

### TEMPERATURE CONTROL

\***Temperature Range:** 10-44C (+/- 1C) lights on and 4-44C (+/- 0.5C) lights off

\***Temperature Uniformity:** +/- 1C within work area on a horizontal plane

-Adjustable high and low temperature controls, audible alarms and visual indicators provided

-Controls shut down all power to the room, activate alarm and automatically control the temperature at the safety value (when the temperature returns to the normal range, the system will automatically reset)

-Dry-alarm contacts are provided for connection to remote alarm monitoring system

\***SENCEAIR:** Sensing device located in the chamber growth area continuously sampling chamber air for accurate controlling and recording independent of lamp radiation

### ACCESSORIES

\*Two duplex convenience outlets provided (GFCI)

### ELECTRICAL REQUIREMENTS

\***Chamber Requirements:** Consult Geneva Scientific for electrical requirements and amperage draw

\***Chamber Disconnect Switch:** Electrical lockable disconnect at room will be provided

\***Condensing Unit Requirements:** Consult Geneva Scientific for electrical requirements and amperage draw

\***Condensing Unit Disconnect Switch:** Electrical lockable disconnect near condensing unit will be provided

### INSTALLATION

\*Complete product installation performed by qualified, factory trained installation staff

### OPTIONS:

\*Remote Air-Cooled Condensing Unit

\*Dimmable Lighting

\*Additive Humidification Control with Sensor

\*Dehumidification with Sensor

\*Additive CO2 Control

\*Android-Based Touch Screen

\*LED Lighting in Lieu of Fluorescent Lamps

\*Increase in Light Intensity



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