



GENEVA SCIENTIFIC

LAB EQUIPMENT SOLUTIONS

WALK IN PLANT GROWTH CHAMBER - AR-89L3



Model	AR-89L3
Exterior Dimensions (WxDxH)	96" x 108" x 114"
Temp. Range (w/ lights on)	10-44C +/- 1.0C
Interior Space	540 cu.ft.
Total Shelving Floor Area	96 sq.ft.
Maximum Growing Height	24"
Light Intensity (6" from lamps)	300 micromoles/m2/sec
Number of Tiers	3

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])

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CONSTRUCTION

***Exterior Dimensions:** 96" W x 108" D x 102" H

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

***Interior Dimensions (growth volume):** 82" W x 100" D x 89" H

***Usable Interior Volume:** 408 cu.ft.

***Internal Height:** 89" (from floor to bottom of fan guard)

***Growth Area:** 96 sq.ft. (provided on twelve adjustable shelves [three tiers])

***Shelving:** The chamber is supplied with three tiers of vertically adjustable shelving in 1" increments consisting of four stand alone mobile with wheels Metro shelving units. Each shelving unit consists of three shelves each 24" W x 48" L with four posts and four caster similar to Metro item 5MPBXGSA. Each shelf is electro-zinc plated with a single-dip chromate post treatment after welding. Surfaces additionally protected against rusting with a hard baked plastic resin coating after plating. This Metroseal 3 finish is enhanced with built-in Microban antimicrobial product protection, which protects the Metroseal 3 coating from bacteria, mold, mildew and fungi that cause odors, stains and product degradation.

***Growth Height:** Adjustable up to 24" per tier when using three tiers of shelving without casters

***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 door is a flush type for a 36" 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 sills are made of 18-gauge stainless steel attached to an aluminum base plate and covered with anti-skid strips. Door jambs are made of fiberglass reinforced plastic.

***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:** Chamber is erected on existing building floor by means of coved vinyl screeds which are lagged to existing floor for rigidity (the wall panels sit inside these vinyl screeds which act as an insulator between the cement floor and the wall panels)

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

***Control Cabinet:** Controller shall be mounted at eye level (a clear plexiglass cover shall protect controls from damage and shall be furnished with lock and two keys)

LIGHTING

***Light Intensity:** Up to 300 micromoles/m²/sec at 6" from lamps

***Lamps:** Balance spectrum for plant growth using T-8 fluorescent lamps plus extended life tungsten incandescent lamps

***Programming and Control:** Photoperiod is programmable via real time controller (three programmable levels of lighting)

***Light Fixtures:** There are twelve light fixtures per chamber (three tiers). Each fixture is removable and individually adjustable.

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

***Evaporators:** Ceiling mounted, copper tube construction and aluminum fins

***Condensing Unit Water Consumption:** 2.6 GPM (60F water inlet and 80F water outlet)

AIREFLOW

***Air Flow:** Uniform air circulation across each shelf via air diffusers on the side walls

***Fresh Air:** Adjustable forced air exchange system to provide up to 20 CFM of fresh air to the room

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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



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