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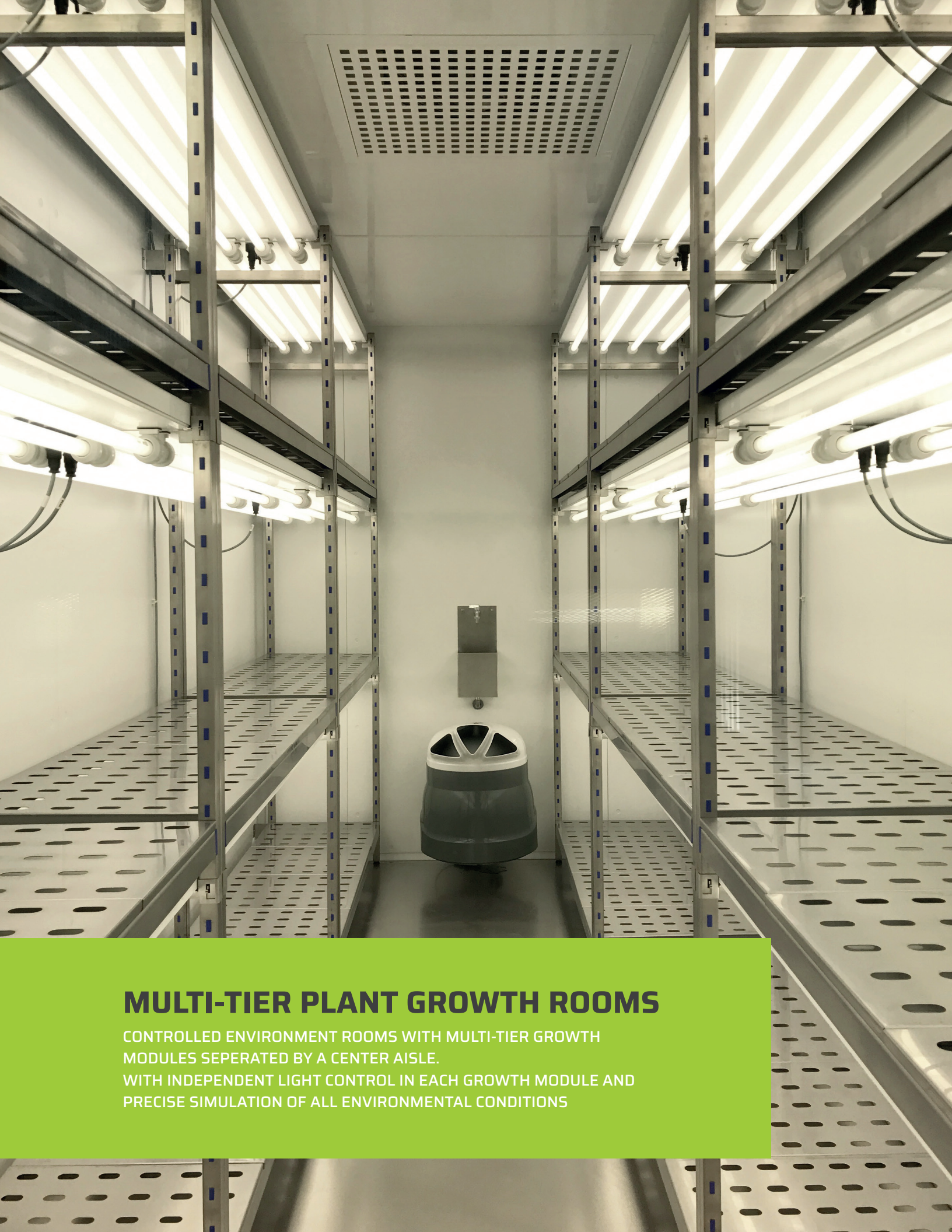
BIO

WALK-IN PLH GROWTH CHAMBERS

MULTI-TIER PLANT GROWTH CHAMBERS CONTROLLED ENVIRONMENT GROWTH ROOMS



MULTI-TIER PLANT GROWTH ROOMS

CONTROLLED ENVIRONMENT ROOMS WITH MULTI-TIER GROWTH MODULES SEPERATED BY A CENTER AISLE.
WITH INDEPENDENT LIGHT CONTROL IN EACH GROWTH MODULE AND PRECISE SIMULATION OF ALL ENVIRONMENTAL CONDITIONS

memmert

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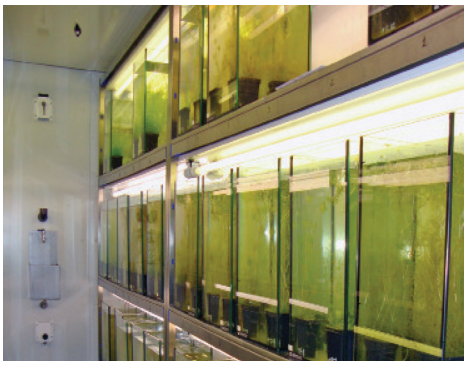
Benefit from the combined strengths of two industry leaders. Memmert, a pioneer in climate and temperature control since 1933, and Aralab, known for its innovation in walk-in climate chambers since 1985, bring decades of specialized knowledge to the table. This collaboration ensures that customers receive the highest quality solutions, backed by the expertise of two of the most trusted names in the industry.



WALK-IN PLH GROWTH CHAMBERS

PROVIDE THE CONTROL AND FLEXIBILITY TO MEET THE EVOLVING NEEDS OF RESEARCHERS AND RESEARCH REQUIREMENTS THROUGH TIME.

KEY FEATURES

- Temperature, Humidity, Light intensity and Air Flow controlled with consistent precision through the years
- Adaptive future proof design with easily removable trays and height adjustable shelves
- Lighting options to suite multiple research requirements and stages of plant development
- All environmental conditions easily programmable with the new ClimaPlus® multicolour touchscreen interface
- Stainless steel shelves for maximum resistance, durability and easy cleaning
- Research protection features, with configurable high/low temperature and humidity alarms and automatic remote notifications

COMMON APPLICATIONS INCLUDE

- PLANT GROWTH
- TISSUE CULTURE / IN-VITRO
- ARABIDOPSIS
- GERMINATION
- ALGAE RESEARCH
- ENTOMOLOGY
- INSECT REARING
- OTHER LIFE SCIENCES APPLICATIONS

ISO 9001 BUREAU VERITAS Certification

Certified ISO:9001 for its Quality Management System
Certified ISO:14001 for its Environmental Management System

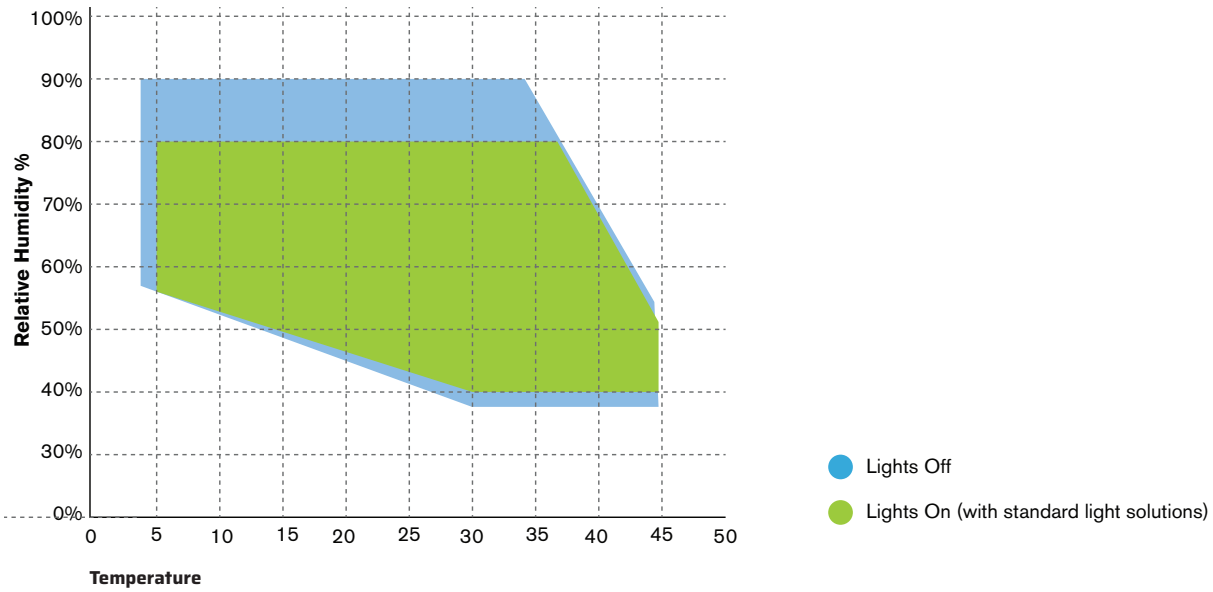
TECHNICAL SPECIFICATIONS

WALK-IN PLH GROWTH CHAMBERS

TEMPERATURE RANGE [1]	Lights On: +5ºC to +45ºC Lights Off: 0ºC to +45ºC
TEMPERATURE UNIFORMITY IN SPACE	± 1,0ºC (Lights Off)
HUMIDITY RANGE [1] (PLH Models)	Lights On: 40 to 80% rH Lights Off: 40 to 90% rH
HUMIDITY UNIFORMITY IN SPACE	± 2 % rH (Lights Off)
TIERS / SHELVES / LIGHT BANKS	Flexible interior configuration, allowing from 2 to 3 tiers on each side of the chamber. Number of shelves and light banks dependent on chamber size and tiers. Admissible weight load: 200Kg per shelf.
STANDARD GROWTH AREA [2] FitoClima 5.000 FitoClima 12.000 FitoClima 20.000	0,75 m² per shelf (1.500mm x 500mm) 4,5 m² (approx 6,975 in²) 9 m² (approx 13,950 in²) 13,5 m² (approx 20,925 in²)
GROWTH HEIGHT	Approximately 450mm (17.72") per shelf / tier with the 3 tier configuration, and 770mm (30.31") with 2 tier configuration. More or less growth height can be configured in 45mm (1.77") increments.
LIGHT TYPE AND INTENSITY [3]	
Light Type	**Approximate intensity per shelf (±10%)**
LED lights in White. 4 tubes per shelf	+300 µmol/m²/s (+ 21.500 Lux)
LED lights in White. 8 tubes per shelf	+600 µmol/m²/s (+ 43.000 Lux)
AIRFLOW SPEEED	Between 0,3 to 1 meter per second. Adjustable by set point % at the touch screen controller

[1] Temperature and Humidity performances with Lights ON can be affected by the chosen light configuration and light intensity set-point. Due to heat dissipation from the lamps - depending on the chosen type of light solution - high light intensities can affect Temperature and Humidity performances and Uniformity values. Please consult us for specific information regarding the combination of light types, intensities, and how they can affect temperature and humidity performances.
[2] Other shelf dimensions available. Standard configuration assumes 3 tiers on both sides with controlled light intensity.
[3] Measurements at 150mm from light source at 25ºC. Other lighting combinations available.

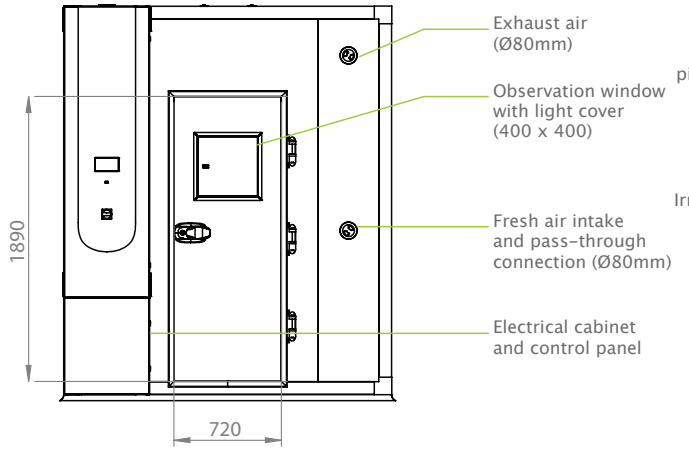
TEMPERATURE AND HUMIDITY WORKING RANGE

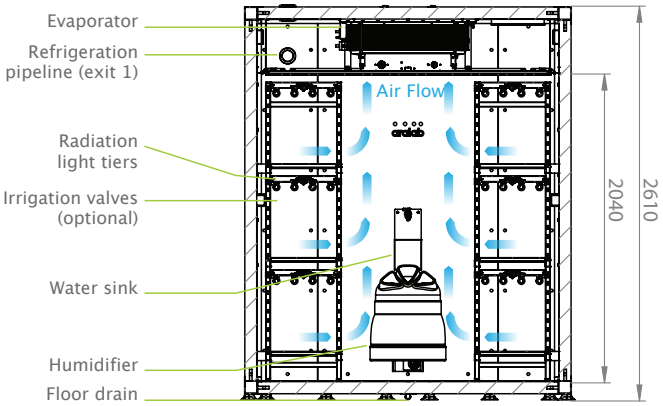


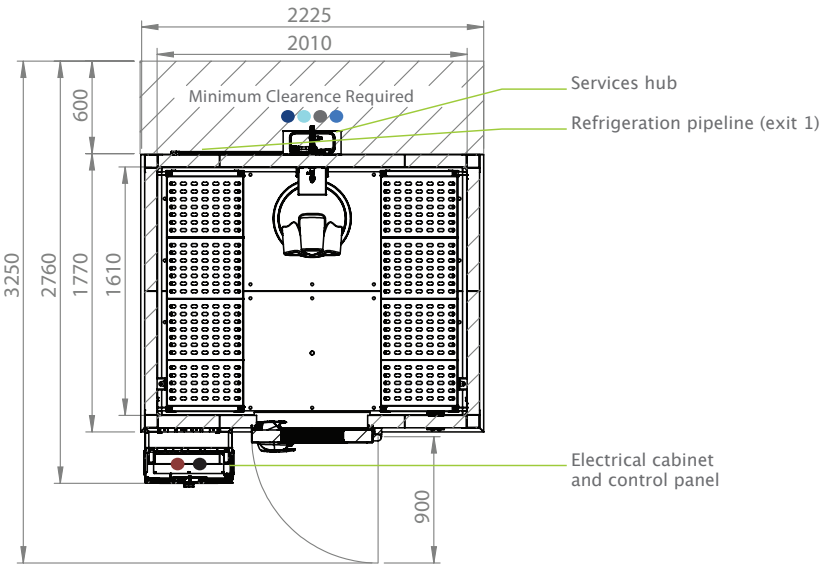
DIMENSIONS AND DRAWINGS

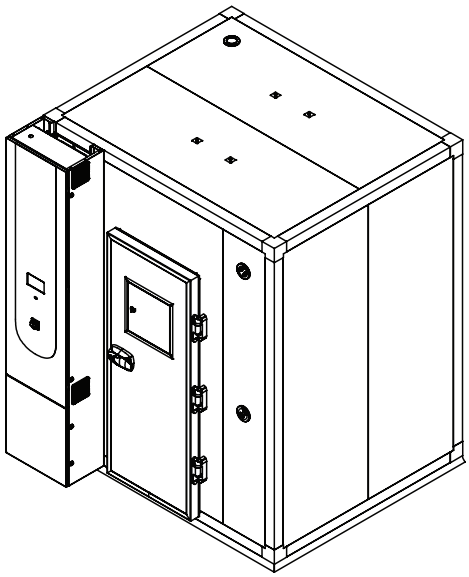
WALK-IN PLH GROWTH CHAMBERS 5.000

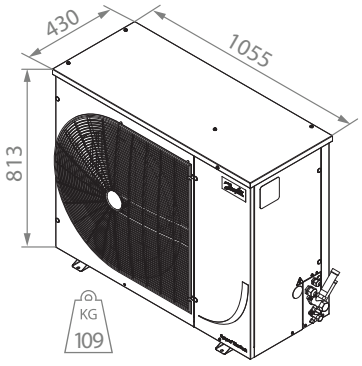
EXTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.610 x 2.225 x 2.160 (3.250 with open door) (in) 102.76 x 87.60 x 85.04 (127.95 with open door)
INTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.040 x 2.010 x 1.610 (in) 80.31 x 79.13 x 63.39











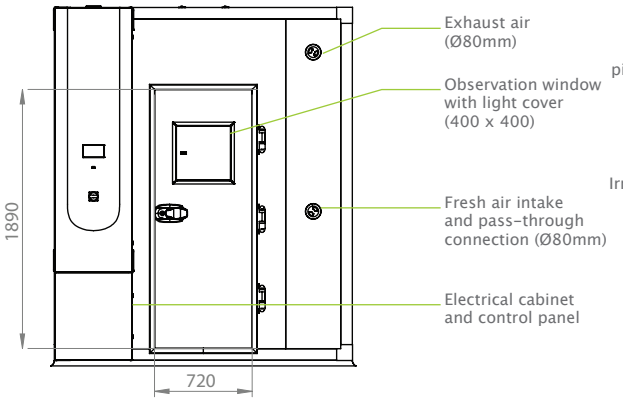
Condensing unit
Should be installed in the exterior, sheltered for direct sunlight, snow, rain or dust.

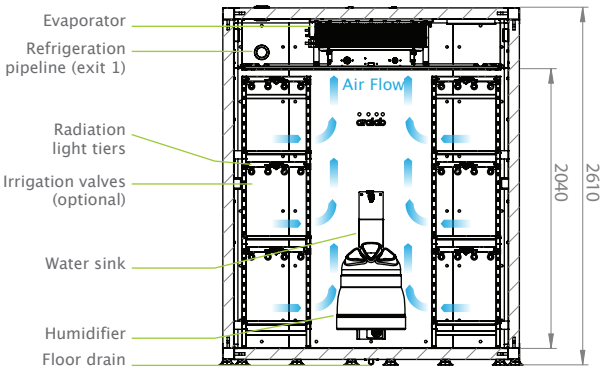
1. Standard refrigeration system is air cooled
2. Services hub installation needs:
   - ¾" demineralized water supply
     Condutivity: <50µS/cm , TDS <35PPM
     Pressure: 1-5 BAR
     Maximum theorical water consumption 6,5L/h
   - 50mm water drain at floor level
   - ¾" tap water supply
   - ¾" irrigation valve system
3. Electrical cabinet installation needs:
   - Supply power: 208VAC, 60Hz, 50A / 3-Phase + Neutral + Ground
     Electrical protection: Circuit breaker 3 x 63A + N with 30A differential
     3-Phase electrical cable RV-K 5G4 on the top
   - RJ45 Ethernet socket communication port on the top
4. Equipment Weight (approximate): 715 kg

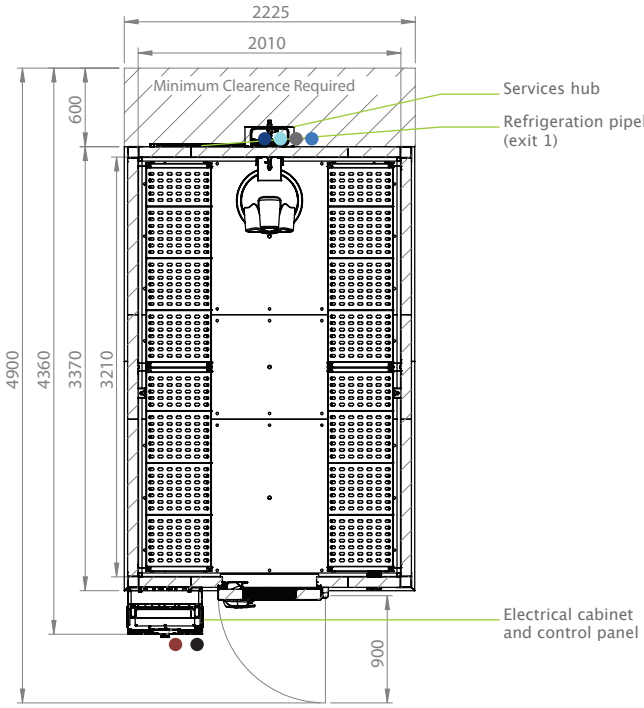
DIMENSIONS AND DRAWINGS

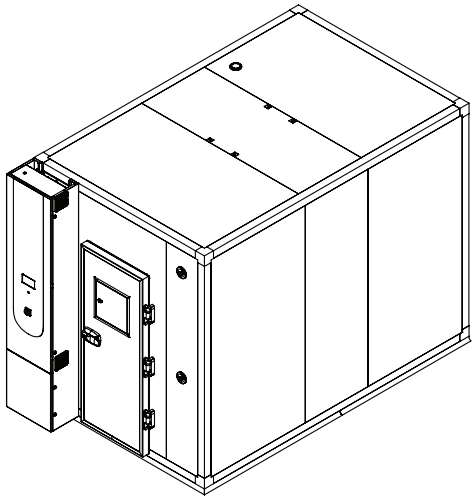
WALK-IN PLH GROWTH CHAMBERS 12.000

EXTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.610 x 2.225 x 4.360 (4.900 with open door) (in) 102.76 x 87.6 x 171.65 (192.91 with open door)
INTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.040 x 2.010 x 3.210 (in) 80.31 x 79.13 x 126.38



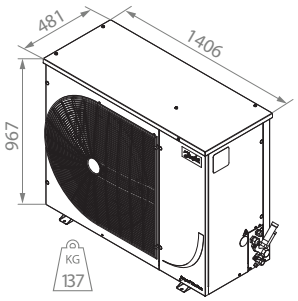






1. Standard refrigeration system is air cooled
2. Services hub installation needs:
   - ¾" demineralized water supply
     Condutivity: <50µS/cm , TDS <35PPM
     Pressure: 1-5 BAR
     Maximum theorical water consumption 6,5L/h
   - 50mm water drain at floor level
   - ¾" tap water supply
   - ¾" irrigation valve system
3. Electrical cabinet installation needs:
   - Supply power: 208VAC, 60Hz, 50A / 3-Phase + Neutral + Ground
     Electrical protection: Circuit breaker 3 x 63A + N with 30mA differential
     3-Phase electrical cable RV-K 5G4 on the top
   - RJ45 Ethernet socket communication port on the top
4. Equipment Weight (approximate): 1050 kg

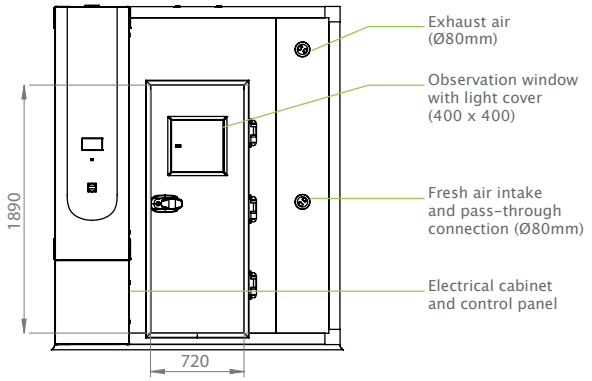
Condensing unit
Should be installed in the exterior, sheltered for direct sunlight, snow, rain or dust.

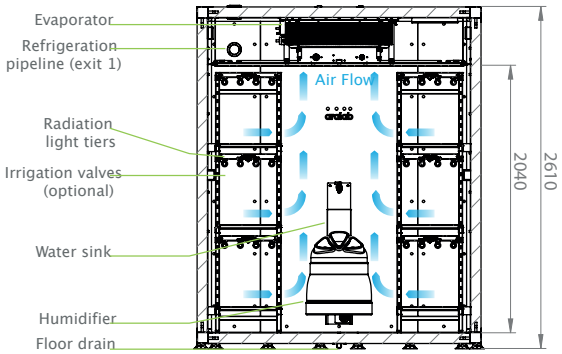


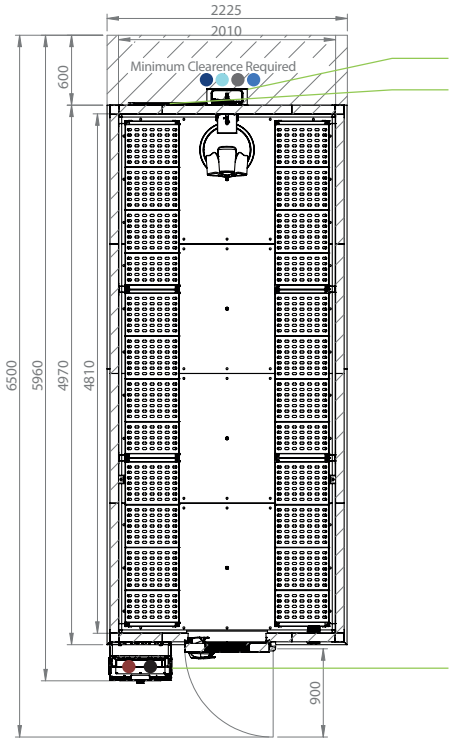
DIMENSIONS AND DRAWINGS

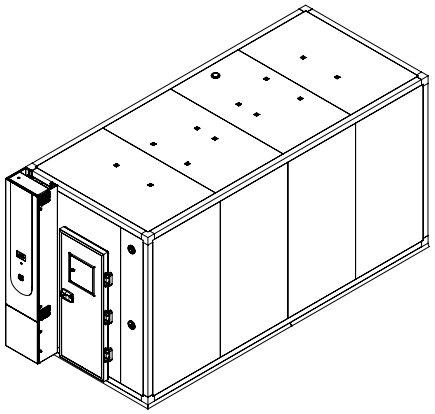
WALK-IN PLH GROWTH CHAMBERS 20.000

EXTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.610 x 2.225 x 5.960 (6.500 with open door) (in) 102.76 x 87,6 x 234,65 (255,91 with open door)
INTERNAL DIMENSIONS (HxWxD) (mm) (inches)	(mm) 2.040 x 2.010 x 4.810 (in) 80.31 x 79,13 x 189,37

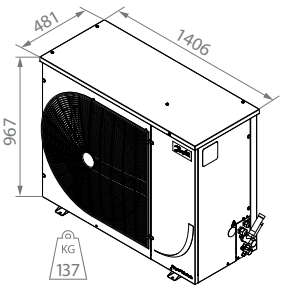








Condensing unit
For better performance and durability, Should be installed in the exterior, sheltered for direct sunlight, snow, rain or dust

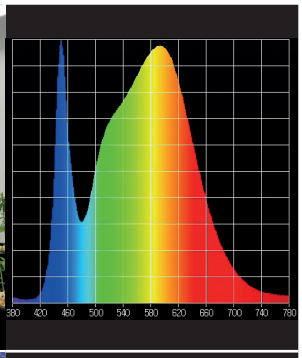


1. Standard refrigeration system is air cooled
2. Services hub installation needs:
   - ¾" demineralized water supply
     Condutivity: <50µS/cm , TDS <35PPM
     Pressure: 1-5 BAR
     Maximum theorical water consumption 6,5L/h
   - 50mm water drain at floor level
   - ¾" tap water supply
   - ¾" irrigation valve system
3. Electrical cabinet installation needs:
   - Supply power: 208VAC, 60Hz, 55A / 3-Phase + Neutral + Ground
     Electrical protection: Circuit breaker 3 x 63A + N with 300mA differential
     3-Phase electrical cable RV-K 5G4 on the top
   - RJ45 Ethernet socket communication port on the top
4. Equipment Weight (approximate): 1400 kg

LIGHT TYPES AND INTENSITIES

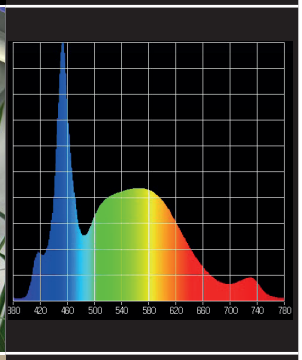
COOL-WHITE LED 4000K

Shelves with 4 tubes: 300 µmol/m²/s (at 150mm)
Shelves with 8 tubes: 600 µmol/m²/s (at 150mm)



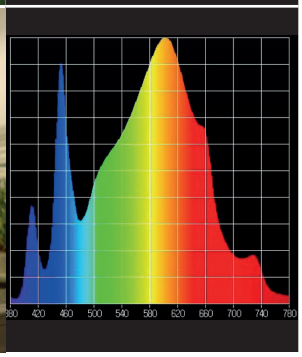
ENHANCED COOL-WHITE LED
(White 4000K LED with UVA and FR compensation)

Shelves with 4 tubes: 400 µmol/m²/s (at 150mm)
Shelves with 8 tubes: 600 µmol/m²/s (at 150mm)

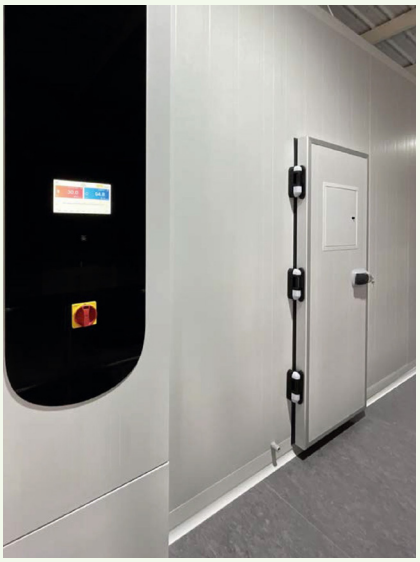


WARM-WHITE LED 3000K

Shelves with 4 tubes: 400 µmol/m²/s (at 150mm)
Shelves with 8 tubes: 600 µmol/m²/s (at 150mm)



EQUIPMENT DESCRIPTION



CONSTRUCTION

- Exterior: EN 14509 sandwich type high density injected polyurethane foam modular panels, 80 mm thick (other thicknesses available for different specific insulation requirements) with galvanized steel in light gray plastic finish. CFC-free.
- Floor: slip resistant AISI 304 stainless steel floor
- Walls: Galvanized steel with white epoxy paint
- Shelving and trays: highly resistant AISI 304 stainless steel
- 80mm Ø entry-port
- New generation multi-color touch-screen ClimaPlus© controller
- Door with sealing gasket, observation window, key lock and safety opening mechanism from the inside
- Open door alarm with configurable time-out function
- Free slots for connecting and integrating external devices with the ClimaPlus controller (CO_2, Auto Irrigation, Aeration, Radiometers and other)
- Entomology and Insect rearing rooms have 'flicker-free' ceiling lights and special low-noise blower. In addition to a particulate air filter located on the evaporator inlet, the system is also protected by a phenolic resins coating

CLIMATIC CONTROL

- Air cooled, CFC free, mechanical refrigeration by sealed condenser group
- Dual heating technology with hot gas by-pass and stainless steel electric heaters
- Humidification by centrifugal humidifier with very low power consumption and hygienic automatic washing cycles
- Dehumidification by condensation on the cooling system evaporator
- PT100 RTD temperature sensor and capacitive humidity sensor

AIR FLOW

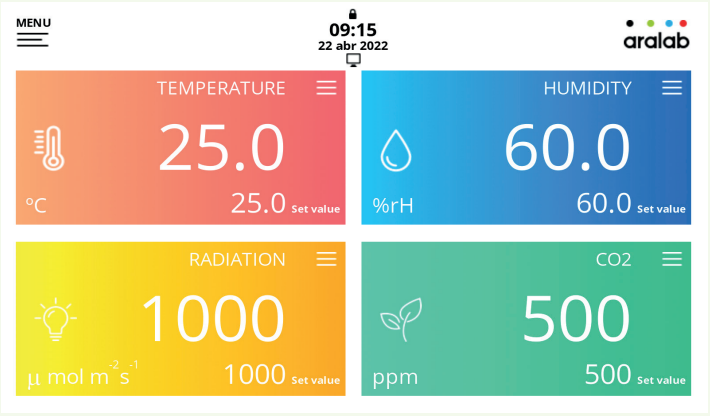
- Dynamic airflow with EC (variable) blower
- Forced in vertical and downward direction through ceiling plenum
- Horizontal airflow across the shelves to assure uniformity to all growth area
- Air renovation through adjustable port-holes
- Airflow speed adjustable at the ClimaPlus© controller

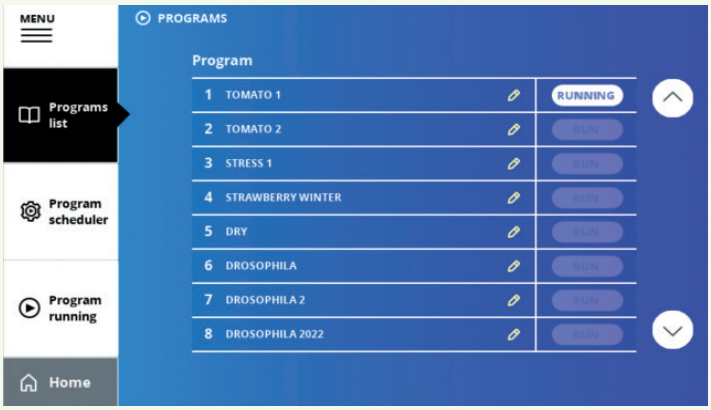
RESEARCH PROTECTION AND SECURITY

- Independent thermostats for maximum and minimum temperature limits
- Automatic cut-off function, in case of excessive heating or cooling
- Configurable maximum and minimum temperature and humidity limits
- Visual and audible alarms for temperature and humidity band limits

EQUIPMENT DESCRIPTION

- Programmable Logic Controller exclusively developed by us for walk-in growth chambers
- Easy to use touch-screen interface
- 90mm x 155mm (7 inch) multicolor display
- Controls every environmental variable available for any specific FitoClima model (Temperature, Humidity, Lights, Airflow, CO2 and connected external devices)
- Friendly program editor for creating 32 programs of 24 segments each, allowing the design of complex and comprehensive climatic simulation programs
- Password protection of the controller functions
- Content and research protection feature, with configurable High, Low and Band Temperature and Humidity alarms and automatic notifications
- Managing, monitoring and recording of all alarms
- Non-volatile memory, allowing the automatic restart of previously defined set-points or on-going programs due to power failure, without losing data
- Real-time monitoring of all the functions and active components of the equipment, allowing for a fast and accurate diagnostic in case of malfunction
- Possibility to control and program events by external commands and with external devices
- Secure Remote Access through ClimaPlus VNC Server
- Ethernet port for connecting logging computer to the chamber controller
- ClimaPlus controller functions also available at the PC/Laptop with the FitoLog software pack



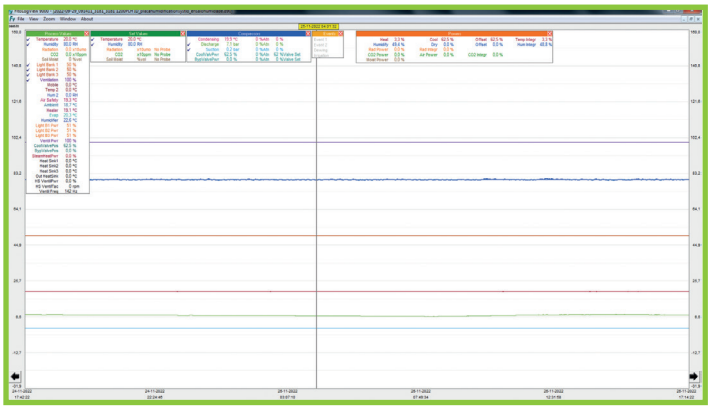


FITOLOG SOFTWARE

The FitoLog software pack is a set of applications designed to facilitate the managing, monitoring and recording of programs and data from the FitoClima chambers. It consists of 3 applications: **FitoLog, FitoLogView** and **FitoProgram.**

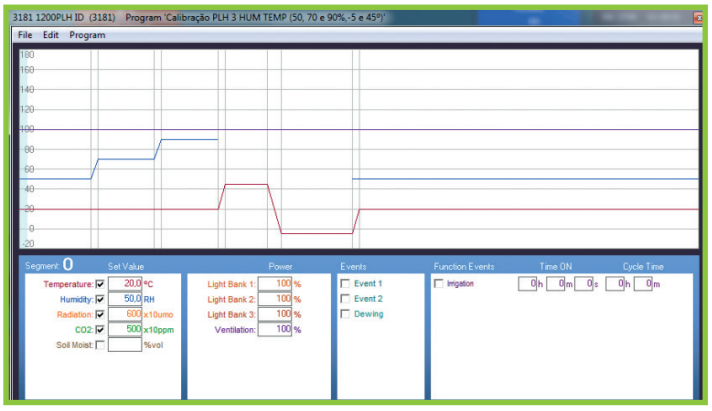
FITOLOG

Records and displays in real time all data and details related to the set-points, running variables and equipment behaviour. It also retrieves information about the active components of the chamber, running processes, errors, alarms and allows the configuration of periodic or alarm triggered remote notifications (by email or SMS, depending on existing connections and accessories).



FITOLOGVIEW

It is a working tool to process the data recorded by the FitoLog program. One can view, print and export the log contents to other file types, and analyse the data in other data management software (Excel, Star Office, Access or others).



FITOPROGRAM

This application simplifies the creation of programs and its integration on the chamber ClimaPlus controller. Up to 32 programs, each with 24 segments, can be designed and linked to create detailed environmental profiles and simulations.

RESEARCH SECURED WITH ALARMS, NOTIFICATIONS, FAST DIAGNOSTICS AND PROMPT TROUBLESHOOTING

With FitoLog it is possible to gather data from each of the chambers systems, which makes it a very useful tool to diagnose any necessary maintenance. This tool works as the “black box” of the equipment, giving our technicians the necessary data to remotely carry out a fast and efficient diagnostic. All that is needed is a FitoLog file.

COMMON APPLICATIONS AND FITOCLIMA MODELS MATRIX

TYPICAL APPLICATIONS	FITOCLIMA CONFIGURATION
Tissue culture	Configuration 1
Small plants (e.g. Arabidopsis)	Configuration 1
Medium plants (e.g. Tomato, Colza, Rice)	Configuration 2

COMMON ACCESSORIES

PLEASE CONSULT ARALAB FOR OTHER ITEMS

- FitoLog® software pack for PC/Laptops, enabling data monitoring, logging and managing operations directly on a computer
- CO2 monitor and controlling unit
- Light intensity control in µmol/m²/s with the integration of an internal quantum light meter
- LED modules with fixed spectral distribution
- LED modules with adjustable spectral distribution
- Extra drying capacity with compressed air dryer
- Additional entry ports
- Additional electrical plugs
- Water-cooled condenser
- Dew and Mist simulation
- Positive/Negative pressures with HEPA filters
- Phenolic coating for Entomology/Insect rearing rooms
- Irrigation function for automated watering and plant nurturing
- Aeration kit for Algae Research and Hydroponic cultures
- Integrated water tank with electric pump and security valve
- Conductivity meter for water quality control, with assembling accessories
- Additional internal electrical connection sockets

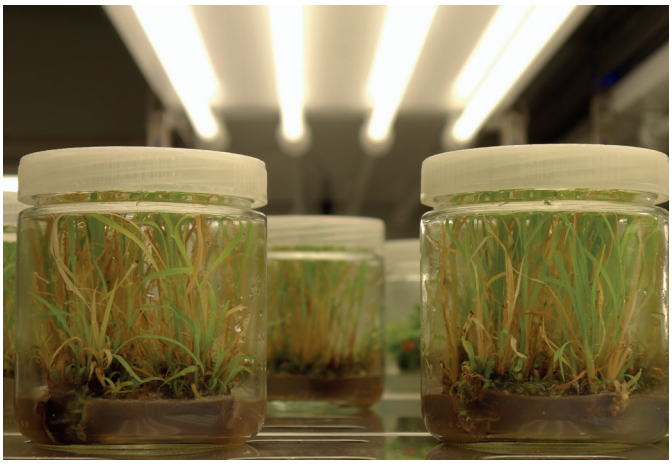
Quantum Light Meter

Hydroponic Irrigation (pH and EC control)

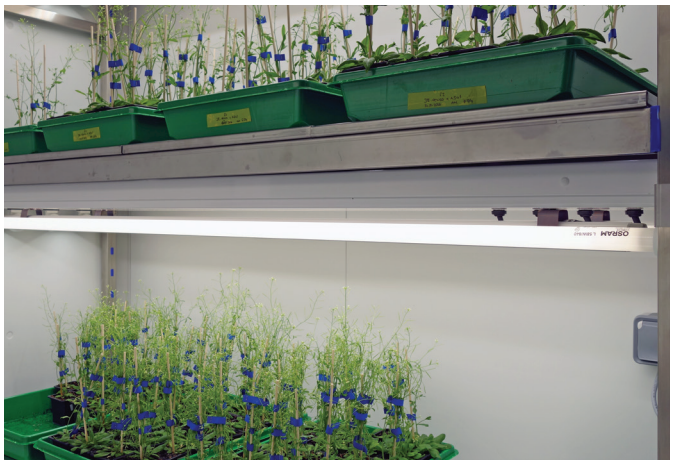
CO2 control and monitoring

CUSTOMER APPLICATIONS

CUSTOMER SPECIFICATIONS AND ACCESSORIES MAY RESULT IN DIFFERENT PRODUCT IMAGES

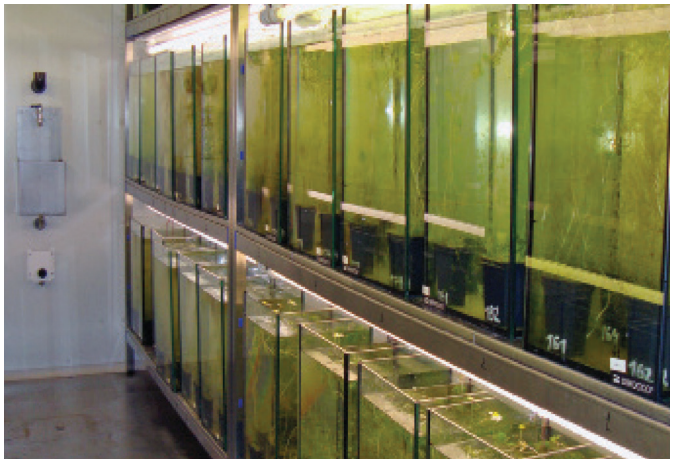


TISSUE CULTURE ROOMS



ARABIDOPSIS RESEARCH GROWTH CHAMBERS

VEGETABLE RESEARCH ROOMS



ALGAE RESEARCH AT MARINE BIOLOGY CENTER

AGTECH VEGETABLE PRODUCTION ROOM

DROSOPHILA REARING AND STOCK ROOM

Features and specifications are subject to change. We continuously study ways to further develop our products to achieve better performance and overall product quality. As a result, characteristics and specifications provided in this document may be subject to changes.

Let’s meet!

LinkedIn: www.linkedin.com/company/memmert-usa-llc/
Product link: www.memmertusa.com/WalkInChambers
Website: www.memmertusa.com
Tel.: + 262-594-3941

Even The Best Gets Better

Walk-in chambers designed to fit.