

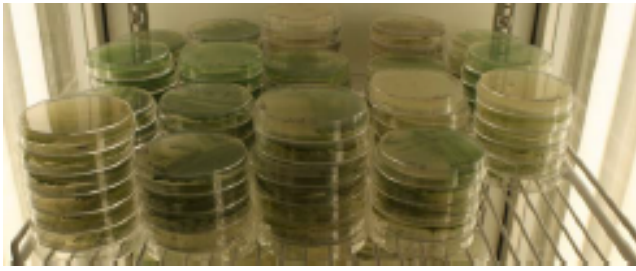
// CHAMBERS AND  
CABINETS FOR  
ALGAE GROWTH

// CHAMBERS FOR  
PHYTOLOGICAL TESTS

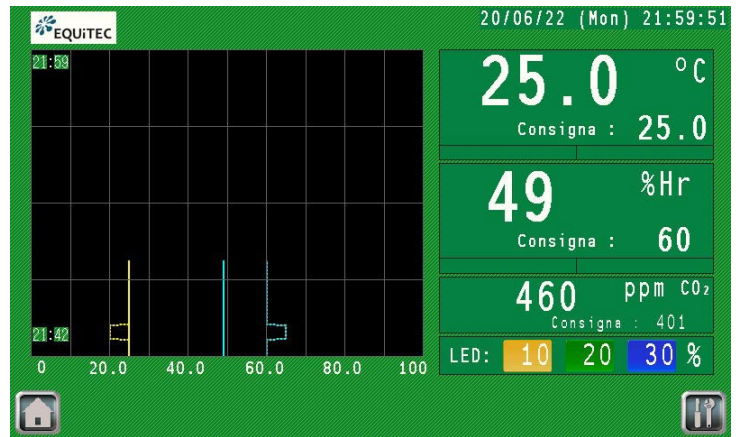
// CHAMBERS FOR  
TISSUE CULTURE

// REFRIGERATED  
INCUBATORS FOR  
CELL CULTURES  
WITH  
CONTROLLED LIGHT





## CONTROLLER



4500 SERIES CONTROLLER

### REFRIGERATED CHAMBERS AND INCUBATORS FOR ALGAE TESTING AND CULTURE

#### OUR PRODUCTS AND APPLICATIONS

- Chambers and cabinets for climate tests with photoperiod
- Chambers for Arabidopsis tests
- Photo-stability tests
- Stability control in food and beverages
- Algae growth
- Seed growth chambers
- Frost formation
- Controlled seed storage
- Research with Drosophila and insects
- Large capacity incubators
- Growth with LED Light Low temperature cabinets with photoperiod
- Tissue cultures
- Chambers for plant growth walk-in
- Refrigerated incubators
- Chambers for drying seeds

- Temperature ranges from +10° to +60° (optional from +4°C or -10°C).
- Humidity control: optional working ranges from 20% to 95% R.H.
- Light intensity control, day/night photoperiod.
- Graphic control panel with optional 4.3" 7.0" TFT touch screen.
- Electronic data logger with graphical representation of the data y exit USB for discharge of data.
- Temperature and/or humidity control.
- Probe with an accuracy of 0.1°C.
- Microprocessor for the control and programming of parameters with PID system.
- Height-adjustable lights on the shelves and/or on the top and/or sides.
- Light control with 6 levels of intensity, with the possibility to simulate sunrise/sunset.
- Horizontal or semi-horizontal airflow, to reduce stress on plants.
- Maximum intensity in PPDF trays 1200  $\mu\text{mol m}^{-2}\text{s}^{-1}$ .
- Optional regulation of airflow speed, to reduce stress on plants.
- Optionally LED or Fluorescent light
- Ultrasonic humidification system, optionally electrodes or sprayers.
- Product protection by safety thermostat for minimum/maximum temperature.

#### APPLICATIONS TYPICAL

Controlled plant growth conditions: Temperature, light and humidity with photo Periods.  
Optional CO<sub>2</sub> and irrigation control.

Intensity of light:  
PPDF 20-1200  $\mu\text{mol}$

Spectrum Available: from 350 to 820 nm  
pending on of the wavelength requirements.

Air Flow:  
Optional air velocity control between 0,2 and 0,8 m/s  
ensure an uniformity of temperature to a through all the free adjustable growth surface; reducing the air stress on the plants.



Optional: control of the intensity up to 6 independent LED light channels with intensity and wavelengths spectrum dimming one-to-one

**REFRIGERATED INCUBATORS - LINE 4000 ALG  
FOR CLIMATIC ALGAE GROWTH  
FORCED AIR VERTICAL MODELS**

**from +10° to +55°C**

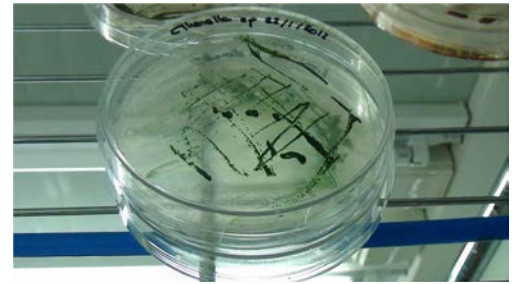
*ALGAE GROWTH CHAMBERS AND  
LABORATORY COOLED INCUBATORS  
WITH FORCED AIR  
WITH PHOTOPERIODE*

*ERIS 4000 LED ALG MODELS FROM  
+10°C TO +55°C*

*OPTIONAL  
FROM -10°C/+4°C TO +55°C*



// **ERIS 40455 HR LED ALG  
with 4500 Series Controller  
and LED Door Lights .  
Optional lights on 3 sides**



Optional internal plugs for instrument connection



// ERI 41345 HR 3L LED ALG with 4500 Series Controller and LED Lights 3 Shelves



Optional internal inspection glass door

// ERI 40452 3S LED ALG with 2000 Series Controller and LED Lights 3 sides

## TECHNICAL SPECIFICATIONS

- System of refrigeration by air forced.
- PID microprocessor for parameter control.
- Temperature range from +10°C to +55°C, optional: +4°C to +55°C / -10°C to +55°C/ -20°C to +55°C / -30°C to +55°C.
- Safety thermostat for product protection.
- Independent audible and visible alarms for maximum and minimum temperatures.
- Backlit LED display for temperature and parameter control.
- Accuracy of +/- 0.1°C on screen.
- Homogeneity +/- 1.0 °C inside the chamber at 37°C.
- Stability +/- 0.5°C the interior of the chamber at 37°C.
- Pt 100 probe, for temperature control.
- Optional: internal glass door with independent closure.
- Blind external door with opening to 180°, opening on the right (optional left-hand opening).
- Optional: Key-protected main switch (ON/OFF ).
- Control panel with touch screen.
- Internal lighting with separate switch.
- Optional: Programming of temperature/time ramps, with the variation of the different duty cycles.
- Alarm stop switch, rearms when the programmed temperature is reached.
- Cables porthole for the access of cables, probes, for the connection of external/internal instruments.
- Temperature controlled by PID.
- Finned heating element, improved temperature distribution.
- Independent heating and cooling systems.
- Ventilation by forced air, with vertical air flow, evenly distributed, allowing a greater homogeneity of the air temperature inside the chamber.
- Alternative refrigerant gas R452a R290, free of CFCs and HCFCs. Optional water cooled condenser.
- Hermetic compressor, mounted on shock absorbers to reduce noise levels.
- Epoxy coated steel exterior finish .
- Optional interior finish: in steel coated with epoxy or stainless steel.
- Rounded corners for easy cleaning.
- Magnetic perimeter joint achieving a perfect closing of the door.
- High density injected polyurethane insulation, free of CFCs and HCFCs.
- Height-adjustable legs/feet, optional wheels.
- Operation in work areas with temperatures up to +32°C.

## LED LIGHTS, OPTIONS:

See page 7

RANGE	VERTICAL FLOW REFRIGERATED INCUBATORS - ERI SERIES 4000 ALG	
ERIS MODELS WITH HUMIDITY CONTROL	ERIS HR 3S LED ALG	ERIS 40255 HR 3S LED ALG
ERIS MODELS WITHOUT HUMIDITY CONTROL	ERIS 40155 3S LED ALG	ERIS 40255 3S LED ALG
ERIS MODELS WITH HUMIDITY CONTROL	ERIS 40155 HR 3L LED ALG	ERIS 40255 HR 3L LED ALG
ERIS MODELS WITHOUT HUMIDITY CONTROL	ERIS 40155 3L LED ALG	ERIS 40255 3L LED ALG
PHOTO-PERIOD	Yes	Yes
TYPE OF LIGHT / POSITION	3L LED*= Located on the front and side door / 3S LED*= Located on I3 tray levels (other optional levels)	
TEMP RANGE. [°C] NO HUMIDITY CONTROL	+10/+55 (Optional: +4°/-10)	
MODELS WITH CONTROLLED HUMIDITY	20% to 90% RH	
TEMP RANGE. WITH CONTROLLED HUMIDITY (°C)	+20/+40	
ERIS CONTROLLER	4500 CONTROLLERS	2000 CONTROLLERS
NOMINAL NET/GROSS CAPACITY [litres]	135/150	223/255
INTERIOR MEASURES [mm] L x D x W*	510 x 478 x 555	570 x 523 x 1045
EXTERIOR MEASURES [mm] L x P x W*	600 x 600 x 825	670 x 660 x 1530
DOOR CLEAR [mm] L x H**	504 x 552	568 x 855
INSULATION THICKNESS [mm]	45	75
INTERNAL FINISH	Stainless Steel	Stainless Steel
EXTERNAL FINISH	Epoxy coated steel	
INTERNAL GLASS DOOR	Optional	Optional
TYPE OF EXTERNAL DOOR	Solid	Solid
LOCK	Yes	Yes
Nº OF SHELVES	2	3
SHELVES DIMENSIONS [mm] L x P***	660 x 800	530 x 650
SHELVES MATERIAL	Stainless Steel	Stainless Steel
SHELVES SURFACE (m2)	0,18	0,18
INTERNAL PLUGS	Optional	Optional
CABLES PORT HOLES	Yes	Yes
DATALOGGER	On models with 4500 Series controller	
USB OUTPUT	On models with 4500 Series controller	
ON-SCREEN GRAPHICS	On models with 4500 Series controller	
RS485 CONNECTION PORT WITH MODBUS	On models with 4500 Series controller	
POTENTIAL-FREE REMOTE ALARM OUTPUT	Yes	Yes
BATTERY	On models with 4500 Series controller	
TYPE OF REFRIGERANT	R290 optional R452a, depending on application. Optional water cooled.	
AMBIENT TEMPERATURE RANGE	from +10°C to +32°C	
ELECTRICAL POWER [W]	520	750
VOLTAGE / FREQUENCY (V / HZ)	230/50 optional 110 /60 and 220/60	
WEIGHT [KG]	60	118

\* Width x Depth x Height \*\* Width x Height \*\*\* Width x Depth

\* LED Details: see page 7

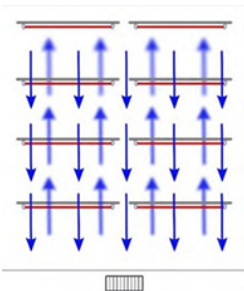
RANGE	VERTICAL FLOW REFRIGERATED INCUBATORS - ERIS SERIES 4000 ALG		
ERIS MODELS WITH HUMIDITY CONTROL	ERIS 40455 HR 3S LED ALG	ERIS 40855 HR 3S LED ALG	ERIS 41355 HR 3S LED ALG
ERIS MODELS WITHOUT HUMIDITY CONTROL	ERIS 40455 3S LED ALG	ERIS 40855 3S LED ALG	ERIS 41355 3S LED ALG
ERIS MODELS WITH HUMIDITY CONTROL	ERIS 40455 HR 3L LED ALG	ERIS 40855 3LHR LED ALG	ERIS 41355 HR 3L LED ALG
ERIS MODELS WITHOUT HUMIDITY CONTROL	ERIS 40455 3L LED ALG	ERIS 40855 3L LED ALG	ERIS 41355 3L LED ALG
FOTO-PERIDO	Yes	Yes	Yes
TYPE OF LIGHT / POSITION	3L LED*= Located on the front and side door / 3S LED*= Located on I3 tray levels (other optional levels)		
TEMP RANGE. [°C] NO HUMIDITY CONTROL	+10/+55 (Optional: +4°/-10)		
MODELS WITH CONTROLLED HUMIDITY	20% to 90% RH		
TEMP RANGE. WITH CONTROLLED HUMIDITY (°C)	+20/+40		
ERIS CONTROLLER	ERI CONTROLLER	4500 CONTROLLERS	/ 2000 CONTROLLERS
NOMINAL NET/GROSS CAPACITY [litres]	438/455	780/805	1353/1395
INTERNAL MEASURES [mm] L x D x W*	570 x 523 x 1470	606 x 848 x 1512	1277 x 693 x 1529
EXTERNAL MEASURES [mm] L x P x W*	670 x 660 x 1955	757 x 979 x 2121	1384 x 814 x 2123
DOOR CLEAR [mm] L x H**	568 x 1280	605 x 1494	575 x 1488
INSULATION THICKNESS [mm]	50	55	55
INTERNAL FINISH	Stainless Steel	Stainless Steel	Stainless Steel
EXTERNAL FINISH	Epoxy coated steel		
INTERNAL GLASS DOOR	Optional	Optional	Optional
TYPE OF EXTERNAL DOOR	Solid	Solid	Solid
LOCK	Yes	Yes	Yes
Nº OF SHELVES	4	4	4 + 4
SHELVES DIMENSSIONS [mm] L x P***	500 x 445	570 x 790	500 x 518
SHELVES MATERIAL	Stainless Steel	Stainless Steel	Stainless Steel
SHELVES SURFACE (m2)	0,22	0,18	0,26
INTERNAL PLUGS	Optional	Optional	Optional
CABLES PORT HOLES	Yes	Yes	Yes
DATALOGGER	On models with 4500 Series controller		
USB OUTPUT	On models with 5400 Series controller		
ON-SCREEN GRAPHICS	On models with 4500 Series controller		
RS485 CONNECTION PORT WITH MODBUS	On models with 4500 Series controller		
POTENTIAL-FREE REMOTE ALARM OUTPUT	Yes	Yes	Yes
BATTERY	On models with 4500 Series controller		
TYPE OF REFRIGERANT	R290 optional R452a, depending on application. Optional water cooled.		
AMBIENT TEMPERATURE RANGE	from +10°C to +32°C		
ELECTRICAL POWER [W]	850	1000	1250
VOLTAGE / FREQUENCY (V / HZ)	230/50 optional 110 /60 and 220/60		
WEIGHT [KG]	141	178	278

\* Width x Depth x Height \*\* Width x Height \*\*\* Width x Depth

\* LED Details: see page 7



Optional: contol of the intensity up to 6 independent LED light channels with intensity and wavelengths spectrum dimming one-to-one



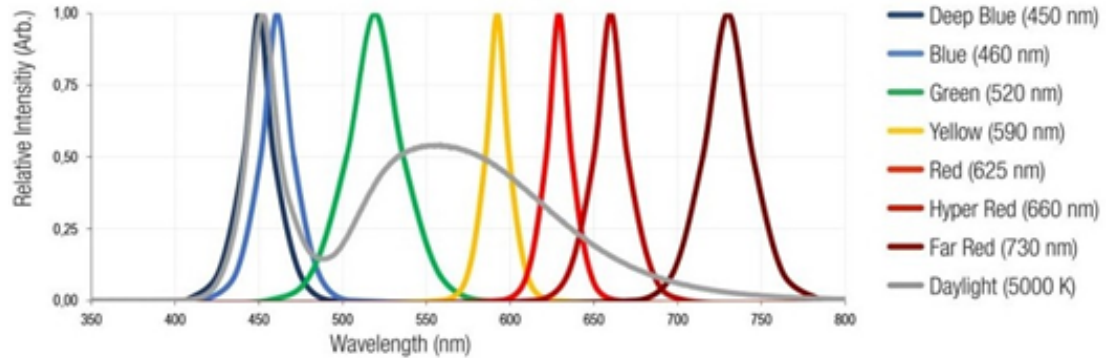
## MODULAR GROWTH CHAMBERS VISITABLE

### CUSTOMS SPECTRA

We have a wide selection of wavelengths for photo-biological research, for example UV-A 390 nm, 455 nm blue, 530 nm green, 660 nm red and 730 nm red far.

We also have specific spectra for use in specific applications, for example, for the purpose of Induction enhancement of secondary metabolites, including improvement of lettuce coloration or production or enhancement of specific metabolites in micro-algae.

- **Typical applications:** controlled plant growth conditions: temperature and humidity with photoperiods.
- **Controlled plant growth conditions:** temperature and humidity with photoperiods.
- **Light intensity in typical applications:** 20-1200  $\mu\text{mol m}^{-2}/\text{s}^{-1}$ .
- **Available spectra:** 350 to 820 nm, according to the required luminaire.



	S 60	M 90	L 120	XL 150
POWER	25 W	40 W	50 W	80 W
DIMENSION (MM) (LENGTH/DIAMETER)	595 / Ø 26	895 / Ø 26	1.198 / Ø 26	1.498 / Ø 26
DIMENSION (INCHES) (LENGTH/DIAMETER)	23.4" / Ø 1.02"	35.2" / Ø 1.02"	47.2" / Ø 1.02"	59.0" / Ø 1.02"
CERTIFICATES	Marked CE			
SPECTRUM	Depending on the need: configurable spectrum and intensity			
INTENSITY PPDF	since 5 $\mu\text{mol M/s}$ a 1200 $\mu\text{mol M/s}$			
DISTANCE A THE PLANT (RECOMMENDED)	100 a 400 mm			
DECAY OF INTENSITY LIGHT	Max. 10% in 35.000 h. in Applications standard 50.000 h.			
EFFICIENCY LIGHT (380 - 820 NM)	Until 2,2 $\mu\text{mol/W}$ (dependent of the spectrum)			
TEMPERATURE OF WORK ENVIRONMENT	0/+50°C (32-100° F)			

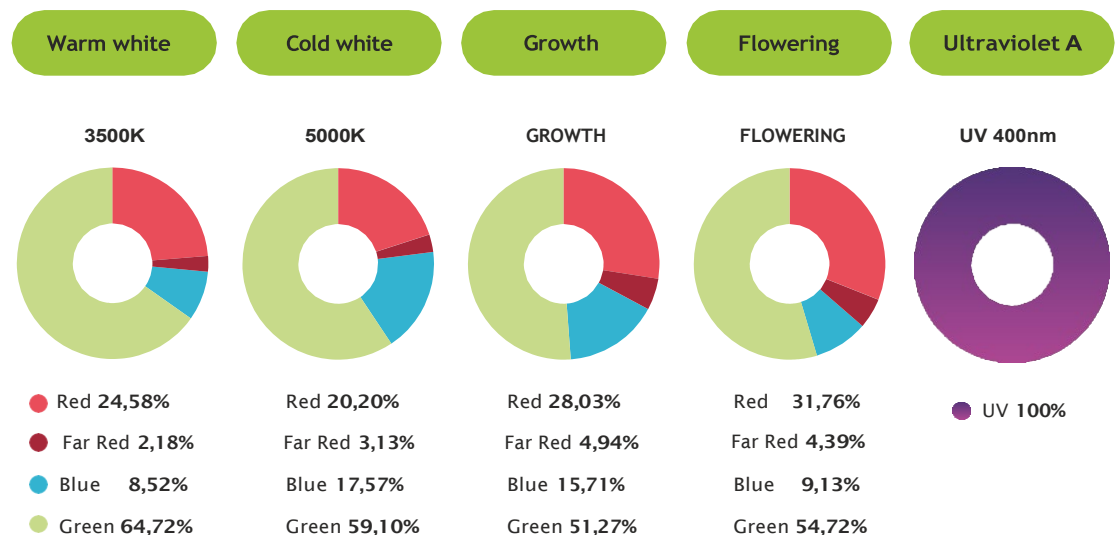
Available with transparent or diffuser cover, G13 connection terminal, ip65 optional IP67 protection rating with socket assembly, ROHS compliant, 5-year limited warranty .

### TUBOS LED LIGHT ON THE TUBE HOLDERS OF FLUORESCENTS OPTIONALS

The tubes type T6 or T8, allow the standard tubes to be installed in the tube holders of the fluorescent without any modification (fixings with magnetic ballast).

Cost-effective, very easy to install on terminals with IP65, for example, for particular test.

### GUIDE TO LED TUBE APPLICATIONS



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