Climatron®
By Thermoline Scientific

CLIMATRON GROWTH CABINETS

(+4°C TO +40°C) (AMBIENT TO 90% RH)

(Image: CLIMATRON-1100-SL-H and CLIMATRON-520-DL)

Climatron Growth Cabinet Series

- Proudly designed and manufactured in Australia
- Customize cabinet to your specific requirements
- User friendly 7" colour touch screen
- Easy to operate and program
- Stainless steel internal liner
- Data logging and external communication via PC available
- Energy efficient red LED lights
- Castors fitted for ease of mobility
- Adjustable shelves and self closing doors
- LED lights strips dimmable by simple turn dial

Thermoline LED light strips available in three colour options.

Product Applications and Design Features

Thermoline has designed the Climatron range of growth cabinets to maintain conditions critical for research applications such as Arabidopsis, plant growth, plant production, plant pathology, seedling germination, seed storage, tissue culture, insect incubation along with many other applications were precise control of temperature and or humidity is required.

Specific focus in the design brief was centered around designing a temperature/humidity cabinet that had an easy to operate touch screen control system, was manufactured to a high standard of quality yet remain very affordable. Most importantly we wanted to design a cabinet that would allow Thermoline customers to have their own input into the design of their cabinet by being able to easily vary the configuration of the cabinet to meet their specific research application by choosing to have their cabinet supplied with door lighting, various shelf lighting options, humidity control and carbon dioxide control.

Cabinet Construction and Standard Features

Three sizes of Climatron Growth Cabinets are available, a single door upright 360 litre, 520 litre capacity and a double door 1100 litre capacity. Cabinet exterior is manufactured from grey Colorbond, whilst the interior is finished in 304 grade stainless steel which is highly corrosive resistant and easy to clean.

Accurate internal conditions are maintained by internal fan forced air flow behind a solid rear plenum which discharges conditioned air at the bottom of the internal liner creating upward airflow across product load for superior uniformity.

All cabinets are supplied standard with self closing doors that will also remain open to enable product to be loaded easily when the door is fully opened. Doors are complete with magnetic gaskets and key locks for security.

Product shelves are P.V.C coated for durability and are vertically adjustable in 12mm increments. Cabinets are fitted with a 50mm Ø cable/monitoring port hole to allow easy access for a remote measurement devise if required. All cabinets are fitted with heavy duty lockable castors to allow these large capacity cabinets to be moved easily when the cabinet requires servicing or the area around the cabinet requires cleaning.

Light dimming, USB and Ethernet logging ports
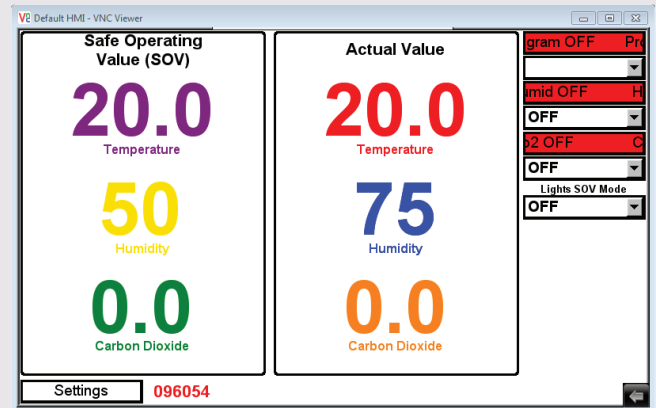

Ultrasonic humidity control box

STAR 700 Controller

Climatron cabinets are powered by Thermoline's Select Touch And Run (STAR 700) touch pad control system. The STAR 700 touch pad control system offers easy to program diurnal control of temperature, lighting, humidity and carbon dioxide.

The STAR 700 features a large 154x87mm rugged full colour touchscreen, PC connectivity via ethernet cable and synchronize programmed settings which can be viewed in real time.

The STAR 700 logs the performance of the cabinets for up to up to 800 days.

A live trend screen to allow the operator to quickly check the performance conditions within the cabinet. Alternatively the operator can download the logged data to a USB and then view data via a Excel spread sheet.

STAR 700 Alarms

When temperature inside the chamber exceeds the set values by ±5.0°C an alarm event is triggered. Alarms may result in all sources of heating (including Lights) or refrigeration to be isolated. This alarm is auto resetting. Volt free BMS connection is fitted to inform operators of an alarm condition. All out of tolerance conditions can be later viewed in the logged data.

Safe Operating Values

The STAR 700 has a safe operating (power fail) condition. In the event of a power failure the STAR 700 will reset the diurnal cycle and upon power restore, will control the safe operating values. The safe operating values can be set by the operator.

Humidity Control (Optional)

Energy efficient humidification is generated by a state of the art ultrasonic humidifier which generates a fog or mist of water particles that are injected into the supply air. Accurate humidity levels are controlled via the STAR 700 touch pad control system which is pre programmed by the operator. The ultrasonic humidifier comes complete with all the necessary plumbing fittings, water filters and water container that's required to get the cabinet operational on a gravity fed water supply.

Carbon Dioxide Control (Optional)

Climatrons carbon dioxide control has been specifically designed to control CO_2 concentration levels often required to obtain accurate results in plant research. Carbon dioxide concentration levels are able to be controlled from ambient to 3000 parts per million with an accuracy of ±50 parts per million. Accurate carbon dioxide concentration levels are controlled via the STAR 700 touch pad. The carbon dioxide control option requires connection to a pressure regulated (100kpa) carbon dioxide supply.
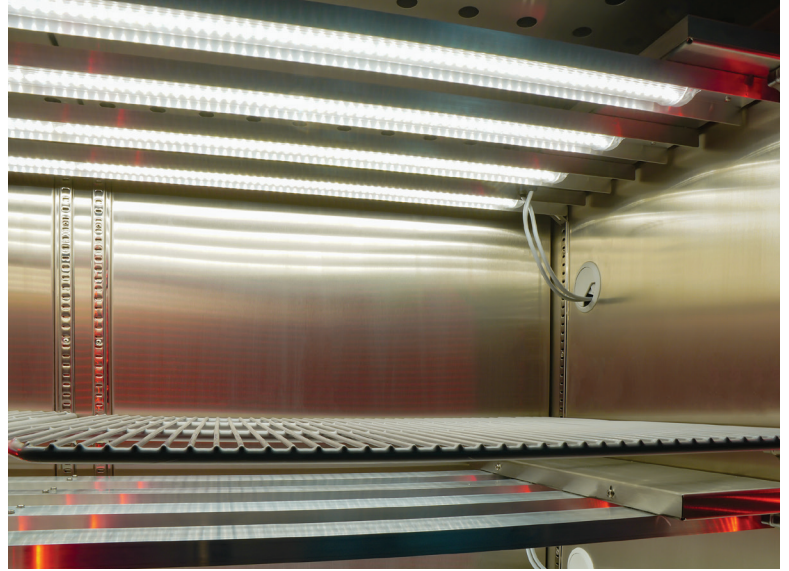

Right: CLIMATRON-520-DL

Door Lighting Models

Dimmable door lights are protected within a door light enclosure mounted at the front of the cabinet. This enclosure allows light to pass through to the chamber interior, whilst staying outside the controlled environment to minimize the impact of radiated heat from the lights.

Shelf Lighting Models

Stainless steel shelf light trays have the dimmable LED strips fitted to the under side. Cabinets can be operated with up to three combinations of shelf light trays. Shelf light trays can be easily removed and are vertically adjustable in 12mm increments.

Above: Internal shelf lighting

Lighting Specifications

LED Light Options

Three LED colour options for all Thermoline cabinets with LED lighting. Thee three options are described as '4000K', 'LEAF' or 'BLOOM'.

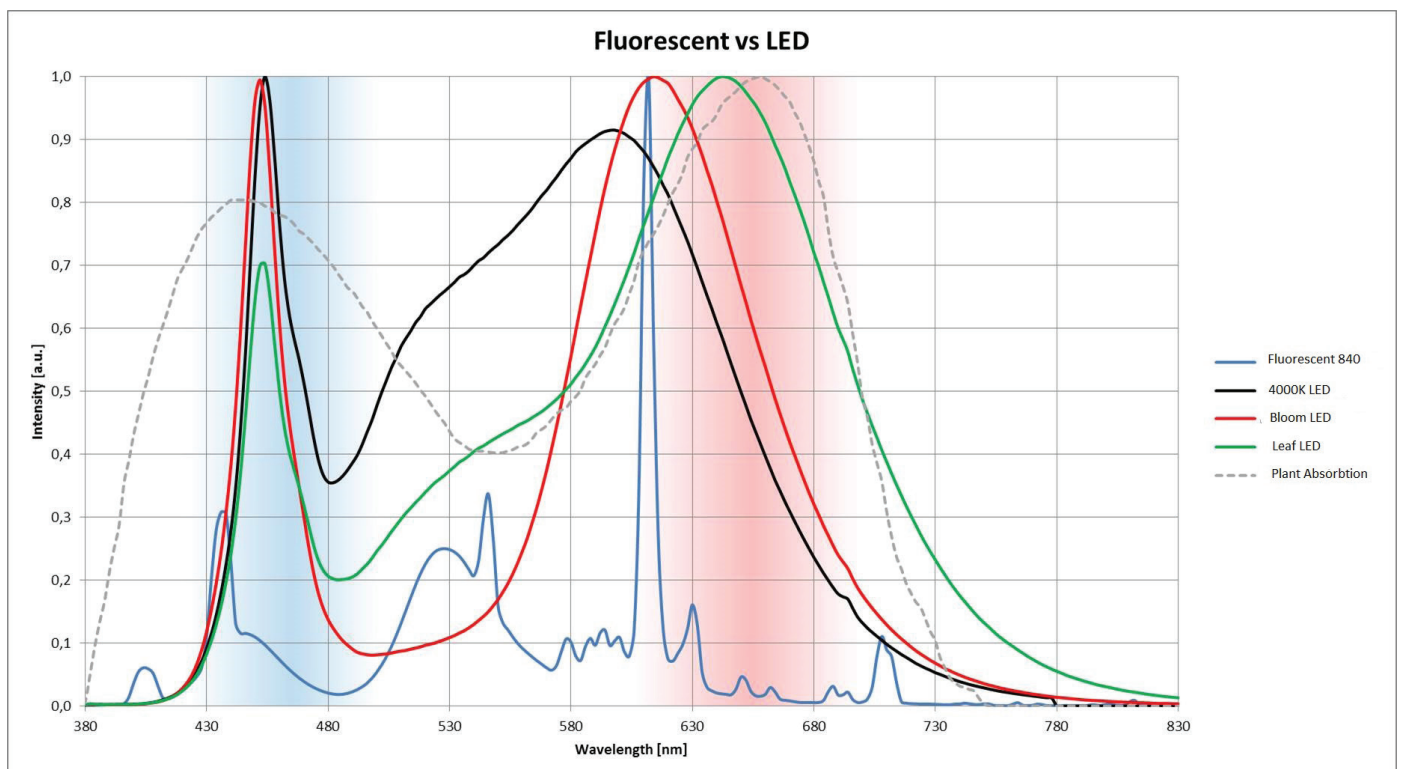| 4000K	Leaf (2700K)	Bloom (1900K)
Because the light is neutral, not leaning in favour of red or blue spectrum, it can be described as 'standard' and is the closest equivalent to Cool White T5 fluorescent lamps.	'Leaf' is the recommendation for plants and vegetables which should have an optimized vegetative growth. Due to increased spectral emission in the far red (> 700 nm), as well as in the green (500–560 nm) spectral range, the growth of the plants or the vegetables can be positively influenced.	"Bloom" shows an optimized effect on ornamental plants and young seedlings, which need support in the flowering or in the initial growth stage. The spectrum is characterized by its focus on the blue and red spectral range, which provides maximum efficiency in photosynthesis.

Spectural Characteristics

Type	Spectral distribution related to μmol/s				Ratios		
	400–500 nm (blue)	500–600 nm (green)	600–700 nm (red)	> 700 nm (far red)	blue – red	blue – green	red – far red
Bloom	16.9%	24.0%	56.6%	4.5%	1 : 3.2	1 : 1.4	1 : 0.1
Leaf	10.1%	22.5%	53.7%	13.7%	1 : 5.3	1 : 2.2	1 : 0.3

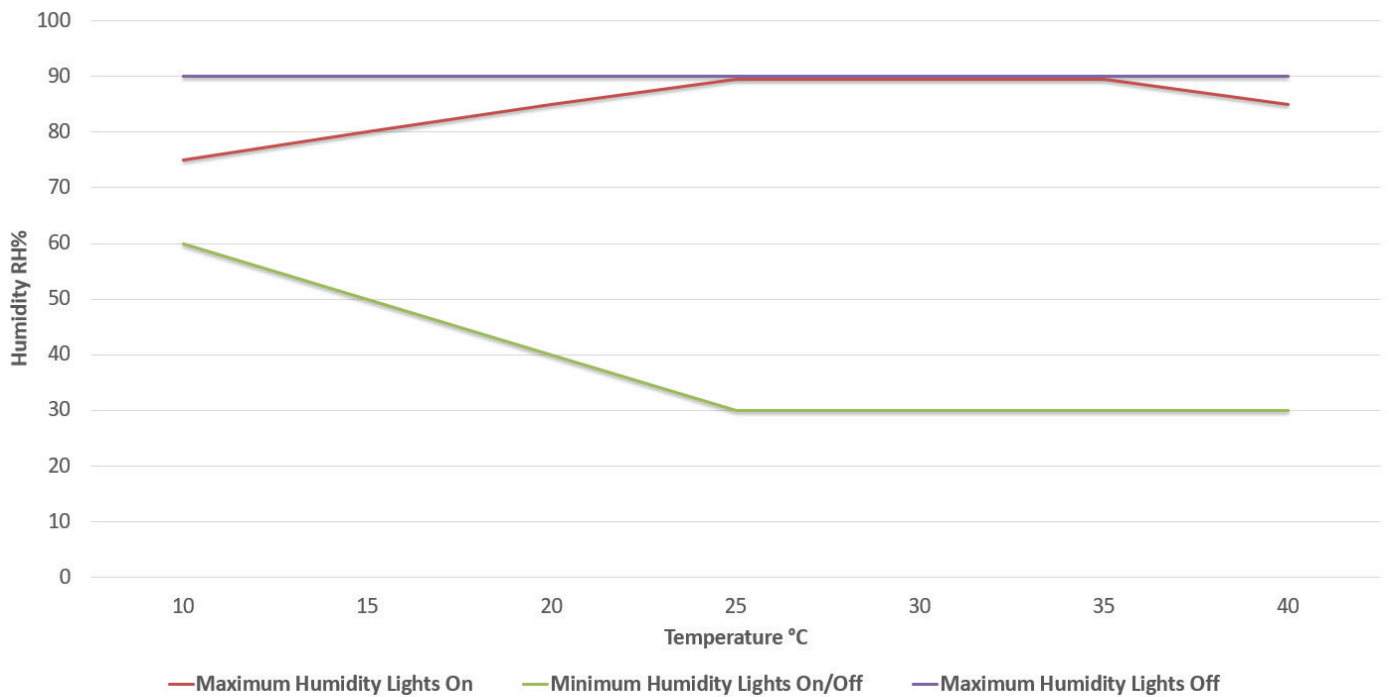| Order Code	Product Description
CLIMATRON-360-DL	CLIMATRON-360 with door lighting.
CLIMATRON-360-SL	CLIMATRON-360 with shelf lighting. (Shelf light trays not included/available selection below)
CLIMATRON-520-DL	CLIMATRON-520 with door lighting.
CLIMATRON-520-DL-H	CLIMATRON-520 with door lighting and humidity control.
CLIMATRON-520-SL	CLIMATRON-520 with shelf lighting. (Shelf light trays not included/available selection below)
CLIMATRON-520-SL-H	CLIMATRON-520 with shelf lighting and humidity control. (Shelf light trays not included/available selection below)
-CO2 (Add to the end of any order code above)	Above product description with carbon dioxide control.
For CLIMATRON-1100 model, substitute 1100 for 520 in the above table.	

Model	CLIMATRON-360-(DL/SL)	CLIMATRON-520-(DL/SL)	CLIMATRON-1100-(DL/SL)
Capacity (litres)	360	520	1100
Internal Dimensions (WxDxH mm)	595x550x990	590x550x1435	1330x550x1435
External Dimensions (WxDxH mm) Shelf Lighting Models	760*x830x1560	760*x880x2040	1490*x880x2040
External Dimensions (WxDxH mm) Door Lighting Models	830*x880x1560	830*x920x2040	1560*x920x2040
*External Dimensions With Humidity Control Option	As above depth plus 90mm depth for -H (Humidity) models (due to water filters fitted at rear)		
Temperature Range	+4°C to 40°C (lights off) +10°C to 40°C (lights on)		
Temperature Tolerance	Control ±0.2°C		
	Spatial ±2.0°C (unloaded lights off)		
Humidity Range (+5°C to 45°C)	Ambient to 90%RH (lights off) Ambient to 80%RH (lights on)		Ambient to 80% (Lights off) Ambient to 75% (Lights on) Temperature and model dependant Control envelope available on request
Humidity Tolerance	Control ±2% RH		
	Spatial ±5% RH (unloaded lights off)		
CO2 Range	Ambient to 3000 PPM		
CO2 Tolerance	±50 PPM		
Light Intensity at 20°C Shelf Lighting Models *	4x LED Rails Per Tray 250 umols/m^2/sec (measured perpendicular to light source at 300mm)		4x LED Rails Per Tray Light intensity up to 420 umols (300mm from light source)
Light Intensity at 20°C Door Lighting Models	4x LED Rails 145 umols/m^2/sec (measured perpendicular to light source at 300mm)	4x LED Rails 220 umols/m^2/sec (measured perpendicular to light source at 300mm)	8x LED Rails 400 umols/m^2/sec (measured perpendicular to light source at 300mm)
Shelves Shelf Lighting Models	1 with each shelf light tray		2 with each shelf light tray
Shelves Door Lighting Models	3	4	8
Electrical	240 Volt / 10 Amp		

* The light intensity changes throughout the temperature range. Detailed light intensity data can be supplied on request.

Temperature & Humidity Performance for CLIMATRON-360-520-1100

Legend:
— Maximum Humidity Lights On   — Minimum Humidity Lights On/Off   — Maximum Humidity Lights Off

Water Feed Tank for Climatron Cabinets

Suitable for the following models: CLIMATRON-520-(DL/SL) and CLIMATRON-1100-(DL/SL)

This 55 litre water feed tank allows water to be pumped directly to the cabinet whilst being safely stored on the floor. This specialised tank features a self-priming 12v diaphragm pump, low water protective cut-out, extra-long 6 metre hose and a large opening for easy filling.

Features

- 55 Litre UV stabilised polytuff tank
- Self-priming 12v diaphragm pump
- 2.6L/min open flow, 50psi
- Low water protective cut-out with audible alarm
- Extra-large filter requires less cleaning
- Large opening for easy filling
- Large outlet for quick drainage
- Extra-long 6 metre hose

Tank Model: 55L-WC-PUMP

Thermoline Scientific have been manufacturing and distributing high quality laboratory and scientific testing equipment since 1970. Over this time, Thermoline has grown to be a leading brand in the science industry, with our equipment being used in small and large Hospitals, Universities and Research Laboratories across Australia and the Asia Pacific region.

We're proud to say that we are 100% Australian owned and operated.

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