Thermoline

Climatron Cabinet
User Manual & Setup Guide

CLIMATRON-SL/DL RANGE
CLIMATRON-SL/DL-H RANGE

STAR X Touchscreen

Contents

Contents

Symbol

General Warning Sign

Warning sign: signifies a general warning, and indicates a risk to people specified by the supplementary sign that if not avoided, may result in death or serious injury.

Warning; Flammable

Warning; Flammable: signifies a flammable warning, and indicates a risk of flammable content as specified by the supplementary sign that if not avoided, may result in a fire by igniting flammable material.
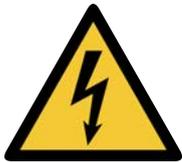
Warning; Electricity

Warning; Electricity: signifies a electricity warning, and indicates a risk of contact with electricity as specified by the supplementary sign that if not avoided, could result in injury.

Warning; Hot Surface

Warning; Hot Surface: signifies hot surface warning, and indicates a risk to people specified by the supplementary sign that if not avoided, will result in contact with hot surface.

General Prohibition Sign

General Prohibition: signifies a prohibited action, indicates a risk to people specified by the supplementary sign that if not avoided, will result in death or serious injury.

Do Not Expose Outside

Do Not Expose Outside: signifies prohibiting the exposure to direct sunlight, and indicates a raised temperature due to sunlight or placement on hot surface can cause harmful damage to cabinet.

General Information

This user manual is intended for Thermoline's Climatron range. We recommend that you read this user manual the whole way through before you start using the cabinet. Consider this manual as a part of the cabinet and an integral part to its function. We recommend keeping it close and within easy access.

Intended Use

The Thermoline Climatron Growth Cabinet 360, 520, and 1100 models are designed and manufactured to maintain environmental conditions critical for general research, plant biology, soil science and agriculture research. The Thermoline Climatron Growth Cabinet offers an industry standard in Temperature & Humidity Control.

- Door lighting and Shelf lighting available
- Optional Humidity, CO_2 plus custom modifications

Climatron®

Operating Range

The Thermoline Climatron cabinet is set to function with specific Operating Ranges. The optimum operating conditions will be explained further in this manual.

Product Specification
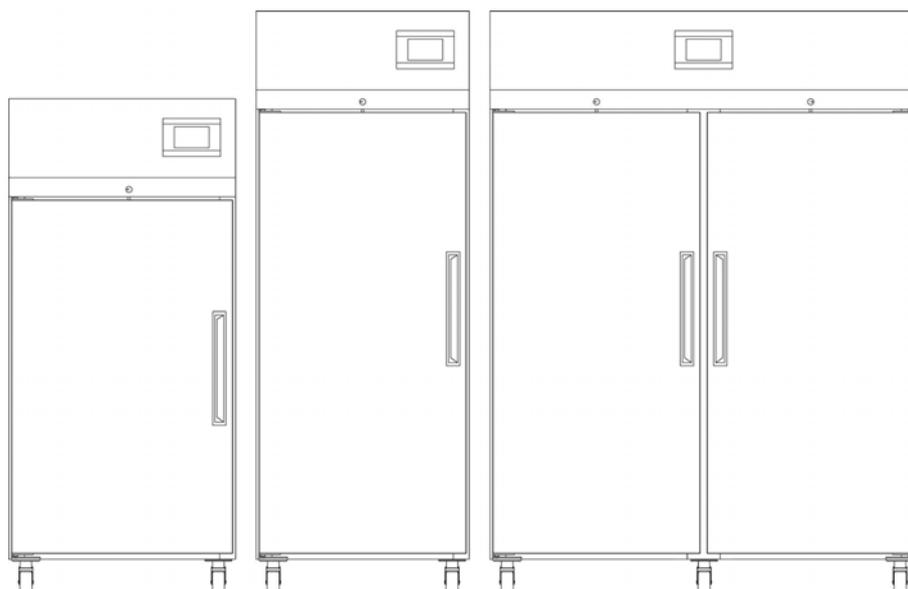
Dimensions

External

	CLIMATRON-360-(DL/SL)	CLIMATRON-520-(DL/SL)	CLIMATRON-1100-(DL/SL)
WxDxH (mm) Shelf Lighting Models	740x840x1590	740x840x2040	1470x840x2040
WxDxH (mm) Door Lighting Models	740x890x1590	740x890x2040	1470x890x2040

Internal

WxDxH (mm)	590x530x1000	590x530x1430	1320x530x1430

Clearance

	CLIMATRON-360	CLIMATRON-520	CLIMATRON-1100
Front (mm)	740		
Back (mm)	100		
Sides (mm)	100		
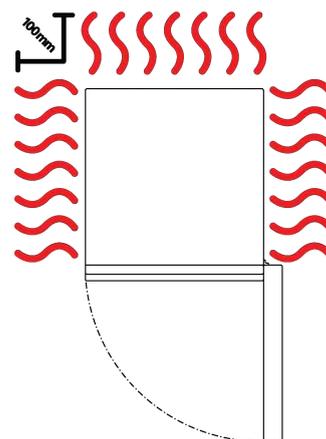
Product Specification

Technical Specifications	CLIMATRON-360-(DL/SL)	CLIMATRON-520-(DL/SL)	CLIMATRON-1100-(DL/SL)
Temperature Range	+4°C to 40°C (lights off) +10°C to 40°C (lights on)		
Temperature Control Stability	+/- 0.2°C		
Temperature Uniformity	+/- 2.0°C (unloaded lights off)		
Humidity Range	Ambient to 90%RH as per temperature and humidity performance graphs		
Humidity Uniformity	+/- 5%RH (unloaded lights off)		
CO2 Range (Optional)	Ambient to 3000 PPM		
Nominal Capacity (L)	360	520	1100
Porthole Diameter (mm)	13mm (50mm with humidity option)		
Light Intensity at 20°C Shelf Lighting Models	4x LED Rails Per Tray 400 µmols/m2/sec (measured 300mm from light source) Note: By placing two Shelf Light Trays on top of each other, it is possible to achieve intensities up to 650µmols at 300mm		
Light Intensity at 20°C Door Lighting Models	4x LED Rails 400 µmols/m2/sec (measured 300mm from light source)		8x LED Rails 400 µmols/m2/sec (measured 300mm from light source)
Weight	130kg	170kg	280kg
Electrical	10A/230V		
Heat Output	500 watts to 2000 watts (dependant on operating conditions)		
Noise Level @ 1 metre (dbA)	64		
Power Consumption (kWh/24)	8.5 (dependant on operating conditions)		
Refrigerant Type	R134a		

Product Specification

Features	Climatron 360	Climatron 520	Climatron 1100
Shelves (Door Lighting)	3 (DL)	4 (DL)	4 levels (DL)
Shelf Lighting	Shelf Mounted Lighting (Max 2)	Shelf Mounted Lighting (Max 3)	Shelf Mounted Lighting (Max 3)
Lockable Castors	✔	✔	✔
Fan Forced Air Circulation	✔	✔	✔
Star X Touch Screen	✔	✔	✔
Ethernet port	✔	✔	✔
Download data to USB	✔	✔	✔
Battery Backed-up alarms	✔	✔	✔
BMS	✔	✔	✔
Door Locks	✔	✔	✔
Supply Line Water Filters 1x Carbon, 1x Sediment	✔	✔	✔
Ecofoam Insulation	✔	✔	✔

Safety

Safety			
Over Temperature Safety	✔	✔	✔
Element Safety Cutout	✔	✔	✔

Options

Options	
Shelf or Door Lighting	Nomenclature designations: Shelf Lighting (SL), Door Lighting (DL)
Door Lighting	LED Lighting mounted to the outside of the glass door
55L Pump Water Feed Tank	Pump feed water supply where mains water is unavailable
Drain Pump	Drain Pump for when a suitable drain is unavailable
Additional Shelves	Additional shelves and clips can be supplied
CO2 Control	Set Point Control of CO2 Between Ambient and 3000ppm
Additional Port Holes	Additional 13mm port holes or 50mm port holes can be added to the side walls
Ultrasonic Humidification	Internally mounted humidifier (-H)
STAR X-DIM	Option to control light intensity from the touchscreen

Temperature and humidity performance graphs - subject to ambient conditions.

Lights OFF
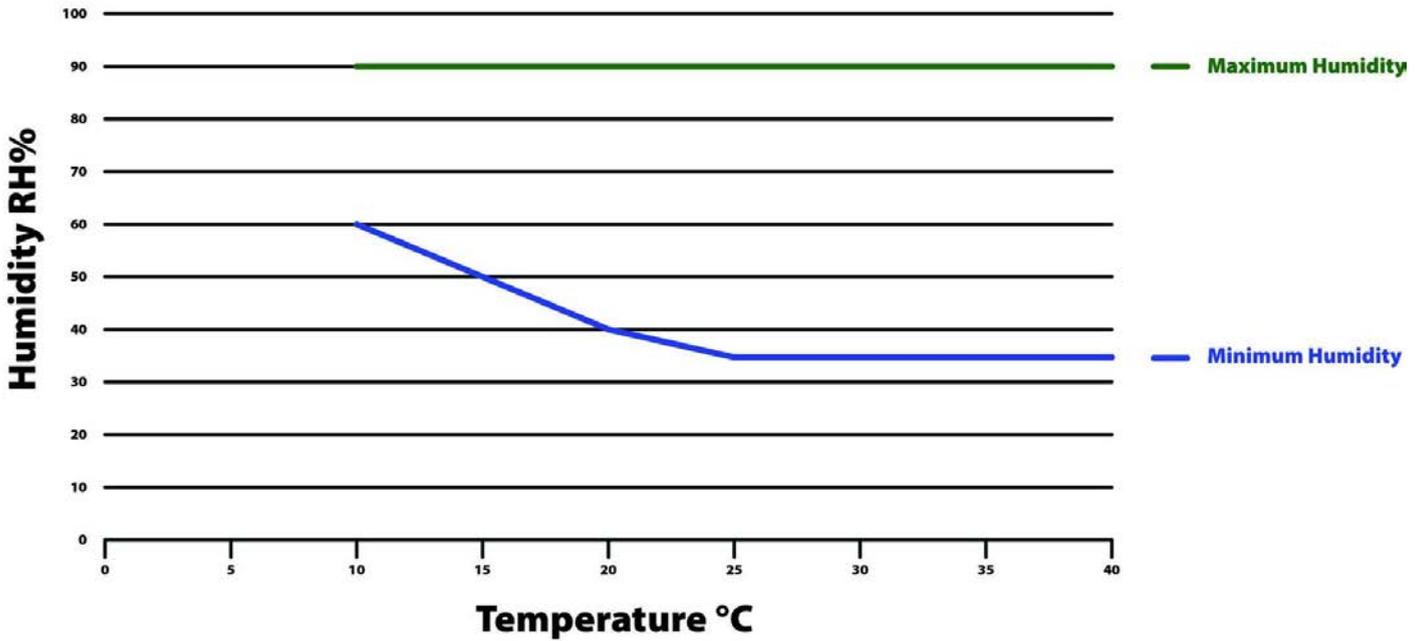
Lights ON
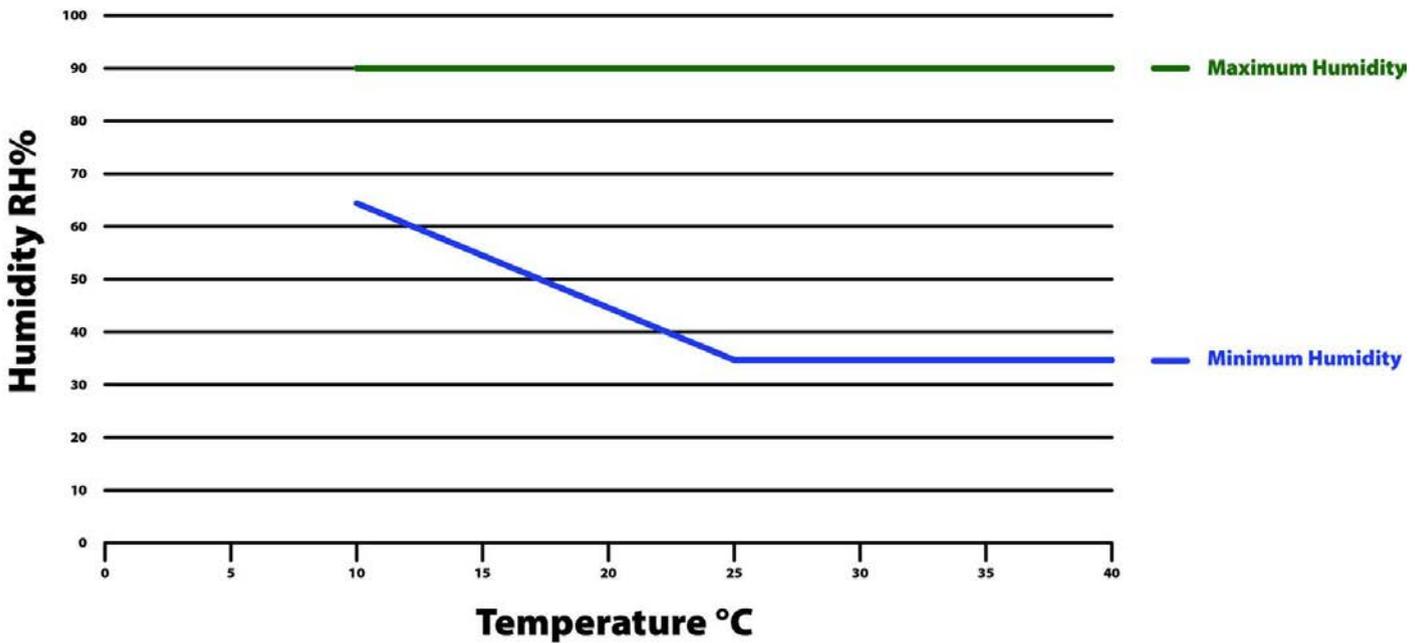
Minimum Humidity is based on an empty cabinet and an ambient condition of 25°C and 35%RH.

Operating Environment

Cabinet Location

Ensure the Climatron cabinet is placed in the correct environment, away from direct sunlight or direct heat sources such as heaters **(Fig 1)**. The product shouldn't be placed in a room where the ambient temperature exceeds that of which it was designed to operate **(Fig 2)**.

The Climatron cabinet should be stored inside at all times. Failure to adhere to this could cause significant drops in cabinet performance and damage to items stored inside.
Extreme Operating Environment:
- **Temperature:** *10°C to 32°C (+/-2.0°C)*
- **Humidy:** *Up to 85%RH*

Optimal Environment:
- **Temperature:** 23°C (+/-2.0°C)
- **Humidy:** 50%RH (+/-5%RH)

50%RH   **25°C**
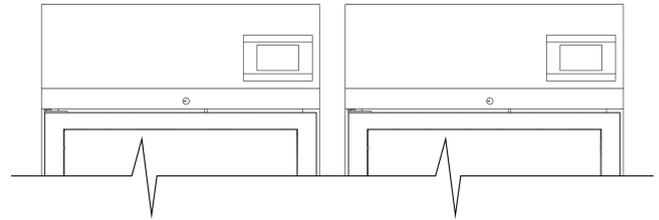
Fig 2. Suitable Environment
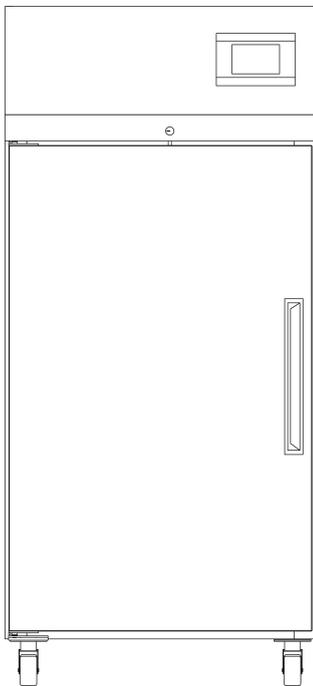
Fig 1. Suitable Environment

Operating Environment

Electrical Connections

All Climatron cabinets require a 10amp, 230V, 50hz power supply. A dedicated outlet should be used for the supply; do not use power boards or the like. A 3-pin moulded plug is supplied as standard to the mains.

Electrical Conditions:
- All Climatron cabinets include a 2.5m removable mains power lead with a three pin plug and right angle female IEC plug. Ensure the product is reasonably distanced from the power supply. **(Fig 1)**

- On the cabinet itself is a male IEC socket **(Fig 2)** and **(Fig 3).**

10 Amp IEC Socket

2m
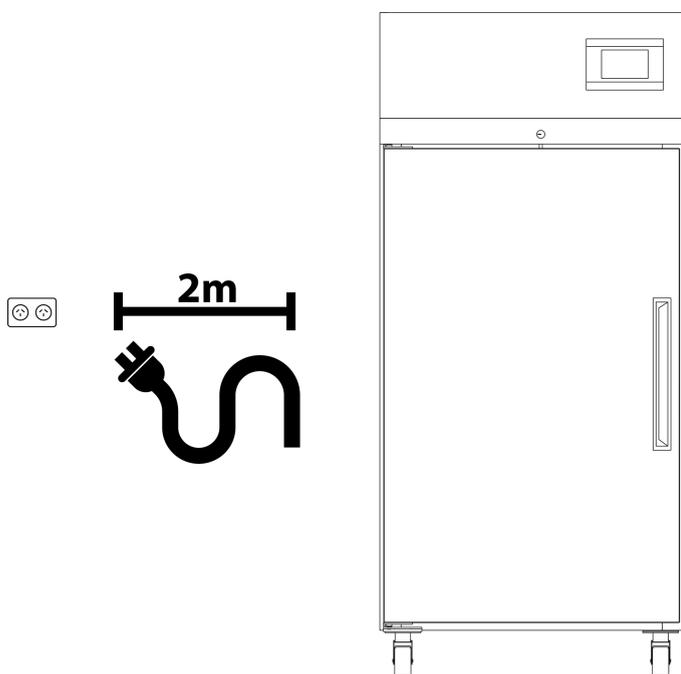
Fig 1. suitable cord distance (2m)
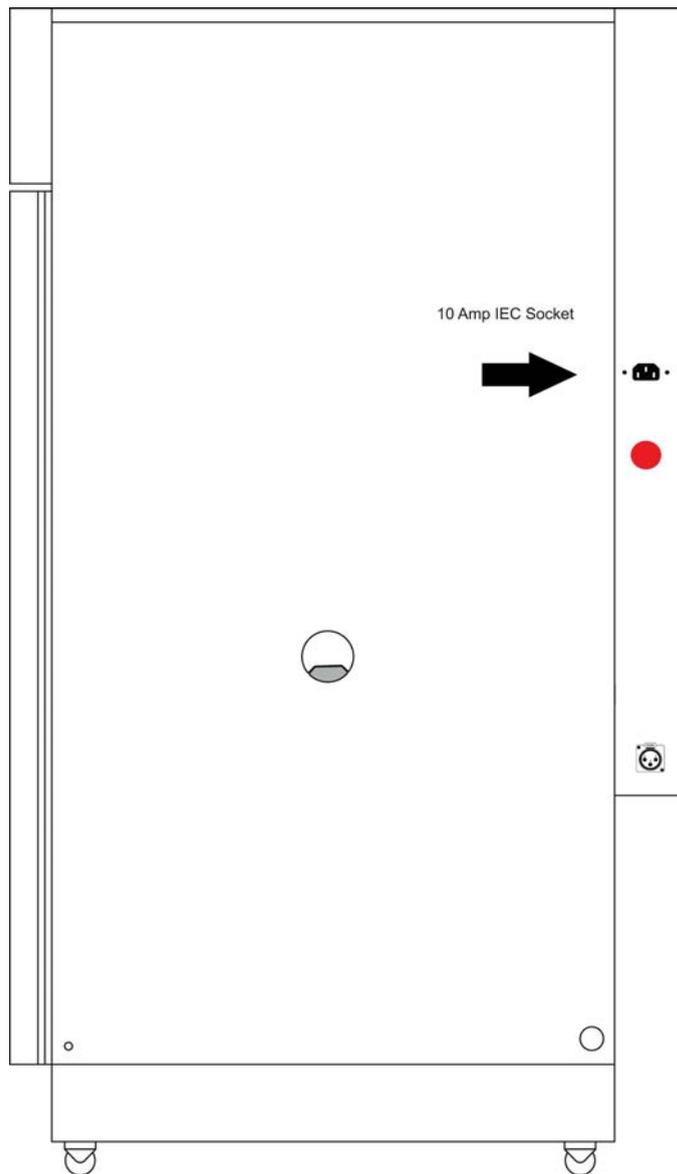
Fig 3. 10A/230V IEC socket location.

Fig 2. 10 Amp IEC socket

Operating Environment

Water Quality

The water quality parameters in the table below should be adhered to to get the best out of your Thermoline equipment. Due to the extensive use of stainless steel in Thermoline products, deionised water should not be used. It can cause corrosion (due to leaching over time) that may not be covered under warranty.

Thermoline suggests avoiding using tap water if possible. Using tap water may significantly increase the required frequency of cleaning and maintenance of the equipment. Unacceptable water can cause excess scale build-up and mineral deposits, particularly in humidity systems. This, in turn, can cause heater failure and issues with float switches. In water baths, corrosion due to insufficient cleaning is the primary concern, with heater circulators and circulation pumps being the most significant issue.

Note: All Thermoline equipment using water requires regular maintenance, inspection and cleaning. Six monthly for Humiditherm, Envirotherm and Climatron cabinets. Water baths will require much more frequent cleaning due to the ease of contamination in the water. Water should be changed for any signs of contamination.

Parameter	Range
Resistivity	**0.1 - 0.5 MΩ**
Conductivity	**2-10 μs/cm**
Total Dissolved Solids	**<10 mg/L**
Acidity	**6-7 pH**

Operating Environment Warnings

Climatron cabinets require ventilation around them. 100mm on either side and the back is necessary.

Climatron cabinets should be stored inside at all times. Failure to adhere to this could cause significant drops in cabinet performance and damage to items stored inside.

Ensure that the feed water is suitable for the cabinet.

Climatron cabinets are not suitable for use with flammable solvents! They are fitted with components that may be the source of ignition.

Setup

Uncrating/Unpacking

Unpacking process for foam wrapped and crated:
- In most cases, the Climatron cabinet will be delivered foam-wrapped and on its castors via sensitive freight (**Fig 1**)

- The Climatron cabinet may be delivered to remote areas in a crate. To remove the crate packaging with some cabinets, unscrew both the left and right sides of the packaging. **(Fig 2)** A forklift is needed to remove the Climatron cabinet from the crate.

- Please only dispose of the packaging once the Cliamtron cabinet is inspected. If you find damage when you open your package, please let your supplier or Thermoline Scientific know by phone on +61 2 9604 3911 or email at service@thermoline.com.au.

Fig 1. Unpacking Process (foam wrapped)
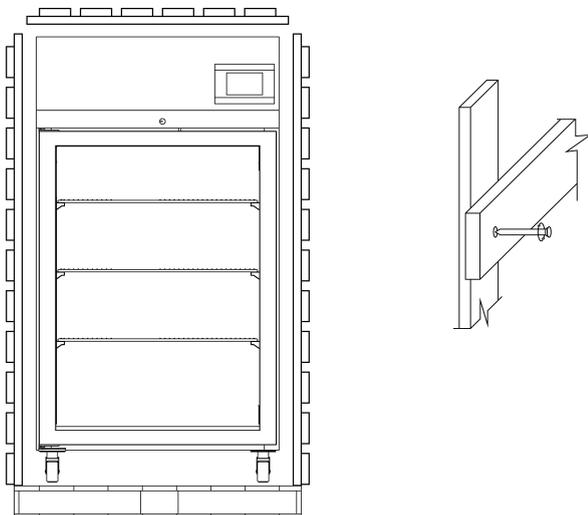
Fig 1 . Unpacking Process (Crate)

Moving

Moving the Climatron cabinet:
- Ensure that the Climatron cabinet is rolled on an even and flat surface. Uneven surfaces can cause the cabinet to fall over.

NOTE: Climatron cabinets are 'Top Heavy'. Do not move the cabinet too quickly. **(Fig 3 & 4)**

Fig 3 . Safe moving of cabinet.
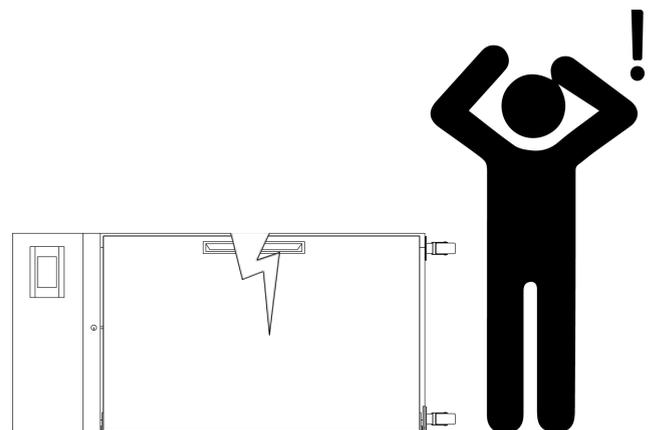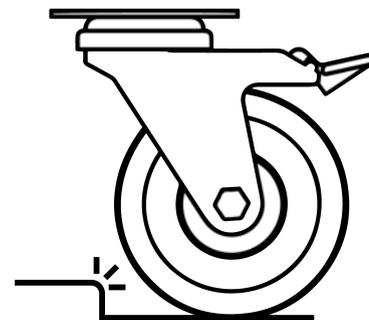
Fig 4.

Setup

Castors

The Climatron cabinets are equipped with lockable castors to prevent cabinet movement.

Castor Setup:

- Ensure the Climatron cabinet is placed on an even flat surface. Uneven surfaces can cause issues within the cabinet. Uneven surfaces can cause the cabinet to fall over or roll away with unlocked castors.

- Castors can be fixed in place by pushing down on the brake lever. Ensure the castors are locked to prevent unwanted movement from the cabinet **(Fig 1)**.

- Ensure when placing the Climatron cabinet into place that the castors can be accessed so they can be locked **(Fig 3)** and unlocked **(Fig 2)**. Please contact your supplier or Thermoline should there be any castor damage.
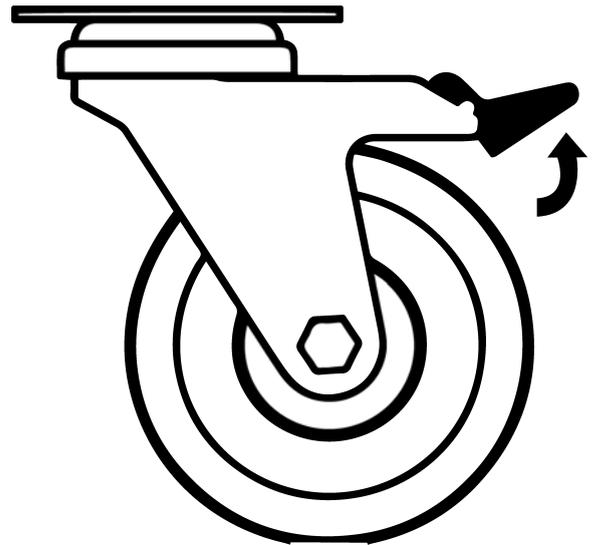
Fig 2 . Castor Unlocked

Fig 1. Castor Unlocked

Fig 3 . Castor Locked

Setup

Cabinet Location

Location Requirements:
- Ensure the Climatron is placed on a firm-level surface **(Fig 1).**

- Do not store items on top of the cabinet.

- The Climatron cabinet requires ventilation. Thermoline suggests 100mm on the sides and 100mm on the back, which aids accessibility **(Fig 2).** 300mm is required at the top to ensure good ventilation **(Fig 3)**.

- The cabinet doors should also be allowed to open and close at full range **(Fig 4).**
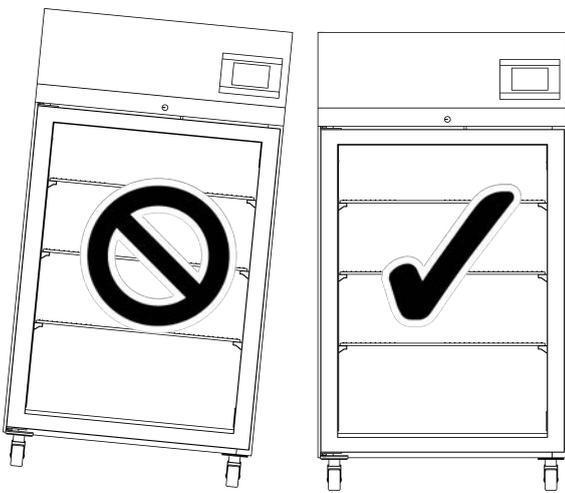
300mm

Fig 3.

Fig 1. Correct Levelling

100mm

Fig 2.

100mm
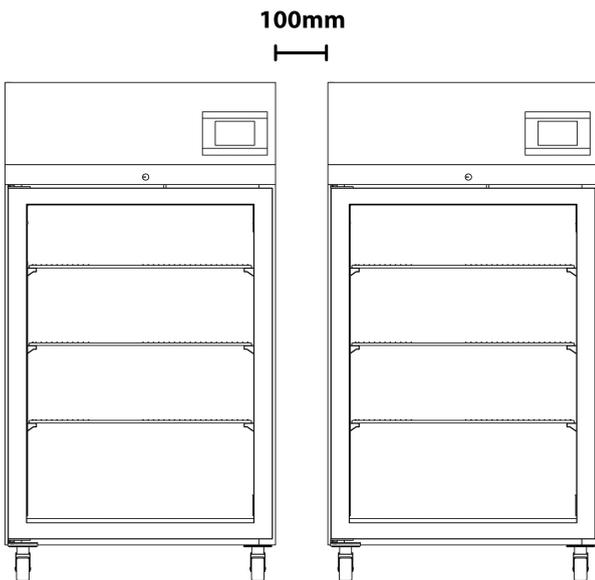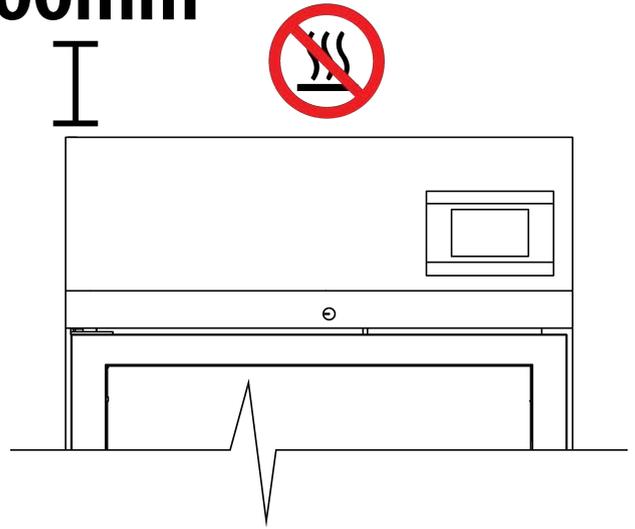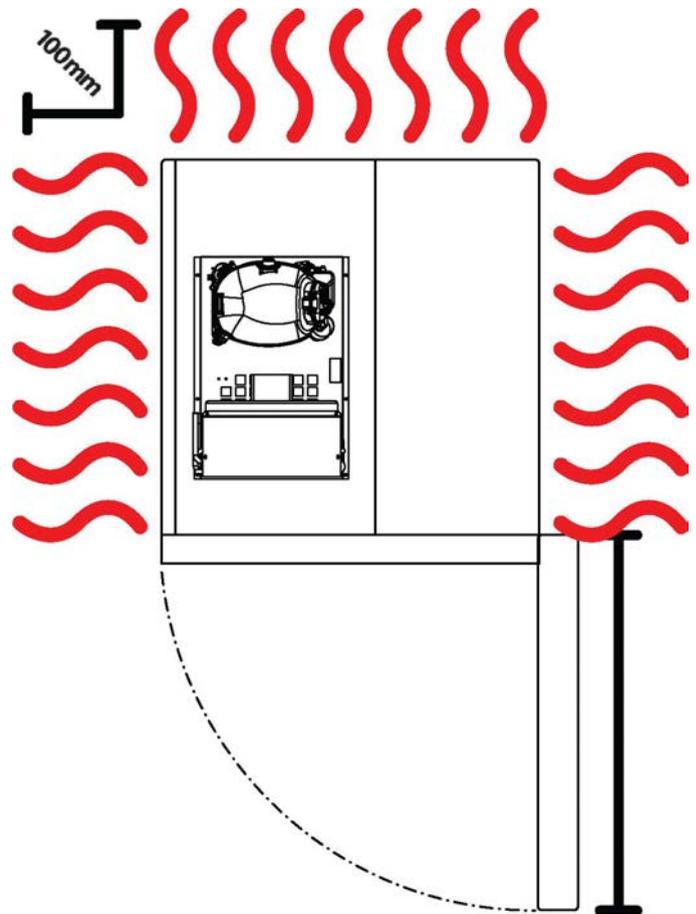
Fig 4.

Setup

Shelves

All Climatron cabinets come equipped with shelves used for holding items while in operation. The shelves can be adjusted to different heights to accommodate different sized items.

To adjust the shelf clips you must:

- Hook the top of the clip into the slot seen below.
- Pinch and squeeze the base of the clip
- Push base of clip into slot and release.
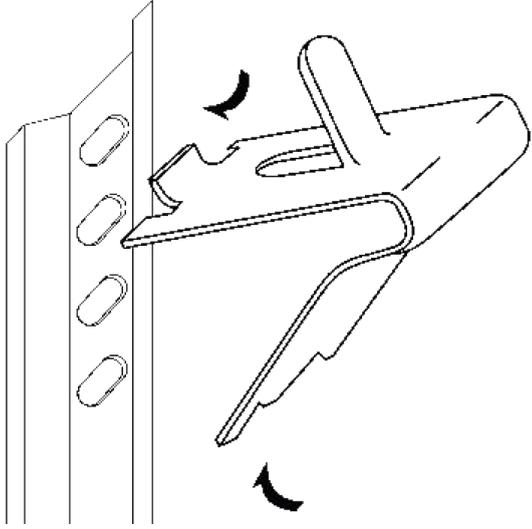
SAFETY NOTE:

- The edges of the clips can be sharp. Thermoline recommends using protective gloves while adjusting or moving the clips (e.g. leather gloves).

Setup

Cleaning

The interior, exterior, and door gasket can be cleaned as often as required using a soft cloth and soapy water. Never use abrasive cleaners or scouring pads, as these will scratch the surface and may result in corrosion. Never use caustic-type cleaning agents.

All cabinets have electrical components. These items should not be subjected to any levels of moisture.

If the Climatron cabinet has the ultrasonic humidity option, the water system (filters and humidifier) should be inspected and flushed. The supplied Water Filter Assembly is included to provide additional protection even if the supply water meets the suggested water quality requirements to keep the residual deposit to a minimum but cannot eliminate them. Even with supply water meeting the requirements, regular maintenance is still required and replacement every six months. During the replacement, you can also check the condition of the humidifier. Instructions for this are contained further in the manual.

Cleaning Stainless Steel

Stainless steel is, under most conditions, extremely resistant to corrosion. This is in part due to the addition of chromium and nickel to the steel and the formation of a durable chromium oxide at the surface during the manufacturing process. There are several chemicals that will attack the surface of stainless steel, plus the lack of oxygen at the surface will cause rusting, corrosion and pitting. When cleaning tap water is usually suitable but for ordinary running of the cabinet Thermoline suggests water meeting the parameters mentioned in the water quality section manual.

NOTE: DO NOT USE DEIONIZED WATER

Turn off power at the power point before cleaning the condenser.

The condenser is located on the left hand side of the cabinet behind the Front Panel. To remove the panel simply lift upwards to remove. At this point you would have full access to the condenser and would be able to clean it.

NOTE: **Use a soft brush and/or vacuum with a soft brush attachment to remove any build up of lint and/or dust. Take extreme care not to damage the aluminium fins on the condenser face.**

NOTE: the touch screen will remain connected to the front panel.
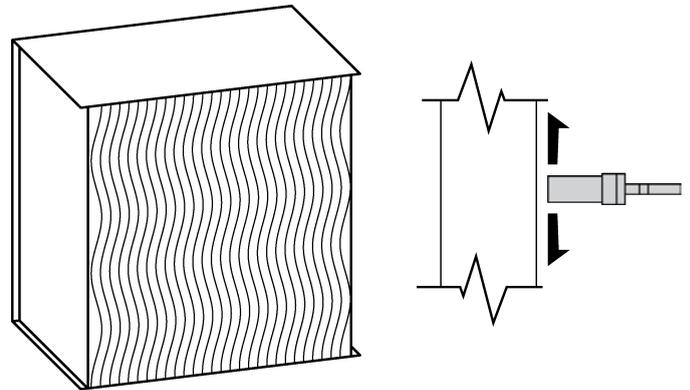
Setup

Door Gasket

The door gasket should be cleaned regularly with a mild soap solution. If a gasket is to be replaced, please contact Thermoline Scientific. Regular inspection is recommended
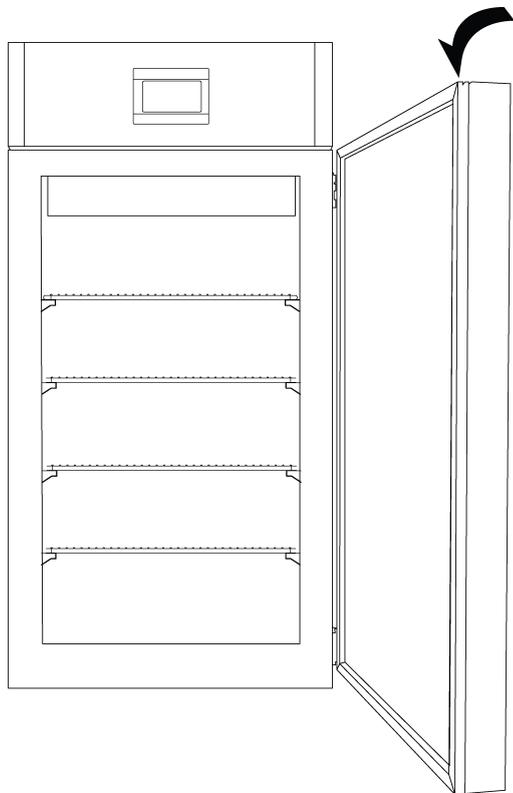
Port Hole

The cabinet comes equipped with a 13mm port hole and a combination of 54mm portholes, depending on the model. DL models without humidity do not have a 54 mm port hole.
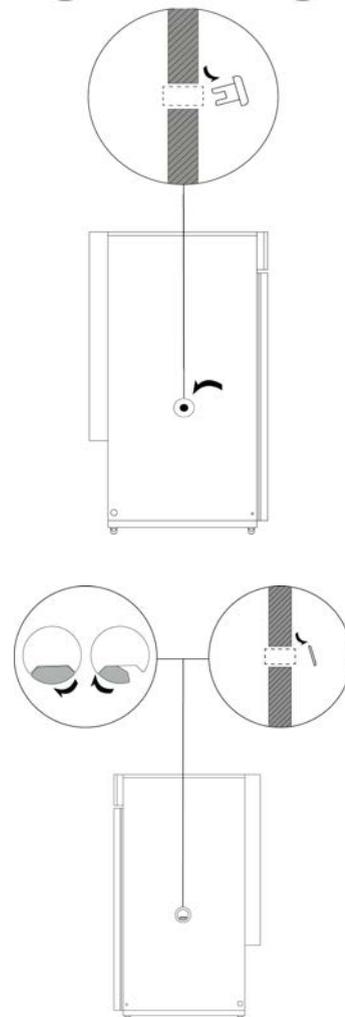
Push-Fit Pneumatic Fittings

Thermoline uses nickel plated brass push-fit fittings for water inlet connections on the Climatron cabinets. There are also on the optional CO_2 inlet. To use the fitting push the 6mm hose of fitting into the push-fit connector. To release push the outer ring in and pull the hose or fitting out. Below shows a flexible tube, mains water fitting and elbow attached to a push-fit connector.
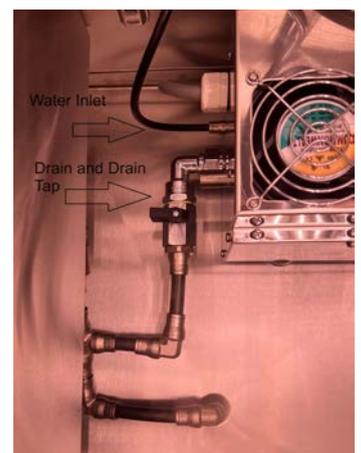
Setup

Lighting

Your Climatron will have either door lighting (DL) or shelf lighting (SL). If it is the special build that has both, it will have a selector switch, as you can not run both Door and Shelf Lighting at the same time.

Both the DL and SL models also have low-intensity strip lights down the sides of the cabinet with a colour of approximately 630nm.

Door Lighting Setup

The door lights are already fully installed and ready to operate. There is a single manual dimmer on the right side of the cabinet (as you look at it). While you can adjust the intensity, as standard, the lights only go on and off with the program (unless the STAR-X-DIM option has been taken).
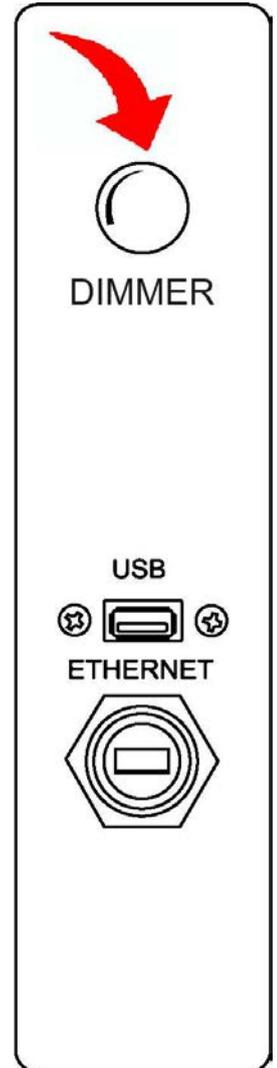
Setup

Shelf Lighting Setup

The shelf light trays are delivered held in place inside the cabinet. There is a manual dimmer on the right side of the cabinet (as you look at it) for each shelf light tray. While you can adjust the intensity, as standard, the lights only go on and off with the program. (unless the STAR-X-DIM option has been taken).

The leads need to be passed through the 54 mm port holes and plugged into the power sockets provided. Make sure the keyways line up, and then screw the locking nut into place.

The light trays sit on the same shelvex clips as used for the open wire shelves and can be positioned accordingly. A maximum of three trays can be used at once (two for the Climatron 360 model).

Shelf lights tray on shelvex clip

Shelf lights installed with power cables going through the 54 mm port holes.

Setup

Water Filter

A water supply is required if the cabinet is fitted with optional Humidity control. The water supply can come from either mains water or from a water reservoir pumping water to the cabinet. In both cases the water will flow through a pressure regulator to reduce water pressure below to 14psi. Pressure higher than this can cause damage to the water control system for the the humidifier. The supplied water filter is encased in a protective cover **(Fig 4).**

Attaching Water Filter
The water filter pack is supplied but not put in place to ensure it does not get damage during transport.

- On the back of the cabinet are two protruding screws **(Fig 1)** that match two key holes on the top of the filter housing **(Fig 2)**. Fit and hang the filter pack from the protruding screws (do not tighten the screws after fitting). These are located below the electrical box on the 360 and 520 cabinets with the 1100 cabinet having them at the top.

- On the back of the cabinet are two protruding screws **(Fig 1)** that match two key holes on the top of the filter housing **(Fig 2)**. Fit and hang the filter pack from the protruding screws (do not tighten the screws after fitting).

- Once the filter pack is in place the water inlet can be connector to the humidifier inside the cabinet using the push-fit connector.

- **Note: Do not connect water direct to the water inlet without passing through the filter/pressure regulator as it will damage the cabinet.**
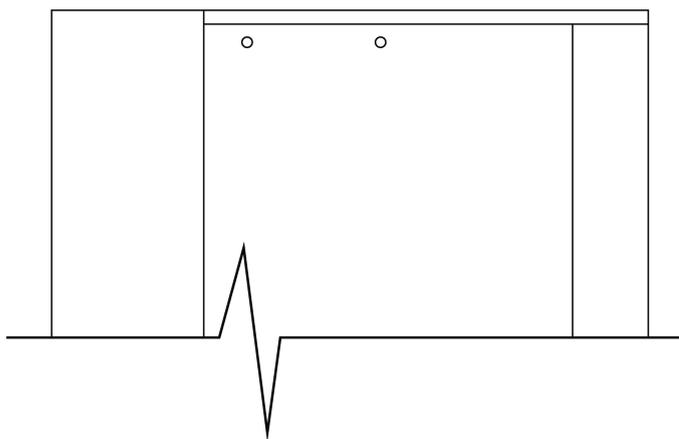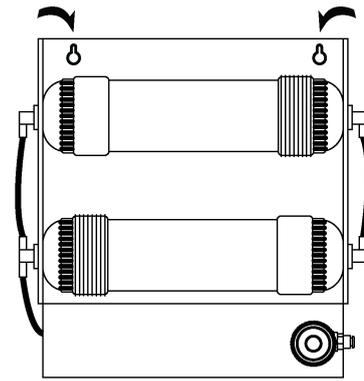

Fig 2. Water Filter Key Holes

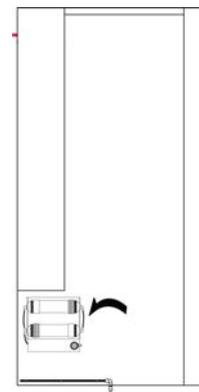**Fig 3. Installed Water Filter**

Fig 1. Water Filter Screws

Fig 4. Water Filter Cover

Setup

Water Filter Replacement

Thermoline suggests that, at a minimum, the particulate and carbon filters are replaced every six months. This could be more frequent depending on the feed water quality. Replacement filters are available through the Thermoline online parts store (MFC2000).

Replacing the Water Filter

- Power down the cabinet and isolate the water supply.

- Release the pressure within the line and disconnect the inlet water and outlet from the filter pack.

- Remove the filter pack from the cabinet and lay it on a flat surface.

- Remove the six screws and lift off the front plate.

- Replace the filters taking note to match the orientation and flow.

- Reinstall the cover and put the filter pack back on the cabinet. Reconnect the inlet and outlet and turn the water back on (check for leaks).

- Turn the cabinet back on.

Water Filter Pack in Place

Water Filter Pack with Cover Off

Water Filter replacement Kit

Setup

Humidifier Setup

The humidifier is located inside the cabinet. It will require the power lead to be connected to the electrical box on the rear of the cabinet and have the water inlet connected from the filter box to the humidifier.

Note: Do not attach the water directly to the humidifier without passing through the pressure reduction valve and filter pack.
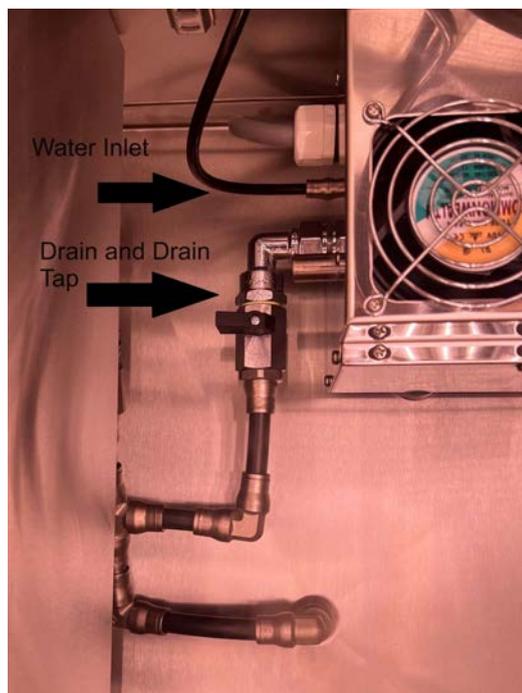
Connect the power lead through the lowest 54 mm port hole and connect it to the corresponding port on the Climatron electrical box.

Fig 1. Power lead and water feed line passed through the lowest 54mm port hole

Fig 3. Humidifier power connection

Fig 2. Humidifier Connections


Fig 4. Humidifier in place

Setup

Connecting mains water or water with similar pressure:

- Locate the Mains water connector **(Fig 5)** found inside the cabinet upon delivery. Insert mains water connector into water pressure regulator. **(Fig 6 & 7)**

Note: Thermoline recommends using water meeting the parameters shown in the water quality section of this manual.

Note: Make sure that the pressure does not exceed 60psi (+/-7psi) (400kpa, +/-50kpa).
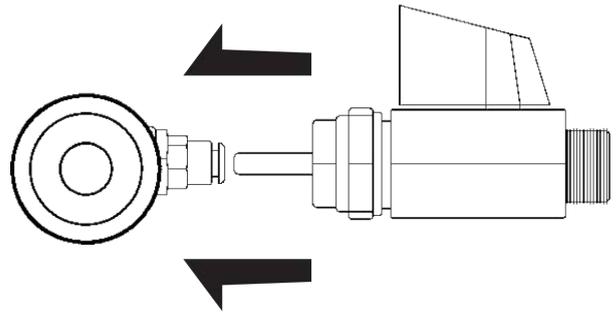
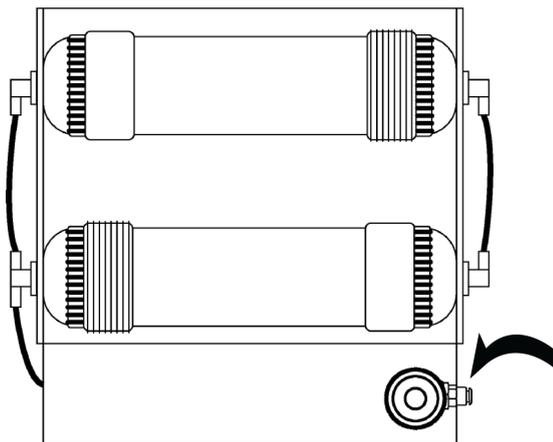**Fig 7: Connection of Mains Water Connector and Water Pressure Regulator.**

NOTE: When using a continual mains water supply, the drain outlet must be connected to a suitable waste point. Failure could result in flooding.

Fig 5: Mains Water Connector
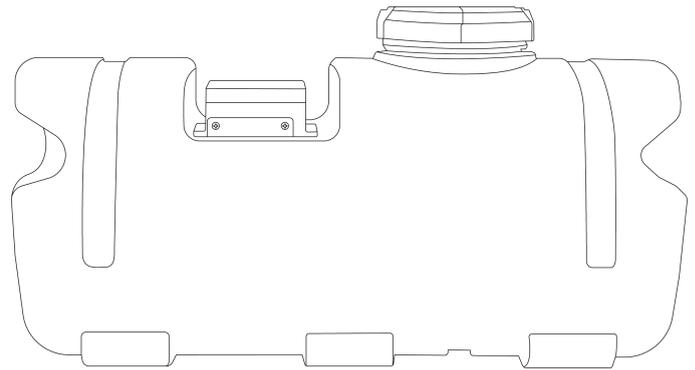

Fig 6: Water Pressure Regulator Connection

Setup

## Alternate Water Supplies

55 Litre Water Container:

- This is placed a floor level and will pump water to the cabinet as required. Supplies water at 50psi (3.5bar, 350kpa)

- There is an audible low water alarm is triggered to alert that the container needs to be filled.

- Thermoline suggests that the cabinet drain is connected to a floor drain or pump arrangement when using the 55 litre water container.

NOTE: DO NOT USE DEIONIZED WATER

Connect into Water Container hose to Water Filter (shown below)

55 Litre Water Container (shown above). Equipped with a black hose for connection to the Water Filter.
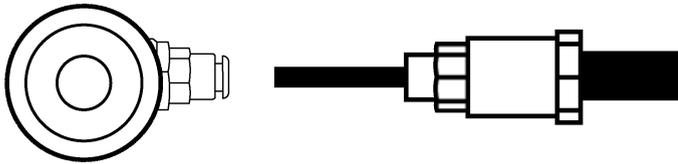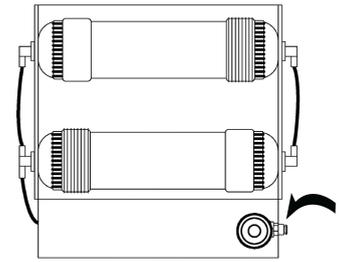
Setup

Water Pressure Regulator

Located with the Water Filter Assembly. The Water Pressure Regulator can be adjusted to stop the Float Switch 'Bounce' and also shut off the water supply to the cabinet.

Note: Do not adjust the regulator unless there is an issue. It is preset at the factory.

Adjusting the Water Pressure (if required):
- To adjust the water pressure regulator first pull the knob outwards **(Fig 1)**. You should feel and hear a click as it comes out. Twist it clockwise (to increase the pressure) or anti-clockwise (to decrease the pressure) depending on what needs to be done **(Fig 2 & 3)**.
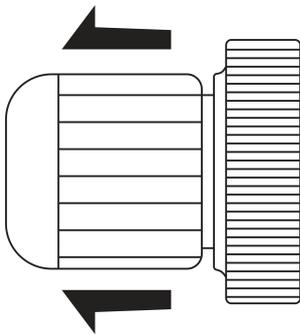

Location of Water Pressure Regular
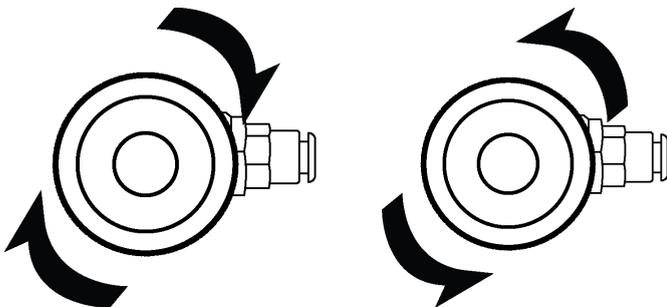

Fig 1. Water Pressure Regulator

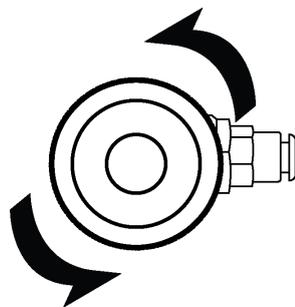
Fig 2. Increase Pressure   **Fig 3. Decrease Pressure**

Setup

Drain

All Climatron cabinets are equipped with a drain. This is particularly important when taking the humidity control option although the refrigeration drip tray is also connect to the drain. The drain point is located at the rear of the cabinet below the electrical enclosure.
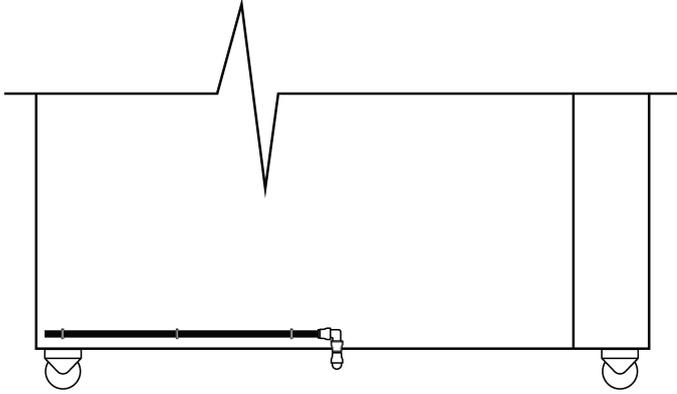
The drain consists of an open-ended 12mm poly pipe. Ideally, a floor drain would be available or alternatively, a sump pump could be used.
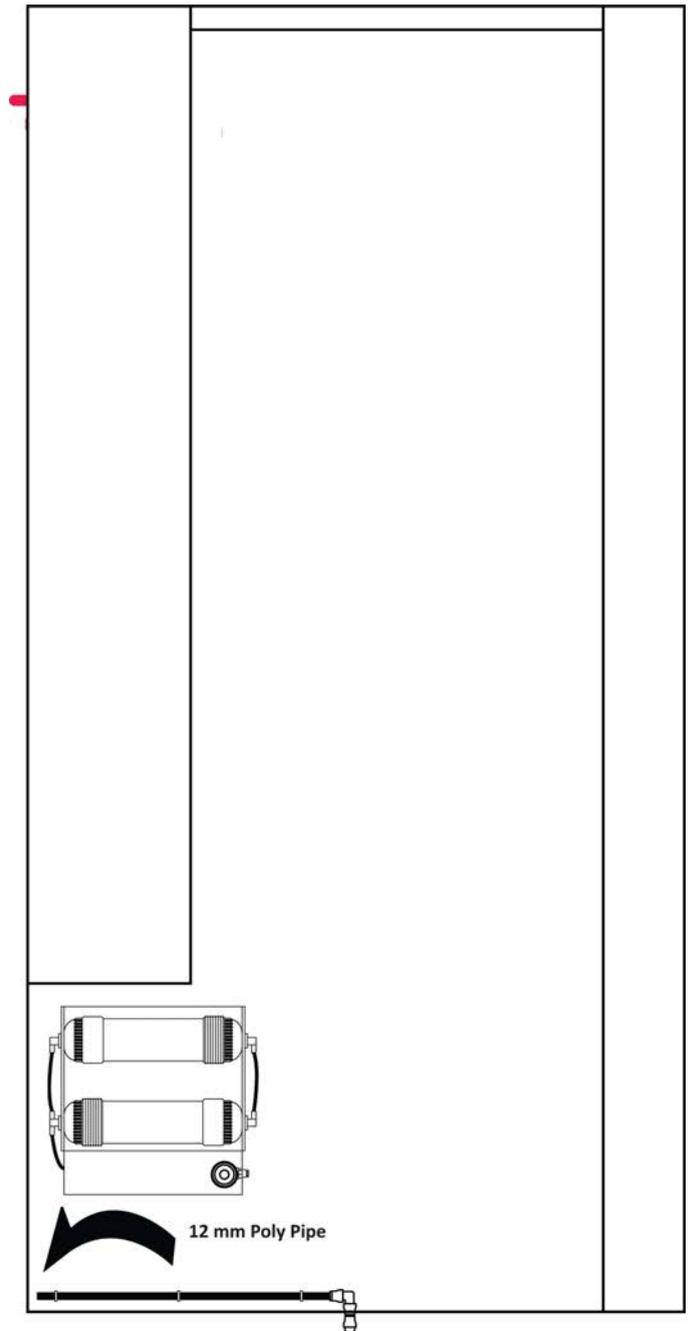
Cabinet drain location.

Setup

## Draining the Humidifier and Depressurising the Water Feed Line.

The humidifier will need to be periodically be drained, inspected and flushed/cleaned. This procedure can also be used to depressurise the water lines prior to changing the water filters. While the cabinet is running with the humidity function enabled isolate the water supply and open the drain on the humidifier (the float switches will prevent any damage). After a short period of time turn of the power to the cabinet using the shutdown procedure. You can then disconnect the water lines with minimal water spilling.
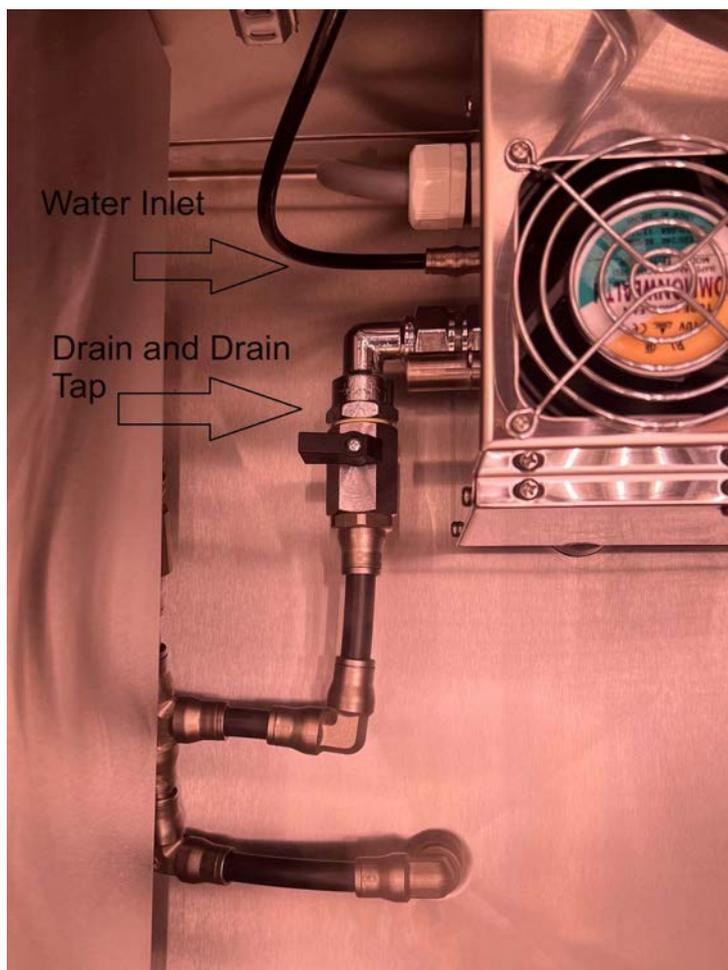
Once the water is drained, the nebuliser can be inspected (two small discs). The lid is held in place by four screws. There is often a small black dot at the centre. This is nothing to be concerned about and will not be able to be removed without causing damage. The nebuliser can be flushed with clean water if needed. Replace the lid once clean, and close the drain valve. With the water supply turned back on, the humidifier will refill once the Climatron is turned back on.

Setup

Optional CO$_2$

When fitted, the CO$_2$ fitting will be located at the rear of the cabinet in the form shown **(Fig 1)**. A barbed fitting adapter is also supplied **(Fig 2)**. Connect a regulated CO$_2$ supply to this point with set to a maximum pressure of 125kpa. (+/-25kpa). Make sure that when connecting the CO$_2$ supply that is connected in a manner that will not leak. Use a hose clamp if necessary. See STAR X Touchscreen operating guidelines on how to control the CO$_2$.

Note: Do not adjust the regulator. It is preset at the factory.

Please note that when using the CO$_2$ sensor within the cabinet, the maximum temperature is 60°C. The sensor is not rated to run higher than that. The sensor can be easily unplugged and removed from the cabinet. Once removed, the Humidtherm cabinet will be able to reach its usual 80°C maximum temperature.

Fig 1. CO$_2$ connection

Fig 2. CO$_2$ connection adapter

Setup

Loading

All Climatron Cabinets cabinets require constant air flow throughout the cabinet to maintain the desired temperature and humidity.

Loading Requirements:
- Airflow is an important factor in maintaining a stable and uniform environment for optimal usage. Keep the sides, top and bottom clear of any obstructions to ensure that the airflow is consistent. Take extra care to keep the fan free of blockages. It is important to ensure that the air is circulating properly around each product on each shelf. **(Fig 1)**

- Distribute the load evenly over all of the shelves rather than stacking everything on one shelf.

- Ensure the highlighted area of the cabinet is clear of all obstructions to ensure that proper ventilation is allowed throughout the cabinet. **(Fig 2)**
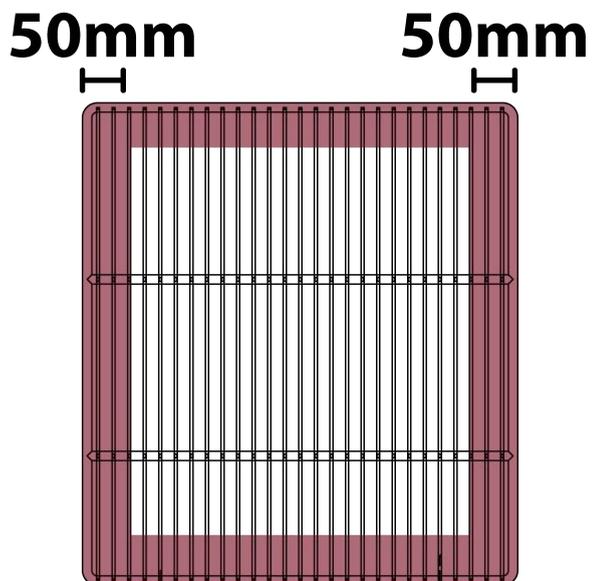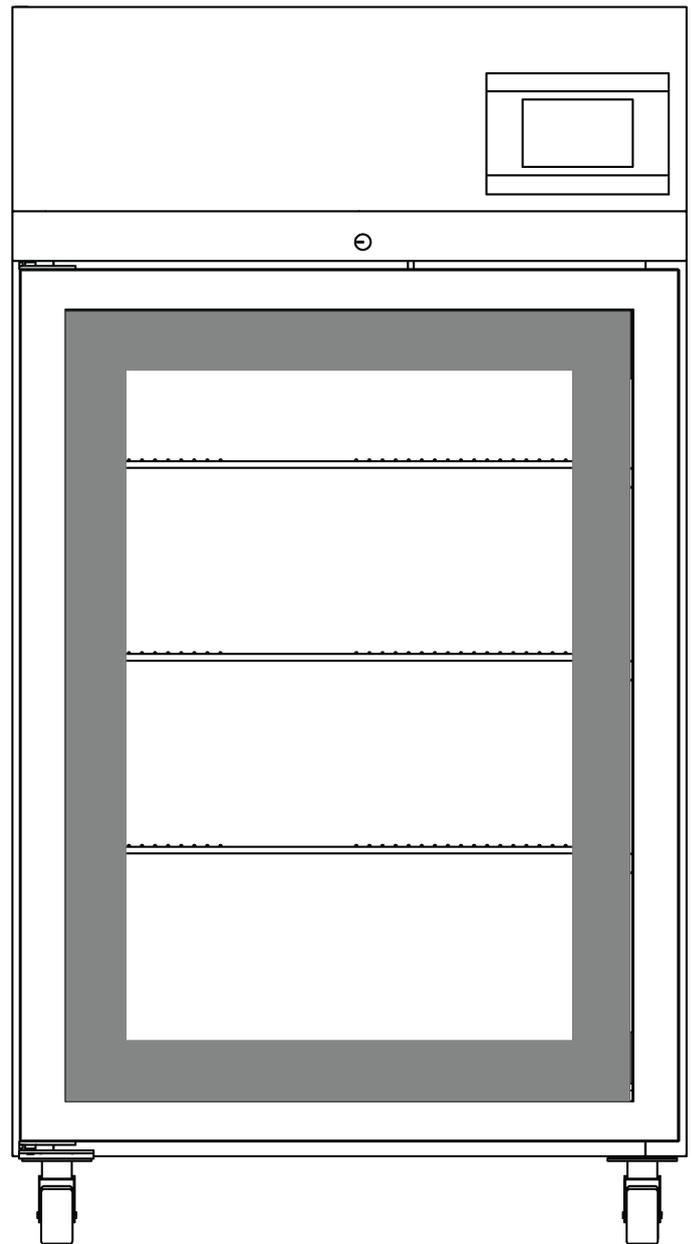

Fig 1.

Fig 2.

Setup Warnings

Castors can be fixed in place by pushing down on the brake lever. Ensure all castors are locked to prevent unwanted movement from the cabinet.

Ensure that the Climatron cabinet is rolled on an even and flat surface. Uneven surfaces can cause the cabinet to fall over and damage the product.

Ensure that the feed water is suitable for the Humditherm cabinet.

Failure to adhere to the requirements can lead to improper ventilation. Failure to observe these guidelines will void manufacturing warranty.

Packaging supplied on cabinets can be sharp and cause injury. Caution must be taken when removing the crate or using knifes to cut tape and cardboard.

Start Up Procedure

Start Up Procedure

Start-Up process for Climatron cabinet:

- Before proceeding, please ensure that all internal and external packaging has been removed from the cabinet and that all tape, plastic bags and foam pieces have been removed.

- Once the cabinet is in a suitable location with the water and drain connected you can now turn on the power.

- Take the supplied lead and plug it into the male IEC socket on the side of the Climatron cabinet. Next, plug the 3 pin plug into a 10amp General Purpose Outlet.

- The controller will go through a warm-up period and then show the security screensaver (SOV mode).
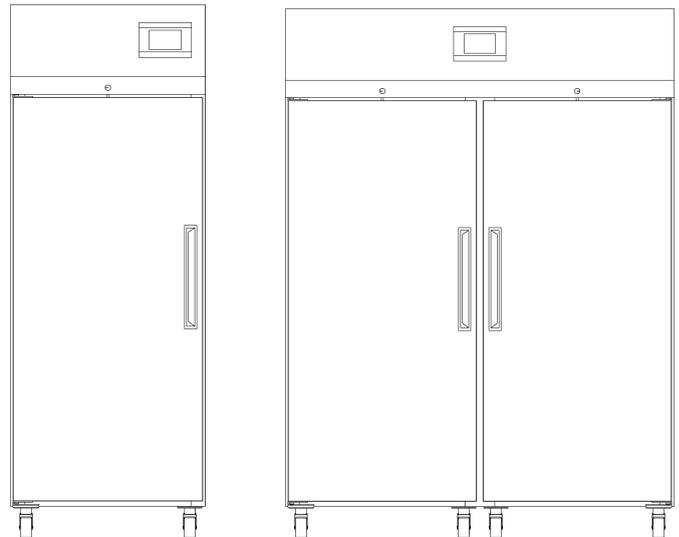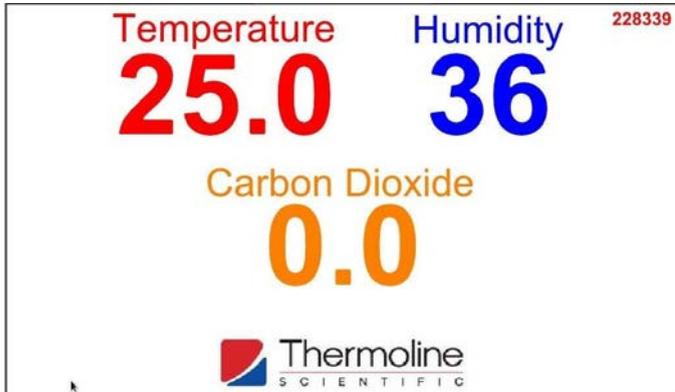
Temperature Controller

Factory Settings:

- Upon first start-up, the temperature will be set at 25.0°C and with the humidity function set to off.

Security Screen Saver

The screensaver is displayed on initial power-up or any time the touchscreen has power cycled to it. You can follow the instructions below to navigate this section and get to the Main Screen.

To exit the screen saver, you must input the security code. Press the Thermoline logo, as shown below, to access the passcode.
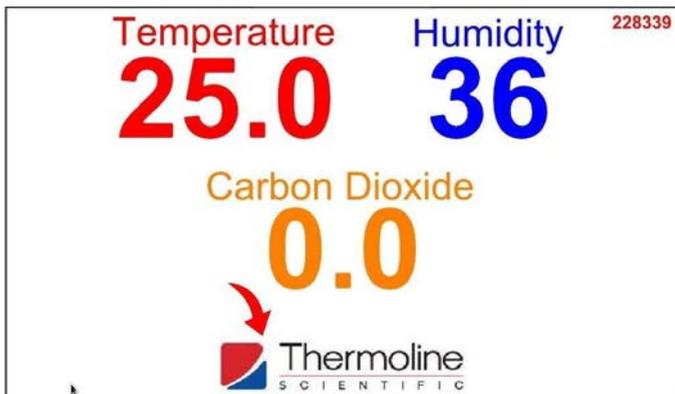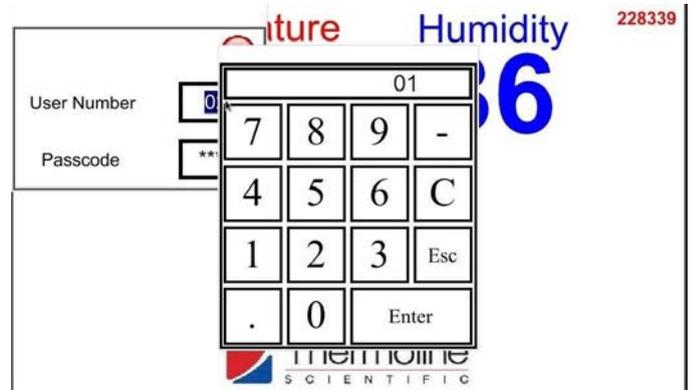

At this point, you should be seeing the User Access window shown below.
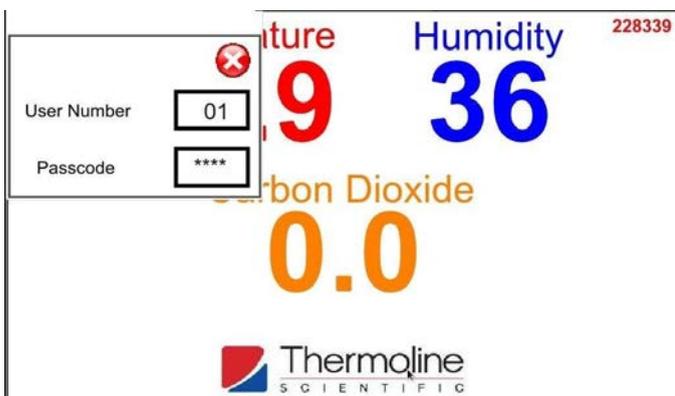
Press the passcode section on the right column and enter the passcode using the numeric keypad, as shown below.

**NOTE:** *For this section of the STAR X controller, use the User Number '01' and the Passcode '1111'.*

After entering the passcode, press anywhere above the Thermoline logo to continue to the main screen and then close the User Access window.

Use the QR Code to see the video of this step.

From here you can set the humidity function (and CO_2 if fitted) to on. Also the SOV values for these can be set.

Shut Down Procedure
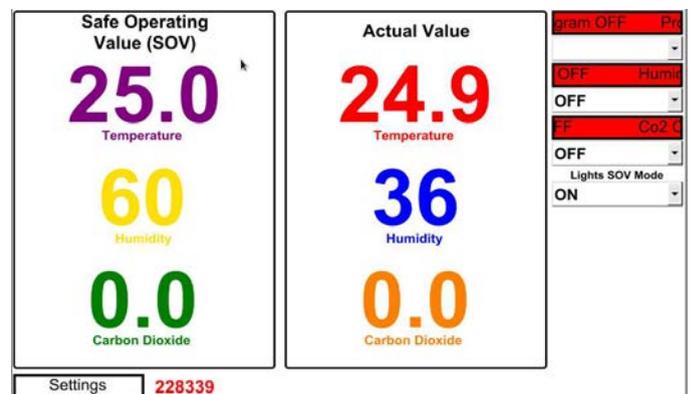
Shut Down Procedure

Shutdown process for the Climatron cabinet:
- Because of the battery backed up alarm system, just turning off the power will cause a power fail alarm to show on the screen.

- The power to the controller needs to be interrupted by pressing the red button and holding it in while turning off the mains power to the cabinet.

STAR X User Guide
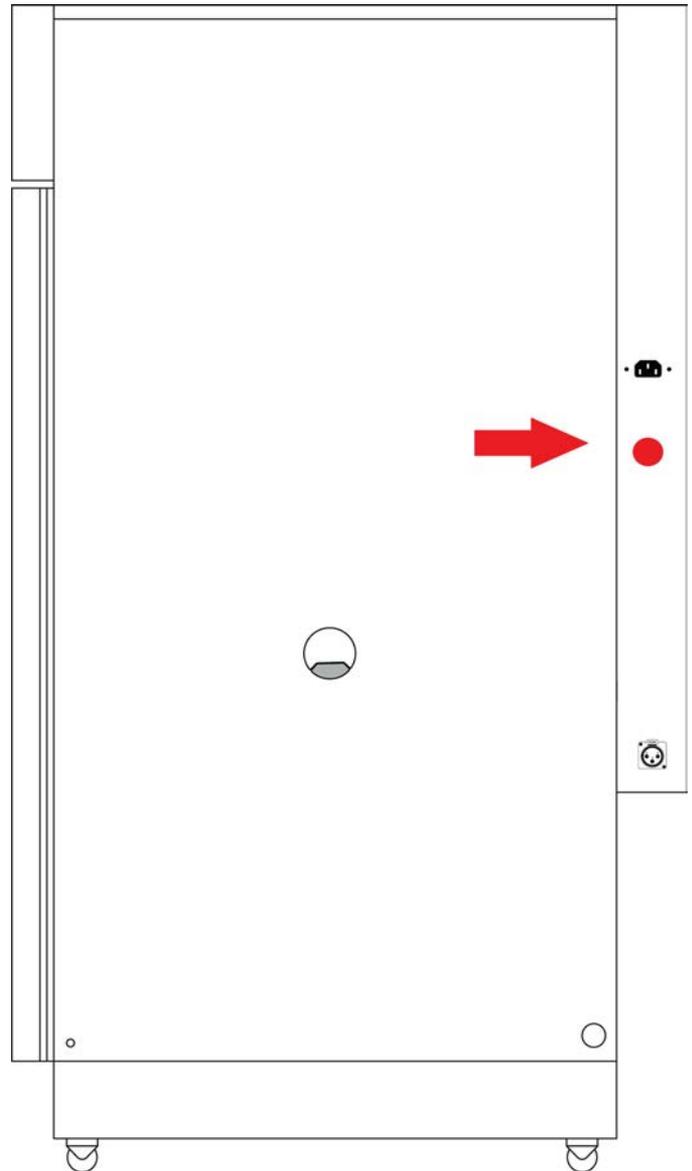
The temperature controller on the Climatron cabinet is a STAR X touchscreen. The Thermoline STAR X has been designed and configured to provide ease of use and a suitable level of security. The STAR X has a unique identifier that allows traceability back to the instrument.

SOV Mode
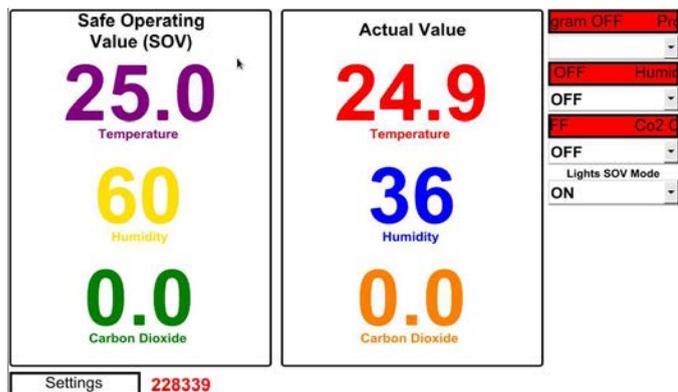
This mode is simply setting a single temperature, humidity and CO_2 setpoint and having the cabinet operate continuously without any ramp, dwell or timer actions.

Safe Operating Value: The values below the heading "Safe Operating Value (SOV)" are the current set values the controller will start controlling on initial power. The purpose of the "SOV" is to have a safe condition that will not cause damage to any research. In the event of a power failure (including alarm battery), the cabinet returns to this mode.

Actual Value: This is the current measured temperature/ Humidity/ CO_2 of the workspace.

Program ON/OFF/Pause/Resume: The drop-down menu in the top right-hand corner allows the operator to Start, End, Pause or Resume a Program/Diurnal Cycle.

Humid/Co2 ON/OFF: Below the Program drop down menu are the Humidity and CO_2 functions. Use these to turn off the Humidity and/or the CO_2 on or off.

Lights SOV Mode: Used to turn on the lights in SOV mode.

PSV Mode
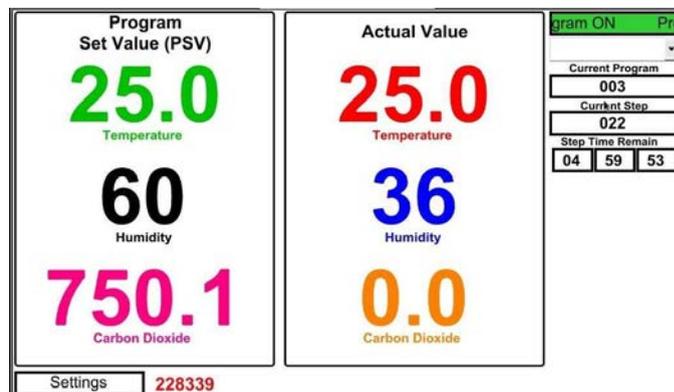
Program Set Value: The "PSV" is shown when a Program is operating. These values cannot be changed by touching the value.

NOTE: *The values can only be adjusted within the Program Set-Up accessed via the settings menu.*

Current Program: This indicates the Current Program is running and is only visible when a Program/Diurnal Cycle is operational.

Current Step: This indicates the Current Step in a program is running and is only visible when a Program/Diurnal Cycle is operational.

Step Time Remain: This indicates the remaining time of the "Current Step" and is only visible when a Program/Diurnal Cycle is operational.

NOTE: *It is important to activate the Humidity and CO_2 before initiating the Program.*

Use the QR Code to see the video of this step.

Alarms

The STAR X is equipped with various alarms. The instructions below will run through each alarm and its primary function.

Power Fail: The STAR X Touchscreen has a controller battery backup in the event of a power fail. A fully charged battery will keep the Alarms and Touch Screen powered for approximately 24hrs. If the power loss is extended and you wish to turn off the cabinet and alarms please use the shutdown procedure shown in the manual.

Battery Fail: Approximately every 7 days the STAR X Touchscreen Touchscreen checks the Battery Health. If during the 5 minute test the battery voltage falls below 22vdc a battery alarm will occur. If the alarm occurs the battery may need replaced.
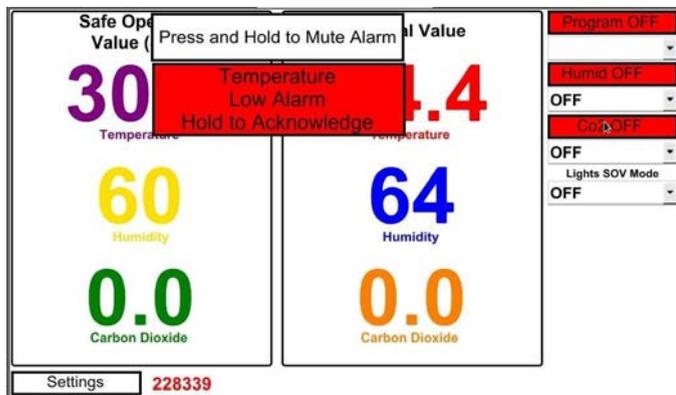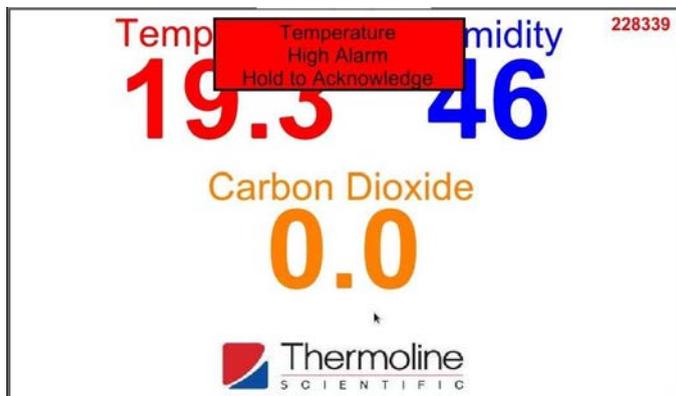
NOTE: *You must log into the main screen to mute and acknowledge alarms.*

Latching Alarm: 'Latching alarm' means that if the alarm activates and subsequently the condition returns to normal, the alarm will remain *latched,* or visible, until the alarm Acknowledge button is pressed. While the alarm can be muted, it will return in 15 minutes unless the condition has been resolved and the alarm is acknowledged.

Temperature Deviation Alarm: If the Actual Temperature deviates the SOV or PSV by more than the set tolerance and for more than the Alarm Delay Time, a Visual and Audible alarm is triggered. This Alarm is a Latching Alarm and needs to be corrected before it can be Cleared/Acknowledged.

Humidity Deviation Alarm: If the Actual Humidity deviates the SOV or PSV by more than the set tolerance and for more than the Alarm Delay Time, a Visual and Audible alarm is triggered. This Alarm is disabled if the Humidity Function is turned Off. This Alarm is a Latching Alarm and needs to be corrected before it can be Cleared/Acknowledged

Carbon Dioxide Deviation Alarm: If the Actual Carbon Dioxide deviates the SOV or PSV by more than the set tolerance and for more than the Alarm Delay Time, a Visual and Audible alarm is triggered. This Alarm is disabled if the Carbon Dioxide Functions is turned Off. This Alarm is a Latching Alarm and needs to be corrected before it can be Cleared/Acknowledged.

NOTE: *If alarms and issues persist then immediately call a trained and qualified service technician.*

NOTE: *There are also temperature high and low safety alarms that will halt all forms of heating for a high alarm (including lights) and halt all cooling for a low alarm. These are not user-adjustable.*

USB and Ethernet

The cabinet comes with a built-in USB and Ethernet connection located on the left side of the touchscreen control panel. It can be identified by the diagram below.

USB Downloading

To download the logged data from the STAR X Touchscreen controller, simply insert a USB memory stick and the data is downloaded automatically. Do not remove the USB stick until all the data has been downloaded. The following messages appear on the screen when data is downloading and when it is safe to remove the USB memory stick. Data is logged every 1 minute. Using the unique identifier number, data can be traced back to the instrument.

Files are in monthly formats. Each file name is the date backwards (YYYY/MM). A maximum of 12 months can be held on the screen and be downloaded.

The below screen is the USB Screen Saver indicating a USB memory stick has been inserted, and the Historical Data and Alarm/Events are being downloaded. This will happen automatically when a USB memory stick is inserted into the cabinet.
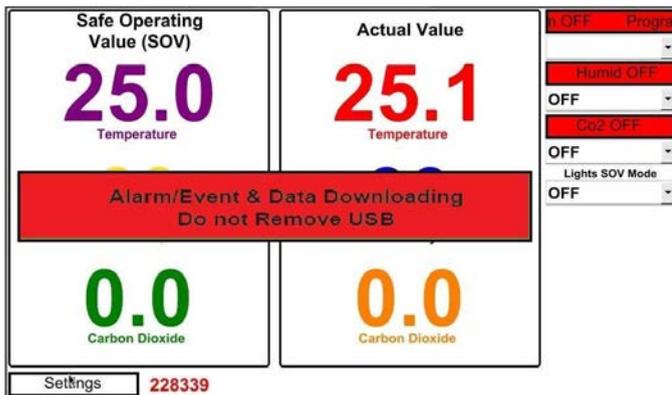
Once the data has been downloaded, the STAR X Touchscreen controller will notify you that it is safe to remove the hardware, as shown above.

NOTE: Downloaded data is formatted in comma-separated format (CSV). This can be easily opened in most spreadsheet programs.

Use the QR Code to see the video of this step.

Settings Screen

Below is the Main Screen. To access the settings from this screen, simply press the settings button located on the bottom left.

The next screen is the settings screen and is shown below. From here, you can access all other functions present on your STAR X Touchscreen.

No additional passcode is needed to access the functions on the first two rows. Access to the bottom row options is passcode protected. To access, simply touch anywhere on the Thermoline logo in the bottom right corner, and the User Access window will appear. You will require **User Number 02** and **Passcode 2222**.

NOTE: After exiting, you will need to enter the passcode again to access these sections.

Use the QR Code to see the video of this step.

Contact Details Screen

If you need to contact Thermoline for any reason, our contact details are available by pressing the Contact Details Screen button on the settings page.
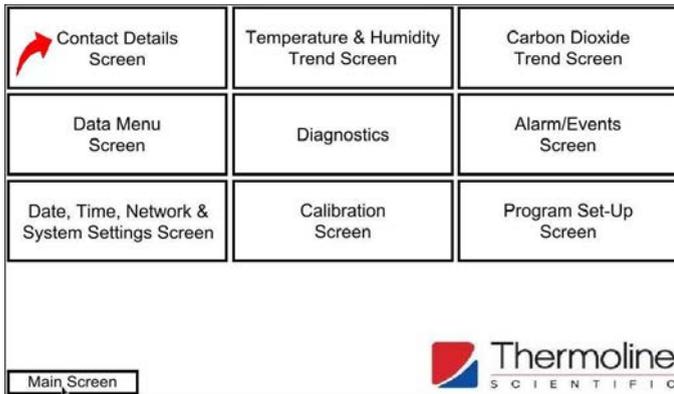
Alarm/Events Screen

The Alarm/Events Screen is accessed via the settings menu and is protected by the Passcode. This screen records alarms and events that occur within the touchscreen. Things such as logins, operator access to different screens and operator functions being activated and deactivated are all recorded on this screen.

The below screen is the Historical Data and Alarm/Events screen. Entries highlighted in RED are when events or alarms occurred and entries in GREEN are when the Alarm/Event is normalised.
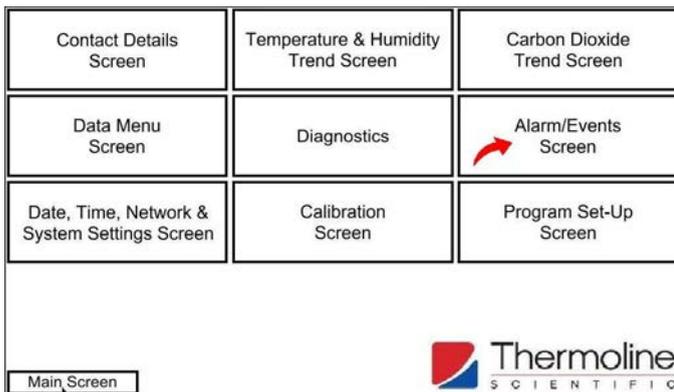
| Sequence no.	Trigger date	Trigger time	Message	Recovered time
57	18/09/2023	18:00:17	Lights (EV1)	18:00:35
56	18/09/2023	18:00:17	Program Running	18:00:35
55	18/09/2023	17:56:35	System Settings Accessed	17:56:36
54	18/09/2023	17:55:45	Program Running	17:56:01
53	18/09/2023	17:52:35	System Settings Accessed	17:52:37
52	18/09/2023	17:20:53	Lights (EV1)	17:56:01
51	18/09/2023	14:02:00	Humid Function	14:29:48
50	18/09/2023	08:03:23	Lights (EV1)	
49	17/09/2023	12:54:47	Lights (EV1)	00:56:00
48	16/09/2023	12:52:19	Lights (EV1)	00:53:32
47	15/09/2023	13:47:27	Program Set-Up Accessed	13:47:29
46	15/09/2023	12:49:49	Lights (EV1)	00:51:02
45	14/09/2023	12:47:18	Lights (EV1)	00:48:32

Trend Screen

There are two types of trend screens available. A graph or a data table. They show a daily live trend of the performance of the cabinet. Press the settings button (cog) to select the required date to view historical trends. Use the Chart Time Scale to view the trend in more detail. The STAR X Touchscreen will hold 365 days of logged data.
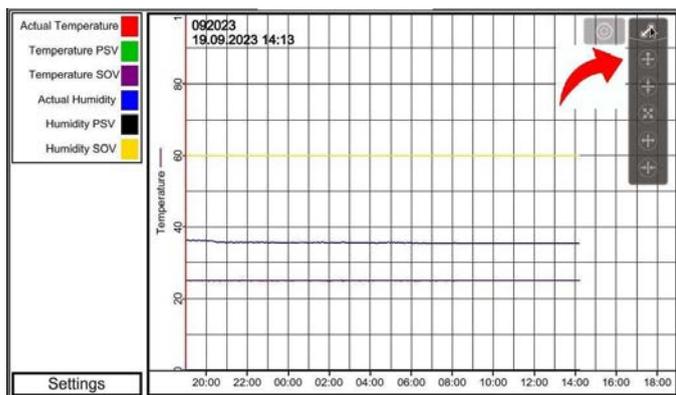
The below screen is the Trend Screen for Temperature and Humidity. Use the legend on the left-hand side to identify the lines.
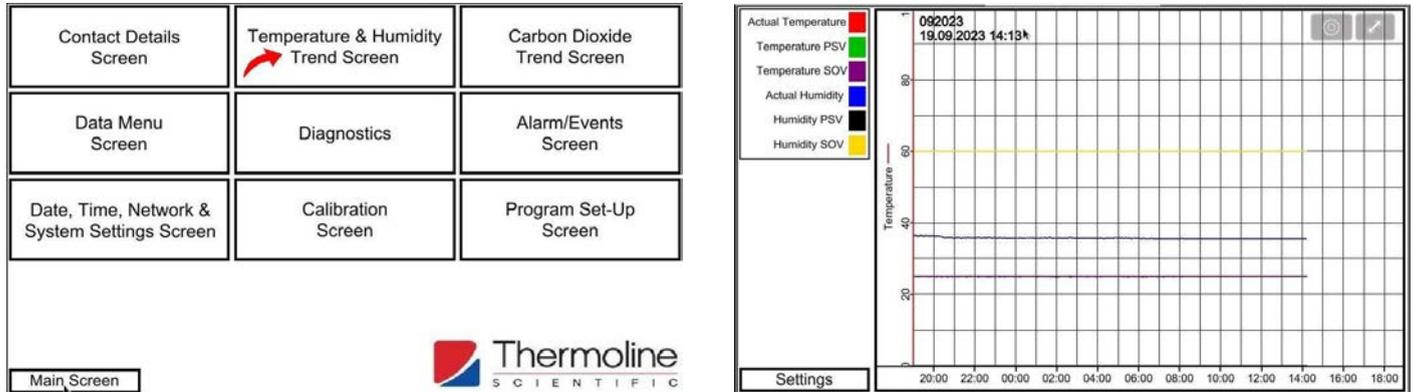
On the trend screen, you can use the settings button (cog) to change the month shown on the graph.
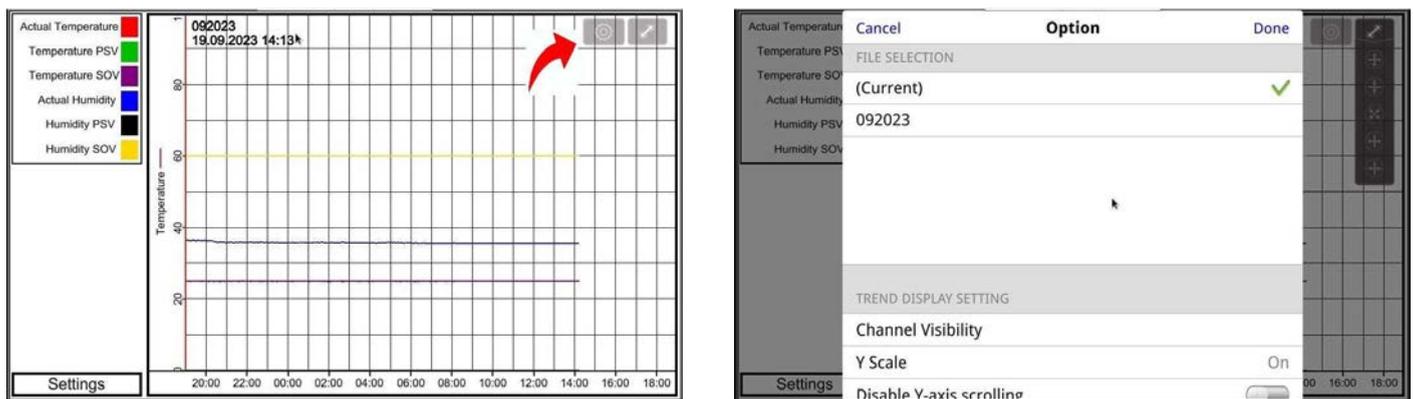
There is also scale adjustment using the button shown below.

Optional CO$_2$ Trend Screen

The below screen is the Trend Screen for the optional CO$_2$. Use the legend on the left-hand side to identify the lines.
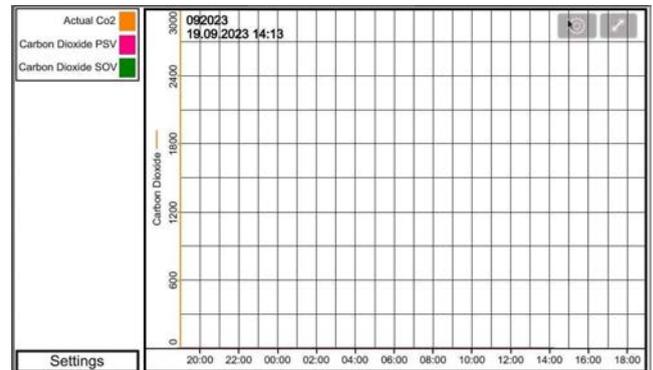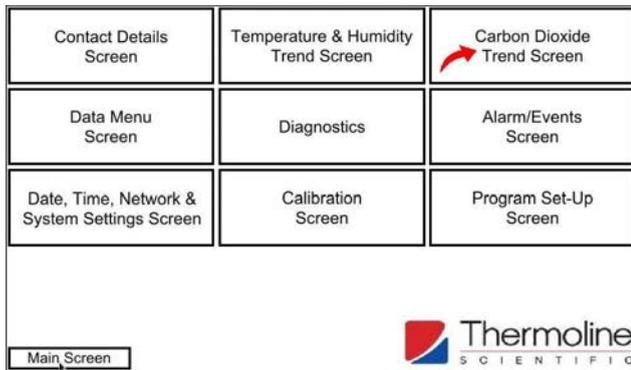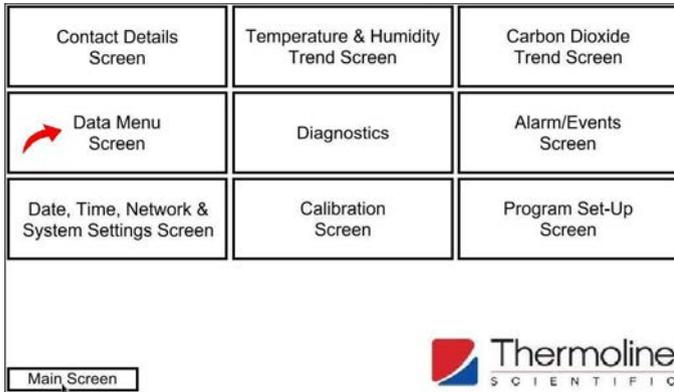

Options and scale adjustments are made the same as the temperature and humidity trend screen.

Data Menu Screen

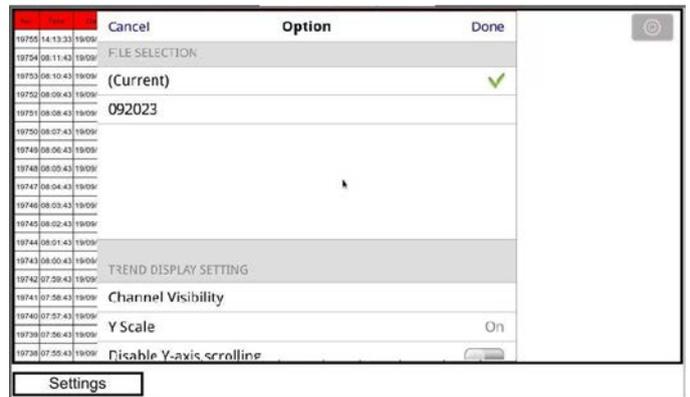The STAR X Touchscreen also features the Trend Screen in a table format.

On the data menu screen you can use the settings button (cog) to change the month shown on the table. You can also choose to see all data by selecting (Current).

Diagnostics Screen

The Diagnostics screen is to help the operator when problems may occur. The Diagnostic screen shows the percentage output of each control function. This is a good diagnostic tool if the cabinet is not operating correctly.
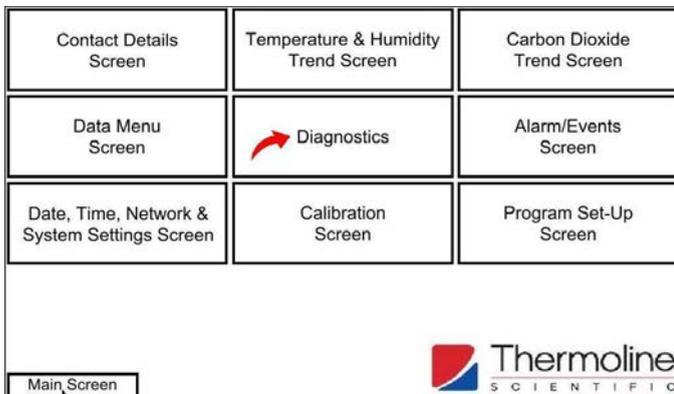
The diagnostics screen shown below can also be used to turn the heaters back on in the event of a service technician adjusting the heater settings in the service menu. (The service menu is not covered in this manual nor accessible by the user.)

System Settings Screen

NOTE: *Use the User Number '02' and the Passcode '2222' to access this screen.*

To access the system settings screen, simply press on the System Settings button in the Settings menu. From this screen, the user is able to see the Network Communication Parameters, Time, Date, Memory Information and Screen Saver Timeouts. The user is also able to change passcodes from this screen.

System Settings

Network Settings: This shows the network address once the touchscreen is connected to a network.

Time and Date Settings: To change the Time and Date, simply touch the parameter that needs to be changed and enter the current or required time and date.

NOTE: *The STAR X Touchscreen does not adjust for daylight savings; this must be done manually.*

NOTE: *Remember this will be the time and dates stored on the data logging. If it is wrong, so will the time and date on the logged data.*

System Settings

Screen Timeout: Screensaver timeout and Backlight timeout can be adjusted. The screen saver timeout can be adjusted from 1 minute to 255 minutes. The backlight timeout can be adjusted from 0 minutes to 255 minutes. 0 minutes will disable the backlight timeout function and keep the screen illuminated.

Passcodes: Passcodes can be changed if needed. Passcode Number 1 is the passcode for User 1. This is the passcode required to exit the screen saver mode. Passcode number 2 is the passcode for user 2 and allows access to the calibration, System Settings page and the Program Screen.

NOTE: *Thermoline takes no responsibility for lost/forgotten passcodes. If passcodes are forgotten, they cannot be retrieved. It will require a factory reset, which will erase all previously logged data.*

Log Information: Memory Information shows the amount of memory left on the touchscreen before old data is lost. The number shown below indicates how many data storage days you have; this can be as high as 365 days. The size of the raw data files is indicative of the amount of memory being used.

NOTE: The data erase button needs to be held for at least 10 seconds. This is a preventative measure to avoid accidental erasure.

Use the QR Code to see the video of this step.

LAN Connection

Thermoline cabinets that use the STAR X controller can be connected via a LAN connection to clone the screen so they can be viewed at a remote location. As standard, the STAR X is set to automatically assign an IP address when connected to an active network and is shown on the System Settings page. If a manual IP address is required, please contact Thermoline for additional instructions.

Calibration Screen

NOTE: *It is advised that all calibrations be made by a trained service technician.*

The Thermoline touchscreen has been fitted with a simple one-point calibration adjustment. Access to the Calibration Screen is passcode protected. To access, simply touch the Thermoline logo, and the User Access window will appear.

NOTE: *Use the User Code '02' and the passcode '2222' to access this screen.*

Calibration screen seen with associated values.

Note: The deviation alarm settings are also available on the calibration screen. The maximum time delay is 1800 seconds.

How to Calibrate

To adjust the calibration, simply press the offset window you require to adjust.
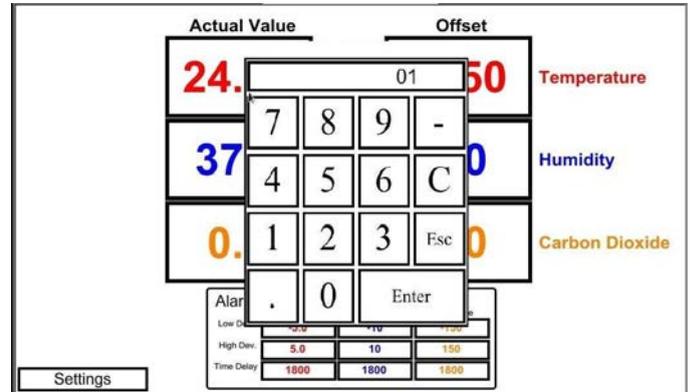
Use a calibrated reference device in the centre of the workspace and then compare that reading to value the screen. Then enter the difference between the PV and your calibrated device.

Use the QR Code to see the video of this step.

STAR X Setup

Temperature and Humidity Control

NOTE: *Use the User Code '01' and the passcode '1111' to access this screen.*

The Thermoline Touchscreen has been fitted simple temperature control system, allowing for quick and easy adjustments to the cabinets temperature and humidity levels (plus CO_2 if option fitted).

From the main screen of the STAR X, simply press on the value you wish to change.

This feature only works when the controller is in SOV mode. To change the values in PSV mode, you will have to access the Program Set-up feature.

The next screen will show the numeric keypad over the top of the main screen.

Program Setup

NOTE: *Use the User Code '02' and the passcode '2222' to access this screen.*

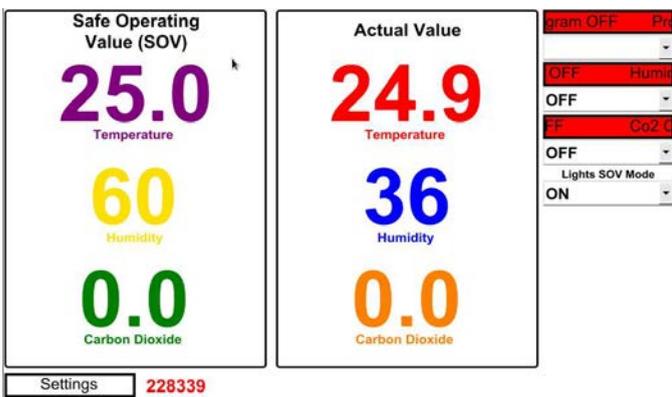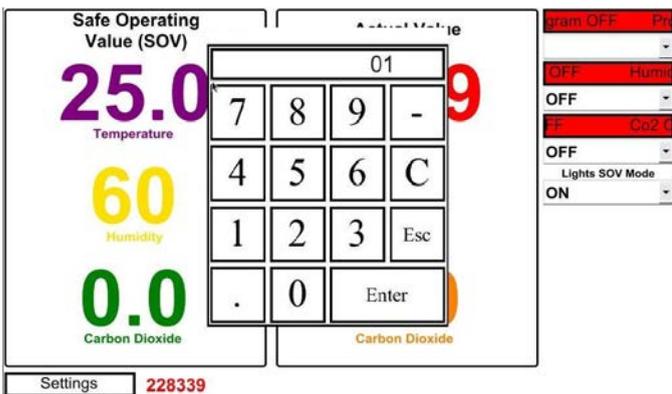The STAR X has a 250 segment Programmer. The 250 segments are split between 25 Programs (10 segments per program).

Segment Type: The segment can either be a Time, Jump To or End type.
- *Time:* This determines that the segment is a period of time. The time is set in hours, minutes and seconds.
- *Jump To:* This allows the program to repeat a predetermined set of segments. By selecting the 'Jump To' parameter in segment type and then entering a segment value at the 'Jump To' section directly below, the controller will tell the program where to jump back to.
- *End:* This tells the program when to end. There has to be an end segment. Failure to enter an end segment will cause the controller to indefinitely dwell at the last segment.

Jump To: The operator enters the segment number that the program will jump back to. This value is ignored if the segment is set to either a Time or End Segment.

Jump Cycle: The operator would enter a value here as to how many times the 'Jump To' repeats itself. A value of 0 will continually repeat the Jump To segments until the operator ends the Program Cycle manually. This value is ignored if the Segment Type is set to either a Time or End Segment.

Temperature: The operator would enter the Temperature they require the cabinet to achieve. This value is ignored if the segment type is Jump To.

Humidity: The operator would enter the Humidity they require the cabinet to achieve. This value is ignored if the segment's Step Type is Jump To.

CO_2: The operator would enter the CO_2 they require the cabinet to achieve. This value is ignored if the segment's Step Type is Jump To.

Lighting On/Off: Opens a screen allowing the operator to program the lights.

Program Setup

Hours: The operator enters the required length of time for the segment in Hours. This value is ignored if the segment either Jump To or End.

Minutes: The operator enters the required length of time for the segment in Minutes. This value is ignored if the segment either Jump To or End.

Seconds: The operator enters the required length of time for the segment in Seconds. This value is ignored if the segment either Jump To or End.

End Action: This value determines what will happen when the program ends. It can be set to SOV, which stops the program from operating and controls at the Safe Operating Value. It can be set to Dwell, in which case it will continue to control the Temperature, Humidity and CO_2 of the last Time segment.

Setting Up the Cycle
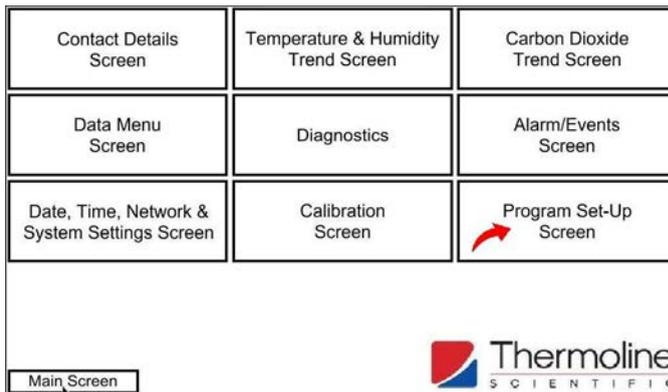
The screen below is the Program Set Up Screen. The 25 programs each have 10 segments:
- Program 1: Segments 1-10
- Program 2: Segments 11-20
- Program 3: Segments 21-30
- Program 4: Segments 31-40 etc.

Once in this screen you can select from 25 of the Programs available. In this example we start at program 1.

Setting Up the Program

The most important thing to remember is that the segments are always ramping. By that, it means that the time entered in the segment is the time it takes to reach the setpoint. If the temperature in a segment increases or decreases on the previous segment, the setpoint will ramp to the new setpoint at a rate evenly distributed over the time you have entered. It will be up to the cabinet to heat up or to cool down to keep up with the ramp rate you have entered (time). This also applies to humidity and CO_2 settings.

By setting the time to, say, 20 minutes, you will virtually eliminate the ramp rate and have the cabinet heat up or cool down at its fastest possible rate. In this case, after the 20 minute segment, you'll then set the next segment as the 'dwell period' you want the temperature to soak at. 20 minutes is chosen as a safeguard to prevent nuisance alarms (It may need to be changed depending on the conditions required).

Please also note that segment 1, or the first segment of a program, will use the SOV as a starting temperature, as will each first segment of the other 25 available programs.

By pressing on Program 1, the following screen is displayed. The below example is a program starting at 22°C and 60% RH that uses segment 1 for 20 minutes to set the conditions. It follows on with the same conditions for a 5-hour segment and then ramps to 40°C and 30%RH over 5-hour segment.

The conditions hold, then ramp and finally hold at 10°C and 80% RH. Segment 8 is a Jump To segment going back to segment 2 with infinite cycles. After this is an End segment at which time the program ends, and the cabinet will return to the temperature set as SOV. Please note in this example with infinite repeats it will not reach the End segment.

Each of the columns is an editable segment that can have the temperature, humidity and CO2 adjusted as well as the time that each segment lasts. The diagram the on right shows a column with all the editable features.

Time Remaining	Time ▼
Jump To	001
Jump Cycle	0001
Temperature	010.0
Humidity	080
Co2	0000.0
Hours	05
Minutes	00
Seconds	00
End Action	SOV ▼

When finished editing your requirements, you can move on to the next segment and continue on. Once you are finished editing all segments, move to the next screen by pressing the button shown below.

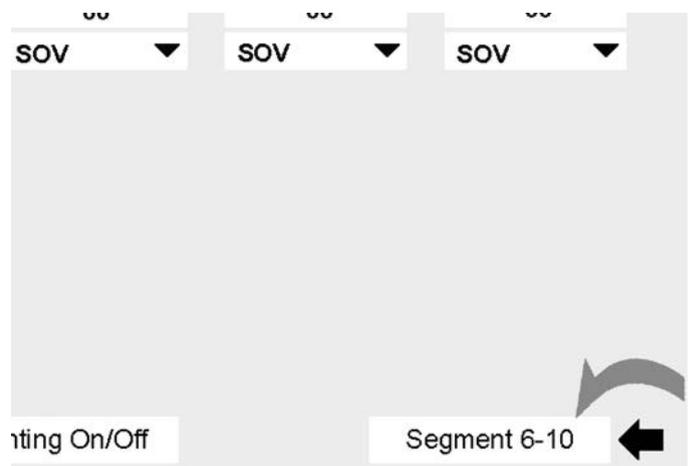| Step Type	Segment 6 Time ▼	Segment 7 Time ▼	Segment 8 Jump To ▼	Segment 9 End ▼	Segment 10 Time ▼
Jump To	001	001	002	001	001
Jump Cycle	0001	0001	0000	0001	0001
Temperature	010.0	010.0	-17.8	-17.8	010.0
Humidity	080	080	000	000	060
Co2	0000.0	0000.0	0000.0	0000.0	0000.0
Hours	02	05	02	10	02
Minutes	00	00	00	00	00
Seconds	00	00	00	00	00
End Action	SOV ▼	SOV ▼	Hold ▼	SOV ▼	SOV ▼
G'Soak Temp					
G'Soak Humid					
G'Soak Co2					

Segment 1-5   Lighting On/Off

Program 1 Segment 6-10

Step Type	Segment 1 Time ▼	Segment 2 Time ▼	Segment 3 Time ▼	Segment 4 Time ▼	Segment 5 Time ▼
Jump To		001	001	001	001
Jump Cycle		0001	0001	0001	0001
Temperature	022.0	022.0	040.0	040.0	022.0
Humidity	060	060	030	030	060
Co2	0000.0	0000.0	0000.0	0000.0	0000.0
Hours	00	05	05	02	05
Minutes	20	00	00	00	00
Seconds	00	00	00	00	00
End Action	SOV ▼	SOV ▼	SOV ▼	SOV ▼	SOV ▼
G'Soak Temp					
G'Soak Humid					
G'Soak Co2					

Program Set-Up   Lighting On/Off   Segment 6-10

Program 1 Segment 1-5

Linking the Programs

If you find that 10 segments are not enough to complete the program that you require, you can link from one program to the next. As long as you haven't used an end segment and the final segment in the program is a Time segment (it would also work with a Jump To with a finite number of repetitions), the program will automatically transition into the next program.

Once you have finished setting up your program, you can choose from three options. You can end your program, link it to another or repeat the same program.

For example, if your program requires the use of 15 segments, we can use the 10 segments of Program 1 and the first 5 segments of Program 2 making segment 15 (5th segment of Program 2) an End segment.

If you choose to link programs, you will need to access the program you wish to link with and edit the parameters. Simply do this by returning to the Program Set-Up screen and selecting the next program in this example we select Program 2.
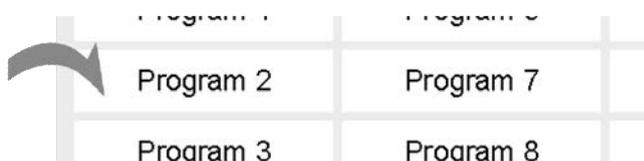

Note: Because of this functionality, it is always important to finish any program with an End segment.
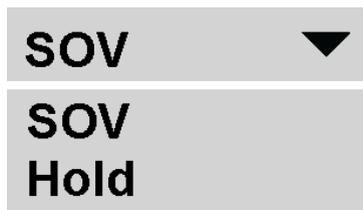
Ending the Program

To end the programs, access the drop-down menu and select End. This will allow the program to end the cycle <u>on that segment.</u> The parameters in this segment will be ignored.

Time Remaining	Time
Jump To	001
Jump Cycle	0001
Temperature	010.0
Humidity	080

Time ▼

Time
Jump To
End

Once you have ended your program, you can choose to return the cabinet to your SOV conditions or you can Hold the parameters from the last segment. To do this, access the drop-down menu with the End Action value and change it to Hold or SOV.

Seconds	00
End Action	SOV
G'Soak Temp	

SOV ▼

SOV
Hold

Repeating the Program

If you wish to Repeat the program without going to another, use the Jump To feature in the same drop-down menu.

Time Remaining	Time
Jump To	001
Jump Cycle	0001
Temperature	010.0
Humidity	080

Time ▼

Time
Jump To
End

After selecting the Jump To parameter, you must change the values in the two sections below. The first section, labelled 'Jump To' determines which segment the cycle is repeated from, and the 'Jump Cycle' parameter determines how many times the cycle is repeated.
Note: Choosing a Jump Cycle of 0 gives infinite repeats.

Time Remaining	Time
Jump To	001
Jump Cycle	0001
Temperature	010.0
Humidity	080

For example, if you wanted to Jump To the 5th segment of the program 6 times, you would input '005' into the Jump To parameter and then '0006' into the Jump Cycle Parameter.

Programming Lights

You will have the option of having the lights on in SOV mode as well as having the lights come on as part of a program (PSV mode).

SOV Lights

The lights can be activated from the Main Screen in SOV mode. By accessing the drop down menu shown below you can alter the parameters between ON & OFF.

Lights SOV Mode

OFF
ON

PSV Lights

Each time segment allows for the activation of the lights. This is accessed by pressing the Lighting On/Off button at the bottom of the screen while preparing the program. Unlike temperature, humidity and CO2 changes the lights are either on or off (no ramping). The light level can be adjusted using the manual dimming knob (or knobs for shelf lighting) on the side of the cabinet.

Note: Ramping of light levels can be achieved using the STAR X-DIM. With this option, there is the ability to enter a light percentage. Manual dimming is removed with this option.

Once a program has been selected access the lighting/event screen by pressing its corresponding button at the bottom of the screen shown in the following diagram.

From this screen you can determine which segments of the program have lighting by simply accessing the drop down menu and turning it ON or OFF.
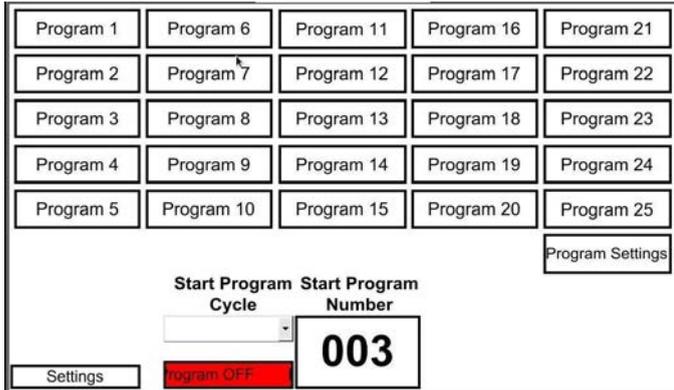
Starting/Stopping the Program

Once you have set the temperature program to your desired parameters and values, you can then activate the program and start it. The STAR X offers two ways to do this. The first way is through the Program Set-Up screen, and the second is from the Main Screen. In the instructions below, we will cover both of these setups.

From the initial Program Set-Up screen, locate the Start Program Cycle drop-down menu at the bottom of the screen.

The drop-down menu offers four different types of options. They are:

- *End*: The End parameter is what stops the running program from operating
- *Start*: The Start parameter initiates the program associated with the Start Program Number.
- *Pause*: The Pause parameter will pause the program at its present point. It will hold this point until the resume parameter is selected. If the Start parameter is selected while a program is on Pause, it will restart the program from the beginning.
- *Resume*: The Resume parameter will resume a program after it has been paused.

To start the program, simply press the START key once it has been selected. The previously RED indicator will become GREEN and display Program ON.

To start on a specific program, access the Program Set-Up screen and change the number in the Start Program Number box shown below.
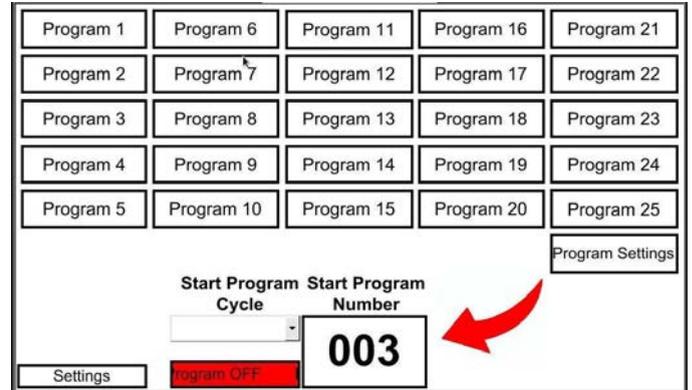
This number can only be changed from the Set-Up screen and not the Main Screen. The number can only be changed between 001 and 025 in line with the number of programs available.

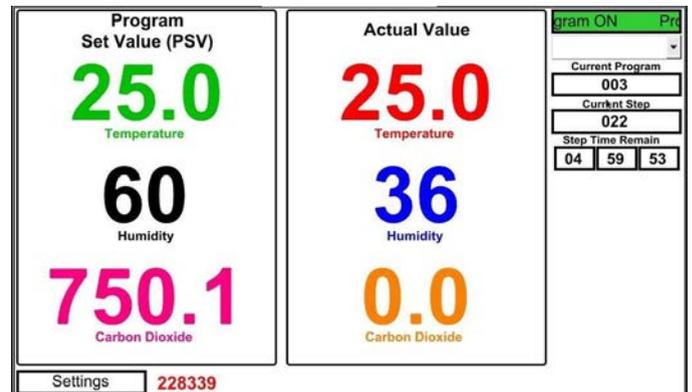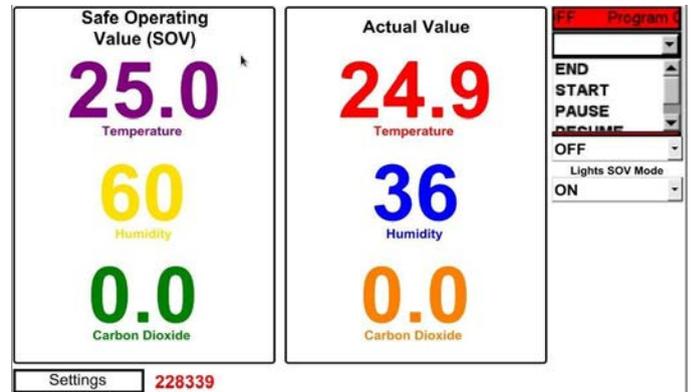To start the program from the Main Screen, access the drop-down menu below and select the START option. The main screen will then show the program as ON. Please note If you want the Humidity and CO2 to be active, you will need to turn them both on before you start the program.

General Controls

BMS Output

The Climatron cabinet is fitted with a 3-pin socket to allow for connection to a building monitoring system or phone dialler. A plug is also supplied separately to connect the socket to your system. The BMS socket is located on the outside of the electrical box on back of the Climatron cabinet (on the right when looking from the front).

The alarm contacts have no voltage, but we recommend that a suitably qualified technician connect the wiring.
An alarm can be triggered by the following:
- Loss of power
- High and low temperature alarms
- High and low humidity alarms
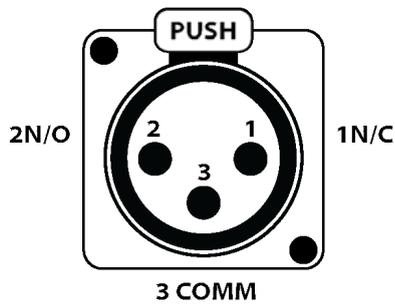
1N/C: Will open loop upon alarm situation. This is the optimal option, as any break in the loop is detected.
2N/O: Will close loop upon alarm situation.
3COMM: At least one wire is connected to this pin.

Location of BMS socket

Manual Reset Safety Thermostat

This safety thermostat is not operator adjustable. It will electrically isolate the heating elements in the event of an over-temperature situation. The main aim of this safety is to protect from over-heating, in the event that there is no airflow through the cabinet. This could be a failure of the air circulating fans or the cabinet being over-stocked. The Climatron-360 and 530 have one MRST button with the Climatron-1100 having two (one on top of the other).

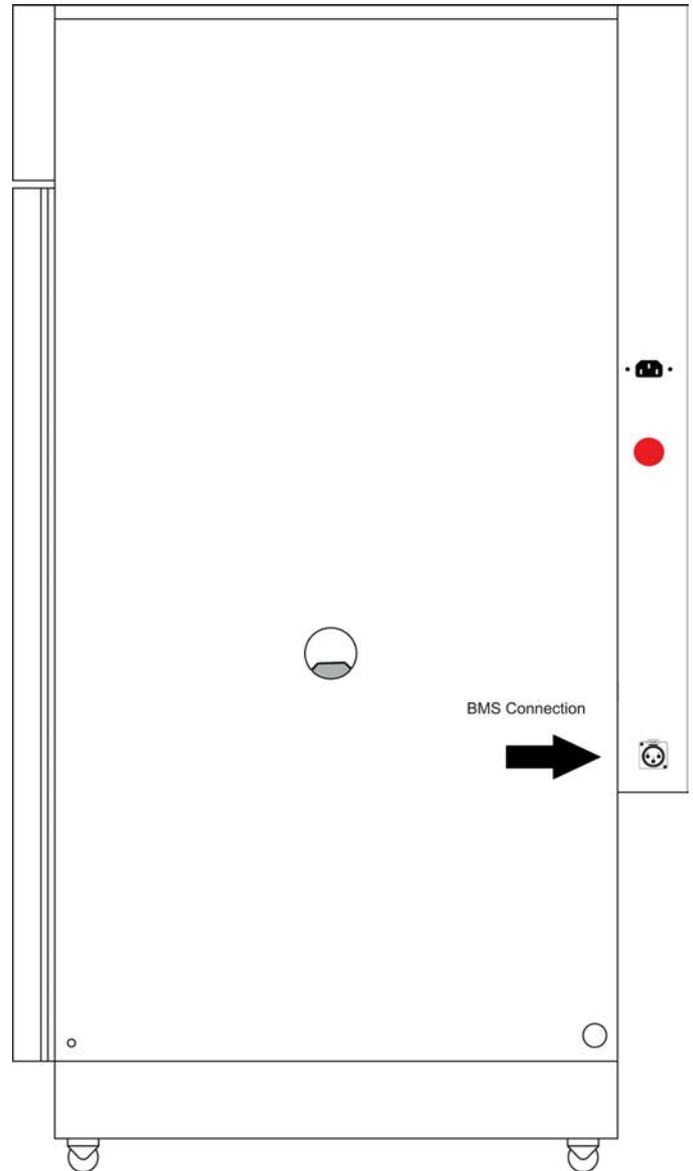**Fixing the Manual Safety Reset:**
- Allow the cabinet to cool down before resetting the thermostat.

- Locate the safety reset at the back of the cabinet. It is either a black or red knob **(Fig 1)**.

- Once the cabinet has cooled down. Twist the red or black knob anti-clockwise.

- Once the knob is off simply press the red button firmly until you feel a "click", this will restart the circulating fan and turn on the digital display again. **NOTE:** This will allow the heaters to operate again. The cause will need to be investigated by a qualified technician
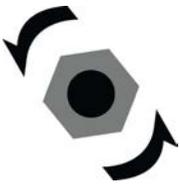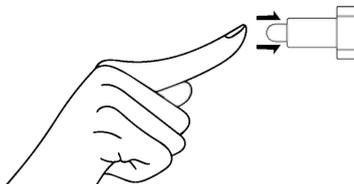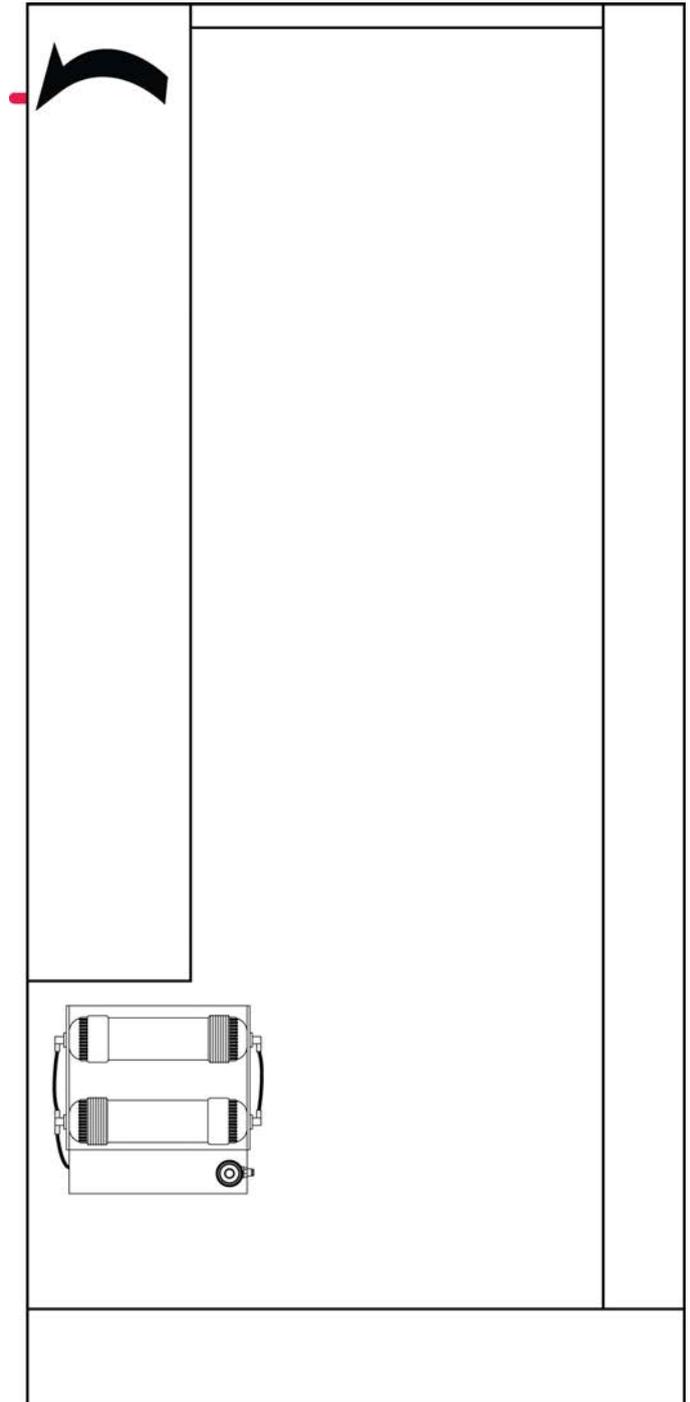
Fig 1.

Fig 2. Remove Screwcap

Fig 3. Press the inner button

Location of Manual Safety Reset

Troubleshooting

Problem	Fix	Part Number
I cannot acknowledge the alarm	**Alarm Condition** Is the chamber still in the alarm condition? This will need to be fixed before the alarm can be properly acknowledged. Muting the alarm will only do so for 15 minutes. **Press Alarm** Once the issue has been fixed, to acknowledge the alarm, you will need to press and hold the alarm acknowledgement down for 10 seconds.	
Battery Alarm still occurs every 7 days, even after being acknowledged and reset	**Low Voltage** One of the back up battery's voltage could be low. The battery needs to be replaced.	70320 - **Sealed lead acid Backup Battery (12V 9.5A)**

Technical and Repair Support

When contacting Thermoline regarding information about the product, it is important to have the Serial Number and other related information with you. The serial number is on a silver sticker, usually located near the power IEC socket.

Contact Thermoline service on +61 2 9604 3911 or email at service@thermoline.com.au

Thermoline

Model:
Serial No:
Watts/Amps:
Volts:

Phone: +61 2 9604 3911
Email: hello@thermoline.com.au

2 Years Warranty

Warranty

Standard 24 Month Warranty

Thermoline Scientific Equipment Pty Ltd ABN 80 000 859 129 ('Thermoline')

Thermoline warrants to the original purchaser that this product will perform to its product specification for a period of 2 years from date of purchase, provided that the installation of the product has been carried out in accordance with the latest version of the manufacturer's instructions and further provided that the use of the product complies with that specified in the relevant specification. Thermoline is not responsible for any loss or damage arising from incorrect usage, usage outside the suitability of the product as stipulated in the manufacturer's instruction, damage caused by accident, fire, flood, act of God or failure to properly install, operate or maintain the goods in accordance with the printed instructions provided.

The following statement applies only to product sales that fall within the definition of a Consumer Sale set out in the Australian Consumer Law contained within the Competition and Consumer Act (Cth) 2012:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. Notwithstanding the preceding clause and to the extent permissible by law, the liability of Thermoline is limited, in relation to the warranted product and at the option of Thermoline to:

Replacing the product or the supply of equivalent product;
The repair of the product;
The payment of the cost of replacing the product or of acquiring equivalent product; or
The payment of the cost of having the product repaired.

To the extent permitted by law, all other warranties whether implied or otherwise, not set out in this Warranty are excluded and Thermoline is not liable in contract, tort (including, without limitation, negligence or breach of statutory duty) or otherwise to compensate the Purchaser for:

any increased costs or expenses;
calibration/certification services;
any loss of profit, revenue, business, contracts or anticipated savings;
any loss or expense resulting from a claim by a third party.
Any special, indirect or consequential loss or damage of any nature whatsoever caused by Thermoline's failure in complying with its obligations or the purchaser's failure due to accident damage, impact, misuse or negligence.

The benefits given to the purchaser in this Warranty are in addition to other rights and remedies under a law in relation to the products or services to which this warranty applies. This warranty applies only to products purchased and installed in Australia and does not cover any consumable items e.g. filters, light globes, ultrasonic nebulizers. The warranty does not extend to labour and freight costs where the warranted product is located outside Australia.

To make a warranty claim, contact Thermoline on 02 9604 3911 or service@thermoline.com.au.

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We will continue to invest in Australian manufacturing.