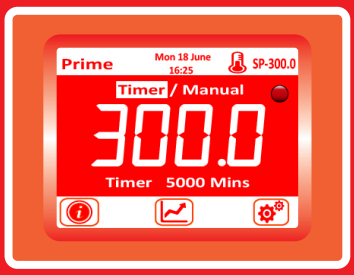
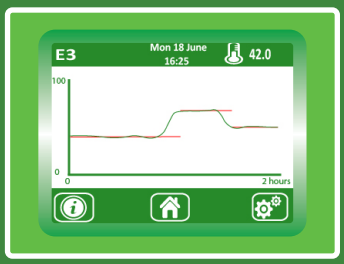
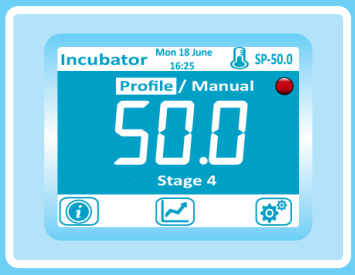
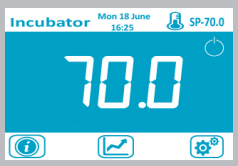
Manual

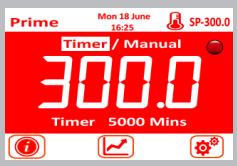
Drying Cabinets
Incubators
Industrial Ovens











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UNPACKING ...

Remove all packing material from between the shelves and inner walls of the oven.

MAINS SUPPLY ...

415-volt units — These units should be wired in by a suitably qualified electrician to the following:-

BROWN	'L1'	Phase 1
BLACK	'L2'	Phase 2
GREY	'L3'	Phase 3
BLUE	'N'	Neutral
GREEN/YELLOW	'E'	Earth pin

240-volt units. — Each unit comes supplied with a mains connection lead already fitted with a correctly rated fuse. The fuse rating and other details for each unit is shown on the voltage plate riveted to the back of the unit. It is important that, if the fuse needs to be replaced, it must only be replaced with one of the correct rating.

110-volt units — Each unit is supplied with a cable but without a plug or fuse. These units should be wired in by a suitably qualified electrician to the following:-

BROWN	'L'	Live pin, refer to voltage plate
BLUE	'N'	Neutral pin for fuse requirement
GREEN/YELLOW	'E'	Earth pin

WARNING

DO NOT CONNECT THE OVEN TO A D.C. MAINS SUPPLY OR SERIOUS DAMAGE WILL OCCUR

MAINTENANCE - ROUTINE CHECKS ON EACH OCCASION OF USE ...

Check the condition of supply lead and plug top.

Connect to mains supply and check:-

Supply switch operation.

A temperature check can be done by using a suitable temperature probe inserted 100mm into the oven chamber via the top vent. If the chamber requires a temperature adjustment, see 'Calibration' section

PREVENTATIVE MAINTENANCE

Ensure that the unit is maintained in a clean, dry condition and, when not in use, stored in a normal ambient atmosphere.

Minimum recommendation every six months:-

Check the plug top connections are tight and the fuse rating is correct.

Check the operation of the overheat protection system by raising the desired temperature above the overheat temperature see 'Safety' section of this manual

Carry out an electrical safety check (Portable Appliance Test) using an appropriate appliance tester operated by a competent person.

Check that the control temperature is maintained within limits.

The manufacturer can offer the above service on request.

SAFETY

When the unit is to be used for the incubation of microbiological specimens, please consider carefully the siting and use of the unit to ensure safe operating conditions for all users.

Appropriate safety precautions are essential for any microbiological work and any guidelines issued for example, The Department of Education and Science guidelines on this subject must be followed exactly. They are necessary to protect both people and animals from infection and to protect cultures of micro-organisms from infection by unwanted contaminants.

If liquids contained in partially sealed vessels are to be heated in the unit, then at all times the temperature setting must be such that no appreciable pressure build-up is allowed to occur within the vessel. The risk of explosion becomes high if the temperature setting is higher than that of the boiling point of the liquid. Therefore, any vessels that require heating SHOULD NOT be completely sealed. These units are not suitable for use where inflammable solvents are being used where the solvent concentration can reach inflammable or explosive levels.

GENERAL

Mop up any spilled liquid from the floor of the unit. Drip trays are available upon request from the supplier should you have excess liquid evaporation.

Do not place samples on the chamber floor.

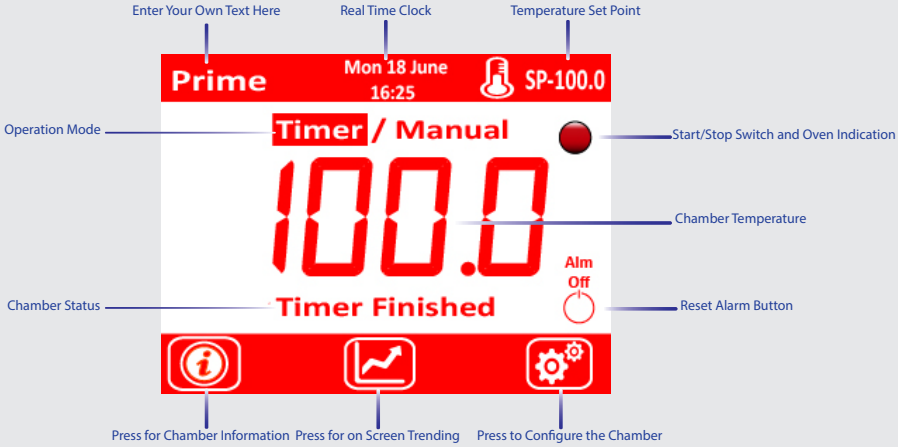
Take the normal precautions to prevent liquids coming into contact with the electrical components.

The outer surfaces can be cleaned with a warm, damp, soapy cloth or any proprietary cleaner suitable for a painted surface (do not use solvents or harsh abrasives).
The work chamber may also be cleaned as above.

PLEASE NOTE

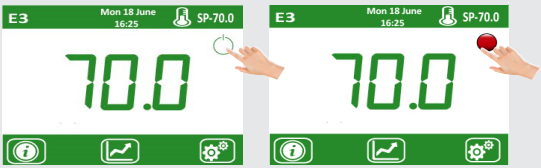
Quote the model and serial number (press the button on the home screen) for replacement parts. Fitting instructions are supplied with any replacement parts ordered.

RUNSCREEN



Notes : Available functions and features differ from unit to unit. Please contact your supplier if you see a feature in this manual which you want to install

To Start / Stop the Chamber

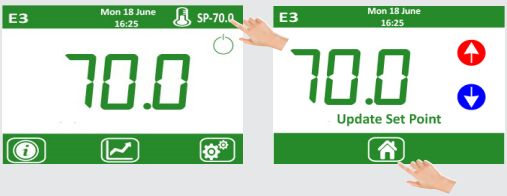


Press the start button.

The chamber will now start to the default Set Point shown the the top right hand of the screen

To stop the chamber, press the red button and the icon will turn back to start symbol shown here awaiting the next command

To Change Set Point



The active Set Point (SP) is displayed next to the

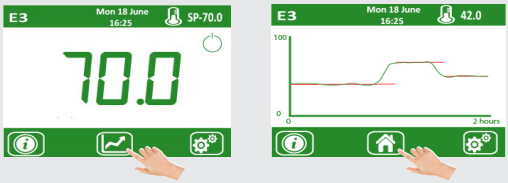
Press the SP button

The screen will change to SP screen

Change the set point using the up and down keys

Either press or leave the screen for 5 seconds and the SP will be updated and go back to the run screen

To View Historical Information



To view the history of the chamber, press

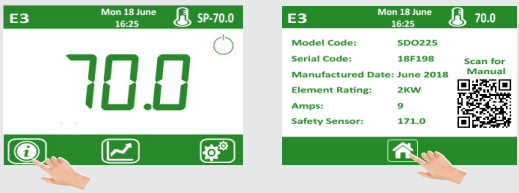
The red trend is the set point the chamber is working to and the green trend is the actual temperature the chamber has been.

The scaling of the trend can be set with the min and max set point in the configuration menu (page 7)

The time period can be set in the history section in the configuration menu (page 9)

The top right value becomes the current chamber temperature on the trend page and not the Set Point as the home page

To View Chamber Details



To view chamber information such as serial codes, power ratings, 2nd safety temperature value, press the button

To download this manual in electronic format, scan the QR code on this screen

To return to the run screen, press the home button

OPERATING CHAMBER IN TIMER MODE

The chamber can be set up to work in 3 timer functions.

1 Process Countdown Timer
2 Profile Control
3 24 Hour Real Time Clock Mode

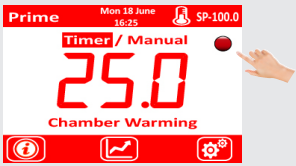
Only one timer mode can be active at any time. These are selected in the Timer Settings on the configuration page.

Timer functions are not available on all models. To upgrade to timer functions, please contact the supplier

Process Count Down Timer

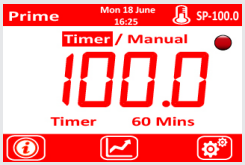
Select to run in either Timer mode or Manual mode

Manual mode will keep the chamber at the selected Set Point until you press the stop button.



Press the start button

The chamber will begin to warm to the desired set point.

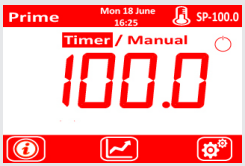


Within 2 deg of setpoint, the chamber will start the count down timer and the remain time is displayed on screen.

If the temperature falls outside of the 2 deg band, (ie if chamber door is opened) the timer will pause until the set point is reached again.

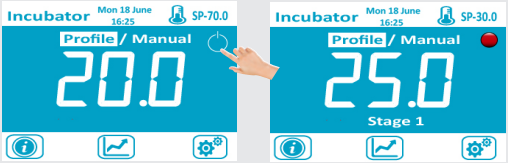
At the end of the countdown, the timer will turn the oven off. Depending on preference, you may choose to turn on a siren/beacon at this stage (selected in Output Relay Section - Page 9)

To cancel the siren / beacon, press the 'Alm Off' icon. The chamber will now return to sleep mode awaiting the next command.



Repeat proceedure if required, or select manual mode.

OPERATING CHAMBER IN PROFILE MODE

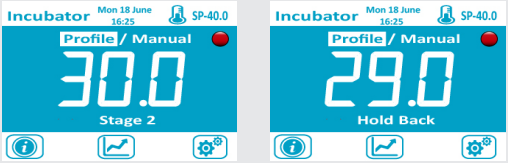


Select to run in either Profile Mode or Manual Mode

If in Manual mode, the chamber will warm to 70 (default set point)

If in Profile mode, the SP automatically changes to the stage 1 SP set in the configuration menu (page 9)

The chamber will start to heat until it reaches the target SP of stage 1

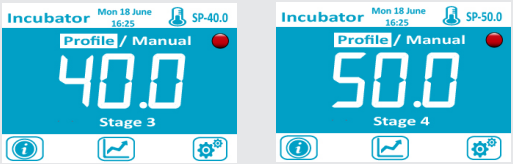


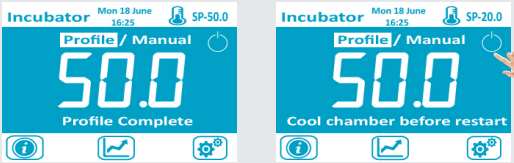
At the start of stage 2, the set point shall change to the next requested SP and the chamber will begin to heat / cool as required.

If the Hold Back feature is set during this stage on the configuration, if the chamber temperature falls outside the expected temperature range, the chamber goes into Hold Back mode. This will pause the time and ramp function until is comes back into the expected temperature range.

The Hold Back feature can be disabled if required, and used for example when either the door is unexpectedly opened or if the decrease in temperature is set too quick for the natural loss of heat from the chamber if a cooling stage is set. In this example, the chamber comes back into the expected temp range so stage 3 profile is then continued.

On reaching 40 deg, the final stage (stage 4) ramps the chamber to 50 deg.

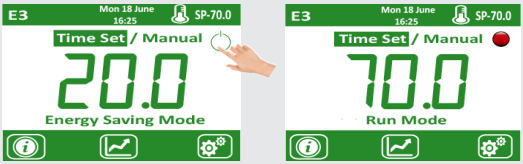




At the end of stage 4, the chamber indicates profile complete and goes into standby mode (up to 8 stages can be configured if required)

If the chamber is above the starting temperature of the configured profile and the start button is pressed, the chamber will not turn on. To start the next profile, either wait until the chamber falls below the Stage 1 temperature setting, or press the Manual button and run the chamber to the default SP.

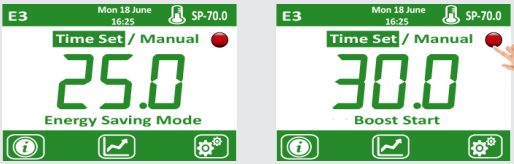
OPERATING CHAMBER IN REAL TIME CLOCK MODE



Select to run in either Real Time Clock mode or in Manual mode.

To work the chamber so it turns on and off at designated times of the day, select Time Set and press the start button.

The chamber will now work in standard mode, but at the predetermined times set in the configuration set up (page 9) the chamber will turn on and off automatically. Up to 2 turn on and 2 turn off settings per day can be set.



The chamber will go into sleep mode at the stop time set and the chamber temperature will begin to fall.

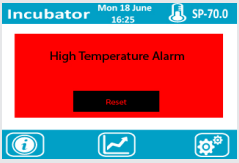
To turn the chamber on during sleep mode, press the start button (should be in red state at this stage). The chamber will then start before the pre configured start time but turn off at the next stop time. The chamber will indicate it is in 'Boost Start' mode until it passes the designated start time and then go into standard time set mode.

If you want to start the chamber during the sleep mode in a manner so it does not turn off, change to manual mode and then press the start button. The chamber will then remain on until the stop button is pressed.

TURNING ON/OFF LIGHTS / EXTRACTION UNITS

If the chamber is configured with internal lights or extraction systems, these can be manually turned on or off by pressing the ▷ or ▢ icon. See Output Relay Action -Page 9

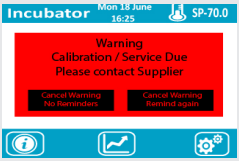
ALARM DIAGNOSTICS



The controller is designed to indicate any faults should they occur.

High Temp Alarm.... If the chamber goes into alarm mode and configured for manual reset (page 7 Safety Setting) Press the reset button. In manual mode, the chamber shall continue to operate as soon as the temperature falls below the safe level.

Sensor failure. ... If the probes fail, the chamber shall automatically turn the heating elements off. Please contact your supplier for replacement probes.



If you requested a calibration certificate with your chamber, the controller shall give you notification when the calibration /service is about to expire one month before. If you require a new calibration or service visit, please contact the supplier.

By pressing the Cancel Warning, the controller shall not remind you again. To continue chamber operation but request another reminder 1 week later, press the 'Cancel Reminder, Remind again' icon.

The controller shall remind you when the warranty is about to expire. If you want to arrange a service visit, please contact the supplier.

By pressing the Cancel Warning, the controller shall not remind you again. To continue chamber operation but request another reminder 1 week later, press the 'Cancel Reminder, Remind again' icon.

CONFIGURATION MENU

Press the configuration symbol

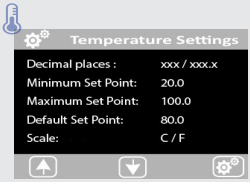
Enter Config PIN

The password pin is 0381 on all models

Depending on chamber specification, some icons may not be displayed on your model. Features can be added by contacting your supplier if required.

After configuring your chamber, press the home screen.

The chamber will then ask if you want to save the configuration, if you have made an error, press cancel and the chamber will go back to the previous configuration.



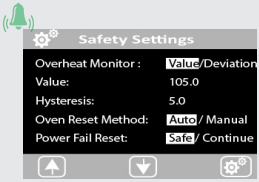
Decimal places... Choose the screen resolution of chamber temperature.

Min Set Point... Set the lowest set point available for the chamber.

Max Set Point... Set the highest set point available for the chamber.

Default Set Point... Set the set point you want the oven to go to after power failure or reconfiguration. Operators can change from this default set point inbetween the Min and Max set point from the run screen without any passwords.

Scale... Set chamber to work as either Celsius or Fahrenheit .

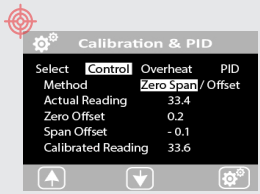


Overheat Monitor... When selected as a Value, enter the Max Temperature alarm value which sends the chamber into an alarm condition. The hysteresis value is the temperature the chamber comes out of alarm condition.
Example : Overheat Value 100, hysteresis 5 - The chamber will go into alarm condition at 100 and come out of alarm condition at 95 (100-5)

Overheat Monitor... When selected as a Deviation, enter the deviation band around the set point. This function is useful when the chamber is in profile mode to help protect the process.
Example, Deviation = 5 - The chamber will go into alarm mode if the temperature is outside the deviation band. With a set point of 100, the chamber will go into alarm condition if it falls below 95 or above 105

Oven Reset Method... In Auto mode, the chamber will reset itself and continue operation as soon as it comes out of alarm mode
In Manual mode, the chamber will require the operator to press the reset button on the run screen to restart. The chamber will only restart if it is out of alarm condition. This is the safest configuration as it will need a user intervention to restart the chamber

Power Failure... In Safe mode, should power be lost, upon power being turned back on, the chamber will turn back on and await the operator to press the start button.
In Continue mode, the chamber will turn itself back on and control to the 'Default Set Point' temperature upon power being turned on. (See Temperature Settings above)

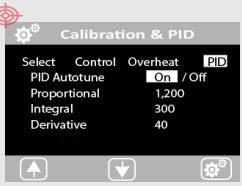


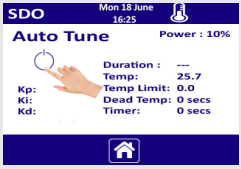
The chamber has 2 isolated temperature probes, a control probe which the chamber uses to detect temperature, and an overheat probe, which works indepndently as a safety monitoring solution, to turn the chamber off under an alarm condition that may occur under fault mode. Both Control and Overheat probes can be calibrated either with a zero/span calibration or an offset calibration.
In zero/span calibation mode, set the chamber to work at the lowest temperature and note the temperature against a calibrated reference probe situated within the chamber. If the readings do not match, apply a zero offset.

Example, the chamber display states 33.4, the reference probe states 33.6, enter +0.2 in this field.

After the zero offset is applied, run the chamber up to the maximum temperature and repeat the process for span offset. The chamber will then compensate a linear offset against the minimum and maximum values.

In Offset calibration mode, run the chamber to the temperature it is commonly used at. From the reading from an external calibrated probe, compare this reading to the chamber reading.
Example, the chamber display states 33.4, the reference probe states 33.6, enter 0.2 in this field.
After the Offset is applied, the chamber will compensate for this over the entire range.





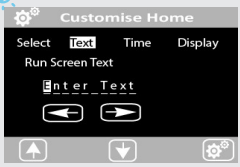
In PID mode, you can manually enter the P, I, and D value to optimise the control.

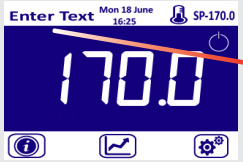
When selected as Auto, when you return to run screen, the chamber will then automatically calculate the best P, I and D values for optimum chamber conditions.

Only Auto Tune the chamber if it is not controlling well, if you have an unusual load, or if you replace the control system. The firmware will continually adjust these values to optimise efficient control.

The Auto Tune feature may take up to 4 hours depending on the model. During this time, the chamber will gradually increase the temperature and teach itself the thermal errors hence do not run a heating sequence until it has completed.

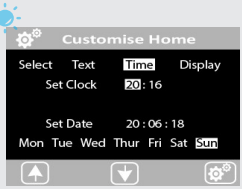
If power is lost during Auto Tune, it will retain the previous values hence you may need to repeat the process.





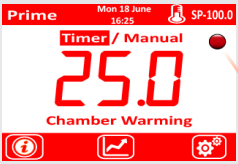
You can customise the run screen to best suit the environment with a variety of text colours, background colours and identity tags.

In the Text configuration, you can enter upto 10 characters such as company name, oven name, location, ID no. This text is then displayed on the top left hand side of the run screen.



Enter the Time and Date.

This may be required to update if clock battery runs low.

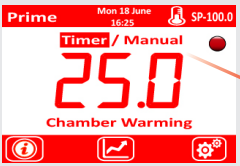


The run screen can be colour selected to suit the environment. The chamber will have default colours set depending on the model, but you can change colours to your preference. Both run screen text and background colours can be changed and as you change the colours, these are represented in the top bar.

Availble colours are navy blue, green, grey, black, red, light blue and white.

Screen Brightness... Select between 5 to 100% screen brightness.

Element Status... The start icon changes to a red on symbol during operation. The icon can either be solid red when set to 'Off' or flash at the same frequency power if applied to the heating elements if set to 'On'

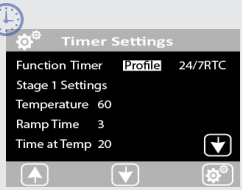


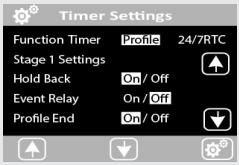
Timer Mode.

Enter the time period in minutes you want each cycle to be.

You can enable and disable the timer from the run screen. When disabled, the chamber will run as manual mode and the selection bar will not be present. When enabled, you can select on the run screen if you want to user timer or manual mode.

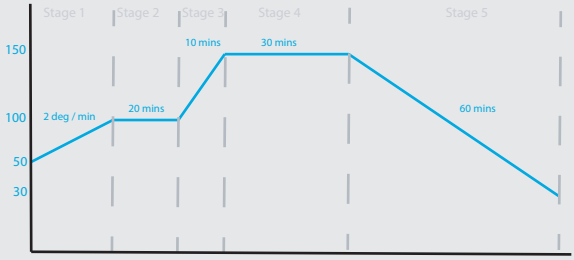
Event relay, Select if you want to trigger a siren or beacon (if fitted) at the end of the timer cycle.





Profile Mode.

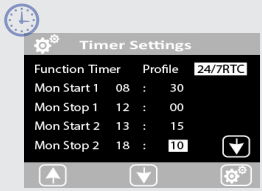
The chamber can run a 8 stage profile. To configure the profile, please calculate the ramp rate and time period. An example is shown below explaining the calculations. At each stage, please select if you require hold back or if the event relay is activated for control of sirens or beacons. If hold back is selected and the chamber falls outside the expected temperature, the profile is put on hold until it returns back to the expected condition (ie if chamber door opens). If this is not selected, the time period continues as configured depending on the chamber conditions.
Configure upto 8 profile stages. If less are required, select profile end at the desired stage and the chamber will then go into stand by mode at this stage and stop heating.



On start, the chamber shall rise to 50 deg C. The chamber will then rise in temperature at a rate of 2 deg per minute for 25 minutes (50 to 100).
Stage 2 will then hold temperature for 20 minutes (no ramp).
Stage 3 will then rise at 5 deg per minute for 10 minutes (50 deg rise over 10 mins).
Stage 4 will then hold temperature for 30 minutes (no ramp).
Stage5 will then fall to 30 deg over a rate time period of 60 minutes (150 - 30 = 120 mins, over 60 min timer period = -2 deg per minute) - siren/beacon activated.
Oven goes into stand by mode.

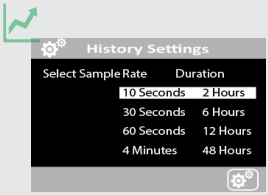
Example Configurations to perform the highlighted

S1	Temp	50			
S1	Ramp	2			
S1	Time	25			
S1	Hold Back	N	Event	N	End N
S2	Temp	100			
S2	Ramp	0			
S2	Time	20			
S2	Hold Back	N	Event	N	End N
S3	Temp	150			
S3	Ramp	5			
S3	Time	10			
S3	Hold Back	Y	Event	N	End N
S4	Temp	150			
S4	Ramp	0			
S4	Time	30			
S4	Hold Back	Y	Event	N	End N
S5	Temp	30			
S5	Ramp	-2			
S5	Time	60			
S5	Hold Back	Y	Event	Y	End Y
S6	END				
S7	END				
S8	END				



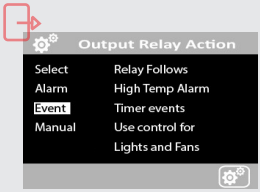
The chamber can be configured to turn itself on and off twice per day.

Enter the start and shut down times as requested.



The trend page can be set to run as a 2, 6, 12 or 48 hour window.

The longer the time on the viewing window, the less sampling rate. If you have a quick responding application we would recommend to set this for a 2 hour duration.



The chamber may be built with an addtional siren / beacon or with a oven light that you can control via the touch screen.

Only 1 action can be active at one time.

In Alarm mode, the siren will come on with a high temp alarm.

In event mode, this is linked to the count down timer or on the profile control mode. If you set Event active, the siren or beacon will come on at that sequence. This is used to highlight the end of a process timer with a visual indication and/or siren sound.

In manual mode, the chamber light will be turned on and off via the run screen button.

Alternate actions could be manually turning on extraction system.

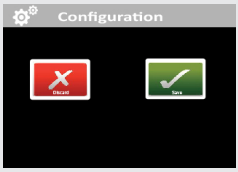
This setting should only be changed by a competent engineer and circuit checked prior to any changes.

The upgrade key is password protected and used at manufacturing stage only.

Please do not change any settings in this menu as it may cause damage to the chamber.

The changes will be saved to internal memory and this will void your warranty.

Contact your supplier if you need to perform any upgrade and your serial number will be required.



To Exit the configuration menu, press

The chamber will then ask if you want to save any amendments as the current configuration.

If you have made errors on the configurations, if you press 'Discard' the chamber will go back to the previous configuration.

The touch screen can be configured to power up with your own logo and company details.

This can only be done via the manufacturer so please contact your supplier for further details.

The chamber comes with a standard 2 year warranty. Contact your supplier if you want to extend the warranty within the first month's use.

If your chamber comes with a factory calibration, it will remind you on the run screen one month before the calibration certificate expires.

To be completed by customer.

Model Code
Serial Code
Date Received
Current Rating
Voltage

Dealer Stamp

PENDING PATENTED PENDING

Made in Britain