

**USER MANUAL**  
**LEEC WARMING CABINETS**  
**W100, W157 and W330**

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**Register your product:**



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## **1.0 GENERAL DESCRIPTION**

Model W100	100 litre chamber capacity
Model W157	157 litre chamber capacity
Model W330	330 litre chamber capacity

### **1.1 CONSTRUCTION, HEATING AND INSULATION**

Even heating throughout the entire chamber is ensured by the LEEC designed heating element. The low wattage element is bonded to the outer surface of the chamber walls ensuring quick heat conduction and low heating element temperature, only a few degrees above the warming cabinets operating temperature.

New profiled resistive wire heating elements and high-performance insulation ensure optimum temperature control. All models have gentle fan assisted air circulation. This ensures even temperature distribution throughout the chamber. Fast temperature recovery keeps heat loss to a minimum after door opening.

### **1.2 TEMPERATURE CONTROLLER**

An easy to program electronic PID temperature controller is fitted to the LEEC warming cabinet range.

This controller is easy to use and enables quick programming of the warming cabinet's chamber temperature.

In addition, this temperature controller has built in under temperature (low) level alarm and over temperature (high) level alarm functions. The low- and high-level alarm limits are factory set to +/- 2.0 °C above/below programmed temperature respectively after a delay of 2 minutes. The controller is factory set to run between 25°C and 60°C see section 3 for set point changes.

### **1.3 INDEPENDENT OVER TEMPERATURE SAFETY CUT OUT**

An independent fail safe over temperature safety cut out is fitted to this warming cabinet. This is protecting the integrity of the unit not the samples inside. The over temperature cut out is factory set to 65°C which is the maximum and should not be adjusted by the customer. In the extremely unlikely event of the warming cabinets temperature controller failing on, the over temperature safety cut out will disconnect the heaters and fan. This device, once tripped, has to be manually reset once the fault has been rectified and the unit has cooled. Refer to section 3.6 for instructions to reset.

### **1.4 CIRCULATION FAN AND DOOR MICRO-SWITCH**

The internal fan helps to achieve accurate temperature uniformity throughout the inner chamber. It also helps to enhance temperature recovery when the chamber is heavily loaded. The fan is located at the top of the chamber. Air is drawn up through the chamber, circulated around the full width ducting, and returned to the chamber floor. The fan also improves temperature recovery after inner glass door opening. A micro switch disconnects the fan upon door opening to minimise temperature loss to the chamber environment during door opening.

## **2.0 INSTALLATION AND SET UP**

### **2.1 UNPACKING WARMER AND POSITIONING**

Instructions:

\* Please refer to your employers/organisation Safe Manual Handling Policy: The Manual Handling Operations Regulations 1992, before attempting to lift the warmer cabinets.

Remove the warming cabinet from its protective cardboard packaging.  
To do this, carefully undo one side of the cardboard packaging and gently slide the warming cabinet out.

This operating manual should be inside with a user guarantee card and power lead.

\*Position the warming cabinet in the laboratory, either on the laboratory bench, or under the bench. It is recommended that if the warming cabinet is to be placed under the laboratory bench it is raised off the floor sufficiently to reduce the risk of contamination from the floor entering into the warming cabinet inner chamber.

LEEC manufactures an under bench stand for the Warming cabinet range to raise the warming cabinet sufficiently off the floor. Please contact LEEC if this is required.

Typically the unit is supplied with 2, 4 & 6 shelving and runners for the 100, 157 & 330 respectively.

Fit the shelves so they are level across the chamber, the shelves are packed in the bottom of the unit. The runners are fitted into the ladders in the chamber before the shelf can slide in.

Level the warming cabinet using the 2 independent adjustable feet at the front of the warming cabinet and secure this position by tightening the locking nut using a 17mm spanner.

It is recommended that a bubble spirit level is placed in the centre position of the middle shelf in the warming cabinet to check for level from left to right and front to rear.

The warming cabinet should not be next to equipment giving off excessive temperature extremes and should be a 50mm gap from the sides and 100mm gap from the rear.

Leave the warming cabinet to acclimatise to the environment after storage. The warming cabinet needs to be switched off for this period. Normally if the unit has been stored in a cold environment leave in the new position until the following day with the outer door and glass doors open.

The weights are as follows: W100 – 54kg, W157 – 70kg and W330 – 107kg.

### **2.2 CONNECTION TO THE ELECTRICAL SUPPLY**

Your LEEC warming cabinet is supplied with a 2 metre mains cable. Connect the moulded plug to the 230V 50 Hz mains supply and the IEC connector to the socket at the rear of the warming cabinet. Please make sure that the IEC connector is pushed in securely.

The mains cable wiring is colour coded as follows: -

- |                         |   |                |
|-------------------------|---|----------------|
| • <b>BROWN</b>          | = | <b>LIVE</b>    |
| • <b>BLUE</b>           | = | <b>NEUTRAL</b> |
| • <b>GREEN / YELLOW</b> | = | <b>EARTH</b>   |

Your LEEC warming cabinet requires a **230V 50Hz** mains supply.

Once the warming cabinet is situated in the correct position in the laboratory, plug the warming cabinet into a 230V 50Hz mains socket. Keep all power inlets and switch's so they are easily accessible.

## 2.3 TURNING ON THE WARMING CABINET

You will have one of the two below power buttons on your incubator.

### Front Facia Panel



### Option 1 Illuminating Power Button

To switch on the incubator, press in the Power button on the front facia panel. This button will illuminate **Green** when power is On.



### Option 2 Power Button

To switch on the incubator, press in the Power button on the front facia panel. This button will click in when power is On. It does not illuminate but the temperature controller will come on as above.



The incubator display will now light up and perform a self-check displaying the firmware of the controller. After this the display shows both the programmed temperature (**SET**) and actual inner chamber temperature (**ACT**) and the Heater (**H**) LED on the display indicates when the heaters are active. The incubator will now heat up to the programmed temperature.

**LET THE WARMING CABINET TEMPERATURE STABILISE BEFORE USE.**

## 2.4 Fuses

A 5 Amp fuse is fitted to the Mains Plug.

At the rear of the warming cabinet there are two internal protection fuses:

A 5 Amp internal fuse. This provides additional protection to the mains plug fuse.

A 3.15 Amp heater fuse. This provides additional protection to the warming cabinet heating elements.

## 2.5 Precautions



A qualified electrician or other competent person must carry out any electrical work required to install the warming cabinet.



Do not place the warming cabinet in direct sunlight or near a heat source.



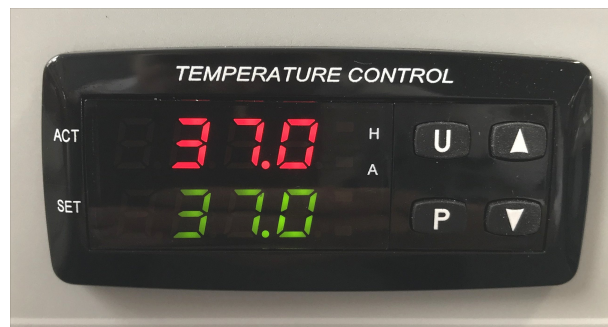
Make sure the warming cabinet is not standing on its electrical supply cable.



Before any cleaning or maintenance work is carried out, the mains supply must be switched off and the plug removed from the electrical socket.

## 3.0 PROGRAMMING

### 3.1 TEMPERATURE DISPLAY




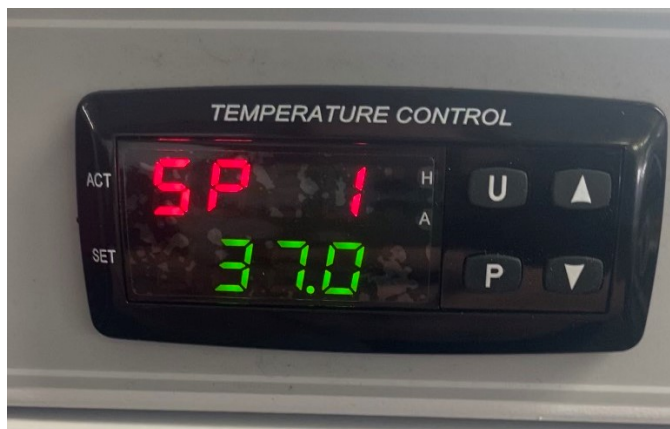
The programmed temperature, Set Point (**SET**) is displayed in **Green** and the Actual Chamber Temperature inside the warming cabinet Inner Chamber (**ACT**) is displayed in **Red**


A **Red** LED Indicator next to the letter **H** (Heaters) on the display illuminates when the heaters are on. When the chamber temperature is very close to programmed set point temperature, it is normal to see this LED flashing.

A **Red** LED Indicator next to letter **A** (Alarm) on the display will illuminate if the chamber warming cabinet temperature deviates to either the Low or High alarm limits of  $\pm 2.0^{\circ}\text{C}$  after a delay of 2 minutes.

### 3.2 TO PROGRAMME CHAMBER TEMPERATURE:

1. Press the  button on the controller once and release.
2. **SP1** in **Flashing Red** is now displayed on the screen.



3. Press either the ▲ button to increase the set point temperature or the ▼ button to decrease the set point temperature.  
**Set Point Temperature** is displayed in **Green**
4. Press the  button again to return to the normal screen that displays both the Chamber Temperature in **Red** and Programmed Set Point in **Green**
5. \*The Temperature can be programmed between a Set Point Temperature of 20°C to a maximum of 60°C.

**\*The practical minimum operation temperature of the warming cabinet is 5°C above ambient temperature.**

**The warming cabinet is factory set to operate at +37.0°C unless otherwise specified. Allow the temperature to stabilise at the set point before use.**

### 3.3 HIGH & LOW LEVEL TEMPERATURE ALARM SETTING


The Low Temperature Alarm is factory set to - 2.0°C below the set point (programmed) temperature.

The High Temperature Alarm is factory set to + 2.0°C above the set point (programmed) temperature.

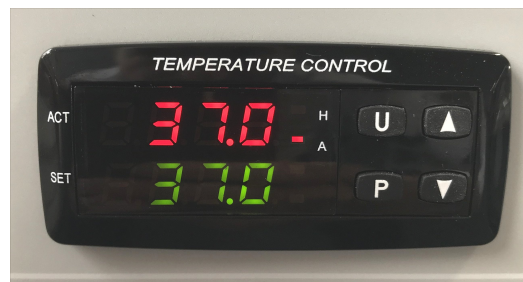
NB: There is a dwell period of 2 minutes factory programmed into the controller to allow sufficient time for the chamber temperature to recover within the low / high alarm set points; to prevent the alarm from activating immediately after the inner glass door is closed.

### 3.4 AUDIBLE ALARM

A **Red** LED next to letter **A** (Alarm) on the display will illuminate if the chamber warming cabinet temperature deviates to either the Low or High alarm limits of  $\pm 2.0^{\circ}\text{C}$  and an audible alarm will activate.

To cancel the audible alarm Press and hold the  button for 3 seconds.

If the Low / High alarm values or the 2 minutes dwell need to be adjusted, please contact LEEC Limited for instructions.



### 4.0 INDEPENDENT OVER TEMPERATURE SAFETY CUT-OUT

4.1 An independent fail safe over temperature safety cut out is fitted to this incubator. The over temperature cut out is factory set to  $65^{\circ}\text{C}$  which is maximum and should not be adjusted by the customer. In the extremely unlikely event of the incubator temperature controller failing on, the over temperature safety cut out will disconnect the heaters and fan. This device once tripped must be manually reset, refer to section 4.2 for resetting instructions.

You will have one of the two below power buttons on your incubator.

#### Option 1 Illuminating Power Button

There is an Audible Alarm when the independent over temperature cut out is activated; the illuminated **Green** Power On Switch on the front facia panel will change to **Red** in the event of the over temperature cut out being activated.

Normal Status **Green**



Over Temperature Cut Out Activated **Red**



## Option 2

There is an Audible Alarm when the independent over temperature cut out is activated; the Power On Switch on the front facia panel will illuminate **Red** in the event of the over temperature cut out being activated.

**Normal On Status**



**Over Temperature Cut Out Activated **Red****

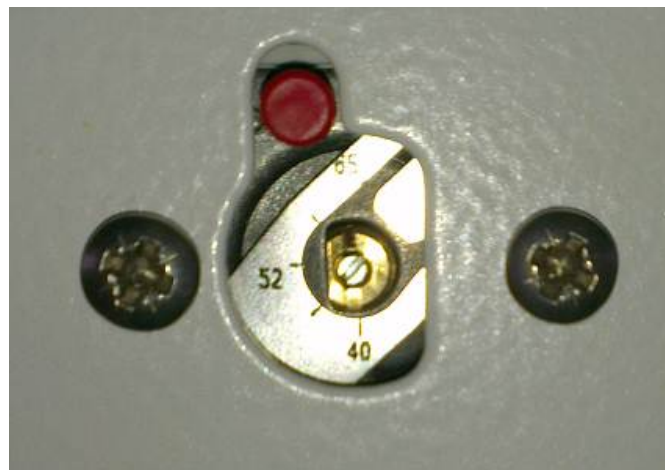


### 4.2 RESETTING OVER TEMPERATURE CUT-OUT

In the unlikely event of the over temperature safety cut out activating, this can be reset by Pressing in the **Red** Button at the Back of the warming cabinet.

#### **Over Temperature Cut Out at Rear of warming cabinet**

**Push In Red Button to Reset**



## 5.0 CLEANING and DISINFECTING

- 5.1 It is recommended that the exterior of the warming cabinet is kept clean by wiping over with a non-abrasive soft damp cloth using a warm soapy water solution. It is very important to thoroughly **dry** the exterior after cleaning.
- 5.2 It is advisable to clean the inner chamber regularly. To clean the inner chamber use a



70% isopropanol (alcohol) 30% distilled water solution. Apply using a sterile cloth so as not to introduce any contamination and wipe over all the surfaces of the stainless steel inner chamber.

The inner chambers of LEEC warming cabinets are made from the finest quality stainless steel. However, corrosion can still result from improper use of fungicides and bactericides. Never use any Chloride based chemicals for cleaning as this can result in permanent damage to the stainless inner chamber and this is not covered by LEEC warranty as no stainless steel is completely resistant to chlorine.

NB: Never use the following substances / chemicals / reagents to clean the stainless-steel inner chamber as **permanent damage may result**:

Sodium Azide

Aqua Regia

Iodine

Ferric Chloride

Sulphuric Acid

Always avoid any Chlorine based chemicals, including bleach.

## 6.0 WARRANTY - PREVENTATIVE MAINTENANCE

All LEEC warming cabinets are supplied with a one-year warranty from the date of dispatch.

### PRODUCT REGISTRATION / WARRANTY

To register your product, scan the QR code at the front of this manual, or visit: <https://www.leec.co.uk/product-registration/>

All LEEC warming cabinets are built to the highest standards and all manufacturing processes are compliant to ISO 9001 & ISO 14001.

All LEEC warming cabinets are built, then fully tested and factory calibrated to UKAS traceable standards in the UK.

This warming cabinet is built to last for many years, but to ensure this unit continues to function at its optimum performance levels it is recommended that a Preventative Maintenance Calibration Contract is purchased from LEEC Limited after the units first year warranty period.

If the warming cabinet is outside the United Kingdom please contact the Distributor the unit was purchased from for further information on Preventative Maintenance Contracts.

## 7.0 TECHNICAL DATA

	W100	W157	W330
External Dimensions (H x W x D mm)	582 x 684 x 620	790 x 684 x 620	1417 x 684 x 620
Internal Dimensions (H x W x D mm)	365 x 550 x 500	573 x 550 x 500	1200 x 550 x 500
Chamber Capacity (litres)	100	157	330
Shelves Included	2	4	6
Voltage requirements	240V AC, 50 Hz, single phase		
Power Rating (Watts)	240 (maximum)	280 (maximum)	440 (maximum)
Temperature Range	At least 5°C above ambient to +60°C		
Temperature Control	Typically $\pm 0.1^{\circ}\text{C}$ @ 37°C		
Temperature Variation	Typically better than $\pm 0.2^{\circ}\text{C}$ at 37°C		
Temperature Recovery	2 minutes	3 minutes	4 minutes