USER MANUAL

LEEC CLASSIC INCUBATOR

C100, C157 and C330

CONTENTS

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1.0 GENERAL DESCRIPTION

Model C100	100 litre chamber capacity
Model C157	157 litre chamber capacity
Model C330	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 incubator 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

A very easy to program electronic PID temperature controller is fitted to the LEEC Classic Incubator range.
This controller is easy to use and enables quick programming of the incubator 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 ℃ above/below programmed temperature respectively after a delay of 2 minutes.

1.3 INDEPENDENT OVER TEMPERATURE SAFETY CUT OUT

An independent fail safe over temperature safety cut out is fitted to this incubator. The over temperature cut out is factory set to 40℃, but can be adjusted by the customer, refer to section 4.3. In the extremely unlikely event of the incubator temperature controller failing on, the over temperature safety cut out will disconnect the heaters. This device, once tripped, has to be manually reset. Refer to section 3.6 for instructions to reset.

1.4 CIRCULATION FAN

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 INCUBATOR

Instructions:

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

*Position the incubator in the laboratory, either on the laboratory bench, or under the bench. It is recommended that if the incubator 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 incubator inner chamber.

LEEC manufactures an under bench stand for the Classic Incubator range to raise the incubator sufficiently off the floor. Please contact LEEC if this is required.

Level the incubator using the 2 independent adjustable feet at the front of the incubator and secure this position by tightening the locking nut using a 10mm spanner.

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

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

The weights are as follows: C100 – 54kg, C157 – 70kg and C330 – 107kg.

2.2 CONNECTION TO THE ELECTRICAL SUPPLY

Your LEEC incubator 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 incubator. Please make sure that the IEC connector is pushed in securely.

The mains cable wiring is colour coded as follows: -

- **BROWN = LIVE**
- **BLUE = NEUTRAL**
- **GREEN / YELLOW = EARTH**

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

Once the incubator is situated in the correct position in the laboratory plug the incubator into a 230V 50Hz mains socket.

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

Front Facia Panel **Power On**

The incubator display will now light up displaying 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.

2.5 Fuses

A 5 Amp fuse is fitted to the Mains Plug.

At the rear of the incubator 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 incubator heating elements.

2.6 Precautions

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

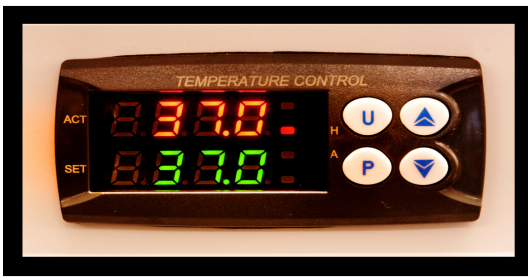
Do not place the incubator in direct sunlight or near a heat source.

Make sure the incubator 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 Incubator 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 incubator temperature deviates to either the Low or High alarm limits of +/- 2.0℃ after a delay of 2 minutes.

3.2 TO PROGRAMME CHAMBER TEMPERATURE:

1. Press the (P) 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 (P) 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℃ to a maximum of 60℃.

***The practical minimum operation temperature of the Incubator is 5℃ above ambient temperature.**

The incubator is factory set to operate at +37.0℃ unless otherwise specified. Allow the temperature to stabilise for at least 24 hours before use.

3.3 HIGH & LOW LEVEL TEMPERATURE ALARM SETTING

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

The High Temperature Alarm is factory set to + 2.0℃ 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 incubator temperature deviates to either the Low or High alarm limits of +/- 2.0℃ 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 then 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 40℃, but can be adjusted by the customer if higher than 37.0 ℃ programmed temperatures are programmed. In the extremely unlikely event of the incubator temperature controller failing on the over temperature safety cut out will disconnect the heaters. This device once tripped has to be manually reset, refer to section 3.6 for resetting instructions.

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

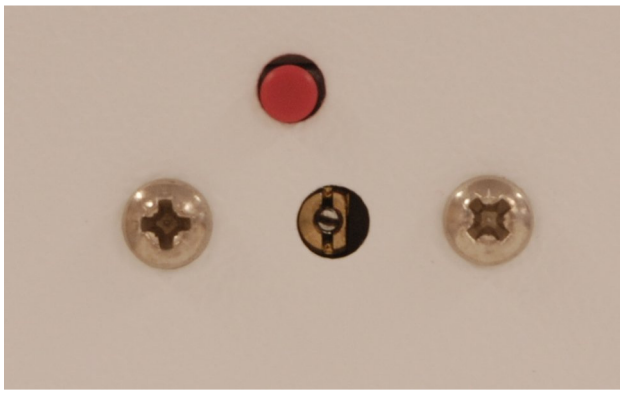
Over Temperature Cut Out Activated Red

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 incubator.

Over Temperature Cut Out at Rear of Incubator

Push In Red Button to Reset



4.3 PROCEDURE FOR PROGRAMMING OVER TEMPERATURE CUT OUT IF OPERATING TEMPERATURE IS ABOVE 37.0℃

If the incubator set temperature is above 37.0℃ the procedure to set the over temperature cut-out is as follows:

1) At the rear of the incubator locate the over temperature cut out adjustment screw, turn this screw fully clockwise to raise the cut out to maximum

2) Programme new set point temperature on temperature controller. Allow time for the incubator to stabilise at this new set point temperature.

3) Gently turn the over temperature cut out adjustment screw back (anti-clockwise) until the incubator over temperature cut out activates. The Power switch on the facia panel will illuminate **RED** and audible alarm sounds. Then gently increase the over temperature cut out by turning the adjustment screw a small increment clockwise.

4) Press the red Reset button, refer to section 4.2.

5.0 CLEANING and DISINFECTING

5.1 It is recommended that the exterior of the incubator 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 steal inner chamber.

The inner chambers of LEEC incubators 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 Classic Incubators are supplied with a 1 year manufacturer's warranty from the date of installation.

Warranty Card – To register your warranty please fill in the User Guarantee Registration Card and post to LEEC Limited, or to the Distributor that supplied your incubator if outside the United Kingdom.

All LEEC incubators are built to the highest standards and all manufacturing processes are compliant to ISO 9001.

All LEEC incubators are built, fully tested then factory calibrated to UKAS traceable standards.

This Classic Incubator 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 1st year warranty period.

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