Grant
IN THE LABORATORY

Transportable Incubator

Operating instructions

C O N T E N T S

1 Safety

The following symbol marked on the equipment means:-

 Caution: Read these operating instructions fully before use and pay particular attention to sections containing this symbol

Always observe the following safety precautions

- Use only as specified by the operating instructions, or the intrinsic protection may be impaired.
- After transport or storage in humid conditions, dry out the unit before connecting it to the supply voltage. During drying out the intrinsic protection may be impaired.
- Connect only to a power supply with a voltage corresponding to that on the serial number label.
- Connect only to a power supply which provides a safety earth (ground) terminal.
- Before moving, disconnect at the power supply socket. Remove the IEC connector.
- Do not check the temperature by touch, use the temperature display or a thermometer.

- Ensure that the operating temperature is less than the maximum operating temperature of your sample material.
- Ensure that the mains switch is easily accessible during use.
- If liquid is spilt inside the unit, disconnect it from the power supply and have it checked by a competent person.
- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment.

2 Installation

2.1 Unpacking

Remove the packing materials carefully, and retain for future shipment or storage of the unit.

The pack should contain:
Transportable incubator block heater
mains cable
operating instructions

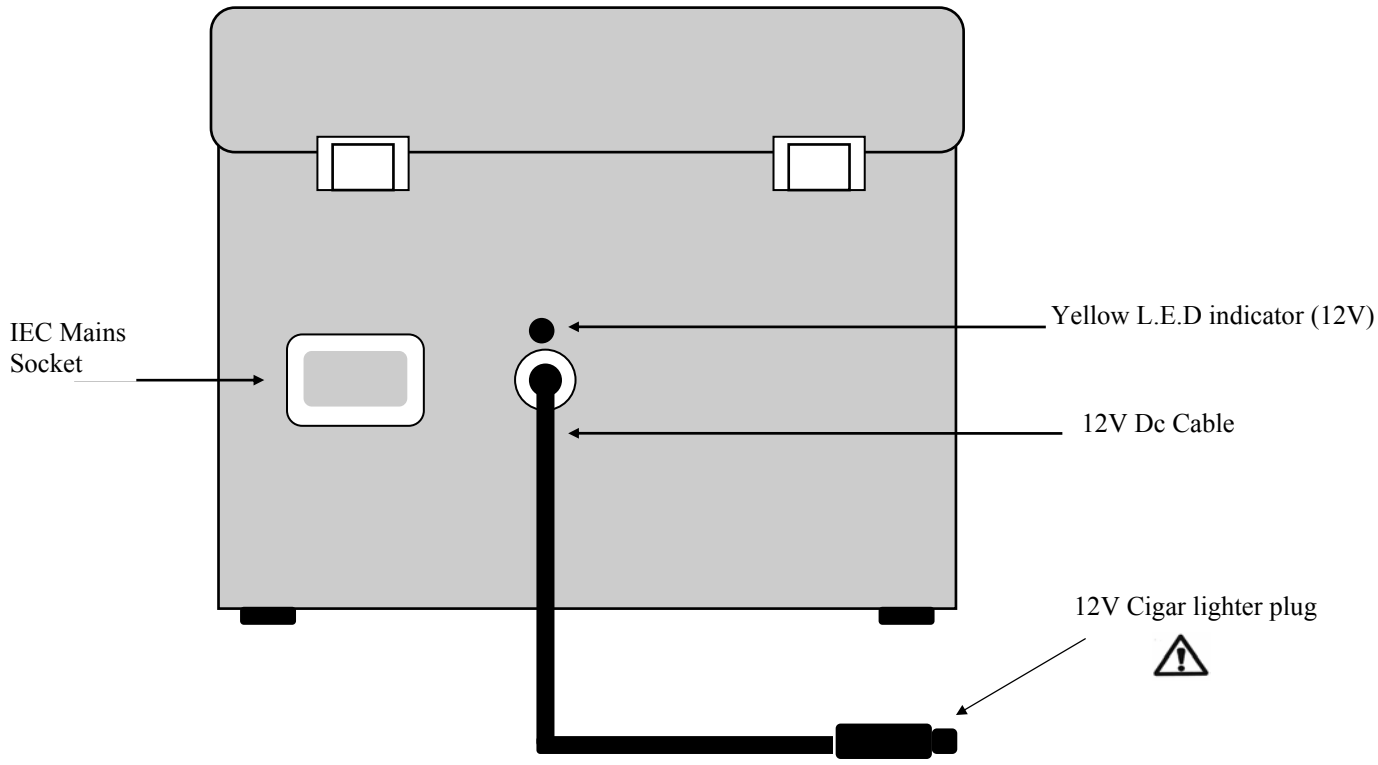
Blocks are supplied separately in their own pack.

2.2 Assembly

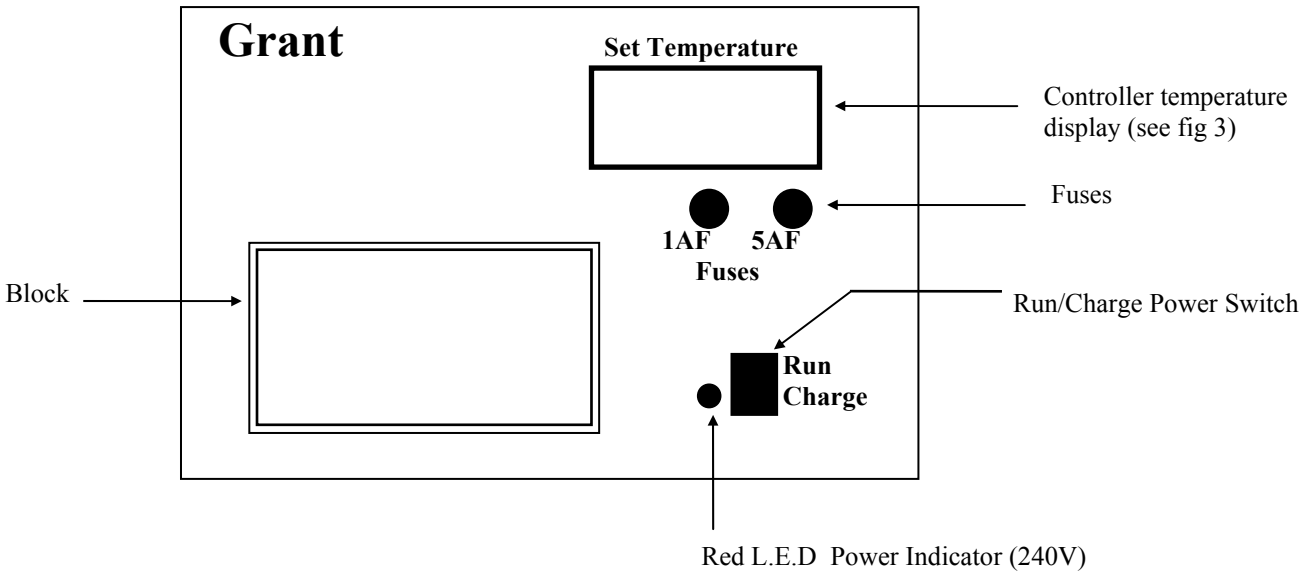
For mains operation or battery charging, fit the mains cable into the IEC power socket on the rear of the case.
Lift up lid of the portable incubator and insert block into unit.
Take care not to drop the blocks; if they are damaged, heat transfer may be affected.

3 Controls and indicator lamps

Case rear view (Figure 1)



Control Panel (Figure 2)



The **run/charge** switch when in the run position is used to start unit and in the charge position charges the internal battery.
The temperature display normally shows the block temperature in °C.
The **set temperature °C** is set to 37°C and can be adjusted on temperature controller.
The **red LED** when illuminated indicates 240V mains power operation.
The **yellow LED** when illuminated indicates 12V Dc power operation.

4.0 Operation

4.1 Mains operation 240V

Plug the mains lead into IEC socket at rear of case and connect to a mains 240V power supply. Set the switch on the control panel to the “Run” position and check that the red L.E.D is illuminated onthe control panel. The temperature display will display the block temperature.

4.2 Internal battery operation

As mains operation, but with mains power lead disconnected. If the display does not light the internal battery is not charged. Charge battery as shown in operation section 4.4 .

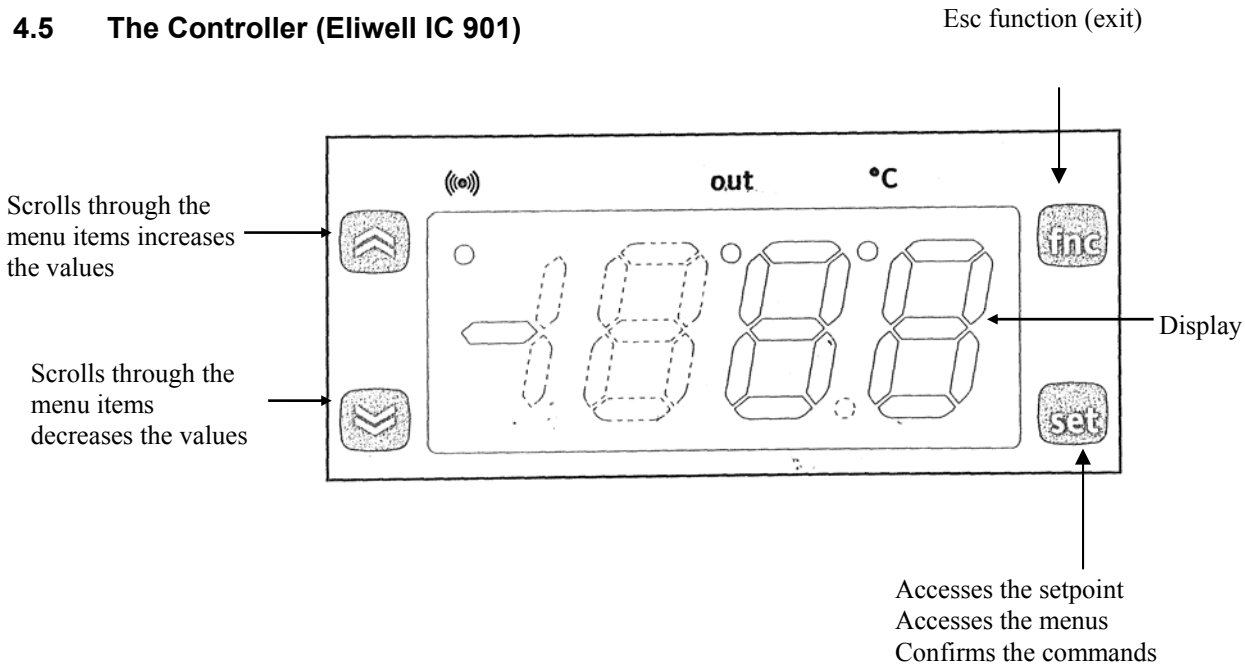
4.3 Cigar socket 12V Dc operation

As mains operation, but with mains lead disconnected and 12V lead plugged in cigar lighter socket. Check that the yellow L.E.D on the rear of case chassis is illuminated .
CAUTION - This is 12V DC only

4.4 Charging Internal battery

Plug the mains lead into the IEC socket at the back of the case and connect to the mains power supply. Check that the red L.E.D is illuminated. Set switch on the control panel to “charge” position and unit is now charging (the temperature display will not light).
Note: Allow 16 hours to fully charge the battery (a fully charged battery will maintain a constant temperature for 5 hours)

4.5 The Controller (Eliwell IC 901)



(fig 3)

4.6 Set temperature

To access the set temperature press and quickly releasing the **“set key”** . The label of the “Set” folder appears. To display the setpoint value press the **“set”** key again.
The value appears on the display.
To change the setpoint value , use the up and down keys within 15 seconds

4.7 Up and Down buttons

The **up** and **down** buttons are used to increase or decrease the set point value. When held down for a few seconds the change rate accelerates.

4.8 Start up

At start up the instrument performs a lamp test for a few seconds where the display and the leds blink, in order to verify the integrity and correct operation.

LED		
Position	**Associated function**	**Status**
out	Relay 1	ON for heater activation
ºC	Setpoint	ON When setting the set point

4.9 Overtemperature

To protect both the unit and your samples, the unit has a cycling thermal switch located inside the unit and operates at 50°C. The switch resets when the temperature falls to the reset level (nominally 15°C below the operating temperature) .

5 Fault diagnosis

Symptom	Possible cause	Action required
Unit does not operate	Unit not switched on	Switch on
	Unit not plugged into power supply	Plug in, switch on
	Power supply failure	Check that other electrical appliances on the same circuit are working
	Fuse blown in unit or in plug (UK units only)	Check and replace - see 7.2
	Overtemperature thermal switch has operated	Thermal switch operates at 50 °C and resets when the temperature falls to the reset level (nominally 15°C below the operating temp) . If the thermal switch keeps operating, have the unit checked by a competent person.
Temperature does not rise when expected	Set temperature is lower than block temperature	Check set temperature
	Set temperature is too close to ambient	Raise set temperature
	Temperature control circuit fault	Have unit checked by competent person
Temperature continues to rise when not expected	Set temperature is higher than block temperature	Check setting
	Temperature control circuit fault	Have unit checked by competent person

6 Technical specification

Temperature range	Ambient to 45°C
Stability at 37°C	± 0.1°C
Temperature display resolution	1°C
Supply voltage range	Mains 220-240V AC, 50/60 Hz Internal battery 12V DC, 6.5 AH Vehicle battery 12V DC
Power Rating	48 Watts
Heating rate	Ambient to 37°C within 60 minutes
Heat retention	Using internal battery, the incubator will maintain a temperature of 37°C for 5 hours.
Overtemperature protection	Cycling thermal switch (50°C)
Dimensions l/w/h (mm)	304/235/280
Weight	9Kg
Set temperature	37°C

This equipment is for indoor use and will meet its performance figures within the ambient temperature range 10°C to 35°C, with maximum relative humidity of 80%.

7 Maintenance and service

All Grant laboratory products are designed to comply with IEC1010-1 and can be flash tested. Some are fitted with radio frequency interference suppressors. Therefore it is recommended that only a d.c. test is performed.

7.1 Cleaning

The case can be cleaned with a damp cloth after disconnection. Do not use solvents.
Before using any decontamination or cleaning method except that recommended, check with our Service Department, or in other countries with our distributor, that the proposed method will not damage the equipment.

7.2 Replacement of fuses

Disconnect the unit from the power supply socket.
Locate fuses on panel. Use screwdriver of correct size to turn fuse holder a quarter turn anti-clockwise to release fuse holder.Check, replace with correct fuse if necessary.
The fuses should be 1.25 x 0.25 inch ceramic quick acting, rated: 1AF and 5AF
Replace fuse holder.

8 Guarantee

When used in laboratory conditions and according to these operating instructions, this block heater is guaranteed for ONE YEAR against faulty materials or workmanship.

9 Service

For service, return to our Service Department in the UK, or to our distributor.

Service Address: Grant Instruments (Cambridge) Ltd.
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