



**Installation, Operation and Maintenance Instructions**  
Controller Manual  
R38 Controller

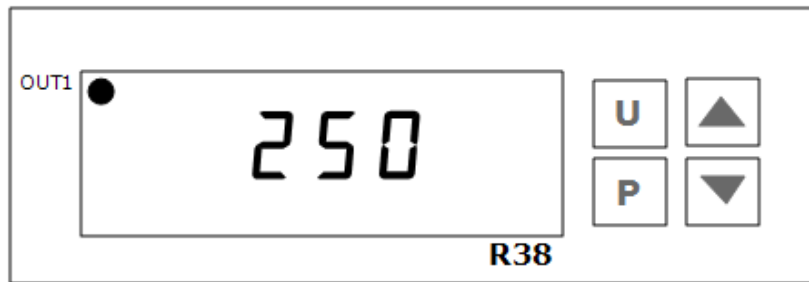
R38 Controller

## Contents

This manual is for guidance on the use of the Carbolite Gero product specified on the front cover. This manual should be read thoroughly before unpacking and using the furnace or oven. The model details and serial number are shown on the back of this manual. Use the product for the purpose for which it is intended.

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## 1.0 R38 Controller



### 1.1 PID control

This controller uses PID (Proportional Integral Derivative) temperature control. This type of control uses a complex mathematical control system to adjust the heating power and achieve the desired temperature.

### 1.2 Controller Operation

When switched on, the controller lights up, goes through a short test routine and then displays the measured temperature and starts to control. The output light OUT1 indicates when heating is occurring.

To alter the setpoint, press the down arrow key once, "SPI" flashes. Then use the up and down arrow keys to adjust the setpoint. Press the P key to accept.

### 1.3 R38 Over-Temperature Controller

When an R38 Controller is fitted to be used as an over-temperature controller, to configure the setpoint:

- Press and hold the 'P' key until the display flashes 'SP'.
- Press the 'down' arrow key until the display shows 'AL'.
- Press the 'P' key to enable the setpoint option.
- Use the 'up' and 'down' arrow keys to select the required setpoint. The display will flash between 'AL' and the setpoint value during this process.
- Once you have input the required setpoint, press the 'P' key, followed by the 'U' key to accept.
- The display will flash 'AL' for 30 seconds before the setpoint is accepted.

Note that if the 'P' and 'U' keys are not pressed, the setpoint will be automatically accepted after 30 seconds.

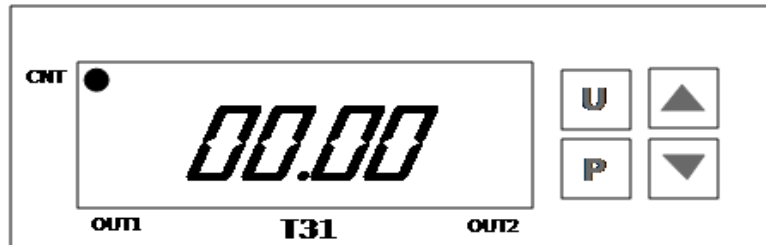
### Over-Temperature Alarm

If the over-temperature alarm is tripped, then the 'OUT2' and 'AL' lights will illuminate in the bottom right-hand corner of the controller.

## Resetting the Over-Temperature

To reset the over-temperature controller, power cycle the product by turning the instrument switch off, then on again.

### 1.4 Process Timer (if fitted)



#### To set a process time:

Press the P key; S.t1 shows momentarily on the display. The display then flashes. Use the arrow keys to adjust the process time, which is in hours and minutes (hr.mn). Wait 5 seconds without pressing a key, or press the P key once, and the display returns to normal.

#### To start the timer:

Press the U key once. Timing starts. The CNT light flashes slowly while timing is in progress and the display counts down (at the end of each minute).

At the end of timing the OUT1 light comes on, the display flashes continuously and power to the temperature controller is cut off.

#### To reset the timer after timing has finished:

Press the U key once. The timer is now idle; it is not stopping the oven from heating, nor is it timing.

Power is only supplied to the temperature controller when the timer is reset or is timing.

To stop the timer during timing, press U during the countdown. The temperature controller remains on. It is not possible to resume timing. Pressing U again will reset the timer.

### 1.5 Calibration

If the process requires an accurate temperature display it is possible to calibrate the controller by entering a single temperature offset value as follows:

Please contact Carbolite Gero Service for detailed instructions on entering an offset in the R38 Controller.

### 1.6 Over-Temperature Control (if fitted)

The over-temperature controller should typically be set at 15 °C above the main controller. If an over-temperature condition occurs, check the main controller is functioning correctly.

An over-temperature condition cuts off power to the heating elements. A light in the over-temperature controller flashes. To reset this, refer to the over-temperature control section of this manual.

### 1.7 Controller Replacement

If the over-temperature trip operates, a click occurs and a warning light near the thermostat lights up; the reset button on the thermostat pops out. The reset button is hidden behind the control dial. To reset the oven it is necessary to turn the thermostat dial until the hole lines up with the reset button and press it using a small diameter rod.

### 1.8 Temperature Controller Replacement



Before handling the controller: wear an anti-static wrist strap or otherwise avoid any possibility of damage to the unit by static electricity. Refer to the detailed instructions supplied with the replacement controller.

Disconnect the product from the electrical supply and remove the cover.

Make a note of all the wiring connections before disconnecting the wires. Loosen the screw that holds the controller body clamp in place. Use a flat screwdriver or similar object to ease apart the two plastic lugs on the side of the clamp and pull the instrument forward out of the front control panel.

Reconnect the wires according to the notes made.

**Note:** If the product features an R38 over-temperature controller, then this should be replaced using the same method described.





ProductLabel

The products covered in this manual are only a small part of the wide range of ovens, chamber furnaces and tube furnaces manufactured by Carbolite Gero for laboratory and industrial use. For further details of our standard or custom built products please contact us at the address below, or ask your nearest stockist.

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