## 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 iTools

1.1 Installation of iTools Software

Item supplied when purchasing iTools software from Carbolite Gero.

1. iTools software CD
2. 3216 Programming Wizard CD

Please note sections 1.0 and 2.0 contain screenshots showing the iTools installation on a Windows 10 operating system. Later sections may show examples from earlier Windows operating systems.

On most computers, the CD-ROM version of iTools will start automatically as soon as it is inserted into the CD-ROM drive. If it does not auto-start, run the Install program from the CD's root folder.

During the installation, you will have to:

- Have administration rights on your computer
- Accept the licence
- Enter the user name and company name
- Select whether the software is to be accessible to all operators or specific operators
- Complete installation or custom (depending on memory available on the computer)

Once the installation has completed, click 'Close'.
A window will then automatically appear asking for entry of the iTools Product Key which is found on the iTools CD box.
1.0 iTools

Click OK and follow the instruction to enter the product key.

After entering the product key click OK to complete the installation.
2.0 Configuring iTools Communication Settings

- Head to Control Panel and double-click on the iTools icon.

- The "Registry Settings - iTools Configuration" window will appear.
2.0 Configuring iTools

2.1 RS232 or RS485 Connections

Connect the computer's 9 pin serial connector (male) to the 9 pin connector on the product (female) via a ‘straight through’ RS232, or RS485, cable. If the computer does not have a 9 pin serial connector use a 9 pin RS232, or RS485, to USB converter and connect through a USB port on the computer.

- For the RS232 communication a USB to RS232 serial adaptor is required. This will be supplied with software for installation of driver files. Please ask Carbolite Gero for advice about suitable adaptors.
- For the RS485 please purchase a USB to RS485 isolated converter from Carbolite Gero.

Switch on the product. In this example the product has a Eurotherm3508P10 instrument with RS232 comms.

- Click on the 'Serial Ports' tab.

![Registry Settings - iTools Configuration](image)

- Click the tick box to enable the serial port being used for the connection. In this example the computer has one serial port 'COM3'.
- Please note if a connection is moved to a different USB port on the same computer it may have a different COM port number.
- Click 'Apply' and close this window and close the control panel window.
- Restart iTools for the new port to be recognised.
2.2 Ethernet Connections

- Click on the 'TCP/IP' tab.
- Click on the 'Add...' button.

Give the new port a name of your choosing. In this example the port has been named 'nanodac'.
- Click on the 'Add...' button.
2.0 Configuring iTools

- Enter the IP address. In this example the default IP address of a nanodac temperature controller has been used. The IP of the device being used should be entered.
- Click the 'OK' button.

- Click the 'OK' button.
2.0 Configuring iTools

- Click the 'Apply' button then the 'OK' button.
- Restart the iTools software for the new port to be recognised.

2.3 Establishing a Connection

- Click on the Windows icon in your toolbar, then scroll through your list of programs until you find Eurotherm Tools.
- Expand the folder, then double-click on iTools Engineering Studio to open the iTools software.
2.0 Configuring iTools

On the iTools software click the ‘Scan’ button. The following window will appear:

![Enable Background Scan](image)

Leave the settings and click ‘OK’.

When the software scans the address of the Eurotherm controller connected to the computer it will add an image of the instrument.

![iTools Software](image)

Note: when this image was captured the software was still scanning the port addresses. Once the temperature controller has been found by the software scanning can be stopped by clicking on the 'Scan' button again. Then wait until the controller has synchronised; the '(synchronising)' message next to the controller will disappear.
3.0 Programming a Eurotherm 3508 Controller

To create and edit temperature programs click on the 'Programmer' button.

The 'Initializing Programmer Editor...' message will appear. Then the 'Program Editor' window will appear. In this example a program was already set in Program 1 of a Eurotherm 3508P10.

A program can be created by adjusting the parameters in the boxes below the graphical representation.
Segments can be deleted by clicking on the segment number box and then clicking the delete button.

If the program had no segments set, or all segments have been deleted, the window will look like this.
Click on the '+' button to add segments.

Set the segment parameters using the boxes.

See the operating instructions of the temperature controller for an explanation of program segment parameters.

For multi-program instruments such as the 3508P10 the different programs are set up and accessed using the 'program number' button.

The programs can be given a name if required by click on the '...' button.
4.0 Setting up a Chart and Temperature Data Logging

The iTools software can log parameters from the connected instrument and can show them graphically. Click on the ‘OPC Scope’ button.

This will open the ‘iTools OPC Scope’ Window.
In the example below ‘COM1’ is the serial communication port being used to communicate with the 3508 Controller.

Double click on the ‘COM1’ folder (or click the ‘+’ symbol next to it) to show ‘ID001-3508’ folder which is the 3508 Controller.

Double click on the ‘ID001-3508’ folder to show folders that contain groups of parameters in the 3508 Controller.
Parameters with the blue icon can be added to the 'list' and 'chart' by double click them, or click the 'Add new item' button.

In the example below the 'PV', 'WorkingSP' and 'ActiveOut' parameters have been added.

To remove from the list highlight the parameter in the list window and press the 'remove item' button or the 'delete' key on the computer keyboard.

To create a graph that shows the temperature setpoint and the actual temperature (known as the process value = PV), and the output power, add the following parameters (by double clicking on the corresponding blue icon):

1. For temperature setpoint – add the 'WorkingSP' parameter found inside the 'Loop' then '1' then 'Main' folders.  
   For the 3216 Controller add 'WorkingSP' found in the 'SP' folder.  
   For the 301 Controller add 'OperativeSetPoint' found in the 'CONTROL' folder.

2. For the actual temperature (known as the process value = PV) - add the 'PV' parameter found inside the 'Loop' then '1' then 'Main' folders.  
   For the 3216 Controller add 'PVInValue' found in the 'Input' folder.  
   For the 301 Controller add 'MeasureValue' found in the 'CONTROL' folder.

3. For the output power – add the 'ActiveOut' parameter found inside the 'Loop' then '1' then 'Main' folders.  
   For the 3216 Controller add 'ActiveOut' found in the 'CTRL' folder.  
   For the 301 Controller add 'PIDPowerValue' found in the 'OUTPUTPOWER' folder, inside the 'CONTROL' folder.
4.0 Setting up a Chart and

Click on the 'Chart' tab then click on the 'Show Chart Control Panel' button.

There are methods of controlling the graphs axes, colours and other parameters in the Chart Control Panel, which can be opened again using the 'Show Chart Properties' button. Once setting up the chart has been completed this can be saved to a file so it can be used again in the future.

Click the tick boxes next to the three parameters to make them appear on the graph.

To Data Log this information click on the 'Start Data Log' button and select a location and file name for the data log file.

'Update Interval' button.
The data log file is a comma separated values ‘CSV’ format which can be opened in spreadsheet programs such as Excel. The amount of data in the log file is affected by setting of the ‘Update interval’ – i.e. how often data is written to the log file. The default setting is 1000ms (milliseconds) = 1 second. To change the update interval click on the ‘Update interval’ button and type in the interval required.

To finish data logging click the data log button again. The data will be written to the file specified when starting the data logging.

While the chart is being created it is possible to scroll the graph back in time. To do this, click on the ‘Toggle Chart Review Mode’ button.

Now the page back and forward buttons can be used.

To return to see the chart being created, click the ‘Toggle Chart Review Mode’ button.
## Service Record

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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.

For preventive maintenance, repair and calibration of all furnace and oven products, please contact:

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