



# X-306/S Oven Commander

An application for the X-REFLOW306/S Oven to create/run programs and monitor/store in real time the temperatures of the oven thermocouples and the additional two thermocouples connected to the TC-T and TC-B sockets.

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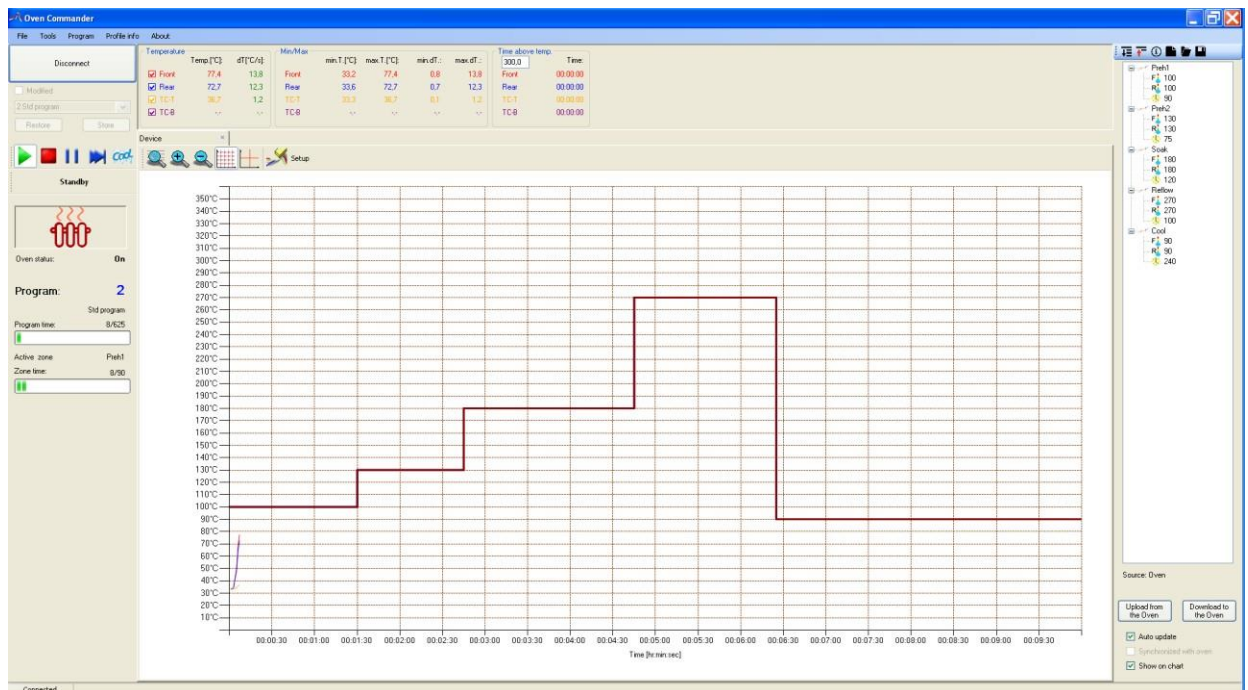


# Introduction

The X306/S Oven Commander allows the operator to easily program, run and document work done with the X-Reflow306/S Oven.

## Major Oven Commander Features and User Benefits:

- Programming and controlling the X-Reflow306/S oven from a PC
- Monitoring in real time the air or N2 temperatures inside the oven and the two temperatures of the object to which the TC-T and TC-B thermocouples are connected
- Storing on a PC the four monitored temperature/time profiles
- Printing the stored time/temperature graphs and Programs
- Exporting to Excel the stored information in the time/temperature graphs
- Observing in real time of time/temperature characteristics of the process in progress
- Changing the program with “on the fly” modifications using a computer mouse or keyboard
- Documenting and storing additional information (like PCB number, PCB description, etc.) related to tasks performed (entered manually when running a profile)



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8. Press Connect (Top/Left corner of the program). This will connect the oven to your PC.

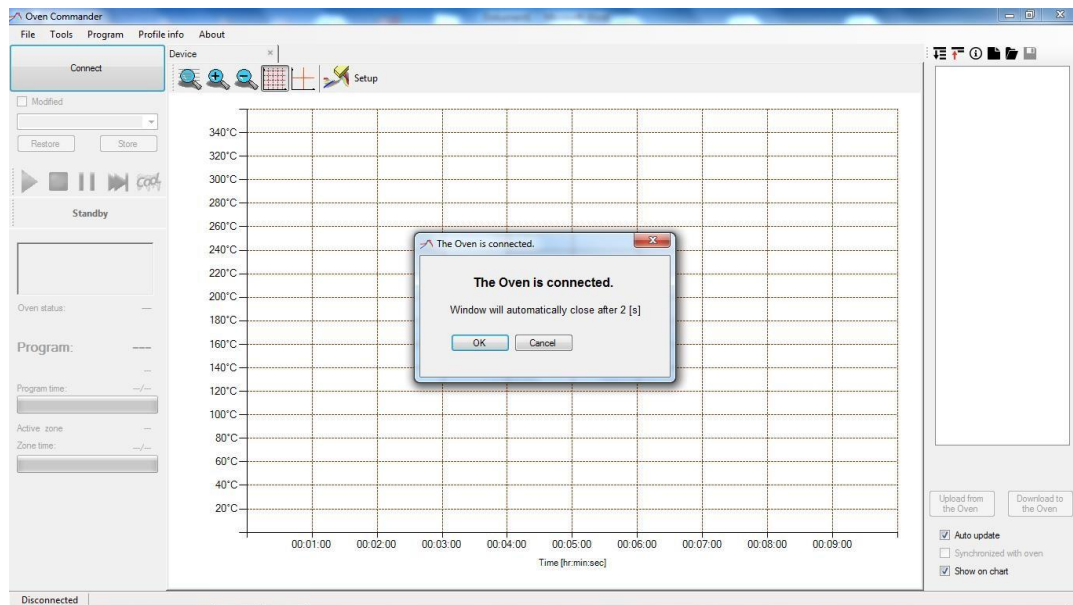


Figure 5

Note:

*If your computer will not connect to the oven via X485-USB Converter, unzip the file "X485-USB converter\_driver.zip" and run the file "CDM20600.exe".*

*If the message "Unable to open license file" is displayed, check and perform step 7 again.*

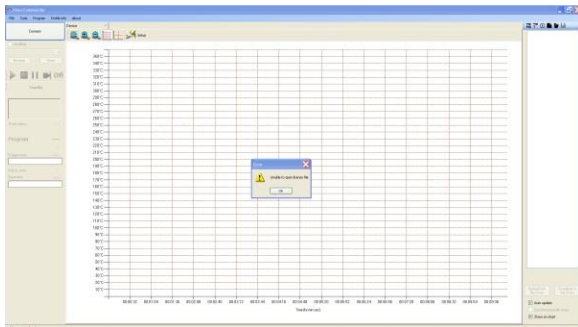


Figure 6



Figure 7

## II. MAIN WINDOW

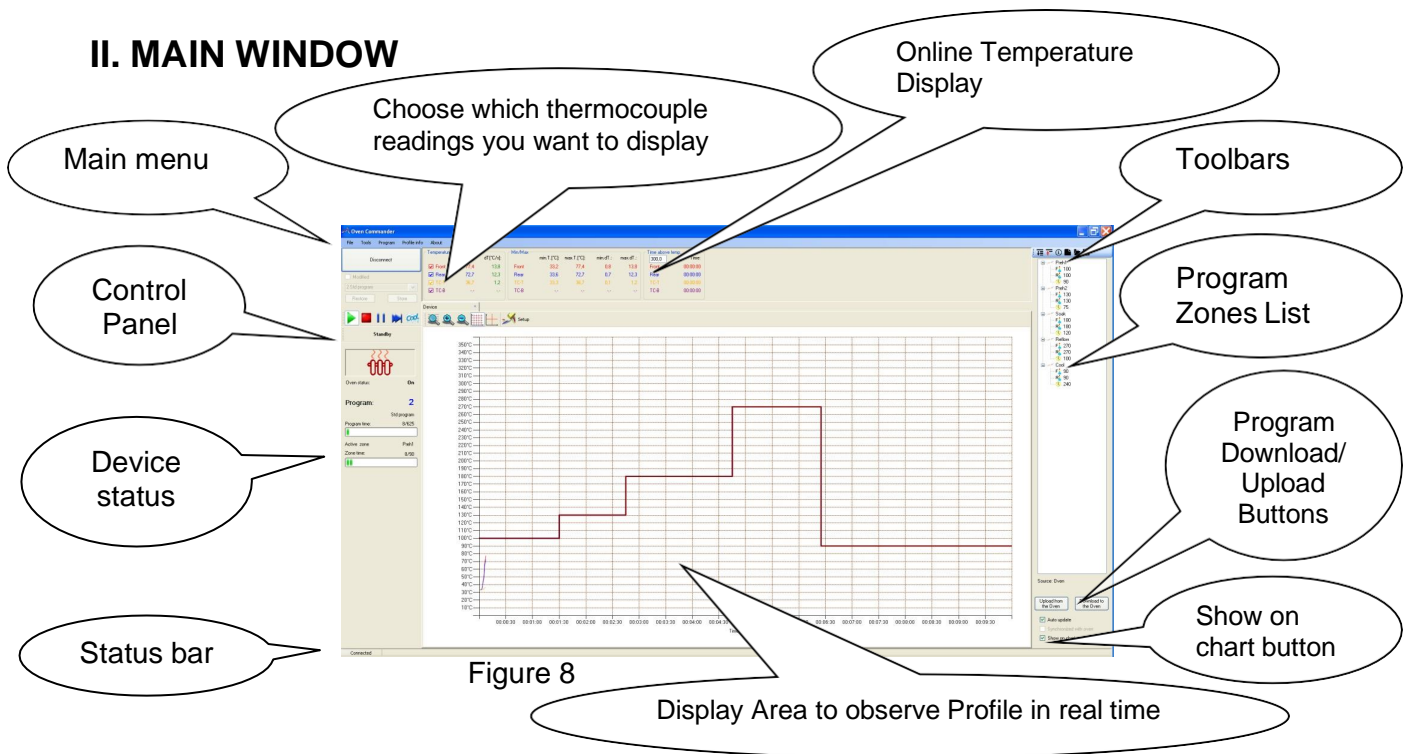


Figure 8

## III. Description of the Control Panel

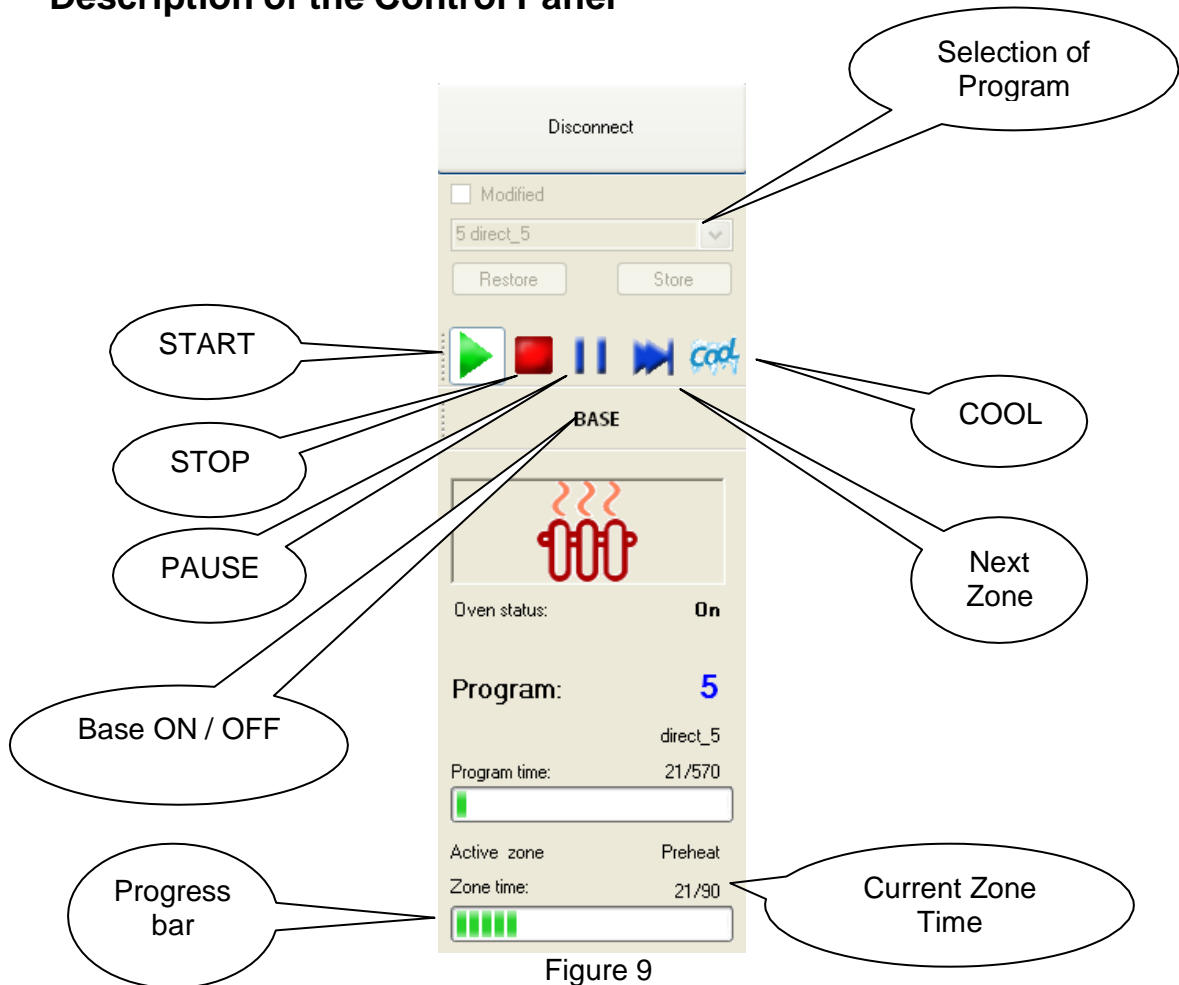


Figure 9



### Control buttons:

**START** – Starts the process. If the process is active, you can control it by clicking on the Control Buttons.

Note: If you press **START** during the process, the process will restart.

**STOP** – Stops the process

**PAUSE** – Pauses the process. Press the **PAUSE** button again to continue the process.

**NEXT ZONE** – Clicking on this button ends the zone in progress and starts the following zone. This is an override of the preset program if the timing of the zone in the preset program was too long.

**COOL** – Clicking on this button stops the process and the system starts cooling the board. It can be pressed at any time during the process to stop it.

**Base ON/OFF** button - After this option is selected, the oven will maintain the preset temperature inside the heating chamber at all times.

## IV. STARTING A PROGRAM

1. Choose a program from the program list:

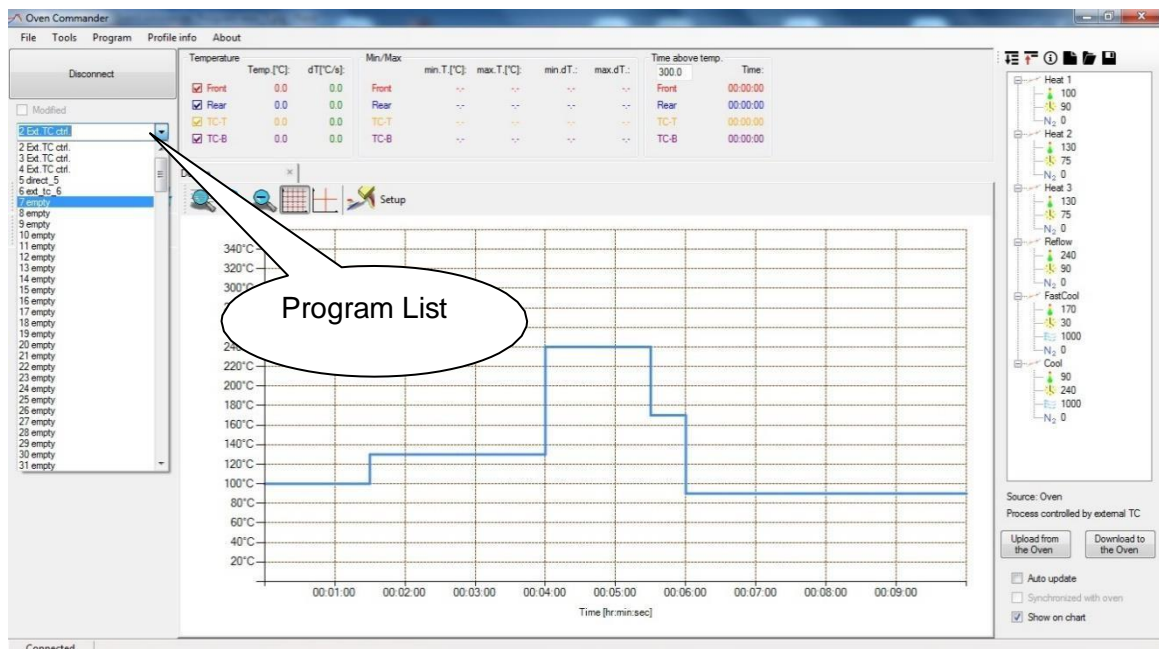


Figure 10

## V. EDITING A PROGRAM

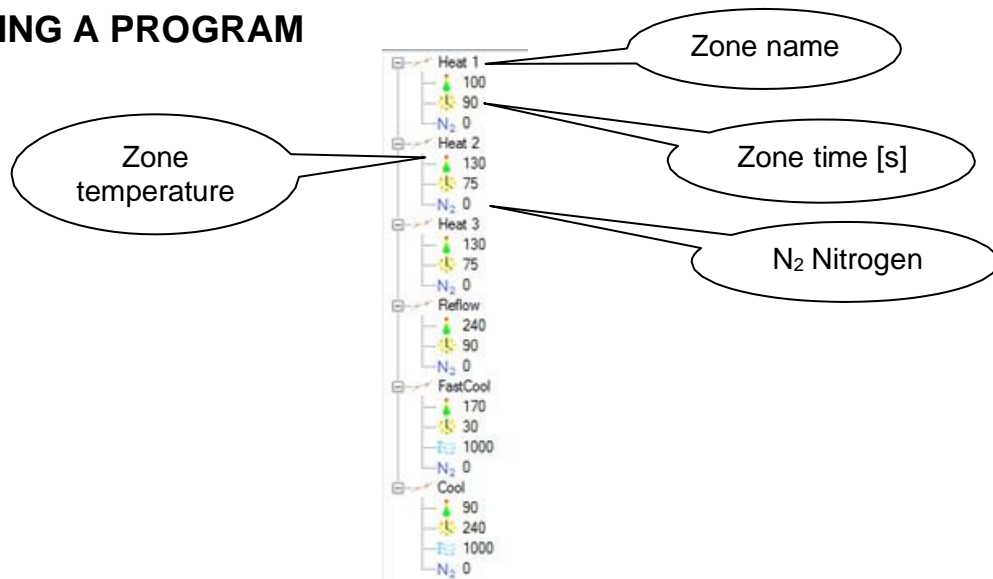


Figure 11

### Note:

**The Operator has two ways to edit the Program: graphical (using the mouse and modifying the graph) and by modifying temperatures and zone times in the Program Zones List via keyboard entry (Fig. 11).**

### Editing using the graph.

- 1 Changing zone temperature:
  - a Place the mouse cursor on the horizontal line of the Program Graph
  - b Press and hold the left mouse button
  - c Move the line up or down to the desired temperature
  - d Release the mouse button to set the temperature
- 2 Changing the zone time:
  - a Place the cursor on the vertical line indicating zone shifts on the Program Graph
  - b Press and hold the left mouse button
  - c Move the cursor left or right to the required timing
  - d Release the mouse button to set the zone time

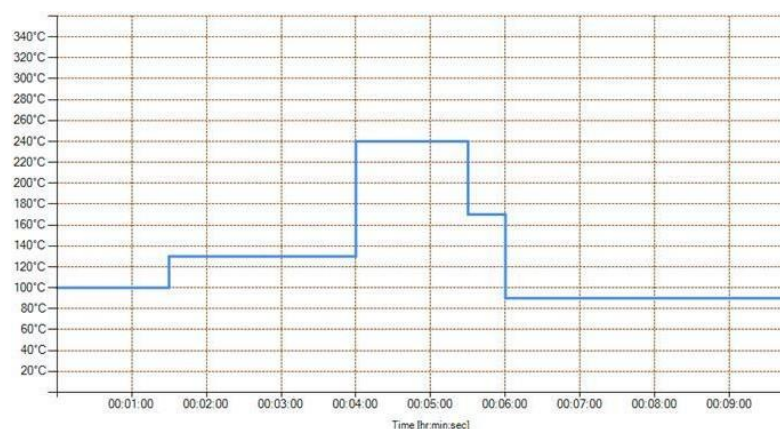


Figure 12

## Editing the Program by keyboard entry in Program Zone List.

### 1 Changing zone temperature:

- a. Place the cursor on the temperature of the zone which you wish to modify

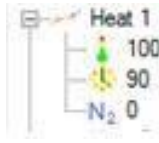


Figure 13

- b. With the right mouse button, click on the existing value and click edit

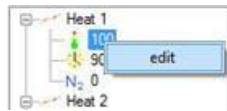


Figure 14

- c. Enter the new value from the keyboard and press enter

## CREATE NEW PROGRAM

1. Choose from the Main Menu “Program” and then “New”

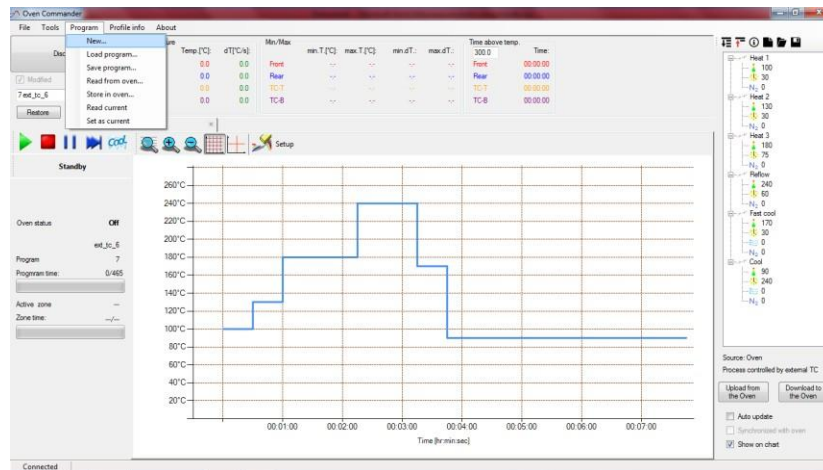


Figure 15

2. Select the zone count and if the process will be controlled by an external thermocouple

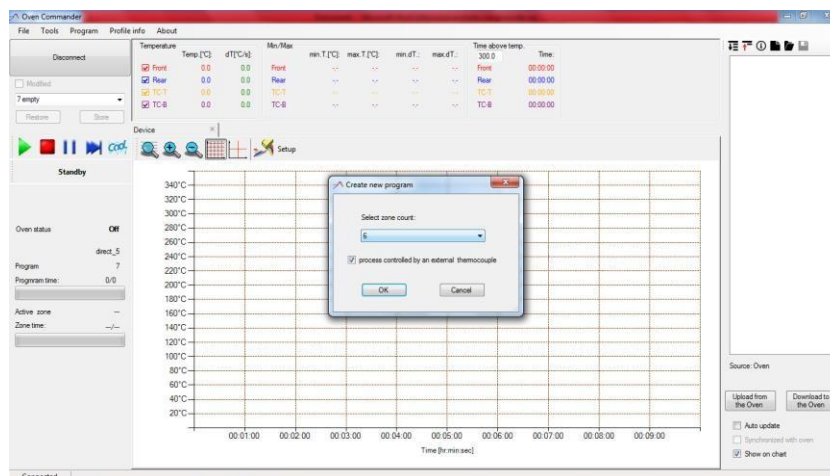


Figure 16

3. Press “OK”
4. Write the program Name and Description

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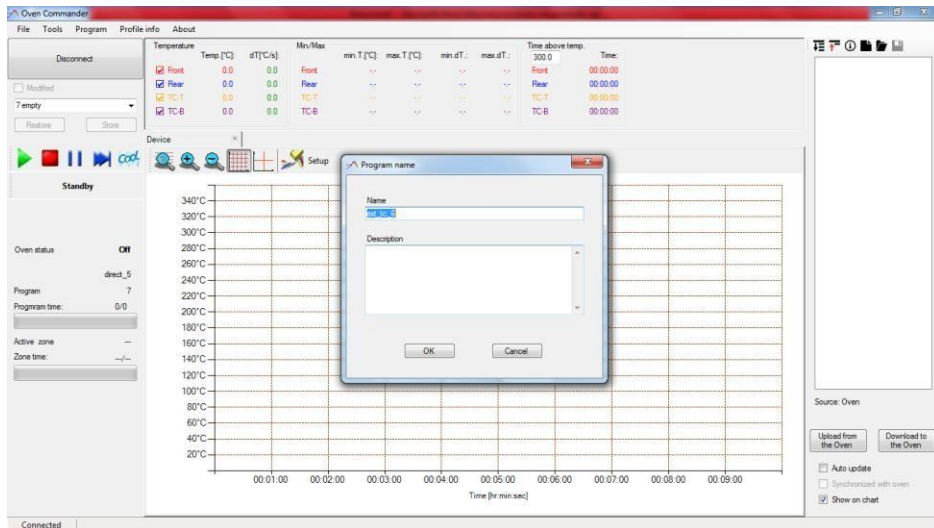


Figure 17

5. Edit the program's parameters on the default graph

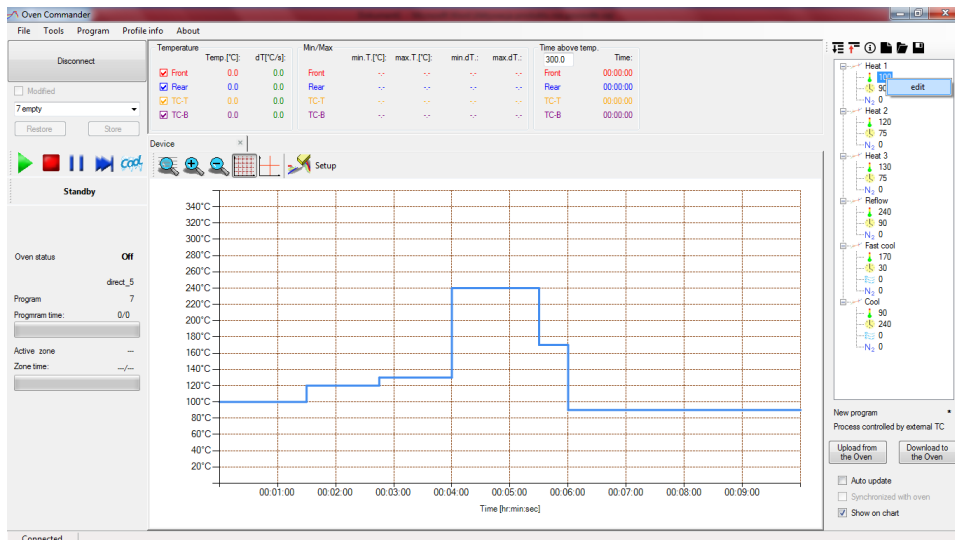


Figure 18

6. Press "Download to the Oven" to copy the program to the oven and then press "Store" on the Control Panel in order to run it



Figure 19



Figure 20

7. Now press "Start" to run the program

## VI. Editing the program in progress

You can change the current program parameters through either of the methods outlined in section 5. Note that you can edit the program while it is running.

## VII. Saving profiles

When you have a profile on the screen and you want to save it, select from the Menu “File” and then “Save”



Figure 21

Select where you want to save it on your computer, enter the file name, add an additional description if needed, and save it by clicking the Save button.

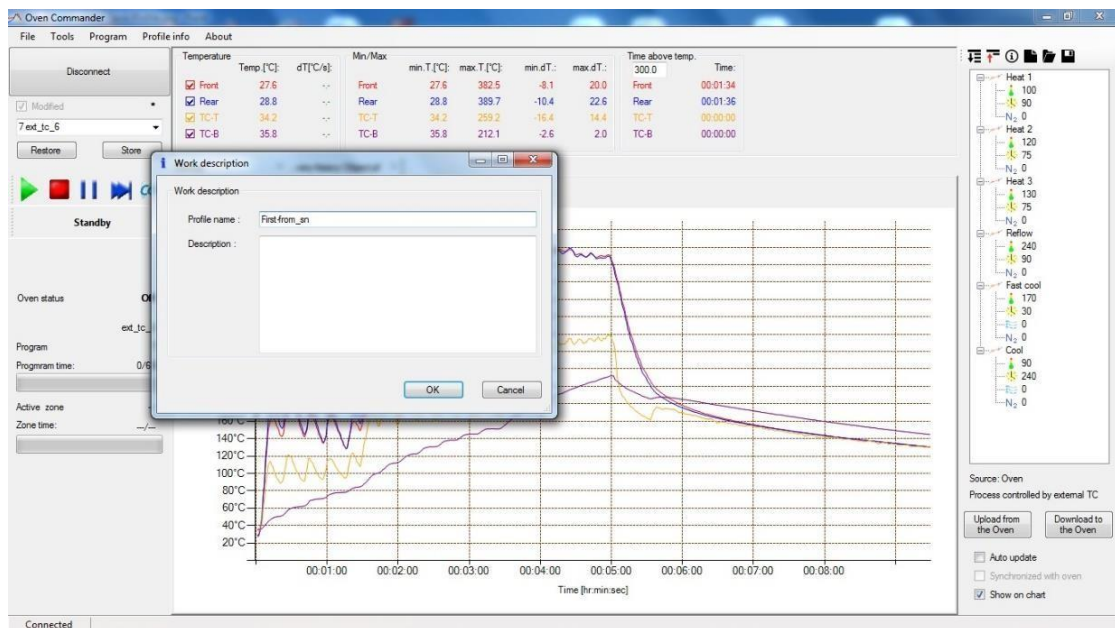


Figure 22

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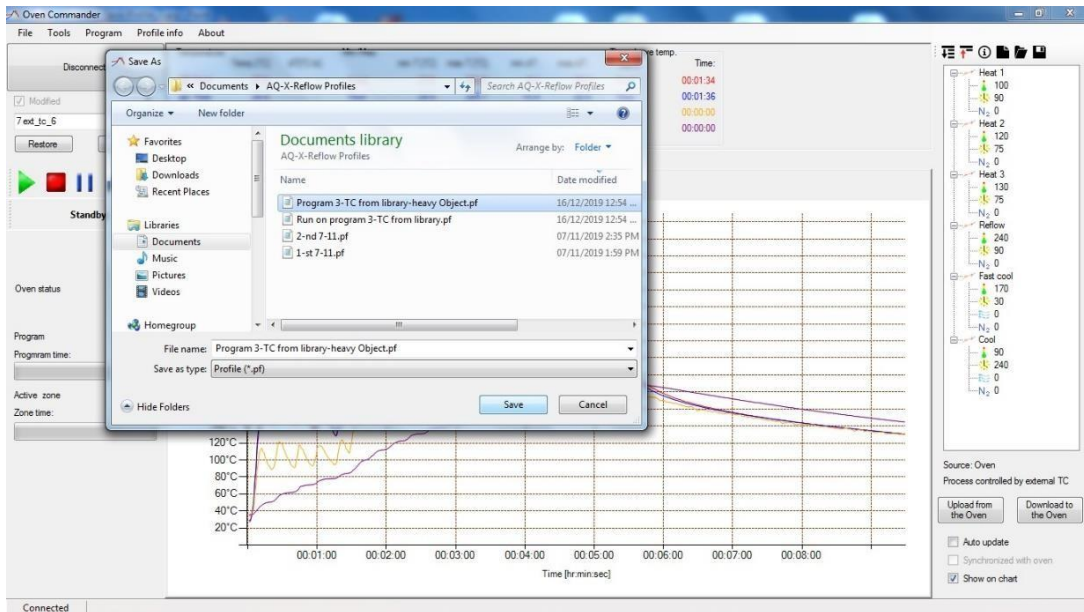


Figure 23

## VIII. Reviewing saved profiles

To open a saved profile: chose from the Menu “File” and then “Open”

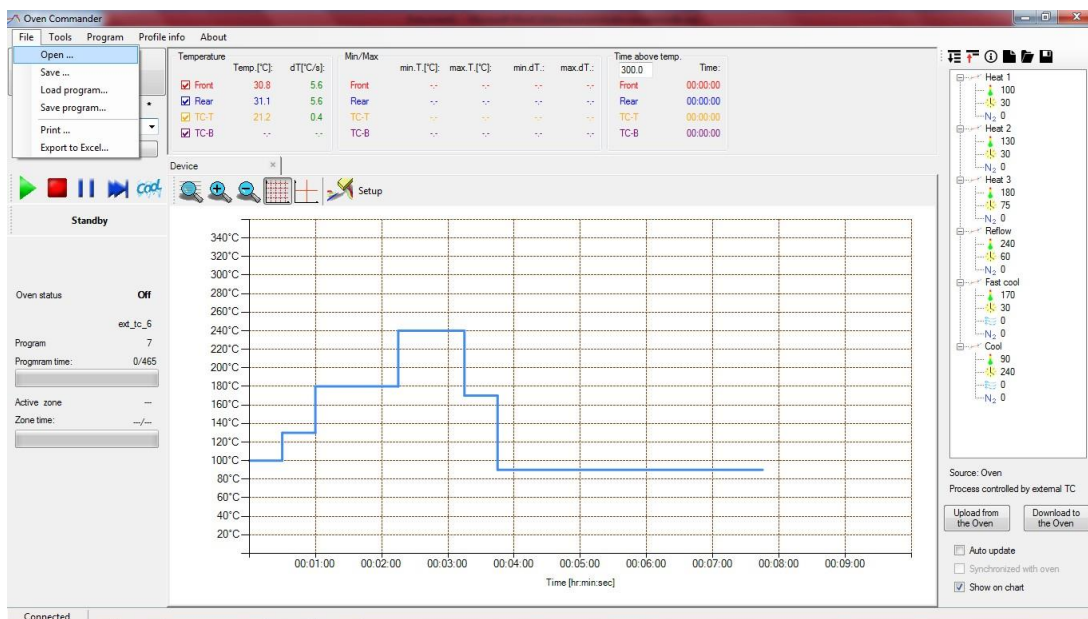


Figure 24

Chose “profile1.pf” or another file and open it:

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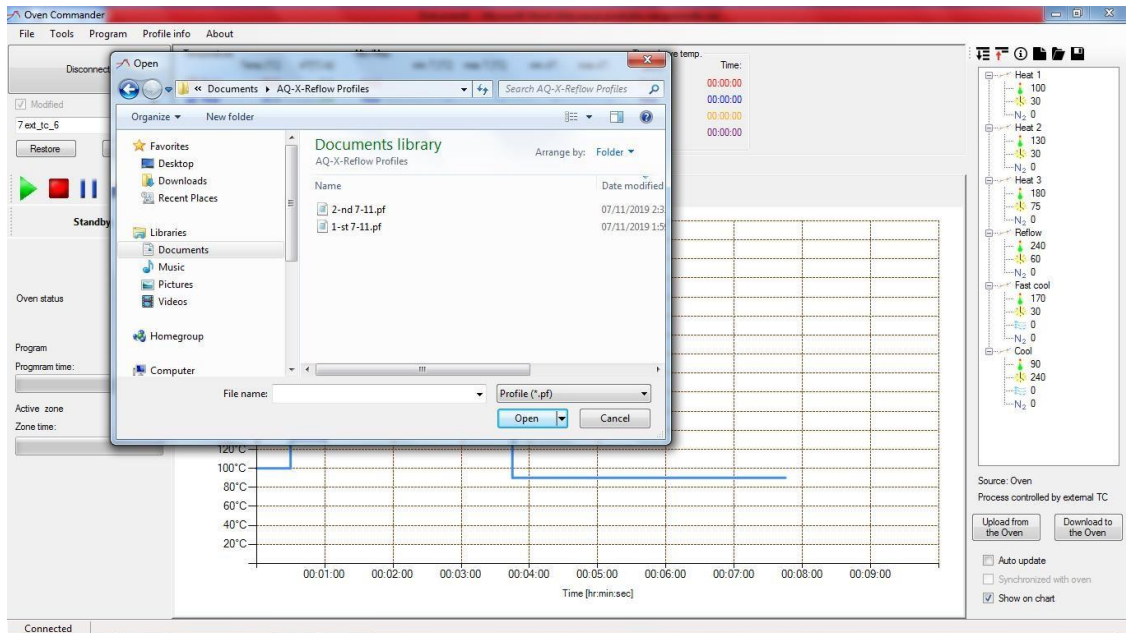


Figure 25

The profile shows four thermocouples:

- Two thermocouples: Located above the Front and Rear heaters.
- Two thermocouples: connected to the TC-T and TC-B on the left side panel and possibly attached to the PCB heated in the oven.

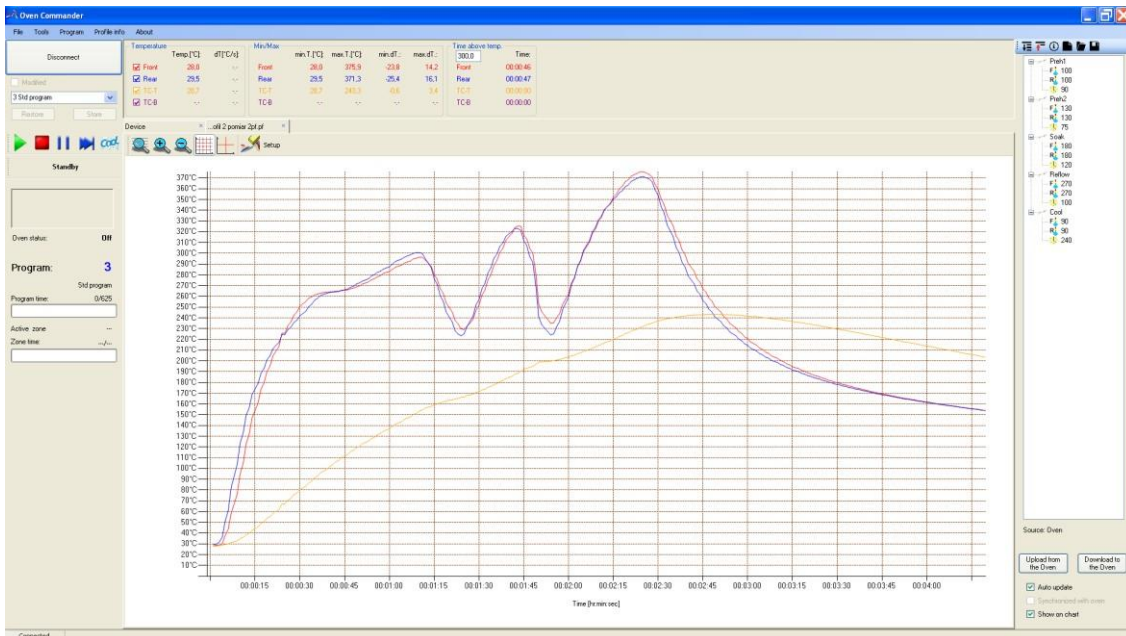


Figure 26

## IX. Load program file from a PC to the Oven

### 1. Expand Program List and choose empty program

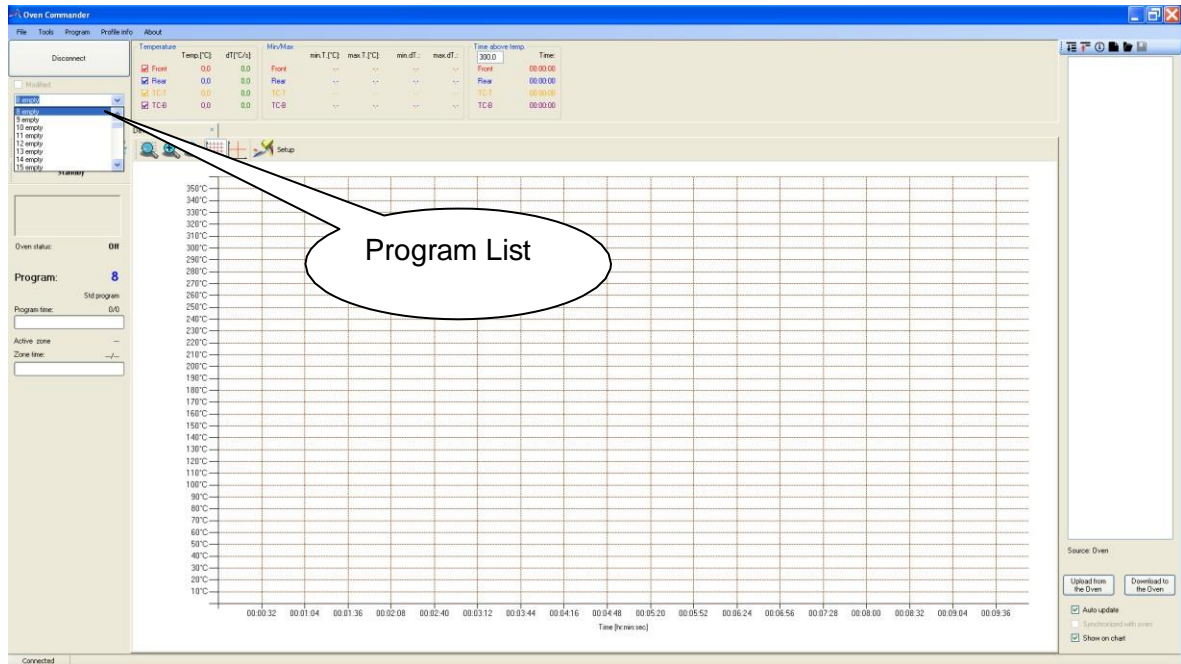


Figure 27

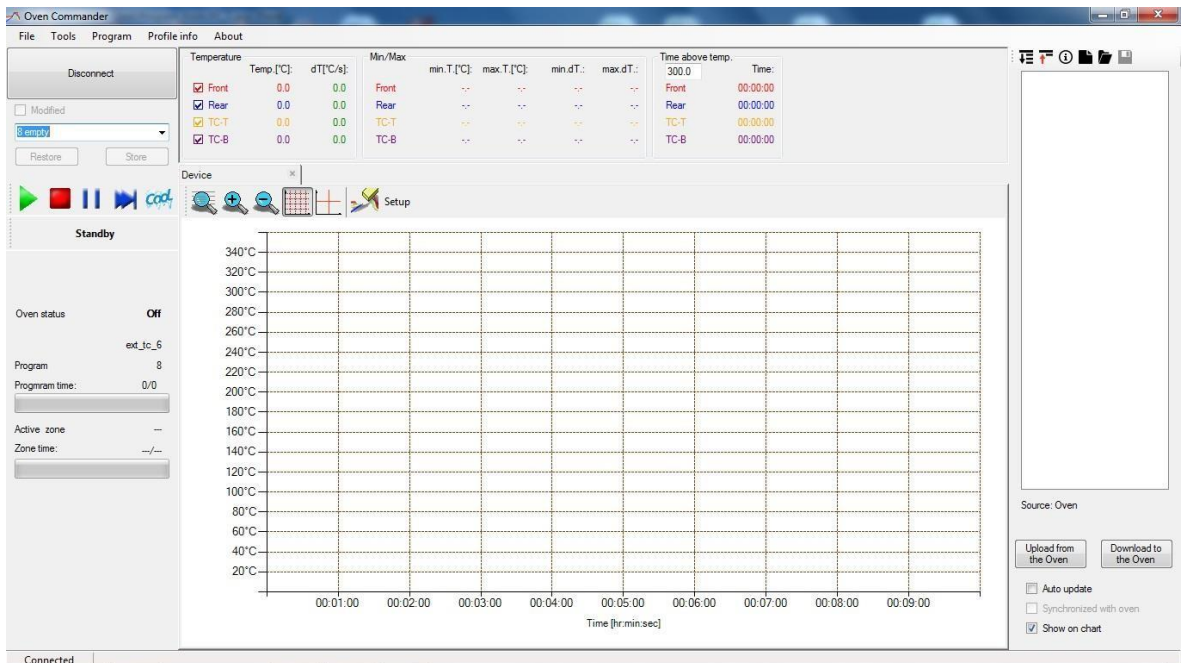


Figure 28

### 2. Choose "File" from Menu and then "Load program"

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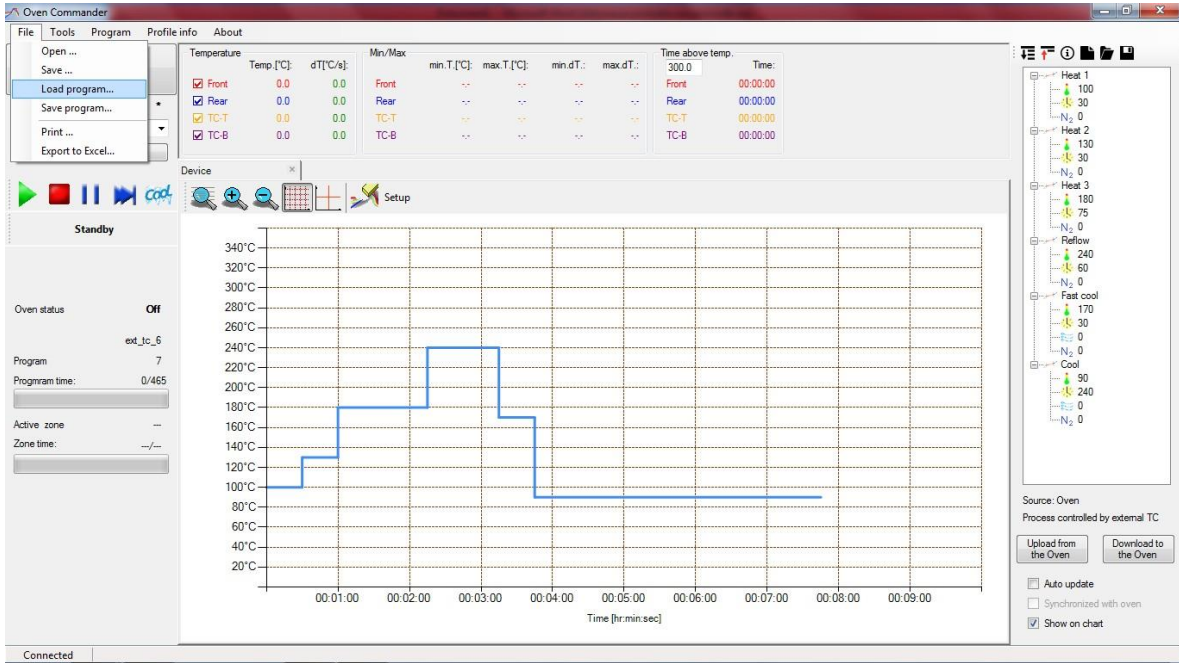


Figure 29

3. Choose the desired program and open it by clicking the “Open” button

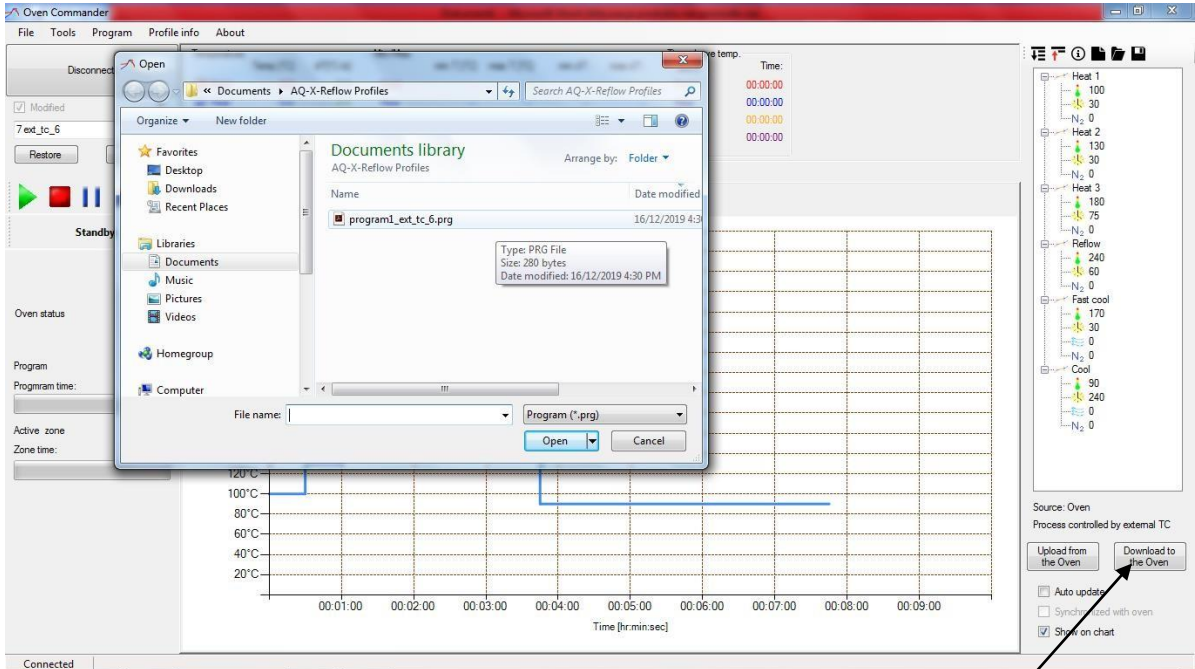


Figure 30

Then click the “Download to the Oven” button to save the program to the oven.

## X. Saving a program file from the Oven to the PC

1. Choose "File" and then "Save program"

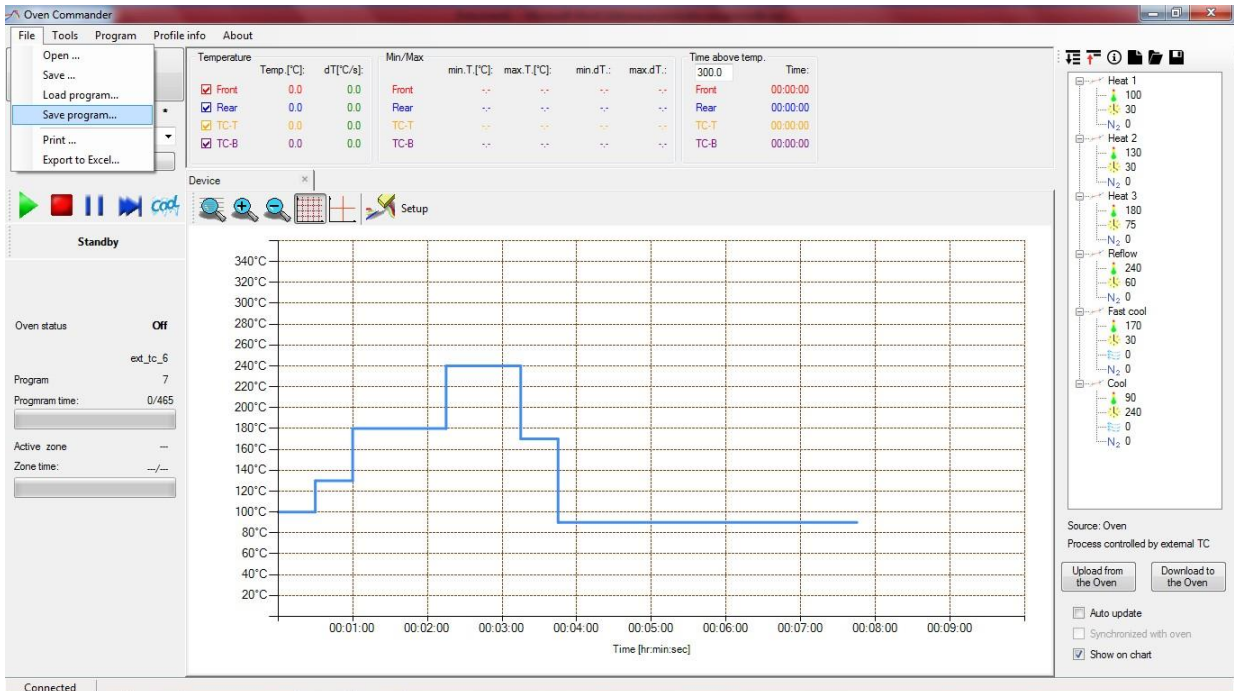


Figure 31

2. Choose where you want to save the program and the file name. Then press "Save".

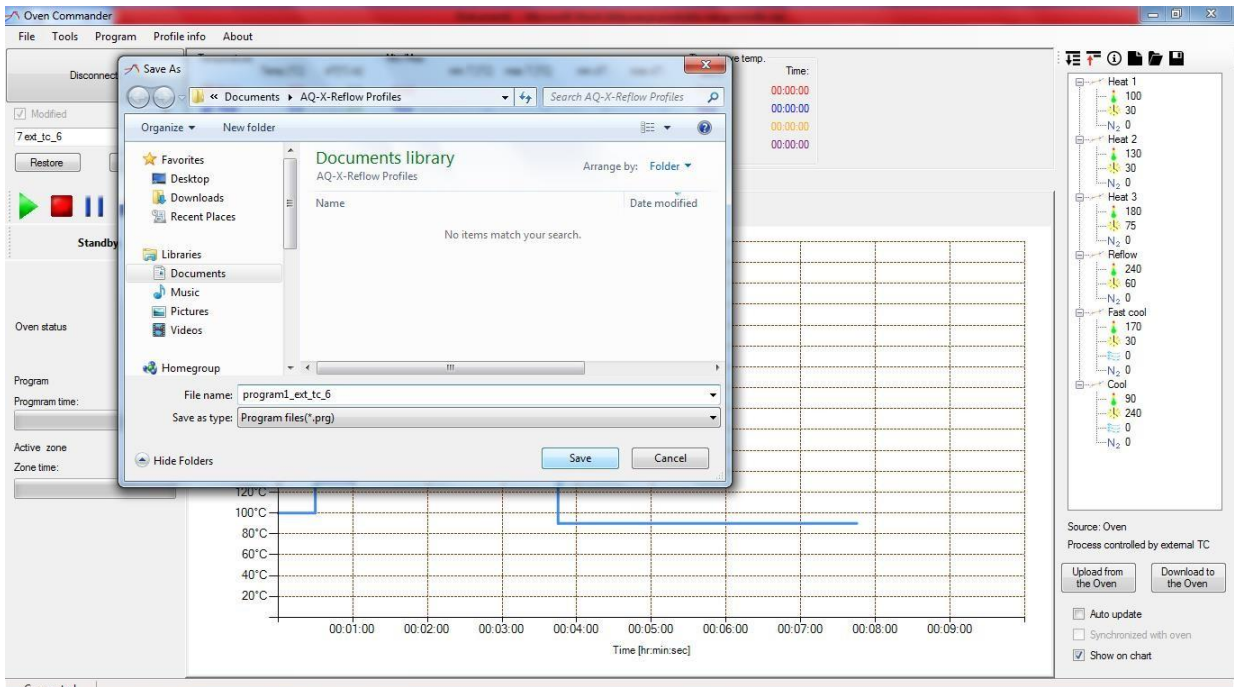


Figure 32

## XI. Export the graph to the Excel file

If you want to export the graph to an Excel file, chose from the menu “File” and then “Export to Excel”. Enter the file name and chose the place to save the Excel file.

Click the “Save” button and the Excel version of your graph will be saved to your specified location.

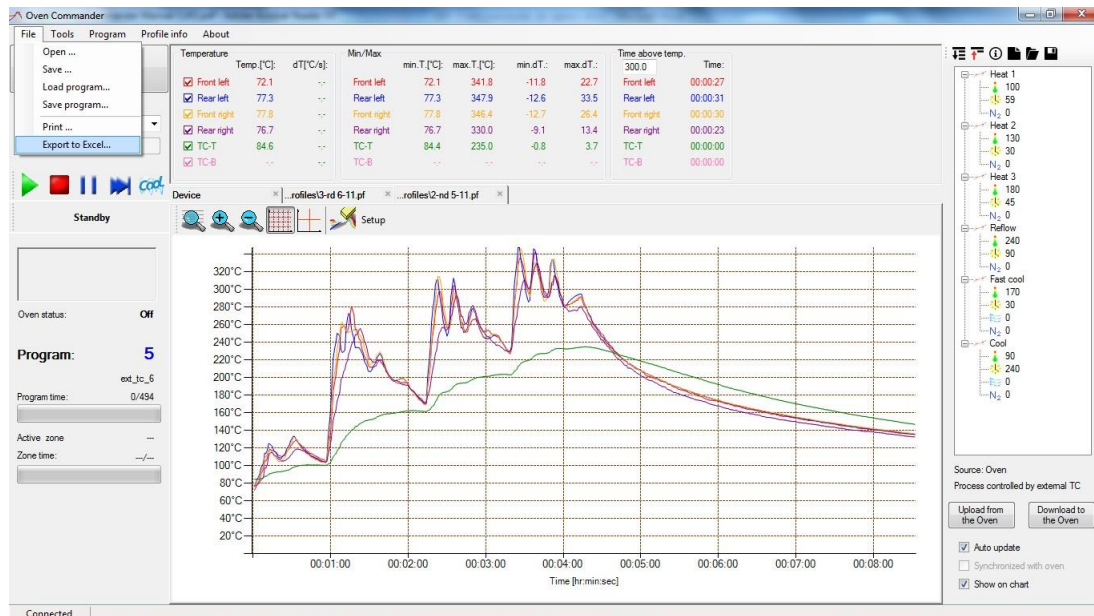


Figure 33

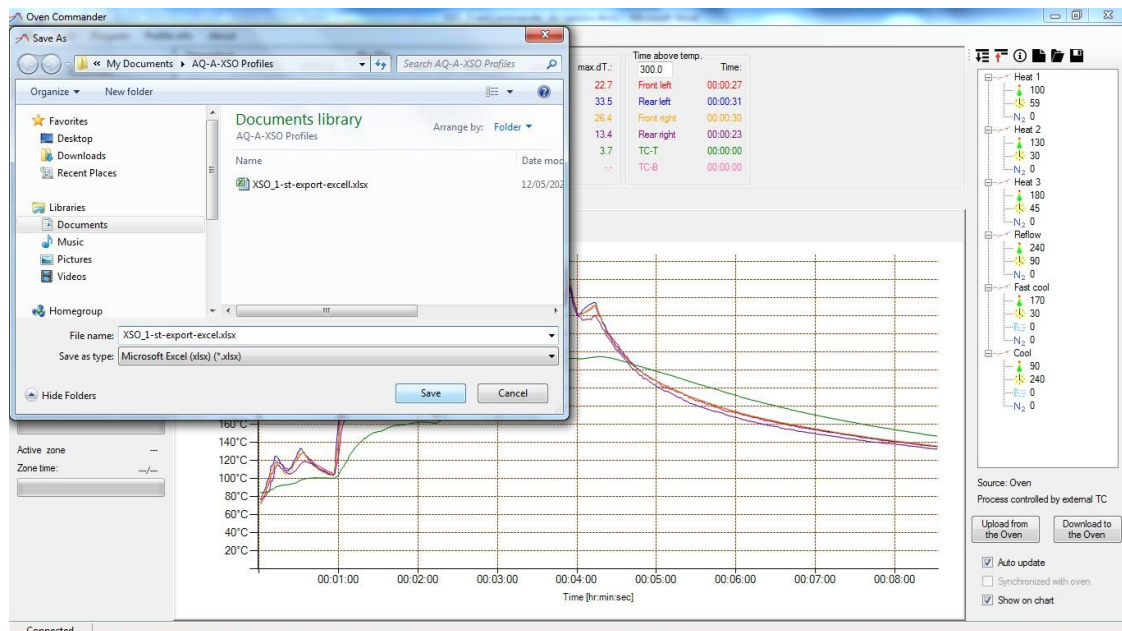


Figure 34



When you open the Excel file, it will look like Figure 35 shown below:

	A	B	C	D	E	F	G	H
1							Date	2019-12-15
2	Time [s]	Front [°C]	Rear [°C]	TC-T [°C]	TC-B [°C]			
3	0	27,60	28,80	34,20	35,80			
4	1	27,80	29,00	34,20	35,80			
5	2	33,60	33,60	34,60	35,80			
6	3	41,10	40,60	38,40	36,00			
7	4	50,60	50,30	43,80	36,60			
8	5	74,00	75,50	60,60	38,30			
9	6	87,10	90,00	71,10	39,40			
10	7	113,70	120,00	89,40	41,40			
11	8	127,10	135,20	97,50	42,60			
12	9	149,10	161,10	109,10	44,70			
13	10	156,00	170,20	112,20	45,70			
14	11	160,50	176,40	113,80	46,60			
15	12	164,30	181,70	110,00	47,90			
16	13	164,40	181,70	108,30	48,30			
17	14	162,20	178,70	102,50	49,20			
18	15	160,20	176,00	100,20	49,60			
19	16	155,40	169,60	95,40	50,00			

Figure 35

## XII. Printing the graphs and profile:

If you want to print the graph and profile: select "Print" from the Menu.

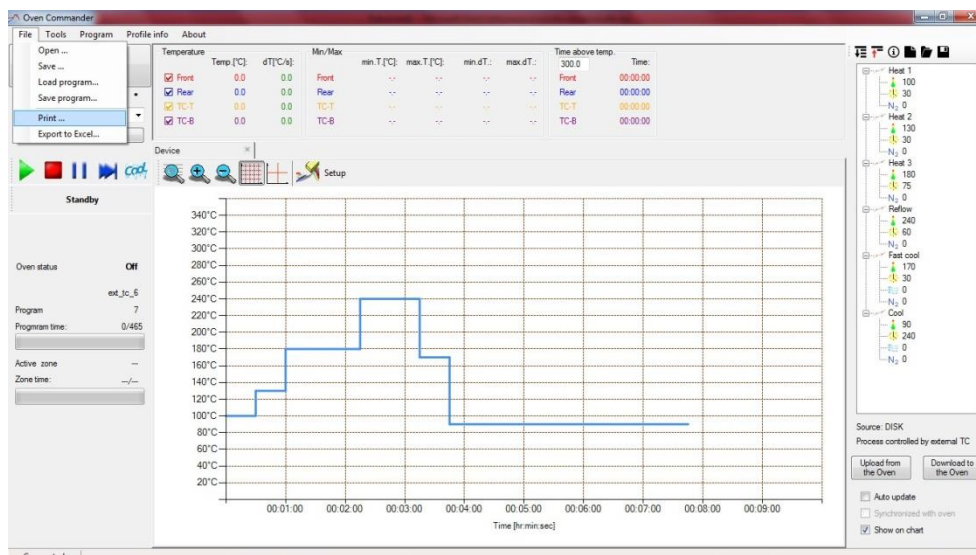


Figure 36

Select the printer which you want to use to print your graph. Click “Print”

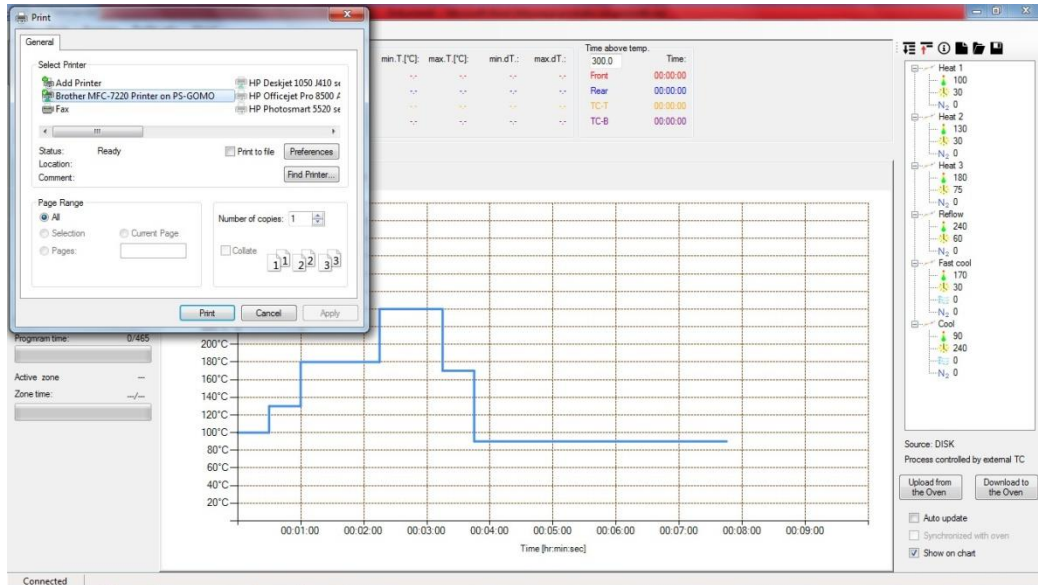


Figure 37

### XIII. OPTIONS

From the Main Menu, choose Tools and Options

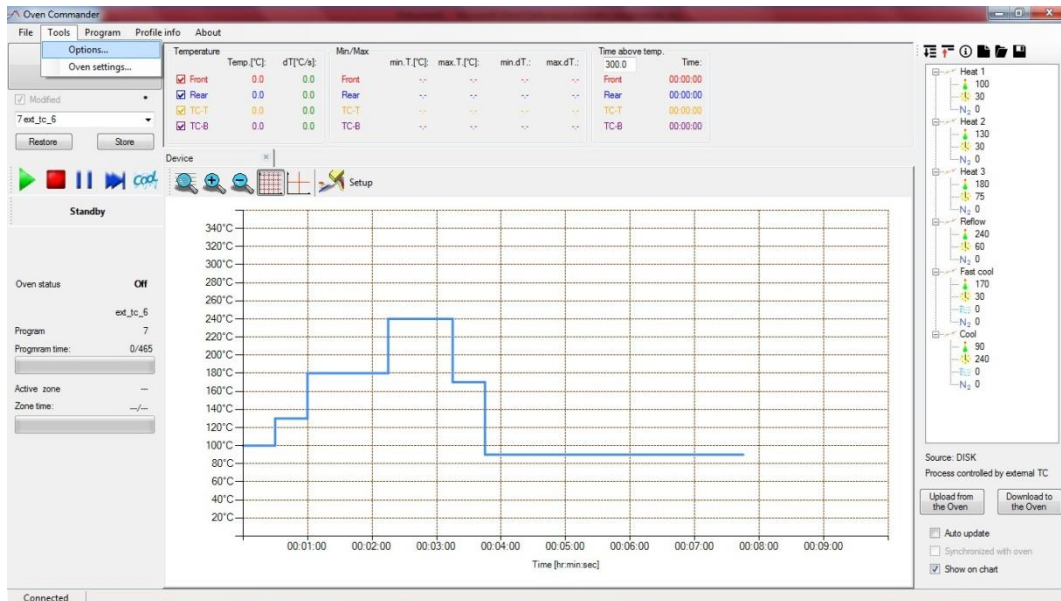


Figure 38



Temperature scale: Choice of Celsius or Fahrenheit

Flow unit: Choice of LPM or SCFM

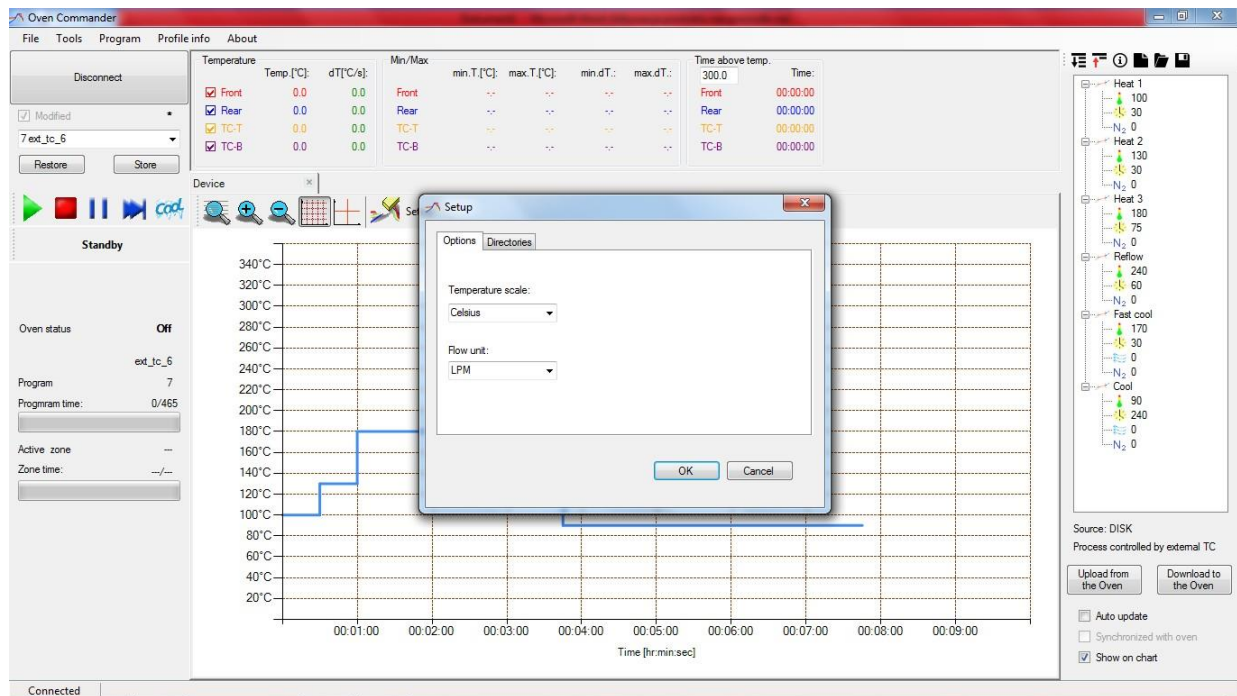


Figure 39

## XIV. OVEN SETTINGS

From the Main Menu, choose “Tools” and then “Oven Settings”.

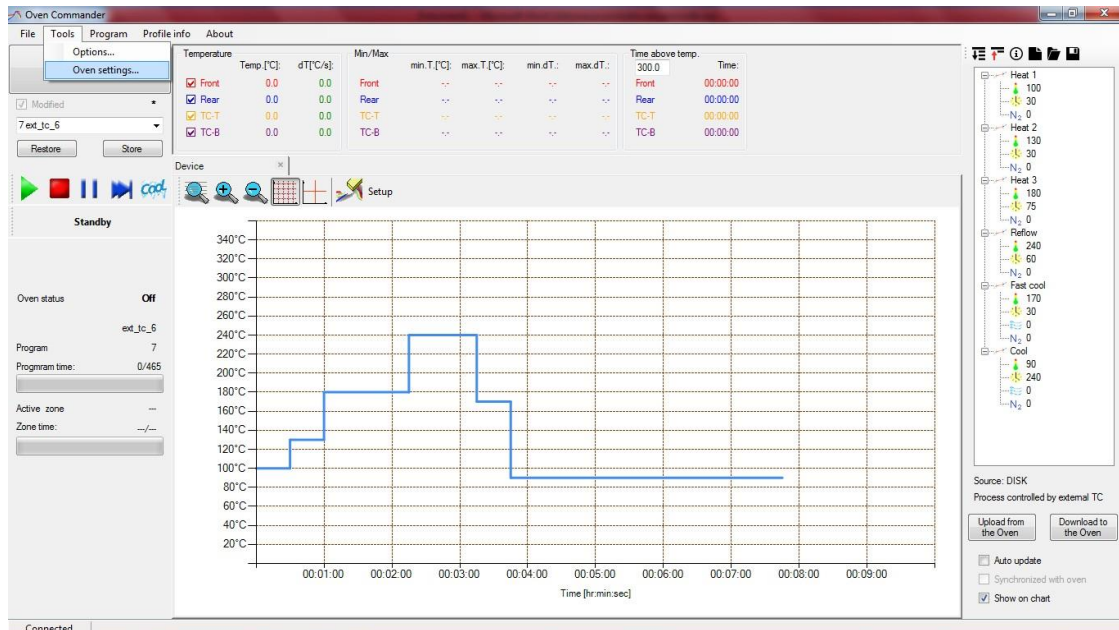


Figure 40

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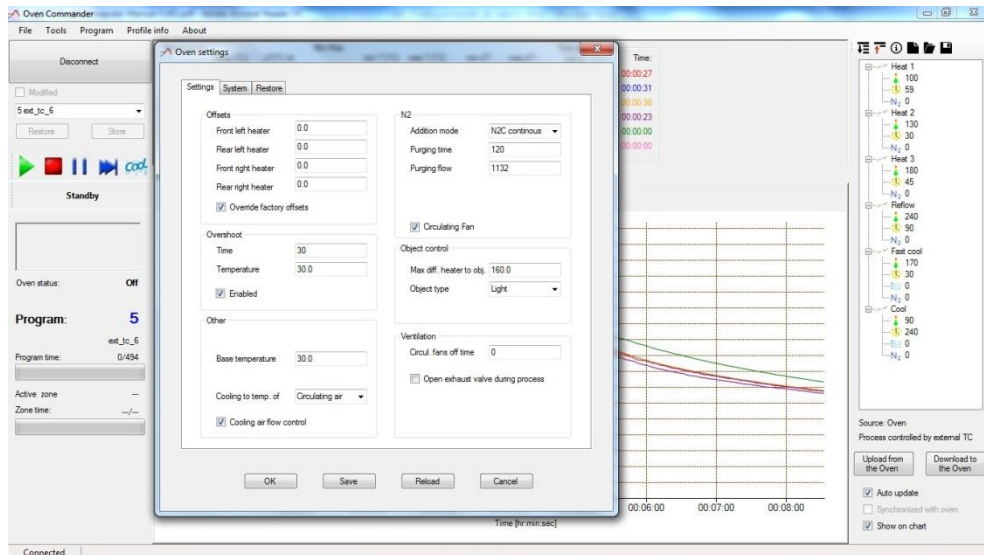


Figure 41

**Settings** - You can adjust the following oven settings from a PC (to save new values in the oven, use the “Save” button):

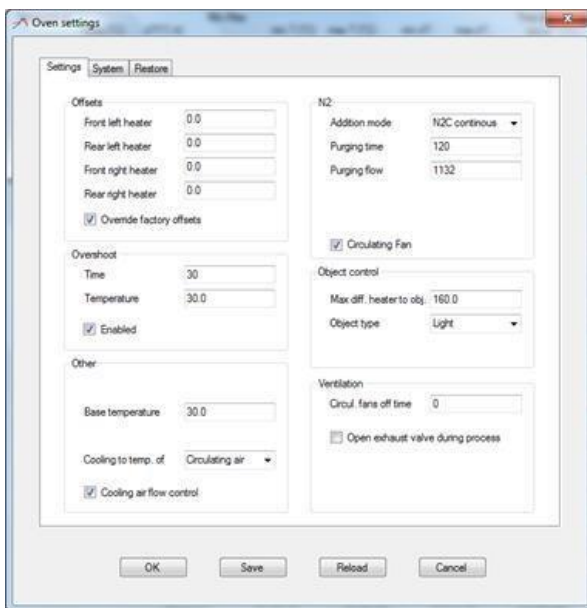


Figure 42

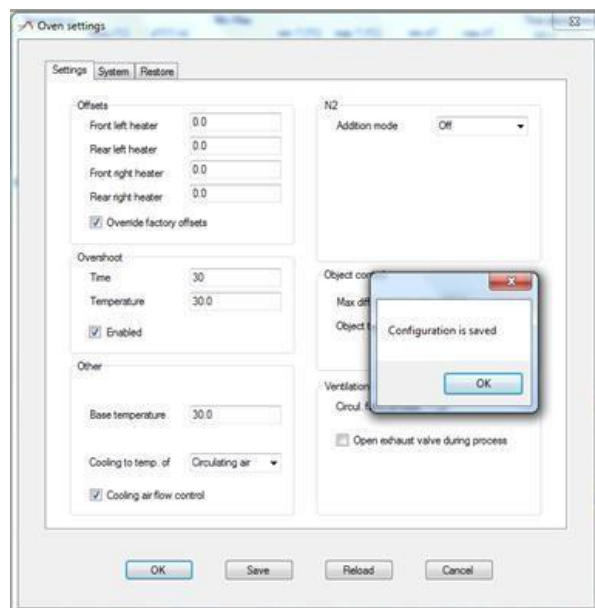


Figure 43

**Offsets:** Front heater: 0.0 °C. Possible range: from -20.0 °C to 90.0 °C (Celsius).  
Rear heater: 0.0 °C. Possible range: from -20.0°C to 90.0°C (Celsius).

**Overshoot:** Time: Recommended time is 10s to 30s (seconds).  
Temperature: Recommended Overshoot is 10 °C to 30 °C

**Base temperature:** Possible range: 0.0 °C (i.e. OFF) or from +50 °C to +300 °C.

**Purging time:** Length of time for Nitrogen to purge the oven before the process starts

**Cooling to temp. of:** Adjusts whether oven cools to Circulating air, TC-T or TC-B temperature

**N2:** Addition mode:

Possible range: OFF or N2C continues or N2R periodic fill or N2P proportional.

**Object control:** Max diff. heater to obj.: 140.0 °C, possible range: from 40.0 °C to 160.0 °C.

Object type: **Light** or **Heavy**

**System** - You can adjust the following oven settings from a PC:

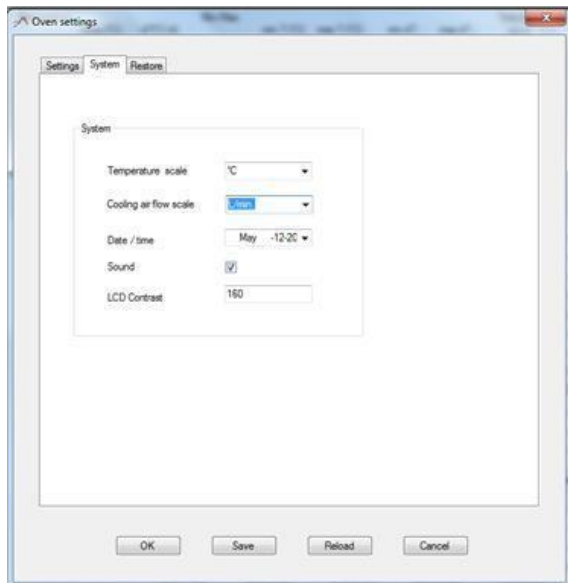


Figure 44

**Temperature scale:**

°C (Celsius) or °F (Fahrenheit)

**Cooling air flow scale:**

L/min. or SCFM

**Date / Time**

**Sound**

**LCD Contrast**

(on the display on the oven)

**Restore** - You can reset the oven to factory settings from your PC:

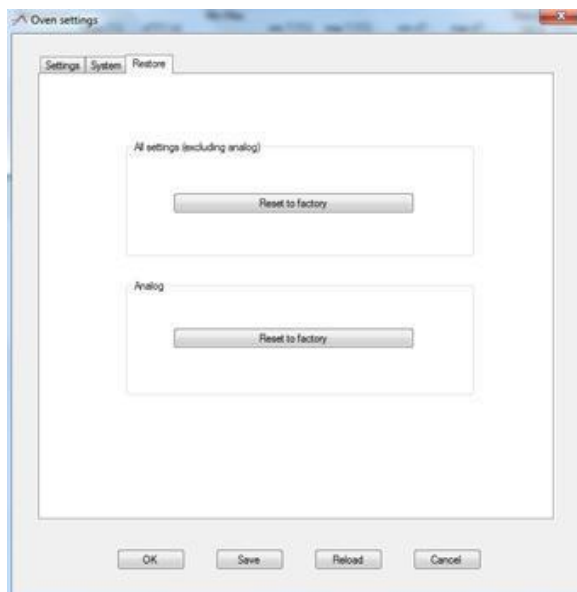


Figure 45

**All settings (excluding analog)** –This option allows an administrator to restore all settings to the factory-set values.

**Analog** -This option allows an administrator to restore the analog settings to the factory-set values

## XV. Icons to adjust the chart

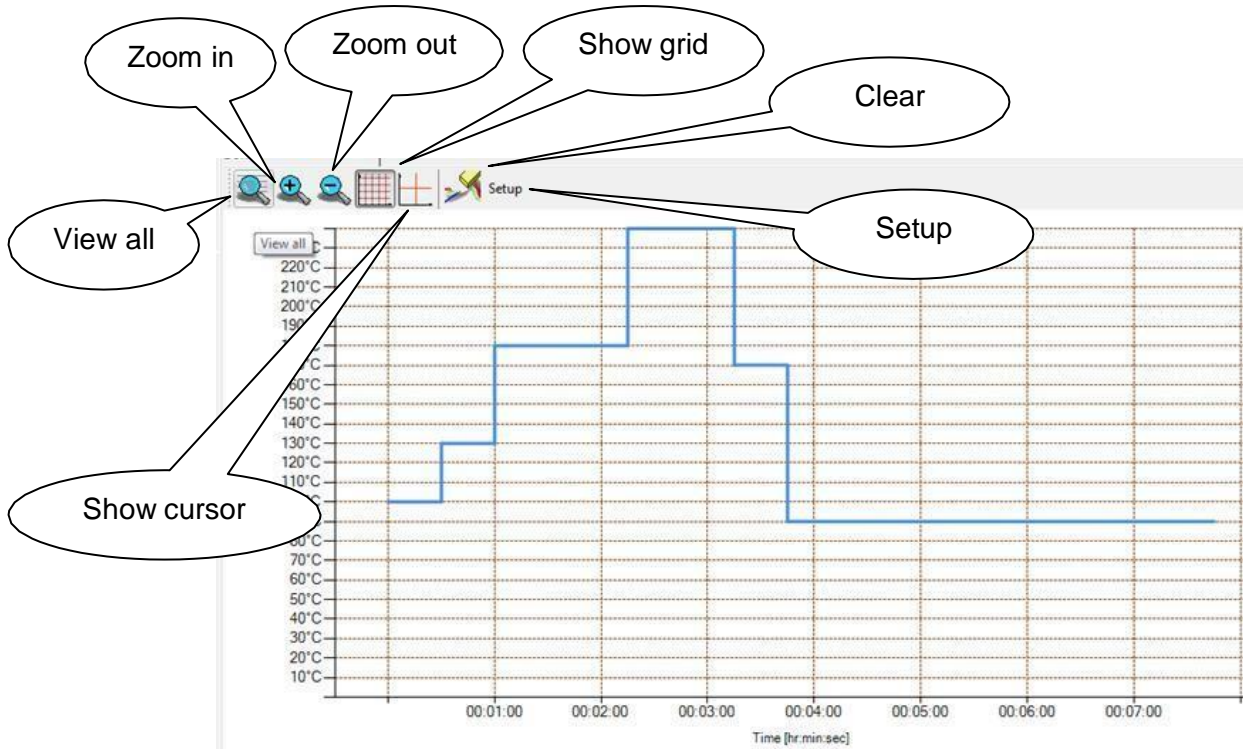


Figure 46

Press “Setup” to adjust axis range

### Note:

The operator can also click and drag the axis to adjust the values.

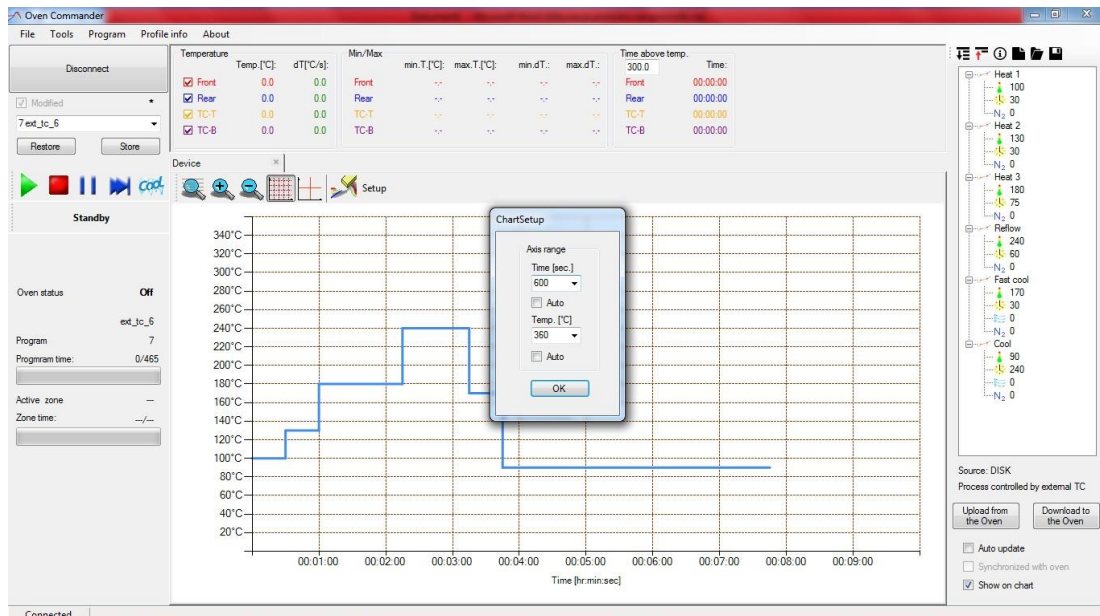


Figure 47

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