

Clarity Controls

Ecom LCO 102


CO

ENG

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To facilitate the orientation in the **Ecom LCO 102** manual and **Clarity** chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

Instrument (blue text) marks the name of the window, to which the text refers.

Open File (italics) describes the commands and names of fields in **Clarity**, parameters that can be entered into them or a window or dialog name (when you already are in the topic describing the window).

WORK1 (capitals) indicates the name of the file and/or directory.

ACTIVE (capital italics) marks the state of the station or its part.

The bold text is sometimes also used for important parts of the text and the name of the **Clarity** station. Moreover, there are text sections written in format other than normal text. These sections are formatted as follows:

Note: Notifies the reader of possibly interesting information.

Caution: Warns the user of possibly dangerous or very important information.

█ Marks the problem statement or trouble question.

Description: Presents any closer information on the problem, describes its causes etc.

Solution: Marks the response to the question, presents a procedure how to remove it.

1 Ecom LCO 102 Control Module

This manual describes the setting of the **Ecom LCO 102** thermostat. The control module enables direct control of the instrument over serial line.

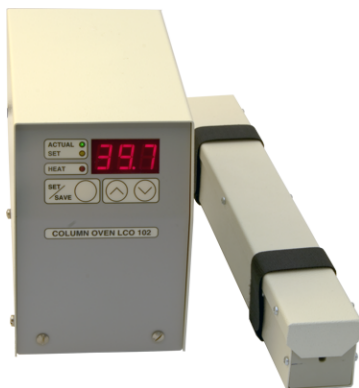


Fig 1: Ecom LCO 102 Thermostat

Direct control means that the thermostat can be completely controlled from the **Clarity** environment. Instrument method controlling the analysis conditions will be saved in the measured chromatograms.

The control is performed via the **UNI Ruby** control module and the **Ecom LCO 102** profile.

2 Requirements

- **Clarity** Installation CD ROM with LC Control (p/n A24) or GC Control module (p/n A23).
- Free serial COM port in the PC.

Note: Modern computers usually have only one (if any) serial (COM) port installed. To use more devices requiring the RS232 port, the **MultiCOM** adapter (p/n MC01) is available.

- Serial DB9F-DB9F cross cable (p/n SK01).

Note: Cables are not part of **Clarity** Control Module. It is strongly recommended to order required cables together with the Control Module.

3 Installation Procedure

3.1 Ecom LCO 102 thermostat communication

The **Ecom LCO 102** thermostat is controlled by serial (RS232) communication. It uses standard serial DB9F-DB9F cross cable (p/n SK01) described in the picture.

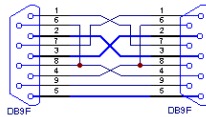


Fig 2: Serial DB9F-DB9F cross cable

The cable should be connected to the RS232 port on the back of the thermostat controller unit.

3.2 Clarity Configuration

- Invoke the **System Configuration** dialog accessible from the **Clarity** window using the *System - Configuration...* command.
- Press the **Add** button (① on **Fig 5** on pg 5.) to invoke the **Available Control Modules** dialog.

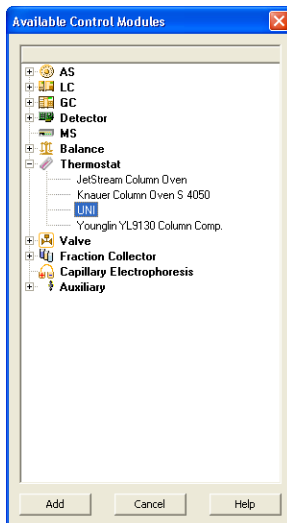


Fig 3: Available Control Modules

- Select the **UNI** item from the Thermostat group and press the **Add** (② on **Fig 5** on pg 5.) button.
- The **DataApex UNI Setup** dialog will appear.

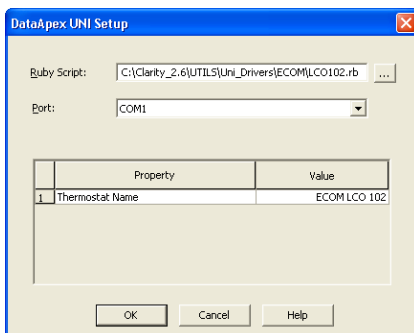








Fig 4: DataApex UNI Setup

- Set the desired *Ruby Script* for your thermostat. The correct script LCO102.RB for the **Ecom LCO 102** thermostat can be found in the UTILS/UNI_DRIVERS/ECOM subdirectory (accessible through the ) of the **Clarity** root directory (C:\CLARITY by default).
- Set the correct communication *Port*.
- You might want to fill in custom *Thermostat Name* for the device.
- The **Ecom LCO 102** item  will appear in the *Setup Control Modules* list of the **System Configuration** dialog.
- Drag the **Thermostat** icon  from the *Setup Control Modules* list on the left side to the desired *Instrument* tab , or use the  button  to do so.

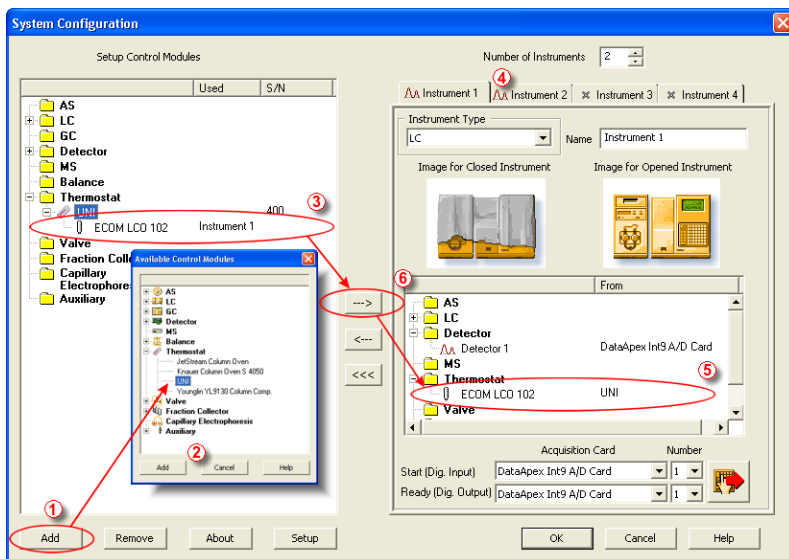


Fig 5: System Configuration

4 Using the control module

New **Thermostat** tab used for setting of the thermostat method is created in the **Method Setup** dialog. The **Ecom LCO 102** thermostat section enabling the monitoring of the current thermostat state is also created in the **Device Monitor** window.

4.1 Method Setup - Thermostat - Properties

The **Method Setup - Thermostat - Properties** tab serves for setting the common parameters of the **Ecom LCO 102** thermostat.

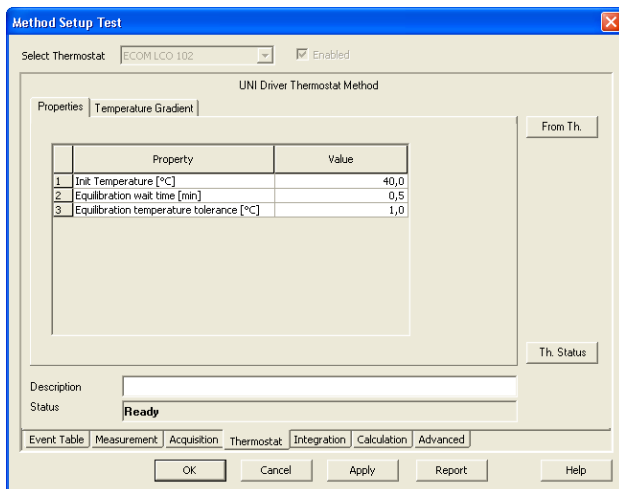


Fig 6: Method Setup - Thermostat

Init Temperature [°C]

Sets the temperature used as the default one when the **Time Table** found on the **Temperature Gradient** tab is not used. Allowed temperature range for the thermostat is 20 - 99 °C.

The lowest usable temperature that can be set is dependent on the temperature of the surroundings, the thermostat can only guarantee to reach the shown temperature when it is above the Ambient temperature.

Equilibration wait time [min]

Sets the amount of time the module will wait after reaching the desired temperature outside of the analysis. The module will become ready only after the time set in the *Equilibration wait time* field has passed.

Equilibration temperature tolerance [°C]

Serves for the setting of the target temperature tolerance. When the temperature reaches the desired value with the tolerance set here, the

time set in the *Equilibration Wait Time* field starts to run. If the temperature doesn't leave the tolerance for that time, the thermostat gets to the *READY* state.

From Th.

Acquires the temperature value set in the **Ecom LCO 102** thermostat from the device and sets the values obtained to the **Thermostat** tab of the **Method Setup** dialog.

Th. Status

When invoked, opens the **Hardware Configuration** dialog showing the information regarding the connected thermostat.

4.1.1 Hardware Configuration

The **Hardware Configuration** dialog (invoked by using the *Th. Status* button from the **Method Setup - Thermostat** dialog) displays the configuration of the **Ecom LCO 102** thermostat, notably the COM port.

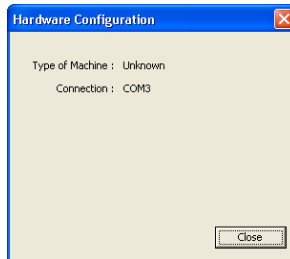


Fig 7: Hardware Configuration

4.2 Method Setup - Thermostat - Temperature Gradient

The [Method Setup - Thermostat - Temperature Gradient](#) tab serves for preparing and editing of the instrument method used by the **Ecom LCO 102** thermostat.

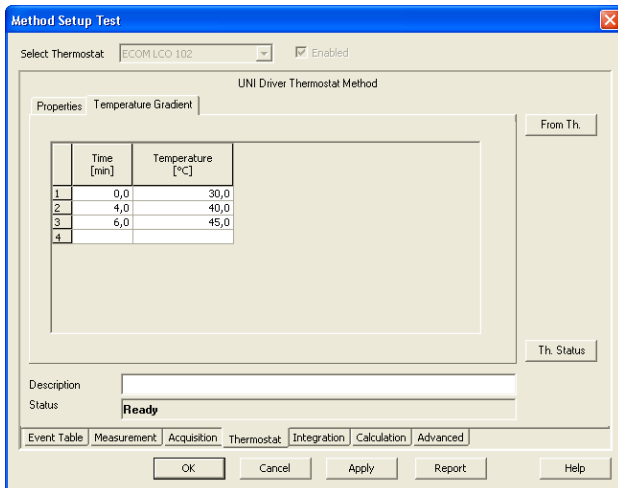



Fig 8: Method Setup - Thermostat - Temperature Gradient

The **Time Table** allows to set the *Time* (in minutes) and its corresponding *Temperature* (in °C). The table only lists changes sent to the thermostat at given times, no linear interpolation of values is used. Allowed temperature range for the thermostat is 20 - 99 °C.

The lowest usable temperature that can be set is dependent on the temperature of the surroundings, the thermostat can only guarantee to reach the shown temperature when it is above the Ambient temperature.

Note: Decreasing the thermostat temperature will usually take longer time than increasing the temperature.

4.3 Device Monitor

The window with the thermostat status can be invoked by the *Monitor - Device Monitor* command from the [Instrument](#) window or using the  icon. It displays the both set temperature and the current one.

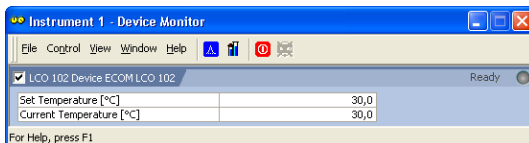


Fig 9: Device Monitor

Set Temperature [°C]

Displays the temperature that was pre-set for the **Ecom LCO 102** thermostat at the given time on the [Method Setup - Thermostat - Temperature Gradient](#) tab.

Current Temperature [°C]

Displays the actual thermostat temperature as read from the instrument.

4.4 DataApex UNI Setup

The appearance of the **DataApex UNI Setup** dialog depends on the presence of the selected Ruby Script - if the script is not present, only the *Ruby Script* field is visible.

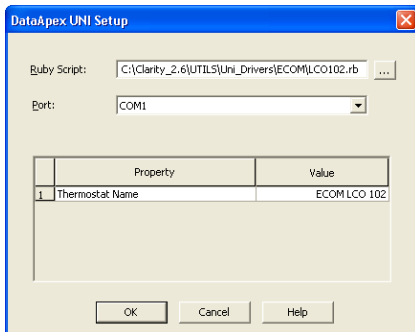



Fig 10: DataApex UNI Setup

Ruby Script

Allows the selection of the desired Ruby Script. The correct script LCO102.RB for the **Ecom LCO 102** thermostat can be found in the UTILS\UNI_DRIVERS\ECOM subdirectory (accessible through the  button) of the **Clarity** root directory (C:\CLARITY by default).

Port

Serves for setting of the serial port to which the thermostat is connected.

Thermostat Name

Allows to set the custom name of the thermostat. This name (entered into the *Value* column) will be used throughout the **Clarity** station.

5 Report Setup

The report of the thermostat part of the method can be enabled by checking the *Instrument Control* checkbox on the **Method** tab of the **Report Setup** dialog.

The screenshot shows a 'Print Preview' window with a menu bar containing 'Print...', 'Next Page', 'Prev Page', 'Two Page', 'Zoom In', 'Zoom Out', 'Close', 'Print to PDF', and 'Send PDF'. The report content is as follows:

Configuration	
Property	Value
Thermostat Name	ECOM LCO 102

Method	
Property	Value
Init Temperature [°C]	30,0
Equilibration wait time [min]	0,2
Equilibration temperature tolerance [°C]	1,0

Temperature Gradient	
Time [min]	Temperature [°C]
0,0	30,0
4,0	40,0
6,0	46,0

Page 1

Fig 11: Report Setup

All of the parameters set in the **Method Setup - Thermostat** dialog are reported (including the *Temperature Gradient*), as well as the custom *Thermostat Name* set in the **DataApex UNI Setup** dialog.

6 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and the thermostat can significantly help the **DataApex** support to discover the cause of the problem.

The recording can be enabled by adding or amending the COMMDRV.INI file in the **Clarity** installation directory (C:\CLARITY by default). The file can be edited in any text editor (e.g. Notepad). Following section should be edited or added:

```
[COM1]
echo=on
textmode=on
filename=UNIRuby.txt; %D or %d could be used to include a current
date (recommended in combination with the Reset=Off option
reset=off
```

Note: Instead of COM1 type the correct serial port used to communicate with the **Ecom LCO 102** thermostat. This port number is displayed when the *Th. Status* button in the [Method Setup - Thermostat](#) dialog is invoked.

The created *.TXT files will greatly help in diagnosis of unrecognized errors and problems in communication.