DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

ECOM TOPAZ

Clarity Control Module   ENG

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Contents

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

>*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.
>
>WORK1 (capitals) indicates the name of the file and/or directory.
>
>*ACTIVE* (capital italics) marks the state of the station or its part.
>
>[Chromatogram](#) (blue underlined) marks clickable links referring to related chapters.

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

>*Note:*   Notifies the reader of relevant information.

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

▌**Marks the problem statement or trouble question.**

>*Description:* Presents more detailed information on the problem, describes its causes, etc.
>
>*Solution:*   Marks the response to the question, presents a procedure how to remove it.

1 Ecom Topaz Control Module

This manual describes the setting of the **Ecom Topaz** detector. The control module enables direct control of the **Ecom TOPAZ Dual UV** detector and **Ecom LCD 2073A Dual UV** detector over serial line.

Fig. 1: Ecom Topaz detector

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

2 Requirements

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

Note: Modern computers usually have only 1 (if any) serial (COM) port installed. To use more devices requiring the RS232 port, the **MultiCOM** adapter (p/n MC01) is available.

- Serial cross DB9F-DB9F 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.

- Digital Input Device (p/n DID01) adapter for RS232 line required for external start.

3 Installation Procedure

3.1 Hardware - Wiring

The **Ecom Topaz** detector is controlled by serial (RS232) communication. It uses standard serial cross DB9F-DB9F cable described in the picture.
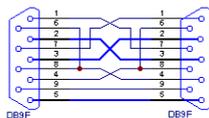

Fig. 2: Serial cross DB9F - DB9F cable

Moreover, the **Digitial Input Device** (p/n DID01) has to be placed between the PC and the detector to be able to use the digital inputs on the **Ecom Topaz** detector control module. The digital input can be triggered either by the button or by Start contact (e.g. from LC).
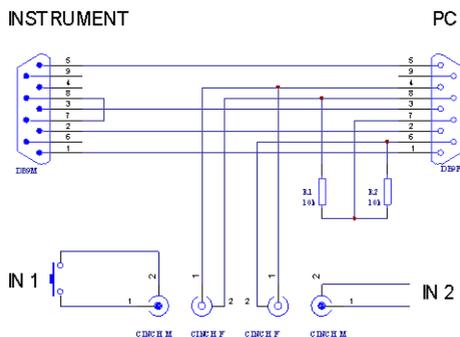

Fig. 3: Digital Input Device scheme

Detailed description of the **Digital Input Device** (p/n DID01) can be found in the datasheet **D025**.

3.2 Clarity Configuration

- Invoke the *System Configuration* dialog accessible from the *Clarity* window using the *System - Configuration* command.
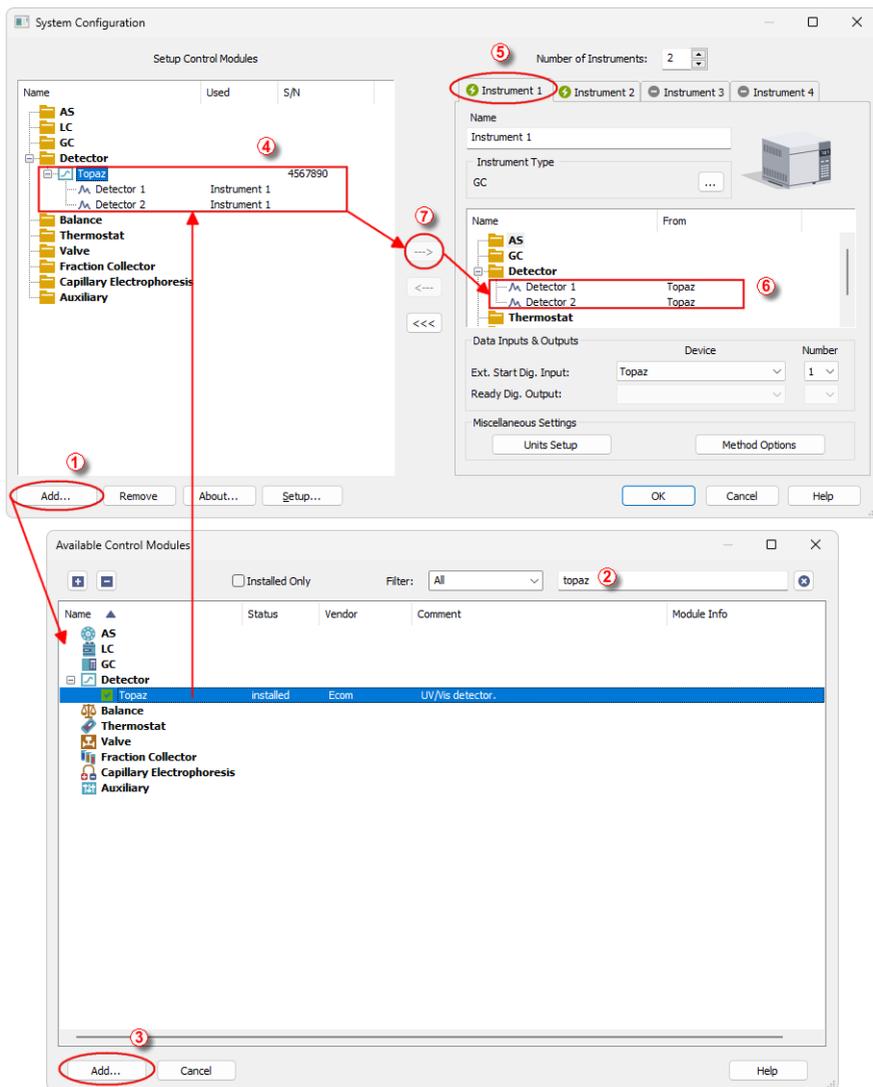- Press the *Add* button ① to invoke the *Available Control Modules* dialog.

Fig. 4: System Configuration

- Select the **Ecom Topaz** ② from the **Detector** group and press the *Add* button ③ .
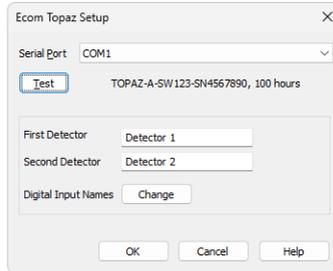- The Ecom Topaz Setup dialog will appear.

Fig. 5: Ecom Topaz Setup

- Select the correct *Serial Port* and press the *Test* button. The message stating the detector type and serial number will show.
- Fill in the signal name for each signal.

Note: The Ecom Topaz Setup dialog is described later (for more details see also chapter **Ecom Topaz Setup** on pg. **10**).

- The **Ecom Topaz** item will appear in the *Setup Control Modules* list of the *System Configuration* dialog.
- Drag the separate detector signals from the *Setup Control Modules* list on the left side ④ to the desired *Instrument* tab ⑤ on the right side ⑥ , or use the ⟶ button ⑦ to do so. The individual detector signals cannot be assigned to different **Clarity** Instruments.

4 Using the control module

New Acquisition tabs (one for each detector signal assigned to the Instrument) are created in the *Method Setup* dialog. They can be accessed by switching to the desired signal in the *Select Detector* section on the top of the dialog.

. . . .

Caution: To function correctly, the lamp of the detector must be switched on from the **Clarity** environment, not from the front panel of the **Ecom Topaz** detector.

4.1 Method Setup - Acquisition

The *Method Setup - Acquisition* tab for each signal of the **Ecom Topaz** detector has two sub-tabs: Detector, where basic information on the signal is set, and the Wavelength Program sub- tab containing the *Time table* governing the time program of the detector.

In the right section on all *Method Setup - Acquisition* sub-tabs for **Ecom Topaz** detectors two buttons are placed:

From Det

Pressing the button loads all detector parameters as they are set in the **Ecom Topaz** detector. These parameters are set in appropriate fields of the *Method Setup - Acquisition* dialog.
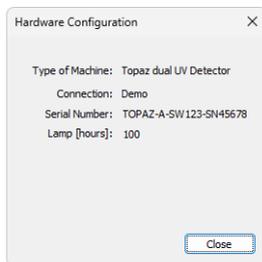
Det Status

Fig. 6: Hardware Configuration

After pressing the *Det Status* button the *Hardware Configuration* dialog opens. It displays the detector type, serial port through which it is connected, serial number of the instrument and the information on the lamp usage time.
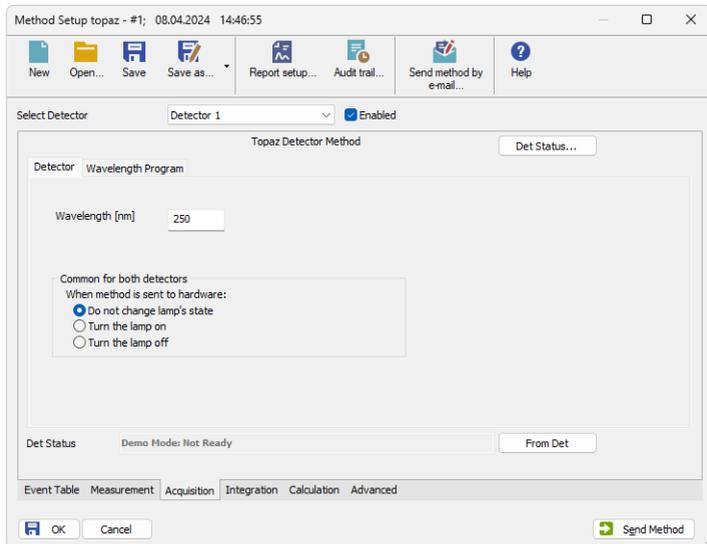
4.1.1 Method Setup - Acquisition - Detector

Fig. 7: Method Setup - Acquisition - Detector

The *Detector* sub-tab of the Method Setup - Acquisition dialog is used to specify the operation mode of the particular detector and its other parameters.

Wavelength [nm]
Serves for the setting of the initial wavelength used on the detector cell. The wavelength may be later changed (based on the time program) on the Method Setup - Acquisition - Wavelength Program tab.

Common for both detectors
This section is used to set common behavior for both detector cell. When the method is sent to the **Ecom Topaz** detector, the lamp may automatically change its state.

When the method is sent to hardware:
Do not change lamp's state - does not switch the state of the lamp.

Turn the lamp on - in case the lamp is switched off, it is switched on during the method sending.

Turn the lamp off - in case the lamp is switched on, it is switched off during the method sending.

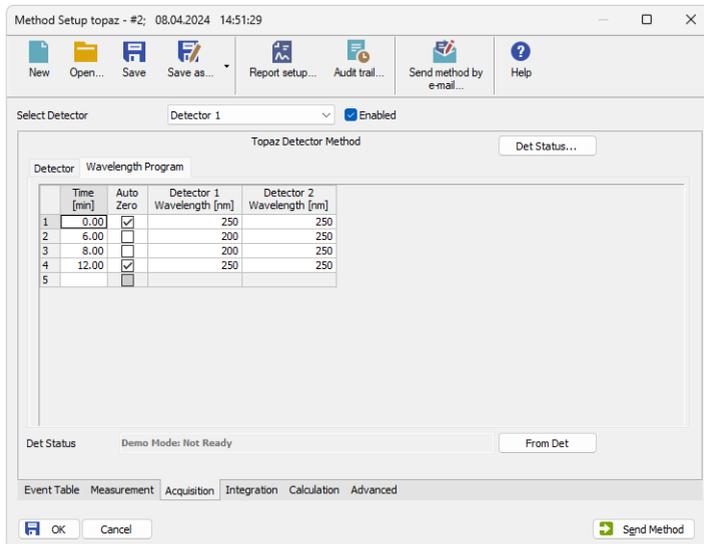## 4.1.2 Method Setup - Acquisition - Wavelength Program

Fig. 8: Method Setup - Acquisition - Wavelength Program

The **Time Table** allows to change the wavelength of the detector lamps during the analysis run based on the pre-set time program.

Note: The first row of the **Time Table** has to be set for the *Time = 0* min. This setting overrides the *Wavelength* setting for both signals of the Method Setup - Acquisition - Detector tab.

After entering the desired *Time* for the event (in minutes), it is possible to check the *Auto Zero* field (this row would perform the autozero operation for both detectors) and fill in the desired wavelength values for both detectors in the *Detector 1 [2]Wavelength* columns.

Caution: After executing the wavelength program the hardware will be using wavelengths from the last line. Initial conditions will be restored only after the method has been sent to the detector. In **Sequence** mode this is done automatically before each injection. In **Single Analysis** mode, however, this must be done manually (using the *Send Method* button). It is recommended to restore the initial conditions on the last line in the **Time Table** to prevent problems.

4.2 Device Monitor

The window with the detector status can be invoked by the *Monitor - Device Monitor* command from the *Instrument* window or using the 🔵 *LC Monitor* icon. It displays the state of the lamp as well as wavelength values on both detector cells. The window also allows to perform the autozero operation.
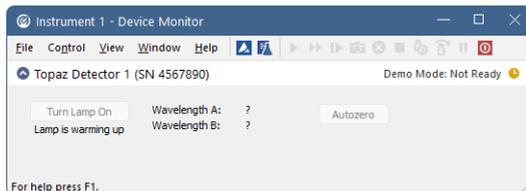

Fig. 9: Device Monitor

The detector can be monitored and partially controlled from the *Device Monitor* window. Available control commands and fields are:

Turn Lamp Off/On
Using this button switches the detector lamp either *ON* or *OFF*, depending on its own current state. The state of the lamp is shown below the button.

Wavelength A [B]
Displays the actual wavelength set for the measurement on both detector cells.

Autozero
This button performs the autozero operation - the output signal of the detector is set to zero.
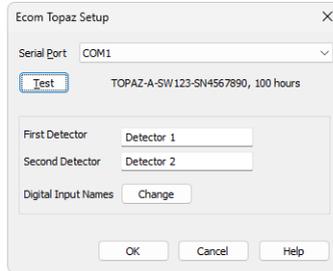
4.3 Ecom Topaz Setup

Fig. 10: Ecom Topaz Setup

Serial Port
  Selection of the communication port.

Test
  This button is used to test the connection to the **Ecom Topaz** detector using the previously set *Serial Port*. Obtained data about the detector are then shown to the right of the *Test* button.

First Detector, Second Detector
  Allows to set the custom names for both detector signals.

Digital Input Names
  Invoking the button opens the *Digital Inputs* dialog, which allows to set the digital input names provided by the **Digital Input Device** used for the external starts.
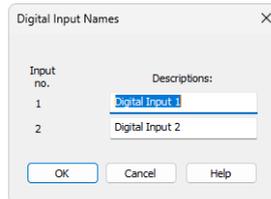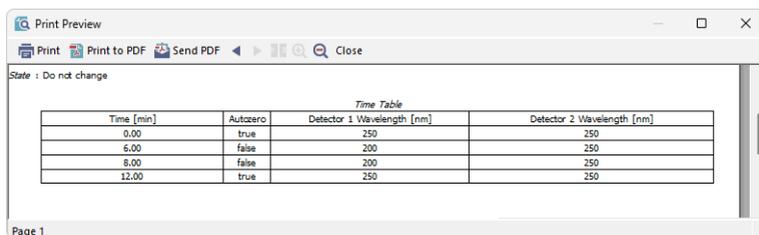

Fig. 11: Digital Input Names

5 Report Setup

All of the detector settings accessible on the Method Setup - Acquisition tab for both possible signals are reported. To do so, the *Instrument Control* parameter on the *Method* tab of the *Report Setup* dialog must be checked.

If the **Time Table** on the Method Setup - Acquisition - Wavelength Program is left empty, both initial *Wavelength* values are reported instead.

Fig. 12: Report Setup

6 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and the detector 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\CFG by default). The file can be edited in any text editor (e.g. Notepad). The following lines should be edited or added:

```
[COM1]
echo=on
textmode=on
filename=EcomTopaz_%D.txt
reset=off
```

Note: Instead of COM1 type the correct serial port used to communicate with the **Ecom Topaz** detector. This port number is displayed when the *Det Status* button in the Method Setup - Acquisition dialog is invoked.

Note: *%D* (or *%d*) in the filename parameter means that the log will be created separately for each day. The *reset=off* parameter disables deleting the content of the log each time the station is started during the same day.

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