DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

YOUNGIN CHROMASS
YL9140 FLD

Clarity Control Module ENG

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DataApex Ltd.
Petrzilkova 2583/13
158 00 Prague 5
Czech Republic

Phone: +420 251 013 400
clarity@dataapex.com
www.dataapex.com

Author: DM

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To facilitate the orientation in the **YoungIn Chromass YL9140 FLD** manual and **YL-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 **YL-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 **YL-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 YoungIn Chromass YL9140 FLD Control module

This manual describes the setting of the **YoungIn Chromass YL9140 FLD** detector. The control module enables direct control of the instrument over the USB port.

Fig. 1: YoungIn Chromass YL9140 FLD

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

2 Requirements

- **YL-Clarity** installation USB with **LC control** module (p/n A24) allowed.

Note: Cables are not part of the **YL-Clarity** Control Module. If you don't have the USB cable for connecting the Interface Board with the PC, you can order it as p/n SK06.

- **USB-IF Board** supplied by the system manufacturer must be installed. This board is connected to the computer over the USB port.
- The **YoungIn Chromass YL9140 FLD** LC control for **YL-Clarity**, the **YoungIn Chromass YL9140 FLD** LC control for OpenLab/EZChrom or **YoungIn Chromass YL9140 FLDSystem Manager** must not be installed on the same computer as it may result in communication errors.

Supported operating systems:

- **Windows 7 (32/64 bit)**

Note: Although **YoungIn Chromass YL9140 FLD** does not state other **Windows OS** between supported, the system may work on other OS versions as well e.g., Windows 10. This functionality is not guaranteed though.

3 Installation procedure

3.1 YoungIn Chromass YL9140 FLD communication

It is possible to controlup to 4 **YoungIn Chromass YL9140 FLD** detectors configured on different Instruments of the same **YL-Clarity** Chromatography Station. Then it is necessary to set the switch on the first **USB-IF Board** to *Sys1* , the second one to the *Sys2* and so on. Consult the **USB-IF Board** manual.

3.2 YL-Clarity Configuration

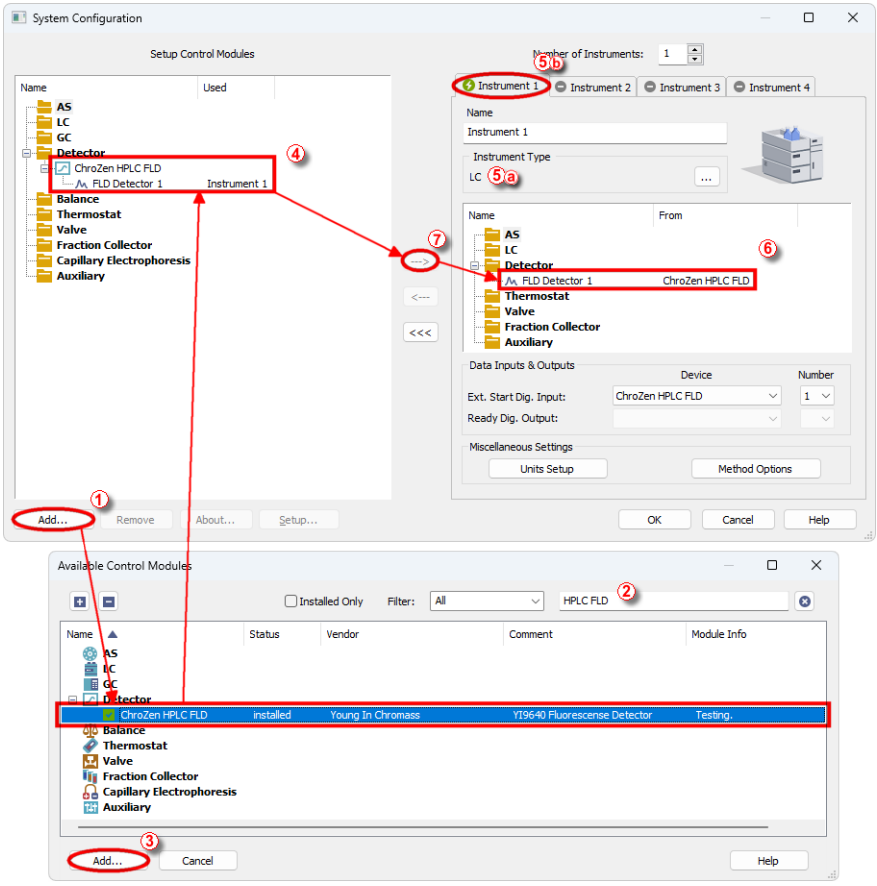

Fig. 2: Adding YoungIn Chromass YL9140 FLD module

- Press the *Add* button ① in the *System Configuration* dialog to invoke the *Available Control Modules* dialog.

- You can use the filter ② to simplify the searching of the control module.

- Select the **YoungIn Chromass YL9140 FLD** and click the *Add* ③ button. The YL9140 FLD Setup dialog will appear.

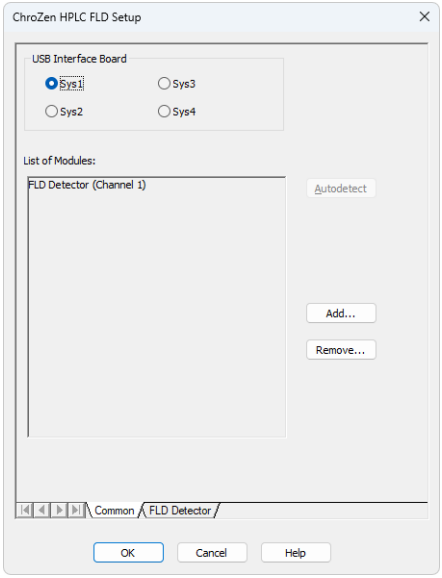

Fig. 3: YoungIn Chromass YL9140 FLD Setup

- Select the corresponding *USB Interface Board* and click the *Autodetect* button to detect all modules including their *Serial* and *Program Numbers*. Alternatively you can click the *Add…* button and add the available modules manually. Each module will add its own tab to the YoungIn Chromass YL9140 FLD Setup dialog. It will be described in the manual later.
- After clicking the *OK* button, the **YoungIn Chromass YL9140 FLD** item ④ will appear in the *Setup Control Modules* list of the *System Configuration* dialog.
- Set the *Instrument Type* ⑤ ⓐ on the desired Instrument tab ⑤ ⓐ to LC (or LC-PDA if necessary).
- Drag the control module from the *Setup Control Modules* list on the left ④ to the *Instrument* tab on the right ⑥ , or use the ---> button ⑦ .
- Set the digital input nr. 1 to be used for starting the acquisition ⑧ .

- If external contact (manual valve) is used then e-DIO cable needs to be used for starting of the **YoungIn Chromass YL9140 FLD** detector. With such setup the *Ext. Start Dig. Input* needs to be set to 'YL9140 FLD' *Device* and *Number* item to value '1'.

4 Using the control module

Several new tabs appear in the ***Method Setup*** dialog, based on the settings performed in the YL9140 FLD Setup dialog. These new tabs enable the setting of the **YoungIn Chromass YL9140 FLD** system operation program.

4.1 YL9140 FLD Setup - Common

The *Common* tab serves for configuration of the communication with the **YoungIn Chromass YL9140 FLD** system and for adding its modules you want to control.

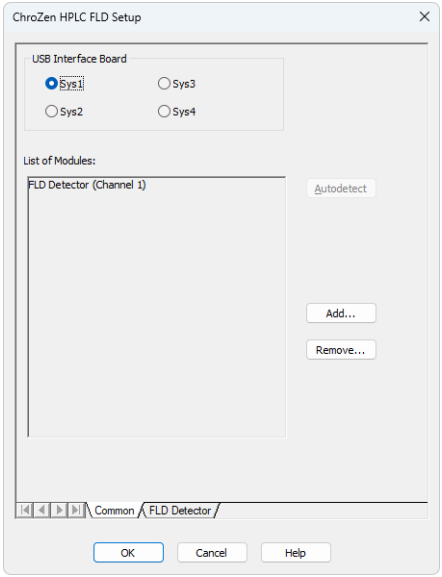

Fig. 4: YL9140 FLD Setup - Common tab

USB Interface Board

Depending on the switch configured on the **USB-IF Board** in the **YoungIn Chromass YL9140 FLD** system, this option allows to select the matching *Sys1..4* setting.

List of Modules

Displays the list of modules autodetected or manually added to the setup.

Autodetect

When used, this button automatically detects modules and their serial and program numbers installed in your **YoungIn Chromass YL9140 FLD** system and lists them in the *List of Modules* section.

Add…

Opens the *Add Module* dialog, which is used to select one of the YoungIn Chromass YL9140 FLD modules.

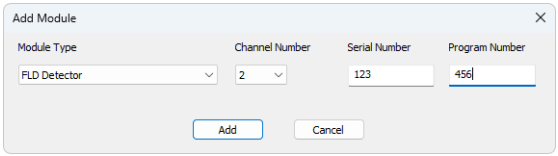

Fig. 5: Add Module dialog

In the *Add Module* dialog, select the *Module Type* you want to add to the configuration. If requested, select *Channel Number* which is set in the YL9140 FLD system for the selected module. Enter also the *Serial Number* and *Program Number* and click the *Add* button. The module is then listed in the *List of Modules* and has its own tab in the lower part of the *YL9140 FLD Setup* dialog.

Remove…

Open the *Remove Module* dialog, which is used to select the module you want to remove.

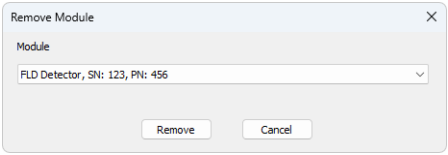

Fig. 6: Remove Module dialog

4.2 Part Maintenance

Part Maintenance dialog can be invoked from module tab in YL9140 FLD Setup dialog by clicking *<Module Type> Maintenance* button. The dialog can be also opened the same way from *Device Monitor* window. When the *Part Maintenance* dialog is opened from *Device Monitor* window, it cannot be edited. Every change must be made through *System Configuration* window.

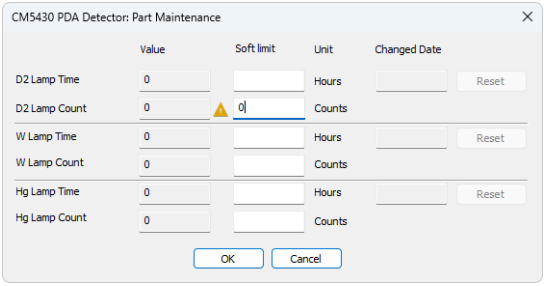

Fig. 7: Example of Part Maintenance dialog for Detector

Value

The column displays the value read from the device for each item. Hovering over the number with cursor displays tooltip with further information for each item. Warning ⚠ is displayed next to the field when the soft limit has been reached.

Note: The Value field can be reset to 0 by clicking *Reset button* for respective row. When clicked, the current date is filled in Changed Date field, and the information, including the last value before reset, is logged to *Station Audit Trail*.

Caution: Reset of the **Value** field cannot be reverted.

Caution: Values are read from a device after following actions; opening *Instrument* window, sending *Method*, opening *Part Maintenance* dialog, and automatically once per hour.

Soft Limit

Set by user, number represent the **Value** at which warning will be displayed. Maximum is limited by the maximal value that can be saved in device. When left empty no limit is set and warning will not be displayed.

Unit

Displays used unit for each row.

Change Date

Displays the date of the last **Value** reset. If the field is empty, the **Value** hasn't been reset up to this point.

4.3 FL Detector

The Method Setup - Acquisition tab and its sub-tabs serve for setting the FL Detector parameters configured in the YL9140 FLD Setup - Fluorescence Detector dialog.

4.3.1 YoungIn Chromass YL9140 FLD Setup - FL Detector

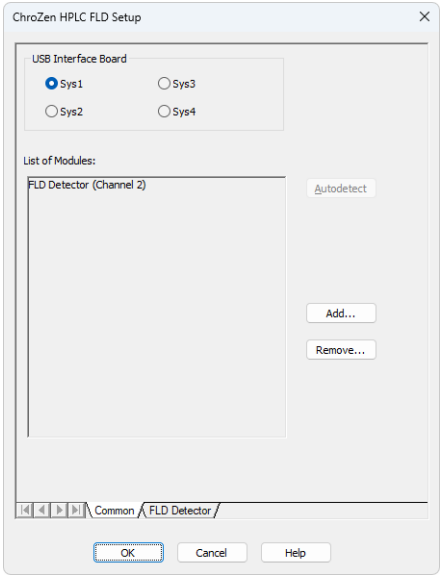

Fig. 8: YL9140 FLD Setup - FL Detector

Module Type
Displays the *Module Type* you have added.

Serial Number
Displays the Serial number you have entered for the module.

Program Number
Displays the Program Number you have entered for the module.

Signal Name
Sets the name of the signal acquired by the detector.

Lamp Off at Shutdown
Sets whether the Lamp should be turned off on shutdown. Lamp could be turned on again by sending the method to the detector, in case it is set in the method.

Lamp Maintenance
Opens *Part Maintenance* dialog. For more information refer to Part Maintenance.

4.3.2 Method Setup - Acquisition - Detector Settings

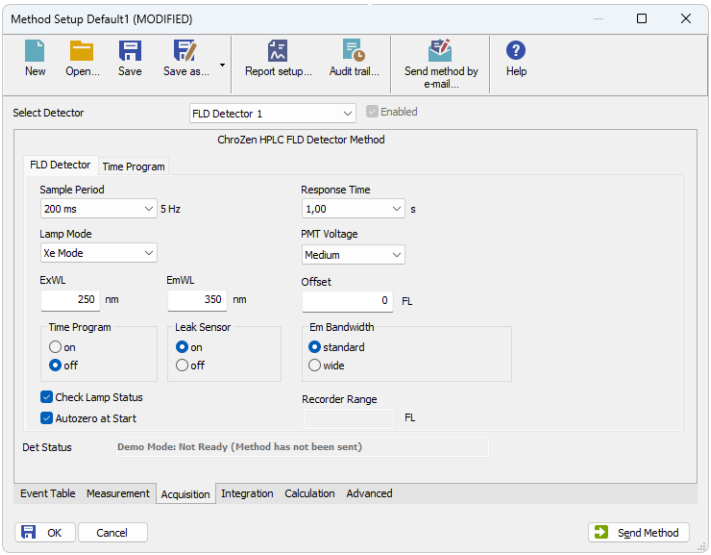

Fig. 9: Method Setup - Acquisition - Detector Settings

Sample Period
Sets the period time in ms. Valid values are 10, 20, 50, 100, 200, 400, 800, 1600 and 3200 ms.

Note: If lower values are selected (e.g. 10 ms) lower filtering Response Time should be used (e.g. 0,01 s), otherwise the resulting chromatogram will not be smooth.

Lamp Mode
Sets the mode of the lamp. With *None* option set lamp is turned off.

ExWL
Sets the excitation wavelength of the detector.

EmWL
Sets the emission wavelength the detector is measuring on.

Time Program
Sets whether the Time Program is turned on/off.

Leak Sensor
Allows to set the leak sensor *on*/*off*.

Check Lamp Status
If Checked, the status of the lamp will be detected before run.

Autozero at Start
Sets if the Autozero is performed at the start of the acquisition.

Response Time
Defines the Time Constant of the detector's filter.

PMT Voltage
Sets the voltage of the photomultiplier.

Offset
Sets the offset of the signal output.

Em Bandwidth
Sets the bandwidth of the emission filter.

Recorder Range
Sets the Recorder Range. Active only with *Analog Output Board* installed.

4.3.3 Method Setup - Acquisition - Time Program

Time Program allows to set the detector wavelength parameter defined on previous tab based on the analysis time. It is available in *Single WL* mode only. This tab is active only when *Time Program* is turned on Detector tab. In order to modify wavelength for desired time by the *Time Program*, the table has to contain a row defining time when wavelength is about to switch to new one and successive row (with the same wavelength as on previous row) defining time interval for use of newly set wavelength. When a last row of the table is reached the time program is finished and initial conditions are set according to wavelength defined in the method tab. If *Time Program* is longer then *Autostop* time of the method the *Instrument* will in switch to *Control* after elapsing *Autostop* time.

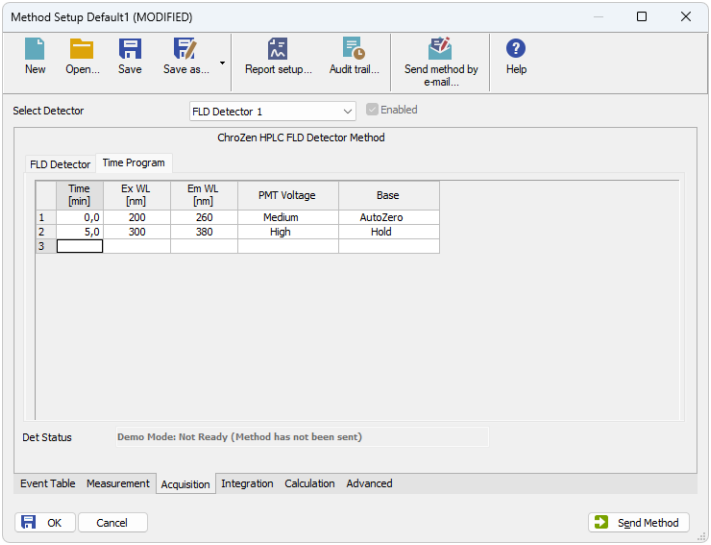

Fig. 10: Method Setup - Acquisition - Time Program

The wavelength settings defined on theDetector Settings sub-tab can be changed during the analysis by events programmed in the **Time Table**.

Time [min.]
Sets the time of the wavelength change in min.

Ex WL
Sets the excitation wavelength which will be set in the defined time.

Em WL
Sets the emission wavelength which will be set in the defined time.

PMT Voltage
Sets PMT Voltage which will be set in the defined time.

Base

Choose the *AutoZero* if you want to reset the Detector to zero or *Hold* if you want to keep the current value.

4.3.4 Device Monitor

The *Device Monitor* window can be invoked by the *Monitor - Device Monitor* command from the ***Instrument*** window or using the Device Monitor icon. It displays the actual wavelengths retrieved from the detector. Also allows to perform the *Zero Detector* action and switch the Xe Lamp off.

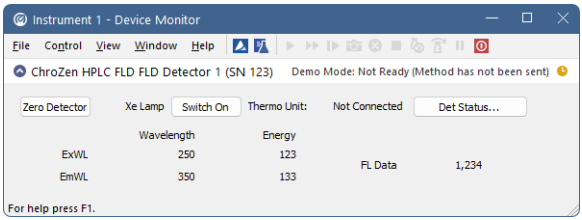

Fig. 11: Device Monitor - FL Detector

It is possible to control the detector operation during the analysis in the *Device Monitor* window.

Zero Detector
Sets the response of the detector to *0*.

Switch On (Off)
Turns the *Xe Lamp* on/off.

Wavelength and Energy
Current wavelength and energy retrieved from the detector.

FL Data
Displays actual value of detector signal.

Thermo Unit Not Connected/ Off
Indicates whether Thermo Unit is connected or not.

Det Status…

Opens the Status window showing the information about the detector.

Warning ⚠ is displayed next to the button when *Soft Limit* has been reached. Warning is also displayed next to *Lamp Maintenance* button.

Note: When the Part Maintenance dialog is opened from *Device Monitor* it is in read-only mode.

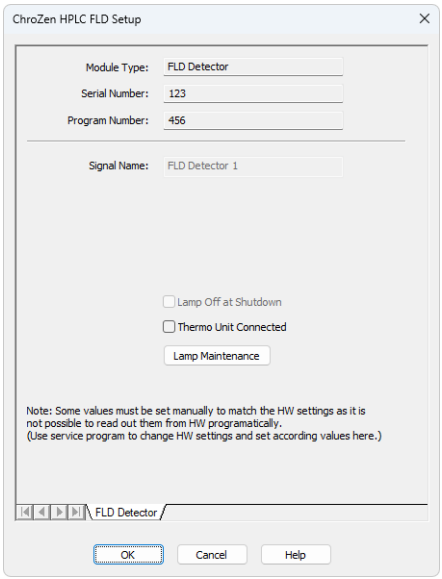

Fig. 12: YL9140 FLD Setup - FL Detector

Lamp Off at Shutdown

Turns the lamp off after shutdown.

Lamp Maintenance

Opens the Part Maintenance window displaying the information about the lamps.

4.3.5 Report Setup

All detector settings accessible on theMethod Setup - Acquisition tab (including sub-tabs) are reported if the *Instrument Control* parameter on the ***Method*** tab of the ***Report Setup*** dialog is checked.

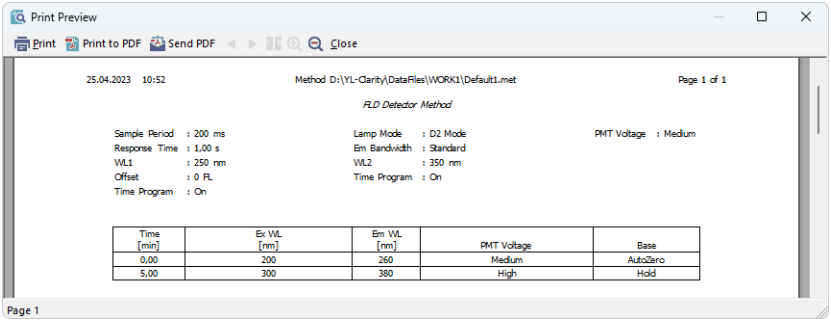

Fig. 13: Report - FL Detector

This section also includes the **Time Table** from theMethod Setup - Acquisition - Time Program tab.

5 Troubleshooting

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

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

```
echo=on
textmode=on
filename=Comm_YL9140 FLD_%D.txt
reset=off
```

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

Note: In case your system uses other USB Interface Board than Sys 1, you should change the number in the section header to the proper value.

It is not possible to autodetect the device.

Solution: It is possible that the IFC USB driver is not installed properly. To make sure the HW driver is installed properly, go to the Device manager. Find IFC USB driver and check if it is installed properly. Eventually, try to reinstall it.

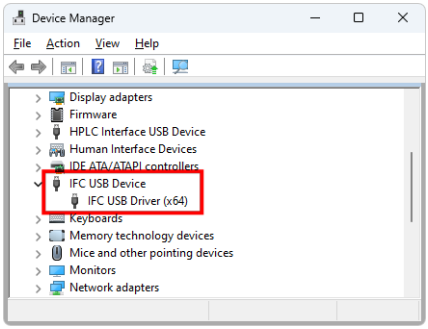

Fig. 14: IFC USB driver in Device manager

It is not possible to install YoungIn Chromass driver. Installation failed with error code 39 (can be found in Device Manager - driver details).

Solution:

Memory Integrity setting (to be found in Windows security - Device security - Core Isolation details) may be switched on. To install the driver this setting must be switched off.

5.1 YL9140 FLD Maintenance Software

For service purposesor setting of the *Gas Leak Sensor* install the **YL9140 FLD Maintanace Software** located in C:\YL-CLARITY\HW_DRIVERS\YL9140FLD_DDK_KIT\TOOLS. This application can be also used for evaluation of communication troubles between **YL-Clarity** and **YL9140 FLD** system.