DataApex
Clarity™
CHROMATOGRAPHY SOFTWARE

SEDERE ELSD

Clarity Control Module ENG

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Contents

To facilitate the orientation in the **Sedere ELSD** 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, 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 Sedere ELSD

This manual describes the setting of the **Sedere ELSD** detectors **-** models **Sedex LT-ELSD 80**, **85**, **90** , **FP** , **LC**, **100**.

Fig 1: Sedere ELSD detectors

Direct control means that the detector can be completely controlled from the **Clarity** environment, including the digital data acquisition. That way, no A/D converter is needed. Instrument method controlling the analysis conditions will be saved in the measured chromatograms.

2 Requirements

- **Clarity** Installation CD ROM with LC Control module (p/n A24).
- **Sedex LT-ELSD 80 & 85**: Free serial COM port in the PC.

Caution: The serial communication in **Sedex LT-ELSD 80** is optional. In case your instrument does not support control by a software, please contact the manufacturer.

- **Sedex LT-ELSD 90**: Free serial COM or USB port in the PC.
- **Sedex LC**: Free serial COM or USB port in the PC.
- **Sedex 100LT**: Free serial COM or USB 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 straight DB9F-DB9M cable (p/n SK02) and DB9F-DB9F reduction (p/n SK07) in case of the serial COM connection. The straight serial DB9F-DB9F cable could be used as well, but it is not widely available.
- USB A-B cable (p/n SK06) in case of the USB connection. After connecting the instrument to the PC a virtual COM port is created in Windows.

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

Caution: The minimal required firmware version in **Sedex LT-ELSD 80** is **1.3**, in **Sedex LT-ELSD 85** is **2.7**, in **Sedex LT-ELSD 90** is **1.0**, in **Sedex LC** is **1.0**, in **Sedex 100LT** is **1.0** and in **AG (G4218A)** is **1.4**.

3 Installation Procedure

3.1 Hardware - Wiring

In case the **Sedere ELSD** detector is controlled by serial (RS232) communication, it uses standard serial straight cable DB9F-DB9M wiring described in the picture.

Fig 2: Serial straight cable DB9F - DB9M

Detector uses External Autozero input for Start of the acquisition. Start condition is determined by the close state of this input. External Autozero input has to be connected to the Relay output (NO) from external control device, not the TTL !

3.2 Clarity Configuration

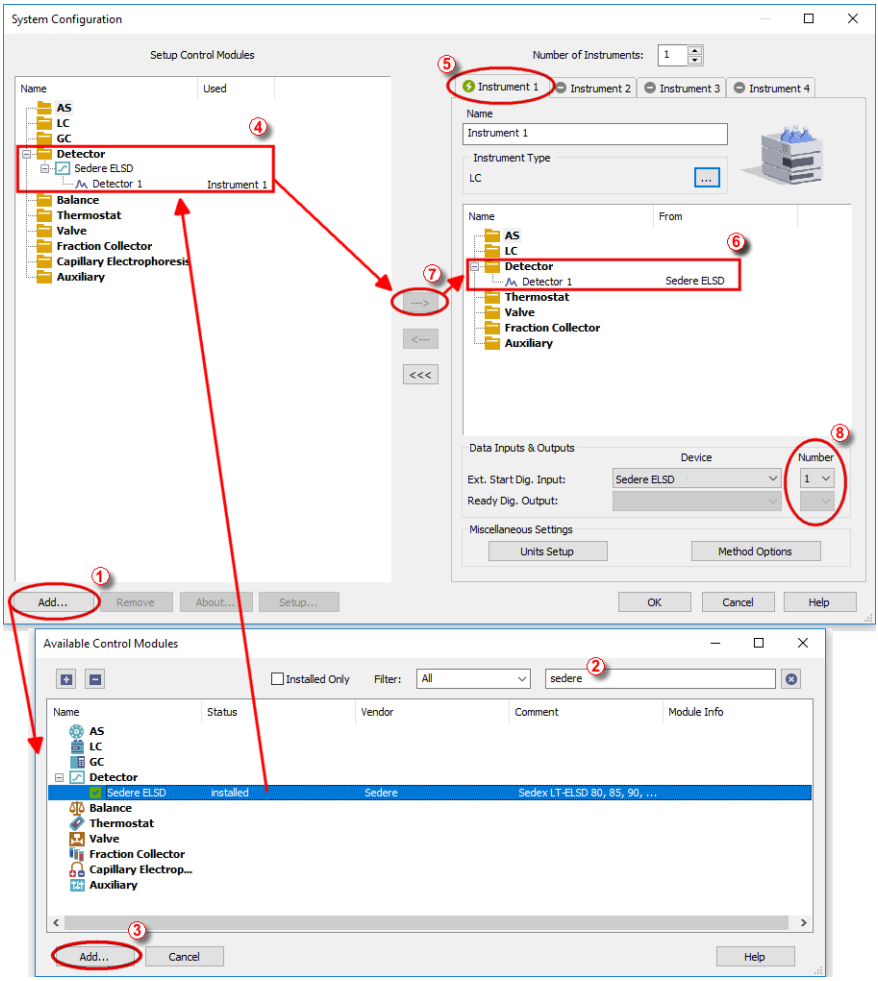

Fig 3: System Configuration

- Install the driver for using Sedere ELSD (the drivers are copied to the PC during installation, but they are not installed automatically). Follow the instructions in the SEDEX 90LT USB INSTALLATION.PDF document located in C:\CLARITY\HW_ DRIVERS\SEDERE\SEDEX90_ USB_ DRIVER\ folder.

- Connect the instrument to the PC using the serial or USB cable. In case of the USB cable, a virtual *COM Port* is created in **Windows** you will be able to select it in the Sedere ELSD Setup dialog.
- Start the **Clarity** station by clicking on the  icon on the desktop.
- Invoke the System Configuration dialog accessible from the Clarity window using the *System - Configuration...* command.
- Press the *Add* button ① (see **Fig 3** on pg **4**.) to invoke the Available Control Modules dialog.
- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **Sedere ELSD** and press the *Add* ③ button.

The Sedere ELSD Setup dialog will appear (see **Fig 4** on pg **6**.).

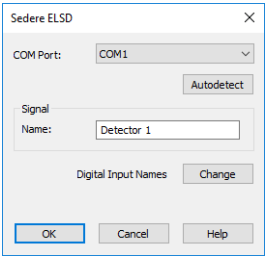

Fig 4: Sedere ELSD Setup

- Select the correct *Port* and press the *Autodetect* button. If the detector is connected correctly, dialog containing the detector model will be displayed.
- Fill in the signal name.

Note: Other fields from this dialog are described later in the description of the Sedere ELSD Setup dialog (for more details see also chapter **Sedere ELSD Setup** on pg **7**).

- Press the *OK* button.

  The **Sedere ELSD** will appear in the *Setup Control Modules* list ④ of the System Configuration dialog.

- Drag and drop the **Sedere ELSD** icon from the *Setup Control Modules* list ④ on the left side of the System Configuration dialog to the desired *Instrument* ⑤ tab on the right side ⑥ (or use the ---> button ⑦ to do so).
- Set the *Ext. Start Dig. Input* to *Sedere 8x Device* and appropriate *Number* ⑦ for external start of acquisition.

Note: The configuration dialog of the **Sedere ELSD** detector (Sedere ELSD Setup) can be displayed any time by double-clicking on its icon or using the *Setup* button.

4 Using the control module

New Acquisition tab is created in the Method Setup dialog. If there are any other detectors configured on the instrument, then the **Sedere ELSD** detector can be accessed by switching to the desired signal in the *Select Detector* section on the top of the dialog.

4.1 Sedere ELSD Setup

The Sedere ELSD Setup dialog serves for the correct setting of the communication between **Clarity** and the detector.

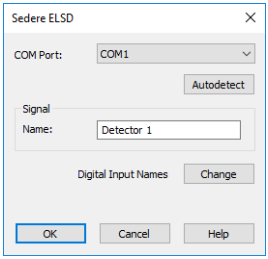

Fig 5: Sedere 8x Setup

COM Port

Selection of the communication port.

Autodetect

This button is used to test the connection to the **Sedere ELSD** detector using the previously set *COM Port*. Obtained data about the detector are then displayed in the dialog.

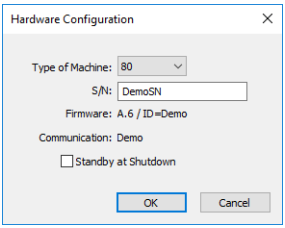

Fig 6: Sedere ELSD - Detector found

Signal - Name

Enables to set the detector name.

Digital Input Names - Change

Displays the Digital Input Names dialog which enables to set the custom label of **Sedere ELSD** digital input. The custom names are displayed in the Device Monitor window described in the chapter **"Device Monitor"** on pg **15**.

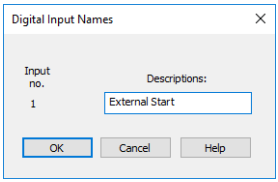

Fig 7: Digital Input Names

4.2 Method Setup - Acquisition

The *Method Setup - Acquisition* tab has four sub-tabs Basic - Limit Check - Time Table and Preview dedicated to setting and viewing parameters of the method. All parameters set on those sub-tabs are automatically sent to the **Sedere ELSD** detector prior to each injection in the *ACTIVE* sequence and may be sent there manually by using the *Send Method* button in the lower part of this tab or in the Single Analysis dialog. When you want to load an instrument method set in the **Sedere ELSD** detector itself into **Clarity**, use the *From Det* button.

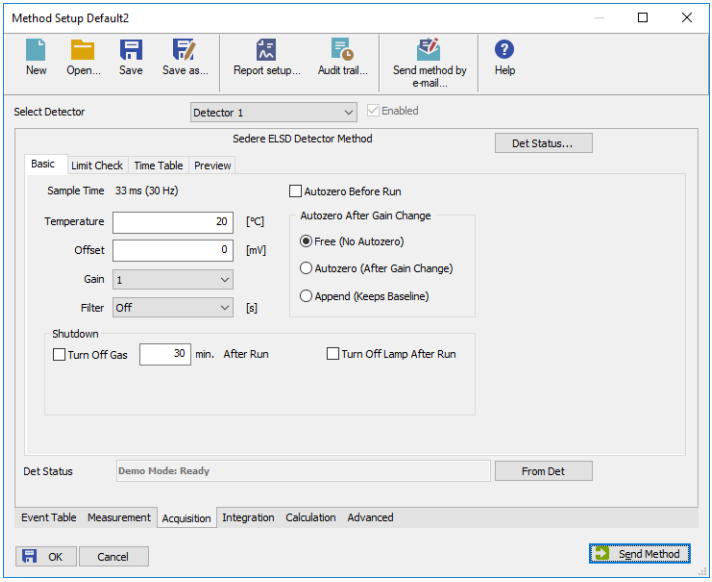

Fig 8: Method Setup - Acquisition

Buttons in the Method Setup - Acquisition dialog

In the right section on all Method Setup - Acquisition sub-tab for **Sedere ELSD** detectors two buttons are placed:

Det Status

After pressing the *Det Status* button the Hardware Configuration dialog opens. It displays the detector type, serial port through which it is connected and the detector serial number.

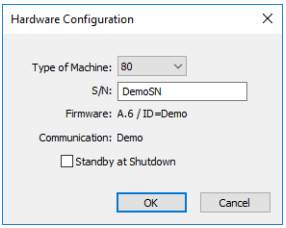

Fig 9: Hardware Configuration

From Det

Pressing the button loads all detector parameters as they are set in the **Sedere ELSD** detector. These parameters are entered in appropriate fields of the Method Setup - Acquisition dialog.

4.2.1 Method Setup - Acquisition - Basic

This sub-tab server for setting the operating parameters of the detector.

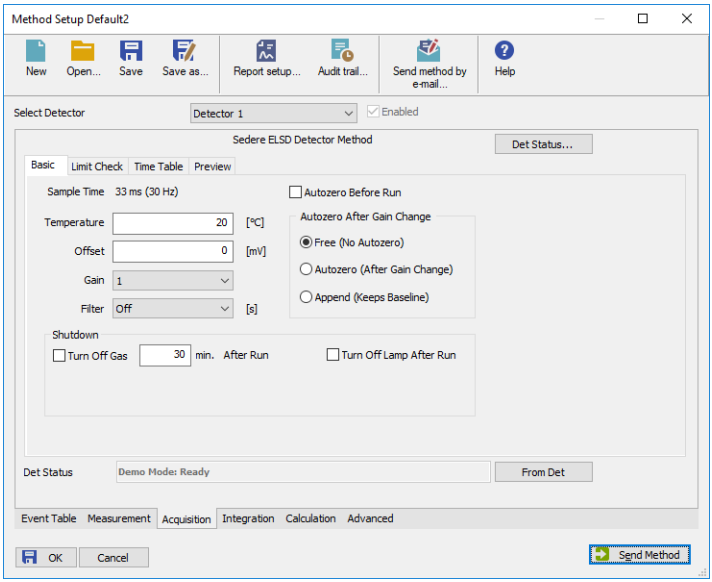

Fig 10: Method Setup - Acquisition - Basic tab

Sample Time

Sample time (frequency) the detector is measuring.

Temperature

Set the Temperature of the detector during the measurement. The acquisition starts after the requested temperature is reached.

Offset
Set the offset in mV.

Gain
Set one of the Gain options from the drop-down menu.

Filter
Set the filter time in seconds.

Autozero before run
Check this option if the detector should perform the Autozero function before start of the measurement.

Autozero after gain change
Choose one of the option *Free*, *Autozero* or *Append* for requested operation when the change of gain is performed (for example in the Time Table).

Shutdown
The shutdown parameters (check boxes) are intended for use in the shutdown method. Such method could be run from last line of unattended sequence table operation. The pumps should be switched off in this method as well.

Caution: Please note that pumping eluent to the detector without a gas flow could damage it!

Turn Off Gas
Set the time in minutes. After the period, the gas will be turned off.

Turn off Lamp After Run
Turns Lamp off after the measurement.

4.2.2 Method Setup - Acquisition - Limit Check

The limits tests in this sub-tab will ensure the detector will not be *READY* unless the values are within the limits specified.

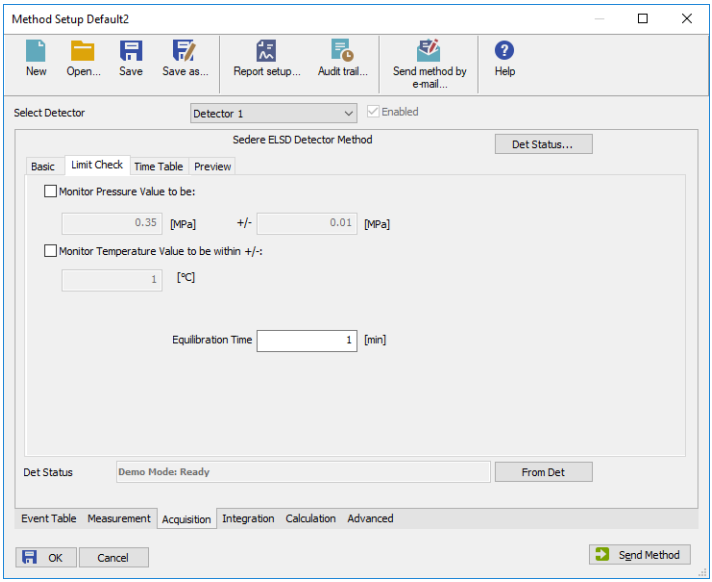

Fig 11: Method Setup - Acquisition - Limit check tab

Monitor Pressure Value to be

Set the pressure in *MPa* and its range the detector will be watching.

Monitor Temperature Value to be within +/-

Set the temperature in *°C* the detector will be watching.

Equilibration Time

Time within defined conditions are reached.

4.2.3 Method Setup - Acquisition - Time Table

This sub-tab serves for time program to change operating parameters during run. Meaning of the columns is the same as in the Basic sub-tab.

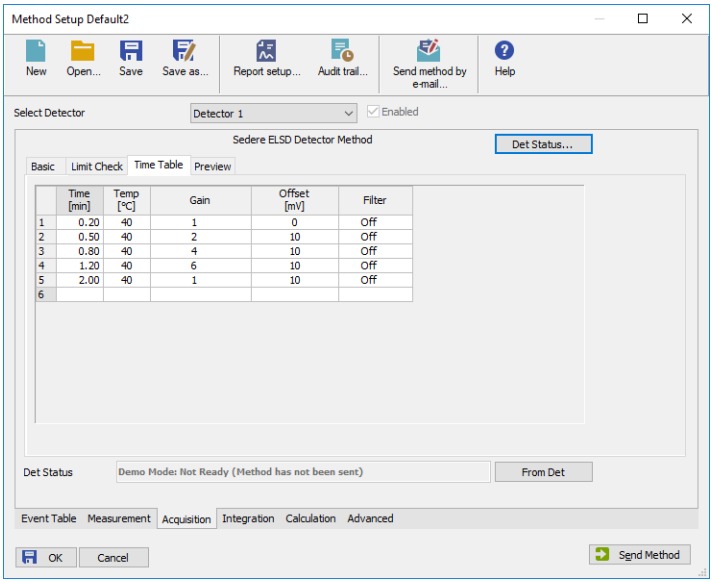

Fig 12: Method - Setup - Acquisition - Time Table

Time [min.]
Set the time when the parameters entered on this line are applied.

Temp [°C]
Set the temperature.

Gain
Choose the gain from the list.

Offset [mV]
Set the offset.

Filter
Choose the filter from the list.

4.2.4 Method Setup - Acquisition - Preview

Preview of the time table in graphical form.

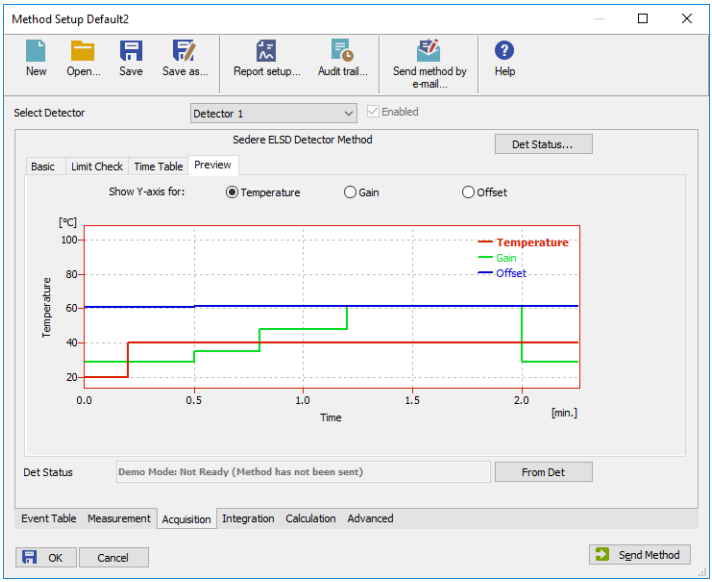

Fig 13: Method Setup - Acquisition - Preview

Show Y-axis for

Switch the right axis to *Temperature*, *Gain* or *Offset*, values are scaled to the permissible ranges.

4.3 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 actual detector temperatures and their settings in the Method Setup - Acquisition window, as well as other parameters set there.

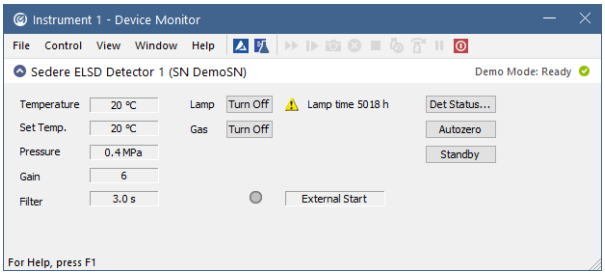

Fig 14: Device Monitor

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

Lam - Turn Off/On
Turn the lamp *OFF* or *ON* state.

Gas - Turn Off/On
Turns the gas flow to *OFF* or *ON* state.

Autozero
Performs the Autozero operation.

External Start
Indicates the status of the external signal.

5 Report Setup

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

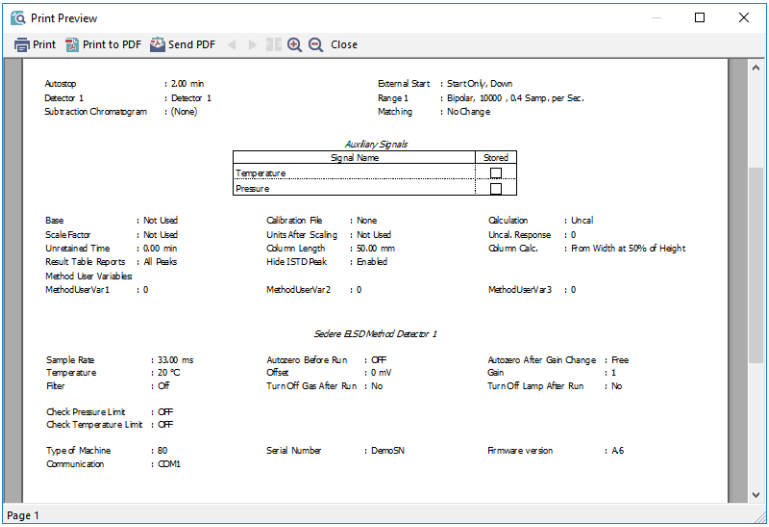

Fig 15: Print Preview of the Report Setup

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). Following section should be edited or added:

```
[COM1]
echo=on
textmode=on
filename=SedereELSD.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 **Sedere ELSD** 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.

Status: Error 1008 concerning communication error.

Reason: Communication is blocked by status info on the ELSD display.

Solution: Check ELSD display as it shows some info on hardware malfunction, e.g. Laser lifetime expiration. After solving the hardware problem and clearing the error messages on ELSD, the communication should be established again after restarting.