

SEDERE ELSD

Clarity Control Module

ENG

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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.

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.

Note:

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

Setup Control Modules Number of Instruments: 1 Name Instrument 1 Instrument 1 Instrument 2 Instrument 1 Instrument 1 Instreator Instrument 1 <th>8 Arr</th>	8 Arr
Add Remove About Setup OK Cancel He	lp
Available Control Modules X	
Instaled Only Filter: All Sedere	
Name Status Vendor Comment Module Info	
Iscore ELSO installed Sedere Sedere Seder. 17-ELSO 80, 85, 90, Image: Comparison of the state of th	

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
- 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.).

Sedere ELSD		×
COM Port:	COM1	~
		Autodetect
Signal		
Name:	Detector 1	
Digi	tal Input Names	Change
OK	Cancel	Help

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.

Sedere ELSD		×			
COM Port:	COM1	~			
		Autodetect			
Signal					
Name:	Detector 1				
Dig	Digital Input Names				
ОК	Cancel	Help			

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**.

Digital Input Names						
Input no.	Descriptions:	_				
ОК	Cancel Help					

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.

New Open	Save Save as	Report setup	Audit trail	Send method by e-mail	? Help	
Basic Limit Ch	D eck Time Table P	etector 1 Sedere ELSE review	Detector Method	Enabled	Det Status	
Sample Time Temperature Offset Gain Filter Shutdown Turn Off	33 ms (30 Hz)	20 [°C] 0 [mV] ~ [s] ain. After Run	Autozero Before Autozero After G Free (No Auto Autozero (After Autozero (After Append (Keep Turn Of	: Run lain Change zer O) er Gain Change) os Baseline) f Lamp After Run		
Det Status Event Table Mea	Demo Mode: Read	ly on Integration (Calculation Advan	ced	From Det	

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.

wethou setup bera	ult2					×		
New Open	Save Save as	Report setup Audit trail	Send method by e-mail	? Help				
Select Detector	Dete	tor 1 🗸 🗸	Enabled					
Basic Limit Ch	adk Time Table Drev	Sedere ELSD Detector Method		Det Status				
Sample Time	33 ms (30 Hz)	Autozero Befor	e Run					
Temperature		20 [°C] Autozero After (Sain Change					
Offset		0 [mV] O Autozero (Af	ter Gain Change)					
Gain	1	Append (Kee	ps Baseline)					
Shutdown	Gas 30 min.	After Run Turn O	ff Lamp After Run					
Det Status	Demo Mode: Ready			From Det				
Event Table Mea	surement Acquisition	Integration Calculation Advar	nced	H	Send Meth	bod		

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

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.

Method S	etup Defa	ult2										×
New	Open	Rave	Save a	s	Report setup	p Audit tra	i iil	Send method by e-mail	? Help			
Select Det	ector			Detector	1	~		Enabled				
					Sedere ELSI	Detector Met	thod		Det Status			
Basic	Limit Che	time Time	Table	Preview								
	Monitor Pre	ssure Valu	e to be:									
		0.35	[MPa]		+/-	0.01	ſM	Pal				
	Monitor Ter	nperature	Value to	be with	in +/-:							
		1	[°C]									
			F = 4				1	-				
			Equi	bration		1	լտ	nj				
Det Stat	116	Demo Mo	de: Rei	vhe					From Det			
Derbia				,					Homber			
Event Ta	ible Meas	airement	Acquiei	tion In	tegration (Calculation A	dvan	red				
21211111			nequiai									
🔒 ок	Ca	ncel								-	Send Met	hod
-												

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.

ethod S	Setup Defa	ault2						—		×
New	Open	Save	Save as	Report setup A	udit trail	Send method by e-mail	(2) Help			
elect De	tector		Detec	tor 1	~	Enabled				
Basic	Limit Ch	eck Time	e Table Previe	Sedere ELSD Detect	or Method		Det Status			
	Time [min]	Temp [°C]	Gain	Offset [mV]	Filte	r				
1	0.20	40	1	0	Off					
2	0.50	40	2	10	Off					
3	0.80	40	4	10	Off					
4	1.20	40	6	10	Off					
5	2.00	40	1	10	Off					
Det Sta	itus	Demo 1	10de: Not Read	ly (Method has not be	en sent)		From Det			
Event Ti	et Status Demo Hode: Not Ready (Method has not been sent) From Det ent Table Measurement Acquisition Integration Calculation Advanced OK Cancel									

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 *C 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.

@ Instrumen	t 1 - Device M	onitor			-	×
File Control	View Windo	w Help	<u> </u>	>> > iii ⊗ = /₀	🖀 II 🗿	
Sedere EL	SD Detector 1	(SN Dem	oSN)		Demo Mode: Read	ly 📀
Temperature Set Temp.	20 °C	Lamp Gas	Turn Off Turn Off	🔥 Lamp time 5018 h	Det Status Autozero	
Pressure	0.4 MPa				Standby	
Gain	6					
Filter	3.0 s		\circ	External Start		
For Help, press I	F1					

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.

🔯 Print Preview			×
💼 Print 📸 Print to PDF 🎂 Send PDF	< 🕨 🗏 🕘 🤤 Close		
Antotop : 2.00 min Detector 1 : Detector 1 Subtraction Chromotogram : (None)	Esternal Sart : Rangel : Matching : Aurklay, Sprak Sgnal Name Temperature	SærtChri/, Down Bjodar, 19000 , 0.4 Samp, per Sec. No Change	^
Base : No: Led ScoleFacer : No: Led Unretaned Time : 0.00 min Realt Tile Regions : Al Peelo Method Ler Variables Method Ler Variables	Presure Gilferaton File I None Units Mar Scaling I Non Hed Okimit Langh I Studio mm Hide ISTD Peak I Brabled Michod LeeVier 2 : 0	Oktovation : Uncal Utcal Response : 0 Column Calt. : Prom Width at 59% of Height Method User/Var3 : 0	
	Sedere ELSD Method Detector 1		
Sample Rate : 33.00 ms Temperature : 20 °C Filter : Off Check Pressure Limit : OFF	Autœero Before Run : CPF Offset : 0 mV Turn Off Gas After Run : No	Autozero After Gain Change : Free Gain : 1 Turn Off Lamp After Run : No	
Check lemperature Limit : OFF Type of Machine : 80 Communication : CDM1	Serial Number : DemoSN	Firmware version : A6	v
Page 1			

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.