



Agilent 1290 Infinity II Evaporating Light Scattering Detector (ELSD) in Empower Environment

Technical Note

Technical Guide for the configuration and use of the Agilent Evaporating Light Scattering Detector (ELSD) with Waters Empower 3.

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Introduction

Waters Instrument Control Software (ICS) includes the integration of the Agilent Instrument Control Framework (ICF) for Waters data systems. This guide describes how to configure the Agilent Evaporating Light Scattering Detector (ELSD) in a Waters Empower environment.

Table 1 Supported and unsupported configurations using ELSDs in Empower.

Waters Instrument Control Packages	Agilent ICF/ Agilent LC Driver	ELSD support in Waters Empower 3
ICF Support v2.2 #667005584	A.02.04 A.02.14	Initial support for ELSD
ICF Support v2.2 #667005449	A.02.03 DU2 A.02.13	Not supported
any previous ICF support integration		

Table 2 ELSD Support Status in Waters Empower 3

Product No.	Module Name	Communication	Min. FW	Status
G4218A	1260 Infinity ELSD			Not supported
G4260A	380 ELSD			Not supported
G4260B	1260 Infinity ELSD / 1260 Infinity II ELSD	RS-232	31.06	Supported
G4261A	385 ELSD			Not supported
G4261B	1290 Infinity ELSD			Not supported
G7102A	1290 Infinity II ELSD	LAN only RS-232 not tested	31.06	Supported

ELSD Instrument set up

- 1 Close the Empower CDS.
- 2 Switch off the Agilent LC Tower and add the Agilent ELSD to the LC system.
- 3 Connect the power plug.
- 4 Switch on all modules of the LC instrument tower as well as the ELSD.
- 5 Ensure that all Agilent LC modules in the system meet or exceed the minimum firmware requirements specified by the 3rd-party CDS software vendor and Agilent's firmware set/firmware interoperability requirements. Agilent recommends using the latest available firmware set.

<http://www.chem.agilent.com/layouts/agilent/downloadFirmware.aspx?whid=79809>

- 6 The G4260B ELSD requires an RS232 connection.
For 1260 ELSDs with Firmware 31.06 or greater, ensure RS232 communication is selected when powering the ELSD. This is done using the same procedure as described for the G7102A.
USB/Serial conversion is possible, but was not tested. If a USB-to-Serial Adapter is used, install the correct driver version for your adapter and define the COM Port in the device manager.
- 7 During start up, use the arrows on the G7102A ELSD to choose between RS232 and LAN connection in the display and press **OK** to confirm your choice.

ELSD Instrument set up

- 8** Establish the communication cabling.
 - a** G4260B: Use a RS232 cable and connect the instrument to the COM X (where X is a free COM port of the controller).
 - b** G7102A: Plug the LAN cable into the ELSD module and connect it to the same switch that your LC instrument is connected to as well. Ensure that the IP address is in the same subnet as the Agilent system.

It is possible to use a static IP or DHCP assigned address for the LAN connection. Decide on one option and click **Ok**. For DHCP make a note of the assigned IP address, as it is required during configuration in Empower.
- 9** Additionally, a start/stop cable is required to transfer the start impulse to the ELSD. Refer to the ELSD manual.

The ELSD Driver

The ELSD driver is *included* in the LC Driver and not listed as a separate component. Therefore, Agilent ICF consists of two components and the Waters integration adds one additional component. All three components must be present in the Windows **Programs and Features** view:




 Agilent Instrument Control Framework - LC Drivers A.02.14	Agilent Technologies	12/21/2016	111 MB	2.14.115
 Agilent Instrument Control Framework A.02.04	Agilent Technologies	12/21/2016	48.2 MB	2.4.124
 Agilent LC	Waters Corporation	12/20/2016	16.8 MB	2.2.0.0

Figure 1 Components in Programs and Features

ELSD information can be viewed via the **i** symbol in the LC Status Dashboard.

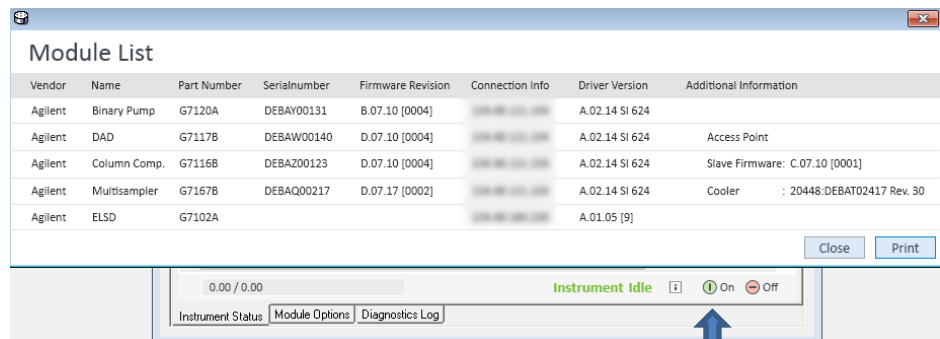


Figure 2 Module List

Configuration of the ELSD

The configuration of the ELSD in Empower requires the use of the PreConfiguration Utility.

NOTE

Using LAN communication for the LC /ELSD stack, separate LAN connections are required for the ELSD and the LC stack.

- The use of DHCP is not recommended.
- Use a fixed IP address for the LC stack and the ELSD.
- If an Agilent detector is present in the LC stack, ensure that this detector is the LAN communication host. If there is no Agilent detector present in the LC stack, use the pump as LAN communication module.

Via the Empower Configuration Manager

Software required ICF Support v2.2 (See page 16 for Waters support documentation TECN134936402).

- 1 In the Empower Configuration Manager, select **Tools > Agilent PreConfiguration**.

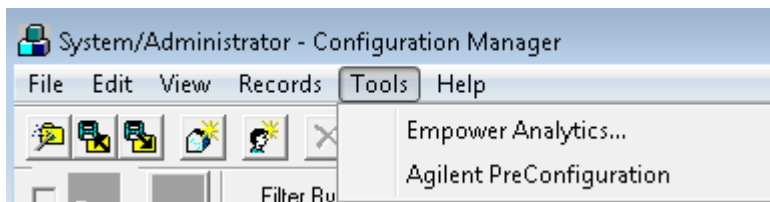


Figure 3 Configuration Manager

- 2 Enter the IP address or host name of the LAC/E box that your instrument is connected to into the pop-up screen **Configuration Directory** and click **Connect**.

Note

Do not enter the IP address of the instrument here

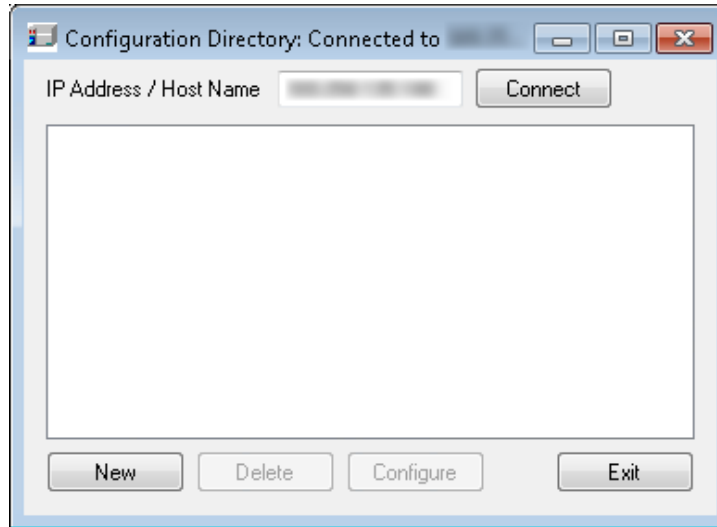


Figure 4 IP address to connect

- 3 Once the IP address is connected, click **New** to open the PreConfiguration Utility.

Configuration of the ELSD

For the ELSD perform the following steps:

- 1 To manually configure the ELSD, select the correct ELSD type from the list of modules displayed on the left and click the right arrow button to add it to the list of modules for the current configuration displayed on the right.

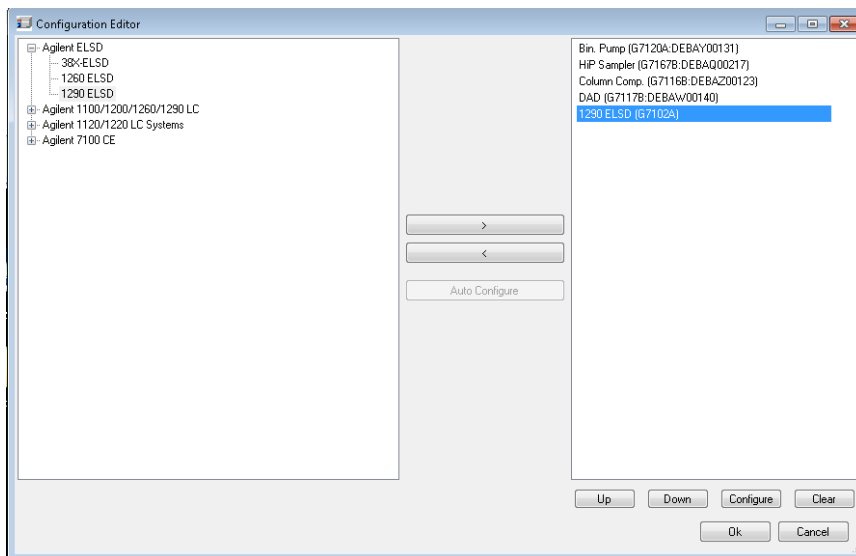


Figure 5 Set up the ELSD

- 2 Double-click on the ELSD in the list of modules on the right, or select it and click **Configure** at the bottom of the screen.

3 The ELSD configuration window opens.

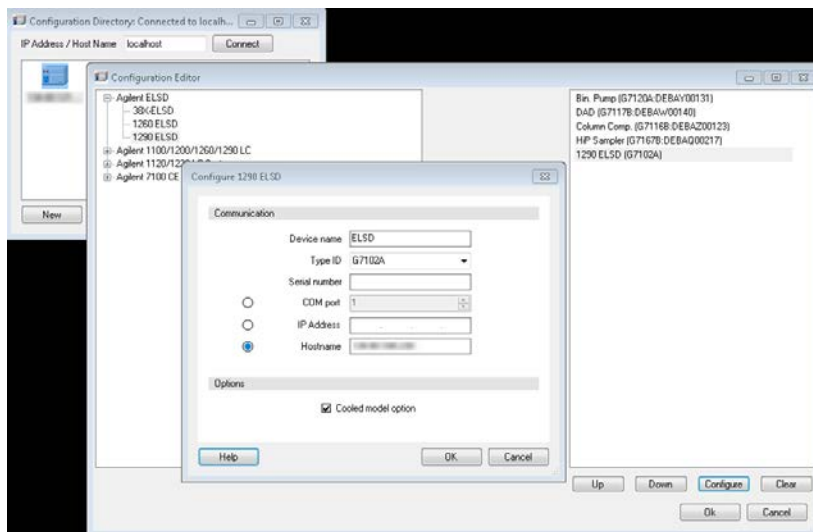


Figure 6 Configure a G7102A ELSD

- a** In the **Type ID** drop-down list, select the ELSD type.
- b** Enter the serial number (located on the rear of the instrument or on the ELSD front panel display).
- c** Enter the IP address (or COM X Port, where x is the number of the free port).
- d** Click **OK** to close the screen.
- e** Click **OK** to close the **Configuration Editor**.
- f** Click **OK** to close the PreConfiguration Utility.

Configuration of the ELSD

Using the ELSD in Empower

- 1 Start Empower and open the **Runs Sample** Screen.
- 2 The LC Status window automatically displays all available online modules – now including the newly added ELSD.

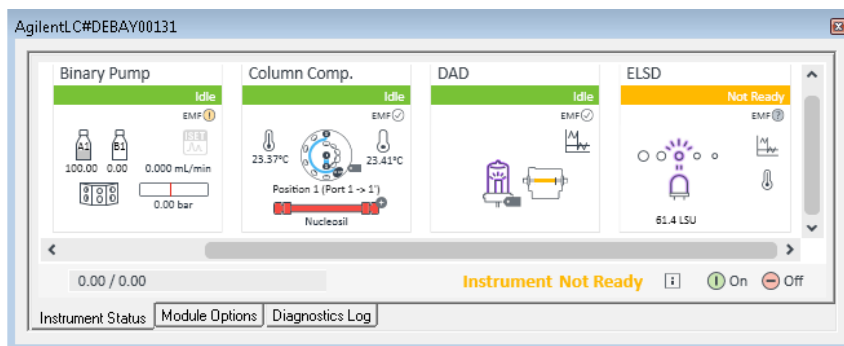


Figure 7 LC Status Dashboard

- 3 Loading the instrument method, the system requests the user to update the given method configuration with the new instrument configuration. Click **OK** and the system opens the method dialog.
 - a *Instrument Configuration Tab:* The LC system configuration is displayed in the **Instrument Configuration** tab. All settings in this dialog are already defined using the PreConfiguration tool. Changes made in this section of the method are not applied to the system. Any changes e.g. modifying the IP address need to be made in the PreConfiguration tool on the LAC/E box controlling the instrument.
 - b *Instrument Method Tab:* The **Instrument Method** tab provides access to all method parameters of the LC system, one tab per module. Select the **ELSD** tab to enter the method parameters. For details on the parameters refer to the online help and the ELSD user manual.

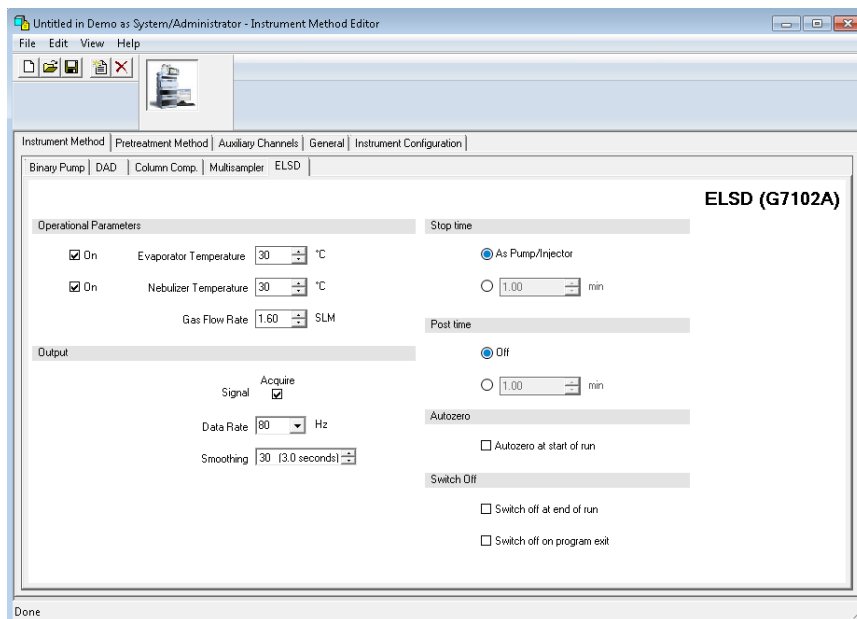


Figure 8 ELSD Method Screen

NOTE

The stop time of the ELSD is independent of the run time of the LC stack and the run time set in Empower for the sample. Changes to the stop time on the LC stack or the run time in Empower are not applied to the ELSD. Ensure that all run times are the same.

NOTE

Empower offers an alternative process to shut down the ELSD. To do so, select the ELSD in the **General** tab of the Instrument Method.

Configuration of the ELSD

To shut down the ELSD after a sequence, make sure to generate a method with the ELSD parameter **switch off at end of run** enabled. Save this method and used it as method for the last run.

Empower also offers the ELSD for module shutdown in the Selective Shutdown section of the **General** tab.

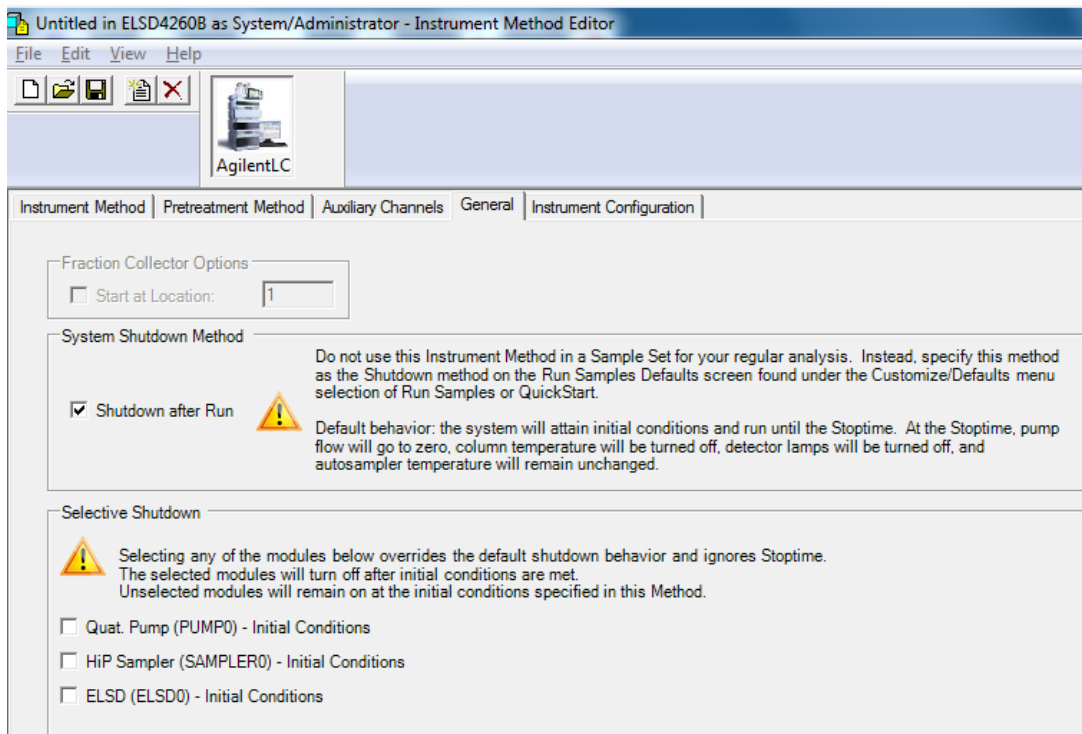


Figure 9 ELSD option present in Selective Shutdown

How does it look - ELSD in Empower

- 1 Running the ELSD in Empower, the LC Status Dashboard displays the run status of all the Agilent modules. As four modules fit to the current space in the status window, move the slider into the LC Status Dashboard to see the ELSD.

DemoLC in Demo as System/Administrator - Run Samples

File Edit View Inject Actions Customize Help

Run Only Continue on Fa

Active sample set : DemoSampleSet1

View	Inj Vol (µL)	# of Injs	Label	SampleName	Level	Sample Matrix	Function	Method Set / Report Method	Label Reference	Proc
1	1	0.0	1	U0101	1Unk		Inject Samples	DemoMethodSet1		Normal

AgilentLC#DEBAY00131

Multisampler Injecting EMF On

Binary Pump Prerun EMF On

Column Comp. Prerun EMF On

DAD Prerun EMF On

0.00 / 0.00 Instrument Injecting On

Instrument Status Module Options Diagnostics Log

Figure 10 ELSD in LC Status Dashboard

How does it look - ELSD in Empower

- 2 The online plot shows both the ELSD signal and the ELSD Aux Traces. Make sure Auxiliary Channels are enabled in your method.

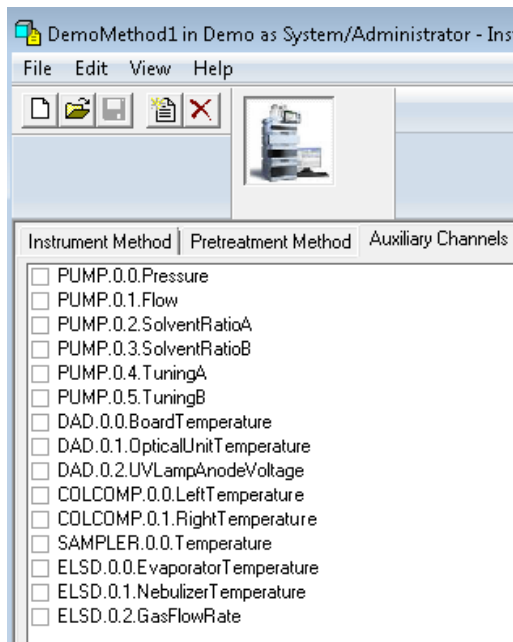


Figure 11 Select the Auxiliary Channel of interest

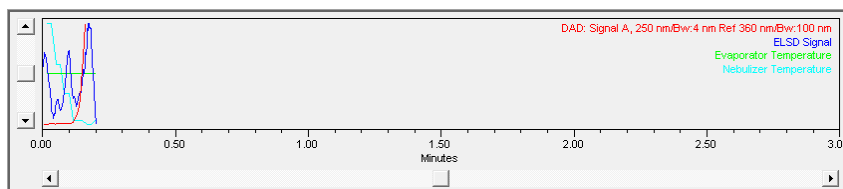


Figure 12 ELSD Signal and AUX channels

- 3 Audit trail and error information appear in the diagnostic logbook, displayed in the **Diagnostics Log** section below the LC Status Window.

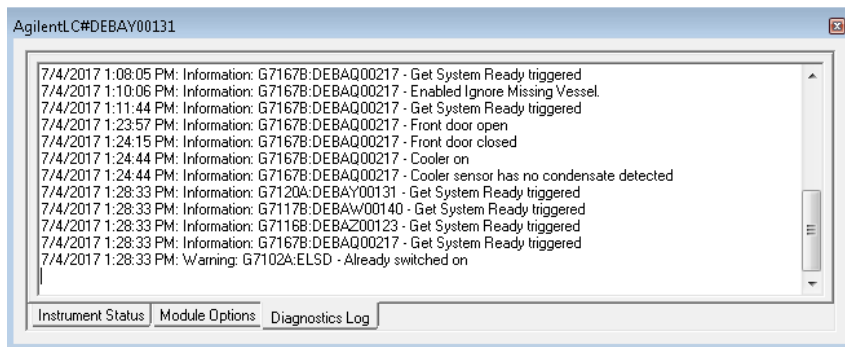


Figure 13 Audit Trail

Additional Information

Known limitation/restrictions

- No Analog out support for G4260B 1260 Infinity ELSD / 1260 Infinity II ELSD
- No RS-232 communication support for G7102A Infinity II ELSD
- Usage of RS-232/USB adapter not tested

Waters TechNotes

Additional information on the PreConfiguration Utility is provided on the Waters Support Webpage

<http://www.waters.com/waters/support.htm?lid=134936402&cid=511442&type=TECN>.

Document reference: TECN134936402

Title: Using the Agilent PreConfiguration Utility with Agilent ICF Support Version 2.2



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