Agilent Drivers for Thermo Scientific Chromeleon 7

Release Notes – Revision 3.1

Introduction

References to product documentation for installation and usage are provided, as well as references to documentation regarding known issues and workarounds.

Table 1 Terms and abbreviations used in this document

Terms	Description
Agilent Drivers	Agilent Drivers for Thermo Chromeleon 7
Chromeleon 7	Thermo Scientific Chromeleon 7 Chromatography Data System (CDS)
Chromeleon	Thermo Scientific and Chromeleon are registered trademarks of Thermo Fisher Scientific.
Thermo	Thermo Fisher Scientific

For our regulated customers

When any change is made to Agilent software, the validation status of the software needs to be re-established by the user. Whenever software is changed, a validation analysis should be conducted not just for the validation of an individual change, but also to determine the extent and impact of that change on the entire software system.

Agilent Drivers for Chromeleon 7 Revision 3.1 - What's new?

8850 GC Support

This release of the Agilent Driver for Chromeleon adds support for the 8850 GC. The 8850 GC is a new single-channel GC based on the technology of the established 88XX family of GCs.

8697 XL Headspace Support

This release of the Agilent Driver for Chromeleon adds support for the 8697 XL headspace sampler. This is the 120-vial version of the already supported 8997 headspace sampler.

G7167C 1260 Infinity II Hybrid Multisampler Support

This release of the Agilent Driver for Chromeleon adds support for the 1260 Infinity II Hybrid Multisampler (G7167C). The G7167C is a new hardware component, introduced for existing 1260 Infinity II Prime LC System and designed using the technology of the G7167X Multisampler family, equipped with 3pos/6port quick change Feed Injection (FI) valve head, enabling the samples injection to the column using either classical Flow-Through Injection or new Agilent Feed Injection.

New SerialNo property for GC and HS modules

The property SerialNo is now populated with the serial number of the respective GC and HS instruments. This enables reporting the instruments serial number. The SerialNo property is already available for LC instruments and no change was introduced in this regard.

Driver updates

The Agilent Drivers for Chromeleon include updated drivers for LC/CE, ELSD, GC and HS instruments. Furthermore, the Instrument Control Framework component is updated providing the basis for integration of the instrument driver components. The updated drivers enable the above-mentioned support for new modules and include defect fixes.

GC Method Resolution Wizard

The GC method resolution wizard now guides users through the process of method resolution offering a graphical user interface.

Compatibility

The compatibility matrix provides information about installation and execution prerequisites with respect to hardware, firmware, and the operating system.

Supported Chromatographic Data System

This driver release supports Chromeleon 7.2.10 MUf and higher, Chromeleon 7.3.1, Chromeleon 7.3.2, Chromeleon 7.3.2 MUa and includes all subsequently released Chromeleon versions including their respective maintenance updates. At the time of writing the latest Chromeleon release was Chromeleon 7.3.2 MUa.

Supported Agilent Components

The following Agilent components are included in this release of the Agilent Drivers for Chromeleon 7:

- Agilent Instrument Control Framework 3.3 Update 1
- Agilent LC Driver 3.7 Service Release 1
- Agilent ELSD Driver 1.8.61
- Agilent GC Driver 4.1
- Agilent HSS Driver 4.1

Lab Advisor

Lab Advisor is a standalone Software which can be co-installed and can co-exist with Thermo Fisher Chromeleon on the same IPC. Lab Advisor does not interfere with the CDS.

Modules with a firmware A (mainly 1100/1200) can host only one instrument controller. In this case only Lab Advisor or Chromeleon can be used.
Main modules with firmware B/D can host up to five instrument controllers and allow parallel execution of Chromeleon and Lab Advisor.

Connecting to an instrument with Lab Advisor the user can lock instrument.

The instrument locks automatically when Lab Advisor is actively used for, e.g., tests and firmware updates etc. In these cases, only Lab Advisor actions are allowed. Other connected controllers may only execute look up actions.

If the instrument is acquiring data via Chromeleon, Lab Advisor can connect to the instrument, but no Lab Advisor active user actions can be executed.

Supported Operating Systems

The supported operating system in use is determined by the hosting CDS.

- Microsoft Windows 10 Pro and Enterprise, 64-bit
- Microsoft Windows 11 Enterprise

- Microsoft Windows Server 2016, 64-bit
- Microsoft Windows Server 2019, 64-bit
- Microsoft Windows Server 2022, 64-bit

The LC Drivers have been optimized for the Windows default font size. Larger font sizes may require increasing the window size or may cause truncations.

Supported Language Settings

The Agilent Drivers are developed for use with English (US) regional settings and are supported in English language only. The LC instrument driver offers language support for English, Chinese, Japanese, and Portuguese languages. The GC instrument driver offers language support for English, Chinese, Portuguese, and Russian.

Supported Third-Party Modules

Supported third-party modules are the Thermo Fisher Corona Veo Charged Aerosol detector and the WPS-3000 sampler. These modules can be combined with Agilent LC modules in one instrument.

During testing some functional limitations were identified. The following functions or use cases are therefore not supported. For instructions on usage and maintenance refer to the manufacturer's documentation.

WPS-3000 limitations

- The WPS-3000 must be the only sampler in the instrument.
- Overlapping injections are not supported.
- The smart startup / shutdown feature is not supported.
- It is not possible to link the pump with the autosampler. This means injection synchronization is not possible.
- The sampler may only be used as injection source. Fraction collection is not supported.
- User-Defined programs are not supported.
- USB-to-LAN adapters are not supported.

Corona Veo Charged Aerosol detector limitations

Besides the USB connection, the Corona Veo CAD requires a start trigger cable running between the detector and the sampler. An emergency pump shut down cable is highly recommended. A suitable cable kit may be purchased from thermo Fisher (P/N 6081.2300). The kit consists of the following parts:

- Connector 9 Pin Female
- 2 x Connector, 9 Pin, Male
- 2 x Connector, 15 Pin, Male
- RS232 <-> USB Interface Cable
- 2 x Cable I/O 2-Conductor

Assembling the start trigger cable

For remote control, Agilent LC systems use either a 9-pin based remote port, or a 15-pin based enhanced remote interface (ERI). Verify which of the ports is present on your autosampler and either use the 9-pin or 15-pin connector accordingly.

When using a 9-pin based remote port, connect the bare wire ends of the 2-conductor I/O cable to pins 1 (black) and 3 (red) of the male 9-pin adapter.

When using a 15-pin based enhanced remote interface, connect the bare wire ends of the 2-conductor I/O cable to pins 7 (red) and 13 (black) of the male 15-pin adapter corresponding to the pin assignment shown below.

Attach either the male 9-pin adapter or the male 15-pin adapter to your sampler.

Plug the USB-RS232 adapter into a free USB serial port on the Instrument Controller.

Connect the 2 conductor I/O cable to the female 9 Pin Adapter by attaching the bare wire ends of the cable to pins 5 (green), 7 (black) and 8 (red). Attach the female 9 pin connector to the USB-RS232 adapter.

Assembling the emergency pump shutdown cable

To prevent damage to the Corona Veo (RS) in case of a failure, the installation of an emergency pump shut-off is recommended.

Connect the three stranded end of the I/O cable to the ports 1 (red, B-1), 2 (black, B-2) and 3 (green, B-3) on the Terminal B on back of the Corona Veo (RS).

When using a 9-pin based remote port, connect the bare wire ends of the conductor I/O cable to pins 1 (black) and 4 (red) of the male 9-pin adapter.

When using a 15-pin based enhanced remote interface, connect the bare wire ends of the conductor I/O cable to pins 6 (red) and 13 (black) of the male 15-pin adapter.

Attach either the male 9-pin adapter or the male 15-pin adapter to your pump.

Mixed Instrument Configuration

To configure an instrument consisting of Agilent LC modules and Themo Fisher LC modules, first configure the Agilent LC modules as described in this user guide. Then select and add the appropriate driver for the Thermo Fisher module from the list of available drivers. Refer to the Thermo Fisher documentation for details on module configuration options.

Using the mixed instrument

After starting the Chromeleon console the ePanels for the Agilent modules and the Thermo Fisher modules are available.

NOTE The third-party modules are not integrated into the Status Dashboard on the Agilent Home ePanel.

To create an instrument method, follow the Instrument Method Wizard and save the instrument method. The user interfaces of both, the Agilent LC, and the third-party modules, are integrated in the method wizard. The aforementioned use case and functional limitations need to be considered when creating an instrument method. The instrument method can then be used in sequences as usual.

Installation

Stand-Alone installer

NOTE The Agilent Drivers installation routine will abort if no supported Chromeleon version is detected.

Installing the Agilent Drivers is a two-step process. In the first step the Software Verification Tool (SVT) is installed. In the second step the Agilent Drivers are installed.

To install the SVT double click the SFVtool.msi and follow the installation wizard.

The Agilent Drivers are delivered as a single Windows Installer file, named Agilent_Drivers_for_Thermo_Chromeleon.msi. The installation process is started by double-clicking the file. Follow the instructions of the installation wizard to install Agilent Drivers. For detailed step-by-step instructions see chapter 3 of the Agilent Drivers User Guide.

Installation during Chromeleon installation

The Agilent Drivers for Chromeleon 7 are delivered on the Chromeleon installation medium available at time of release. Installation prerequisites are outlined by Chromeleon (e.g., CPU, memory, and hard drive space).

The preferred installation is the automatic installation using the advanced option of the Chromeleon installer. Please refer to the Chromeleon Installer documentation for installation, updates, and uninstallation.

Installation Verification

Agilent offers a Software Verification Tool (SVT) to verify the correct installation of the software components. The tool is delivered along with the Agilent Drivers for Chromeleon 7.

Using the Chromeleon installation routine, the tool is installed along with the Agilent Drivers.

Manual installation of the Agilent Drivers for Chromeleon requires the SVT to be installed prior to the Agilent Drivers installation.

After the installation of the SVT execute the verification with the following steps:

Open *Start > Programs > Agilent Technologies* and select *Software Verification Tool*.

In the upcoming dialog box, select the required report type and the components of interest and click *Qualify*. The corresponding browser opens and shows the resulting files and passed or failed status of the installation.

NOTE
- The Chromeleon IQ does not start the Agilent SVT, the Agilent Software Verification Tool requires manual execution.
- Silent execution of the installation verification is possible, please refer to the respective User Guide for the Agilent Drivers for Chromeleon 7.

Chromeleon IQ report

The Agilent Drivers for Chromeleon 3.1 integrates with the Chromeleon IQ. The IQ includes the installed version information and the version information of all installed driver files. An intact installation of the driver does not trigger any warnings or errors in the Chromeleon IQ.

Upgrade Installation

Upgrading the Agilent Drivers for Chromeleon 7 from version 1.1 Update 1 or version 1.2 requires additional steps due to changes in the handling of Run Diagnostic Data and newly added features. After the installation it is recommended to update the instrument configuration to ensure that the changes become active. In rare cases not updating the instrument configuration may result in connectivity issues. Please see also chapter Backward Compatibility in the User Guide.

Updating the instrument configuration

The steps to update the instrument configuration are as follows:

1. Open the Instrument Configuration Manager and connect to the upgraded IPC
2. Expand the instrument node
3. Select the Agilent Drivers for Chromeleon 7 instrument node and note the ip address or hostname
4. Delete the Agilent Drivers for Chromeleon 7 instrument node
5. Click Add Module
6. Select Agilent Technologies from the vendor list
7. Select Agilent Drivers for Thermo Chromeleon from the modules list and click OK
8. In the new window select the node corresponding to the instrument family, e.g. 1290 LC
9. Click Auto Configure
10. Enter the ip address or hostname noted in step 3 and click OK

    After a few seconds the modules will be shown in a list
11. Click OK. The new configuration is now being loaded. If applicable edit the signal names.
12. Save the updated instrument configuration by clicking File > Save Installation

Updating instrument methods

After upgrading the Agilent Drivers for Chromeleon 7, the instrument methods may require an update. This is the case when the instrument method uses the Run Diagnostic Data signals.

After opening the instrument method, the Chromeleon method translation tool starts automatically. Choose Adjust Manually and open the method script. Command lines requiring an update are marked with a red background and can be updated by clicking on the command.

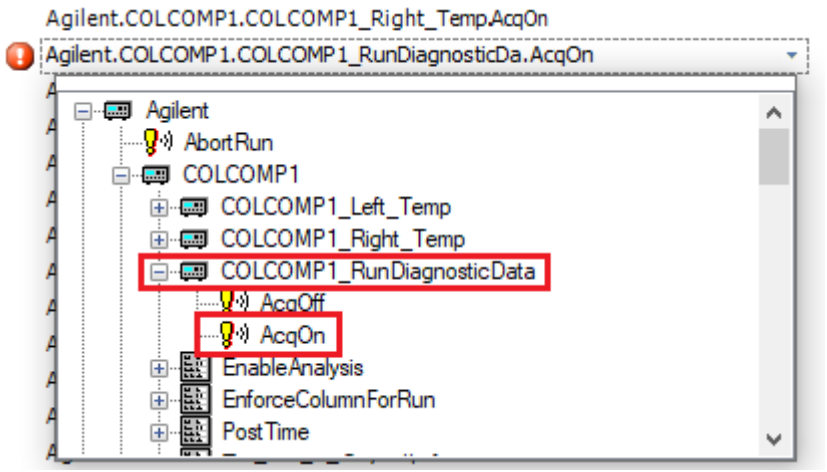
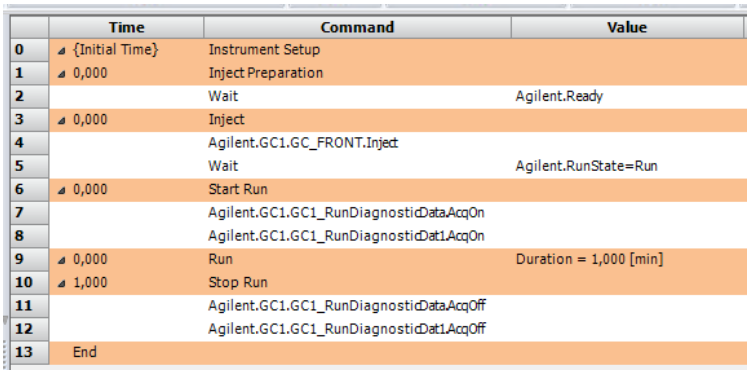


Figure 1. Updating the RunDiagnosticData command in the method script

Instrument methods for GCs (7890B, 8890, Intuvo 9000) created prior to version 2.3 of the Agilent Drivers for Thermo Chromeleon include two Run Diagnostic Data channels as shown in figure 2.

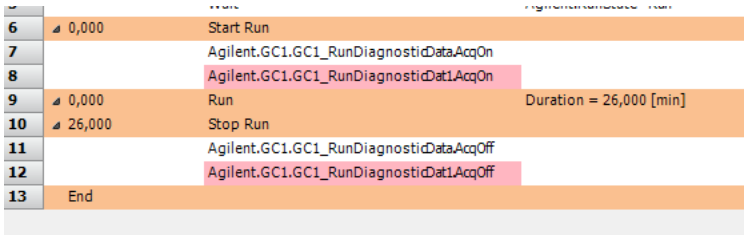


	Time	Command	Value
0	{Initial Time}	Instrument Setup	
1	0,000	Inject Preparation	
2		Wait	Agilent.Ready
3	0,000	Inject	
4		Agilent.GC1.GC_FRONT.Inject	
5		Wait	Agilent.RunState=Run
6	0,000	Start Run	
7		Agilent.GC1.GC1_RunDiagnosticData.AcqOn	
8		Agilent.GC1.GC1_RunDiagnosticDat1.AcqOn	
9	0,000	Run	Duration = 1,000 [min]
10	1,000	Stop Run	
11		Agilent.GC1.GC1_RunDiagnosticData.AcqOff	
12		Agilent.GC1.GC1_RunDiagnosticDat1.AcqOff	
13	End		

Figure 2. GC instrument method including two Run Diagnostic Data channels

Versions 2.3 and later of the Agilent Drivers for Thermo Chromeleon only use one Run Diagnostic Data channel to provide the same information. It is necessary to update the GC instrument methods manually to adjust for the change in the driver.

After opening the instrument method, the Chromeleon method translation tool starts automatically. Choose Adjust Manually and open the method script. Delete the two command lines highlighted in red and save the method.



6	0,000	Start Run	
7		Agilent.GC1.GC1_RunDiagnosticData.AcqOn	
8		Agilent.GC1.GC1_RunDiagnosticDat1.AcqOn	
9	0,000	Run	Duration = 26,000 [min]
10	26,000	Stop Run	
11		Agilent.GC1.GC1_RunDiagnosticData.AcqOff	
12		Agilent.GC1.GC1_RunDiagnosticDat1.AcqOff	
13	End		

Figure 3. The commands highlighted in red need to be deleted

Support Information/User Documentation

The Agilent Drivers for Chromeleon 7 include the following components:

- Agilent Drivers for Thermo Chromeleon 7
- Agilent Instrument Control Framework (ICF)
- Agilent Instrument Control Framework - LC & CE driver
- Agilent Instrument Control Framework - GC/HS driver

The following components documents are present in the folder structure \Packages\Agilent Chromeleon Drivers\Documentation of the Chromeleon DVD:

- Release Notes

  The release notes document new and changed feature sets, important information on the required operating environment, supported modules and firmware, impact analysis etc.
- Validation Certificate/Declaration of Software Quality
- License Terms
- Release Notes
- Troubleshooting Guide

Online-Help

Online help is available either via the help button present on the window screen or using the F1 button. F1 brings up online help even if there is no help button present. LC or GC-HS Driver Help explains the parameters present on the current window along with the possible parameter ranges, variables and allowed formats, which may be entered.

Online help for the Agilent Drivers for Chromeleon can only be accessed via the Help button below the dashboard. Help provides information on special handling required to run Agilent LC or GC-HS modules in a Chromeleon environment.

User Guides

Two user guide documents are included in the installation for the Agilent Drivers for Chromeleon 7. One user guide for LC and one for GC.

Please navigate on the Chromeleon disk to the folder \Packages\Agilent Chromeleon Drivers\Documentation.

The user guides offer information on

- how to install the Agilent Drivers
- how to configure the instrument
- how to run injections
- the method handling (Agilent Method user interface/Chromeleon Script Editor)
- how to migrate methods based on native drivers and ICF based drivers
- how to troubleshoot

Obtaining Technical Support

For all technical support enquiries regarding Thermo Scientific Chromeleon 7

Chromatography Data System (CDS) software please contact your Thermo Fisher Scientific customer support organization as your first point of contact regarding any data system and instrument control enquiries.

If your question or problem is related directly to your Agilent instrument, please contact your local Agilent Sales & Support organization for assistance.

In any communication with the Thermo Fisher Scientific or Agilent Technologies support teams regarding a problem, please clearly state the following:

- Your name, address, e-mail address and telephone number.
- Your Chromeleon version number together with installed Chromeleon updates.
- Your instrument driver information is listed in the Agilent Software Verification Tool report. Please run this tool by navigating to Start > Agilent Technologies > Software Verification Tool from your Windows operating system.
- Your instrument information can be found in Chromeleon 7 by accessing the Instrument Status dashboard and clicking i.
- A description of the problem including any errors that were displayed in the Instrument Audit Trail, what you were trying to do when the problem occurred and the frequency of the problem.

Major and Minor Method Changes

In previous versions of the Agilent Drivers for Thermo Chromeleon 7 so-called “soft configuration” parameters, which are changeable in the method editor, were reported as “minor incompatibilities” with the existing GC configuration. This prevented these methods from being used without first resolving the method (changing the soft configuration parameters) or updating the existing GC configuration.

Starting with version 2.3 of the Agilent Drivers for Thermo Chromeleon 7 those incompatibilities will no longer need to be resolved and thus can be used without requiring any changes.

This change includes the following settings:

- Column changes
  - Presence or absence
  - Type change (even if same dimensions)
  - Connections
  - Dimensions
  - Calibration
- ALS
  - Syringe Size
  - Nanoliter Adapter presence
  - Solvent Mode
- Gas types
  - Gas sources (inlets, EPC modules)
  - Detector gases
- Any valve change (presence, type, configuration)

By contrast, anything that the GC can determine independently of external software is considered a major inconsistency and will still require (manual) resolution. These settings are read-only and can only be changed by physically altering the GC.

- ALS
  - Different tower or tray model
  - Removal of tower or tray
- Different (oven) cryo type
- Valve Box presence
- Helium Conservation Module presence
- Gas Source (inlet, EPC module) or Detector module presence
- Aux Heater presence
- Different module type (inlet, detector)

NOTE On GC systems configured for dual simultaneous injections the minor changes will only be updated for the instrument which was created first during configuration. To ensure all changes are correctly propagated the instrument should be reconfigured even after minor changes. Systems which do not use dual simultaneous injection mode do not need to be reconfigured in such cases.

Known Issues

The below table lists known issues for this release of the Agilent Drivers. For the full lists of issues refer to the SSB's for the used components. Information related to SSB is also available on www.agilent.com.

ADC:

https://agilent.com/cs/library/support/Patches/SSBs/SSB-for-Agilent-Drivers-for-Chromeleon-7.html

ICF:
https://www.agilent.com/cs/library/support/Patches/SSBs/Agilent_Instrument_Control_Framework_(ICF).html

LC Drivers:

https://www.agilent.com/cs/library/support/Patches/SSBs/LC_RC_Net.html

ELSD Drivers:

https://www.agilent.com/cs/library/support/Patches/SSBs/PL29ELSD.html

GC Drivers:

https://www.agilent.com/cs/library/support/Patches/SSBs/Agilent_GC_Drivers_Software.html

HS - ICF Drivers:

https://www.agilent.com/cs/library/support/Patches/SSBs/ICF-Headspace.html

Table 2 Known Issues

Key	Summary	Workaround
1106249	In rare cases a GC/HS sequence may abort with the message "System not ready on vial X" where X is a vial number.	Reschedule the aborted injection.
1086227	With LC Drivers 3.6 new control functions for missing vial options were implemented. The function "Abort Current Run" aborts the whole sequence instead of skipping/aborting the current run.	Use the "Ignore missing vessel" function instead.
956217	A headspace sampler method does not include the run time information. Therefore, the ready check of an instrument method for an instrument consisting only a headspace sampler will fail.	Use an instrument consisting of a GC and a headspace sampler.
941803	The FLD spectral data is stored as a 3DFIELD instead of FLField. Hence, Chromeleon Studio shows the spectral data in the UV-Vis Spectra plot and the dedicated Fluoresence Spectra plot is not populated with the data.	Use the UV-Vis Spectra plot
777461	When a sequence using the headspace sampler is edited while the last line of the sequence is already locked the sequence will never reach the finished state.	Avoid editing sequences using the headspace sampler when the last line is already locked.
726410	When an injector program uses the function "Eject" and "Seat" as destination, then the method check will fail with an error informing on missing needle offset.	Edit the instrument method script to include the missing offset entry.
728191	Two empty folders remain after uninstalling the software verification tool.	Delete the folders manually.

Unsupported CE Uses Cases and Limitations

- Coupling the CE with MS instruments is not supported
- LIF and CCD detectors are not supported

Known Issues

- User vials and the capillary catalog are only available in Agilent CDS and therefore not available in Chromeleon.
- Chromeleon always requires an injection volume in the injection list. The CE instrument does not use an injection volume. Enter any value for the sequence to be valid.

Resolved Issues

The below table is a summary of issues resolved in this release of the driver.

Table 3 Resolved Issues

Key	Description
1050345	When recording 3D, i.e., spectra, on an HDR-DAD cluster system the contour plot is unavailable. Instead, the data is plotted as single UV spectra.
237931	ValidateSequence succeeds even though blank runs are in sequence
263510	Sequences with extremely many HSS events my crash the CDS.
542494	A warning may be logged in the audit trail when running long sequences or sequences with many repeated injections (~ 80 injections in one sequence). The text of the warning is "Client response for 'Get Status Xml' could not be returned because limit of 1MB is exceeded".
614434	When using the Thermo Fisher Remote Inject driver to enable manual injections the maximum injection volume is restricted to 2000.0µl. This maximum is independent of the actual sample loop volume.
679911	When using a low resolution, e.g., 1280x800 px, and opening the method translator Chromeleon may become unresponsive.
695456	Sequences using GC methods created before ADC 2.3 may abort with message "Signal <number> not available, where <number> is the number of the unavailable signal. The cause is a diagnostic signal selection which is not supported in ADC releases > 2.3.
710731	Upon deletion of a ramp in the oven program the method save button may not become active.
741992	Entering an incorrect IP address during HS configuration results in an exception.
941085	The oxidizer flow range of SCD detectors has incorrect limits.
985026	The execution of a sequence may get stuck in cases where a third-party sampler is used in place of an Agilent sampler. At the end of an analysis the sequence gets stuck with message "The GC failed to start. Reason: StartRun() was called when already in a run." or "The GC run was stopped at the GC".

Supported Agilent Modules and Firmware

NOTE The Agilent LC drivers are backwards compatible. Modules with identical Product Numbers are supported, even if the tables below list only the name of the current model version. 1100 Series models are supported on a best effort basis only. For more details, please refer to the driver Release Notes of the driver revision you are using.

NOTE The Agilent Drivers for Chromeleon 3.1 do not support fraction collection modules although these modules are selectable during instrument configuration. These modules are untested and may show unexpected behavior. Their use is discouraged until official support is implemented.

NOTE The tables in this chapter reflect the support status at the time of initial driver release. Since release of the Agilent Drivers for Chromeleon 3.1 Agilent released the Infinity III Series of LC modules. On the equivalency of Infinity III Series modules see the addendum at the back of this document.

Table 4 Pumps

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G1310A	1200 Isocratic Pump	A.06.10	1.1
G1310B	1260 Infinity Isocratic Pump	A.06.32	1.1
G1311A	1200 Series Quaternary Pump*	A.06.10	1.1
G1311B	1260 Infinity Quaternary Pump*	A.06.10	1.1
G1311C	1260 Infinity Quaternary Pump VL*	A.06.32	1.1
G1312A	1200 Series Binary Pump*	A.06.10	1.1
G1312B	1260 Infinity Binary Pump*	A.06.10	1.1
G1312C	1260 Infinity Binary Pump VL*	A.06.32	1.1
G1361A	1260 Infinity Preparative Pump	A.06.50	1.1
G1376A	1260 Infinity Capillary Pump	A.06.10	1.1
G2226A	1260 Infinity Nanoflow Pump	A.06.10	1.1
G4204A	1290 Infinity Quaternary Pump*	B.07.38	1.1
G4220A	1290 Infinity Binary Pump*	B.07.38	1.1
G4220B	1290 Infinity Binary Pump VL*	B.07.38	1.1
G4302A	1260 Infinity SFC Binary Pump*	A.06.10	1.1
G4782A	1260 Infinity II SFC Binary Pump*	D.07.38	1.2
G5611A	1260 Infinity Bio-inert Quaternary Pump*	A.06.10	1.1
G5654A	1260 Infinity II Bio-Inert Quaternary Pump*	D.07.38	1.1
G7104A	1290 Infinity II Flexible Pump*	B.07.38	1.1
G7104C	1290 Infinity II Flexible Pump*	B.07.38	1.2
G7110B	1260 Infinity II Isocratic Pump	D.07.38	1.1
G7111A	1260 Infinity II Quaternary Pump VL*	D.07.38	1.1
G7111B	1260 Infinity II Quaternary Pump VL*	D.07.38	1.1
G7112B	1260 Infinity II Binary Pump*	D.07.38	1.1
G7120A	1290 Infinity II High Speed Pump*	B.07.38	1.1
G7131A	1290 Infinity Bio Flexible Pump	B.07.38	3.0
G7131C	1260 Infinity Bio Flexible Pump	B.07.38	3.0

Table 4 Pumps

G7132A	1290 Infinity Bio High Speed Pump	B.07.38	3.0
G7161A	1260 Infinity II Preparative Binary Pump	D.07.20	1.2
G7161B	1290 Infinity II Preparative Binary Pump	D.07.27	1.2
Cluster			
N/A	Pumps marked with * can create a pump valve cluster with up to two valves of type G1160A and/or G1170A with 5067-4159 or 5067-4147	See modules	1.1
N/A	1260 Infinity Preparative Pump Cluster with up to four G1361A	A.06.50	1.1

Table 5 Sampling Systems

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G1328A/B	Manual Injector	N/A	2.5
G1330A/B	Thermostat for Agilent Sampler	N/A	1.1.
G1313A	1100 Series Autosampler	A.06.10	1.1
G1329A	1200 Series Standard Autosampler	A.06.10	1.1
G1329B	1260 Infinity Standard Autosampler	A.06.10	1.1
G1367A	1100 Series Well-plate Autosampler	A.06.31	1.1
G1367B	1200 Series High Performance Autosampler	A.06.31	1.1
G1367C	1200 Series High Performance Autosampler SL	A.06.31	1.1
G1367D	1200 Series High Performance Autosampler SL+	A.06.31	1.1
G1367E	1260 Infinity High Performance Autosampler	A.06.32	1.1
G1377A	1260 Infinity High Performance Micro Autosampler	A.06.12	1.1
G1389A	1100 Series Micro Thermostated Autosampler	A.06.10	1.1
G2258A	1260 Infinity Dual-Loop Autosampler	A.06.50	1.1
G2260A	1260 Infinity Preparative Autosampler (High flow)	A.06.50	1.1
G4226A	1290 Infinity Autosampler	A.06.31	1.1
G4303A	1260 Infinity SFC Standard Autosampler	A.06.54	1.1
G4767A	1260 Infinity II SFC Multisampler	D.07.39	1.2
G5667A	1260 Infinity Bio-inert High Performance Autosampler	A.06.32	1.1
G5668A	1260 Infinity II Bio-inert Multisampler	D.07.39	1.1
G7129A	1260 Infinity II Vialsampler	D.07.38	1.1
G7129B	1290 Infinity II Vialsampler	D.07.38	1.1
G7129C	1260 Infinity II Vialsampler	D.07.38	1.2
G7137A	1290 Infinity II Bio Multisampler	D.07.39	3.0
G7157A	1260 Infinity II Preparative Autosampler	D.07.38	1.2
G7167A	1260 Infinity II Multisampler	D.07.39	1.1
G7167B	1290 Infinity II Multisampler	D.07.39	1.1
G7167C	1260 Infinity II Hybrid Multisampler	D.07.39	3.1

Supported Agilent Modules and Firmware

Table 6 Detectors

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G1314A	1100 Series Variable Wavelength Detector	A.06.10	1.1
G1314B	1260 Infinity Variable Wavelength Detector VL	A.06.10	1.1
G1314C	1260 Infinity Variable Wavelength Detector VL+	A.06.10	1.1
G1314D	1200 Series Variable Wavelength Detector	B.06.32	1.1
G1314E	1290 Infinity Variable Wavelength Detector	B.06.32	1.1
G1314F	1260 Infinity Variable Wavelength Detector	B.06.32	1.1
G1315A	1100 Series Diode Array Detector	A.06.10	1.1
G1315B	1200 Series Diode Array Detector	A.06.10	1.1
G1315C	1260 Infinity Diode Array Detector VL+	B.06.30	1.1
G1315D	1260 Infinity Diode Array Detector VL	B.06.30	1.1
G1365A	1100 Series Multiple Wavelength Detector	A.06.10	1.1
G1365B	1200 Series Multiple Wavelength Detector	A.06.10	1.1
G1365C	1260 Infinity Multiple Wavelength Detector	B.06.30	1.1
G1365D	1260 Infinity Multiple Wavelength Detector VL	B.06.30	1.1
G1321A	1200 Series Fluorescence Detector (FLD)	A.06.10	1.1
G1321B	1260 Infinity Fluorescence Detector Spectra	A.06.36	1.1
G1321C	1260 Infinity Fluorescence Detector	A.06.54	1.1
G1362A	1260 Infinity Refractive Index Detector	A.06.10	1.1
G4212A	1290 Infinity Diode Array Detector	B.06.30	1.1
G4212B	1260 Infinity Diode Array Detector	B.06.30	1.1
G7114A	1260 Infinity II Variable Wavelength Detector	D.07.01	1.1
G7114B	1290 Infinity II Variable Wavelength Detector	D.06.70	1.1
G7115A	1260 Infinity II Diode Array Detector WR	D.07.01	1.1
G7117A	1290 Infinity II Diode Array Detector FS	D.06.70	1.1
G7117B	1290 Infinity II Diode Array Detector	D.06.70	1.1
G7117C	1260 Infinity II Diode Array Detector HS	D.07.01	1.1
G7121A	1260 Infinity II Fluorescence Detector	D.07.01	1.1
G7121B	1260 Infinity II Fluorescence Detector Spectra	D.07.01	1.1
G7165A	1260 Infinity II Multi Wavelength Detector	D.07.01	1.1
G4218A	1260 Infinity Evaporative Light Scattering Detector	N/A	Not supported
G4260A	380-ELSD	25.00	1.1
G4261A	385-ELSD	25.00	1.1
G4260B	1260 Infinity II Evaporative Light Scattering Detector	32.06	1.1
G4261B	1290 Infinity Evaporative Light Scattering Detector	32.06	1.1
G7102A	1290 Infinity II Evaporative Light Scattering Detector	32.06	1.1
G7162A	1260 Infinity II Refractive Index Detector	D.06.76	1.1
G7162B	1290 Infinity II Refractive Index Detector	D.06.76	1.1
Cluster			
HDR-DAD	2 × G4212A or 2 × G4212B or a combination of 1x G4212A and 1x G4212B	B.06.57	1.1

Table 6 Detectors

HDR-DAD	2 × G7117A or 2 × G7117B or a combination of 1xG7117A and 1xG7117B	B.06.70	1.1

Table 7 Column Compartments

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G1316A	1260 Infinity Thermostated Column Compartment	A.06.10	1.1
G1316B	1200 Series Thermostated Column Compartment SL	A.06.10	1.1
G1316C	1200 Series Thermostated Column Compartment	A.06.14	1.1
G7116A	1260 Infinity II Multicolumn Thermostat	C.07.32 (B.07.35 / D.07.35)	1.1
G7116B	1290 Infinity II Multicolumn Thermostat	C.07.32 (B.07.35 / D.07.35)	1.1
G7130A	Integrated Column Compartment ICC (option to G7129A/B)	D.06.75	1.1
Cluster			
N/A	Cluster with up to three G1316C with integrated 8-pos/9-port valves (product G4230A/B) or a minimum of two G13161C TCCs; the third TCC can be a G1316A, B or C.	See module	1.1
	The Valve Thermostat Cluster is a combination of G7116B, G1170A and G1316C as valve or column hosts and G1316A/B and G7130A as column hosts.		

Table 8 Valve Drives and Valves

Module No.	Module Name or Min. Module Firmware	Min. Host Module Firmware	Min. Version of Agilent Drivers
G1157A	1200 Series 2-Position/10-Port Valve	A.06.02	1.1
G1158A	1200 Series 2-Position/6-Port Valve	A.06.02	1.1
G1158B	1200 Series 2-Position/6-Port Valve (600bar)	A.06.02	1.1
G1159A	1200 Series 6-Position Selection Valve	A.06.02	1.1
G1160A	1100 Series Multiple Purpose Switching Valve (12-Position/13-Port)	A.06.02	1.1
G1162A	1200 Series 2-Position/6-Port Micro Valve	A.06.02	1.1
G1163A	1200 Series 2-Position/10-Port Micro Valve	A.06.02	1.1
G1170A	1290 Infinity Valve Drive (Host required with firmware B.06.40/D.06.060)	C.07.30	1.1
G9322A	Agilent 1260 Infinity II Clustering Valve	N/A	

Only the above listed valves require a firmware. All other valve heads are supported.

Table 9 Other Modules

Module No.	Module Name or Min. Module Firmware	Min. Host Module Firmware	Min. Version of Agilent Drivers
G1390A	1100 Series Universal Interface Box (UIB)	A.06.02	1.1
G1390B	1200 Infinity Series Universal Interface Box II (Host required with B.06.53/D.06.53 firmware)	C.06.50	1.1

Table 9 Other Modules

G4227A	1290 Infinity Flexible Cube (Host required with B.06.52/D.06.52 firmware)	C.06.50	1.1
G1364A	1100 Series Automatic Fraction Collector	N/A	Not supported
G1364B	1260 Infinity Fraction Collector (preparative-scale)	N/A	Not supported
G1364C	1260 Infinity Fraction Collector (analytical-scale)	N/A	Not supported
G1364D	1100 Series Micro Fraction Collector	N/A	Not supported
G5664A	1260 Infinity Bio-inert fraction collector AS	N/A	Not supported
G4240A	1260 Infinity Chip Cube MS Interface	N/A	Not supported
G4301A	1260 Infinity Analytical SFC System	A.03.09	1.1
G7170B	1290 Infinity II MS Flow Modulator (Host required with B.06.20/D.06.20 firmware)	C.06.20	1.2
Cluster			
N/A	Any combination of G1364A/B/C or G566A plus a fourth G1364A/B/C or G5664A for recovery can be clustered. Multiple single Fraction Collectors are not supported	See module	Not supported

Table 10 Combined LC Systems

Module No.	Module Name or Min. Module Firmware	Min. Firmware	Min. Version of Agilent Drivers
G4286A	1120 LC Isocratic	B.06.21	1.1
G4286B	1220 LC System Isocratic, Man. Inj., VWD, 600 bar	N/A	Not supported
G4287A	1120 LC Isocratic with Oven and ALS	B.06.50	1.1
G4287B	1220 LC Isocratic, ALS, TCC, VWD, 600 bar	B.06.50	1.1
G4288A	1120 LC Gradient	B.06.21	1.1
G4288B	1220 LC Gradient, Man. Inj., VWD, 600 bar	N/A	Not supported
G4288C	1220 LC System VL Gradient, Man. Inj. VWD, 400 bar	N/A	Not supported
G4289A	1120 LC Gradient with Oven	B.06.50	1.1
G4289B	1220 LC Gradient, ALS, TCC, VWD, 600 bar	B.06.50	1.1
G4289C	1220 LC System VL Gradient, Man. Inj. VWD, 400 bar	N/A	Not supported
G4290A	1120 LC Gradient with oven and ALS	B.06.50	1.1
G4290B	1220 LC Gradient, ALS, Man. Inj., TCC, VWD, 600 bar	B.06.50	1.1
G4290C	1220 LC System VL Gradient, ALS, TCC, VWD, 400 bar	B.06.50	1.1
G4291B	1220 LC Isocratic, Man. Inj., TCC, VWD, 600 bar	N/A	Not supported
G4292B	1220 LC Isocratic, ALS, VWD, 600 bar	B.06.32	1.1
G4293B	1220 LC Gradient, ALS, VWD, 600 bar	B.06.32	1.1
G4293C	1220 LC System VL Gradient, ALS, VWD, 400 bar	B.06.50	1.1
G4294B	1220 LC Gradient, ALS, TCC, DAD, 600 bar	B.06.32	1.1

Table 11 Capillary Electrophoresis

Module No.	Module Name or Min. Module Firmware	Min. Firmware	Min. Version of Agilent Drivers
G7150A	G7100 Capillary Electrophoresis II	B.06.25	3.0
G7151A	Diode Array Detector for CE	B.06.25	3.0

Table 12 Driver Features and Special Solutions

Feature	Feature Name	Min. Firmware	Min. Version of Agilent Drivers
Additional Driver Features	External Contacts Board G1351A	N/A	1.1
Additional Driver Features	Blend Assist	N/A	Not supported
Additional Driver Features	ISET G2197AA I	N/A	1.1
Additional Driver Features	ISET G2197AA II	N/A	1.1
Additional Driver Features	ISET G2197AA III	N/A	1.1
Additional Driver Features	ISET G2197AA IV	N/A	1.1
Special Solutions	Buffer Advisor (G5617AA)	N/A	1.1 (Import buffer files)
Special Solutions	2DLC (G2198AA)	N/A	Not supported
Special Solutions	Method Scouting Wizard (G2196AA)	N/A	Not supported
Special Solutions	Automated Purification Software (M8368/M8369AA)	N/A	Not supported

Table 13 Supported Gas Chromatographs, Inlets, and Detectors

	Module Type	Inlets	Detectors
Intuvo 9000	G3950A	S/S, MMI, HCM	TCD, FID, NPD, FPD ECD,
			µECD, NCD, SCD
	G3952A	S/S, MMI, HCM	TCD, FID, NPD, FPD ECD,
			µECD, NCD, SCD
	G3953A	S/S, MMI, HCM	TCD, FID, NPD, FPD ECD,
			µECD, NCD, SCD
8890	G3540A	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3542A	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3543A	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3545A	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
8860	G2790A	S/S, P/P, COC, PCI	TCD, FID, NPD, µECD, FPD,
			FPD+
8850	G3940A	S/S, P/P, COC	FID, TCD
	G3941A	S/S, P/P, COC	FID, TCD
7890B & 7890A+	G3440B	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3442B	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3443B	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD
	G3445B	S/S, P/P, COC, PTV, HCM	HSM, TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB, NCD, SCD

7890A	G3440A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB
	G3442A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB
	G3443A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB
	G3445A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV, LTM II	µECD, Dual W FPD, AIB
7820	G4350A	S/S, P/P, COC, PCI	TCD, FID, NPD, µECD, FPD,
			FPD+
6890A	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
6890Plus	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
6890N	G1530N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
	G1540N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, LTM I	µECD, Dual W FPD, AIB
6850	G2630A/B	S/S, P/P, COC, PTV	TCD, FID, NPD, FPD ECD, AIB

Table 14 Gas Chromatographs and Hardware Required Firmware and Agilent Drivers

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G1530N	6890N	N.06.07	2.1
G1540N	6890N	N.06.07	2.1
G1530A	6890A	A.03.8	2.1
G1540A	6890Plus	A.03.8	2.1
G2630A	6850A (Serial Number >= US10243001)	A.06.02	2.1
G2630A	6850A (Serial Number <= US00003200)	A.03.07	2.1
G2790A	8860 GC	1.0	2.1
G3540	8890 GC	1.0	2.1
G3650A	Intuvo 9000 GC	A.01.04	2.0
G3952A	Intuvo 9000 GC	A.01.04	2.0
G3953A	Intuvo 9000 GC	A.01.04	2.0
G3440B	7890B GC	B.02.03.2	2.0
G3445B	7890B GC	B.02.03.2	2.0
G3440A	7890A GC	A.01.16	2.0
G3445A	7890A GC	A.01.16	2.0
G4350A	7820A GC	A.01.15.012	2.0
G4567A	7650 GC ALS Injector	A.10.02	2.0

Table 14 Gas Chromatographs and Hardware Required Firmware and Agilent Drivers

G4513A	7693 GC ALS Injector	A.10.08	2.0
G4514A	7693 GC ALS Tray	A.10.16	2.0
G4515A	7693 GC ALS BCR/Mixer	A.10.04	2.0
G4516A	7693 GC ALS External Controller	A.01.06	2.0
G4517A	7693 GC ALS Injector 6890Plus ALS card upgrade	A.01.06	2.0
G4521A	7693 GC ALS LVI Syringe Carriage	N/A	2.0
G4522A	7693 GC ALS Cooling Accessory	N/A	2.0
G4520A	7693 GC ALS Tray with BCR Mixer	A.10.16	2.0
G2913A	7683B GC ALS Injector	A.11.03	2.0
G2614A	7683B GC ALS Tray	A.02.01	2.0
G2615A	7683B GC ALS BCR/Mixer	N/A	2.0
G2613A	7683A GC ALS Injector	A.10.07	2.0
G2614A	7683A GC ALS Tray	A.02.01	2.0
G2615A	7683A GC ALS BCR/Mixer	N/A	2.0

Table 15 Supported Headspace Hardware

	Module Type	Description	FW Revision	Min. Version of Agilent Drivers
7697A	G4557A	7697A Headspace Sampler, 111 vial	A.01.08.2	2.1
	G4556A	7697A Headspace Sampler, 12 vial	A.01.08.2	2.1
8697	G4511A	G4511A Headspace Sampler	1.1.0.34	2.4
8697 XL	G4512A	8697Headspace Sampler, 120vial	1.4	3.1

Table 16 GC Accessory valves

Module No.	Module Name	Min. Firmware	Min. Version of Agilent Drivers
G3539A	High Pressure Liquid Injection Valve	N/A	3.0
G3535A	GC Gasifier	N/A	3.0
G3541	GC Sample Selector	1.06	3.1

Changelog

Agilent Drivers for Chromeleon 7 Revision 3.0 - What's new?

.NET Upgrade and supported Chromeleon versions

Agilent Drivers for Chromeleon 3.0 is built using Microsoft's .NET technology. This driver release is built with .NET 4.7.2 ensuring the driver is compatible with future Chromeleon releases. Agilent Drivers for Chromeleon 3.0 is therefore supported on Chromeleon 7.2.10 MUf and Chromeleon 7.3.1 including future maintenance updates and Chromeleon main branch releases. Agilent Drivers for Chromeleon 3.0 is not supported on any earlier Chromeleon version. User wishing to use the driver on these Chromeleon version may opt to use release 2.5.

GC Barcode reader support

The barcode reader available for GC instruments are now supported. The feature enables users to verify barcodes on a per sample basis and take a predefined action in case of a barcode mismatch. The mismatch action is defined on a per sequence basis. Using this feature requires two custom variables defined in the sequence. One defining the mismatch action, the other holds the expected barcodes against which the check is performed. Detailed instructions are available in the GC user guide provided with the driver.

7100 CE support

The 7100 CE system is now supported. The integration provides basic script commands only and therefore no ePanel is available. Support includes creating and editing methods, running sequences, replenishment, conditioning, direct actions, CEC, and CE/p mode. The CE can be combined with Agilent LC pumps, but coupling with MS instruments, fraction collection, LIF detectors, and CCD detectors are not supported. User vials and the capillary catalog are only available in Agilent CDS and therefore not available in Chromeleon.

Bio LC module support

In addition to the already supported modules, the following bio-LC modules are now supported:

- G7131A 1290 Infinity II Bio Flexible Pump
- G7131C 1260 Infinity II Bio Flexible Pump
- G7132A 1290 Infinity II Bio High Speed Pump
- G7137A 1290 Infinity II Bio Multisampler

Improved reporting capabilities for GC and HS instruments

GC and HS instrument method setpoints can now be inserted in Chromeleon report templates using the Report Designer. The information is available in the Audit Trail section of the Report Formula Editor once a run has been started. Available are the values of all information that can be edited in the instrument method UI.

Negative Runtimes

Some drivers, like the Ramona Star driver 1.0, may require a negative runtime in the method script to prepare the system. In earlier releases of the driver, the method check would fail when the script contained negative run time values in the script. Starting with Agilent Drivers for Chromeleon 3.0 it is now possible to use negative run times for third party drivers.

ELSD 38XX deprecation information

The G4260A and G4261A ELSD modules are now out of support and will not receive any updates or defect fixes. The driver for these models is subject to removal in a future driver release. Consider updating to G7102A for future driver releases.

Agilent Drivers for Chromeleon 2.5 - What's new?

Updated GC and HS Drivers

This release of the Agilent Drivers for Chromeleon includes GC Driver version 3.6 and HS driver version 3.1. The update includes defect fixes and is a requirement for the GC Feature Selection functionality.

GC Feature Selection

This feature allows users to enable or disable specific features in the 8890 GC firmware and in the 9000 GC firmware. The GC Feature Selection requires firmware version 2.4 or later. The features can be selected in a new tab in the instrument configuration.

Updated Software Verification Tool

This release of the Agilent Drivers for Chromeleon includes the Software Verification Tool version B.01.01.013. The update is a requirement for the use of CLR 4 and does not introduce any changes to the software verification process.

Updated ELSD driver

This release of the Agilent Drivers for Chromeleon includes the ELSD driver 1.8. This version of the ELSD driver for the 1290 and 1260 models requires revision 32.06 or later of the ELSD firmware. If an older version of the ELSD firmware is encountered the driver will display the message; “Error 101 Unsupported ELSD firmware”. No new features have been added to this release. No additional new modules are supported with this release.

Agilent Drivers for Chromeleon support Microsoft .NET CLR 4

Chromeleon 7 is moving to obsolete .NET CLR 2 in the future. Starting with release 2.5 the driver now supports .NET CLR 4, thus ensuring compatibility with future versions of Chromeleon 7. This change does not break backward compatibility. Agilent Drivers for Chromeleon 2.5 still uses CLR 2 when installed on a PC with a Chromeleon version prior to 7.3.1. Starting with Chromeleon 7.3.1 the driver will use CLR 4. The Chromeleon installer automatically install .NET 4.8, therefore no further action is required to use driver version 2.5.

Microabsorbance Units

Signals of unit mAU can now be converted to µAU. The new functionality is available for all 2D signals, i.e., chromatograms. 3D data is not converted. Select the "Convert mAU to µAU" checkbox during instrument configuration to enable the conversion. This will convert the signals to µAU automatically and update the configuration report accordingly. See the LC user guide for details.

Mixed instrument support

The Agilent Drivers for Thermo Chromeleon have been tested in conjunction with the Thermo Fisher Corona Veo Charged Aerosol detector and the WPS-3000 sampler. Other combinations of third-party modules are not tested and therefore not supported. See the chapter Compatibility for detailed information.

Manual Injection

The manual injection workflow for GC has been improved based on user feedback-.

The manual injection valves for LC are now supported.

Modular Installation Qualification

Chromeleon 7.3.1 introduces a new feature named modular IQ. This feature allows third party drivers like the Agilent Drives for Chromeleon to hook into the Chromeleon IQ. Agilent Drivers for Chromeleon 2.5 uses this feature thereby providing an enhanced installation qualification. The Agilent Software Verification Tool continues to be included with the driver for compatibility purposes.

Windows 11 Support

This release of the Agilent Drivers for Thermo Chromeleon introduces support Windows 11.

Agilent Drivers for Chromeleon 2.4 - What's new?

8697 Headspace Sampler Support

This release of the Agilent Drivers for Thermo Chromeleon adds support for the 8697 headspace sampler.

Dynamic Licensing

The Agilent Drivers for Chromeleon will now request a class 3 license for LC instruments and a class 2 license for GC instruments. This is, however, dependent on the version of Chromeleon in use. Any Chromeleon version up to and including 7.2.10 MUa and 7.3 will request a class 3 license for a GC where normally only a class 2 would be required. Versions released after these will request the class 2 license as expected. Please contact your Thermo Scientific representative for the correct license if using those versions.

GCs configured in dual sequence mode will request only one license.

Updated GC and HS Drivers

This release of the Agilent Drivers for Chromeleon include GC Driver version 3.5 SR1 and HS driver version 3.5 SR1.

Agilent Drivers for Chromeleon 2.3 - What's new?

Dual Simultaneous Injection

This release of the Agilent Drivers for Thermo Chromeleon introduces the Dual Simultaneous Injection feature for GCs. It is now possible to inject two samples simultaneously on the front and back injector thereby improving GC utilization.

The feature is available for 6890, 7890, and 8890 GC models.

Simplified GC online method access

The GC online method is now accessible via one click on the status dashboard thereby reducing the number of steps required to open the online method user interface.

Adding Sequence Lines to running sequences

It is now possible to add sequence lines to a sequence whose last run has already started.

Dynamic Licensing

The Agilent Drivers for Chromeleon will now request a class 3 license for LC instruments and a class 2 license for GC instruments. This is, however, dependent on the version of Chromeleon in use. Any Chromeleon version up to and including 7.2.10 MUa and 7.3 will request a class 3 license for a GC where normally only a class 2 would be required. Versions released after these will request the class 2 license as expected. Please contact your Thermo Scientific representative for the correct license if using those versions.

GCs configured in dual sequence mode will request only one license.

Column handling

Changing the installed columns in the GC online method no longer triggers a method resolution. Previously a change in the column configuration required a manual method resolution. Now the same method can be used without manual intervention.

LC and GC User Guides

The Agilent Drivers for Thermo Chromeleon now includes a user guide for LC and a separate user guide for GC.

Extended configuration audit trail

The configuration audit trail now logs all information available in the configuration report. Previously only the ICF information was available

Custom name handling

Customized names set during configuration, e.g., signal names, now are retained during reconfiguration. This eliminates the need to re-enter the custom names when a change in the configuration is made.

Defect fixes

Resolved issues are listed in this document in the chapter Resolved Issues.

Agilent Drivers for Chromeleon 2.2 - What's new?

- Multiple GC injectors on one instrument are now supported
- Manual injection for GC is now supported
- Manual method resolution for GC methods is now available
- Use of more than one GC simultaneously now possible

Agilent Drivers for Chromeleon 2.1 - What's new?

- New GC instrumentation
  - 8890 GC

  - 8860 GC
  - 6890 GC
  - 6850 GC
- New Agilent GC-HS driver 3.0
- Defect fix

Agilent Drivers for Chromeleon 2.0 – What's new?

- New GC instrumentation
  - Intuvo 9000 GC
  - 7890A GC
  - 7890B GC
  - 7820A GC
  - 7697A Headspace Sampler
- Method Migration
- Methods from ICF or previous Agilent Drivers version can be migrated to the current version
- Support for Sample Thermostat G7167-60100 for Multisampler and Vialsampler

Agilent Drivers for Chromeleon 1.2 – What´s new?

- New LC instrumentation
  - G4782A 1260 Infinity II SFC Binary Pump
  - G4767A 1260 Infinity II SFC Multisampler
  - G7161A 1260 Infinity II Preparative Binary Pump
  - G7161B 1290 Infinity II Preparative Binary Pump
  - G7170B 1290 Infinity II MS Flow Modulator
  - G7129C 1260 Infinity II Vialsampler
  - G7104C 1260 Infinity II Flexible Pump
  - G4260B 1260 Infinity II Evaporative Light Scattering Detector with LAN connection
  - Prep 6-column selector valve head 5067-4267
  - G4232E (5067-4283) 2pos/10port Valve head 800 bar
  - G4234D (5067-4284) 6 column selector 800 bar with different port layout
  - G4237D (5067-4279) 4-column selector 800 bar
  - G4231D (5067-4282) 2pos/6port Valve Head 800 bar
  - new characterizations for ISET 4.2 (support for G7104C)
  - Shutdown Method
  - Enables the user to shut down the pump and detector lamp after a run.
  - Direct Actions
  - Enables the user (expert permissions) to execute direct actions via the command tree or to place them on an ePanel.
  - Improvements in timetable handling

- Invalid timetable script changes are notified in more detail at method check.

Agilent Drivers for Chromeleon 1.1 – Features

The Agilent Drivers for Chromeleon 7 supports the following features:

- Support for the following Agilent LC Systems and Modules:
- 1220/1260/1290 Agilent Infinity II LC
- 1220/1260/1290 Agilent Infinity LC
- 1100/1200 Series and 1120
- Chromeleon specific user experience to control Agilent LC equipment, as these drivers offer a new look and feel similar to the previous look and feel of the Chromeleon Native Driver for Agilent LC instrumentation
- ePanels for each module class
- In addition to the Home ePanel offering the LC Instrument Control Dashboard module ePanels are now available. There is one ePanel available for each module class, which can be customized to fit the configuration in use.
- Independent module access in instrument method tree
- The instrument method offers all modules as a separate unit enabling direct access and allowing method creation via the guided method wizard.
- Chromeleon specific command handling
- The Command Tree offers Agilent method parameters.
- The Chromeleon method script includes the Agilent instrument method parameters now in scripted format.
- Timetable parameters listed in method script´s “Run stage” in order of their execution.
- Enabling full feature set for custom variables handling in method script.
- Elimination of duplicate entries
- One entry for overall run time/stop time.
- Injection volume defined by sequence only (manual overwrite with script possible).
- Alignment of status information
- Agilent LC Status Dashboard runtime / Chromeleon runtime information
- Agilent LC Status Dashboard colored status / Chromeleon colored status information
- Audit trail captures changes falling within and outside a run on module level
- Data Audit Trail for Instrument Method
- Using the enabled versioning and data audit trails is now possible to perform a method comparison of different versions via the scripted method and no longer in an ICF specific view.
- Enabling development of shutdown method to switch off lamps or pumps at end of the sequence
- Sequence handling
- Acts as master for injection volume (manual overwrite via method script possible).
- Improved overlapped injection
- Performance improvements
- The performance of the graphical user interface components, e.g. close/open method windows has been improved.
- Partially available Method Migration

Changelog

- User guidance migrating previously created methods using Instrument Control Framework (ICF) is given, the resulting method continues to work with the scripted method (minor manual interaction still required).
- No complete method migration possible due to the revised command naming structure. However, all incompatible commands are marked red and can easily be transferred manually.

The Agilent Drivers for Chromeleon 7 do not support the following features:

- Manual Injection
- Mixed LC systems (Agilent and Non-Agilent LC systems)
- Blend Assist
- This pump feature is offered by the LC driver, but it is not supported in this release.

For a full list of known limitations consult the user guide.

Appendix A

Table 17 Registry entries not listed by SVT report on a 32-bit system

Registry key	Location under HKEY_LOCAL_MACHINE\SOFTWARE
Ag7697WS	
GCPackage	Agilent Technologies\Instrument Control Framework
Installationdirectory	Agilent Technologies\Instrument Control Framework\GCPackage
Versionmajor	Agilent Technologies\Instrument Control Framework\GCPackage
Versionminor	Agilent Technologies\Instrument Control Framework\GCPackage

Table 18 Registry entries not listed by SVT report on a 64-bit system

Registry key	Location under HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\agilent
Ag7697WS	
GCPackage	Agilent Technologies\InstrumentControlFramework\GCpackage
Installationdirectory	Agilent Technologies\InstrumentControlFramework\GCpackage
Versionmajor	Agilent Technologies\InstrumentControlFramework\GCpackage
Versionminor	Agilent Technologies\InstrumentControlFramework\GCpackage

Table 19 Registry keys not reported in SVT report

Key not reported in SVT report	Registry folder below HKEY_LOCAL_MACHINE\SYSTEM\CURRENTCONTROLSET\SERVICES
EVENTMESSAGEFILE	EVENTLOG\APPLICATION\AGGC68XXDRV
EVENTMESSAGEFILE	EVENTLOG\APPLICATION\AGGC7890DRV
EVENTMESSAGEFILE	EVENTLOG\APPLICATION\AGGCDATASYSTEMADAPTER

Table 20 SVT reference files not reported by SVT report placed in driver installation folder

File not reported in SVT report	Installed under directory C:\Program Files (x86)\Agilent Technologies
IQTRefRapidControlIF.xml	IQTool\IQProducts\Agilent Rapid Control .NET
IQTRefICFMerge.xml	IQTool\IQProducts\Agilent Drivers for Thermo Chromeleon
GC_Drivers_RefFile.xml	Agilent Drivers for Thermo Chromeleon\Instrument Control Framework\IQTWizard\RefFiles
IQTRefELSDDrivers.xml	Agilent Drivers for Thermo Chromeleon\Instrument Control Framework\IQTWizard\RefFiles
IQTRefICFMerge.xml	Agilent Drivers for Thermo Chromeleon\Instrument Control Framework\IQTWizard\RefFiles
IQTRefLCDrivers.xml	Agilent Drivers for Thermo Chromeleon\Instrument Control Framework\IQTWizard\RefFiles
IQTRefRapidControlIF.xml	Agilent Rapid Control .NET
IQTRefRapidControlSampleContainerManager.xml	Agilent Rapid Control .NET

Appendix A

Table 21 SVT reference files not reported by SVT report placed in Chromeleon installation path

File not reported in SVT report	Installed under directory C:\PROGRAM FILES (X86)\THERMO\CHROMELEON\BIN
Agilent_Drivers_for_Thermo_Chromeleon.xml	DDK\V1\Drivers\AgilentTechnologies\RefFiles
IQTRefAgilentDriversforThermoChromeleon.xml	DDK\V1\Drivers\AgilentTechnologies\RefFiles

Addendum on Infinity III Series control in Chromeleon

The new Agilent 1260/1290 Infinity III LCs are designed to streamline the routine interaction through automation and system health indicators and significantly reduce the time and effort spent on operator training and troubleshooting. The 1260/1290 Infinity III LC systems have been commercially available since November 1, 2024 and, while product improvements have been incorporated, experiments currently run on 1260/1290 Infinity II LC systems can continue to be run on 1260/1290 Infinity III systems without disruption because the Product Number of the module have not changed. This means that instrument methods that currently run on 1260/1290 Infinity II systems can also be run on 1260/1290 Infinity III systems without changes provided the configuration (pump, column compartment, autosampler and detector) is the same. Infinity III modules ship with current firmware (B/D.07.40 at release). Firmware changes are documented and published on https://www.agilent.com/en-us/firmwareDownload?whid=69761 webpage.

See Table 22 for the list of modules in the 1260/1290 Infinity III portfolio.

Additional details related to system configuration, supported options/features per data system and additional considerations can be supplied by your local Agilent representative. As standard practice, we recommend also following the IQ/OQ/PQ approach when operating a 1260/1290 Infinity III LC system in compliant environments:

- Installation Qualification (IQ), includes documentation of product number, firmware and revisions.
- Operational Qualification (OQ), includes testing for operational and performance specifications in the user's environment.
- Performance Verification (PQ), should include "qualification type testing" but with a user-specific typical compound and method parameters that are representative of the methods the user(s) will use on a day-to-day basis.

It is common practice in the regulated industry that the end user has ultimate responsibility for validation of methods and systems. Therefore, Agilent cannot accept any legal responsibility for the statements or assumptions made, and explicitly specifies that the final decision lies with the user, what qualification and validation effort must be made or not.

Table 22 Modules in the 1260/1290 Infinity III portfolio

Product Number	Product Name Infinity II Series	Product Name Infinity III Series
G1170A	1290 Infinity Valve Drive	1290 Infinity III Valve Drive
G1328C	1260 Infinity II Manual Injector	1260 Infinity III Manual Injector
G1390B	1200 Infinity Universal Interface Box II	InfinityLab Universal Interface Box
G4260B	Agilent 1260 Infinity II ELSD	1260 Infinity III ELSD
G4301A	1260 Inf. II SFC Control Module	1260 Inf. III SFC Control Module
G4767A	1260 Infinity II SFC Multisampler	1260 Infinity III SFC Multisampler
G4782A	1260 Infinity II SFC Binary Pump	1260 Infinity III SFC Binary Pump
G5654A	1260 Infinity II Bio-inert Pump	1260 Infinity III Bio-inert Pump
G5668A	1260 Infinity II Bio-inert Multisampler	1260 Infinity III Bio-inert Multisampler
G7102A	1290 Infinity II ELSD	1290 Infinity III ELSD
G7104A	1290 Infinity II Flexible Pump	1290 Infinity III Flexible Pump
G7104C	1260 Infinity II Flexible Pump	1260 Infinity III Flexible Pump
G7110B	1260 Infinity II Isocratic Pump	1260 Infinity III Isocratic Pump
G7111A	1260 Infinity II Quaternary Pump VL	1260 Infinity III Quaternary Pump VL

Table 22 Modules in the 1260/1290 Infinity III portfolio

G7111B	1260 Infinity II Quaternary Pump	1260 Infinity III Quaternary Pump
G7112B	1260 Infinity II Binary Pump	1260 Infinity III Binary Pump
G7114A	1260 Infinity II VW Detector	1260 Infinity III VWD
G7114B	1290 Infinity II VWD	1290 Infinity III VWD
G7115A	1260 Infinity II Diode Array Detector WR	1260 Infinity III DAD WR
G7116A	1260 Infinity II Multicolumn Thermostat	1260 Infinity III Multicolumn Thermostat
G7116B	1290 Infinity II Multicolumn Thermostat	1290 Infinity III Multicolumn Thermostat
G7117A	1290 Infinity II Diode Array Detector FS	1290 Infinity III DAD FS
G7117B	1290 Infinity II Diode Array Detector	1290 Infinity III DAD
G7117C	1260 Infinity II Diode Array Detector HS	1260 Infinity III DAD HS
G7120A	1290 Infinity II High Speed Pump	1290 Infinity III High Speed Pump
G7121A	1260 Infinity II Fluorescence Detector	1260 Infinity III Fluorescence Detector
G7121B	1260 Infinity II FLD Spectra	1260 Infinity III FLD Spectra
G7129A	1260 Infinity II Vialsampler	1260 Infinity III Vialsampler
G7129B	1290 Infinity II Vialsampler	1290 Infinity III Vialsampler
G7129C	1260 Infinity II Vialsampler	1260 Infinity III Vialsampler
G7131A	1290 Infinity II Bio Flexible Pump	1290 Infinity III Bio Flexible Pump
G7131C	1260 Infinity II Bio Flexible Pump	1260 Infinity III Bio Flexible Pump
G7132A	1290 Infinity II Bio High-Speed Pump	1290 Infinity III Bio High-Speed Pump
G7137A	1290 Infinity II Bio Multisampler	1290 Infinity III Bio Multisampler
G7162A	1260 Infinity II RI detector	1260 Infinity III RI detector
G7162B	1290 Infinity II RI detector	1290 Infinity III RI detector
G7165A	1260 Infinity II MW Detector	1260 Infinity III MWD
G7167A	1260 Infinity II Multisampler	1260 Infinity III Multisampler
G7167B	1290 Infinity II Multisampler	1290 Infinity III Multisampler
G7167C	1260 Infinity II Hybrid Multisampler	1260 Infinity III Hybrid Multisampler
G3167A	1260 Inf. II Online Sample Manager Set	1260 Inf. III Online Sample Manager Set
G3167B	1290 Inf. II Online Sample Manager Set	1290 Inf. III Online Sample Manager Set

In This Book

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