Release Note for Agilent LC and CE drivers Revision A.02.11

Introduction

This release note provides important information for the release of Agilent LC and CE drivers A.02.11

This driver release supports Agilent's next generation UHPLC system, the new 1290 Infinity II LC System, which includes following modules:

Product Number	Name
G7104A	1290 Infinity II Flexible Pump
G7120A	1290 Infinity II High Speed Pump
G7167A	1260 Infinity Multisampler
G7167B	1290 Infinity II Multisampler
G7116B	1290 Infinity II Multicolumn Thermostat
G7114B	1290 Infinity II Variable Wavelength Detector
G7117A	1290 Infinity II Diode Array Detector FS
G7117B	1290 Infinity II Diode Array Detector
G7102A	1290 Infinity II ELSD

List of New Features

The 1290 Infinity II LC achieves unmatched separation and detection performance, delivering data of the highest quality by lowest peak dispersion, lowest carryover, unique detection capabilities, highest retention time precision and fast injection cycles. This driver release gives access to latest instrument control features.

Pumps

New 1290 Infinity II pumps G7104A Flexible Pump and G7120A High Speed Pump have an increased power range up to 1300 bar pressure and 5 mL/min flow rate, which provides best flexibility for various application requirements. All modules are equipped with seal wash for improved system performance and buffer compatibility.

Improved flushing procedures allow preparing the system for use. These procedures with new status information allow starting up the system, flushing it and removing small bubbles from the flow path for best performance. New Infinity II pumps can be configured in pump-valve-clusters.

Autosamplers

1290 Infinity II Multisamplers G7167A/B offer a high sample capacity for up to 16 micro titer plates, 8 deep well plates or 8 vial plates, which gives a maximum storage capacity of 6144 samples. Samples can be analyzed in fast injection cycles down to 10 s. Needle wash functionality is included to for all modules. An optional Multi-wash of needle and needle seat with 3 wash solvents for ultra-low carry-over is available. Optionally, samples can be cooled down to 4 °C with an integrated cooler. This driver offers configuration and control of all these advanced features.

Infinity II Multisamplers have already been supported by driver release A.02.10. This release adds support for additional injector program features (draw/eject commands), which requires firmware D.06.70.

Multicolumn Thermostat

The new Infinity II Multicolumn Thermostat G7116B with simplified access has space for up to 8 columns and easy-to-install pre-column heat exchangers. The thermostat range has been extended to 4 – 110 °C.

A column-centric approach allows the configuration and use of columns as method parameters in addition to the classic approach using valve positions. This improves strongly the usability for method setup when working with valves.

Valves

A series of new 1300 bar valves is being introduced, which have been optimized for the 1300 bar Infinity II LC System, e.g. a 6 column selector and an 8 column selector as a perfect extension for the Multi Column Thermostat. These valves are supported by drivers for the Multi Column Thermostat G7116B, the 1290 Infinity Valve Drive G1170A and the Flexible Cube G4227A.

Detectors

Infinity II Diode Array Detectors are based on Agilent Max-Light Cartridge Technology and come in two editions. The high end edition G7117B offers a maximum data acquisition rate of 240 Hz and a programmable slit. The standard edition G7117A has a maximum data acquisition rate of 120 Hz and a fixed slit (FS).

The new Infinity II Variable Wavelength Detector G7114B allows up to 240 KHz DA rate. In dual wavelength mode, two wavelengths can be used in parallel.

Agilent has launched a new model of Evaporative light scattering detector (ELSD) G7102A. This compliments the existing model G4260B.

The new model ELSD offers a range of differentiating features such as:

- The Agilent 1290 Infinity II ELSD delivers a dynamic range of 4 orders of magnitude. The 10 times wider dynamic range allows analysis of compounds and low level impurities with just one sample injection.
- Peltier cooled sub-ambient evaporation down to 10 °C for maximum sensitivity of all semi-volatile compounds across a wide range of concentrations.
- Low dispersion and high-speed data output rates for fast LC applications. Flow rate range of 1-5 ml/min for both analytical and preparative LC, without changing nebulisers.

The unique features of G7102A features and the G4260B are supported by driver rev. 30.42 respective rev. 30.35. For more information about the capabilities of the Agilent Infinity and Infinity II ELSD's please refer to the appropriate user manuals and online help supplied with the detector on a disk along with the drivers.

ISET 4

The Intelligent System Emulation Technology version 4 allows using Infinity II modules for the emulation of Agilent 1100, 1200, 1220, 1260 and 1290 modules and third party instruments e.g. from Waters or Shimadzu or any other instruments through generic emulation.

Latest features and Infinity II system support are available through this driver package. Using ISET requires a free demo license for new instruments or a full license.

HDR

The Agilent high dynamic range (HDR) solution allows clustering two diode array detectors for extending their dynamic range and quantitation of substances with low absorption /concentration next to substances with high absorption/concentration. This driver set adds support for HDR with latest Agilent DADs. Infinity II DADs can be clustered with other Infinity II DADs G7117A/B and 1290 Infinity DADs can be clustered with other 1290 Infinity DADs G4212A/B but no mixed configurations are possible.

Using HDR requires a license for one DAD per HDR cluster.

Compatibility Matrix

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

Supported Operating Systems

The following operating systems are supported:

- Windows 7 SP1 (32 Bit / 64 Bit)
- Windows Server 2008 R2 (64 Bit)
- Windows 8.1 (32 Bit / 64 Bit)
- Windows Server 2012 R2 (64 Bit)

Supported Chromatographic Data Systems (CDS)

This subsection lists Agilent Chromatographical Data Systems, which have been tested before the release of the driver package. Typically, additional CDS tests are performed after the release, which cannot be documented here. Agilent drivers can also be used with third party CDS through the instrument control framework (ICF). Please refer to the corresponding CDS and ICF documentation.

OpenLAB CDS ChemStation Edition[1]	C.01.07
OpenLAB CDS EZChrom Edition[2]	A.04.07

[1] OpenLAB CDS ChemStation does not support Chip Cube G4240A

[2] OpenLAB CDS EZChrom does not support Capillary Electrophoresis G7150A and Chip Cube G4240A

Modules and Minimum Required Firmware

In the following sections this guide summarizes the instruments and modules for which drivers are available from Agilent and lists the minimum required firmware.

Information on Agilent's Firmware Revisions

This driver release has been tested with following firmware revisions:

Device	Firmware
Agilent 1100 Series, 1200 Series and 1200 Infinity[1]	A.06.5x
Agilent 1200 Series, 1200 Infinity and 1120 Compact LC[2]	B.06.70
Agilent 1200 Infinity Hosted Modules[3]	C.06.70
Agilent 1290 Infinity II (some modules)[4]	D.06.70

1 G1158A/B, G1159A, G1160A, G1162A, G1163A, G1310A/B, G1311A/B/C, G1312A/BC, G1313A, G1314A/B/C, G1315A/B, G1316A/B/C, G1321A/B/C, G1329A/B, G1361A, G1362A, G1364A/B/C/D, G1365A/B, G1367A/B/C/D/E, G1376A, G1377A, G1389A, G1390A, G2226A, G2258A, G2260A, G4226A, G4240A, G4302A, G4303A, G5611A, G5664A, G5667A, G1156A, G1157A

2 G1314D/E/F, G1315C/D, G1365C/D, G1369C, G4204A, G4208A, G4212A/B, G4220A/B, G4286A/B/C, G4287A/B/C, G4288A/B/C, G4289A/B/C, G4290A/B/C, G4291A/B/C, G4292A/B/C, G4293A/B/C, G4294B, G7101A, G7150A, G7104A, G7120A

3 G1170A, G1390B, G4227A, G7116B

4 G7167A/B, G7114B, G7117A/B

Agilent uses several different firmware architectures, which are based on different underlying electronic architectures and are indicated by a different letter A/B/C/D:

Revision A:	Electronic architecture of Agilent 1100 Series, 1200 Series and 1200 Infinity modules. This is the architecture used by recent and historic modules.
Revision B:	Electronic architecture of many Agilent 1200 Series and 1200 Infinity modules. This architecture is used by many modules with high computing performance or data acquisition rates like recent VWD, DAD and MWD detectors or 1290 Infinity pumps.
Revision C:	This architecture is used by hosted modules. Hosted modules have a mainboard with reduced complexity and require a hosting module with revision B or D firmware.
Revision D:	This architecture is used by 1290 Infinity II modules like G7114B and G7117A/B detectors and G7167A/B Multisamplers.

Agilent recommends always using the most recent firmware revisions which include latest firmware features and improvements. Drivers are forward compatible with respect to firmware, i.e. the firmware can be updated without the need of updating the driver or CDS.

This table lists the minimum required firmware for all modules supported by the driver. Please note that all modules in a system need to use compatible firmware from one firmware set. Please refer to firmware documentation for details, see "Other Documents" on page 13.

Agilent LC – Pumps

Product Number	Module Name	Minimum Required Firmware Revision
G1310A	1100 Series Isocratic Pump	A.06.10
G1310B	1260 Infinity Isocratic Pump	A.06.32
G1311A	1100 Series Quaternary Pump[1]	A.06.10
G1311B	1260 Infinity Quaternary Pump[1]	A.06.32
G1311C	1260 Infinity Quaternary Pump VL[1]	A.06.32
G1312A	1260 Infinity Binary Pump[1]	A.06.10
G1312B	1260 Infinity Binary Pump SL[1]	A.06.10
G1312C	1260 Infinity Binary Pump VL[1]	A.06.32
G1361A	1260 Infinity Preparative Pump Cluster with up to 4	A.06.50
G1376A	1260 Infinity Capillary Pump	A.06.10
G2226A	1260 Infinity Nanoflow Pump	A.06.10
G4204A	1290 Quaternary Pump[1]	B.06.50
G4220A	1290 Infinity Binary Pump[1]	B.06.23
G4220B	1290 Infinity Binary Pump VL[1]	B.06.43
G4302A	1260 Infinity SFC Binary Pump[1]	A.06.32
G5611A	1260 Infinity Bio-inert Quaternary Pump[1]	A.06.32
G7104A	1290 Infinity II Flexible Pump	B.06.70
G7120A	1290 Infinity II High Speed Pump	B.06.70

[1] Pump valve clusters are possible for marked pumps with up to 2 valves of type G1160A and/or G1170A

Agilent LC - Sampling Systems

Product Number	Module Name	Minimum Required Firmware Revision
G1313A	1100 Series Standard Autosampler	A.06.10
G1329A	1100 Series Standard Autosampler	A.06.10
G1329B	1260 Infinity Standard Autosampler	A.06.10
G1367A	1100 Series Well-plate Sampler	A.06.31
G1367B	1200 Series High Performance Autosampler	A.06.31
G1367C	1200 Series High Performance Autosampler SL	A.06.31
G1367D	1200 Series High Performance Autosampler SL+	A.06.31
G1367E	1260 Infinity High Performance Autosampler	A.06.32
G1377A	1260 Infinity High Performance Micro Autosampler	A.06.12
G1389A	1100 Series Micro Thermostatted Autosampler	A.06.10
G2258A	1260 Infinity Dual-Loop Autosampler	A.06.50
G2260A	1260 Infinity Preparative Autosampler (High flow)	A.06.50
G4226A	1290 Infinity Autosampler	A.06.31
G4303A	1260 Infinity SFC standard autosampler	A.06.54
G5667A	1260 Infinity Bio-inert Autosampler	A.06.32
G7167A	1260 Infinity Multisampler	D.06.60
G7167B	1290 Infinity II Multisampler	D.06.60

Agilent LC – Column Compartments

Product Number	Module Name	Minimum Required Firmware Revision
G1316A	1260 Infinity Thermostatted Column Compartment	A.06.10
G1316B	1200 Series Column Compartment SL	A.06.10
G1316C	1200 Series Thermostatted Column Compartment SL[1]	A.06.14
G7116B	1290 Infinity II Multicolumn Thermostat	C.06.70

[1] Cluster with up to three G1316C with integrated 8pos/9port valves (products G4230A/B). Minimum two G1316C TCCs, the third TCC can be a G1316A, B or C.

Agilent LC – Detectors

Product Number	Module Name	Minimum Required Firmware Revision
G1314A	1100 Series Variable Wavelength Detector	A.06.10
G1314B	1200 Series Variable Wavelength Detector	A.06.10
G1314C	1200 Series Variable Wavelength Detector	A.06.10
G1314D	1200 Series Variable Wavelength Detector	B.06.32
G1314E	1290 Infinity Variable wavelength Detector	B.06.32
G1314F	1260 Infinity Variable wavelength Detector	B.06.32
G1315A	1100 Series Diode Array Detector	A.06.10
G1315B	1200 Series Diode Array Detector	A.06.10
G1315C	1200 Series Diode Array Detector VL+	B.06.30
G1315D	1200 Series Diode Array Detector VL	B.06.30
G1365A	1100 Series Multiple Wavelength Detector	A.06.10
G1365B	1100 Series Multiple Wavelength Detector	A.06.10
G1365C	1260 Infinity Multiple Wavelength Detector	B.06.30
G1365D	1260 Infinity Multiple Wavelength Detector VL	B.06.30
G1321A	1100 Series Fluorescence Detector (FLD)	A.06.10
G1321B	1260 Infinity Fluorescence Detector	A.06.32
G1321C	1260 Infinity Fluorescence Detector	A.06.54
G1362A	1260 Infinity Refractive Index Detector	A.06.10
G4212A	1290 Infinity Diode Array Detector	B.06.30
G4212B	G4212B 1260 Infinity Diode Array Detector	B.06.30
HDR-DAD Cluster	2x G4212A or 2x G4212B or a combination of 1x G4212A and 1x G4212B	B.06.57
G7114B	1290 Infinity II Variable Wavelength Detector	D.06.70
G7117A	1290 Infinity II Diode Array Detector	D.06.70
G7117B	1290 Infinity II Diode Array Detector FS	D.06.70
G4218A	1260 Infinity Evaporative Light Scattering Detector	1.3
G4260A	380-ELSD	25.00
G4261A	385-ELSD	25.00
G4260B	1260 Infinity Evaporative Light Scattering Detector	30.35
G4261B	1290 Infinity Evaporative Light Scattering Detector	30.35
G7102A	1290 Infinity II Evaporative Light Scattering Detector	30.42

Agilent LC – Quick Change Valves

Product Number	Module Name	Minimum Required Firmware Revision
G1156A	1200 Series 6 Position / 7 Port Valve (400 bar)	A.06.02
G1157A	1200 Series 2 Position / 10 Port Valve	A.06.02
G1158A	1200 Series 2 Position / 6 Port Valve	A.06.02
G1158B	1200 Series 2 Position / 6 Port Valve (600bar)	A.06.02
G1159A	1200 Series 6 Position Selection Valve	A.06.02
G1160A	1100 Series Multiple Purpose Switching Valve (12 Position / 13 Port)	A.06.02
G1162A	1200 Series 2 Position/ 6 Port Micro Valve	A.06.02
G1163A	1200 Series 2 Position/ 10 Port Micro Valve	A.06.02
G1170A	1290 Infinity Valve Drive (Host required)	C.06.40 (B.06.40)

Agilent LC – Other Module types

Prduct Number	Module Name	Minimum Required Firmware Revision
G1390A	1100 Series Universal Interface Box (UIB)	A.06.02
G1390B	1200 Infinity Series Universal Interface Box II (Host required)	C.06.53 (B.06.53)
G4227A	1290 Infinity Flexible Cube (Host required)	C.06.52 (B.06.52)
G1364A	1100 Series Automatic Fraction Collector Cluster of up to 3[1]	A.06.53
G1364B	1260 Infinity Fraction Collector (preparative-scale) Cluster of up to 3[1]	A.06.53
G1364C	1260 Infinity Fraction Collector (analytical-scale) Cluster of up to 3[1]	A.06.53
G1364D	1100 Series Micro Fraction Collector	A.06.53
G5664A	1260 Infinity Bio-inert fraction collector AS	A.06.53
G4240A	Chip Cube	A.06.36
G4301A	1260 Infinity Analytical SFC System	A.03.07

[1] Any combination of G1364A/B/C or G5664A plus a fourth G1364A/B/C or G5664A for recovery can be clustered. Multiple single Fraction Collectors are not supported

Agilent LC Systems

Product Number	Module Name	Minimum Required Firmware Revision
G4286A	1120 Compact LC, Isocratic	B.06.50
G4286B	1220 Infinity LC System Isocratic, Man. Inj., VWD, 600 bar	B.06.50
G4287A	1120 Compact LC, Isocratic with Oven and ALS	B.06.50
G4287B	1220 Infinity LC Isocratic, ALS, TCC, VWD, 600 bar	B.06.50
G4288A	1120 Compact LC, Gradient	B.06.50
G4288B	1220 Infinity LC Gradient, Man. Inj., VWD, 600 bar	B.06.50
G4289A	1120 Compact LC, Gradient with Oven	B.06.50
G4289B	1220 Infinity LC Gradient, ALS, TCC, VWD, 600 bar	B.06.50
G4290A	1120 Compact LC,Gradient with oven and ALS	B.06.50
G4290B	1220 Infinity LC Gradient, ALS, Man. Inj., TCC, VWD, 600 bar	B.06.50
G4291B	1220 Infinity LC Isocratic, Man. Inj., TCC, VWD, 600 bar	B.06.50
G4292B	1220 Infinity LC Isocratic, ALS, VWD, 600 bar	B.06.50
G4293B	1220 Infinity LC Gradient, ALS, VWD, 600 bar	B.06.50
G4294B	1220 Infinity LC Gradient, ALS, TCC, DAD, 600 bar	B.06.50
G4286C	1220 Infinity LC System VL, Isocratic, Man. Inj., VWD, 400 bar	B.06.50
G4287C	S1220 Infinity LC System VL, Isocratic, ALS, TCC, VWD, 400 bar	B.06.50
G4288C	1220 Infinity LC System VL, Gradient, Man. Inj. VWD, 400 bar	B.06.50
G4289C	1220 Infinity LC System VL, Gradient, Man. Inj. VWD, 400 bar	B.06.50
G4290C	1220 Infinity LC System VL, Gradient, ALS, TCC, VWD, 400 bar	B.06.50
G4291C	1220 Infinity LC System VL, Isocratic, Man. Inj. TCC, VWD, 400 bar	B.06.50
G4292C	1220 Infinity LC System VL, Isocratic, ALS, VWD, 400 bar	B.06.50
G4293C	1220 Infinity LC System VL, Gradient, ALS, VWD, 400 bar	B.06.50

Agilent CE Firmware Information

Product Number	Module Name	Minimum Required Firmware Revision
G7150A	G7100 Capillary Electrophoresis II	B.06.25
G7151A	Diode Array Detector for CE	B.06.25

NOTE There are dependencies between firmware revisions that can be combined in one LC or CE system.

All firmware revisions need to belong to one set. For obtaining and updating firmware and for detailed information about compatibility between firmware revisions please visit our web site at http://www.chem.agilent.com/_layouts/agilent/downloadFirmware.aspx?whid=69761

Software Solutions

Agilent offers several add-ons to its CDSs like the Method Scouting Wizard, 2D-LC data acquisition software, Buffer Advisor etc. These add-ons are based on the CDS, not on the driver. For compatibility information, please consult documentation for the add-on or CDS.

Impact Analysis

This section is intentionally empty for this driver release. There are no known changes, which would require a review of existing methods or data.

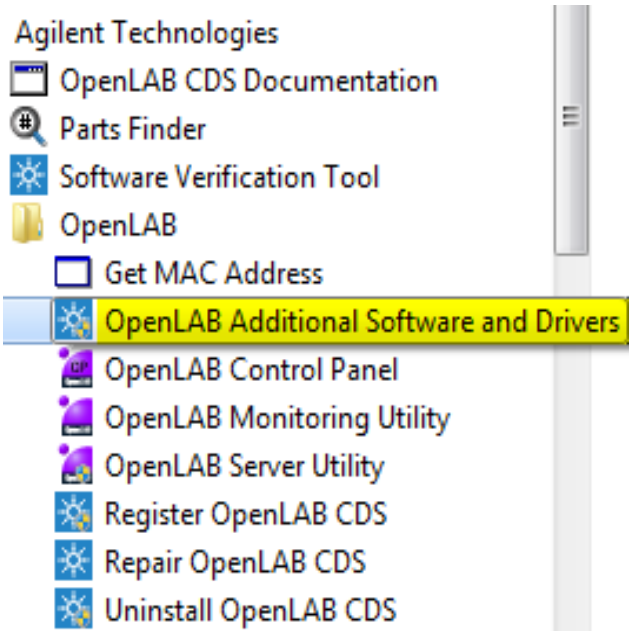
Please refer to the SSB and SRB for other important software improvements.

For issues specific to upgrading and using version 1.3 of the ELSD driver refer to the document “SSB_ELSD_RCNETDriver_Ver1.3.pdf” located in the “More Drivers\G4260-60012_ELSD-Drivers” folder.

Installation

Drivers are installed by the Agilent or third party Chromatographical Data System (CDS) installer, e.g. the Agilent OpenLab Master Installer. Installation prerequisites like CPU, memory and hard drive space are also mainly determined by the underlying CDS. Please refer to documentation of the CDS installer for installation, updates and uninstallation.

For OpenLAB, please use "OpenLAB Additional Software and Drivers" for installing the driver from the Windows Start Menu.



Drivers for the ELSD are located in the "More Drivers" folder.

Other Documents

The driver DVD includes more documents with further information:

Software Status Bulletin (SSB): The software status bulletin lists known limitations and incompatibilities and information about available fixes or workarounds for this and previous versions

Software Release Bulletin (SRB): The software release bulletin lists issues which have been fixed with this revision.

SSB and SRB are included to the driver CD and can be found in folder documentation

The SSB is updated regularly. Please visit our Website for the latest version at http://www.chem.agilent.com/Library/Support/Patches/SSBs/LC_RC_Net.html.

Firmware and firmware documentation are available for download from http://www.chem.agilent.com/_layouts/agilent/downloadFirmware.aspx?whid=69761.

ELSD specific information is located in the folder “More Drivers\ G4260-60012_ELSD-Drivers”.

Updates

Agilent continuously improves its drivers, firmware and software and recommends using latest updates. If applicable, any updates or bug fix releases for this driver package are available from Subscribenet at https://agilent.subscribenet.com.

Updates

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Revision 1.2