Agilent OpenLab CDS

Workstation Requirements and Supported Instruments

Notices

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This guide is valid for Agilent OpenLab CDS version 2.4 workstations.

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In this Guide ...

This document details the minimum hardware and software that need to be met to run an Agilent OpenLab Chromatography Data System (CDS) Workstation or Workstation Plus, and lists supported instruments.

For Client/Server configurations please see *Requirements and Supported Instruments for Client/Server Systems*

Table 1 Terms and abbreviations used in this document

Term	Description
Content Management	Component of OpenLab Server used to manage your analytical data, including a database.
AIC	Agilent's Analytical Instrument Controller
Control Panel	Control Panel for Agilent OpenLab software
Microsoft Control Panel	Part of the Microsoft Windows operating system
Shared Services	Set of administrative services that control, for example, the security policy and the central configuration of OpenLab CDS. Shared services are accessed via the Control Panel.

1 Hardware and Software Requirements

This chapter contains the hardware and software requirements for the different components of an OpenLab CDS Workstation or Workstation Plus.

3 Supported Instruments

This chapter provides information on the instruments supported by the current revision of OpenLab CDS and the required respective instrument drivers and firmware revisions.

Contents

1 Hardware and Software Requirements

This chapter contains the hardware and software requirements for the different components of an OpenLab CDS Workstation or Workstation Plus.

Introduction

With an OpenLab CDS Workstation installation, all required components (Shared Services and, if relevant, Content Management) are installed on the workstation.

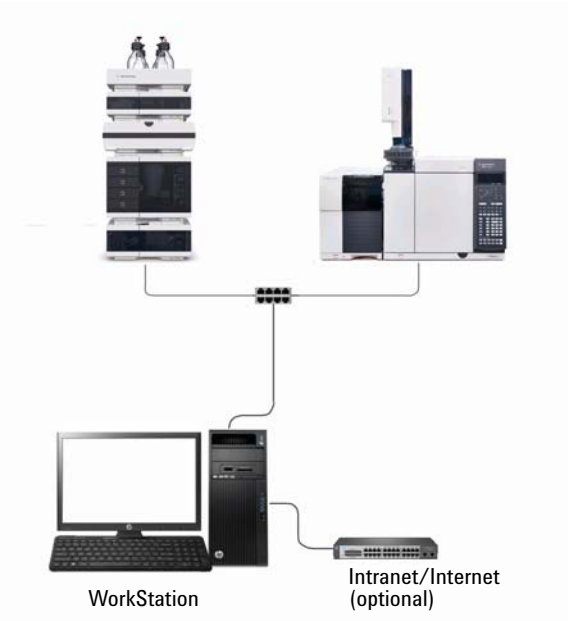

Figure 1 OpenLab CDS Workstation and Workstation Plus

General Software Requirements

Component	Details
.NET framework	• .NET 3.5.1 must be enabled on systems running on Windows 10, or Windows Server 2012 R2. and • .NET 4.7.2 or above (if needed, it will be installed automatically by the OpenLab Installer)
Web browser	• Internet Explorer 11 • Google Chrome 40 or higher • Edge
Antivirus software[1]	• Symantec Endpoint Protection • Trend Micro • Microsoft Security Essentials • McAfee
PDF reader	• For example, install Adobe Reader from the installation media.

[1] The listed antivirus software has been tested and is recommended by Agilent. Check with your Agilent service person in case you want to use other software.

You will need a PDF viewer to open PDF manuals in OpenLab Help & Learning. We recommend Adobe Reader DC. The PDF viewer is not required for the system to function correctly.

Workstation Storage Options

The OpenLab CDS Workstation is available either with storage in the local file system (OpenLab CDS Workstation software) or in a built-in Content Management database (OpenLab CDS Workstation Plus software).

A workstation with Content Management (OpenLab CDS Workstation Plus) requires higher performing hardware.

Language Compatibility

The English version of OpenLab CDS is validated on Windows English and Western European language operating systems. Regional settings (locales) can be adjusted as required.

Localized versions of OpenLab CDS are supported on localized language versions of Windows, using default system fonts:

- Chinese: Microsoft YaHei
- Japanese: Meiryo UI
- Brazilian Portuguese: Calibri

OpenLab CDS can run on other language versions of Windows as well, but the user interface will be English.

Non-localized instrument drivers are supported and will appear in English even when running localized versions of OpenLab CDS.

Disk Space

Disk space requirements should be adjusted based on the number and type of instruments and archival periodicity. Agilent recommends providing disk space for one year of lab operation in addition to the operating system and OpenLab CDS requirements.

Table 2 Typical expected file sizes

	Run time	Description	Expected data size
2D data	60 min	10 Hz, 2 channel data	300-700 KB
3D data	60 min	10 Hz, 5 channel data, plus spectra at 1 nm resolution from 200 to 400 nm	100-300 MB
LC/MS data (SQ)	60 min	Scan mode	20-40 MB
GC/MS data (SQ)	60 min	Scan mode	50-300 MB
GC/MS data (SQ)	60 min	SIM mode with 2 ions	1-3 MB

Operating Systems

Table 3 Supported operating systems for a workstation

Operating System	Details
Windows	• Windows 10, Enterprise or Pro, 64bit (version 1703, 1709, or 1803) [1] or • Windows 7 SP1, Enterprise or Professional, 64bit For information on Windows configuration, see installation guides.

[1] for support of the most current versions check with your Agilent representative

PC Recommendation

The table below provides the recommended hardware configuration for Workstations with up to 4 instruments.

Table 4 Tested and recommended hardware configuration for workstations

Item	Workstation	Workstation with Content Management
Processor speed (CPU)	Intel® i5, i7, or Xeon E3 or equivalent 3.0 GHz or greater 4 Core	
Physical memory (RAM)	8 GB 16 GB for 4 instruments or more than 2 instrument points	16 GB
Hard disk	1 x 500 GB 7200 RPM SATA drive minimum or equivalent solid state drive See table 2 on page 10	2 x 500 GB or 1 TB 7200 RPM SATA drive minimum[1] or equivalent solid state drive See table 2 on page 10
Graphic Resolution	1600 x 900 minimum 1920 x 1080 recommended	
RS-232 port	1 serial port required for selected instruments that are still using RS-232 communication. See instrument specifications for details.	
USB port	USB 2 required for installation via provided media	
LAN card	100 MB/1 GB LAN for instrument control 2nd LAN card required for lab intranet connection	

[1] If the computer has a disc array controller we recommend 2 x 1 TB in RAID1.

Recommended bundle PC for a workstation with File System storage: HP Z240 or equivalent, with 8 GB RAM and option to add 8 GB more.

Recommended bundle PC for a workstation with Content Management: HP Z440 or equivalent, with 16 GB RAM.

Number of Instruments

You can configure any number of instruments that sums up to *4* instrument points per OpenLab CDS Workstation (Standard configuration). Per OpenLab CDS VL Workstation you can configure only 1 instrument with up to 2 instrument points per OpenLab CDS VL Workstation.

Instrument points are an indicator for the data stream that needs to be managed, and thus also for the required hardware and software. Instruments count as follows:

Table 5 Instrument points per Instrument type

Instrument Type	Instrument Points
LC - Liquid Chromatograph (LC = injector + pump + 2D detector such as VWD)	1
3D detector (LC detector such as DAD or (3D)FLD)	1
MS (Single quadrupole mass spectrograph)	2
GC - Gas Chromatograph	1
Additional GC detector/headspace	0
Examples:	
3D LC:	2
GC/MS:	3
LC/MS:	3
LC with HDR-DAD	3
3D LC/MS	4

Database

Workstation Plus uses PostgreSQL 10.3 database for both Shared Services and Content Management. It is installed and configured automatically during installation. For the Workstation Plus with Content Management, Agilent does not support the use of a PostgreSQL version other than the one installed by the OpenLab software.

System Configuration Checker

The System Configuration Checker helps you to make sure that the PC matches all requirements. You can use it for all supported operating systems and applications.

1. Run the Master Installer from the USB medium or from a centralized folder. From the **Planning** screen, select **System Configuration Checker**.
2. The **Site Preparation Tool** opens. Select the relevant software from the drop-down list.
3. Select **OK**.
4. Complete page 1 of the **Contact Information—System details** by typing in the fields provided.
   - System Location fields
   - System Information fields
   - Configuration fields
5. Review the system details and make any necessary entries. The system will follow the paths specified.
6. Select the green check mark icon in the top left corner of the screen to begin the software check. A summary report is displayed showing the results for each check category. Results are expressed as **Pass**, **Warning**, **Critical Warning**, or **Fail**.

   Fail results must be corrected before continuing with the installation. Agilent recommends investigating and correcting any **Critical Warnings** and **Warnings** whenever possible before proceeding.

NOTE

If the firewall is controlled by security software, the Site Preparation Tool cannot read the firewall settings because of security limitations and will display **Status "Fail"** for the firewall settings.

In this case, make sure the firewall is disabled and enter the status in the Site Preparation Tool report manually.

7. To view details of the report, select the appropriate link: **System Hardware Details**, **Operating System and Software Details**, or **Manual Verification Required**.
8. To save the report, select the **Save** icon at the top left of the screen.
9. E-mail the saved report to your Agilent Service Representative for evaluation, and for validation of your personal computer for Agilent Software Systems Installs.

2 LAN Communications

About LAN Communications

When using LAN communications to connect workstations or instrument controllers to an instrument, use one of these methods:

- Connect via an isolated switch using standard CAT-5 network cabling
- LAN communication hardware should be 100/1000 mbps (or higher) speed capable.

NOTE The J4100 Jet Direct Card is not supported. For example, use a G1369 LAN interface card instead.

- NIC teaming[1]: LAN cards should *not* be teamed on workstations, instrument controllers, or clients.
- LAN communication must be on the same subnet as instruments, and preferably on the same segment.

NOTE See the separate driver installation guides for further information regarding vendor specific instrument connections. GPIB or RS232 might be required.

[1] Network Interface Card (NIC) teaming is also known as Load Balancing and Failover (LBFO)

LAN Power Management

Avoid data capture or transfer interruptions in your data acquisition system by making LAN communication cards available for instrument and system component communications.

Windows may be set to turn instruments/components off to save power while sleeping or hibernating. To change this setting:

1. In the Microsoft Control Panel, open the **Network and Sharing Center**[1].
2. Select **Change adapter settings**. Right-click **Local Area Connection > Properties > Configure**.
3. Select the **Power Management** tab.
4. Clear the **Allow the computer to turn off this device to save power** check box.

[1] View the items by icon to see a list of all items.

Firewall Settings

If you are using a third party firewall or antivirus software on the network where OpenLab CDS is installed, open these firewall ports to allow communication between the system components of OpenLab CDS. These apply to workstations as well as to Client/Server systems as component communications rely on these communication channels:

The OpenLab CDS installer will automatically open these ports on an enabled Windows firewall during installation.

Table 6 Ports required

Name	Port (range)	Protocol	1	2	3	4	5	6	7	8
			1=Instrument, 2=AIC, 3=WorkStation, 4=Client, 5=OLSS, 6=ECM 3.x, 7=OpenLab Server/OpenLab ECM XT, 8=Database							
FTP (data transfer)	20	TCP, UDP	X	X	X	X			X	
Content Management FTP, GC MSD - Firmware Installation (FTP)	21	TCP	X	X	X	X			X	
Content Management SFTP (control)	22	TCP	X	X	X	X			X	
GC MSD - Firmware Installation (Telnet)	23	TCP, UDP	X	X	X					
eMail (SMTP) sent by Agilent OpenLab	25	TCP					X	X	X	
DNS	53	TCP, UDP		X	X	X	X	X	X	X
BootP server communication	67 and 68	TCP, UDP	X	X	X	X	X	X	X	X
TFTP (was required for Communication with legacy Instruments (Jet Direct Cards))	69	UDP	X	X	X					
Content Management HTTP, GC MSD - Embedded Web Server HTTP, McAfee	80	TCP		X	X	X	X	X	X	
LC/MS instrument communication	111, 1007, 1024, 1025 and 1026	TCP	X	X	X					
SNMP	161	UDP	X	X	X					
LDAP	389	TCP					X	X	X	
HTTPS	443	TCP		X	X	X	X	X	X	

Table 6 Ports required

Name	Port (range)	Protocol	1	2	3	4	5	6	7	8
			1=Instrument, 2=AIC, 3=WorkStation, 4=Client, 5=OLSS, 6=ECM 3.x, 7=OpenLab Server/OpenLab ECM XT, 8=Database							
Server Message Block (SMB)	445	TCP		X	X	X		X	X	X
LDAP SSL	636	TCP						X		
SQL Server default	1433	TCP					X	X	X	X
SQL Server default	1434	TCP					X	X	X	X
Oracle default	1521	TCP					X	X	X	X
GC MSD - Instrument Control (Proprietary/SunRPC/TCP)	2883-2885	TCP	X	X	X	X	X			
OpenLab Automation Services	2886	TCP	X	X	X	X	X			
GC MSD - Instrument Control (Proprietary/SunRPC/TCP)	3068 and 3071	TCP	X	X	X	X	X			
Global Catalog LDAP	3268	TCP					X	X	X	
Global Catalog LDAP SSL	3269	TCP						X		
Microsoft RDP	3389	TCP		X		X				
OpenLab Diagnostics Tools	3424	TCP		X	X	X	X			
Instrument comm (headspace)	4879	TCP	X	X	X					
PostgreSQL default	5432	TCP						X	X	X
OpenLab Server Cluster	5701	TCP							X	
GC MSD - Firmware Installation (ICMP/Ping)	5813	TCP	X	X	X					
GC MSD - Instrument Control (Proprietary/SunRPC/TCP)	5973	TCP	X	X	X	X				
OpenLab Licensing Support (Flexera)	6570	TCP		X	X	X	X			
OpenLab Shared Services	6577	TCP		X	X	X	X			
OpenLab REST API	6624	TCP		X	X	X	X		X	
Agilent OpenLab Remote Work Area	6628	TCP		X	X	X	X		X	
GC MSD - Instrument Control	7972 and 7973	TCP		X	X	X	X			
GC MSD - Instrument Control - RSlick (TCP)	7980-7983	TCP		X	X	X	X			

Table 6 Ports required

Name	Port (range)	Protocol	1	2	3	4	5	6	7	8
			1=Instrument, 2=AIC, 3=WorkStation, 4=Client, 5=OLSS, 6=ECM 3.x, 7=OpenLab Server/OpenLab ECM XT, 8=Database							
Quest Rapid Recovery Agent Service	8006	TCP		X	X	X	X		X	
OpenLab Licensing Support (Flexera)	8080	TCP		X	X	X	X			
OpenLab Licensing alternates	(8085-8090)	TCP		X	X	X	X			
Hosts the viewing page of current license grants and consumptions found in the OpenLab Control Panel administration interface	8090	TCP		X	X	X	X			
PAL3, data subscription with CDS	8194	TCP	X	X	X	X	X			
OpenLab License web UI	8090	TCP		X	X	X				
Agilent OpenLab Content Management Search Service SSL	8443	TCP							X	
Agilent OpenLab Content Management Search Service	8983	TCP							X	
Instrument comm (GC/LC)	9001-9002	TCP	X	X	X	X	X			
Instrument comm (GC/LC/35900)	9100	TCP	X	X	X					
Instrument comm (GC/LC)	9101	TCP	X	X	X					
Instrument comm (GC/LC)	9110	TCP	X	X	X					
Messaging communication	9753	TCP		X	X	X	X	X		
Instrument comm (GC 7890)	(10000-10010)	TCP	X	X	X					
Agilent Compliance Engine (ACE)	(11121-11141)	TCP		X	X	X				
OpenLab Licensing Support (Flexera)	(27000-27009)	TCP		X	X	X				
Instrument Utilities	30718	TCP	X	X	X					
Instrument Utilities	(55055-55057)	TCP	X	X	X					
Instrument Utilities	61001	TCP	X	X	X					
PAL3 communication	64000, 64001	TCP	X	X	X					

Table 6 Ports required

Name	Port (range)	Protocol	1	2	3	4	5	6	7	8
			1=Instrument, 2=AIC, 3=WorkStation, 4=Client, 5=OLSS, 6=ECM 3.x, 7=OpenLab Server/OpenLab ECM XT, 8=Database							
PAL3, plain socket protocol	64500	TCP	X	X	X					
Temporary communications between clients and instrument controllers. The ports used depend on the operating system in use and are configurable. Refer to the operating system documentation for more information.	Dynamic Ports	TCP	X	X	X	X			X	

Specific Requirements for Compliant Systems

If you intend to use your system in a compliant environment, ensure the following settings related to time synchronization:

- Your network must have a time synchronization service to make sure that all systems are using a consistent and valid time.
- To ensure that users cannot change the time on a client system, users must not operate using an administrator account. This is important as the client time is used during buffered activity logging during network outages.

3 Supported Instruments

This chapter provides information on the instruments supported by the current revision of OpenLab CDS and the required respective instrument drivers and firmware revisions.

RC.NET Drivers and OpenLab CDS

OpenLab CDS can control instruments and modules that use **RC.NET** based driver software only.

Agilent and other vendors may release RC.net drivers independent of the OpenLab CDS releases. Agilent recommends that you always use the most recent firmware revisions. They include all latest firmware features and improvements. Agilent driver software is forward compatible with respect to firmware, i.e. the firmware can be updated without the need of updating the driver or CDS.

NOTE

Instrument driver versions must always match in a network system.

Accidental use of a method from a different driver version, and accidental launching of an AIC instrument from a client with a mismatched driver version will have unpredictable behavior, including subtle errors that might not be spotted immediately.

The following Agilent instrument driver software revisions are part of the OpenLab CDS 2.4 software package. Some of them are installed by default with the software.

Table 7 Agilent driver packages shipped with OpenLab CDS 2.4

RC.NET Instrument Driver	Driver Software Revision	Installed with OpenLab CDS 2.4
Agilent LC	A.02.19.18 (=A.02.19 SR2)	x
Agilent ELSD	A.01.07 (build 12)	
Agilent LC/MS SQ	2.2.2260	x
Agilent GC	3.0.532	x
Agilent 490 Micro GC	B.01.12.1.2125	
Agilent Headspace	B.01.07.3	
Agilent GC/MS SQ	1.3 (build 54)	x
Agilent 35900E A/D Converter	2.3 (build 53)	x
Agilent SS420X A/D Converter	A.01.01 (build 65)	x
Agilent Data Player	2.2.6	x

Table 7 Agilent driver packages shipped with OpenLab CDS 2.4

RC.NET Instrument Driver	Driver Software Revision	Installed with OpenLab CDS 2.4
Agilent CTC PAL 3	A.01.04.1	
Agilent CTC PAL-xt	B.01.08	

Drivers that are not automatically installed by the OpenLab CDS installer can be found on the media under Setup\Packages\Add-ons. To install these drivers see section *Install or Upgrade Driver Software* in chapter 1 of your Workstation or Client Server guide.

More information on instrument drivers and firmware is available in the respective RC.NET driver release notes.

Non-Agilent Instrument Drivers

OpenLab CDS 2.4 supports selected Non-Agilent instruments. Please check with your sales representative if a corresponding driver is available.

Always install the dedicated RC.NET driver available from SubscribeNet at **OpenLab CDS > OpenLab 3rd-Party Instrument drivers**.

Agilent LC and LC/MS Instrument Support

Agilent LC

Most Agilent LC modules can be controlled with the current version of OpenLab CDS. LC driver release A.02.19 SR2 has been tested with this revision and is installed by default with the software.

The tables below list the supported LC modules.

Recommended Firmware

Agilent recommends using current LC firmware sets with your OpenLab CDS. The latest LC firmware sets are 7.01, 6.50, and 6.30. Please note that using some driver features like valve-thermostat clusters and new temperature control modes require current firmware versions. For more information please refer to the respective LC driver release notes. The *Release Note for Agilent LC and CE Drivers Revision A.02.19 SR2* (LC-Driver_ReleaseNote_A0219-SR2.pdf) is available in the Docs/EN folder of the OpenLab CDS media.

Firmware revisions are grouped into sets for each module or system. Firmware sets include just the latest firmware of each module.

Do not mix firmware revisions from one set with older or newer sets. Firmware is not tested across set borders!

Device	Recommended Firmware
Agilent 1100 Series, 1200 Series and 1200 Infinity	A.07.01 or later
Agilent 1200 Series, 1200 Infinity and 1120 Compact LC	B.07.25 or later
Agilent 1200 Infinity Hosted Modules	C.07.20 or later
Agilent 1260/1290 Infinity II Modules	D.07.25 or later

Download the latest LC Firmware at http://www.agilent.com/en-us/firmwareDownload?whid=99818. For more information see **Agilent LC Firmware News / Downloads / Procedures** at https://www.agilent.com/en/support/liquid-chromatography/lcfirmwarenews.

NOTE

Modules combined into one LC instrument always need to have firmware from the same set. Firmware of one set is fully compatible with your CDS that supports this firmware set. However, if one module uses a firmware revision lower that the specified Minimum Firmware Revision some functionality might not be supported.

You need to upgrade all existing modules to the latest version only if

- you add a new LC module to the existing system (recommended).
- one of the existing modules requires an upgrade due to a bug fix solved with the latest release.

Liquid Chromatography (LC) Modules

The Agilent LC modules listed below are supported for control with CDS 2.4 unless stated otherwise.

HINT

Find the product number at the lower right of each module or system.

Agilent LC - Sampling Systems

Product Number	Module Name	Compatibility Statement
G1313A	1100 Series Standard Autosampler	
G1329A	1200 Series Standard Autosampler	
G1329B	1260 Infinity Standard Autosampler	
G1330A	1100 Series Thermostat	
G1330B	1290 Infinity Thermostat	
G1367A	1100 Series Well-plate Sampler	
G1367B	1200 Series High Performance Autosampler	
G1367C	1200 Series High Performance Autosampler SL	
G1367D	1200 Series High Performance Autosampler SL+	
G1367E	1260 Infinity High Performance Autosampler	
G1377A	1260 Infinity High Performance Micro Autosampler	not supported
G1389A	1100 Series Micro Thermostatted Autosampler	not supported

Product Number	Module Name	Compatibility Statement
G2258A	1260 Infinity Dual-Loop Autosamper	not supported
G2260A	1260 Infinity Preparative Autosampler (High flow)	not supported
G4226A	1290 Infinity Autosampler	
G4303A	1260 Infinity SFC Standard Autosampler	
G4767A	1260 Infinity II SFC Multisampler	
G5667A	1260 Infinity Bio-inert Multisampler	
G5668A	1260 Infinity II Bio-inert Multisampler	
G7129A	1260 Infinity II Vialsampler	
G7129B	1290 Infinity II Vialsampler	
G7129C	1260 Infinty II Vialsampler	
G7157A	1260 Infinity II Preparative Sampler	not supported
G7167A	1260 Infinity II Multisampler	
G7167B	1290 Infinity II Multisampler	

Table 8 Agilent CTC PAL Autosampler with Agilent LC

Product Number	Module Name	Compatibility Statement
G4277A	Agilent 1290 Infinity LC Injector HTS	
G4278A	Agilent 1290 Infinity LC Injector HTC	
G4270-CTC	HTC PAL Auto sampler	requires motherboard with FW 4.1.5 or higher
G4271-CTC	HTS PAL Auto sampler	

Agilent LC – Pumps

Product Number	Module Name	Compatibility Statement
G1310A	1200 Series Isocratic Pump	
G1310B	1260 Infinity Isocratic Pump	
G1311A	1200 Series Quaternary Pump Pump [1]	

Product Number	Module Name	Compatibility Statement
G1311B	1260 Infinity Quaternary Pump [1]	
G1311C	1260 Infinity Quaternary Pump VL [1]	
G1312A	1260 Infinity Binary Pump [1]	
G1312B	1260 Infinity Binary Pump SL [1]	
G1312C	1260 Infinity Binary Pump VL [1]	
G1361A	1260 Infinity Preparative Pump	not supported
G1376A	1200 Micro Capillary Pump	not supported
G2226A	1200 Micro Nano Pump	not supported
G4204A	1290 Quaternary Pump [1]	
G4220A	1290 Infinity Binary Pump [1]	
G4220B	1290 Infinity Binary Pump[1]	
G4301A	1260 Infinity II SFC Control Module	
G4302A	1260 Infinity SFC Binary Pump [1]	
G4782A	1260 Infinity II SFC Binary Pump [1]	
G5611A	1260 Infinity Bio-inert Quaternary Pump [1]	
G5654A	1260 Infinity II Bio-inert Quaternary Pump [1]	
G7104A	1290 Infinity II Flexible Pump [1]	
G7104C	1260 Infinity II Flexible Pump[1]	
G7110B	1260 Infinity II Isocratic Pump [1]	
G7111A	1260 Infinity II Quaternary Pump VL [1]	
G7111B	1260 Infinity II Quaternary Pump[1]	
G7112B	1260 Infinity II Binary Pump[1]	
G7120A	1290 Infinity II High Speed Pump [1]	
G7161A	1260 Infinity II Preparative Binary Pump	not supported
G7161B	1290 Infinity II Preparative Binary Pump	not supported

[1] Pump valve clusters are possible for marked pumps with up to 2 valves of type G1160A and/or G1170A with 5067-4159 or 5067-4147.

Agilent LC – Column Compartments

Product Number	Module Name	Compatibility Statement
G1316A	1260 Infinity Thermostatted Column Compartment	
G1316B	1200 Series Thermostatted Column Compartment	
G1316C	1290 Infinity Thermostatted Column Compartment	
TCC Cluster	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.	
G7116A	1260 Infinity II Multicolumn Thermostat	
G7116B	1290 Infinity II Multicolumn Thermostat	
G7130A	Integrated Column Compartment ICC	
VTC Valve Thermostat Cluster	Combinations of G7116B, G1170A and G1316C (valve or column hosts) and G1316A/B and G7130A	See LC Driver Release Notes: *Valve-Thermostat Cluster*

Agilent LC – Detectors

Product Number	Module Name	Compatibility Statement
G1314A	1100 Series Variable Wavelength Detector	
G1314B	1260 Infinity Variable Wavelength Detector VL	
G1314C	1260 Infinity Variable Wavelength Detector VL+	
G1314D	1200 Series Variable Wavelength Detector	
G1314E	1290 Infinity Variable Wavelength Detector	
G1314F	1260 Infinity Variable Wavelength Detector	
G1315A	1100 Series Diode Array Detector	
G1315B	1200 Series Diode Array Detector	
G1315C	1260 Infinity Diode Array Detector VL+	
G1315D	1260 Infinity Diode Array Detector VL	
G1321A	1200 Series Fluorescence Detector	
G1321B	1260 Infinity Fluorescence Detector Spectra	

Product Number	Module Name	Compatibility Statement
G1321C	1260 Infinity Fluorescence Detector	
G1362A	1260 Infinity Refractive Index Detector	
G1365A	1100 Series Multiple Wavelength Detector	
G1365B	1200 Series Multi-Wavelength Detector	
G1365C	1260 Infinity Multiple Wavelength Detector	
G1365D	1260 Infinity Multiple Wavelength Detector VL	
G4212A	1290 Infinity Diode Array Detector	
G4212B	1260 Infinity Diode Array Detector	
HDR-DAD Cluster	2x G4212A, 2x G4212B, 2x G7117A or 2x G7117B, or a combination of either 1x G4212A and 1x G4212B, or 1x G7117A and 1x G7117B	
G7114A	1260 Infinity II Variable Wavelength Detector	
G7114B	1290 Infinity II Variable Wavelength Detector	
G7115A	1260 Infinity II Diode Array Detector WR	
G7117A	1290 Infinity II Diode Array Detector FS	
G7117B	1290 Infinity II Diode Array Detector	
G7117C	1260 Infinity II Diode Array Detector HS	
G7121A	1260 Infinity II Fluorescence Detector	
G7121B	1260 Infinity II Fluorescence Detector Spectra	
G7162A	1260 Infinity II Refractive Index Detector	
G7162B	1290 Infinity II Refractive Index Detector	
G7165A	1260 Infinity II Multiple Wavelength Detector	

Evaporative Light Scattering Detector

G4260A	380-ELSD	
G4261A	385-ELSD	
G4260B	1260 Infinity II Evaporative Light Scattering Detector	
G4261B	1290 Infinity Evaporative Light Scattering Detector	
G7102A	1290 Infinity II Evaporative Light Scattering Detector	

Agilent LC – Valve Solutions

Product Number	Module Name	Compatibility Statement
G1156A	1200 Series 6 Position / 7 Port Valve (400 bar)	
G1157A	1200 Series 2 Position / 10 Port Valve	
G1158A	1200 Series 2 Position / 6 Port Valve	
G1158B	1200 Series 2 Position / 6 Port Valve (600bar)	
G1159A	1200 Series 6 Position Selection Valve	
G1160A	1200 Series 12 Position/13 Port Valve	
G1162A	1200 Series 2 Position/ 6 Port Micro Valve	
G1163A	1200 Series 2 Position/ 10 Port Micro Valve	
G1170A	1290 Infinity Valve Drive	host required. For details see latest LC driver release note.
G1390A	1100 UIB	not supported as part of fraction collector
G1390B	UIB II	
G4227A	1290 Infinity Flexible Cube	
G4231A	5067-4282 2pos/6port Valve head 800 bar	Includes backward compatibility to the former 600 bar valves. For more detail on required driver versions see customer letter (Part No. 01200-90134).
G4232C	5067-4283 2pos/10port Valve head 800 bar	
G4234A	5067-4284 6pos/14port, 6-column selector Valve head 800 bar	
G4237A	5067-4279 4pos/10port, 4-column selector Valve head 800 bar	
G4240A	1200 Chip Cube Source	not supported
G7170B	1290 Infinity II MS Flow Modulator	
G9322A	1260 Infinity II Clustering Valve (solvent selection)	not supported

Fraction Collectors

Product Number	Module Name	Compatibility Statement
G1364A	1100 Series Automatic Fraction Collector	not supported
G1364B	1260 Infinity Fraction Collector (preparative-scale)	not supported
G1364C	1260 Infinity Fraction Collector (analytical-scale)	not supported
G1364D	1100 Series Micro Fraction Collector	not supported
G1364E	1260 Infinity II Preparative Fraction Collector	not supported
G1364F	1260 Infinity II Analytical Fraction Collector	not supported
G5664A	1260 Infinity Bio-inert Fraction Collector AS	not supported
G5664B	1260 Infinity II Bio-inert Fraction Collector	not supported
G7159B	1290 Infinity II Preparative Open-Bed Fraction Collector	not supported
G7166A	1260 Infinity II Preparative Valve-Based Fraction Collector	not supported

Agilent LC Systems

Product Number	Module Name
G4286A	1120 Compact LC, Isocratic
G4286B	1220 Infinity II Isocratic LC System
G4286C	1220 Infinity LC System VL
G4287A	1120 Compact LC, Isocratic with Oven and ALS
G4287B	1220 Infinity LC Isocratic LC System
G4287C	1220 Infinity LC System VL
G4288A	1220 Infinity II Gradient LC System
G4288B	1220 Infinity II Gradient LC System
G4288C	1220 Infinity II Gradient LC System VL
G4289A	1120 Compact LC, Gradient with Oven
G4289B	1220 Infinity LC Gradient System
G4289C	1220 Infinity LC System VL
G4290A	1120 Compact LC, Gradient with oven and ALS
G4290B	1220 Infinity II Gradient LC System

Product Number	Module Name
G4290C	1220 Infinity II Gradient LC System VL
G4291B	1220 Infinity LC System
G4291C	1220 Infinity LC System VL
G4292B	1220 Infinity LC System
G4292C	1220 Infinity LC System VL
G4293B	1220 Infinity LC System
G4293C	1220 Infinity LC System VL
G4294B	1220 Infinity II Gradient DAD LC System

Agilent LC/MS

Recommended Firmware

Always use the most recent Firmware installation package that comes with the driver package.

Agilent LC/MS Single Quad 6100 Series

The following Agilent LC/MS instruments can be controlled with OpenLab CDS.

Product Number	Description	Compatibility Statement
61xxA LC/MS family		not supported
G6120C G6125C G6130C G6135C	MS Module LC/MSD MS Module LC/MSD XT	61x0B to 61x0C via upgrade kit (G2725N) 61x5B to 61x5C via upgrade kit (G4934C)
G6150B	MS Module	not supported
G1947B G1971B	APCI APPI (Photo Ionization)	ESI or AJS capable source required
G1948B	ESI	
G1951A	Analog Output Accessory	not supported

Product Number	Description	Compatibility Statement
G1958B	Agilent Jet Stream for Single Quad	
G1978B	Multimode Source	
G4240	Chip Cube Source	not supported

Agilent CE Instrument Support

Capillary Electrophoresis (CE) instruments are not supported to be controlled by OpenLab CDS version 2.4.

Agilent GC and GC/MS Instrument Support

Supported GC Systems

Agilent GC Firmware Interoperability and Support Statements

Agilent releases GC firmware updates independently of software releases.

All Agilent GC instrument driver revisions have been designed to be backward compatible to the installed instrument base. Agilent recommends always using the latest module firmware revision to provide the highest level of system capability.

Upgrading firmware is not required in all cases. A firmware upgrade should be done if you face problems or want to add system capability to your GC. Refer to latest Hardware Service Notes for latest firmware available.

Supported GC Systems

Product Number	Description	Compatibility Statement
G3950A G3952A G3953A	Intuvo 9000 GC system	7683 ALS family not supported
G3540A G3542A G3543A G3545A	8890 Series Custom GC System	
G2970A	8860 Series Custom GC System	
G3440A G3445A	7890A	
G3440B G3445B	7890B	
G4350A	7820A	Backflush not supported with 7820
G1530N G1540N	6890N	

Product Number	Description	Compatibility Statement
G1530A G1540A	6890A 6890Plus	Manual inlets and manual detectors are not supported
G2629A	6850 Handheld Controller	not supported
G2630A	6850 Serial # >= US10243001 Serial # < US00003200	
G3581A G3582A	490 Micro GC	New 4.02 mainboard required (blue power LED or internal USB connector)

Supported Autosamplers

Supported Autosamplers

Table 9 7693 GC Autosampler

Product Number	Description
G3420A	GC ALS Controller
G4513A	Injector
G4514A	Tray
G4515A	BCR/Mixer
G4516A	External Controller for 68xx
G4517A	6890 Plus Card Upgrade
G4520A	Tray with BCR/Mixer
G4521A	LVI Syringe Carriage
G4522A	Cooling Accessory

Table 10 7683A GC Autosampler

Product Number	Description
G2613A	7683A Injector
G2614A	Tray
G2615A	BCR/Mixer

Table 11 7683B GC Autosampler

Product Number	Description
G2614A	Tray
G2615A	BCR/Mixer
G2912A	7683B ALS Controller for 6890
G2913A	7683B Injector
G4516A	ALS Controller Board for 6890 Plus GC

Table 12 7650 and G2880A GC Autosamplers

Product Number	Description
G4567A	7650A ALS Injector
G2880A	Injector

Table 13 Agilent Headspace Autosampler

Product Number	Description	Support Statement
G4556A G4557A	7697A Headspace	12 vial heating
G1888A	G1888 Headspace	12 vial heating

Table 14 Agilent CTC and PAL-xt CTC Sampler with Agilent GC

Product Number	Description	Support Statement
G6500-CTC	CTC Combi-Pal for Liquid and Headspace Injection	requires new motherboard with FW 4.1.5. or higher or G6500-60605 XT Upgrade for COMBI PAL Systems
G6501-CTC	CTC Combi-Pal for Liquid Injection	
G6509-CTC	CTC Combi-Pal for Liquid Injection	requires new motherboard with FW 4.1.5. or higher or G6500-60605 XT Upgrade for COMBI PAL Systems
G6502-CTC	CTC GC-Pal for Liquid Injection	
G6501B	Agilent GC Sampler 80 for Liquid Injection	new motherboard required with FW 4.1.5 or higher
G6502B	Agilent GC Injector 80 for Liquid Injection	
G6509B	Agilent GC Sampler 120 for Liquid Injection	

Table 15 Agilent CTC PAL-3 Autosampler with Agilent GC

Product Number	Description
G7366A	PAL RTC 120 Robotic Tool Change X-rail
G9256A	PAL RSI 120 Robotic Sample Injection X-rail
G7368A	PAL RSI 53 Robotic Sample Injection X-rail
G7370A	PAL LSI 53 Liquid Sample Injection X-rail

Agilent GC/MS

Recommended Firmware

Always use the most recent MS Firmware installation package that comes with the driver package.

The supported GC/MS firmware is available after installation of OpenLab CDS in **Program Files (x86) > Agilent Technologies > OpenLab Acquisition > GCMS > Firmware**. Open the appropriate MS folder (5977 or 5975) and run msupdate.exe to upgrade the MS firmware.

Agilent GC/MS Single Quad Series

The following GC/MS Models can be controlled with OpenLab CDS.

Model number / series	Description	Note
	5973 GC/MS family	not supported
5975A 5975B 5975C 5975E 5977A 5977E	MS System	CI added with GC/MS Driver A.01.02
5975T	Integrated GC/MS	not supported
5977B	MS System	CI added with GC/MS Driver A.01.02
7890A 7890B 7820 6890N 6850	GC System	GC's supported as part of GC/MS system - see "Supported GC Systems" on page 38 for details
7693 7683B 7650	GC ALS	Samplers supported as part of GC/MS system - see "Supported Autosamplers" on page 39 for details

Model number / series	Description	Note
PAL-XT PAL-3	CTC	
G7697A G1888	Headspace	

Other supported Agilent Instruments

Other Agilent instruments or modules that you can connect with the latest revision of OpenLab CDS:

Table 16 Other Agilent modules

Product number	Description
35900E 35900E (Series II)	35900 A/D Interface
SS420x	A/D Interface
7667A	Mini Thermal Desorber

Non-Agilent Instruments

The following non-Agilent instruments can be controlled with OpenLab CDS 2.4.

NOTE

For a current list of supported versions please check OpenLab CDS 2.4_Non_Agilent Compatibility Matrix.docx available from SubscribeNet.

Always download the most recent instrument drivers available from SubscribeNet to control Non-Agilent instruments.

Table 17 Non-Agilent instrument drivers compatible with OpenLab CDS version 2.4

Part Number	Vendor	Driver Type	Instrument Name	Status
M8505BA	Waters	LC	Waters ACQUITY UPLC, ACQUITY UPLC I-Class, ACQUITY UPLC H-Class, ACQUITY UPLC H-Class Bio, ACQUITY ARC, ACQUITY CHC, ACQUITY CM-AUX, Waters 2998 PDA, Waters 2489 UV, Waters 2414 RID	Supported
	Waters	LC	Waters Alliance 2690, Waters Alliance 2695, e-Alliance e2695, Waters 996 PDA, Waters 2996 PDA, Alliance 2998 PDA, Waters 2487 UV, Alliance 2489 UV, Waters 2414 RID	Supported
M8237BA	Scion / Bruker/ Varian	GC	436/450/456 GC CP-3800, CP-3900/430, and associated Auto-samplers	Supported
M8224BA	Valco Instruments (VICI)	Valve	Standard Electric Actuator with SVI option (multiposition) Micro-electric actuator (two-position and multi-position) Universal actuator (two-position and multi-position)	Supported

Table 17 Non-Agilent instrument drivers compatible with OpenLab CDS version 2.4

Part Number	Vendor	Driver Type	Instrument Name	Status
M8236BA	Thermo Fisher	LC	Accela, Surveyor (plus)	Supported
M8240BA	Shimadzu	LC	LC-20 (Prominence), LC-30 (Nexera), LC-2030 (Prominence-i), LC-2030C, LC-2030C 3D LC-2040 (Nexera-i), LC-2040C, LC-2040C 3D SPD-M20A/SPD-M30A	supported
M8232BA	Shimadzu	GC	GC 2010, GC 2010 Plus GC 2014, GC 2014C Nexis GC 2030 HS-10, HS-20	supported
M8227BA	Hitachi	LC	Chromaster	supported
M8227BA	Hitachi	LC	ChromasterUltra Rs, Primaide, LaChrom Elite	not released
M8242BA	PerkinElmer	GC	Clarus GC 500, 580, 600, 680 TurboMatrix HeadSpace	release planned for 2019

VL WorkStation and VL WorkStation Plus Supported Instruments

The following subset of the Agilent instrument hardware are compatible with the *OpenLab CDS VL Workstation* and *OpenLab CDS VL Workstation Plus*.

NOTE

VL WorkStation and VL Workstation plus require LC driver version A.03.00 or higher (not included in CDS 2.4 software package).

1260 Infinity LC series

Product number	Module Name
G1310B	1260 Infinity Isocratic Pump
G1311B	1260 Infinity Quaternary Pump
G1311C	1260 Infinity Quaternary Pump VL
G1329B	1260 Infinity Standard Autosampler
G1316A	1260 Infinity Thermostatted Column Compartment
G1315C	1260 Infinity Diode Array Detector VL+
G1315D	1260 Infinity Diode Array Detector VL
G4212B	1260 Infinity Diode Array Detector
G1365C	1260 Infinity Multiple Wavelength Detector
G1365D	1260 Infinity Multiple Wavelength Detector VL
G1314B	1260 infinity Variable Wavelength Detector VL
G1314C	1260 Infinity Variable Wavelength Detector VL+
G1314F	1260 Infinity Variable Wavelength Detector
G1321B	1260 Infinity Fluorescence Detector Spectra
G1321C	1260 Infinity Fluorescence Detector
G1362A	1260 Infinity Refractive Index Detector
G1390B	1200 Infinity Series Universal Interface Box II

1260 Infinity II LC series

Product number	Module Name
G7111A/B	1260 Infinity II Quat. Pump
G7110B	1260 Infinity II Isocratic Pump
G7116A	1260 Infinity II Multicolumn Thermostat
G7129A	1260 Infinity II Vialsampler
G7115A	1260 Infinity II Diode Array Detector WR
G7165A	1260 Infinity II Multiple Wavelength Detector
G7114A	1260 Infinity II Variable Wavelength Detector
G7162A	1260 Infinity II Refractive Index Detector
G7121A	1260 Infinity II Fluorescence Detector
G7121B	1260 Infinity II Fluorescence Detector Spectra

Agilent LC Systems

Product Number	Module Name
G4286A	1120 Compact LC, Isocratic
G4286B	1220 Infinity II Isocratic LC System
G4286C	1220 Infinity LC System VL
G4287A	1120 Compact LC, Isocratic with Oven and ALS
G4287B	1220 Infinity LC Isocratic LC System
G4287C	1220 Infinity LC System VL
G4288A	1220 Infinity II Gradient LC System
G4288B	1220 Infinity II Gradient LC System
G4288C	1220 Infinity II Gradient LC System VL
G4289A	1120 Compact LC, Gradient with Oven
G4289B	1220 Infinity LC Gradient System
G4289C	1220 Infinity LC System VL
G4290A	1120 Compact LC, Gradient with oven and ALS
G4290B	1220 Infinity II Gradient LC System

Product Number	Module Name
G4290C	1220 Infinity II Gradient LC System VL
G4291B	1220 Infinity LC System
G4291C	1220 Infinity LC System VL
G4292B	1220 Infinity LC System
G4292C	1220 Infinity LC System VL
G4293B	1220 Infinity LC System
G4293C	1220 Infinity LC System VL
G4294B	1220 Infinity II Gradient DAD LC System

Agilent GC systems

Table 18 GC systems for VL

G4350A	7820 GC System
G3581A	Micro-GC

4 Software Compatibility

Agilent Software

- LabAdvisor for LC
- Instrument Utilities for GC
- ACE
- Remote Advisor
- Sample Scheduler for OpenLab CDS
- OpenLab ELN
- Match Compare
- ADF Export Plug-in

Compatible Libraries and Databases

The following libraries and databases are compatible with version 2.4 of OpenLab CDS:

NIST MS Search/ NIST Library

Supported revisions

- 2.x / NIST17
- 2.2 / NIST14

  This library ships with NIST MS Search
- 2.0g / NIST11
- 2.0f / NIST08
- 2.0f / NIST08Demo

  Available from NIST.gov website

Wiley/NIST Combined MS Library

Supported revisions

- W10N17

  Ships with the NIST MS Search appropriate to the NIST version (N), e.g. W10N14 contains MS Search v2.2.
- W10N14
- W10N11
- W9N11
- W8N08

Other libraries

Any library in the appropriate NIST format, can be opened in NIST MS Search and a basic search e.g. name search, run against it.

In This Book

This document details the minimum hardware and software that need to be met to run an Agilent OpenLab Chromatography Data System (CDS) Workstation or Workstation Plus.

It also lists supported instruments.

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