Agilent ICF Support Layer for Waters CDS

Release Notes – Revision 4.2

Notices

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Software Revision

This guide is valid for the Agilent ICF Support Layer for Waters CDS 4.2.

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Contents

1 Introduction

The Agilent ICF Support Layer for Waters CDS (WICF) is an instrument control application for the Agilent instrument portfolio running in Waters CDS.

The purpose of this document is to provide users of WICF guidance to relevant updates, known and resolved issues, compatibility, and support information as well as references to product documentation for installation and usage. For more details on ICF or the specific driver packages, please review the respective Release Notes on the installation media.

Table 1 Terms and abbreviations used in this document

Terms	Description
CDS	Chromatographic Data System
DSA	Data System Adapter
FR	Feature Release
HF	Hotfix
ICF	Instrument Control Framework
ICF SL	Waters ICF Support Layer
ICL	Instrument Control License
ICS	Instrument Component Software
Instrument controller	LAC/E or Personal Workstation
LAC/E	Laboratory Acquisition Control Environment
SFC	Supercritical Fluid Chromatography
SP	Service Pack
SR	Service Release
SSB	Software Status Bulletin
SVT	Software Verification Tool
U	Update
Waters	Waters Corporation
WICF	Agilent ICF Support Layer for Waters CDS

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 for the validation of an individual change and to determine the extent and impact of that change on the entire software system.

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2 Agilent WICF 4.2 – What's new?

Updated WICF 4.2

- Changed WICF Logging to the ICF and driver logging framework.
    - WICF logs are now written by default into "%ProgramData%\Agilent Technologies\Instrument Control Framework\WICF".
    - There are a maximum 30 logfiles per process name with a maximum file size of 20 MB for each.
    - There are 3 log levels: basic (default), medium and verbose.
    - The log level can be changed by changing the value of the AgilentWicfLogging.dll.config file in C:\Empower%\Instruments\AgilentLC:
        - Basic: WICFLogger_basic.config
        - Medium: WICFLogger_medium.config
        - Verbose: WICFLogger_verbose.config
    - All logs can be collected through the "Collect Support Info" next to the instrument dashboard.
- Improved safety by replacing the deserialization of the DriverDataDictionary.xml
- Separated information on instrument and pretreatment method resolution.
- GC Keypad lock setting moved from PreConfiguration to Method.
- Minor defect fixes. See section 6.

LC Solvent Level Sensing support

- Support of the new Agilent Infinity III Solvent Level Sensing module G7175A to automatically monitor the relative level of solvent in each bottle.
- Solvent Prediction is not supported.

G1888 support

- WICF 4.2 is planned to be the final version to support the G1888 Headspace Sampler.

Component updates

- Updated drivers for LC/CE, GC and HS instruments.
- Updated Instrument Control Framework.
- The updated components support the new hardware and features mentioned above and include defect fixes. For further details, please refer to the driver release notes available on the installation media.

3 Compatibility and System Requirements

WICF releases include dedicated versions of ICF, instrument drivers, and Software Verification tool. The sections below provide prerequisites and compatibility information for Waters CDS, operating systems, Agilent hardware, and firmware.

The WICF installer prevents the installation if the prerequisites are not met.

Supported Agilent Components

The following Agilent components are included in this release of Agilent ICF Support Layer for Waters CDS 4.2.23

- Agilent Software Verification Tool 6.3.4.1
- Agilent Instrument Control Framework 3.4.49
- Agilent LC Drivers 3.9.56 including Agilent ELSD Drivers 1.8.61
- Agilent GC Drivers 4.3.235
- Agilent HS Drivers 4.3.117 including G1888 driver B.01.09.2

NOTE

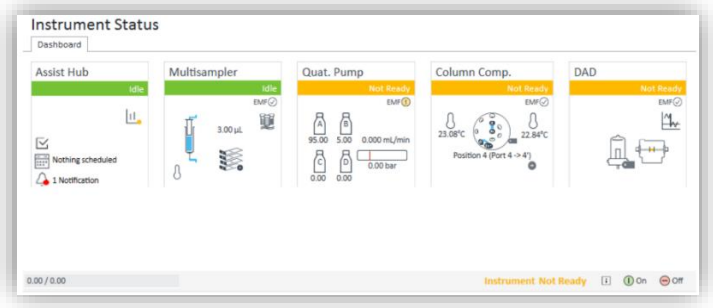
Agilent has announced that the G1888 Headspace Sampler will reach its official end of support in December 2025. In alignment with the hardware lifecycle, WICF 4.2 is planned to be the final version that supports the G1888.

Please contact your local Agilent sales representative for assistance with any questions or planning needs related to this change.

Agilent InfinityLab Assist Hub

Agilent InfinityLab Assist is a comprehensive solution comprising a user interface, computing unit, and control software, compatible with Waters Empower.

With WICF 4.1 or later, a driver tile for the Assist Hub is visible in the Instrument Status Dashboard.



With WICF 4.0 or earlier, the Assist Hub will not display a driver tile in the Instrument Status Dashboard. However, the Assist Hub remains functional.

In an Empower environment, the following constraints apply

- With WICF 4.1 and higher, tasks and the instrument actions included in tasks executed by the InfinityLab Assist are recorded in the diagnostic log. For earlier versions only the instrument actions are logged.
- The access to the InfinityLab Control Software via a browser or CDS is restricted to the same subnet, such as from the instrument controller.
- If a sample set is running, Assist tasks can be submitted and will be executed after the Run Queue is finished.
- If the system is in a monitoring run, submitting Assist tasks is not supported.
- If an Assist task is running, sample sets cannot be submitted.
- Activating HTTPS/TLS communication via certificate is not supported.
- For all versions below WICF 4.1, the “CDS required” setting is not supported.
- With WICF 4.0 and ICF SL 3.7.01, the InfinityLab Assist is displayed in the diagnostic log and Empower message center as “Warning: Unknown module found”, including model and serial number.

For more information, see the InfinityLab Assist user manual or visit Infinity III LC Series Technology on Agilent.com.

Agilent Lab Advisor

Agilent Lab Advisor is a standalone diagnostic software for Agilent LCs and CEs, compatible with Waters Empower on the same PC without interfering with the CDS.

Modules with firmware A.XX (mainly 1100/1200) can host only one instrument controller, allowing the use of either Empower or Lab Advisor. Modules with firmware B/D can host up to five instrument controllers, enabling parallel connections of Empower and Lab Advisor. When in use, each instrument is locked by its respective controller. For example, Empower locks the instrument when a Sample Set is submitted, Lab Advisor locks the instrument when a diagnostic test is started. Other connected instrument controllers can view the instrument actuals but not modify method parameters or submit commands.
This also applies to the Lab Advisor Client/Server setup with a TCP Relay Service installed on the instrument controller.

For more information, visit Lab Advisor on Agilent.com.

Supported Waters CDS

- Waters Empower 3 FR4, FR5, 3.6.0, 3.6.1, 3.7.0, 3.8.0, 3.8.1, 3.9.0[1] including all service releases and hotfixes.

Unless otherwise stated, the latest WICF release is deemed compatible with any subsequent Empower release.

NOTE Waters MassLynx is not supported with this release.

Supported Operating Systems

- Microsoft Windows 11[2]
- Microsoft Windows 10
- Microsoft Windows Server 2016
- Microsoft Windows Server 2019
- Microsoft Windows Server 2022[2]

WICF 4.2 has been validated with Citrix Virtual Apps and Desktops 7 2402 LTSR CU1 on Empower 3.8.1.

The supported operating system and virtualization platform in use is primarily determined by the Waters CDS, please refer to the Waters Empower documentation.

Supported Localization

This version of WICF is localized in English, Japanese, and Chinese (simplified).

[1] Including RapidDeploy
[2] Tested with Empower 3.8.1 and 3.9.

Supported Microsoft .NET Framework

- Microsoft .NET 4.8 or higher
- For ELSD driver 1.8, Microsoft .NET 3.5 must be activated.

Please ensure that Microsoft .NET 4.8 or higher is installed in addition to any pre-installed version.

Network Specifications

Only Ethernet connection between the instrument controller and the instrument is supported. The exception is SFC instruments which use serial connections. To connect an instrument controller to an instrument, follow these guidelines

- Connect via an isolated switch using standard CAT-5 network cabling.
- LAN communication hardware should be capable of 100/1000 Mbps or higher speeds.
- LAN communication must be on the same subnet as instruments, and preferably on the same segment.
- NIC teaming/bridging: It is recommended that Network Interface Cards (NICs) connected to instruments should not be configured for teaming or bridging.

Table 2 Network specifications

Network Specification Description	Supported
Network type, bandwidth, speed, protocol etc.	Internet Protocol Version 4 (TCP/IPv4) only Internet Protocol Version 6 (TCP/IPv6) must be deactivated
Additional network or instrument communication card requirements	Static or DHCP Reservation (not recommended)

For Network and PC Specifications within the Empower environment, for example, LAC/E, client, or database, refer to the Waters documentation.

Interoperability

Interoperability describes a scenario in which different driver versions are present on Client or Citrix Servers and instrument controller in a client/server environment. In this way a rolling upgrade from previous WICF or ICF SL versions to the current WICF version may be realized with minimal downtime.

WICF supports driver interoperability in client/server systems for LC, GC, and HS drivers in accordance with the following constraints

- The driver version of the client is greater or equal to the version on the instrument controller.
- The controller-side driver version is equal or greater than:
    - LC Drivers A.02.19 SR2
      (Agilent ICF version 2.6 Update 2, Waters ICF SL version 3.3)
    - GC Drivers 3.1
      (Agilent ICF version 2.6 Update 2, Waters ICF SL version 3.3)
    - HS Drivers 3.1
      (Agilent ICF version 3.0 Update 2, Waters ICF SL version 3.5)
- New hardware and new features are only supported when both the instrument controller and the client are updated to the same version.
- Instrument configuration is only supported directly on the instrument controller.
- ELSD driver interoperability is not supported.

Periodically, new technologies or features may require breaking changes to the drivers. New features and options introduced by a new client-side driver version may not work or lead to unexpected behavior. Fully functional behavior requires synchronized driver versions on both the client and the instrument controller. The recommendation is to keep interoperability scenarios at a minimum.

Supported Non-Agilent RC.NET Drivers

At the time of writing, WICF 4.2 supports several Non-Agilent RC.NET Drivers

- CTC PAL3 version 1.10.3 providing support for PAL RTC, PAL RSI, PAL LSI, PAL RTC Series II, PAL RSI Series II, CTC Analytics AG. Can be purchased via Agilent for Agilent branded GC PAL3 (G7376A).
- Waters 3465 Electrochemical Detector Driver for Empower – Version 1.3.

For other drivers or more information and compatibility, contact the respective driver vendors.

Support of Legacy and Native Drivers

- ICF Support Layer cannot co-exist with WICF and must be removed completely before WICF installation.
- Legacy ICS instrument drivers such as A1100 LC (v1.06), 7890 GC ICS v2.6, 6850 GC ICS v1.40, HS G1888A, and HS7697 HCO v3.0 are independent and can co-exist with WICF on the same client or LAC/E. A chromatographic system can solely be controlled by one driver, either WICF or legacy. The legacy drivers can be used to access legacy instrument methods. The GC Dual Tower functionality is not supported when WICF or ICF SL and legacy drivers are installed on the instrument controller.
- The native Waters Driver Pack (DP) may exist in parallel on the same instrument controller or client to control Waters instrumentation. Uninstalling the Waters DP leads to issues as shared components will be removed (InstrIDL.dll in C:\Empower\Instruments\Bin) after every restart. Workarounds are:
    - Re-install the Waters DP.
    - Set the Read-only attribute for the InstrIDL.dll before uninstalling Waters DP or after WICF installation, before restarting.

4 Supported Agilent Modules and Firmware

Capacity Recommendation

Empower supports up to 4 systems per instrument controller. The recommendation for WICF is to connect up to 4 systems, where each instrument stack includes 2D detectors, for example, VWD, RID, FID, ECD.
3D detectors, for example, DAD, FLD count as 2 systems and thus reduce the number of recommended systems respectively.

Example recommended capacities for one instrument controller

- LC (2D) + LC (2D) + GC (2D) + GC-HS (2D)
- LC (3D) + GC-HS (2D) + GC-HS (2D)
- LC (3D) + LC (3D)

Supported LC Modules

The Agilent LC & CE drivers are backwards compatible down to the so-called minimum required firmware version. Modules with identical Product Numbers are supported, even if the tables below list only the name of the current model version. 1100 Series and 1200 Series models are supported on a best-effort basis only. For more details, refer to the driver Release Notes of the driver revision you are using.

Recommended Firmware

With the release of this version, it is recommended to use the following firmware revisions. Agilent LC and CE Drivers are forward-compatible with respect to firmware, for example, the firmware can be updated without the need of updating the driver.

Table 3 Recommended Firmware

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.07.40 or later
Agilent 1200 Infinity Hosted Modules	C.07.32 or later
Agilent 1260/1290 Infinity II/III Modules	D.07.40 or later

NOTE A firmware update within set A/B/C/D.07.01 is required for all modules in that stack, not only new modules.

Minimum required Firmware

The following table lists the minimum required firmware for all LC modules supported by the LC and CE Drivers. Please note that not all features might be available, if only the minimum required firmware is used.

Table 4 Pumps

Module No.	Module Name	Min. Firmware
G1310A	1200 Isocratic Pump	A.06.10
G1310B	1260 Infinity Isocratic Pump	A.06.32
G1311A	1200 Series Quaternary Pump	A.06.10
G1311B	1260 Infinity Quaternary Pump	A.06.10
G1311C	1260 Infinity Quaternary Pump VL	A.06.32
G1312A	1200 Series Binary Pump	A.06.10
G1312B	1260 Infinity Binary Pump	A.06.10
G1312C	1260 Infinity Binary Pump VL	A.06.32
G1361A	1260 Infinity Preparative Pump	A.06.50
G1376A	1260 Infinity Capillary Pump	A.06.10
G2226A	1260 Infinity Nanoflow Pump	A.06.10
G4204A	1290 Infinity Quaternary Pump	B.07.42
G4220A	1290 Infinity Binary Pump	B.07.42
G4220B	1290 Infinity Binary Pump VL	B.07.42

G4301A	1260 Infinity II/III SFC Control Module	A.03.09
G4302A	1260 Infinity SFC Binary Pump	A.06.10
G4782A	1260 Infinity II/III SFC Binary Pump	D.07.42
G5611A	1260 Infinity Bio-inert Quaternary Pump	A.06.10
G5654A	1260 Infinity II/III Bio-Inert Quaternary Pump	D.07.42
G7104A	1290 Infinity II/III Flexible Pump	B.07.42
G7104C	1290 Infinity II/III Flexible Pump	B.07.42
G7110B	1260 Infinity II/III Isocratic Pump	D.07.42
G7111A	1260 Infinity II/III Quaternary Pump VL	D.07.42
G7111B	1260 Infinity II/III Quaternary Pump VL	D.07.42
G7112B	1260 Infinity II/III Binary Pump	D.07.42
G7120A	1290 Infinity II/III High Speed Pump	B.07.42
G7131A	1290 Infinity II/III Bio Flexible Pump	B.07.42
G7131C	1260 Infinity II/III Bio Flexible Pump	B.07.42
G7132A	1290 Infinity II/III Bio High-Speed Pump	B.07.42
G7161A	1260 Infinity II Preparative Binary Pump	D.07.20
G7161B	1290 Infinity II Preparative Binary Pump	D.07.27

Table 5 Sampling Systems

Module No.	Module Name	Min. Firmware
G1313A	1100 Series Autosampler	A.06.10
G1329A	1200 Series Standard Autosampler	A.06.10
G1329B	1260 Infinity Standard Autosampler	A.06.10
G1367A	1100 Series Well-plate Autosampler	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 Thermostated Autosampler	A.06.10

G2258A	1260 Infinity Dual-Loop Autosampler	A.06.50
G2260A	1260 Infinity Preparative Autosampler (High flow)	A.06.50
G3167A	1260 Infinity II/III Online Sample Manager	Not supported
G3167B	1260 Infinity II/III Bio Online Sample Manager	Not supported
G4226A	1290 Infinity Autosampler	A.06.31
G4303A	1260 Infinity SFC Standard Autosampler	A.06.54
G4767A	1260 Infinity II/III SFC Multisampler	D.07.40
G5667A	1260 Infinity Bio-inert High Performance Autosampler	A.06.32
G5668A	1260 Infinity II/III Bio-inert Multisampler	D.07.40
G7129A	1260 Infinity II/III Vialsampler	D.07.38
G7129B	1290 Infinity II/III Vialsampler	D.07.38
G7129C	1260 Infinity II/III Vialsampler	D.07.38
G7137A	1290 Infinity II/III Bio Multisampler	D.07.40
G7157A	1260 Infinity II Preparative Autosampler	D.07.38
G7158B	1290 Infinity II Open-bed Sampler / Fraction Collector	D.07.39
G7167A	1260 Infinity II/III Multisampler	D.07.40
G7167B	1290 Infinity II/III Multisampler	D.07.40
G7167C	Agilent 1260 Infinity II/III Hybrid Multisampler (NEW)	D.07.40
G7169B	1290 Infinity II Open-bed Sampler / Fraction Collector – Sampler Driver	D.07.39
G1328A/B	1100/1200 Series Manual Injectors, 400 bar[1]	N/A
G1328C	1260 Infinity (II) Manual Injector, 600 bar[1]	N/A
G1328D	1260 Infinity II Preparative Manual Injector, 600 bar[1]	N/A
G5628A	1260 Infinity (II) Bio-Inert Manual Injector, 600 bar[1]	N/A
G1330A/B	Thermostat for Agilent Sampler	N/A

Table 6 LC-Fraction Collectors (see Technical Note Using the Fraction Collector in Empower 3 Environment)

Module No.	Module Name	Min. Firmware
G1364A	1260 Infinity Preparative-Scale Fraction Collector	A.06.53
G1364B	1100 Fraction Collector	A.06.53
G1364C	1260 Infinity Analytical-Scale Fraction Collector	A.06.53
G1364D	1260 Infinity Micro-Scale Fraction Collector/Spotter	B.06.53

G1364E	1260 Infinity II Preparative-Scale Fraction Collector	D.07.34
G1364F	1260 Infinity II Analytical-Scale Fraction Collector	D.07.34
G5664A	1260 Infinity Bio-Inert Fraction Collector	A.06.53
G5664B	1260 II Infinity Bio-Inert Fraction Collector	D.07.34
G7159B	1290 Infinity II Preparative Open-Bed Fraction Collector	D.07.34
G7166A	1260 Infinity II Preparative Valve-Based Fraction Collector	C.07.30 (B.07.34 / D.07.34)

Table 7 Detectors

Module No.	Module Name	Min. Firmware
G1314A	1100 Series Variable Wavelength Detector	A.06.10
G1314B	1260 Infinity Variable Wavelength Detector VL	A.06.10
G1314C	1260 Infinity Variable Wavelength Detector VL+	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	1260 Infinity Diode Array Detector VL+	B.06.30
G1315D	1260 Infinity Diode Array Detector VL	B.06.30
G1365A	1100 Series Multiple Wavelength Detector	A.06.10
G1365B	1200 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	1200 Series Fluorescence Detector (FLD)	A.06.10
G1321B	1260 Infinity Fluorescence Detector Spectra	A.06.36
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	1260 Infinity Diode Array Detector	B.06.30

G4218A	1260 Infinity Evaporative Light Scattering Detector[3]	Not supported
G4260A	380-ELSD[3]	Not supported
G4261A	385-ELSD[3]	Not supported
G4260B	1260 Infinity II/III Evaporative Light Scattering Detector[3]	32.06
G4261B	1290 Infinity Evaporative Light Scattering Detector[3]	Not supported
G7102A	1290 Infinity II/III Evaporative Light Scattering Detector[3]	32.06
G7114A	1260 Infinity II/III Variable Wavelength Detector	D.07.01
G7114B	1290 Infinity II/III Variable Wavelength Detector	D.06.70
G7115A	1260 Infinity II/III Diode Array Detector WR	D.07.01
G7117A	1290 Infinity II/III Diode Array Detector FS	D.06.70
G7117B	1290 Infinity II/III Diode Array Detector	D.06.70
G7117C	1260 Infinity II/III Diode Array Detector HS	D.07.01
G7121A	1260 Infinity II/III Fluorescence Detector	D.07.01
G7121B	1260 Infinity II/III Fluorescence Detector Spectra	D.07.01
G7162A	1260 Infinity II/III Refractive Index Detector	D.06.76
G7162B	1290 Infinity II/III Refractive Index Detector	D.06.76
G7165A	1260 Infinity II/III Multi Wavelength Detector	D.07.01

Table 8 Column Compartments

Module No.	Module Name	Min. Firmware
G1316A	1260 Infinity Thermostated Column Compartment	A.06.10
G1316B	1200 Series Thermostated Column Compartment SL	A.06.10
G1316C	1200 Series Thermostated Column Compartment SL	A.06.14
G7116A	1260 Infinity II/III Multicolumn Thermostat	C.07.32 (B.07.35 / D.07.35)
G7116B	1290 Infinity II/III Multicolumn Thermostat (Host with firmware B.06.75/D.06.75 required)	C.07.32 (B.07.35 / D.07.35)
G7130A	Integrated Column Compartment ICC (option to G7129A/B)	D.06.75

[3] see Technical Note: Agilent 1290 Infinity II Evaporating Light Scattering Detector (ELSD) in Empower Environment

Table 9 Valve Drives and Valves

Module No.	Module Name	Min. Host Module Firmware
G1157A	1200 Series 2-Position/10-Port Valve, 400 bar	A.06.02
G1158A	1200 Series 2-Position/6-Port Valve, 400 bar	A.06.02
G1158B	1200 Series 2-Position/6-Port Valve, 600 bar	A.06.02
G1159A	1200 Series 6-Position Selection Valve	A.06.02
G1160A	1100 Series 12-Position/13-Port Multiple Purpose Switching Valve	A.06.02
G1162A	1200 Series 2-Position/6-Port Valve, Micro	A.06.02
G1163A	1200 Series 2-Position/10-Port Valve, Micro	A.06.02
G1170A	1290 Infinity II/III Valve Drive	C.06.30 (B.06.40/D.07.40)
G9322A	Agilent 1260 Infinity II Fraction Collector Clustering Valve	N/A
5067-4142	6 Column Selector, 1200 bar	N/A
5067-4143	6 Column Selector, 600 bar, BIO	N/A
5067-4144	2-Position/10-Port Valve, 600 bar, Micro	N/A
5067-4145	2-Position/10-Port Valve, 600 bar, Dual MBB	N/A
5067-4145	2-Position/10-Port Valve, 600 bar, with 10-32 fittings	N/A
5067-4146	6 Column Selector, 600bar	N/A
5067-4147	12-Position/13-Port Valve, 200 bar	N/A
5067-4148	2-Position/6-Port Valve, 600 bar, BIO	N/A
5067-4157	2-Position/10-Port Valve, 1200 bar, Micro	N/A
5067-4159	12-Position/13-Port Selection Valve, 210 bar, Bio	N/A
5067-4170	2-Position/8-Port Valve for 2D-LC 1200 bar	N/A
5067-4171	2-Position/8-Port Valve for 2D-LC 600 bar	N/A
5067-4193	2-Position/10-Port Valve, 600 bar, Prep LC up to 200 ml/min	N/A
5067-4194	8-Position/9-Port Valve, 600 bar, Prep LC up to 200 ml/min	N/A
5067-4214	2-Position/4-Port Valve, 1200 bar	N/A
5067-4233	8 Column Selector Valve, 1300 bar	N/A
5067-4239	8-Position/9-Port Valve. 1300 bar	N/A
5067-4240	2-Position/10-Port Valve, 1300 bar	N/A
5067-4241	2-Position/6-Port Valve, 1300 bar	N/A

5067-4243	6 Column Selector Valve	N/A
5067-4244	2-Position/8-Port Valve for 2D-LC, 1300 bar	N/A
5067-4266	5-Position/10-Port combi-valve (G4243A)	N/A
5067-4267	6 Column Selector, 600 bar, Prep, up to 200 ml/min	N/A
5067-4273	6 Column Selector, 1300 bar, NPL	N/A
5067-4279	4 Column Selector Valve, 800 bar	N/A
5067-4282	2-Position/6-Port Valve, 800 bar	N/A
5067-4283	2-Position/10-Port Valve, 800 bar	N/A
5067-4284	6 Column Selector Valve, 800 bar	N/A
5067-4287	4 Column Selector Valve, 600 bar	N/A
5067-6680	3-Position/6-Port Valve, 800 bar (NEW)	N/A
5067-6682	2-Position/10-Port Valve, 1300 bar, Bio	N/A
5067-6711	2-Position/14-Port Valve	N/A
5067-6722	6-Position/14-Port Valve, 600 bar, Prep	N/A
5320-0002	2-Position/14-Port Valve, 600 bar, Prep	N/A
5320-0017	5-Position/10-Port ASM Valve, Bio (NEW)	N/A

Table 10 Other Modules

Module No.	Module Name or Min. Module Firmware	Min. Host Module Firmware
G1390A	1100 Series Universal Interface Box (UIB)	N/A
G1390B	1200 Infinity Series Universal Interface Box II	C.06.50 (B.06.53 / D.06.53)
G4227A	1290 Infinity Flexible Cube	C.06.50 (B.06.52 / D.06.52)
G4240A	Agilent 1260 Infinity Chip Cube MS Interface	Not supported
G4301A	Agilent 1260 Infinity II/III SFC Control Module	A.03.09
G7170B	1290 Infinity II MS Flow Modulator	C.06.20 (B.06.20 / D.07.20)
G7180A	Agilent InfinityLab Assist Hub – Assist Control Software	E.01.00
G7175	Agilent InfinityLab Level Sensing (NEW)	D.07.42

Table 11 Compact LC

Module No.	Module Name or Min. Module Firmware	Min. Firmware
G4286A	1120 LC Isocratic	B.06.21
G4286B	1220 LC System Isocratic, Man. Inj., VWD, 600 bar	B.06.32
G4287A	1120 LC Isocratic with Oven and ALS	B.06.50
G4287B	1220 LC Isocratic, ALS, TCC, VWD, 600 bar	B.06.50
G4288A	1120 LC Gradient	B.06.21
G4288B	1220 LC Gradient, Man. Inj., VWD, 600 bar	B.06.32
G4289A	1120 LC Gradient with Oven	B.06.50
G4289B	1220 LC Gradient, ALS, TCC, VWD, 600 bar	B.06.50
G4290A	1120 LC Gradient with oven and ALS	B.06.50
G4290B	1220 LC Gradient, ALS, Man. Inj., TCC, VWD, 600 bar	B.06.50
G4291B	1220 LC Isocratic, Man. Inj., TCC, VWD, 600 bar	B.06.50
G4292B	1220 LC Isocratic, ALS, VWD, 600 bar	B.06.32
G4293B	1220 LC Gradient, ALS, VWD, 600 bar	B.06.32
G4294B	1220 LC Gradient, ALS, TCC, DAD, 600 bar	B.06.50
G4288C	1220 LC System VL Gradient, Man. Inj. VWD, 400 bar	B.06.32
G4289C	1220 LC System VL Gradient, Man. Inj. VWD, 400 bar	B.06.50
G4290C	1220 LC System VL Gradient, ALS, TCC, VWD, 400 bar	B.06.50
G4293C	1220 LC System VL Gradient, ALS, VWD, 400 bar	B.06.32

Table 12 Capillary Electrophoresis (see Technical Note Agilent 7100 Capillary Electrophoresis System in Empower)

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

Table 13 Driver Features and Special Solutions

Feature	Feature Name	Min. Firmware
Additional Driver Features	External Contacts Board G1351A	N/A
Additional Driver Features	Blend Assist	N/A

Additional Driver Features	ISET G2197AA I[4]	N/A
Additional Driver Features	ISET G2197AA II[4]	N/A
Additional Driver Features	ISET G2197AA III[4]	N/A
Additional Driver Features	ISET G2197AA IV[4]	N/A
Special Solutions	Buffer Advisor (G5617AA)	N/A
Special Solutions	2DLC (G2198AA)	Not supported
Special Solutions	Agilent Online LC Monitoring Software (G2954AA)	Not supported
Special Solutions	Method Scouting Wizard (G2196AA)	Not supported
Special Solutions	Automated Purification Software (M8368/M8369AA)	Not supported

NOTE

Agilent recommends using the most recent firmware revisions as they include the latest features and improvements. Agilent LC and CE Drivers are forward-compatible with respect to firmware, i.e., the firmware can be updated without the need for updating the driver.

Agilent LC – Cluster Drivers

Table 14 Agilent LC – Cluster Drivers

Product Description	Usage
Agilent Auto-scale Cluster Driver	Combines one G7158B with a G1170A Valve Drive and Prep Valve Pod (5320-0002).
Agilent 1200 Infinity Series High Dynamic Range DAD Solution	Combines two G4212A/B or two G7117A/B for high dynamic range DAD applications.
Agilent Column Compartment Cluster Driver	A combination of up to three G1316A/B/C for combined valve and temperature control.
Agilent Fraction Collector Cluster Driver	Combines up to three G1364A/B/C or G5664A with one G1364A/B/C or one G5664 for recovery. This cluster driver is considered obsolete. Use for legacy support only.
Agilent Fraction Collector Cluster II Driver	A combination of Fraction Collectors for increased fraction and recovery capacity. Supports up to three G1364E/F, G5664B or G7159B as fraction collectors with up to 3x G7166A as recovery. Since LC&CE Drivers 3.2, this driver also supports one G7158B with up to two additional G7159B for fraction collection and up to three G7166A for recovery.

[4] see Technical Note: Using ISET in Empower Environment

Agilent Preparative Pump Cluster Driver	Combines up to four G1361A.
Agilent Pump Valve Cluster Driver	A combination of one of the following pumps with up to two G1160A or up to two G1170A and valves 5067-4147 or 5067-4159 Supported pumps: G1311x, G1312x, G4220x, G4204x, G4302x, G4782x, G5611x, G7111x, G7112x, G5654x, G7104x.
Agilent Valve-Thermostat Cluster Driver	A combination of G7116B, G1170A for combined valve control plus a combination of G1316A/B/C, G7116B and G7130A for combined temperature control. Supports up to 32 columns.

Supported GC Modules

NOTE

Agilent releases GC firmware updates independently of the software releases. All Agilent GC instrument driver revisions have been designed to be backward compatible with the installed instrument base.

Agilent recommends always using the latest module firmware revisions to provide the highest level of system capability.

Table 15 Supported Gas Chromatographs, Inlets and Detectors

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

	G3443B	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD, ECD,
		PCM, VI, MMI, HT-PTV, LTM II	HSM, Dual W FPD, AIB, NCD, SCD
	G3445B	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD, ECD,
		PCM, VI, MMI, HT-PTV, LTM II	HSM, 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	HSM, Dual W FPD, AIB
	G3442A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD, ECD,
		PCM, VI, MMI, HT-PTV, LTM II	HSM, Dual W FPD, AIB
	G3443A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD, ECD,
		PCM, VI, MMI, HT-PTV, LTM II	HSM, Dual W FPD, AIB
	G3445A	S/S, P/P, COC, PTV, HCM	TCD, FID, NPD, FPD, ECD,
		PCM, VI, MMI, HT-PTV, LTM II	HSM, 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

NOTE All available GC valves are supported.

Minimum required Firmware

Table 16 Gas Chromatographs and Hardware Required Firmware

Module No.	Module Name	Min. Firmware
G1530N	6890N	N.06.07
G1540N	6890N	N.06.07
G1530A	6890A	A.03.08
G1540A	6890Plus	A.03.08
G2630A	6850A (Serial Number >= US10243001)	A.06.02
G2630A	6850A (Serial Number <= US00003200)	A.03.07
G3940A	8850 GC	2.9
G3941A	8850 GC	2.9
G2790A	8860 GC	2.5.1
G3540A	8890 GC	2.5.1
G3542A	8890 GC	2.5.1
G3543A	8890 GC	2.5.1
G3545A	8890 GC	2.5.1
G3650A	Intuvo 9000 GC	2.5.1
G3952A	Intuvo 9000 GC	2.5.1
G3953A	Intuvo 9000 GC	2.5.1
G3440B	7890B GC	B.02.03.2
G3442B	7890B GC	B.02.03.2
G3443B	7890B GC	B.02.03.2
G3440A	7890A GC	A.01.16
G3442A	7890A GC	A.01.16
G3443A	7890A GC	A.01.16
G4350A	7820A GC	A.01.15.012
G2629A	6850 Handheld Controller	A.05.06
G4567A	7650 GC ALS Injector	A.10.02
G4513A	7693 GC ALS Injector	A.10.09
G4514A	7693 GC ALS Tray	A.10.16
G4515A	7693 GC ALS BCR/Mixer	A.10.05

G4516A	7693 GC ALS Injector 6890Plus ALS card	A.01.06
G4517A	7693 GC ALS External Controller for GC 68xx	A.01.06
G4521A	7693 GC ALS LVI Syringe Carriage	N/A
G4522A	7693 GC ALS Cooling Accessory	N/A
G4520A	7693 GC ALS Tray with BCR Mixer	A.10.16
G2912A	7683B ALS External Controller	A.02.01
G2913A	7683B GC ALS Injector	A.11.03
G2614A	7683B GC ALS Tray	A.02.01
G2615A	7683B GC ALS BCR/Mixer	N/A
G2613A	7683A GC ALS Injector	A.10.07
G2614A	7683A GC ALS Tray	A.02.01
G2615A	7683A GC ALS BCR/Mixer	N/A
G2880A	G2880A GC ALS for GC 6850	A.11.03

Supported HS Modules

Table 17 Supported Headspace Hardware

	Module Type	Description	Min. Firmware
G1888A	G1888A	G1888A Headspace Sampler	A.01.10
7697A	G4557A	7697A Headspace Sampler, 111 vials	A.01.08.4
	G4556A	7697A Headspace Sampler, 12 vials	A.01.08.4
8697	G4511A	8697 Headspace Sampler, 48 vial	1.3.0.59
8697 XL	G4512A	8697 Headspace Sampler, 120 Vial (min FW 2.7 for GC 8890, 8860 and 2.7 for Intuvo 9000)	1.4.0.10

NOTE Communication for GC samplers, trays, and 8697 headspace are handled through the GC.

5 Support Information

Method Migration

Methods created with older driver versions can be used or migrated to the latest WICF version. Opening a method created with older versions automatically initiates the method migration process. Make a copy of the method before migration to retain the old method for documentation.

The method migration is tested and supported for

- ICF SL versions equal or higher than 3.3
- ELSD driver versions equal or higher than 1.6

For the native GC Drivers method migration, refer to the Waters User Guide Mapping ICS-Based GC Methods to Agilent ICF (Waters document no. 715007259).

NOTE Upgrades from ICF SL 3.3 and earlier require an instrument re-configuration (see CRI-1383).

Method Resolution

Method Resolution allows the transfer and resolution of methods between different instruments or instrument types. The method resolution wizard appears only when method resolution is required. The following constraints apply:

- A method developed for one instrument type can be adapted to another instrument of the same type, having different hardware configurations like valves or loops, etc.
- A GC method can be transferred between 7890, 8890, and 9000 and from 6890 to 7890, 8890, and 9000.
- An HS method can be transferred between 7697, 8697, and 8697 XL Tray.

- A LC method can be transferred between the same module types across different series (1100, 1200, 1260, 1290, Infinity I/II/III).

LC Considerations

- Use a fixed IP address for the LC modules. DHCP is not recommended.
- The Sample Set runtime overwrites the method runtime, except for shutdown runs where the method runtime applies.
- If different injection values are specified in the instrument method and the sample set, the sample set takes precedence except for manual injection.
- Configuration changes require a re-configuration via the PreConfig tool. See, for example, Waters technical notes TECN134936402 and TECN134945293.
- Do not use the “Prepare” button for single injections.
- To use alphanumeric plates, the plate types must be imported and configured. See:
  - Agilent Infinity Lab LC Series Vialsampler Vial Drawer Configuration in Empower Environment
  - Controlling the Agilent 1260 Infinity/1290 Infinity II Multisampler (G7167A/B) in Waters Empower 3 Environment
- The LC Drivers are optimized for the Windows default font size. Larger font sizes may require increasing the window size or may cause truncations.
- There are several Technical Notes available on the Agilent Drivers for Empower webpage describing the considerations for special scenarios:
  - Agilent InfinityLab LC Series Multicolumn Thermostats and Column Usage in Empower Technical Note
  - Performing Manual Injection (LC) in Empower Environment
  - Agilent 1290 Infinity II Evaporating Light Scattering Detector (ELSD) in Empower
  - Using the Fraction Collector in Empower 3 Environment
  - Using ISET in Empower Environment
  - Using High Dynamic Range (HDR) in Empower
  - Agilent 7100 Capillary Electrophoresis System in Empower

- Agilent Infinity Lab LC Series Vialsampler Vial Drawer Configuration

GC/HS Considerations

- Use a fixed IP address for the GC and HS modules; DHCP is not recommended.
- Do not create instrument methods offline without configuring the GC at least once.
- Ensure the instrument method and sample set runtime values are the same. If different runtimes are provided, the total oven runtime takes precedence.
- If different injection values are specified in the instrument method and the sample set, the sample set values take precedence, except in multiple injections mode.
- The injector (Front, Back, Headspace, Manual, Valve, etc.) is set in the options tab of the method according with the naming convention in Table 18.

Table 18 Injector Device Type Names

Injector Device Type	Name in Injector Preference (Options tab)
Front Injector	GC0:Front
Back Injector	GC0:Back
Dual Injection	Dual
Manual Injection	Manual_Injection
Headspace Sampler	SAMPLER0:GC
Gas Sampling Valve	GC0:Valve 1

- Front or Back tower injectors are additionally distinguished by the vial numbers. The range varies with the tray/turret capacity:
  - 1-150 for the front injector tower
  - 501-650 for the back injector tower
  - 701-703 for the single vial turret of the back injector tower
- Using the skip function to skip the current injection and proceed with the sample set upon ALS or Headspace errors such as missing vial, incorrect vial size, leak, etc., aborts the entire sample set. This is documented as KPR 718626.

- Resolving a method from a different instrument configuration in Empower, resets the settings in the options tab. This is documented as KPR 745702.
- To update the configuration for an Agilent GC and/or HS using the Pre-Configuration tool, the instrument controller must be rebooted, or the instrument connection must be terminated via Advance Options > Terminate and Re-Initialized afterwards.
- To use a shutdown method, disable all “GC Readiness” parameters in the method.
- For a GC-HS, single injections are not supported, always use sample sets.
- Enable the “Prep Run on Manual Request” button for G1888, external sampler, or manual injections.
- Do not use the “Prepare” button for single injections.

High Throughput Considerations

- Vial positions must be in sequential order from low to high.
- All instrument methods within the sample set must be the same.
- Set the HS loop volume as injection volume.
- Only one injection per line is allowed.
- Do not mix low and high throughput within a sample set.
- In case of discontinuation, only use Abort, not Abort and continue.
- Do not Pause a sample set.
- Do not alter a running sample set.
- Inject and non-inject functions must not be mixed within a sample set.
- Do not use priority vial.

Low Throughput Considerations

- Vials can be arranged in a non-sequential manner.
- Different instrument methods can be mixed within a sample set.
- Multiple injections per line are allowed.
- Editing a running sample set is supported.
- Inject and non-inject functions can be mixed when using the single headspace extraction mode.

Dual Tower Considerations

- Dual tower mode is enabled by default after installation (enable script not necessary) and must be configured as outlined in the Installation Guide.
- The front and back injections lines must specify the same instrument method, number of injections, Injection Function, and runtime to perform dual tower injections.
- The vial numbers are alphanumeric (“F” indicates the front tower and “B” the back tower whereas the vial position is the numerical number):
    - F:1-F:150 for front injector tower
    - B:1-B:150 for back injector tower
- The vial numbers of front and back injectors must be different.
- The use of multiple injection mode is not supported.
- The use of dual tower mode with legacy drivers and WICF installed in parallel on the same instrument controller is not supported.
- The usage of the disable and enable scripts can affect the dual tower configuration and functionality.

Compliance Recommendation

If the lab is in a regulated environment, we recommend following the customer's standard operating procedures (SOP). The known and resolved issues are listed in the Release Notes. Together with the Software Verification Tool and the Software Status and Release Bulletins, this may assist the customer to determine if any qualification tasks are required. Agilent offers the (re-)qualification of the hardware or the functional verification of the WICF driver installation/upgrade as an additional charged service. Please contact your Agilent sales representative for more information.

User Documentation

The following components documents are present in the respective documentation folders

- Release Notes

  The release notes document new and changed feature sets, important information on the required operating environment, supported modules, firmware, impact analysis, etc.

- Installation & Configuration Guide

  The installation guide provides the prerequisites and installation and configuration instructions for the Agilent ICF Support Layer for Waters CDS.

- Software License Terms

  License terms for WICF as well as the Open Source Software license terms for WICF and all components installed by WICF.

- Software Bulletins

  The Software Bulletins document provides web links to the up-to-date Software Status Bulletins of WICF and its components, listing known limitations and incompatibilities and information about available fixes or workarounds for this and previous versions.

- Software Release Bulletin

  The Software Release Bulletin documents problems fixed in the current WICF release and can be found as a separate html document in the released package.

- Validation Certificates: Declaration of Software Quality, Declaration of Cybersecurity

  The documents provide the assurance that the Agilent software product listed was developed and tested using Agilent´s product development and lifecycle processes including Cybersecurity controls.

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.

Agilent Community

To get answers to your questions, join over 10,000 users in the Agilent Community. Review curated support materials organized by platform technology. Ask questions to industry colleagues and collaborators. Get notifications on new videos, documents, tools, and webinars relevant to your work.
https://community.agilent.com/

Agilent on the Web

Visit Agilent's website for up-to-date information on Agilent's Analytical Software suite. To find more information on Agilent Drivers for Waters Empower, for example, brochures, technical notes etc.), please visit
https://www.agilent.com/chem/ade.

Waters Knowledge Base

Waters has a collection of knowledge base articles covering known issues and workarounds with ICF SL that also apply to WICF. Please visit
https://support.waters.com/.

Obtaining Technical Support

For support inquiries related to driver integration, functionality, or hardware issues, please contact your local Agilent Sales & Support organization. Visit Agilent Support for your local contact information: https://www.agilent.com/en/support.

When communicating with support teams, please provide the following details

- Your name, address, mail address, and telephone number.
- The Waters Empower version in use and instrument driver information with version number, for example, by running an Agilent SVT.
- Instrument information, accessible via the Instrument Status dashboard by clicking on "i".
- A description of the problem, including any errors displayed in the Instrument status and activity log, and steps to reproduce the issue.

Important Support Information

While each Agilent instrument driver provides a defined feature set and functionality, it is not 100% guaranteed that the exact same functionality will be available in the Waters CDS.

Where known exceptions occur, these will be documented in the WICF Release Notes or equivalent documentation.

Depending on your integration layer, the distribution model, service, and support differs as outlined in the table below.

Table 19 Support model depending on the Integration Layer

Function	ICF Support Layer (ICF SL) 2.x, 3.x	Agilent ICF Support Layer for Waters CDS (WICF) 4.x
Development	Waters	Agilent
Distribution	Waters	Agilent
Support	Waters	Agilent
Installation Enablement & Support	Waters	Agilent
Support for ICL Activation	Waters	Waters

Waters is still the support owner of Waters ICF Support Layer, ICF SL 3.X. Agilent owns the support ofAgilent ICF Support Layer for Waters CDS (WICF) 4.X.

6 Resolved Issues

The table below lists the issues resolved in the WICF 4.2 release. For resolved instrument driver issues, please refer to the driver Release Notes on the WICF installation media.

Table 20 Resolved WICF 4.2 Issues

Key	Waters ID	Summary	Previous Behavior	Impact Area	Workaround
804562	INFICFSL-3061	Sample Set does not abort upon GC ALS/HS failure	In ICF SL 3.7, the abort or skip function upon ALS/HS failure does abort the instrument run but remains in Run mode in Empower and states 'Run cannot be stopped because the instrument is in idle state' in the instrument log.	Acquisition	Sample Set must be aborted manually after a GC ALS/HS failure by using the Stop button in Empower.
1027682	INFICFSL-3227	Multiple Injection for GC ALS is ignored on Japanese and Chinese systems	On Empower systems localized in Japanese or Chinese, the method setting to perform multiple injections with a GC ALS is ignored. Only standard injections are performed instead.	Localization	Do not use multiple injection functionality in Japanese or Chinese localizations.
1070724		Non-Agilent RC.NET drivers not displayed in SVT	Non-Agilent RC.NET drivers like CTC, Antec or PerkinElmer are not displayed in the Agilent Software Verification Report compared to ICF Support Layer 3.X.	Installation	Copy all reference xml files from \Program Files (x86)\Agilent Technologies\IQTool\IQProducts\Agilent ICF to \Program Files (x86)\Agilent Technologies\IQTool\IQProducts\Agilent ICF Support Layer for Waters CDS. Fixed in the new Non-Agilent RC.NET driver versions.
1173526		CTC Module Tile is empty on a client	Having configured a CTC PAL3 and opening on a client for the first time. The module tile is empty for the PAL3 only.	User Interface	Close and open the Run Samples window. When Run Samples is opened a second time the dashboard tile loads correctly.
1209321		No dashboard, DHCP "No", and slow performance without internet connection	Starting with WICF 4.1, the executables contain a digital signature. For some setups without internet connection, the revoking mechanism of the	Acquisition	Workaround implemented in WICF 4.2 to prevent a timeout of the PluginRunner process.

		certificate can lead to timeouts of the PluginRunner process resulting in an empty instrument dashboard, DHCP scan showing "No", and >30s loading times of the method UI.	Slow Performance to be fixed by one of the following options: - Set the default retrieval timeout to 1 under Local Security Policy > Security Settings > Public Key Policies > Certificate Path Validation Settings > Network Retrieval tab. - Uncheck the certificate revocation checks under Internet Options>Advanced>Security, - Configure the firewall to allow accessing the DigiCert CRL Distribution Points, OCSP Servers and Services with the related ports including DNS resolution for the DigiCert URLs.

7 Known Issues

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

WICF:
agilent.com/cs/library/support/Patches/SSBs/Agilent_ICF_Support_Layer_for_Waters_CDS_WICF.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 21 Known WICF 4.2 Issues

Key	Waters ID	Summary	Current Behavior	Impact Area	Workaround
717268	INFICFSL-1665	Column information refresh does not work	The instrument method UI for a multi-column thermostat (MCT) provides a Refresh button to update the visual column information. This button does not work and leads to a stalling interface displaying "updating column information".	User Interface	Do not use the Refresh button
718626	INFICFSL-2741	Skip function for GC ALS/HS errors aborts the Sample Set	Using the Skip function to skip the current injection and proceed with the sample set upon ALS or Headspace errors, for example, missing vial, incorrect vial size, etc., aborts the entire sample set.	Acquisition	The issue must be fixed in Empower as Skip functions can currently not be handled.
742695	CRI-6129	Run Samples window becomes unresponsive	After clicking a button in Empower like Setup, Develop Methods, Options, etc., and interacting with the instrument dashboard while the button is outlined, causes a "Not Responding" Run Samples window.	User Interface	Avoid outlined buttons. For example, wait until method setup is complete or click into a text field to remove the button outline before

					interacting with the instrument dashboard. Must be fixed in Empower
745702	INFICFSL-1924	Method resolution resets the Options for GC/HS	Resolving a method from a different instrument configuration in Empower, resets the settings in the Options tab (for example, Injector preference is set to GC0:Front, High Throughput mode is turned off).	Method	Edit the method after resolution to correct the settings in the Options tab.
746194	CRI-6127	Non-inject functions with a Postrun time in method cause an abort	Using non-inject (Equilibrate, Condition Columns, etc.) or monitor functions with instrument methods having set a Postrun time, can cause an abort showing an instrument failure.	Acquisition	Use a separate instrument method without Postrun time for the Non-inject functions.
783237	CRI-540	Unhandled Exception when (Re-)Configuring the G1888 HS in Empower	Configuring the G1888 (for example, to change the vial size) when having already an active connection (for example, in Empower after a session was opened once) clicking "Upload from Instrument" will lead to an unhandled exception error. This is a hardware limitation as the G1888 only allows one communication channel at a time.	Instrument Configuration	- Reboot the LACE and directly upload the config again - Do a soft-config via Status UI -> Advance Options -> Module Options - Use the Terminate connection button (introduced with Water SL 3.6) before uploading the config.
783402	CRI-5770	DHCP Configuration details not in System Audit Trail	Configuring a new instrument via Agilent PreConfiguration and Waters DHCP configuration does not create an entry with instrument details in the Empower System Audit Trail.	Configuration	Remove and add the DHCP configuration again without closing the node properties window. Alternatively, use the Details column in the Node Properties window to report the configuration details. Must be fixed in Empower (INFEMP-33741)
933792	CRI-6227	No data from back only injections in dual tower mode	In all WICF and ICF SL versions, if the Dual Tower is enabled and only the back injector is used for injections (injector preference GC0:Back) no data is acquired, and the chromatogram plot appears blank.	GC Control	To run acquisitions with back injector only, disable the Dual Tower mode and run as an individual back tower acquisition. Must be fixed in Empower
937729	INFICFSL-2494	Multiple Injections in Dual Tower mode does not work	Multiple Injection mode is ignored when performing Dual Tower injections and the ALS towers only inject once.	GC Control	Do not use Multiple Injections in Dual Tower mode. To perform Multiple Injections for a GC

					configured as dual tower, perform a front or back injection.
938364	INFICFSL-2901	Direct control issues in ICF SL 3.6 and 3.6.1 Interoperability scenarios	When ICF Support Layer 3.6 or 3.6.1 are installed on a LAC/E and ICF Support Layer 3.7 or WICF 4.0 are installed on a client, instrument direct control functions (for example, right click on instrument dashboard>control/turn on/etc.) do not work from a Citrix server or acquisition client.	Interoperability	Fixed in ICF SL 3.7 but interoperability scenarios (for example, rolling client upgrades to higher versions) with ICF SL 3.6 or 3.6.1 involved are still affected.
955472	INFICFSL-2854	Interoperability issues when using a barcode reader in ICF SL versions before 3.6	False barcode reader inconsistency preventing method download for methods interoperating between ICF SL versions higher (client) and lower (instrument controller) than ICF SL 3.6 (ICF 3.0 U3 with GC driver 3.5 SR1).	Interoperability	Avoid interoperability scenarios across ICF SL 3.6 when using GC/HS with barcode reader.
965886	CRI-6484	Signal assignment for Dual Tower injections do not match the method	Using the slider to set dual injection signal assignments in the Signals tab of the method is ignored. Empower is using its own assignment pattern instead.	GC Control	No workaround Must be fixed in Empower
980181	INFICFSL-3236	Open-bed Sampler (G7158B and G7169B) does not work in a cluster	A Fraction Collector Cluster where G7158B or G7169B are configured as a combined sampler leads to an instrument failure ("Invalid input format") when starting a run.	LC Control	Do not configure a cluster with a combined sampler and use a separate sampler instead
1030362	INFICFSL-3235	Injector Preference GC Front or Back is ignored on Japanese and Chinese systems	On Empower systems localized in Japanese or Chinese, the Injector Preference setting for liquid front or back injections in the Options tab of the method is ignored.	Localization	The vial number is decisive which injector is used. Use vial numbers 1-150 for the front and 501-650 for the back injector.
1030774		Multiple Headspace Extraction (MHE) only works with # of Injs	MHE does not work for consecutive lines in the sequence using the same vial. The vial will be equilibrated and punctured again.	HS Control	Specify the number of injections ("# of Injs column") per vial in the Sample Set to use MHE.
1031138	CRI-6969	Overlapped Injection and Abort after Injection/Vial is complete does not work	Using overlapped injections and the Sample Set functions "Abort after Injection is complete" or "Abort after Vial is complete" will not abort preparing the next sample and the ALS is waiting for injection trigger.	GC Control	Use "Abort Now" to abort the Sample Set again. If not possible, use Terminate and Initialize to recover the GC.

1034481		Manual GC injection stays in Injection Running	Restarting the instrument controller and starting a run within a short timeframe can lead to a not ending run remaining in the Injection Running state.	GC Control	After restarting the instrument controller, reboot the GC or wait >15min until the connection is reset. Planned to be fixed in GC firmware
1050700	CRI-6128	Issues when uninstalling Waters Driver Pack	Uninstalling the Waters Driver Pack leads to issues as shared components will be removed (InstrIDL.dll in C:\Empower\Instruments\Bin) after every restart. As a consequence, the Agilent Software Verification will fail and the instruments will be unusable.	Installation	- Re-install the Waters DP. - Set the Read-only attribute for the InstrIDL.dll before uninstalling Waters DP or after WICF installation, before restarting. Must be fixed in Waters Driver Pack.
1057254	INFICFSL-3243	Antec/Waters 3465 ECD Instrument Failure when both cells are turned off	Running a method with both cells turned off in the Antec/Waters 3465 ECD detector results in an instrument failure.	Antec control	Do not use instrument methods with both cells turned off.
1096898		Exception while configuring the HS G1888	During the PreConfiguration, the G1888 can throw an exception "Exception has been thrown by the target of an invocation". The Windows Event Logs show a missing dependency on Microsoft VC90 which is part of the Microsoft Visual C++ 2008 (x86) redistributable package which is not installed anymore by the Empower installer starting with version 3.8.1.	HS Control	Download and install Microsoft Visual C++ 2008 Redistributable package (vcredist_x86) from Microsoft.
1142013		InfinityLab Assist Hub can start a task during a monitor run in Empower	If a task on the InfinityLab Assist Hub is started during an LC monitor run in Empower, the monitoring and task execution will run in parallel.	LC Control	System must be rebooted to get LC instrument idle again. Alternatively, a sample set can be started to abort the monitoring.
1197338	CRI-8308	">" and "<" symbols display as "gt;" and "lt;" in the method report	The method report of Agilent instrument methods in Empower displays the symbol "gt;" and "lt;" instead of ">" and "<".	Reporting	Planned for WICF 4.3
1215516		GC/HS stays in Monitor after reboot	Rebooting the instrument controller and immediately opening Run Samples after the startup can lead to GC or HS being displayed in Monitor mode and diagnostic log messages "Can't gain ownership of the	GC/HS Control	Terminate the instrument connection before restarting, restart the GC/HS hardware, or wait >15min until the old connection is reset from the hardware side.

		instrument" and "..already controlled by" the own instrument controller.		
1225460	Liner selection not possible	Currently it is not possible to select a liner in the GC instrument method. This has no effect on chromatographic results. The limitation is that reporting the liner is currently not possible.	GC Control	Liner information is removed from the method report for WICF 4.2.
1247908	Methods with Prep Run on Manual Request enabled cannot be migrated	If the "Prep Run on Manual Request" button is enabled in the method for a GC 8890 (firmware ≥ 3.1), Intuvo 9000 (firmware ≥ 2.9.0), or GC 7890B (firmware ≥ B.02.07), methods created with ICF SL ≤ 3.7.01 cannot be migrated to WICF 4.2.	GC Control	- Downgrade the GC firmware - Re-create the method - Use the Prep Run button on the GC Front Panel for manual injection Planned for WICF 4.3

8 Changelog

WICF/ICF SL Revision History

Table 22 Revision History

ICF SL/ WICF	ICF/Driver versions			Release Date	What's New / What Changed in WICF/ICF Support Layer
	ICF	LC	GC/HS		
4.2	3.4 U1	3.9	4.3/4.3	May 2025	Added LC Solvent Level Sensing support
4.1	3.4	3.8	4.2/4.2	Dec 2024	Added support for Agilent Infinity III feature set including InfinityLab Assist Hub GC 8850 support
4.0	3.3	3.5 SR2	4.0/4.0	Oct 2023	Support Layer development transition and rebranding from Waters to Agilent. MSI based installation
3.7.01	3.2 U3	3.5 SR1	3.9 SR1/3.5	Sep 2023	8697 XL Headspace support
3.7.01	3.2 U1	3.5 SR1	3.7/3.3	Sep 2023	Multiple processes to maximize system utilization
3.6	3.1	3.4	3.5 SR1/3.1 SR1	Apr 2022	Initialize and Terminate functionality (Advance Options)
3.5.1	3.1	3.3 SR1	3.5/3.1	Dec 2021	Resolves module offline issues with LC samplers Adds Windows Server 2019 support
3.5	3.0 U2	3.3 SR1	3.5/.3.1	May 2021	8697 Headspace support Inf II Bio modules support CTC PAL3 support (PAL RTC, PAL RSI, PAL LSI, PAL RTC Series II, PAL RSI Series II) driver version 1.7.4.
3.4	3.0	3.2 SR1	3.3 SR2	Nov 2020	Gas Sampling Valve and Manual Injection Support for GC via Options Tab. New CTC PAL3 driver v 1.6.0 included
3.3	3.0	3.2 SR1	3.3 SR2	Oct 2020	1290 Inf II Prep ALS and FC support Defect fix CRI-1784 and CRI-2247 Adds Windows Server 2016 support
3.3	2.6 U3	A.02.19 SR2	3.1	May 2020	CTC driver 1.4.0.16 support
3.2	2.6 U2	A.02.19 SR2	3.1	Dec 2019	Added Support for 8890 GC and 8860 GC
3.2	A.02.05	A.02.18	B.01.03	Oct 2019	GC Dual Tower Support
3.1	A.02.05	A.02.18	B.01.03	Feb 2019	Introduced injector Preference and MHE for GC
3.0	A.02.05	A.02.18	B.01.03	Jun 2018	GC Intuvo 9000 support
3.0	A.02.04	A.02.18	B.01.03	Jun 2018	Windows 10 support for min. Empower 3 FR4

3.0	A.02.04	A.02.14	A.03.02	Feb 2018	Start of Agilent GC/HS support (6850, 6890A/N, 7890A/B, 7697A, G1888A
2.2.1	A.02.04	A.02.14	-	Sep 2017	CTC PAL3 support
2.2	A.02.04	A.02.14	-	Sep 2016	Added 1260 Inf II modules, Interoperability support introduced
2.2	A.02.03 DU2	A.02.13	-	Jun 2016	Added G7129A/B and G7162A/B support

In This Document

The release note describes the following

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