

Agilent ICF Support Layer for Waters CDS

Release Notes – Revision 4.0

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Notices

Manual Part Number

D0110309

Edition March 2024

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Agilent Technologies, Inc.

5301 Stevens Creek Blvd.
Santa Clara, CA 95051
USA

Software Revision

This guide is valid for the Agilent ICF Support Layer for Waters CDS 4.0.

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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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PAL is a trademark of CTC Analytics AG.

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Agilent WICF 4.0 – What's new?

Updated WICF (former Waters ICF Support Layer)

- Rebranding from Waters to Agilent. As part of the transition, symbols, icons, and installer were rebranded.
- Installer changed from Waters deployment manager to Microsoft Installer based installation. Added a prerequisite check to install WICF.
- Agilent Software Verification Tool (SVT) can now be used to fully verify the installation of WICF and its included components.
- Windows Programs & Features only displays WICF and SVT and not the ICF and driver components anymore.
- Method Tabs: Pretreatment Method, Auxillary Channels, and General are not displayed anymore for GC.
- Defect fixes; see chapter Resolved Issues.

Updated ICF 3.3

- Fixed potential issues with method migration of Multi-Column Thermostat.
- Logging mechanism improvements to separate driver and ICF logs in different files.
- Update of barcode reading functionality according to RC.NET.

Updated GC instrument driver package 4.0

- The Method Resolution wizard has been redesigned to improve usability and customer experience.
- Support of new G6598A and G6597A Hydrogen Sensors.
- Minor bug fixes; see GC driver release notes.

Updated HS instrument driver package 4.0

- Adds functionality for the 120 vial 8697 XL Headspace Sampler.
- Minor bug fixes; see HS driver release notes.

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 WICF:

- Agilent ICF Support Layer for Waters CDS 4.0.57
- Agilent Software Verification Tool 6.2.12.1
- Agilent Instrument Control Framework 3.3.41
- Agilent LC Drivers 3.5 SR2 (3.5.83.4) including Agilent ELSD Drivers 1.8.61
- Agilent GC Drivers 4.0.95
- HS Drivers 4.0.77 including G1888 driver B.01.09.2

Agilent Lab Advisor

Agilent Lab Advisor is a diagnostic standalone software for Agilent LCs and CEs, which can be co-installed and co-exist with Waters Empower on the same PC. Lab Advisor does not interfere with the CDS.

Modules with a firmware A.XX (mainly 1100/1200) can host only one instrument controller. In this case only Empower or Lab Advisor can be used.

Modules with firmware B/D can host up to five instrument controllers and allow parallel connection of Empower and Lab Advisor. Each instrument actively in use will be locked by the 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 only look up instrument actuals but not modify method parameters or submit commands. The same applies for the Lab Advisor Client/Server setup where a TCP Relay Service is installed on the instrument controller.

For more information see [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 including all service releases and hotfixes.

Unless otherwise stated, the latest WICF release is deemed compatible with any subsequent Empower release. At the time of writing the latest WICF release was 4.0 and the latest Empower release was 3.8.0.

NOTE

Waters Masslynx is not supported with this release.

Supported Operating Systems

- Microsoft Windows 11, client only
- Microsoft Windows 10,
- Microsoft Windows Server 2016, Citrix and client only
- Microsoft Windows Server 2019, Citrix and client only
- Microsoft Windows Server 2022, Citrix and client only

The supported operating system in use is primarily determined by the Waters CDS. For the supported Citrix environment, refer to the Waters Empower documentation.

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

Supported Localization

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

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.

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 chromatographic client/server data system environment to facilitate rolling upgrades.

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

- The driver version on 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 Driver 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 behaviour. Fully functional behaviour 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

WICF supports the integration of several Non-Agilent RC.NET Drivers:

Compatibility and System Requirements

- CTC PAL3 version 1.8.7 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 Non-Agilent vendors owning and distributing the drivers.

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 allows to configure 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

Supported Agilent Modules and Firmware

Agilent 1200 Series, 1200 Infinity and 1120 Compact LC	B.07.35 or later
Agilent 1200 Infinity Hosted Modules	C.07.30 or later
Agilent 1260/1290 Infinity II Modules	D.07.35 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.06.30
G1311A	1200 Series Quaternary Pump	A.06.10
G1311B	1260 Infinity Quaternary Pump	A.06.10
G1311C	1260 Infinity Quaternary Pump VL	A.06.30
G1312A	1200 Series Binary Pump	A.06.10
G1312B	1260 Infinity Binary Pump	A.06.10
G1312C	1260 Infinity Binary Pump VL	A.06.30
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.07.34
G4220A	1290 Infinity Binary Pump	B.07.34
G4220B	1290 Infinity Binary Pump VL	B.07.34
G4301A	1260 Infinity II SFC Control Module	A.03.09

Supported Agilent Modules and Firmware

G4302A	1260 Infinity SFC Binary Pump	A.06.10
G4782A	1260 Infinity II SFC Binary Pump	D.07.28
G5611A	1260 Infinity Bio-inert Quaternary Pump	A.06.10
G5654A	1260 Infinity II Bio-Inert Quaternary Pump	D.07.28
G7104A	1290 Infinity II Flexible Pump	B.07.34
G7104C	1290 Infinity II Flexible Pump	B.07.34
G7110B	1260 Infinity II Isocratic Pump	D.07.28
G7111A	1260 Infinity II Quaternary Pump VL	D.07.28
G7111B	1260 Infinity II Quaternary Pump VL	D.07.28
G7112B	1260 Infinity II Binary Pump	D.07.28
G7120A	1290 Infinity II High Speed Pump	B.07.34
G7131A	1290 Infinity II Bio Flexible Pump	B.07.34
G7131C	1260 Infinity II Bio Flexible Pump	B.07.34
G7132A	1290 Infinity II Bio High-Speed Pump	B.07.34
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.06.31
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

Supported Agilent Modules and Firmware

G2260A	1260 Infinity Preparative Autosampler (High flow)	A.06.50
G4226A	1290 Infinity Autosampler	A.06.30
G4303A	1260 Infinity SFC Standard Autosampler	A.06.54
G4767A	1260 Infinity II SFC Multisampler	D.07.13
G5667A	1260 Infinity Bio-inert High Performance Autosampler	A.06.31
G5668A	1260 Infinity II Bio-inert Multisampler	D.07.27
G7129A	1260 Infinity II Vialsampler	D.06.75
G7129B	1290 Infinity II Vialsampler	D.06.75
G7129C	1260 Infinity II Vialsampler	D.07.20
G7137A	1290 Infinity II Bio Multisampler	D.07.33
G7157A	1260 Infinity II Preparative Autosampler	D.07.01
G7158B	1290 Infinity II Open-bed Sampler / Fraction Collector	D.07.28
G7167A	1260 Infinity II Multisampler	D.07.27
G7167B	1290 Infinity II Multisampler	D.07.27
G7169B	1290 Infinity II Open-bed Sampler / Fraction Collector – Sampler Driver	D.07.34
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

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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

1 see Technical Note [Performing Manual Injection \(LC\) in Empower Environment](#)

Supported Agilent Modules and Firmware

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.06.30
G1314E	1290 Infinity Variable Wavelength Detector	B.06.30
G1314F	1260 Infinity Variable Wavelength Detector	B.06.30
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
G7114A	1260 Infinity II Variable Wavelength Detector	D.07.01
G7114B	1290 Infinity II Variable Wavelength Detector	D.06.70
G7115A	1260 Infinity II Diode Array Detector WR	D.07.01
G7117A	1290 Infinity II Diode Array Detector FS	D.06.70

Supported Agilent Modules and Firmware

G7117B	1290 Infinity II Diode Array Detector	D.06.70
G7117C	1260 Infinity II Diode Array Detector HS	D.07.01
G7121A	1260 Infinity II Fluorescence Detector	D.07.01
G7121B	1260 Infinity II Fluorescence Detector Spectra	D.07.01
G7165A	1260 Infinity II Multi Wavelength Detector	D.07.01
G4218A	1260 Infinity Evaporative Light Scattering Detector ²	Not supported
G4260A	380-ELSD ²	Not supported
G4261A	385-ELSD ²	Not supported
G4260B	1260 Infinity II Evaporative Light Scattering Detector ²	32.06
G4261B	1290 Infinity Evaporative Light Scattering Detector ²	Not supported
G7102A	1290 Infinity II Evaporative Light Scattering Detector ²	32.06
G7162A	1260 Infinity II Refractive Index Detector	D.06.76
G7162B	1290 Infinity II Refractive Index Detector	D.06.76

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 Multicolumn Thermostat	C.07.30 (B.07.35 / D.07.35)
G7116B	1290 Infinity II Multicolumn Thermostat (Host with firmware B.06.75/D.06.75 required)	C.07.30 (B.07.35 / D.07.35)
G7130A	Integrated Column Compartment ICC (option to G7129A/B)	D.06.75

Table 9 Valve Drives and Valves

Module No.	Module Name	Min. Host Module Firmware
G1170A	1290 Infinity II Valve Drive	B.06.40
G1157A	1200 Series 2-Position/10-Port Valve, 400 bar	A.06.02

² see Technical Note: Agilent 1290 Infinity II Evaporating Light Scattering Detector (ELSD) in Empower Environment

Supported Agilent Modules and Firmware

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
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

Supported Agilent Modules and Firmware

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	1260 Infinity Analytical SFC System	A.03.09
G7170B	1290 Infinity II MS Flow Modulator	C.06.20 (B.06.20 / D.07.20)

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.06.21
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.06.21

Supported Agilent Modules and Firmware

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.06.21
G4293B	1220 LC Gradient, ALS, VWD, 600 bar	B.06.21
G4294B	1220 LC Gradient, ALS, TCC, DAD, 600 bar	B.06.30
G4288C	1220 LC System VL Gradient, Man. Inj. VWD, 400 bar	B.06.21
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.06.21

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.06.24
G7151A	Diode Array Detector for CE	B.06.24

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 ³	N/A
Additional Driver Features	ISET G2197AA II ³	N/A
Additional Driver Features	ISET G2197AA III ³	N/A
Additional Driver Features	ISET G2197AA IV ³	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

³ see Technical Note: [Using ISET in Empower Environment](#)

Supported Agilent Modules and Firmware

Special Solutions	Automated Purification Software (M8368/M8369AA)	Not supported
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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. Please 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.
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 to 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+
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

Supported Agilent Modules and Firmware

	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, μ ECD, FPD,
			FPD+
6890A	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, Dual W FPD, AIB
6890Plus	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, Dual W FPD, AIB
6890N	G1530N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, Dual W FPD, AIB
	G1540N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD, ECD,
		PCM, VI, LTM I	μ ECD, 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.

Supported Agilent Modules and Firmware

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
G2790A	8860 GC	2.5.0
G3540	8890 GC	2.5.1
G3650A	Intuvo 9000 GC	2.4.0
G3952A	Intuvo 9000 GC	2.4.0
G3953A	Intuvo 9000 GC	2.4.0
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

Supported Agilent Modules and Firmware

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
G3451A	Gas Sample Selector	Not supported

Supported HS Modules

Table 17 Supported Headspace Hardware

	Module Type	Description	FW Revision
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 (min FW 2.5.0 for GC 8890, 8860 and 2.4.0 for Intuvo 9000)	1.4.0.10
8697 XL	G4512A	8697 Headspace Sampler, 120 Vial	1.4.0.10

NOTE

Communication for GC samplers, trays and 8697 headspace is 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 starts a method migration process.

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

Make a copy of the method before migration to keep the old method for documentation.

Method Resolution

Method Resolution is the ability to transfer and resolve methods between different instruments or instrument types. The method resolution wizard is only shown when method resolution is required. WICF supports method resolution in accordance with the following constraints:

- A method created on one instrument type can be transferred and resolved to another instrument of the same type but with another hardware configuration, for example, valves, loops, etc.
- A GC method can be transferred between 7890, 8890, and 9000 and from 6890 to 7890, 8890, and 9000.
- A HS method can be transferred between 7697, 8697, and 8697 XL Tray.

Support Information

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

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 provided 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.
- 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](#)
- 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 having configured the GC at least once.
- Provide the same values for instrument method and sample set runtime. If different runtimes are provided in the instrument method and sample set, the total oven runtime takes precedence.
- If different injection values are provided in the instrument method and the sample set, the sample set takes precedence except for 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.

Support Information

- 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, all “GC Readiness” parameters should be disabled 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.

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

Support Information

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 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, 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

Support Information

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/>

Support Information

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 the driver integration, its functionality or hardware problems, please contact your local Agilent Sales & Support organization for assistance. Please check the following web site for your local sales and support contact: <https://www.agilent.com/en/support>

In your communication with the support teams, please clearly state the following:

- Your name, address, e-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.
- Your instrument information can be found by accessing the Instrument Status dashboard and clicking "i".
- A description of the problem including any errors that were displayed in the Instrument status and activity log and how to reproduce.

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.

Support Information

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 is the support owner Agilent ICF Support Layer for Waters CDS (WICF) 4.X.

6 Resolved Issues

The below table lists the resolved issues in in the WICF 4.0 release. For resolved ICF or instrument driver issues, please refer to the appropriate Release Notes on the WICF installation media.

Table 20 Resolved WICF 4.0 Issues

Key	Waters ID	Summary	Previous Behavior	Impact Area
543734	INFICFSL-1665	Column configuration changes are not visible	When changing the column configuration, the system does not graphically display the change in the dashboard, nor provides an information about the change.	LC control Possible Workaround: Perform a reboot and an Auto-Configuration when adding, changing, or deleting a column with a change in plumbing/color code in the Column Assignment screen of the LC Status Dashboard.
805851	INFICFSL-3042	(Re-) Configuration of a HS with ICF SL 3.7.01 can maintain the previous HS config	When the instrument controller (LAC/E or Workstation) is not rebooted, the Headspace configuration is read from a file which is not updated by uploading the Config from instrument in the Pre-Configuration. Thus, the most recent configuration of the same or another HS connected to this instrument controller will apply, potentially leading to config mismatches or mixed systems.	Instrument Configuration Possible workaround: To ensure using the proper HS configuration you must follow these steps: - Only configure a Headspace directly on the instrument controller (LAC/E or Workstation). - Always reboot the instrument controller before a Headspace configuration. - Optional alternative: Before configuring the instrument delete C:\Empower\Instruments\AgilentLC\HSConfig.xml if present.
936794	CRI-6143	Two empty Options tabs for GC methods in Empower 3.8.0	Creating a new instrument method for an Agilent GC in Empower 3.8.0 will display two empty Options tabs and thus prevent the Injector Preference and High Throughput setting. To edit these settings, the method must be saved and re-opened.	GC Method Possible workaround: Saving and re-opening the method displays the Options tab in a correct way.
940321	CRI-6144	GC-HS MHE aborts when queuing Sample Sets	Using Multiple Headspace Extraction (MHE) in the GC-HS method can lead to aborts ("Instrument failure") in case additional sample sets are submitted	HS Control Possible workaround: Do not submit additional sample sets when one is running using MHE.

Resolved Issues

			to the run queue during a running sample set with MHE.	
979714	INFICFSL-3094	Unexpected Instrument Failure for GC+ HS G1888	Using a GC with G1888 HS in ICF SL 3.7 without having terminated and initialized the connection, unexpected instrument failures ("Object reference not set to an instance of an object.") can be observed for a sample set after any interaction with the instrument was performed upfront (for example, using monitor, starting a run, re-opening acquisition).	HS Control Possible workaround: Terminate and Initialize the instrument connection via Advance Options after starting the Acquisition window.
980175	CRI-6548	Fraction Collection does not work	Using a Fraction Collector with ICF SL 3.7.01 executes the sample set as expected but shows injection status incomplete in Empower Data Analysis and does not upload the fraction results.	LC Control Do not use Fraction Collection with ICF SL 3.7.01
1027680	INFICFSL-3213	Multiple Headspace Extraction (MHE) is ignored on Japanese and Chinese systems	On Empower systems localized in Japanese or Chinese, the method setting to perform Multiple Headspace Extractions (MHE) is ignored. Only standard injections are performed instead.	HS Control

7 Known Issues

The below table 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](https://www.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](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 4.0 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 Possible Workaround: 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	User Interface Possible Workaround: Avoid outlined buttons. For example, wait until method setup is complete or click into a

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			"Not Responding" Run Samples window.	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 Possible Workaround: 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 Possible Workaround: 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 Possible Workarounds: - 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 Possible Workaround: 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)
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	Acquisition Sample Set must be aborted manually after a GC ALS/HS

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			and states 'Run cannot be stopped because the instrument is in idle state' in the instrument log.	failure by using the Stop button in Empower.
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 Possible Workaround: 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 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	LC Control Possible Workaround:

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			an instrument failure ("Invalid input format") when starting a run.	Do not configure a cluster with a combined sampler and use a separate sampler instead
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.
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.
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 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. Must be fixed in Waters Driver Pack.

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		
4.0	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	Added support for 8697 XL Headspace
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:

- Introduction
- Agilent WICF 4.0 – What’s new?
- Compatibility
- Support Information
- Resolved Issues
- Known Issues
- Supported Agilent Modules and Firmware
- Changelog

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Edition 03/2024
D0110309

