



Waters
THE SCIENCE OF
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Agilent ICF Support v3.1

Release Notes

716005906
Revision A

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General information

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Agilent ICF Support v3.1

These release notes explain how to install Waters ICF Support version 3.1 for the Agilent Instrument Control Framework (ICF), for control of all supported Agilent LC and GC modules. This software is intended for use in conjunction with Empower 3 software in English, Japanese, and Chinese (simplified).

These release notes are intended for use in conjunction with the documentation supplied by Agilent. For the Framework release notes, refer to the Agilent website.

Compliance recommendations

Any time you install, change, or uninstall software or system modules in a regulated environment, Waters recommends that you follow your organization's approved standard operating procedures.

A risk-based review may assist you in a regulated environment to evaluate changes detailed in the release notes. Using company SOPs, determine if any documentation updates and requalification of the system modules, chromatographic system, or chromatographic data system (CDS) are required.

Requalification with Waters' Total Assurance Plans

The Waters' Total Assurance Plan (TAP) with System Qualification Option covers upgrades and requalification of the instrument driver, software, firmware, or hardware in these cases:

- During yearly requalification, as provided in the plan.
- If installing this release is required for operation of a new module or system, where qualification of the new module or system is covered by the plan.

Requalification of the CDS software and computers after a driver upgrade may or may not be included in your TAP.

Review your TAP to determine which services are covered and which are not covered. For situations not covered by the plan, Waters can perform the qualification, but additional charges will apply.

New features

This release provides the following new features:

- Distributes Agilent ICF version A.02.05 with LC drivers version A.02.18 and GC drivers version B.01.03a.
- Injector Preference for GC instruments. You can now specify the injector you want to use for GC instruments (headspace or autosampler). The headspace injector no longer takes priority over an autosampler.
- Supports the Multiple Headspace Extraction (MHE) technique. Specifically, you can select two throughput options in the headspace: **high throughput** (single headspace extraction) and **low throughput** (multiple headspace extraction). The behavior of headspace injections varies based on the throughput selections in a sample set and on the sequence of vials and multiple methods in the same sample set.

Driver compatibility

This release of Agilent ICF Support (version 3.1) provides support for the Agilent ICF modules in ICF version A.02.05 with ICF-LC drivers version A.02.18 and ICF-GC drivers version B.01.03a. Instrument control using the Agilent ICF, ICF-LC Drivers, and ICF-GC Drivers is separate from and compatible with previous instrument control using legacy ICS instrument drivers such as A1100 LC (v1.06), 7890 GC (v2.6), 6850 GC (v1.40), G1888A and HS7697 headspace samplers (v3.0), and with legacy Empower control for the 6890 GC. Installed legacy instrument control will continue to operate with the systems for which it is specified. In order to allow access to legacy instrument methods, the legacy drivers should remain installed on your Empower system.

GC control considerations

Keep in mind these considerations when updating to Agilent ICF version 3.1:

- Older Agilent drivers (6890 GC, 7890 GC, 6850 GC, G1888A, HS 7697A) are compatible with Agilent ICF version 3.1 drivers. There is no need to uninstall them.
- You must use Ethernet to connect to the GC instruments. RS232 serial communication is not supported.
- If more than one gas sampling valve is connected, the first valve is always assigned as the injection source.
- When running samples, the following headspace rules still apply:
 - When the **high throughput** option is selected in instrument method, these restrictions apply:
 - The vials must run within close proximity.
 - All instrument methods must be the same within a sample set.

- The number of injections must equal 1 in the sample set method.
- Do not select **Alter running sample set**.
- When the **low throughput** option is selected in the instrument method, these restrictions do not apply.
- Method sets cannot contain instrument methods with both the **low** and **high throughput** options selected in the same sample set.
- Do not select **Abort and continue**; instead, select **Abort**.
- Do not **Pause** a sample set.
- Do not perform single injections; use only sample sets.

GC rules:

- GC dual tower functionality is not supported.
- Do not create a GC instrument method offline. To view GC parameters in the instrument method editor, you must scan and configure the instrument at least one time.
- For Agilent 6890 and 7890 GCs, injections from the front and back injector towers are configured in this manner:
 - Vial numbers 1-150 are injected using the front injector tower.
 - Vial numbers 501-650 are injected using the back injector tower.
 - Vial numbers 701-703 are injected using the single vial turret of the back injector tower.

Note: No front and back namings are used to differentiate between the injectors, as in legacy Agilent 6890 and 7890 GCs. For example, F1, B2, and so on are not supported by the ICF-GC drivers.

- For GC instruments, auto configuration works only with the Agilent 7890B GC.

System and software requirements

The following table lists the operating system requirements for this release of the ICF.

Application Software	Empower Feature Release/Service Pack	Operating system
Empower 3 software: English, Japanese, and Chinese (Simplified)	Prior to Feature Release 3 See also: Tech Note 135004217	<ul style="list-style-type: none"> • Windows 7 SP1 (64-bit) • Windows Server 2008 R2 SP1 Enterprise (64-bit)

Application Software	Empower Feature Release/Service Pack	Operating system
Empower 3 software: English, Japanese, and Chinese (Simplified)	Feature Release 3	<ul style="list-style-type: none"> Windows 7 SP1 (64-bit) Windows 8.1 Windows Server 2008 R2 SP1 Enterprise or Standard (64-bit) Windows Server 2012 R2, Standard Edition (64-bit)
Empower 3 software: English, Japanese, and Chinese (Simplified)	Feature Release 4 and higher	<ul style="list-style-type: none"> Windows 7 SP1 (64-bit) Windows 10 Professional or Enterprise (64-bit) Windows Server 2008 R2 SP1 Enterprise or Standard (64-bit) Windows Server 2012 R2, Standard Edition (64-bit)

The computer configurations, operating systems, and hotfixes supported by this software are identical to those for Empower 3 software. If your Empower system is an earlier version or feature release, you cannot install this software. Refer to the *Empower 3 Installation, Configuration, and Upgrade Guide* and the appropriate release notes for details. For incremental information on operating system and hotfix support, visit the Waters website (www.waters.com).

Supported modules and firmware

Agilent ICF Update version A.02.05 supports the Agilent LC modules listed in the following tables.

If you follow Agilent guidelines for firmware versions that Waters previously tested, Waters expects no incompatibilities. Consult Agilent or refer to its website for additional firmware compatibility guidelines.

Agilent LC - Pumps

Product Number	Module Name	Minimum Required Firmware Revision
G1310A	1100/1200 Series Isocratic Pump	A.06.10
G1310B	1260 Infinity Isocratic Pump	A.06.32
G1311A	1100/1200 Series Quaternary Pump ^a	A.06.10

Product Number	Module Name	Minimum Required Firmware Revision
G1311B	1260 Infinity Quaternary Pump ^a	A.06.32
G1311C	1260 Infinity Quaternary Pump VL ^a	A.06.32
G1312A	1260 Infinity Binary Pump ^a	A.06.10
G1312B	1260 Infinity Binary Pump SL ^a	A.06.10
G1312C	1260 Infinity Binary Pump VL ^a	A.06.32
G1361A	1260 Infinity Preparative Pump cluster with up to four	A.06.50
G1376A	1260 Infinity Capillary Pump	A.06.10
G2226A	1260 Infinity Nanoflow Pump	A.06.10
G4204A	1290 Quaternary Pump ^a	B.06.50
G4220A	1290 Infinity Binary Pump ^a	B.06.23
G4220B	1290 Infinity Binary Pump VL ^a	B.06.43
G4302A	1260 Infinity SFC Binary Pump	A.06.32
G4782A	1260 Infinity II SFC Binary Pump	D.07.13
G5611A	1260 Infinity Bio-Inert Quaternary Pump ^a	A.06.32
G5654A	1260 Infinity II Bio-Inert Quaternary Pump ^a	D.07.01
G7104A	1290 Infinity II Flexible Pump	B.06.71
G7104C	1260 Infinity II Flexible Pump ^a	D.07.20
G7110B	1260 Infinity II Isocratic Pump	D.07.01
G7111A	1260 Infinity II Quaternary Pump VL ^a	D.07.01
G7111B	1260 Infinity II Quaternary Pump VL ^a	D.07.01
G7112B	1260 Infinity II Binary Pump	D.07.01
G7120A	1290 Infinity II High-Speed Pump	B.06.71
G7161A	1260 Infinity II Preparative Binary Pump	D.07.20
G7161B	1290 Infinity II Preparative Binary Pump	D.07.20

a. Pump valve clusters are possible for marked pumps with up to two valves of type G1160A and/or G1170A.

Agilent LC - Sampling Systems

Product Number	Module Name	Minimum Required Firmware Revision
G1313A	1100 Series Standard Autosampler	A.06.10
G1329A	1100/1200 Series Standard Autosampler	A.06.10
G1329B	1260 Infinity Standard Autosampler	A.06.10
G1367A	1100 Series Well-Plate Sampler	A.06.31
G1367B	1200 Series High Performance Autosampler	A.06.31
G1367C	1200 Series High Performance Autosampler SL	A.06.31
G1367D	1200 Series High Performance Autosampler SL+	A.06.31
G1367E	1260 Infinity High Performance Autosampler	A.06.32
G1377A	1260 Infinity High Performance Micro Autosampler	A.06.12
G1389A	1100 Series Micro Thermostatted Autosampler	A.06.10
G2258A	1260 Infinity Dual-Loop Autosampler	A.06.50
G2260A	1260 Infinity Preparative Autosampler (high flow)	A.06.50
G4226A	1290 Infinity Autosampler	A.06.31
G4303A	1260 Infinity SFC Standard Autosampler	A.06.54
G4767A	1260 Infinity II SFC Multisampler	D.07.13
G5667A	1260 Infinity Bio-Inert Autosampler	A.06.32
G5668A	1260 Infinity II Bio-Inert Multisampler	D.07.13
G7167A	1260 Infinity II Multisampler	D.07.13
G7167B	1290 Infinity II Multisampler	D.07.13
G7129A	1260 Infinity II Vialsampler	D.06.76
G7129B	1290 Infinity II Vialsampler	D.06.76
G7129C	1260 Infinity II Vialsampler	D.07.20
G7157A	1260 Infinity II Preparative Autosampler	D.07.01

Agilent LC - Detectors

Product Number	Module Name	Minimum Required Firmware Revision
G1314A	1100 Series Variable Wavelength Detector	A.06.10

Product Number	Module Name	Minimum Required Firmware Revision
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	1100/1200 Series Multiple Wavelength Detector	A.06.10
G1365B	1100/1200 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	1100 Series Fluorescence Detector (FLD)	A.06.10
G1321B	1260 Infinity Fluorescence Detector	A.06.32
G1321C	1260 Infinity Fluorescence Detector	A.06.54
G1362A	1260 Infinity Refractive Index Detector	A.06.10
G4212A	1290 Infinity Diode Array Detector	B.06.30
G4212B	1260 Infinity Diode Array Detector	B.06.30
G4212A/B HDR-DAD Cluster	2x G4212A or 2x G4212B or a combination of 1x G4212A and 1x G4212B	B.06.57
G4260B	Agilent 1260 Infinity/Infinity II ELSD RS-232 serial communication ^a	32.06
G7102A	Agilent 1290 Infinity II ELSD Ethernet connection ^a	32.06
G7102A	Agilent 1290 Infinity II ELSD Ethernet connection ^a	32.06
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
G7117B	1290 Infinity II Diode Array Detector	D.06.70

Product Number	Module Name	Minimum Required Firmware Revision
G7117C	1260 Infinity II Diode Array Detector HS	D.07.01
G7117A/B HDR-DAD Cluster	2x G7117A or 2x G7117B or a combination of 1x G7117A and 1x G7117B	D.06.70
G7121A	1260 Infinity II Fluorescence Detector	D.07.01
G7121B	1260 Infinity II Fluorescence Detector Spectra	D.07.01
G7165A	1260 Infinity II Multiple Wavelength Detector	D.07.01
G7162A	1260 Infinity II Refractive Index Detector	D.06.76
G7162B	1290 Infinity II Refractive Index Detector	D.06.76

- a. Per Agilent ELSD drivers revision A.01.07 Release Notes, it is not possible to use the existing instrument methods created by previous versions of the ELSD driver. Loading an instrument method created using a previous version of the ELSD driver results in "Error 102 method mismatch." New methods must be created.

Agilent LC - Column Compartments

Product Number	Module Name	Minimum Required Firmware Revision
G1316A	1260 Infinity Thermostatted Column Compartment	A.06.10
G1316B	1200 Series Column Compartment SL	A.06.10
G1316C	1200 Series Thermostatted Column Compartment SL ^a	A.06.14
G7116A	1260 Infinity II Multicolumn Thermostat [firmware for host module in brackets]	C.07.01 [B.07.01/D.07.01]
G7116B	1290 Infinity II Multicolumn Thermostat [firmware for host module in brackets]	C.06.75 [B.06.75/D.06.75]
G7130A	Integrated Column Compartment ICC	D.06.76

- a. Cluster with up to three G1316Cs with integrated 8pos/9port valves (products G4230A/B). Minimum two G1316C TCCs; the third TCC can be a G1316A, B, or C.

Agilent LC - Valve thermostat cluster (VTC)

The valve thermostat cluster (VTC) is a combination of G7116B, G1170A, and G1316C, as valve or column hosts, and G1316A/B and G7130A, as column hosts.

Table 1–1: Supported Valve Thermostat Cluster (VTC) firmware

Module	Minimum module firmware	Minimum host module firmware
G7116B	C.06.75	B.06.75/D.06.75
G1170A	C.06.75	B.06.75/D.06.75
G7130A (within G7129A/B)	D.06.76	N/A
G1316C	A.06.55	N/A
G1316A/B	A.06.10	N/A

Agilent LC - Valves and Valve Drives

Product Number	Module Name	Minimum Required Firmware Revision
G1156A	1200 Series 6 Position / 7 Port Valve (400 bar)	A.06.02
G1157A	1200 Series 2 Position / 10 Port Valve	A.06.02
G1158A	1200 Series 2 Position / 6 Port Valve	A.06.02
G1158B	1200 Series 2 Position / 6 Port Valve (600 bar)	A.06.02
G1159A	1200 Series 6 Position Selection Valve	A.06.02
G1160A	1100 Series Multiple Purpose Switching Valve (12 Position / 13 Port)	A.06.02
G1162A	1200 Series 2 Position / 6 Port Micro Valve	A.06.02
G1163A	1200 Series 2 Position / 10 Port Micro Valve	A.06.02
G1170A	1290 Infinity Valve Drive [firmware for host module in brackets]	C.06.40 [B.06.40/D.06.60]

Agilent LC - Fraction Collectors

Product Number	Module Name	Minimum Required Firmware Revision
G1364A	1100 Series Automatic Fraction Collector Cluster of up to 3 ^a	A.06.53
G1364B	1260 Infinity Fraction Collector (preparative-scale) Cluster of up to 3 ^a	A.06.53

Product Number	Module Name	Minimum Required Firmware Revision
G1364C	1260 Infinity Fraction Collector (analytical-scale) Cluster of up to 3 ^a	A.06.53
G1364D	1100 Series Micro Fraction Collector	A.06.53
G1364E	1260 Infinity II Preparative Fraction Collector ^b	D.07.20
G1364F	1260 Infinity II Analytical Fraction Collector ^b	D.07.20
G5664A	1260 Infinity Bio-inert fraction collector AS	A.06.53
G5664B	1260 Infinity II Bio-inert Fraction Collector ^b	D.07.20
G7159B	1290 Infinity II Preparative Open-Bed Fraction Collector ^c	D.07.10
G7166A	1260 Infinity II Preparative Valve-Based Collector [firmware for host module in brackets]	C.07.10 [B.07.10/D.07.10]

- a. Any combination of G1364A/B/C or G5664A plus a fourth G1364A/B/C or G5664A for recovery can be clustered. Multiple individual Fraction Collectors are not supported.
- b. Can be clustered with a G7166A or the same module type for recovery collection.
- c. Can be clustered with a G7166A for Recovery.

Agilent LC - Other module types

Product Number	Module Name	Minimum Required Firmware Revision
G1390A	1100 Series Universal Interface Box (UIB)	A.06.02
G1390B	1200 Infinity Series Universal Interface Box II [firmware for host module in brackets]	C.06.53 [B.06.53/D.06.60]
G4227A	1290 Infinity Flexible Cube [firmware for host module in brackets]	C.06.52 [B.06.52/D.06.60]
G4240A	Chip Cube	A.06.36
G4301A	1260 Infinity Analytical SFC System	A.03.09

Agilent LC - Systems

Product Number	Module Name	Minimum Required Firmware Revision
G4286A	1120 Compact LC, Isocratic	B.06.50

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

Agilent - CE Systems

Product Number	Module Name	Minimum Required Firmware Revision
G7100A	G7100A Capillary Electrophoresis II with the internal components: <ul style="list-style-type: none"> • G7150A CE Mainframe • G7151A DAD 	B.06.25

Supported Gas Chromatography Hardware

Agilent GC Model Number	Module Name	Inlets (described below)	Detectors (described below)
Intuvo 9000	G3950A	S/S, MMI	TCD, FID, NPD, FPD ECD, μ ECD, XCD
	G3952A	S/S, MMI	TCD, FID, NPD, FPD ECD, μ ECD, XCD
	G3953A	S/S, MMI	TCD, FID, NPD, FPD ECD, μ ECD, XCD
7890B and 7890A+	G3440B	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB, XCD
	G3442B	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB, XCD
	G3443B	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB, XCD
	G3445B	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB, XCD
7890A	G3440A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB
	G3442A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB
	G3443A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB
	G3445A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI, MMI, HT-PTV	μ ECD, Dual W FPD, AIB
7820	G4350A	S/S, P/P	TCD, FID, NPD, μ ECD, FPD, FPD+
6890A	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI	μ ECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI	μ ECD, Dual W FPD, AIB
6890Plus	G1530A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI	μ ECD, Dual W FPD, AIB
	G1540A	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,

Agilent GC Model Number	Module Name	Inlets (described below)	Detectors (described below)
		PCM, VI	μECD, Dual W FPD, AIB
6890N	G1530N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI	μECD, Dual W FPD, AIB
	G1540N	S/S, P/P, COC, PTV,	TCD, FID, NPD, FPD ECD,
		PCM, VI	μECD, Dual W FPD, AIB
6850	G2630A	S/S, P/P, COC, PTV,	TCD, FID, FPD, uECD,
			AIB
6850	G2630B	S/S, P/P, COC, PTV	TCD, FID, FPD, uECD,
			AIB

Table 1–2: Inlet descriptions

Inlet abbreviation	Description
S/S	Split/Splitless
P/P	Purged/Packed
COC	Cool On-Column
PTV	Programmable Temperature Vaporization
PCM	Pneumatics Control Module
VI	Volatiles Interface
MMI	Multimode Inlet
HT-PTV	High Temp-PTV

Table 1–3: Detector descriptions

Detector abbreviation	Description
TCD	Thermal Conductivity Detector
FID	Flame Ionization Detector
NPD	Nitrogen Phosphorus Detector
FPD	Flame Photometric Detector
μECD	micro Electron Capture Detector
Dual W FPD	Dual Wavelength Flame Photometric Detector
AIB	Analog Input Board
XCD	(Sulphur or Nitrogen) Chemiluminescence Detector

Table 1–3: Detector descriptions (continued)

Detector abbreviation	Description
ECD	Electron Capture Detector

Agilent Gas Chromatograph and Headspace Firmware

Product Number	Communication Type	Minimum Firmware
Agilent 6890 Series I and II Gas Chromatograph	Ethernet	A.03.08
Agilent 6890A and 6890+ Gas Chromatograph	Ethernet	A.03.08
Agilent 6890N Gas Chromatograph	Ethernet	N.06.07
Agilent 6850 Series Gas Chromatograph serial number < 10243001	Ethernet	A.03.07
Agilent 6850 Series II Network Gas Chromatograph serial number > 10243001	Ethernet	A.06.02
Agilent 7820A Gas Chromatograph	Ethernet	A.01.17.004
Agilent 7890A Gas Chromatograph	Ethernet	A.01.16
Agilent 7890B Gas Chromatograph	Ethernet	B.02.04
Agilent Intuvo 9000 Gas Chromatograph	Ethernet	A.01.03
Agilent G1888A Headspace Autosampler	Ethernet	A.01.10
Agilent HS7697A Headspace Sampler (G4556A, G4557A)	Ethernet	A.01.08

Supported plates and trays for LC autosamplers

For LC modules, the following plates and trays are supported with plate definition text files that you can import into Empower software.

Plate or tray type	Size/Volume	Text File Name
96 well plate	500 uL	ANSI96Well500ul.txt
54 vial plate	1500 uL	ANSIAgilent54VialPlate1500ul.txt
96 deep well plate	1.0ml (Agilent3)	96DeepAgilent3.txt
96 deep well plate	1.0ml (Agilent4)	96DeepAgilent4.txt

Plate or tray type	Size/Volume	Text File Name
96 deep well plate	1.0ml (Ritter41)	96DeepRitter41.txt
384 well plate (Agilent)	N/A	384Agilent.txt
384 well plate (Corning)	N/A	384Corning.txt
384 well plate (Greiner)	N/A	384Greiner.txt
384 well plate (Nunc)	N/A	384Nunc.txt
Tray, holding 27 Eppendorf Safe-Lock tubes	0.5 mL	Agilent27Eppendorf500uL.txt
Tray, holding 27 Eppendorf Safe-Lock tubes	1.5 mL	Agilent27Eppendorf1500uL.txt
Tray, holding 27 Eppendorf Safe-Lock tubes	2.0 mL	Agilent27Eppendorf2000uL.txt
High Recovery Vial plate	5 ml	15HRV5mlVialPlate.txt
High Recovery Vial plate	6 ml	15HRV6mlVialPlate.txt
Vial plate	N/A	15VialPlate.txt
Support for 100 micro vial tray (Agilent part G4226-60021)	N/A	Not Applicable
Support for 100 x 2ml vial tray (Agilent part G1329-90010)	N/A	Not Applicable
10-vial bar for well-plate autosamplers	N/A	Vialbar.txt
66 Vial Tray (for G7129A)	2.0 mL	66x2ml-vials.txt

The text files are located in this folder and they are extractable from the distribution media: \ICF Support v3.1\AgilentPlatesForImport.

Importing plate type definitions

You can import or select plate type definitions using the Configuration Manager window.

To import plate type definitions:

1. Select **Configuration Manager > Plate Types**.
2. Inside a row in the Plate Type Name field, right-click, and select **Import from Text**.
Alternative: Right-click in the field, and select **New** to specify a new plate type name, and then click **OK**.
3. Type the path and name of the plate type file, or browse to the location of the file.
4. Type a name for the new plate type definition, and then click **OK**.

Installation process

To use this software on an Empower Enterprise (client/server) system, you must install it on every computer, LAC/E module, client, and Citrix application server that interacts with the Agilent instrument, its methods, or results. You do not need to install the Agilent ICF Support v 3.1 software on the database server unless the server hosts Empower client software and interacts with the Agilent instrument, its methods, or results.

You can upgrade to Agilent ICF Support v3.1 from Agilent ICF Support v3.0.

Note: If you upgrade from the Agilent ICF Support Update A.02.05, the system updates only the ICF framework to version 3.1.

Agilent ICF Support v3.1 is compatible in these environments:

- When Agilent ICF Support v2.1 Hotfix 1 (with at least ICF Update A.01.05) or Agilent ICF Support v2.2 is installed on a LAC/E module and Agilent ICF Support v3.1 is installed on a Citrix server.
- On an acquisition system that contains the current Agilent LC v1.06 ICS, the current Agilent 7890 GC v2.6 ICS, the current Agilent 6850 GC v1.40 ICS, HeadSpace Control Option v3.0, or the current released Waters driver pack.
- With Empower 3 SR1 to Empower 3 SR3 (inclusive) software (English, Japanese, and simplified Chinese).

Before you install Agilent ICF Support v3.1 software, you must remove the following software using Microsoft's **Add/Remove Programs** feature:

- Agilent ICF Support version 2.2.1 in support of the CTC Analytics PAL 3 robotic sampler
- Agilent ICF Support version 1.0 drivers, including:
 - Agilent LC (version 1.0.0.0)
 - Agilent ICF (version 1.02.24)
 - Agilent ICF - LC Drivers (version 1.02.017)

Recommendation: Back up all Empower software projects, library information, and databases before beginning the installation process.

Installing Agilent ICF Support v3.1 using media

Note: These instructions are not applicable for installing the ICF Support v3.1 on an Empower Citrix application server. See [Installing Agilent ICF Support v3.1 on an Empower Citrix Server](#).

To install the Agilent ICF Support v3.1 using media or a downloaded executable file:

1. Power-off the Agilent instruments, and reboot the computer.
2. Log in to the computer using an account with local administrator privileges.

Note: If you have downloaded `ICF_Support_v31.exe`, proceed to step 4.

3. Insert the Agilent ICF Support version 3.1 media in the media drive.
4. Browse to the root directory of the media, and double-click the **ICF_Support_v31.exe** file to extract the installation files to a temporary location.
5. Browse to the temporary location, open the ICF Support v31 folder, and then double-click the `Setup.exe` file.
6. Follow all prompts to complete the installation.
7. To complete the installation, restart the computer.

Requirement: Using Windows' Computer Management, verify that the **Waters DHCP Server** service is running before you power-on the Agilent instruments.

8. Power-on the Agilent instruments.

Installing Agilent ICF Support v3.1 on an Empower Citrix server

To install Agilent ICF Support v3.1 on an Empower Citrix server:

1. Insert the Agilent ICF Support v3.1 media in the media drive.
2. Browse to the `ICF_Support_v31.exe` file, and double-click it to extract the installation files to a temporary location.
3. Put the server in install mode by opening a command prompt and typing `Change user/install`

Result: The screen response states `User session is ready to install applications.`

4. Browse to the `ICF_Support_v31` folder.
5. Select the `Setup.exe` file, and then click **Open**.

Tip: To see the file, you sometimes must select **All Files** from the **Files of type** list.

6. Follow all prompts, to complete the installation.
7. Return the server to Execute mode by opening a command prompt and typing `Change user/execute`.

Silent and push installations

You can install or remove the Agilent ICF Support v3.1 software using a silent or push installation. Both silent and push installations and removals are unattended, meaning that these operations do not require user interaction.

During a silent installation or removal, you deploy Agilent ICF Support v3.1 on a single Empower client, LAC/E module, or Citrix server. You store the information required for the operation in a

response file and an instrument-driver list file. You then call both files from a command prompt or from the commands in a batch file that is in the Empower node to which you are installing.

During a push installation or removal, you deploy Agilent ICF Support v3.1 to multiple Empower clients, LAC/E modules, or Citrix servers from a host computer. You control push installations and removals using PsExec, a Microsoft command-line tool. When you run PsExec, the response file is called as a command line argument, after the `setup.exe` file.

Silent installations

Create or modify the response file

Create or update the response file that is shipped with the media. The response file must be in XML format, using the correct XML syntax. You can update the response file that is shipped with the media, but the file extension must remain `.RSP`. The file that is shipped with the media that you need to modify is located in the `\\ICF Support v31\Push Install\ICS_Response_EN.rsp` folder. If you create a new response file, save and name it `ICS_Response_EN.rsp`, and then replace the original file on the media in the aforementioned location.

`ICS_Response_EN.rsp`

```
<?xml version="1.0" encoding="utf-8" ?>
<Configuration>
  <!-- InstallAll/RemoveAll-->
  <ACTION>InstallAll</ACTION>

  <!-- May be blank. Default is the Empower/System Language-->
  <!-- English Japanese Chinese-->
  <LANGUAGE></LANGUAGE>

  <!-- ICS List - Path to the text file-->
  <ICS_LIST>\\share\ICF Support v31\Push Install\ICS_List_EN.txt</
ICS_LIST>

  <!-- Network destination for log file to be copied-->
  <LOG_FILE_NETWORK_LOCATION>\\share\Logs</LOG_FILE_NETWORK_LOCATION>--
>

  <!--true/false-->
  <RESTART>>false</RESTART>

  <!-- Working Directory - Path to Media root-->
```

```
<WORKING_DIRECTORY>\\share</WORKING_DIRECTORY>  
</Configuration>
```

Note: *Share* is the name of the share created with the installation media Agilent ICF Support v31.

Performing a silent installation or removal

To perform a silent installation or removal:

1. For silent installations on a LAC/E module, skip step 1 and proceed to step 2. If you are installing or removing the Agilent ICF Support v3.1 software on a Citrix server, put the Citrix server in Install mode by opening a command prompt and typing `Change user / install`.
2. In the response file, do one of the following:
 - To install drivers, ensure that the **ACTION** property is set to **InstallAll**.
 - To remove drivers, ensure that the **ACTION** property in the response file is set to **RemoveAll**.

See also: [Create or modify the response file](#)

3. Run `Setup.exe` from a command prompt or from a batch file.

Requirement: The command must include the name of the response file and the path to `Setup.exe`; for example, `\\Share\ICF Support v31\Setup.exe /responseFile \ICF support v31\Push Install\ICS_Response_EN.rsp`.

Result: The Agilent ICF Support v3.1 instrument drivers are installed on or removed from the LAC/E module or Citrix server. Ensure that the node restarts.

4. If you are installing or removing the Agilent ICF Support v3.1 software on a Citrix server, return to Execute mode by opening a command prompt and typing `Change user / execute`.

Note: Removing the ICF Support v3.1 software does not remove the Agilent ICF or ICF Drivers. See [Uninstalling Agilent ICF Support v3.1](#).

Push installations

Push installation requirements

Agilent ICF Support v 3.1 software supports push installations for instrument component software using a Microsoft tool called PsExec. This utility is not included in the media, but you can download it using the following link: <http://technet.microsoft.com/>.

At this site, enter `psexec` in the search box and click **Search**. Click the **PsExec** link and follow the instructions for downloading and installing the latest version of PsExec.

Using PsExec requires the following tasks:

- Creating or updating the response file.
- Creating a client list node text file (for example, `Node_List.txt`) containing LAC/E modules or Citrix servers on which you want to install the ICF Support v3.1 (one line in the file for each computer).
- Obtaining local administrator privilege on each Citrix server or and LAC/E module.
- Running the PsExec command in DOS or from a batch file to do a push installation.

Restriction: When you perform a push installation on multiple computers, you must use the same type of computer for each installation (all Citrix servers, all LAC/E modules, and so on). You cannot push installations onto a mix of computer types.

Performing a push installation or removal

To perform a push installation or removal:

1. Ensure that the node list file includes the names of all the LAC/E modules and Citrix server on which you want to install or remove Agilent ICF Support v3.1.
2. In the response file, do one of the following:
 - To install drivers, ensure that the **ACTION** property is set to **InstallAll**.
 - To remove drivers, ensure that the **ACTION** property in the response file is set to **RemoveAll**.

See also: [Create or modify the response file](#).

3. For push installations on a LAC/E module, run `Setup.exe` from a command prompt or from a batch file.

Requirement: The command must include the name of the response file and the path to `Setup.exe`; for example, `psexec\\Share\node_List.txt -s -d \\ICF Support v31\Setup.exe /responseFile \\Share\ICF support v31\Push Install \ICS_Response_EN.rsp`

Where,

`-s` specifies running the remote process using the System account. You can only use the System account for push installations.

`-d` specifies that you do not need to wait for the process to terminate, and can launch the installation simultaneously on multiple systems.

Result: The Agilent ICF Support v3.1 instrument drivers are installed on or removed from the LAC/E modules. Ensure the computer restarts.

4. For push installations on Citrix servers, create the following batch file, save as PushCitrix.bat, and then run the PushInstall.bat from a Command prompt or from a batch file:

```
Change user/install
psexec\\Share\node_List.txt -s -d \\ICF Support v31\Setup.exe /
responseFile \\Share\ICF support v31\Push Install
\ICS_Response_EN.rsp
Change user/execute
```

Where,

-s specifies running the remote process using the System account. You can only use the System account for push installations.

-d specifies that you do not need to wait for the process to terminate, and can launch the installation simultaneously on multiple systems.

Result: The Agilent ICF Support v3.1 instrument drivers are installed on or removed from the Citrix modules. Ensure the computer restarts.

Note: Removing the ICF Support v3.1 software does not remove the Agilent ICF or ICF Drivers. See [Uninstalling Agilent ICF Support v3.1](#).

Verifying the installation

1. Click **Start > All Programs > Empower > Empower Installation Log**.
2. Search for lines similar to these:

```
*****
DM [09:41:25:776 AM]: Product: ICF Support -- Installation
completed successfully.
DM [09:41:42:601 AM]: Completed the installation of Agilent
Instrument Control Framework
DM [09:42:30:620 AM]: Completed the installation of Agilent
Instrument Control Framework - Driver Package
DM [09:42:55:045 AM]: Completed the installation of Agilent
Instrument Control Framework - Driver Package
*****
```

3. Click **Start > All Programs > Empower > Verify Files** to run the Verify Files utility and generate a checksum.txt file.

Tip: The checksum.txt file documents the installation of options or service packs and verifies the integrity of disk files by comparing their current CRCs and sizes with the

original values recorded during installation of the base software and any installed option or service pack.

Result: Once executed, reports are generated in a browser window. The reports are also saved in the user's Temp folder.

Note: Files installed for the Agilent ICF support are not included in the `checksum.txt` file generated by the Verify Files utility. To verify the installation for the Agilent ICF components, execute the following batch file: `\Empower\Instruments\AgilentLC\IQTWizard\ICFIQT.bat`. If the computer name is longer than 15 characters, the `IQT.exe` does not run properly, and does not provide feedback or generate reports. Agilent documented this issue as 278675.

4. From the Windows Control Panel of the LAC/E module or Citrix server, access Programs and Features and confirm that the following versions are installed:

Figure 1–1: Installed Agilent ICF Support and ICF Drivers from Windows Control Panel



Agilent Instrument Control Framework - LC Drivers A.02.18	Agilent Techn...	12/8/2018	124 MB	2.18.18.6
Agilent Instrument Control Framework - GC/HS Drivers B.01.03a	Agilent Techn...	12/8/2018	256 MB	1.03.096
Agilent Instrument Control Framework A.02.05	Agilent Techn...	12/8/2018	47.9 MB	2.5.148
ICF Support	Waters Corpor...	12/8/2018	24.0 MB	3.1.0.0

Uninstalling Agilent ICF Support v3.1

To ensure that file verification is successful following the removal of the software, you must restart the computer before you uninstall the Agilent ICF Support.

Note: Remove Agilent ICF Support v3.1 before you uninstall ICF-LC or ICF-GC instrument drivers.

To uninstall Agilent ICF Support v3.1:

1. Restart the computer.
2. Select **Start > All Programs > Empower > Remove Waters Instrument Component Software**.
3. Click **Remove**.
4. Select the product you want to remove, and then click **Next**.
5. Follow the prompts to remove the instrument component software from your system.

Result: The registry and new CRC checksums are updated for the Empower software installation. No Oracle software or system files are affected.

Note: Removing Waters Agilent ICF Support v3.1 does not remove the Agilent ICF software itself. You can remove the Agilent ICF software through the Microsoft Windows

Programs and Features utility. To remove these Agilent ICF from **Programs and Features**, you need to select and remove Agilent Instrument Control Framework A.02.04 first, and then you can remove the other two drivers (GC/HS Drivers A.03.02 and LC Drivers A.02.14).

6. Restart the computer.

System validation

After you install or uninstall the software on a qualified system, determine if the system requires requalification according to your laboratory's standard operating procedures.

Requirement: If this is the initial installation in a GxP-regulated environment, perform a full qualification of the Empower software.

Recommendation: Run the Verify Files utility or the ConnectionsAQT for Empower IQ, and then review the resulting file for an entry that states `No installation changes were detected`.

Tip: The date displayed when running Verify Files (or Empower IQ) reflects only the most recent installation. See the `Empower.log` file for the complete history.

Issues resolved in this release

This section lists the problems resolved in this release. The numbers identify issues that Waters personnel monitor within a system change request tracking tool.

55751

Fields in the instrument method editor no longer flicker.

56305, 54736

This release supports the Multiple Headspace Extraction (MHE) technique. Specifically, you can select two throughput options in the headspace: **high throughput** and **low throughput**. The behavior of headspace injections varies based on the throughput selections in a sample set and on the sequence of vials and multiple methods in the same sample set. See: [GC Control Considerations](#)

56306

You can now specify the injector you want to use for GC instruments (headspace or autosampler) in the instrument method. Instrument methods developed using Agilent ICF Support 3.1 are backward compatible.

56310

In Agilent ICF Support 3.0, when acquiring data from a fluorescence detector, 2D peak height and area values did not match the plot. Now, the peak height and area values match the plot.

55693

You can now bring two Agilent 7890 or 7820 GCs (or a combination of an Agilent 7890 and an Agilent 7820 GC) online on the same LAC/E module, acquisition client, or Empower workstation.

Known issues in this release

This section lists the known issues and solutions for this release. The numbers identify issues that Waters personnel monitor within a system change request tracking tool.

55417

When editing an Empower instrument method for the Agilent 7890 GC, the **Save** button may not be enabled when a change is made. This is Agilent issue number 268593.

Solution: To resolve this issue, open another tab in the instrument method, and change a parameter. The **Save** button now becomes enabled.

56545

If the Run Samples window is open and the G1888A headspace sampler or the 7890 A , 7890B, or 6890 GC is powered-on, the Status Panel displays a status of *GC is Offline*.

Solution: Use the Agilent PreConfiguration window to reconfigure the GC . In the Node Properties dialog box, select the **Instruments** tab, and then click **Scan instruments**. The OK? column in the **Instruments** tab of the Nodes Properties dialog box will display a value of **Yes** for the AgGC. See: [Configuring the GC system \(with or without a headspace sampler\) in Empower](#).

55840

When using **Method Differences** with instrument methods for the Agilent 6890 GC, you might see more differences than you expect. This issue stems from an inconsistency in the XML formatting of the Agilent 6890 GC method report produced by the Agilent ICF.

Note: Agilent documented this issue as defect number 278672.

56066

When saving an instrument method for the 7890GC, it is possible that some parameters might not be saved and you may need to redo these changes.

Note: Agilent documented this issue as 267849.

Note: Before saving the instrument method, ensure that it contains no errors. It may take multiple attempts to save the instrument method.

56105

You cannot run the Agilent ICF Installation Qualification tool if the computer name is longer than 15 characters.

Note: Agilent documented this issue as defect 278675.

56181

On Agilent LC DAD systems, when you run a sample set that uses the **Inject Immediate Standards** function, all injections appear to work correctly and signals appear in the real-time plot as expected. However, Empower calculates no results and displays no data when you take the injections into Review.

Solution: In the Sample Set Method, replace the **Inject Immediate Standards** function with an **Inject Standards** function, while retaining an injection volume of 0.0 µL.

56469

If you have an instrument method in Empower that does not match the Agilent 7890 GC column front or back configuration (so that it will auto update the instrument to resolve by itself based on current GC configuration), the software may sometimes acquire different or unknown data channels. In Review, these channels have a `Data Missing` status.

This issue stems from an inconsistency produced by the Agilent ICF with a column update.

Solution: See the Waters Knowledge Base article [30902](#).

56603

On Agilent Intuvo 9000, having more than one injection per line causes Empower to create unknown data acquisition channels. In Review, these channels have a `Data Missing` status.

Solution: Add only one injection per line in the sample set.

56669

The **Column** tab of the Instrument Editor becomes a blank page when you save an edited instrument method.

Solution: Before saving the method, select the **Column** tab, and then save the method. This preserves the **Column** tab's integrity.

56698

With the low throughput option, you cannot delete a line you added to the sample set while it was running.

56699

With Agilent ICF Support 3.1, the online Help topic for the **Options** tab in the Instrument Method Editor is not available.

Solution: Refer to topic [Options Tab in the Instrument Method Editor](#) at the end of these release notes.

Agilent PreConfiguration Utility

Use the Agilent Pre-Configuration Utility to remotely configure a new system. Always launch the utility from the Empower **Configuration Manager > Tools** menu.

The Pre-Configuration Utility connects to a LAC/E module using the module's IP address or host name. You can select and configure the instruments you want to use and create a new system that contains the selected instruments.

To configure Agilent LC systems, refer to the Tech Note (TECN1349136402) "Using the Agilent Pre-Configuration Utility with Agilent Instrument Control Framework (ICF) Support".

Configuring an Agilent 7890 GC system using the PreConfiguration Utility

Follow this procedure to configure an Agilent 7890 GC system using Empower's PreConfiguration Utility.

To configure an Agilent 7890 GC system using the PreConfiguration Utility:

1. Using the front panel of the GC instrument, set up the Agilent GC with a static IP address.
2. Log in to Empower from any client or through the Citrix server.

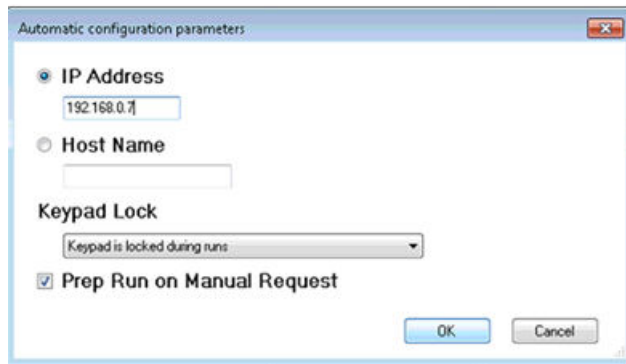
3. From Configuration Manager, click **Tools > Agilent PreConfiguration**.
4. In the Configuration Directory dialog box, type the host name or IP address of the LAC/E node, and then click **Connect**.

Note: When you are connected to the node, the **New** button is enabled.

5. In the Configuration Directory dialog box, click **New**.
Note: Before you proceed to the next step, ensure that you are able to ping the IP address of the Agilent GC system from the LAC/E Command Prompt window.
6. In the Configuration Editor window, select **Agilent 78xx/68xx/7697 GC/HS**, and then click **Auto Configure**.

Result: A message appears informing you that your configuration was successful.

7. In the Automatic Configuration dialog box, do the following, and then click **OK**:
 - Select **IP address**, and then enter the static IP address of the Agilent 7890 GC system.
 - Select a **Keypad Lock** option according to your SOPs:
 - Keypad is locked during runs
 - Keypad is locked while under software control
 - Keypad is never locked
 - Ensure that you select the **Prep Run on Manual Request** check box.



8. Do one of the following:
 - If you successfully connect to the Agilent 7890 GC system, proceed to the next step.
 - If the `Automatic Configuration failed` message appears, manually configure the Agilent 7890 GC following the procedure in the next section [Configuring any other type of Agilent GC and Headspace system using the PreConfiguration Utility](#).

Note: When you successfully connect to the Agilent 7890 GC system, the appropriate instrument configuration appears in the right pane of the Configuration Editor window.

9. In the Configuration Editor window, on the right side, select the module, and then click **Configure**.

10. In the **Connection** tab of the Configure dialog box, specify the IP Address of the instrument.
11. In the **Configuration** tab of the Configure dialog box, specify or modify selections as needed, confirm that the modules are read correctly, and then click **OK**.

Result: The Configuration Directory lists the configured Agilent GC systems with their appropriate IP addresses as the assigned names. If you are finished configuring GC systems, click **Exit**. If not, repeat the procedure.

Configuring any other type of Agilent GC using the PreConfiguration Utility

Follow this procedure to configure an Agilent GC, other than the Agilent 7890 GC, using Empower's PreConfiguration Utility.

Note: The following procedure applies to Agilent 6850 GC and 7820 GC systems, or a 6890 GC system with the required LAN card for Ethernet connectivity.

To configure an Agilent GC system using the PreConfiguration Utility:

1. Using the front panel of the GC instrument, set up the Agilent GC with a static IP address.
2. Log in to Empower from any client or through the Citrix server.
3. From Configuration Manager, click **Tools > Agilent PreConfiguration**.
4. In the Configuration Directory dialog box, type the host name or IP address of the LAC/E node, and then click **Connect**.

Note: When you are connected to the node, the **New** button is enabled.

5. In the Configuration Directory dialog box, click **New**.

Note: Before you proceed to the next step, ensure that you are able to ping the IP address of the Agilent GC system from the LAC/E Command Prompt window.

6. In the Configuration Editor window, select **Agilent 78xx/68xx/7697 GC/HS**, and then do the following:
 - Expand **Agilent 78xx/68xx/7697 GC/HS**.
 - Select the instrument that you want to configure.
 - Click **>** to move the instrument to the right-hand pane of the Configuration Editor window, and then select it.
 - In the right-hand pane of the Configuration Editor window, select the instrument, and then click **Configure**.

7. In the **Connection** tab of the Configure dialog box, specify the IP Address, and then click **Get GC Configuration**.
8. In the **Configuration** tab of the Configure dialog box, specify or modify selections as needed, confirm that the modules are read correctly, and then click **OK** to close the Configuration window.

Note: If you are adding a headspace sampler, proceed to step 4 in the [Configuring a GC system to include a headspace sampler](#); otherwise, click **OK** to close the Configuration Editor.

Result: The Configuration Directory lists the configured Agilent GC systems with their appropriate IP addresses as the assigned names. If you are finished configuring GC systems, click **Exit** to close the PreConfiguration Editor Utility. If not, repeat the procedure.

Configuring a GC system to include a headspace sampler

You must use the Agilent PreConfiguration Utility to configure a headspace sampler with a GC system in Empower software. The headspace sampler is no longer listed as a separate instrument in Empower software.

Note: The following procedure applies to a G1888A or a HS7697A headspace sampler.

To configure an Agilent GC system to include a headspace sampler using the PreConfiguration Utility:

1. Configure the Agilent GC system following one of these procedures: [Configuring an Agilent 7890 GC system using the PreConfiguration Utility](#) or [Configuring any other type of Agilent GC using the PreConfiguration Utility](#).
2. From Configuration Manager, click **Tools > Agilent PreConfiguration**.
3. In the Configuration Directory dialog box, type the host name or IP address of the LAC/E node, and then click **Connect**.
4. Using the front panel of the headspace sampler, set up the headspace sampler with a static IP address.

Note: Before you proceed to the next step, ensure that you are able to ping the IP address of the headspace sampler from the LAC/E Command Prompt window.

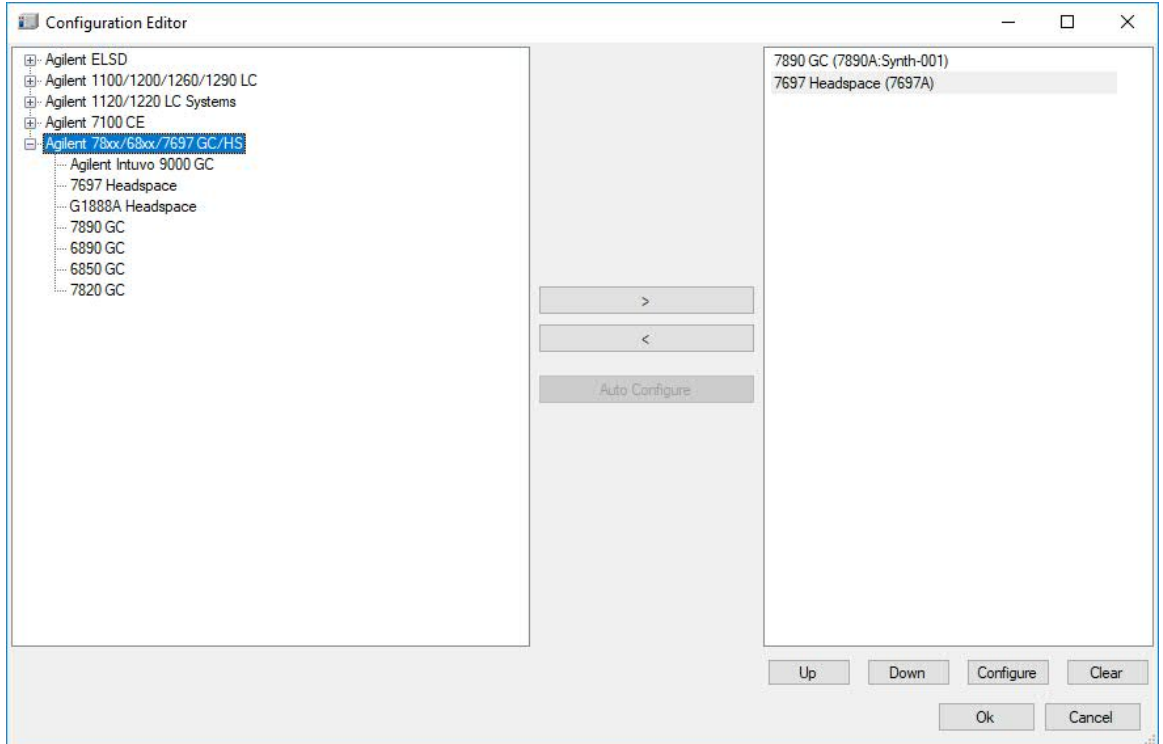
5. In the Configuration Editor window, add the headspace sampler by following these steps:
 - Select **Agilent 78xx/68xx/7697 GC/HS**.
 - Expand **Agilent 78xx/68xx/7697 GC/HS**.
 - Select the headspace sampler that you want to configure.
 - Click **>** to move the headspace sampler to the right-hand pane of the Configuration Editor window, beneath the GC in the list.
 - Select the headspace sampler in the right-hand pane, and then click **Configure**.

6. In the **Connection** tab of the Configure dialog box, specify the headspace IP Address.
7. In the **Configuration** tab of the Configure dialog box, select **Upload Config from Instrument**. Confirm that the information is correct in the **Instrument**, **System**, and **Resource Conservation** tabs. If not, modify as needed, and then click **OK**.

Result: The Configure dialog box closes.

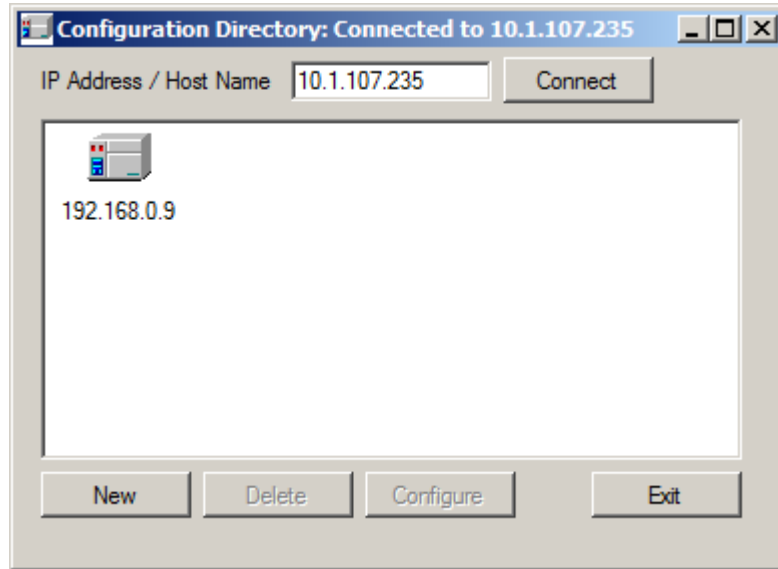
8. In the Configuration Editor dialog box, click **OK**.

Figure 1–2: Configuration Editor



9. After the headspace sampler is configured, only the GC and its IP address appear in the Configuration Directory dialog box. In the Configuration Directory dialog box, click **Exit**.

Figure 1–3: Configuration Directory



10. Continue with the next procedure [Configuring the GC system \(with or without a headspace sampler\) in Empower](#)

Configuring the GC system (with or without a headspace sampler) in Empower

Once you complete creating the entry in the PreConfiguration Utility in Configuration Manager, you must configure the Agilent GC system in Empower software.

To configure the GC system (with or without a headspace sampler) in Empower software:

1. In the Configuration Manager window, select **Nodes** from the Empower 3 configuration tree, select the desired node from the table, and then right-click and then select **Properties**.
2. In the Node Properties dialog box, select the **Configure DHCP** tab, and then click **Configure DHCP**.
3. In the Waters DHCP Server Configuration window, click **Add**.
4. In the Add IP Address dialog box, do the following, and then click **OK**:
 - In the IP address field, specify the static IP address that you assigned to the Agilent GC. This must match the IP address assigned to the PreConfiguration Utility, which is described in the previous section.
 - In the MAC address field, specify the MAC address of the Agilent GC.

- In the Instrument type field, select **AgGC**.
- In the Serial Number/Unique Name field, enter the serial number or the unique name that is in accordance with your SOP.

Note: Even though you configured a headspace sampler using the [Configuring a GC system to include a headspace sampler](#), the Waters DHCP Server Configuration dialog box lists the GC instrument only and not the headspace sampler.

5. In the Waters DHCP Server Configuration dialog box, click **OK**.
6. In the Node Properties dialog box, select the **Instruments** tab, and then click **Scan Instruments**. The OK? column in the **Instruments** tab of the Nodes Properties dialog box displays a value of **Yes** for the AgGC.

Note: Click **OK** to close the Node Properties dialog box.

7. Create a chromatographic system in Empower by following these steps:
 - From the Configuration Manager window, right-click **New > Chromatographic System**.
 - In the New Chromatographic System Wizard - Type Entry page, select **Create New System**, and then click **Next**.
 - In the New Chromatographic System Wizard - Select Server page, select the appropriate node, and then click **Next**.

Note: Even with a Headspace/GC system, there should be only one **AgGC** listed in the Empower chromatographic system.

- In the New Chromatographic System Wizard - System Selection page, select **AgGC** from the **Available Instruments list** (beneath Unused Components), drag it to the **New System Instruments** pane, and then click **Next**.
- In the New Chromatographic System Wizard - Access Control page, select **Share System with other Network Users**, select the appropriate **Allow Access** and **Allow Access to Groups** settings, and then click **Next**.
- In the New Chromatographic System Wizard - Name Selection page, enter a `system name` and any system-related audit trail comments in the **System Comment** field. Ensure that the **Online** check box is selected, and then click **Finish**.

Result: A message informs you that the system is online and ready for use.

Note: You can confirm that the Agilent GC or Agilent GC/HS system is configured in Empower by selecting the node in the Configuration Manager window, and then right-clicking **Export to text**. The Agilent GC or Agilent GC and HS configuration is exported to a text file. Review the text file output for accuracy.

8. From the Empower Log On window, select **Run Samples**, and then select the project and the chromatographic system you created.

Recommendation: If there are any configuration changes that you need to make on an Agilent GC or Agilent GC and HS system, use the PreConfiguration Utility before modifying the appropriate instrument method.

Options Tab in the Instrument Method Editor

Use the **Options** tab to select the throughput mode for the headspace injection and to indicate your injection preference.

Note: The **Options** tab is available only if you configured headspace in Agilent Pre-Configuration Utility.

Throughput Options

By default, **High Throughput** is enabled. Use this option to perform single headspace extractions.

To perform multiple headspace extractions, clear the **High Throughput** checkbox. Empower considers this as low throughput.

Note: For throughput options, refer to [GC control considerations](#).

Injection Preference

Using **Injection Preference**, you can choose the injector as part of the instrument method, as per the Pre-Configuration Utility.

Select the injector from the drop-down list, and then specify your injection preference between **Headspace** and **ALS**.

Note: When **ALS** is the preferred injector, the **High Throughput** becomes disabled.

Recommendation: Do not use different injection sources in the same sample set.