

AGILENT ICF FOR GC

Clarity Control Module

ENG

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Author: MP

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To facilitate the orientation in the **Agilent ICF for GC** manual and **Clarity** chromatography station, different fonts are used throughout the manual. Meanings of these fonts are:

Open File (italics) describes the commands and names of fields in **Clarity**, parameters that can be entered into them or a window or dialog name.

WORK1 (capitals) indicates the name of the file and/or directory.

ACTIVE (capital italics) marks the state of the station or its part.

Chromatogram (blue underlined) marks clickable links referring to related chapters.

The bold text is sometimes also used for important parts of the text and the name of the **Clarity** station. Moreover, some sections are written in format other than normal text. These sections are formatted as follows:

Note:	Notifies the reader of relevant information.
Caution:	Warns the user of possibly dangerous or very important information.

Marks the problem statement or trouble question.

Description: Presents more detailed information on the problem, describes its causes, etc.

Solution: Marks the response to the question, presents a procedure how to remove it.

1 Agilent ICF for GC

This manual describes the use of the **Agilent ICF for GC** (Instrument Control Framework) with the **Clarity** software. The list of ICF versions that **Clarity** comes with is available on www.dataapex.com website on ICF control product page.

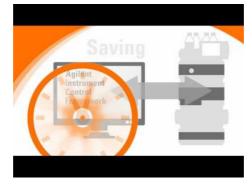


Fig. 1: Agilent ICF

The **Clarity** chromatography station enables to control various laboratory equipment from **Agilent** using the **Agilent ICF for GC**. It is library developed by **Agilent** which can be run within the **Clarity** Chromatography Station environment. This manual describes the basic use within the **Clarity**.

Thus the **Agilent ICF** dialogs and setup windows are displayed within **Clarity**, the manuals are supplied by the Agilent company both for the instrument and the configuration dialogs of the **ICF**. For the detailed help of the respective controlled instruments and functions of the **Agilent ICF** dialogs, press the *Help* or *F1* button in the displayed dialogs. Remember that some of the dialogs embedded into the **Method Setup** window are also part of the **Agilent ICF** library and pressing the **F1** key also displays the Agilent ICF for GC **Help** which is not created by **DataApex Ltd.**

For complete list of controlled instruments by the **Agilent ICF** library, see the **Clarity** Controls web-page: www.dataapex.com/controls.

2 Requirements

2.1 Software requirements

Agilent ICF for GC requires Microsoft .NET version 4.8 or higher for correct installation and operation. This versions is already installed on majority of PCs. Nonetheless you will be notified during the installation if your PC is missing required version of Microsoft .NET - then follow the instructions there. For complete list of .NET requirements, see the .NET Framework System Requirements on Microsoft web page.

Supported operating systems:

- Windows 10 (64 bit)
- Windows 11 (64 bit)

Note: Before installing **Clarity**, it is recommended that your **Windows** is updated to the latest version.

2.2 Hardware requirements

- Version of firmware must be compatible with the **Agilent ICF GC** installed with **Clarity**.
- LAN interface installed on PC is required.
- Latest available firmware version of the module should be used to ensure maximum compatibility.

Tab. 1: Supported Agilent GC hardware:

	Module type	Inlets	Detectors
	G3540A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
	G3542A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
8890	G3543A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
	G3545A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
8860	G2790A	S/S, P/P, COC, PCI	TCD, FID, NPD, ECD, FPD, FPD+
8850	G3940A	S/S, P/P, COC	TCD, FID
0000	G3941A	S/S, P/P, COC	TCD, FID
Intuvo 9000	G3950A	S/S, MMI, HCM	TCD, FID, NPD, FPD ECD, ECD, NCD, SCD
	G3952A	S/S, MMI, HCM	TCD, FID, NPD, FPD ECD, ECD, NCD, SCD
	G3953A	S/S, MMI, HCM	TCD, FID, NPD, FPD, ECD, NCD, SCD

	Module type	Inlets	Detectors
	G3440B	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
7890B &	G3442B	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
7890A+	G3443B	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
	G3445B	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB, NCD, SCD
7890A	G3440A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB
	G3442A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB
	G3443A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB
	G3445A	S/S, P/P, COC, PTV, HCM, PCM, VI, MMI, HT-PTV, LTM II	TCD, FID, NPD, FPD ECD, HSM, DualWFPD, AIB
7820	G4350A	S/S, P/P, COC, PCI	TCD, FID, NPD, µECD, FPD, FPD+

	Module type	Inlets	Detectors
	G1530A	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
6890A	G1540A	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
6890Plus	G1530A	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
	G1540A	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
6900N	G1530N	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
6890N	G1540N	S/S, P/P, COC, PTV, PCM, VI, LTM I	TCD, FID, NPD, FPD ECD, µECD, DualWFPD, AIB
6850	G2630A/B	S/S, P/P, COC, PTV	TCD, FID, NPD, FPD ECD, AIB

Note: Communication between **Clarity** with **Agilent ICF GC** and listed instruments is handled via LAN. All available GC valves are supported.

Tab. 2: Supported Agilent Sampler, Autosamp	ler and Tray hardware:
---	------------------------

	Hardware	Module type
		G4513A Injector
		G4514A Tray
9900 and 9960	7693A	G4515A BCR/Mixer
8890 and 8860 Series	1093A	G4521A LVI Syringe Carriage
Series		G4522A Cooling Accessory
		G4520A Tray with BCR/Mixer
	7650	G4567A Injector
	7693A	G4513A Injector
		G4514A Tray
		G4515A BCR/Mixer
Intuvo 9000 Series		G4521A LVI Syringe Carriage
Intuvo 9000 Series		G4522A Cooling Accessory
		G4520A Tray with BCR/Mixer
	7050	G3430A GC ALS Controller
	7650	G4567A Injector

	Hardware	Module type
		G3430A GC ALS Controller
		G4513A Injector
		G4514A Tray
	7693A	G4515A BCR/Mixer
		G4521A LVI Syringe Carriage
		G4522A Cooling Accessory
		G4520A Tray with BCR/Mixer
7890Series	7683A	G2613A Injector
		G2614A Tray
		G2615A BCR/Mixer
		G2613A Injector
	7683B	G2614A Tray
		G2615A BCR/Mixer
	7650	G3430A GC ALS Controller
	7650	G4567A Injector
7693	7602	G3430A GC ALS Controller
	7693	G4513A Injector
7820 Series	7650	G3430A GC ALS Controller
	7650	G4567A Injector

	Hardware	Module type
		G4516A ALS Controller
		G4513A Injector
		G4514 A Tray
		G4515A BCR/Mixer
	7693	G4517A 6890 Plus ALS Card
		Upgrade
		G4521A LVI Syringe Carriage
		G4522A Colling Accessory
		G4520A Tray with BCR/Mixer
		G2912A ALS Controller
		G4516A ALS Controller
	7693B	G2913A Injector
	10930	G2614A Tray
6890		G2616A Tray
		G2615A BCR/Mixer
		G2912A ALS Controller
		G4516A ALS Controller
	7683A	G2913A Injector
		G2614A Tray
		G2615A BCR/Mixer
		G1512A ALS Controller
	7673C	G1513A Injector
	10130	18596C Tray
		G1926A BCR/Mixer
		18593B Injector
	7673B	18596B Tray
		G2615A BCR/Mixer
	7683B	G2613A Injector
6850	7693	G4513A Injector
	6850	G2880A Injector

Note: Communication for GC samplers and trays is handled through the GC.

	Hardware
8697	G4511A
8697 XL	G4512A
7697A	G4556A
1091A	G4557A
G1888*	G1888

*Note: G1888 requires extra step to be configured. Please contact support at support@dataapex.com for further information.

For complete list of supported Windows OS, instrument firmware and Agilent ICF for GC, see Agilent webpages.

3 Installation procedure

Agilent ICF for GC is not part of the **Clarity** *Typical* installation. To install it, select the *Full* installation or the **Agilent ICF for GC** in the *Choose Components* dialog during the installation of **Clarity**.

📐 Clarity 9.0.1.19 Setup		-		×
Choose Components Choose which features of Clar	ity you want to install.			
Check the components you wainstall. Click Next to continue.	ant to install and uncheck the components	you dor	n't want to	,
Select the type of install:	Full			\sim
Or, select the optional components you wish to install:	V AS Control V Instrument Control Framework V Aglent CC Aglent HS Aglent LC Aglent LC Aglent LC Construct Control Framework Control Contro Control Contro	: (ICF)		I
Space required: 1.3 GB	Position your mouse over a componer description.	nt to see	its	
DataApex Installer				
	< Back Nex	t >	Can	cel

Fig. 2: Full installation of Clarity

3.1 Installing Correct Version of Agilent ICF

Clarity expects a specific version of Agilent ICF. Because other programs may also be using Agilent ICF, it is possible they've installed a different version than is supported by Clarity. In that case in the installation you will be prompted to reinstall it in order to install correct version. Going forward with this step is crucial for correct functionality of Clarity and Agilent ICF.

This situation may also occur during Clarity update when the new version contains updated ICF version.

Note: This reinstallation of Agilent ICF may cause that other programs using it, may not function properly.

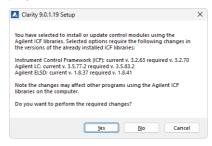


Fig. 3: Installing correct version of Agilent ICF

3.2 Network connections

The instruments supported by **Agilent ICF GC** has to be connected to a site network by LAN. It is recommended to attach the **Agilent** hardware directly to the PC avoiding hubs, switches etc. When using a switch or a hub, multiple **Agilent** hardware can be connected to one PC. Always contact your local LAN administrator who can make the appropriate settings.

Caution: Do not use the **Agilent 68xx** or **Agilent 7890** DHCP server feature.

·····

Caution: **Cross LAN** cable is primarily used for the direct connection of the instrument and the PC. This cable can also be used for the connection of the device to the switch or network socket, but with older switches, the **straight LAN** cable might be necessary.

LAN Settings

PC: LAN card, TCP/IP protocol.

Both PC and supported **Agilent** hardware should be configured on the same IP range.

Tab. 4: Recommended	IP settings:
---------------------	--------------

	Agilent Hardware	LAN card
IP	192.168.0.200	192.168.0.1
Port	80	
Subnet Mask	255.255.255.0	255.255.255.0
Default Gateway	192.168.0.1	192.168.0.1
Accept From IP	0.0.0.0	
Accept From Subnet Mask	0.0.0.0	

Firewall

Ensure that the firewall does not block communication from the Agilent hardware.

Internet connection

Be aware that many Internet connections are provided using the LAN card. If this is the case a separate LAN card must be configured for each Internet and connected **Agilent** hardware.

3.3 Clarity Configuration

System Configuration									\times
Setup Control Modul	es			5 Number	r of Instruments:	4			
Name AS AG C: Injectors Aglent GC system by ICF GC: Injectors Aglent 7390A DEMO A, Detector 1 reserved for GC signs A, Detector 2 reserved for GC signs A, Detector 7 reserved for GC signs C, Detector 1 reserved for GC signs C, Detector 2 reserved	al Instrument 1 al Instrument 1			Name ICF-GC Instrument Type GC Asme GC GC CC: Injec GC GC: C: Injec GC CC Detector A, Detector A, Detector A, Detector Thermostal Data Inputs & Output	tors 399A DEMO 1 reserved for 2 reserved for 4 reserved for t ts	Agilent GC system Agilent GC system Agilent GC system Device	by ICF by ICF by ICF by ICF by ICF by ICF	6) Number	8
0		_		Ext. Start Dig. Input: Ready Dig. Output: Miscellaneous Setting Units Setu	js	ilent GC system by ICF	Agil V	~	
Add Remove About	Setup					OK Can	ncel	Help	
Available Control Modules	□ Instalk	d Only Filter:	All		gilent GC 🝳			×	
Name A Salent GC system by ICF C C Aglent GC system by ICF Aglent GC system by ICF Aglent GC system by ICF Detector Balance Thermostat C Valve III Fraction Collector C apillary Electrophoresis Auxiliary	installed Agile	ent Agilent GC sys	stem compo	nents supported by I	CF (7820, 7890A	76738, 7673C, 7683A, 78906, 8860, 8980 a 6890N, 6890 Plus GC	nd Intuvo	9000	
Add Cancel							Help		

Fig. 4: System Configuration

Caution: Before you start Clarity, ensure there is not any other application controlling the

Agilent ICF GC instruments active (for example *Virtual Keyboard* software applicable for some **78x0** GC types).

- Start the **Clarity** station by clicking on the A icon on the desktop.
- Invoke the System Configuration dialog accessible from the Clarity window using the System - Configuration... command.
- Press the Add button ① (See 3.3 on pg. 11.) to invoke the Available Control Modules dialog.
- You can specify the searching filter ② to simplify the finding of the driver.
- Select the **Agilent ICF for GC** item and press the *Add* ③ button. The *ICF Setup* dialog will open.

Agilent GC system by ICF Setup (modified)			-		×
 Aglert GC Systems Aglert Hituro 9000 GC Aglert 8890 GC Aglert 8890 GC 7890 GC 6890 GC 6890 GC 6890 GC 6890 GC 6890 GC 6890 Agle Age Age Age Age Age Age Age Age Age Ag	Auto Configure	7890 GC (78xA: Synth-001)	G		
Sequence Mode		Up Down	Configure	Cle	ar
Custom name Use 7890 GC Demo		ОК	Cancel	Hel	р

Fig. 5: Agilent ICF Setup

- Select appropriate instrument type (a) transfer it from left side using respective button (b) to the right side (c).
- Click on the *Configure* button (1) in the *ICF Setup* dialog and the *Configure* dialog is displayed for entering the connection parameters.

Note: The Custom name... button can be used to alter the name of the module. This change propagates to the module name in the Setup Control Modules ④ and in the Data Inputs & Outputs ⑧ sections of the System Configuration dialog. Default name is used when the field is left empty.

Configure 789	0 GC		
Connection	Configuration		
[Get GC Configuration	not configured	
	Connect Info		
	Agilent 7	890A DEMO	
	GC Name		
	IP Address		
	127.0.0.1		
	Notes]	
Help			K Cancel

Fig. 6: Connection parameters dialog

- After insertion of the *IP address* or *GC Name* click *Get GC Configuration* button.
- On the *Configuration* tab is loaded configuration from the instrument. Additional behavior of the instrument can be preset here.

onnection Configuration		
comparation _		
GC Name	192.168.111.123	Notes
Keypad Lock		
Keypad is never locked		•
🗆 Bran Pun an Manual P		
🗹 Prep Run on Manual R	equest	
GC		
Communication		
Connection Type	LAN	
IP Address	192.168.111.123	
Options		
Keyboard Lock	Keypad is never locked	
Prep Run on Manual Request	On	
GC Configuration		
Version	Version 4.21	
Boot Loader	BootLdr.01.00	
Firmware Revision	A.01.16	
Cryo Type	None	
Serial Number	CN10939118	
ALS		
ALS Controller Model	G3430A	

Fig. 7: Configuration parameters dialog

- Then click *OK* button in the lower part of the *ICF Setup* dialog and the instrument will then appear in the *System Configuration* including all modules of the instrument (detector, autosampler etc.).
- *Caution:* If you change the configuration of the **Agilent ICF** system (for example remove and add another instruments), the communication parameters like *IP address* will be lost and it is necessary to set them again.

- Caution: When the ICF Setup dialog is open for extended time, communication between Clarity and the GC may be lost. In such case an error message will be displayed. After accepting error message is necessary to start with the GC configuration from very beginning starting with clicking the Add button ① (See 3.3 on pg. 11.) in the System Configuration dialog.
 - After previous steps drag and drop the ICF icon from the Setup Control Modules list ④ on the left side of the System Configuration dialog to the desired Instrument ⑤ tab on the right side ⑥ (or use the → button ⑦ to do so).
 - Set the Ext. Start Dig. Input (1) on the right bottom side of the System Configuration dialog if you wish synchronize Clarity with Agilent ICF GC instrument over LAN. If the settings of the Ext. Start Dig. Input is set to default value (2) the analysis start will be detected by Clarity by receiving data from the Agilent ICF GC configured detector on this Agilent ICF GC Instrument. If this Agilent ICF GC Instrument has no Agilent ICF GC detector signal configured then it is necessary to set Ext. Start Dig. Input

value - \otimes to value "1" - 1 \otimes to assure correctly synchronized start of the analysis with the *Agilent ICF GC* autosampler's injection.

Caution:	The Sequence Mode enables autosampler to prepare next sample during previous run (sequence will lock one row ahead). For correct operation in the Sequence Mode there have to be set corresponding parameters (Enable Sample Overlap) in the <i>ICF GC Method Setup</i> dialog (GC tab, section ALS, item Tray/Other).
Note:	The configuration dialog of the ICF (Agilent ICF Setup) can be displayed any time by double-clicking on its icon or using the <i>Setup</i> button.

Note: Press the *F1* key to display the **Agilent help** with detailed description of the dialog.

3.4 Headspace Sampler configuration

To properly setup the **Headspace Sampler**, it should be configured as separate ICF control (not within the GC ICF setup described in "Clarity Configuration" on page 11).

Caution: Before you start **Clarity**, ensure there is not any other application controlling the **Agilent ICF GC** instruments active (for example *Virtual Keyboard* software applicable for some **78x0** GC types).

Available Control Modules			×
	Installed Only Filter: All		٢
Name ▲ □ ۞ A5 ①	Status Vendor Comment		
Agilent GC system by ICF	installed Agilent Agilent GC system components supported by ICF (6850, 7650, 76738, 7673C, 768	3A, 76838,	7693A,
i LC □ i GC			
Aglent GC system by ICF Aglent GC system by ICF Detector Detector Thermostat Yalve Capillary Electrophoresis	installed Aglient Aglient GC system components supported by ICF (7820, 7890A, 7890B, 8860, 889 installed Aglient Aglient GC system components supported by ICF (6850, 6890A, 6890A, 6890 Plus i		
2 Add Cancel		Help	

Fig. 8: Available Control Modules

- Add a new module in the System Configuration. Select the Agilent ICF for GC from the AS section ① and press the Add ② button. The ICF Setup dialog will open.
 - *Note:* For more information about adding new modules in the *System Configuration* refer to the chapter "Clarity Configuration" on page 11.

Agilent GC system by ICF Setup (modified)			-		×
 G: Agilert GC Systems Agilert Havo 9000 GC Agilert 1880 GC Agilert 1880 GC F380 GC 6850 GC 6850 GC 6850 GC 6850 GC 6850 GC 6850 FR 61888 Headspace 6697 Headspace 6697 Headspace Agilert Made 	© > < Auto Configure		O nfigure	Clea	
Custom name Use 7890 GC Demo		OK Ca	incel	Help	.

Fig. 9: Agilent ICF Setup

- Select appropriate instrument type (a) transfer it to the left side using respective button (c) to the right side (d).
- Make sure that the Sequence Mode (b) is selected for the **Headspace** only.
- Click on the *Configure* button (e) in the *ICF Setup* window and the *Configure* dialog will appear.
- *Caution:* The *Sequence Mode* enables autosampler to prepare next sample during previous run (sequence will lock one row ahead). In case that *GC* is used in combination with a *Headspace* the *Sequence Mode* must be disabled in the *GC* setup and enabled in the *Headspace* setup.
- *Note:* The *Custom name...* button can be used to alter the name of the module. This change propagates to the module name in the *Setup Control Modules* and in the *Data Inputs & Outputs* sections of the *System Configuration* dialog. Default name is used when the field is left empty.

Configure 7697A Headspace		:	×
Connection Configuration Prefe	rences		
Agilent Headspace			
Connection Information			
Instrument Name			
IP Address or Hostname			
Notes			
L			
Version Information			
Software Driver Version: 3.03 [167]			
Help		OK Cancel	

Fig. 10: Connection parameters dialog

- On the Connection tab insert the IP Address or Instrument Name.
- Switch to the *Configuration* tab and click the *Upload Config from Intrument* button.

Configure 7697A Headspace		×
Connection Configuration Pr	eferences	
Upload Config from Ir	strument	
Instrument and System (Re	source Conservation	
Instrument Settings (?)		
Vial pressurization gas:	Helium	
Loop Volume:	0.025 mL 👻	
Pressure unit:	psi 👻	
Transfer line:	Fused Silica Diameter: 0.2 mm	
Keypad locked while in us	a by software	
System Configuration (?)		
Instrument controlling carrier	setpoints:	
GC instrumen	t GC + HS instruments	
Help	OK Car	cel

Fig. 11: Configuration parameters dialog

- The configuration from the instrument is loaded on the Configuration tab.
- Additional instrument behavior can be preset on the Preferences tab.

Configure 7697A Headspace	×
Connection Configuration Preferences	
Method Editor	
Show actual values next to setpoints	
Instrument Actuals	
 Use standard instrument actuals coloring 	
 Select a specific color for instrument actuals 	
Method Development	
Track GC cycle time	
Help	OK Cancel

Fig. 12: Preferences parameters dialog

- After the configuration is finished, click the OK button to return to the *ICF Setup* dialog.
- Then click OK button in the lower part of the ICF Setup dialog and the module will then appear in the System Configuration.

Caution: If you change the configuration of the **Agilent ICF** system (for example remove and add another instruments), the communication parameters like *IP address* will be lost and it is necessary to set them again.

Caution: When the *ICF Setup* dialog is open for extended time, communication between **Clarity** and the intrument may be lost. In such case an error message will be displayed. After accepting error message it is necessary to start with the instrument configuration from very beginning starting with clicking the *Add* button (See "Clarity Configuration" on page 11) in the *System Configuration* dialog.

System Configuration								×
Setup Control Module	5		Nu	mber of Instrument	ts: 4 🔺			
Name	Used		3 Instrument 1	Instrument 2	🚱 Instrument 3	😚 Instrument	t 4	
As Aspent GC system by ICF Sampler LC GC Detector Balance Thermostat Valve Capillary Electrophoresis Auxiliary	Instrument 1	 (2) (Name ICF-GC Instrument Type GC Name As GC Detecto Detecto Detecto Thermo Valve Auxiliar	ler 3 vr stat	 From Aglent GC syst	tem by ICF	ICF	
			Data Inputs & Ou Ext. Start Dig. In Ready Dig. Outpu Miscellaneous Se Units	put: AS / ut: ttings	5	thod Options	Number	4
Add Remove About	Setup			Ĺ	ОК	Cancel	Help	

Fig. 13: System Configuration

- After previous steps drag and drop the ICF icon from the Setup Control Modules list ① on the left side of the System Configuration dialog to the desired Instrument tab on the right side ③ (or use the -> button ② to do so).
- Set the *Ext. Start Dig. Input* ④ on the right bottom side of the *System Configuration* dialog to the default value if the sampler is connected to the GC by synchronization cable. The sampler will trigger the run in the GC and it will propagate to the Clarity.
- When the synchronization cable is not present between the GC and the Headspace, the *Ext. Start Dig. Input* ④ should be set to value "1" I. In this case the Headspace triggers the run in **Clarity** and it will propagate to the GC. For some GC it is necessary to choose the option *Clarity starts this device* during the setup.
- When all modules have been configured the *System Configuration* dialog can be closed by clicking the *OK* button.

Note: The configuration dialog of the **ICF** (Agilent ICF Setup) can be displayed any time by double-clicking on its icon or using the *Setup* button.

Note: Press the *F1* key to display the **Agilent help** with detailed description of the dialog.

3.5 Installation Qualification of Agilent ICF

Agilent ICF is an external program developed by Agilent and for that reason it must be validated using their utility. If you have installed Clarity with Agilent ICF, the IQ is valid only if successful validation of ICF is attached.

The validation of ICF can be performed directly from the IQ Report.

Caution: When Clarity expects *Agilent ICF* is installed then **IQ** expects the same. If (due to any reason) the *Agilent ICF* installation is not found within Clarity, the *Installation Qualification Test* status is set by default to *FAILED*. To resolve this, it is necessary to re-install **Agilent ICF** through Clarity reinstallation and then perform **IQ** again.

		×
<u>File</u> <u>H</u> elp		
Installation	Qualification Report	^
Date	26.02.2024, 11:36	
Serial number of application	and all the approximation	
User Code	Contract (Contractor)	
Version of application	Clarity version 9.0.1.19	
Build date of application	10.10.2023, 13:33	
Instruments	All	
Extensions	SST; GPC; PDA; EA; CE; MS; NGA; DHA; GCxGC; MS-TOF	
Controls	GC: LC: AS	
Certification file	C:\Clarity\Bin\ig.chk	
Checksum of cert, file	C0A775D69593EDE0	
Date of cert. file	10.10.2023, 15:26	
User	lenkad	
System	Microsoft Windows 11 Professional version 10.0 (Build 22631)	
Acquisition and hardware device	es Key Rockey	
Core Files, Emp Files Show files list »	edded Components: Passed	
3 rd Party Packag	-	
Agilent ICF:	U system. It is necessary to perform its validation separately <u>here</u> . The result must be	
Checked by:	Signature:	~

Fig. 14: IQ Report with ICF installation present

Click the link "here" ①, after that it is necessary to click *Run* in two pop-up windows. *Agilent Software Verification Tool* window will open. Select what report file type should be generated and define post-qualification actions. Click *Qualify* ② to run the IQ. The HTML reports are opened in the default browser if the *Open*

reports option was enabled. Installed drivers and their versions are listed at the end of the report.

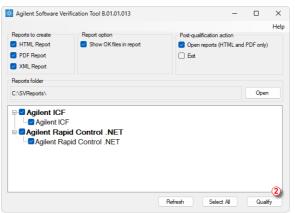


Fig. 15: Agilent Software Verification Tool

Address field of the generated report displays the location of the actual report.

Software Verification Report									
Date: Windows User Name :		Base Revision Number:		Host Name: PC-017 Product Name : Agilent ICF					
Install Type: N/A Additional Packages: Details Base Reference File Name : IOTRefICF.xml									
Summary :									
Overall Evaluation of Installation Check PASS									
File Report Summary									

Fig. 16: ICF Report - PASS

4 Using the Agilent ICF GC

There are multiple places for setting the parameters of the **Agilent ICF for GC** in the **Clarity**:

• the Method Setup - GC tab

Caution: Before opening the *Instrument* window with configured **Agilent ICF** devices, ensure there is not any other PC connected to GC. Otherwise there will be raised an error during the connection.

4.1 Method Setup - GC

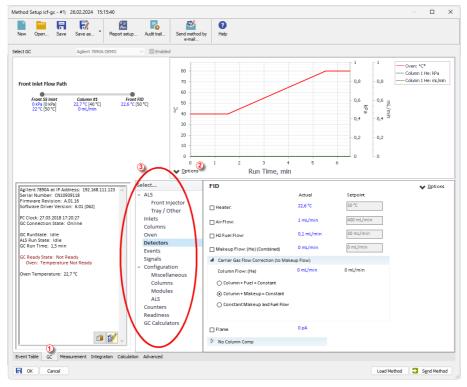


Fig. 17: Method Setup - GC

Note: Press the *F1* key to display the **Agilent help** with detailed description of the dialog.

From **GC tab** ① you can set all parameters for GC or AS control and instrument configuration.

- A window providing graphical plots or curves that represent selected method parameters during the run is located in the upper part of the **GC tab**. The setting of the plots can be made through dedicated button ②.
- For advanced setting of all other parameters use all tabs 3 in the row.
- *Note:* Actual parameters downloaded from GC are used for new method or method adaptation instead of default parameters.
- *Note:* When there is an autosampler used it is necessary to follow numbering rules for vials' positions in *Sequence* and *Single Analysis* dialog. Numbers of vials' positions are dependent on used type of tray. When autoinjector without external tray (for example 16 position autoinjector turret) is used the vials' positions numbers inserted to software have to be from interval <101, 116>. A number for vial position equals to vial position +100, for example for vial placed in position 8 a position number is 108. In case that a 100-position tray is used the vials' position are from interval <1, 100>, for example for vial placed in position 38 a position number 38 has to be used.
- *Note:* Autoinjector turret without external tray does not support identification of missing vials. In case there will be requested to inject from position where vial is not placed the injection will take place as usual. This injection will result in chromatogram with unexpected signal pattern (for example).

4.2 Method Setup - AS

New Open	Save	Save as	Report setup	Audit trail	Send method by e-mail	(?) Help		
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Injector								
Injector	0 - Front			~				
🗹 Multi Inje	ction							
Injector 2	1 - Back			~				
· · · · ·								
-		Common Tray	1	~				
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-		Common Tray	1					
-		Common Tray	1					
-	t - only for (Calculation Adva	nced			

Fig. 18: Method Setup - AS

Injector

Default option where the type of the injector can be selected, i.e. front or back.

Multi Injection

By checking this checkbox, both selected samplers are injecting simultaneously.

Note: Such option is visible only when dual tower samplers are used.

Vial No. Shift

Vial number shift will be applied for second sampler's vial, selected number will be added to the vial number stated in Sequence.

Note: Only when the tray is common for both samplers.

4.3 Device Monitor

The *Device Monitor* window can be invoked by the *Device Monitor* command from the *Analysis* menu or using the **Device Monitor** @ icon in the *Instrument* window.

You may use icon for accessing *Device Monitor* from all **Clarity** windows. For the **Agilent ICF**, it displays the states of configured **Agilent** system and enables the user to monitor and/or change states of this **Agilent** system.

Instrument 2 - Device Monitor			- 0	>
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Configuration				

Fig. 19: Device Monitor

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						Offline		0		Not R			[GC0] Agilent 7890A
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For	nelp press F	1.											

Fig. 20: Device Monitor - simplified view

Button *Configuration* allows to enter and modify configuration of GC directly from the *Device Monitor*. Modifications of configuration may cause that method might

need an adaptation before its use in analysis. The *Configuration* feature is not accessible during running analysis or running *Sequence*.

Note: Press the *F1* key to display the **Agilent help** with detailed description of the dialog.

Note: Tabs on right side of the *Device Monitor* allowing setting collection of diagnostic information are displayed only when **Clarity** is started under Administrator Windows account. For other Windows accounts, when running **Clarity**, there are displayed fewer tabs on the right side of the *Device Monitor*.

5 Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and *Agilent ICF* control module can significantly help the **DataApex** support to discover the cause of the problem. The recording can be found in the **Clarity** installation directory (C:\CLARITY \CFG\DEBUG_ LOGS\PGMLOG by default). Older communication log files are removed and replaced by newer ones, therefore, it is necessary to copy out the communication log which was collected during the problem occurrence soon after it happened.

In case you cannot establish communication with Agilent instruments, please review the following issues:

Check the network connection using the Ping command

The problem in communication between **Clarity** and Agilent instruments may be caused by wrong network configuration, firewall preventing the connection, etc. Run the command line in Windows (for example by pressing the **Windows key** together with the **R** key, in the displayed *Run* window type *cmd* and press *Enter*).

In the command line type ping <ip-address-of-instrument> and press *Enter*. The *IP Address* is the same you entered in the <u>ICF Setup</u> dialog.

5.1 Specific Problems

Clarity can't be run and it displays "Agilent ICF is not installed correctly." message.

Cause: The cause of the problem is that the Agilent ICF has a different version than expected by Clarity. It can typically happen when other software also using Agilent ICF decides to reinstall it. Thus next time Clarity expects different version than is installed.

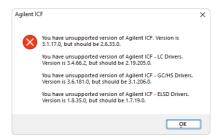


Fig. 21: An Agilent ICF error dialog during Clarity start

Solution: Solution is to reinstall Agilent ICF during Clarity installation. Follow steps described in the chapter "Installation procedure" on pg. 9.

Headspace autosamplers have not been tested.

Cause: There have been implemented Sequence Mode and Enable Sample Overlap functionality but their usage with Headspace autosamplers has not been tested yet.

Solution: We are working to fix this situation.

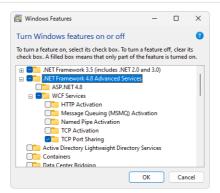
Print of Injection Control is not functional.

 Cause:
 Agilent ICF is incompatible with some Clarity printing procedures.

 Solution:
 Method parameters of autosampler control are printed together with another GC control method parameters using Instrument Control item within Method section in Report Setup dialog.

ICF problems during installation or operation.

Cause: The cause of the problem might be that *Microsoft*.*NET Framework* is not enabled. Agilent ICF requires *Microsoft*.*NET Framework* enabled for its function.





Programs and Features						-		×
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Control Panel Home View installed updates S Turn Windows features on or	View installed updates To uninstall a program, select it from the list and then click Uninstall, Cha							
off	Organize 👻 Uninst	all/Change					≣ •	?
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Fig. 23: Location of Turn Windows features on or off in Windows 10

- Solution: Check if Microsoft .NET Framework is enabled in Turn Windows features on or off dialog. If Microsoft .NET Framework is not enabled enable it. Turn Windows features on or off dialog is accessible in Control Panel window under section Programs in its subsection Programs and Features.
- *Note: Microsoft .NET Framework* version 3.5 is not needed. The required version 4.7.2 or higher can be only disabled in Windows 8.1 or newer, where it is installed with system updates.

Signal #X not available.

Cause: Incompatible version of the method.

Solution: Change the signal number in the method from X to the different one or create a new method.