

# AXCEND FOCUS LC

Clarity Control Module

ENG

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Phone: +420 251 013 400 clarity@dataapex.com www.dataapex.com DataApex Ltd. Petrzilkova 2583/13 158 00 Prague 5 Czech Republic

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Author: SF

# Contents

1 Axcend Focus LC	1
2 Requirements	2
2.1 Software requirements	2
2.2 Hardware requirements	2
3 Installation procedure	
3.1 Installing Correct Version of Agilent ICF	3
3.2 Network connections	4
3.3 Clarity Configuration	5
3.4 Installation Qualification of Agilent ICF	9
4 Using Axcend Focus LC	11
4.1 Device Monitor	11
4.2 Method Setup - AS	12
4.3 Method Setup - Acquisition	13
4.4 Method Setup - Advanced	14
5 Troubleshooting	15
5.1 Specific Problems	15

To facilitate the orientation in the **Axcend Focus LC** 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 Axcend Focus LC**

This manual describes the use of the **Focus LC**, a portable HPLC device, with the **Clarity** software ver. **8.8 and later**.



Fig. 1: Axcend Focus LC System

The control module enables direct control of the instrument over Local Area Network (LAN). Direct control means that the instrument can be completely controlled from the Clarity environment. The Instrument method controlling the analysis conditions will be saved in the measured chromatograms.

# 2 Requirements

# 2.1 Software requirements

Clarity (p/n C50) installation with LC control module (p/n A24).

Agilent ICF and Axcend Focus LC require Microsoft .NET version 4.8 or higher for correct installation and operation. This version is already installed on majority of PCs. Nonetheless you will be notified during the installation if your PC is missing any 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** installed with **Clarity**.
- LAN interface installed on PC is required.

# **3 Installation procedure**

**Axcend Focus LC** is not part of the **Clarity** *Typical* installation. To install it, select the *Full* installation or *Custom* installation with **Axcend Focus LC** option selected.

Choose which features of Cla	arity you want to install.	
Check the components you v install. Click Next to continue	vant to install and uncheck the components you don't w	ant to
Select the type of install:	Custom	~
Or, select the optional components you wish to install:	Transment Control Framework (ICF)  Aglent CC  Aglent HS  Kerner Focus IC  C FAL3 driver  Description	I
Space required: 1.1 GB	Position your mouse over a component to see its description.	
tañnov Installer		

Fig. 2: Custom 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** has to be connected to a site network by LAN. It is recommended to attach the hardware directly to the PC avoiding hubs, switches etc. When using a switch or a hub, multiple hardware can be connected to one PC. Always contact your local LAN administrator who can make the appropriate settings.

*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 **Axcend Focus LC** hardware should be configured on the same IP range.

### Firewall

Ensure that the firewall does not block communication from the **Axcend Focus LC** hardware.

# 3.3 Clarity Configuration

System Configuration			— 🗆 X
Setup Control I	Modules	5b Number of Instru	uments: 2 🛋
Name AS C C C C C C C C C C C C C C C C C C	Used S/N SN02438 Instrument 1 Instrument 1	Instrument 1     Instrument 1     Instrument 1     Instrument Type     Uc 5 a     Name     AS     Asampler     Uc     Detector 2 (Wi=27     A Det	ent 2 Instrument 3 Instrument 4
Add Remove Abor Available Control Modules	ıt Şetup	Data Inputs & Outputs Ext. Start Dig. Input: Ready Dig. Output: Miscelaneous Settings Units Setup	Device    Number  LC Focus LC    Method Options
	Installed Only F	Filter: All 🗸 axcend 🤇	2
Vane AS C C C C C C C C C C C C C	Status Vendor installed Axcend	Comment Axcend Focus LC controlled through ICF.	Module Info Testing. Dev
Add Cancel			Help

Fig. 4: System Configuration

*Caution:* Before you start **Clarity**, ensure there is not any other application active and controlling the instruments.

- 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 Fig. 4 on pg. 5.) to invoke the *Available Control Modules* dialog.
- You can specify the searching filter 2 to simplify the finding of the driver.
- Select the Focus LC item from the LC section and press the Add 3 button.

The ICF Setup dialog will appear.

Focus LC Setup (modified)			-		×
Axcend - Focus LC Focus LC Focus LC		Focus LC (FocusLC:SN0243B)			
	> <				
	Auto Configure				
<u>a</u>		Up Down C	Configure	Cle	ar
This Device Starts the Run in Clarity	Turn OFF P	ump on closing instrument	C Exte	rnal Injec	tion:
Clarity Starts This Device	Turn OFF P	ump on Shutdown	(b)		
Create a real time signal for external fraction collectors Sequence Mode	Turn OFF D Turn OFF D	etector lamp on closing instrument etector lamp on Shutdown	1		
Custom name Use Demo Config		ОК С	ancel	Hel	p

Fig. 5: ICF Setup for Focus LC

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

*Caution:* **Focus LC** can be used with external autosampler, such autosampler should be configured to *Instrument* instead of *Sampler* submodule of **Focus LC**. Further necessary differences in configuration are described in the text bellow.

- *This Device Starts the Run in Clarity* (a) should always be chosen. Regardless whether external autosampler is used or not.
- *External Injection* (b) must only be enabled when using external autosampler.

- Click on the *Configure* button in the *ICF Setup* dialog and the *Configure Focus LC* dialog is displayed for entering the connection parameters.
- *Note:* The *Sequence Mode* should be disabled since the device do not have resources to work with it.

Note:

The *Custom name...* button can be used to change the name of the module in the *System Configuration* window.

Configure Focus LC			×
Communicatio Address	n 192.168.1.102 J Configuration from Device	Device Informati Manufacturer Device Type Serial Number	ON Axcend FocusLC SN0243B
Options Device Name Pressure Unit	Focus LC Psi -	Versions Firmware Revision Bridge Version Image Version	2.1.1 2.1.0 2.1.1-B
Cartridge Infor Cartridge Serial Column 1 Length Column 1 Diameter Column 1 Coating Column 1 Particle Size Detector 1 Detector 2	mation 29 10.0 cm 15.0 micron Kinetex C18 3.0 micron Not Installed 275 nm		
Help			OK Cancel

Fig. 6: Configure Focus LC dialog

• Fill in the *IP address* and click *Load Configuration from Device* button to retrieve parameters from the device then click *OK* button.

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

- The Focus LC system will appear in the Setup Control Modules list ④ of the System Configuration dialog.
- Change the Instrument Type (5) (a) on the desired Instrument tab (5) (b) to LC and drag the Focus LC item from the Setup Control Modules list on the left (4) to the Instrument tab on the right (6), or use the ->> button (7).
- Set the *Ext. Start Dig. Input* (8) to "--" (8) to assure correctly synchronized start of the analysis. This applies to both situations; with and without an external autosampler.

*Note:* The configuration dialog of the **Focus LC System** can be displayed any time by double-clicking on its icon or using the *Setup* button.

# 3.4 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: If Clarity expects ICF installation then IQ also. And if for some reason the ICF installation is not found, the *Installation Qualification Test* is automatically *FAILED*. To resolve this situation, it is necessary to re-install **Agilent ICF** during Clarity installation.

IQ IQ	- 0	×
<u>File</u> <u>H</u> elp		
Installation (	Qualification Report	^
Date	13.03.2024, 15:52	
Serial number of application	48.40 <sup>-1</sup> /24.400-100	
User Code	Children (Shift) (P. A.	
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\iq.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 devices	Key Rockey	
Core Files, Embe Files Show files list »	edded Components: Passed	
3 <sup>rd</sup> Party Packag Agilent ICF:	es	
Agilent ICF is present in your	r system. It is necessary to perform its validation separately <u>here</u> . The result must be attached to this report.	~

Fig. 7: IQ Report with ICF installation present

Press the link *"here"* <sup>(1)</sup> and confirm opening of SFVTool.exe (up to 2 times). *Agilent Software Verification Tool* window will be opened.

💥 Agilent Software Veri	fication Tool B.01.01.013		-		×
					Help
Reports to create	Report option	Post-qualification a	ction		
HTML Report	Show OK files in report	Open reports (H	TML and F	PDF only)	)
PDF Report		Exit			
XML Report					
Reports folder					
C:\SVReports\				Oper	1
C Agilent ICF     Gilent ICF     Gilent ICF     Agilent ICF     Agilent Rapi     Agilent Rapi     Agilent Rapi	d Control .NET id Control .NET				2
		Refresh Select	AI	Qual	ify

Fig. 8: Agilent Software Verification Tool

Select in which format reports should be generated and whether they should automatically open once IQ is completed. Click *Qualify* <sup>(2)</sup> button to start the ICF IQ. Installed drivers and their versions are listed at the end of the report.

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

	Sof	tware Verific	ation Report		
Date:	09 May 2022	Time:	13:43:57 [UTC +02:00:00]	Host Name:	PC-017
Windows User Name :	samuel	Base Revision Number:	3.1.17	Product Name	Agilent ICF
Install Type:	N/A	Additional Packages:	Details		
Base Reference File Nar Summary :	ne : IQTRefIC	F.xml			
Overall Evaluation of Ins	tallation Check	PASS			

Fig. 9: ICF Report - PASS

# **4 Using Axcend Focus LC**

There are multiple places for setting the parameters of the **Axcend Focus LC** in the **Clarity**:

- the Device Monitor
- the Method Setup

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

### 4.1 Device Monitor

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

Clicking the ? button ① will invoke the **Axcend Focus LC** help dialog.

linstrument 1 - Device Monitor	— C	
<u>Fi</u> le Co <u>n</u> trol <u>V</u> iew <u>W</u> indow <u>H</u> elp 🚺 🕨 🕨 🕨 🕼 📾 🕲 🔳 🧞 🖀 II 🔯		
O ICF D	emo Mode: Ready	у 📀 т
Focus LC Offline Manual Manual Reporter Sec		Status Dashboard Collect Support Info
For help press F1.		14

Fig. 10: Device Monitor

## 4.2 Method Setup - AS

The Method Setup - AS tab serves for setting of Sample Port for Injector.

Method Setup Axe	end - #1; 13.03.2024	15:51:59					×
New Open	Save Save as	Report setup Audit trail	Send method by e-mail	? Help			
Select Sampler	Sampler	Enable	:d				
Injector							
Injector	0 - Sample Port	~					
Event Table A	S Measurement Acqui	isition Integration Calculation	Advanced				
С С	ancel			Load Method	2 :	Send Meth	od

Fig. 11: Method Setup - AS

# 4.3 Method Setup - Acquisition

The *Method Setup - Acquisition* tab serves for setting of majority of the parameters for **Axcend Focus LC**, including flow, pressure, composition, and selecting detectors.

Press *F1* key to display detailed help for **Axcend Focus LC**.

Method Setup Axcend - #1; 13.03.202	24 15:51:59				
New Open Save Save as	Report setup	Audit trail	Send method by e-mail	(2) Help	
Select Detector Detector	2 (WI=275 nm) 🗸	Enabled			
Settings			Compositio	on Timetable	<b>.</b>
Control Mode	Flow •		Time (min)	Composition B (%)	Add
Equilibration Time	1.00	min	3.00	95	Delete
Operating Pressure	2000.0	psi	3.20	95	
Elevi Data	1 000		3.30	5	
Flow Rate	1.000	μι/min	3.50	5	Clear
Solvent Usage Solvent Usage A Solvent Usage B	24.13 21.88	μL μL			
Mobile Phase					
Mobile Phase A					
Mobile Phase B					
Signals Store Detector 1 Signal (Not ir Store Detector 2 Signal (275 n	nstalled) m)				
Timed Injection	1.000	min			
Event Table AS Measurement A	Acquisition Integration C	alculation A	dvanced		
GK Cancel				Load Method	Send Method

Fig. 12: Method Setup - Acquisition

## 4.4 Method Setup - Advanced

The *Method Setup - Advanced* tab serves for setting the usage of auxiliary signals of the **Axcend Focus LC** device.

The list of available auxiliary signals is shown in the table in the lower part of the dialog. By checking the checkbox in the *Store* column for the particular row, the given auxiliary signal will be stored into the measured chromatogram.

Method Setup Axcend - #1; 13.03.2024 15:51:59								×
New Open Save	Save as	Report setup	. Audit trail	Send method by e-mail	? Help			
Common for all detectors								
Subtraction			User Variable	5				
Chromatogram	[None]			Variable 1				
Matching	No Change		~	Name		MethodUserVar 1		
	<u>S</u> et		None	Value		0	_	
Column Calculations								
Unretained Time 0 [min]			Variable 2					
Column Length		50 [mm]		Name		MethodUserVar2		
Statistical Moments				Value		0		
From Width at 50%								
	Variable 3							
Auxiliary Signal Store			Store	Name		MethodUserVar3		
2 Pressure A - Focus LC				Value		0		
3 Syringe A - Focus LC								
4 Pressure B - Focus L	.C							
5 Syringe B - Focus LC								
1								
Event Table AS Me	asurement Acq	isition Integratio	n Calculation	Advanced				
		-						
Cancel					Load	Method	Send Meth	nod
(								

Fig. 13: Method Setup - Advanced

# **5** Troubleshooting

When the remedy for some problem cannot be discovered easily, the recording of communication between **Clarity** and **Axcend Foxus LC System** control module can significantly help the **DataApex** support to discover the cause of the problem. The recordings can be found in C:\CLARITY\CFG\DEBUG\_LOGS\PGMLOG.

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

### Check the network connection using the Ping command

The problem in communication between **Clarity** and Axcend instrument 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-adress-of-instrument> or <hostname> and press *Enter*. The *IP Adress* (*hostname*) is the same you entered in the ICF;Setup 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.



Solution: Solution is to reinstall Agilent ICF and Axcend Focus LC during Clarity installation. Follow steps described in the chapter "Installation procedure" on pg. 3.