Performing Manual Injection (LC) in Empower Environment

Technical Note

Technical Guide for the configuration and usage of the G1328A-D and G5628A Agilent Manual Injectors with Waters Empower.

Introduction

When using an Agilent LC without an automated sampler, a manual injector is required to perform a run, e.g. G1328C Agilent 1260 Infinity II Manual Injector.

Waters Corporation´s adoption of the Agilent Instrument Control Framework (ICF) for their Empower Data System is called *Agilent ICF Support*. The *Waters ICF Support* is part of the Waters Instrument Control Package (ICS).

This guide describes how to configure and perform a manual injection in a Waters Empower environment.

Table 1 Supported and unsupported configurations

Waters ICF support Version	Agilent ICF Agilent LC Driver	Manual injection support Empower 3
ICF Support v3.2 With ICF 2.6 Update 2 P/N 667006157	2.6 Update 2 or 2.6 U2 A.02.19 SR2	Supported as outlined
ICF Support v3.2 P/N 667006057	A.02.05 A.02.18	Supported as outlined
ICF Support v3.1 P/N 667005859	A.02.05 A.02.18	Supported as outlined
ICF Support v3.0 With ICF A.02.05 Update P/N 667005815	A.02.05 A.02.18	Supported as outlined
Waters ICF Support v3.0 P/N 667005585	A.02.04 A.02.14	Supported as outlined
Waters ICF Support v 2.2 With ICF A.02.04 Update P/N667005678	A.02.04 A.02.14	Supported as outlined
Waters ICF Support v2.2 P/N 667005450	A.02.03 DU22 A.02.13	Supported as outlined
Waters ICF Support v2.1 HF11 P/N 667005397	A.02.03 DU12 HF21 A.02.11 SP13	Not supported
Waters ICF Support v2.1 HF11 with #667004877 ICF A.01.05 Update	A.01.05 A.02.06 SP13	Not supported
Waters ICF Support v2.1 HF11 P/N 667004899	A.01.04 A.02.04 SP13	Not supported
Waters ICF Support v1.0	A.01.02 A.02.01	Not supported

Table 2 Supported Agilent Manual Injectors

Product No.	Module Name
G1328A/B	1100/1200 Series Manual Injectors, 400 bar
G1328C	1260 Infinity (II) Manual Injector, 600 bar
G1328D	1260 Infinity II Preparative Manual Injector, 600 bar
G5628A	1260 Infinity (II) Bio-Inert Manual Injector, 600 bar

Prerequisites/Compatibility Information

For general software requirements such as operating systems, refer to the Waters Empower documentation.

Requirements for the manual injectors are outlined in the Agilent InfinityLab LC Series Manual Injectors User Manual:

https://www.agilent.com/cs/library/usermanuals/public/G1328CUser.pdf

Using the Manual Injector in the Agilent LC Instrument

Installation

Instrument Set Up

1. Switch off the Agilent LC system.
2. Connect the remote cable of the manual injector to the remote connector of the pump.
   a. APG cable (0100-1677) is for pumps with Firmware A or Firmware B.
   b. ERI cable (5188-8056) is for pumps with Firmware D.
3. Switch on all modules.

NOTE

Ensure that all Agilent LC modules in the system meet or exceed the minimum firmware requirements specified by the 3rd-party CDS software vendor and Agilent's firmware set/firmware interoperability requirements. Agilent recommends using the latest available firmware set.

https://www.agilent.com/en-us/firmwareDownload?whid=69761

PreConfiguration of Agilent LC in Empower

When using the PreConfiguration Tool, follow the instructions in the Empower ICF support release notes. The following procedure describes the set up using ICF Support v2.2 or higher. The procedure is the same for all newer versions.

For information on the PreConfiguration Tool, refer to the related documents on the Waters Empower support page:

- *ICF Support Version Release Note*
- TECN134936402. *Using the Agilent PreConfiguration Utility with Agilent Instrument Control Framework (ICF) Support Version 2.2*

Software required ICF Support v2.2 or higher

1 In the Empower Configuration Manager, select **Tools > Agilent PreConfiguration**.

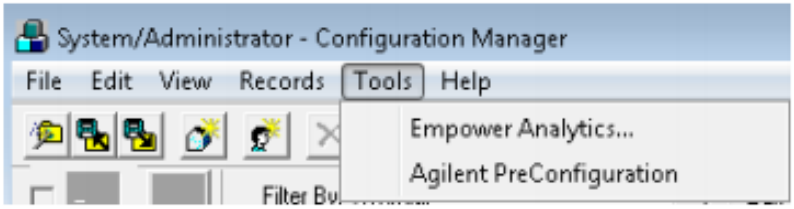

Figure 1 Configuration Manager

2 In the **Configuration Directory** screen, enter the IP address or host name of the LAC/E box that your instrument is connected to and click **Connect**.

NOTE Do not enter the IP address of the instrument here. The IP address of the LAC/E box is required.

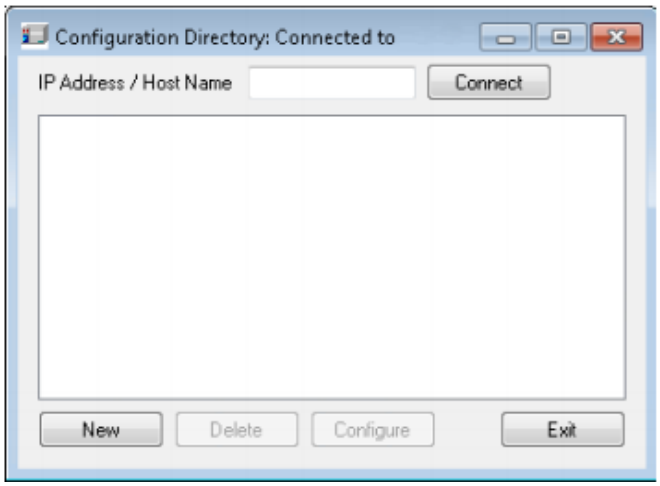

Figure 2 Enter LAC/E IP address

3 Once connected to the IP address, click **New** to open the PreConfiguration Utility.

4 In the **Configuration Editor** select the node corresponding to your instrument type.

5 Click **Auto Configure**.

6 Enter the IP address of the instrument and click **OK**. The instrument is detected, and the LC modules are shown on the right side of the configuration window.

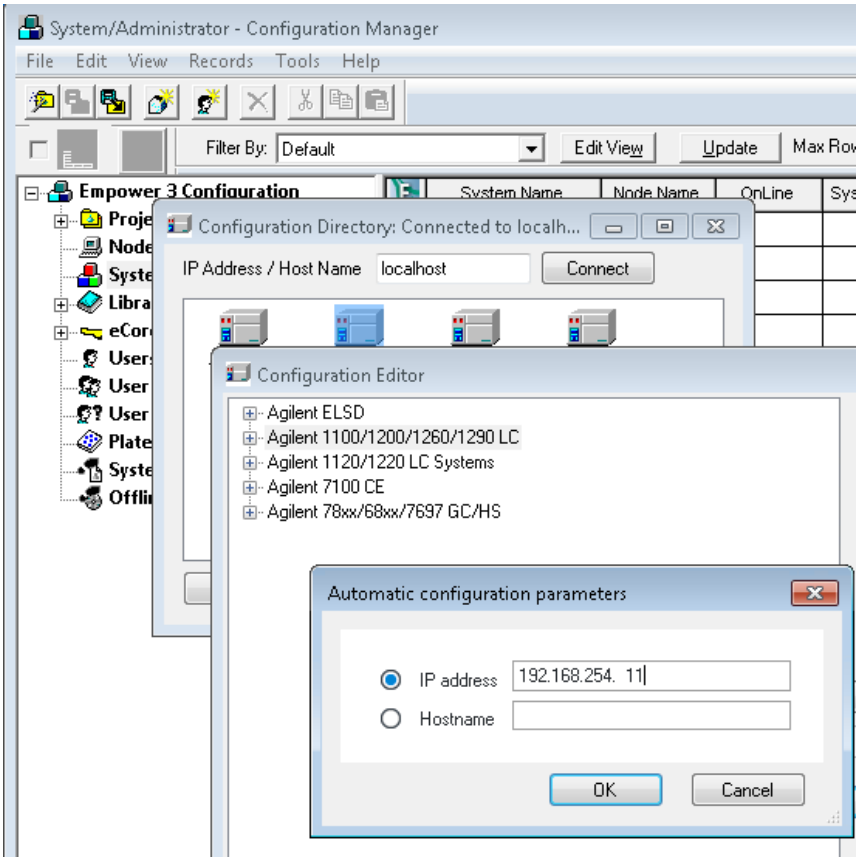

Figure 3 Configuration of the LC

NOTE The default IP address is 192.168.254.11. Please refer to the Agilent User Manual of the module with the LAN connection, if an IP address change is required. The detector is the preferred access point for control via LAN due to the high data rates generated.

The pump configuration window opens.

7 Leave the PreConfiguration Utility by closing all screens using **OK**.

Configuration of LC in Empower

Refer to the Waters Empower documentation for installation and configuration of the LC/CE system in Empower.

1. In the Empower Configuration Manager window, select **Node** in the tree on the left side, then right-click the node you want to add the instrument to and select **Properties**. Select the **Configure DHCP** tab and click **Configure DHCP**.
2. Add the **IP Address** and **MAC Address** manually for the LC instrument.
3. Select **Instrument Type AgilentLC** and click **OK** to leave the screen.

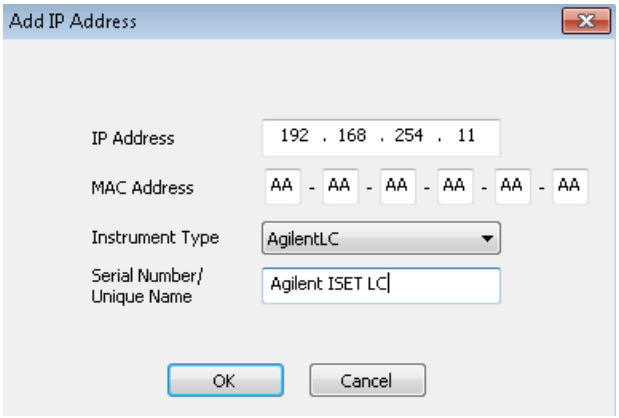

Figure 4 Entering communication details for the instrument

4. Access the **Nodes Properties** in the Empower Configuration Manager and verify that the Instrument is shown as **OK**.
5. Generate a new chromatographic system with the newly configured instrument using **File > New > Chromatographic System**. Follow the instructions on the screen.

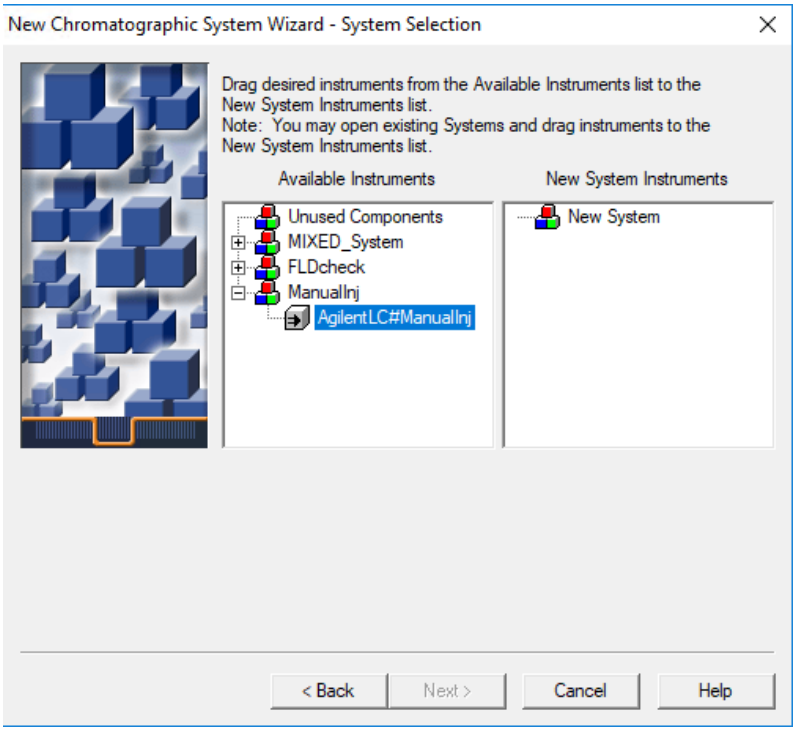

Figure 5 Generating a new chromatographic system

Using the Manual Injector in Empower

1 Start Empower and open the **Run Samples** screen.

The LC Status window automatically displays all available online modules. There is no sampler in the LC status window.

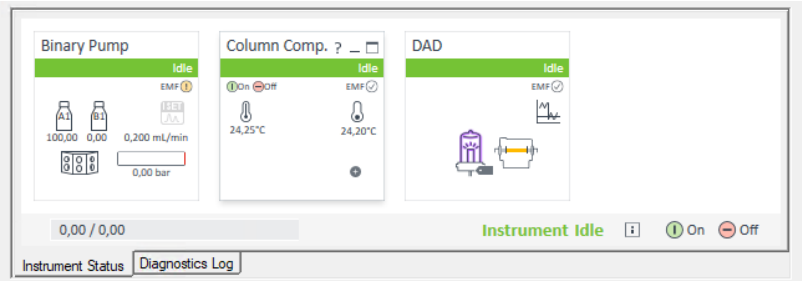

Figure 6 LC Status Dashboard in Empower without injector

2 Either generate a method or use an existing instrument method.

3 Select the **Single** tab and provide the following information:

- **a** **Sample Name** (enter sample name)
- **b** **Function** (select function)
- **c** **Method Set** (select method set which includes the manual injection method)
- **d** **Vial** (a number must be defined)
- **e** **Injection Volume** (enter volume)
- **f** **Run Time** (this run time will be used for the manual run)

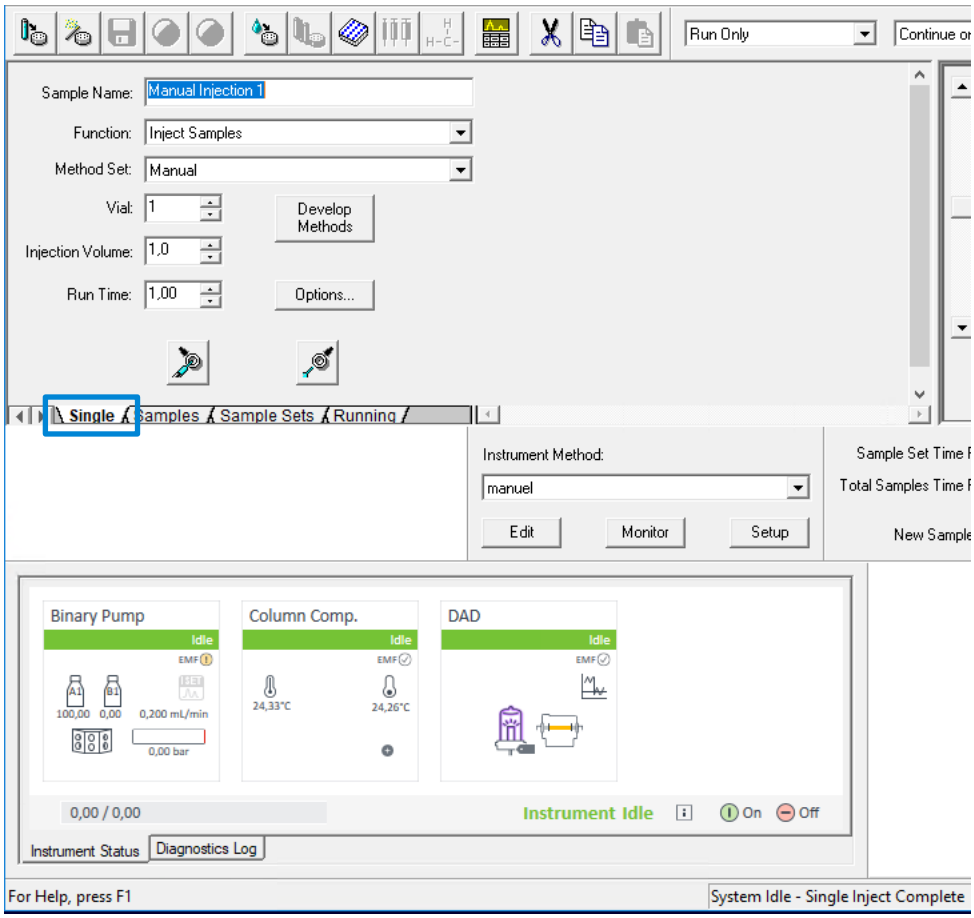

Figure 7 Single tab

4 Click the **Inject** icon.

The **Instrument Method**, **Injection Volume** and **Run Time** are downloaded to the instrument. The **Abort** icon becomes active. The **Inject** icon becomes inactive.

The instrument remains idle, but the download activates the method and it is no longer possible to perform a balance. If a balance is required, perform the balance before clicking the **Inject** icon.

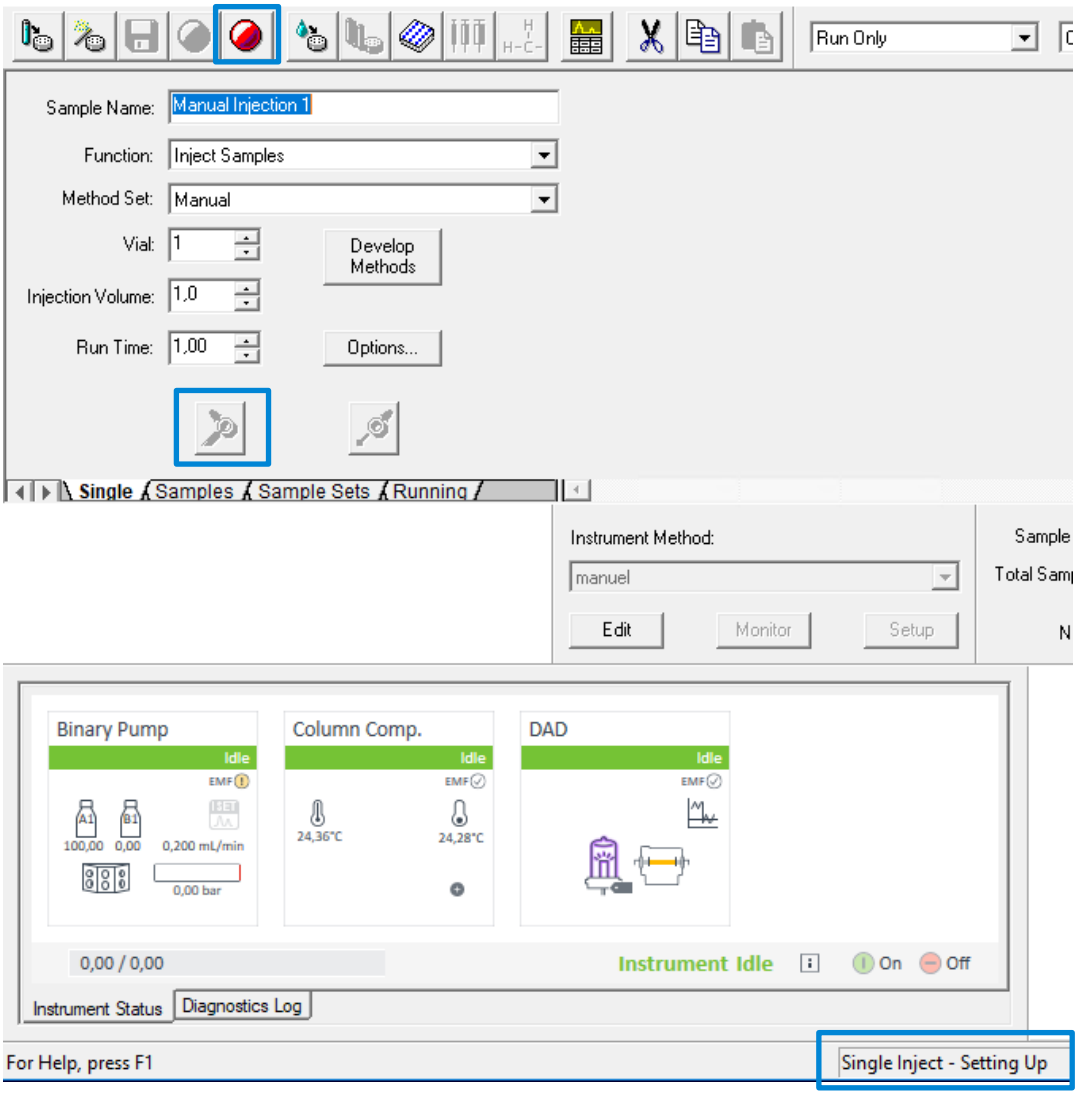

Figure 8 Setting up Single Inject

5 Once Empower has finalized the download of the parameters, the system message changes to **Waiting for Injection**. The instrument is still idle.

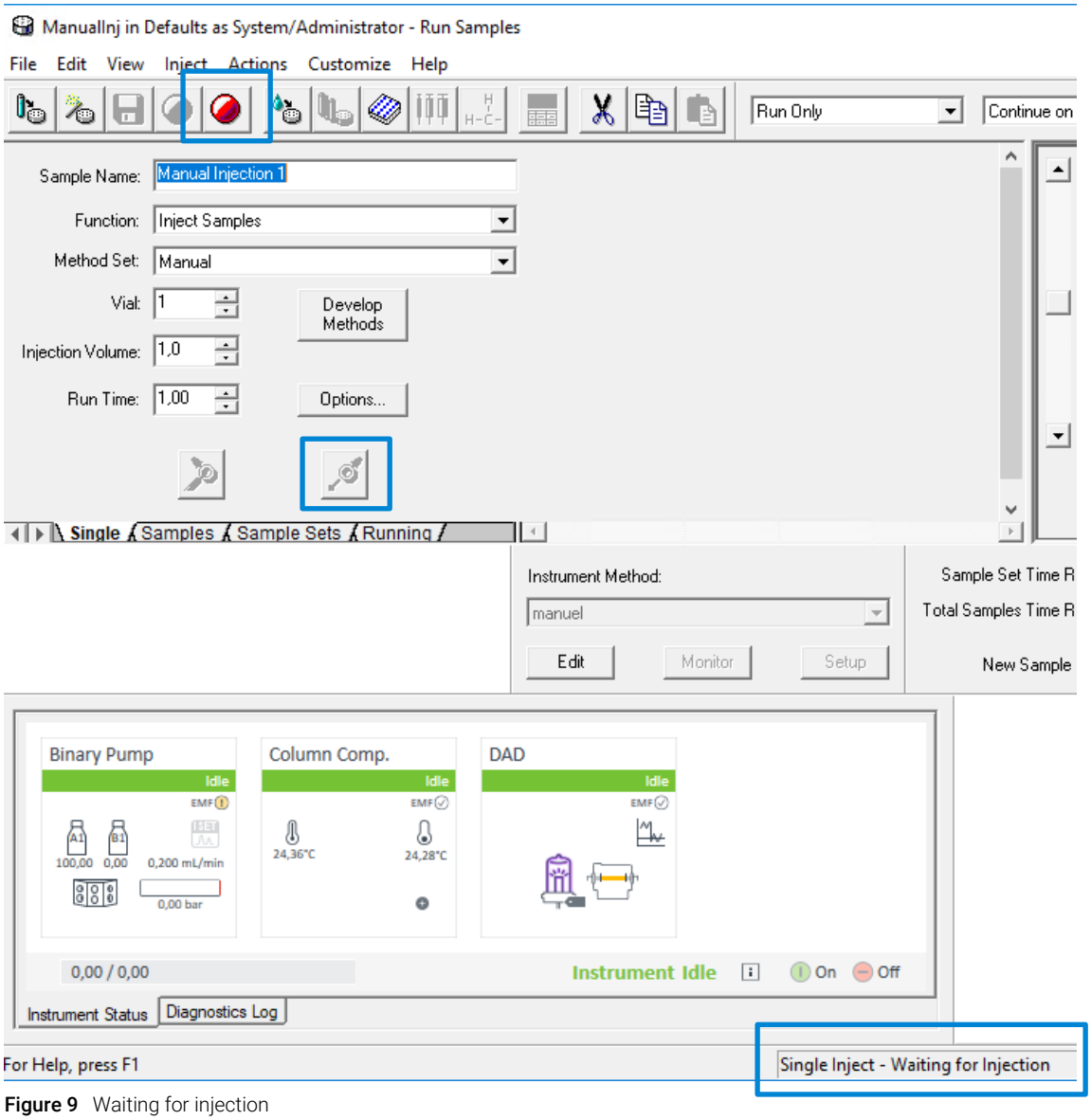

Figure 9 Waiting for injection

6 On the manual injector, switch the manual injector valve to the load position and fill the sample in.

7 On the manual injector, switch the manual injector valve to the inject position. The instrument run starts (instrument status: **Run**) along with the data collection.

NOTE Do not use **Prepare** for manual injection

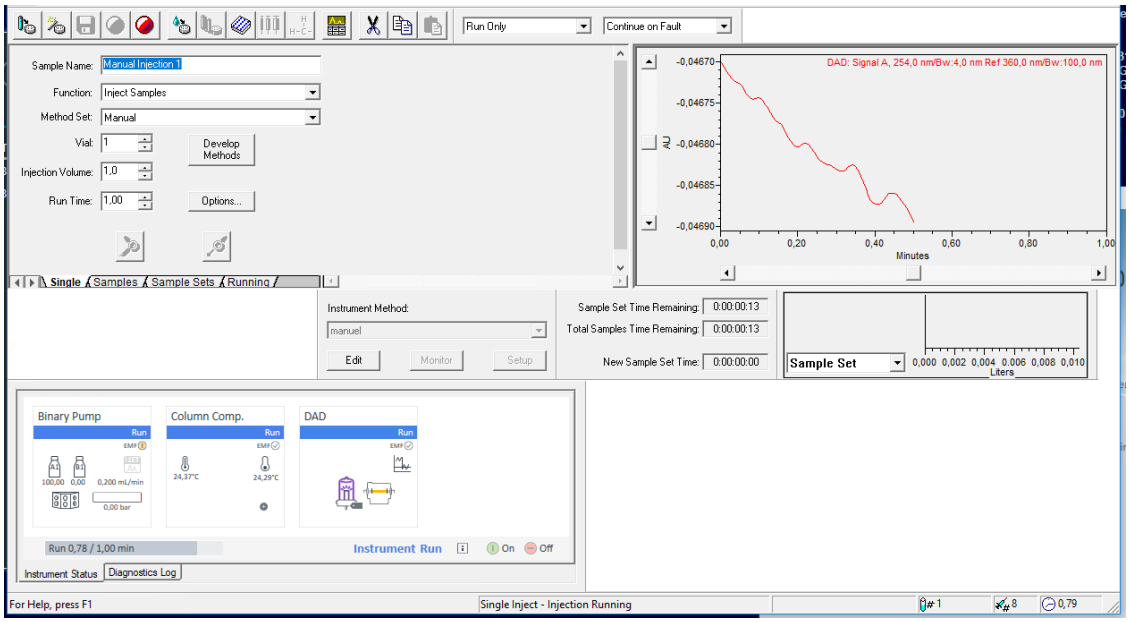

Figure 10 Data collection

References

Agilent InfinityLab LC Series Manual Injectors User Manual:

https://www.agilent.com/cs/library/usermanuals/public/G1328CUser.pdf

www.agilent.com

Edition 04/2020
D0002338

Agilent