

Agilent InfinityLab LC Series 1260 Infinity II Quaternary System

Manual and Quick Guide





Notices

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Manual Part Number

G7111-90300

Edition

04/2016

Printed in Germany

Agilent Technologies Hewlett-Packard-Strasse 8 76337 Waldbronn

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In This Book

This book describes the Agilent InfinityLab LC Series 1260 Infinity II Quaternary System.

1 Introduction

This chapter gives an introduction to the Agilent 1260 Infinity II LC, the underlying concepts and the features of the Agilent 1260 Infinity II LC.

2 Configuration Settings

This chapter describes how to configure the system.

3 Quick Start Guide

This chapter provides information on running an Agilent 1260 Infinity II LC System.

4 Parts and Consumables

This chapter provides information on additional parts and consumables.

5 Appendix

This chapter provides addition information on safety, legal, and web.

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This chapter gives an introduction to the Agilent 1260 Infinity II LC, the underlying concepts and the features of the Agilent 1260 Infinity II LC.



Product Description

The Agilent 1260 Infinity II LC System is the trusted platform, taking you to the next level of routine analysis, and giving you the instrument choice to achieve best operational efficiency.

A broad range of reliable instrumentation matches with latest column technologies guarantees robust separation and detection performance.

Highest instrument utilization and a fast turnaround cycle is achieves through easy column handling and superior sample logistics from sample submission to data analysis.

The designed for method transferability and stepwise upgrade capability enables a risk-free integration in current infrastructure matching your budget.

Features of the Agilent 1260 Infinity II Quaternary LC

With an operating pressure of up to 600 bar the 1260 Infinity II Quaternary Pump is compatible with HPLC and UHPLC, i.e. handling 2.1, 3, and 4.6 mm ID columns over the flow rate range (up to 5 mL/min) and semi preparative analysis due to flow up to 10 mL/min.

Ultralow carryover – The 1260 Infinity II Multisampler is designed for low carryover, you can take clean to a whole new level with the multi-wash capability, cleaning all relevant injection parts between runs. This sophisticated, integrated feature flushes the injection needle outside with three solvents, and uses seat back flush procedures to reduce carryover to less than 9 ppm.

Dual-needle injection – By running samples alternately through one or the other injection path, you can reduce cycle times to mere seconds, virtually eliminating conventional wait times—whether for large volume loadings or flushing procedures.

Higher sample capacity per benchspace – Using shallow well-plate drawers, the 1260 Infinity II Multisampler takes a maximum load of 16 microtiter plates and up to 6144 samples—the most of any single system.

Advanced column capacity for up to 4 columns in a single 1260 Infinity II Multicolumn Thermostat delivering best flexibility for column switching.

Fast and easy connections with A-line Quick Connect fittings to save time and trouble.

1260 Infinity II DAD HS Detector delivers lower detection limit and higher data quality for more confidence.

Seamless integration in your chromatography data system: Agilent's Instrument Control Framework (ICF) enables smooth control of Agilent LC instrumentation through third-party chromatography data systems.

1

System Components

The Agilent 1260 Infinity II LC System consists of the following components:

- Quaternary Pump or Isocratic Pump
- Multisampler or Vialsampler
- Multicolumn Thermostat (MCT)
- Diode Array (DAD), Variable Wavelength (VWD), Refractive Index (RID), or Fluorescence Detector (FLD)
- Evaporative Light Scattering Detector (ELSD) (optional, not stackable)
- Solvent Cabinet

The Agilent 1260 Infinity II LC is described in more detail in the following sections. All modules (except the optional ELSD) are stackable, see "Optimizing the Stack Configuration" on page 24

For specifications, please refer to the individual module user documentation.

Quaternary Pump G7111B

The Agilent 1260 Infinity II Quaternary Pump has an extended power range, delivering pressures up to 600 bar. At these high pressures you can use smaller particle size columns and get higher resolution and faster separations. It maintains virtually pulse-free, well mixed and stable solvent flows. Its dual floating, precise servo-controlled pistons adjust the stroke volume according to your chosen flow rate.

Offering access to up to four solvents, the Agilent 1260 Infinity II Quaternary Pump provides the greatest flexibility in automated solvent blending and is recommended for a wide range of research and routine applications (especially in the food, environmental and pharmaceutical sectors) as well as for method development.





Quaternary Pump VL G7111A

The Agilent 1260 Infinity II Quaternary Pump VL has an extended power range, delivering pressures up to 400 bar. At these high pressures you can use smaller particle size columns and get higher resolution and faster separations. It maintains virtually pulse-free, well mixed and stable solvent flows. Its dual floating, precise servo-controlled pistons adjust the stroke volume according to your chosen flow rate.

Offering access to up to four solvents, the Agilent 1260 Infinity II Quaternary Pump VL provides the greatest flexibility in automated solvent blending and is recommended for a wide range of research and routine applications (especially in the food, environmental and pharmaceutical sectors) as well as for method development.





Isocratic Pump G7110B

The Agilent 1260 Infinity II Isocratic Pump is ideal for demanding QA/QC tasks and routine applications. It maintains virtually pulse-free and stable solvent flows. The dual floating, precise servo-controlled pistons in the delivery mechanism adjust the stroke volume according to your chosen flow rate.

The optional integrated degasser and solvent selection valve offers increased ease-of-use and method flexibility.

The pump can deliver a broad range of pressures up to a maximum 600 bar, giving you the flexibility to use small particle size columns, longer columns or alternative higher viscosity solvents.

The Agilent 1260 Infinity II Isocratic Pump is the ideal pump for GPC/SEC applications where run-to-run and day-to-day precision in retention times is crucial.



Leak drain

Figure 3 Overview of the pump

Multisampler G7167A

The Agilent 1260 Infinity II Multisampler can handle both vials and microtiter plates with ease and efficiency up to 600 bar system pressure, optimized on high flexibility.

This compact module can house up to 6144 samples, all inside the Agilent stack footprint and the robotics to inject each into the chromatograph in turn.

With the multi-wash capability, you can reduce carryover to less than 9 parts per million.



Figure 4 Overview of the Multisampler

Vialsampler G7129A

The Agilent 1260 Infinity II Vialsampler is designed for the reliability, safety, and ease-of-use needed for routine pharmaceutical tasks and quality control, as well as for environmental and food analyses. It can house optionally the integrated column compartment for two LC columns with temperature control up to 80 $^{\circ}$ C as well as a sample cooler for stable temperatures down to 4 $^{\circ}$ C, all within one module.



Figure 5 Overview of the Vialsampler

Multicolumn Thermostat G7116A

The Agilent 1260 Infinity II Multicolumn Thermostat (MCT) allows precise column thermostatting over a broad temperature range: from cooling down to 10 degrees below ambient temperature up to 85 °C, providing high flexibility for optimized speed and selectivity of LC separation.

Ultrahigh pressure valves enable a wide range of applications such as column selection from 4 columns in a single MCT, sample preparation for analyte enrichment or matrix removal, alternating column regeneration, etc.

For bio-inert applications bio-inert heat exchangers and a selection of bio-inert valves are offered.

The MCT fits with all 1260 Infinity II modules and can also be combined with modules of the Agilent 1260 and 1290 Infinity II Series.





Diode Array Detector HS G7117C

The Agilent 1260 Infinity II Diode Array Detector HS is based on the Agilent Max-Light cartridge cell with optofluidic waveguides that improve light transmission to near 100 % efficiency without sacrificing resolution caused by cell dispersions effects.

With typical detector noise levels of $\leq \pm 0.6 \ \mu$ AU/cm the 60 mm flow cell gives up to 10 times higher sensitivity than detectors with conventional flow cells.

Any compromising refractive index and thermal effects are almost completely eliminated, resulting in significantly less baseline drift for more reliable and precise peak integration.

For fast separations, this detector has multiple wavelength and full spectral detection at sampling rates up to 120 Hz.





Diode Array Detector WR G7115A

The 1260 Infinity II DAD WR detector is designed for highest optical performance, GLP compliance, and easy maintenance. With its 120 Hz data acquisition rate the detector is perfectly suited for fast LC applications. The long –life deuterium lamps allow highest intensity and lowest detection limits over a wavelength range of 190 – 950 nm. The use of RFID tags for all flow cells and UV-lamps provides traceable information about these assemblies.

The built-in holmium oxide filter features the fast wavelength accuracy verification, while the built-in temperature controls improves the baseline stability. Additional diagnostic signals for temperature and lamp voltage monitoring are available.





Variable Wavelength Detector G7114A

The Agilent 1260 Infinity II Variable Wavelength Detector (VWD) is the most sensitive and fastest detector in its class.

Time-programmable wavelength switching provides sensitivity and selectivity for your applications.

More sample information can be acquired in the dual wavelength mode.

Low detector noise (<±2.5 μAU) and baseline drift (<1·10⁻⁴ AU/h) facilitates precise quantification of trace levels components.

High productivity can be achieved with fast analysis at up to 120 Hz data rates.





Fluorescence Detector G7121A

The proven optical and electronic design of the Agilent 1260 Infinity II Fluorescence Detector provides highest sensitivity for the analysis of trace-level components. Time-programmable excitation and emission wavelength switching allows you to optimize the detection sensitivity and selectivity for your specific applications. High-speed detection with up to 74 Hz data rates keeping you pace with the analysis speed of fast LC.





Refractive Index Detector G7162A

The Agilent 1260 Infinity II Refractive Index Detector (RID) is the ideal detector for fast and reliable LC results when routinely analyzing non-UV absorbing substances, such as carbohydrates, lipids, and polymers. The 1260 Infinity II RID is also the detector of choice for gel permeation chromatography (GPC) or size exclusion chromatography (SEC).



Leak drain

Figure 11 Overview of the detector

Solutions

Walk-up

Agilent's Walkup Software enables simplified access to the power and precision of high quality LC and LC/MS processes for multiple users.

- Users may simply *walk up* to an LC/MS system, input basic sample information and choose from a list of analytical methods or purification schemes available.
- Sample submitters are prompted where to place their samples. They will receive their results by e-mail when the samples are completed.
- Managers of multiple instrument installations can take advantage of networking instruments through an OpenLAB Shared Services Server to allow administration from anywhere in the lab.

Online SPE

Whether you need to enrich your analytes, remove matrix components, or lower detection limits for e.g. trace-level water analysis, the highly modular design of the Agilent 1290 Infinity II Series Online SPE Solution provides you with the flexibility to tailor your system to match virtually any analytical LC challenge. Agilents Online SPE Solutions are based on the 1290 Infinity Flexible Cube that houses re-usable SPE cartridges and up to two valves. Combined with the Agilent 6400 Series Triple Quadrupole mass spectrometers the 1200 Infinity Series Online SPE Solution allows ultra-low, trace level detection.

The Online SPE Starter Kit builds the basis for all possible Online-SPE solutions. In an alternating way you can clean, condition and load your sample on one of the cartridges while the second cartridge is in the analytical flow path for analyzing the sample.

In addition to the Online SPE Starter Set the online SPE direct injection kit allows also to bypass the SPE cartridges and inject directly onto the analytical column. With this approach you can use your system either for online SPE analysis or for a direct injection without re-plumbing the system.





Figure 13 Position 2

1260 Infinity II Multimethod Solution

This configuration allows to increase your labs' efficiency by combining hardware for column-selection with solvent selection. Multiple LC applications using different mobile phases, different gradients, but also different stationary phases can be performed on just one LC instrument. Typically, several users share one instrument, nevertheless use their individual LC methods dedicated to their specific samples. This configuration is chosen to optimize instrument use.

- By using a high-pressure 4-column selector valve (G4237A, 600 bar) inside the 1260 Infinity II Multicolumn Thermostat, up to 4 columns (30 cm length with A-Line fittings or shorter) can be accessed without any re-plumbing. Individual InfinityLab Quick-Connect heat exchangers support pre-column solvent heating for each column. A bio-inert version of the 4-column selector valve is also available. Fingertight A-Line fittings allow a fast exchange of columns when needed.
- A solvent selection valve attached to the LC stack allows additional access of up to 12 different solvents.
- Utilization and productivity of the LC are optimized by switching between several applications run on a single instrument.



Figure 14 Hydraulic flow path schematics for a 4-column selection setup



Figure 15 Hydraulic flow path schematics for a 4-column selection setup

Optimizing the Stack Configuration

Optimizing the Stack Configuration

To ensure safe operation and optimum performance of an Agilent InfinityLab LC System, Agilent Technologies prescribe stack configurations. The following configurations are possible:

- A-Line Flex Bench
- Single Stack (maximal 4 modules, in a bench rack or directly on the bench)
- Two Stacks (in a bench rack or directly on the bench)

The table below summarizes the advantages of the different prescribed configurations.

Table 1	Overview	on pros and	cons of different	stack configurations
---------	----------	-------------	-------------------	----------------------

modules in a stack	Rack Configuration	Single Stack Configuration	Two Stacks Configuration
fewer than 5	 Pros no bench required mobile optimal access to the modules, solvent bottles, pumps, columns, and accessories integrated waste concept 	 Pros minimal bench space required Cons high stack 	 Pros lower stacks flexible combinations Cons maximum bench space required
5 and more	+ possible	- not possible	+ possible

Agilent A-Line LC Flex Bench

Agilent recommends to use the A-Line LC Flex Bench for all Agilent-LC-Systems.

Main features:

- Increases flexibility in the lab
- Safe moving of LC
- Easy stack customization
- Included waste management

Optimizing the Stack Configuration



Figure 16 Agilent A-Line LC Flex Bench

Optimizing the Stack Configuration

One Stack Configuration

Ensure optimum performance by stacking the modules as shown exemplarily in Figure 17 on page 26. This configuration optimizes the flow path for minimum delay volume and minimizes the bench space required.





Introduction Optimizing the Stack Configuration

1



Vialsampler stack configurations with integrated column compartment

Figure 18 Single stack configuration (bench installation, example shows a vialsampler with optional ICC installed)

Optimizing the Stack Configuration

Two Stack Configuration

To avoid excessive height of the stack (for example when using the system in combination with an additional detector) it is recommended to form two stacks.



Figure 19 Two stack configuration (bench installation, example shows a multisampler)

Introduction Optimizing the Stack Configuration

1

Column compartment
Detectors
Solvent cabinet
Sampler
Pump

Vialsampler Two Stack Configurations

Figure 20 Two stack configuration (bench installation, example shows a vialsampler)

Leak and Waste Handling

The Agilent InfinityLab LC Series has been designed for safe leak and waste handling. It is important that all security concepts are understood and instructions are carefully followed.

The solvent cabinet is designed to store a maximum volume of 8 L solvent. The maximum volume for an individual bottle stored in the solvent cabinet should not exceed 2 L. For details, see the usage guideline for the Agilent 1200 Infinity Series Solvent Cabinets (a printed copy of the guideline has been shipped with the solvent cabinet, electronic copies are available on the Internet).

All leak plane outlets are situated in a consistent position so that all Infinity and Infinity II modules can be stacked on top of each other. Waste tubes are guided through a channel on the right hand side of the instrument, keeping the front access clear from tubes.

The leak plane provides leak management by catching all internal liquid leaks, guiding them to the leak sensor for leak detection, and passing them on to the next module below, if the leak sensor fails. The leak sensor in the leak plane stops the running system as soon as the leak detection level is reached.

Solvent and condensate is guided through the waste channel into the waste container:

- from the detector's flow cell outlet
- from the Multisampler needle wash port
- from the Sample Cooler (condensate)
- from the Seal Wash Sensor
- · from the pump's Purge Valve or Multipurpose Valve

1



Figure 21 Infinity II Leak Waste Concept (flexible rack installation)

Leak and Waste Handling



Figure 22 Infinity II Single Stack Leak Waste Concept (bench installation)

1



Figure 23 Infinity II Two Stack Leak Waste Concept (bench installation)

The waste tube connected to the leak pan outlet on each of the bottom instruments guides the solvent to a suitable waste container.

Leak and Waste Handling

Waste Guidance



NOTE

The waste drainage must go straight into the waste containers. The waste flow must not be restricted at bends or joints.

1

Waste Concept

1 Agilent recommends using the 6 L waste can with 1 Stay Safe cap GL45 with 4 ports (5043-1221) for optimal and safe waste disposal. If you decide to use your own waste solution, make sure that the tubes don't immerse in the liquid.



Leak and Waste Handling


Configuration Settings

General Information on LAN Configuration 38 Instrument Configuration 39 Lab Advisor 41 Installing Add-ons 45

This chapter describes how to configure the system.

2



2

General Information on LAN Configuration

LAN configuration is executed from the module with direct LAN connection to the controller software. This must be the module (usually the detector) with the highest data rate.

Instrument Configuration

Example shows an instrument configuration with a Diode Array Detector.

- **1** Set the switches of the Configuration switch at the rear of the module:
 - a All switches DOWN: module uses the default IP address 192.168.254.11.
 - **b** Switch 4 UP and others DOWN: module uses DHCP.



- 2 Enter the setup information (MAC / IP address and/or Instrument Name).
 - **a** Agilent OpenLab ChemStation (Configure Instrument):

Configure Instrument: G71178 DAD (#4)		X
Agilent LC System Use classic drivers Method load on startup: [Aways ask user to choose an opt	- Options 2 30 apoptal evaluation 2 Enable Intelligent Reporting ion *	
Configurable Modules Agilent LC Modules and Systems Low Fraction Collector Low Row Fraction Collector Sampler HP Sampler Low Row Sampler Low Row HP Sampler Low Row HP Sampler Prep. Sampler Low Row HP Sampler Low Row Low Row HP Sampler Low Row Low Row Row Low Row Low Row Row Row Row Row Row Row Row Row R	Selected Modules	Corfigure
	OK	Cancel Help

- × 🖳 System Properties System System Name: G7117B Description: Instruments Instrument Name: Instrument Address: Instrument Type: 8 . -G7117B 0030D32B5853 - 7 -Agilent LC/CE Add Instrument Reconnect: Apply Cancel
- **b** Lab Advisor (Instrument Overview Add Instrument):

Lab Advisor



1 In the Action Panel of the System Overview, click Add System.

2 Configuration Settings

Lab Advisor

The Add System dialog box is displayed.



2 Enter a name in the **Instrument Name** field.

NOTE

If your system comprises just one instrument, the **Instrument Name** is copied to the **System Name** field.

3 Enter the connection details in the **Instrument Address** field.

🖳 System Prop	perties	×
System		
System Name:	1290 LC	Description:
Instruments		
1	Instrument Name:	Instrument Address: Instrument Type:
	1290 LC	192.168.254.11
Add Instrum	ment 😡	
Rec	onnect:	Apply Cancel

NOTE

The **Instrument Address** can be an IP address, the host name or, if you are connecting using a serial cable, the COM port.

4 Click the **Instrument Type** down-arrow and select the type of instrument you are adding from the list. The default setting is **Agilent LC/CE**. Additional instrument types become available when the respective add-ons are installed.

•	Add System				X
	System Name:	1290 LC			
ſ	Instruments				
	24	Instrument Name:	Instrument Address:	Instrument Type:	
		1290 LC	192.168.254.11 🔹	Agilent LC/CE	
				Agilent ELSD	
	Add Instrume	ent		Agilent QQQ Generic Instrument SD1-218 Pumps	
		ОК	Cancel		

NOTE

By default, the **Instrument Type** drop-down list contains only the entry **Agilent LC/CE**. Addition instrument types can be added by installing the respective add-ons (see "Installing Add-ons" on page 45).

5 If your system comprises more than one instrument, click **Add Instrument** and complete the details as above.



NOTE

As soon as you add a second instrument, the **System Name** field is activated to allow you to edit the system name.

6 Click **OK** to finish adding the system and close the **Add System** dialog box.

The system becomes visible in the $\ensuremath{\textit{System Overview}}$, and Lab Advisor tries to connect to it.

	_	System Name	System Information	EMF	Status
•		FSG Lab LC/MS	Agilent LC / 192.168.254.11 Agilent QQQ / 192.168.254.12	EMF	Not Ready Disconnect
	► E	1290 LC	Agilent LC / 192.168.254.11	EMFQ	Not Ready
	_	6490A QQQ	Agilent QQQ / 192.168.254.12	EMIR	Not Ready
L	_				
	Fast Con	nect		Remove System System	M Properties Add System

Installing Add-ons

Add-ons are installed from the **Configuration** screen, using a Lab Advisor Extension file with the with the extension .LAX.



You need Administrator rights in order to install Add-ons.

- In the Global Tasks section of the Navigation Panel, click Configuration. The Configuration screen is displayed.
- 2 Click Add-ons to navigate to the Configuration Add-ons screen.

Install from Jax file	line for updates Autom	atically check for updates:	Every start
Name		Installed Version	Type Status
Agilent Lab Advisor		B.02.07 [137]	Main
Agilent LC/CE		2.4.218.0	Add-on
Generic Instrument		1.0.11.0	Add-on
СоСо		1.0.0.18	Add-on
Lab Advisor Common Apps		1.1.50.0	Арр
Lab Advisor Common Services Apps		1.1.28.0	Арр
Lab Advisor Diagnostic Catalog App		1.1.55.0	Арр
	🕒 Uninsta	all 💿 Update	Enabled
Agilent Lab Advisor Lab Advisor Core	B.02.07 [137]		

Figure 24 Add-ons in Configuration

The **Configuration - Add-ons** screen contains a table listing all the Add-ons that are already installed.

3 Click Install from .lax file.

A file selection dialog box is displayed to allow you to select the App or Add-on to install.

- **4** Navigate to the folder containing the Add-on files, select the .lax file and click **Open** to install the Add-on.
- **5** Click **Yes** when the request to shut down Lab Advisor appears.

Lab Advisor shuts down and the Add-on installation is started.

Lab Advisor Extension Installe	er 🗧	×
You've selec	ted following Lab Advisor extension for installation:	
Mair	ntenance Wizard	
Guide	customers and service engineers through preventive maintenance.	
Location:	bAdvisorTest\RelatedComponents\MWiz-B039\MaintenanceWizard.lax	
Extension Version:	1.2.39.0	
Required Lab Advisor Version:	2.5.100 - 2.9.999	
	Install	

When the installation is finished, the newly installed Add-on is included in the table in the **Configuration - Add-ons** screen.



3

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This chapter provides information on running an Agilent 1260 Infinity II LC System.





Best Practices



For best practices, refer to the *Agilent Information Center* on Agilent InfinityLab LC Series User Documentation (G4800-64600) or the 1290 Infinity Pump Quick Reference Sheet (01200-90091).

Prepare a Run

This procedure examplarily shows how to prepare a run. Parameters as shown in the screenshots may vary, depending on the system installed.

WARNING

Toxic, flammable and hazardous solvents, samples and reagents

The handling of solvents, samples and reagents can hold health and safety risks.

- → When working with these substances observe appropriate safety procedures (for example by wearing goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the vendor, and follow good laboratory practice.
- → Do not use solvents with an auto-ignition temperature below 200 °C (392 °F). Do not use solvents with a boiling point below 56 °C (133 °F).
- → Avoid high vapor concentrations. Always keep the temperature in the sample compartment at least 25 K below the boiling point of the solvent used.
- → Do not operate the instrument in an explosive atmosphere.
- → Reduce the volume of substances to the minimum required for the analysis.
- → Never exceed the maximum permissible volume of solvents (8 L) in the solvent cabinet. Do not use bottles that exceed the maximum permissible volume as specified in the usage guideline for solvent cabinet.
- → Ground the waste container.
- → Regularly check the filling level of the waste container. The residual free volume in the waste container must be large enough to collect the waste liquid.
- → To achieve maximal safety, regularly check the tubing for correct installation.

1 Switch on the detector.



- **2** Fill the solvent bottles with adequate solvents for your application.
- **3** Place solvent tubings with bottle head assemblies into the solvent bottles.
- **4** Place solvent bottles into the solvent cabinet.
- **5** Solvent bottle filling dialog (in the software).

Quat. Pump ? _ 🗆			
Idle			
①On ⊖Off EMF⊘			
A B 100,0 0,0 C D C D 0,0 0,0 Identify Device Switch On B Bottle Fillings			
Solvent Bottle			
Fillings			
Actual Volume	Total Volume		
A: 0.80 📜 liter	1.00	liter	
B: 0.92 🛟 liter	1.00	liter	
C: 0.78 📜 liter	1.00	liter	
D: 0.81 -	1.00	liter	
A-6			
Actions			
Prevent analysis if level falls below	DW	0.05 📫 lit	er
Turn pump off if running out of sol	lvent		
	Ok	Cancel	Help

6 Purge the pump (in normal usage scenario).

OR

Prime the pump (after installation of the system).



For details on priming and purging, refer to the technical note *Best Practices for Using an Agilent LC System* .

7 Change solvent (if necessary).

Quat. Pump VWD Sampler DAD Column Comp.	
	Quat. Pump (G7111B)
Flow	Advanced
0.800 🗘 mL/min	Minimum Stroke
Solvents 60.0 : 3 % Water	 Automatic 20 1 μL
B: 🖌 40.0 🛟 % Acetonitrile	Compressibility
C: 0.0: %	● 95 ÷ *10 ⁻⁶ /bar ● No compensation
Pressure Limits	Maximum Flow Gradient
Min: 0.00 bar Max: 600.00 bar Stoptime Postime	100.000 C mL/min ²
O As Injector/No Limit ● Off ● 10.00 · ; min 0 1.00 · ; min	Primary Channel Automatic
Import Timetable	
	۲
	Timetable (1/100 events)

8 Choose the tray format of the sampler.



9 Add a new column.



10 Enter the column information.



Column Tag Information

Loca	tion 🗠	Color Code	Description	Length [mm]	Diameter [mm]	Particle Size [µm]	Max. Pressure [bar]	Injections
	Left 1	Red		0	0,0	0,0	0	0
•	Left 2	Blue		0	0,0	0,0	0	0
	Left 3	None		0	0,0	0,0	0	0
	Left 4	None		0	0,0	0,0	0	0
	Right 1	None		0	0.0	0,0	0	0
	Right 2	None		0	0.0	0,0	0	0
	Right 3	None		0	0,0	0,0	0	0
	Right 4	None		0	0,0	0,0	0	0



>>

Prepare a Run

Temperatura		A
Left.	Bight:	Advanced
Left: Not Controlled As Detector Cell Unchanged Valve Position/Column Use Current Column / Position Use Selected Column / Position Position 1	Right: Not Controlled 25.0 : *C As Detector Cell Unchanged Combined	Advanced Frable Analysis ✓ when front door open Left: Right: ○ With any temperature ③ When temperature is within
Enforce column for run Stoptime	Posttime	
As Pump/Injector	⊙ Off	
)	ý	↓ Timetable (empty)
		<u>Qk</u> <u>Apply</u> <u>Cancel</u>

11 Select the column position.

12 Set the detector according to the needs of your method.



Quat. Pump VWD Sampler DAD Column Comp.		
		DAD (G7115A)
<u>Signals</u>		Advanced
Acquire Wave Band Reference Iength width Wavelength	Reference Bandwidth	Spectrum
Signal A Ø 254 2 4 2 360	100 : nm 100 : nm	Subs. Intel Range from: 190 : to 400 : Step: 2.0 : Analog Output Zero Offset: 5 : % Attenuation: 1000 • MAU
Peakwidth > 0.0063 min (0.13 s response time) (40 Hz) Stoptime Posttime	•	Margin for negative Absorbance Slit 100 ; mAU Autobalance Lamps on required for acquisition
As Pump/Injector Off 1.00 : min	1.00 :] min	Prerun UV Lamp Postrun Vis Lamp
		Timetable (empty)

NOTE

For details on running a method, see "Setup the Checkout Method" on page 61 as an example.

Check Out the System

Checkout Method

This is an examplary method for the Agilent InfinityLab LC Series. Examplary configuration:

- Quaternary Pump G7111B
- Multisampler G7167A
- Multicolumn Thermostat G7116A
- Diode Array Detector WR G7115A

The RRLC checkout sample (5188-6529) serves as standard for systems with 600 bar and contains 100 ng/ μ L each of nine components dissolved in water / acetonitrile (65/35). The nine components are:

- Acetanilide
- Acetophenone
- Propiophenone
- Butyrophenone
- Benzophenone
- · Valerophenone
- Hexanophenone
- Heptanophenone
- Octanophenone

The Agilent isocratic checkout sample (01080-68704) serves as standard for systems with 400 bar and contains each of four components dissolved in methanol.

- Dimethylphthalate
- Diethylphthalate
- Biphenyl
- o-Terphenyl

NOTE

Find the correct settings for the individual modules here:

- Checkout method parameter settings Isocratic Pump (G7110B) (Table 3 on page 58)
- Checkout method parameter settings Quaternary Pump VL (G7111A) (Table 4 on page 58)
- Checkout method parameter settings Quaternary Pump (G7111B) (Table 5 on page 59)
- Checkout method parameter settings Multisampler (G7167A) or Vialsampler (G7129A) (Table 6 on page 59)
- Checkout method parameter settings Multicolumn Thermostat (G7116A) (Table 7 on page 59)
- Checkout method parameter settings Diode Array Detector HS (G7117C) or Diode Array Detector WR (G7115A) (Table 8 on page 60)
- Checkout method parameter settings Variable Wavelength Detector (G7114A) (Table 9 on page 60)

Table 2 Overview of column options for different pumps

Pump	Option 1	Option 2	Option 3
1260 Infinity II Quaternary and Binary Pump (G7111B/G7112B)	Poroshell 120 EC-C18, 4.6 x 100 mm, 2.7 µm	Poroshell 120 EC-C18, 3.0 x 150, 2.7 µm	Poroshell 120 EC-C18, 3.0 x 50 mm, 2.7 μm
	695975-902T	693975-302T	699975-302T
1260 Infinity II Quaternary Pump VL (G7111A)	Poroshell 120 EC-C18, 4.6 x 100 mm, 4 μm	Poroshell 120 EC-C18, 4.6 x 50 mm, 2.7 μm	Poroshell 120 EC-C18, 4.6 x 150 mm, 4 μm
	695970-902T	699975-902T	693970-902T

Check Out the System

Parameter	Value
Flow	1.5 mL/min
Solvents	65 % ACN in water
Compressibility	75
Stoptime	10 min
Pressure Limit	600 bar
Minimum Stroke	Automatic

Table 3 Checkout method parameter settings Isocratic Pump (G7110B)

Table 4 Checkout method parameter settings Quaternary Pump VL (G7111A)

Parameter	Value
Flow	1 mL/min
Solvent A	Water
Solvent B	ACN
Compressibility	75
Composition	65 % B (ACN)
Composition	35 % A (Water)
Stoptime	10 min
Pressure Limit	400 bar
Minimum Stroke	Automatic

Parameter	Value
Flow	0.8 mL/min
Solvent A	Water
Solvent B	ACN
Compressibility	95
Composition	40 %B (ACN)
Composition	60 %A (Water)
Stoptime	10 min
Pressure Limit	600 bar
Minimum Stroke	Automatic
Timetable	2.5 min 80 %B

 Table 5
 Checkout method parameter settings Quaternary Pump (G7111B)

Table 6 Checkout method parameter settings Vialsampler/Multisampler (G7129A/G7167A)

Parameter	Value
Injection	1 μL
Stoptime	as pump
Draw speed	100 µL/min

Table 7 Checkout method parameter settings Multicolumn Thermostat (G7116A)

Parameter	Value
Temperature (left)	40 °C
Temperature (right)	combined
Stoptime	as pump

Check Out the System

Parameter	Value
Signal A	254/4 nm
Ref A	360/100 nm
Peakwidth	40 Hz
Stoptime	as pump
Spectrum	None
Autobalance	Prerun

Table 8 Checkout method parameter settings Diode Array Detectors (G7115A/G7117C)

Table 9 Checkout method parameter settings Variable Wavelength Detector (G7114A)

Parameter	Value
Wavelength	254 nm
Peakwidth	40 Hz
Stoptime	as pump
Autobalance	Prerun

Setup the Checkout Method

NOTE

The setup of the checkout method in this procedure is an example. For the individual module parameters, see "Checkout Method" on page 56.

- **1** Turn on the lamp.
- 2 Load the the default method DEF_LC.M

Check Out the System

Quat. Pump VWD Sampler DAD Column Comp.	
	Quat. Pump (G7111B)
Flow	Advanced
0.800 🗘 mL/min	Minimum Stroke
Solvents	 Automatic 20 ⁺, μL
A: 60.0 0 Water	
B: 🕢 🚺 40.0 🛟 % Acetonitrile	Compressibility
C: 0.0 ; %	● 95 : *10 ^{-€} /bar
D: 0.0 0 %	No compensation
Pressure Limits	Maximum Flow Gradient
Min: 0.00 + bar Max: 600.00 + bar	100.000 ÷ mL/min²
Stoptime Posttime	
As Injector/No Limit	Primary Channel
10.00 : min	Automatic 👻
Import Timetable	
	۰ III ا
	Timetable (1/100 events)

3 Change the method and timetable settings for the 1260 Infinity II Quaternary Pump (G7111B)

Figure 25 Method settings 1260 Infinity II Quaternary Pump (G7111B)

Check Out the System

Quat. Pump VWD Sampler DAD Column Comp.							
				Qu	at. Pun	וף (G711)	IB)
Flow	Advanced						
0.800 ⁺ ml/min	▲ Timetable (1/	00 events)					
						function of	centric view
Solvents	Time [min]	A [%]	B [%]	C [%]	D [%]	Flow	Max. Pressure
A: 60.0 0 % Water	0	0 60 0	40.0	0.0	0.0	[mL/min] 0.800	Limit [bar]
B: 🖌 40.0 🛟 % Acetonitrile	2.	50 20.0	80.0	0.0	0.0		
C: 0.0 1 %							
D: 0.0 ; %							
Pressure Limits							
Min: 0.00 t bar Max: 600.00 bar							
Stoptime Posttime							
O As Injector/No Limit Image: Off Off Image:							
Import Timetable							
	Add	Rem	ove	Clear	All	Clear Empty	
	Cut	Coj	ру	Paste	е	Shift Times	0.00 ÷

Figure 26 Timetable settings 1260 Infinity II Quaternary Pump (G7111B)

Check Out the System

Quat. Pump VWD Sampler DAD Column Comp. Multisampler Iso. Pump Qu	uat. Pump Binary Pump Multisampler
	Multisampler (G7167A)
Injection	Advanced
Injection volume: 1.00 C	Sampling Speed
	Draw Speed: 100.0 + µL/min
Needle Wash	Eject Speed: µL/min
Standard Wash 🔻	Wait Time After Draw: 1.2 📜 s
Stoptime Posttime	Needle Height Position
	Offset: 0.0 🗘 mm
● As PumpiNo Limit ● Off ○ 1.00 : min ○ 1.00 : min	Use Vial/Well Bottom Sensing
	High Throughput
	Sample Flush-Out Factor: 5.0 ‡
	Injection Valve to Bypass for Delay Volume Reduction
	Enable Overlapped Injection
	When Sample is Flushed Out
	After Period of Time
	0.00 ‡ minutes after injection
	Injection Path Cleaning

4 Change the method settings for the 1260 Infinity II Multisampler (G7167A)

Figure 27 Method setting 1260 Infinity II Multisampler (G7167A)

Check Out the System

Quat. Pump VWD Sampler DAD (Column Comp. Multisampler Iso. Pump	Quat. Pump Binary Pump Multisampler
		Multisampler (G7167A)
Injection		> Advanced
		▲ Injection Path Cleaning
Injection volume:	1.00 μL	Standard Wash
Needle Wash		Mode: Flush Port 💌
Standard Wash	▼	Time: 3 🛟 s
Stantime	Posttime	Location:
oopund	i ostanic	Repeat: 3 1
As Pump/No Limit	Off	Multi-wash
O <u>1.00</u> , min	O 1.00 J min	Step Solvent Time [s] Seat Back Flush Needle Wash Comment
		1 Off
		2 Off I
		Start Cond. S1
	Figure 28 Method s	setting 1260 Infinity II Multisampler (G7167A) - Injection Path
	Cleaning	- , , , , , ,

Check Out the System

5	Change the method settings for the 1260 Infinity II Multicolumn Thermostat (G7116A)

Temperature		^	🖌 🖌	vanced				
Left:	Right:		Feel	de Areboie				
 Not Controlled 	 Not Controlled 		Criat	her fresh dese ener				
④ 40.0 ÷ °C	O 25.0 ℃		₩ W	1 - 0-			7 L.L.	
As Detector Cell	 As Detector Cell 			Len:			Right:	
 Unchanged 	 Unchanged 		C) With any temperature	0	With any temper	ature	
	Combined		۲) When temperature is within	۲	When temperatu	re is within	
	O COMPANY			± 0.8 🛟 °C for		± 0,	C for	
Valve Position/Column				0.0 🛟 min		0,) 🗘 min	
O Use Current Column / Position			Males	- Decider/Column After Due				
 Use Selected Column / Position 			valv	e Position/Column Arter KUN				
Position 1	• ()			Do not switch				
			0	Switch to position / column at beginning of run				
				Switch to position? column at beginning of fur				
			0	Increase valve position / column				
	6		0	Use valve position / column				
				Position 1				
				TOSHOTT +				
\sim								
Enforce column for run								
	•							
Chantima	Posttimo							
Supune	rosume							
 As Pump/Injector 	 Off 							
0 1.00 (min	0 1.00 : min							
		~	D Tir	metable (empty)				
						Ok	Apply	Cancel
						20	CP(P)	Sauce

Figure 29 Method setting 1260 Infinity II Multicolumn Thermostat (G7116A)

ddd. Tanp TVVD Campion Coldmit Comp.	
	DAD (G7115A)
Signals	Advanced
Acquire Wave Band Reference Reference Iength width Wavelength Bandwidth	Spectrum
Signal A ✓ 254 : 4 · ✓ 360 : 100 : nm Signal B 254 : 4 : 360 : 100 : nm Signal C 210 : 4 : 360 : 100 : nm Signal C 230 : 4 : 360 : 100 : nm Signal D 230 : 4 : 360 : 100 : nm Signal E 280 : 4 : 360 : 100 : nm Signal F 260 : 4 : 360 : 100 : nm Signal G 270 : 4 : 360 : 100 : nm Signal H 290 : 4 : 360 : 100 : nm	Store: None Range from: 190 : to 400 : nm Step: 2.0 : nm Analog Output Zero Offset: 5 : % Attenuation: 1000 mAU
> 0.0002	Margin for negative Absorbance Slit
> 0.0063 min (0.13 s response time) (40 Hz)	100 🔶 mAU 🛛 4 🔍 nm
Stoptime Posttime	
 As Pump/Injector 1.00 : min min	Autobalance Lamps on required for acquisition
	Timetable (empty)

6 Change the method settings for the 1260 Infinity II Diode Array Detector WR (G7115A)



- **7** Save the method as GRAD-1.M
- 8 Equilibrate the system for 10 min under checkout conditions
- **9** Run and evaluate the checkout method

Oust Burns 1400D Consular DAD Column Cours

Check Out the System



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Capillaries for use with the A-Line Quick Turn Fitting 75

This chapter provides information on additional parts and consumables.



4 Parts and Consumables Tool Kit

Tool Kit

The HPLC System Tool Kit contains all tools to operate and maintain a 1260 Infinity II LC system.

The High quality tools are packed in an appealing tool case.

Parts and Consumables 4 Tool Kit





A-Line Quick Connect and Quick Turn Fittings

A-Line Quick Connect Fittings



Figure 32 A-Line Quick Connect Fitting

p/n	Description
5067-5965	A-Line Quick Connect LC fitting (fitting without pre-installed capillary)
5067-5961	A-Line Quick Connect Assy ST 0.075 mm x 105 mm
5067-6163	A-Line Quick Connect Assy ST 0.075 mm x 150 mm
5067-6164	A-Line Quick Connect Assy ST 0.075 mm x 220 mm
5067-6165	A-Line Quick Connect Assy ST 0.075 mm x 280 mm (fitting without pre-installed capillary)
5067-5957	A-Line Quick Connect Assy ST 0.12 mm x 105 mm
5067-5958	A-Line Quick Connect Assy ST 0.12 mm x 150 mm
5067-5959	A-Line Quick Connect Assy ST 0.12 mm x 220 mm
5067-5960	A-Line Quick Connect Assy ST 0.12 mm x 280 mm
5067-6166	A-Line Quick Connect Assy ST 0.17 mm x 105 mm
5067-6167	A-Line Quick Connect Assy ST 0.17 mm x 150 mm
5067-6168	A-Line Quick Connect Assy ST 0.17 mm x 220 mm
5067-6169	A-Line Quick Connect Assy ST 0.17 mm x 280 mm
A-Line Quick Connect Fitting Replacement Capillaries

p/n	Description
5500-1174	A-Line Capillary ST 0.075 mm x 105 mm
5500-1175	A-Line Capillary ST 0.075 mm x 150 mm
5500-1176	A-Line Capillary ST 0.075 mm x 220 mm
5500-1177	A-Line Capillary ST 0.075 mm x 250 mm
5500-1178	A-Line Capillary ST 0.075 mm x 280 mm
5500-1173	A-Line Capillary ST 0.12 mm x 105 mm
5500-1172	A-Line Capillary ST 0.12 mm x 150 mm
5500-1171	A-Line Capillary ST 0.12 mm x 220 mm
5500-1170	A-Line Capillary ST 0.12 mm x 280 mm
5500-1179	A-Line Capillary ST 0.12 mm x 400 mm
5500-1180	A-Line Capillary ST 0.12 mm x 500 mm
5500-1181	A-Line Capillary ST 0.17 mm x 105 mm
5500-1182	A-Line Capillary ST 0.17 mm x 150 mm
5500-1183	A-Line Capillary ST 0.17 mm x 220 mm
5500-1230	A-Line Capillary ST 0.17 mm x 280 mm
5500-1231	A-Line Capillary ST 0.17 mm x 500 mm

Parts and Consumables A-Line Quick Connect and Quick Turn Fittings

4

A-Line Quick Turn Fitting



Figure 33 A-Line Quick Turn Fitting

p/n	Description
5067-5966	A-Line Quick Turn fitting

Capillaries for use with the A-Line Quick Turn Fitting

p/n	Description
5500-1198	Capillary ST 0.075 mm x 105 mm, long socket
5500-1232	Capillary ST 0.075 mm x 150 mm, long socket
5500-1188	Capillary ST 0.12 mm x 105 mm, long socket
5500-1189	Capillary ST 0.12 x 150 mm, long socket
5500-1233	Capillary ST 0.12 mm x 180 mm, long socket
5500-1190	Capillary ST 0.12 mm x 200 mm, long socket
5500-1191	Capillary ST 0.12 mm x 280 mm, long socket
5500-1192	Capillary ST 0.12 mm x 500 mm, long socket
5500-1193	Capillary ST 0.17 mm x 105 mm, long socket
5500-1194	Capillary ST 0.17 mm x 150 mm, long socket
5500-1234	Capillary ST 0.17 mm x 180 mm, long socket
5500-1195	Capillary ST 0.17 mm x 200 mm, long socket
5500-1196	Capillary ST 0.17 mm x 280 mm, long socket
5500-1235	Capillary ST 0.17 mm x 380 mm, long socket
5500-1236	Capillary ST 0.17 mm x 400 mm, long socket
5500-1197	Capillary ST 0.17 mm x 500 mm, long socket

4 Parts and Consumables

A-Line Quick Connect and Quick Turn Fittings



Appendix

5

Safety 78 **General Safety Information** 78 Safety Standards 78 General 78 **Before Applying Power** 79 Ground the Instrument 79 Do Not Operate in an Explosive Atmosphere 80 Do Not Remove the Instrument Cover 80 Do Not Modify the Instrument 80 In Case of Damage 80 Solvents 81 82 Symbols Agilent Technologies on Internet 84

This chapter provides addition information on safety, legal, and web.





Safety

General Safety Information

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

WARNING

Ensure the proper usage of the equipment.

The protection provided by the equipment may be impaired.

The operator of this instrument is advised to use the equipment in a manner as specified in this manual.

Safety Standards

This is a Safety Class I instrument (provided with terminal for protective earthing) and has been manufactured and tested according to international safety standards.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

Before Applying Power

Wrong voltage range, frequency or cabling

Personal injury or damage to the instrument

- → Verify that the voltage range and frequency of your power distribution matches to the power specification of the individual instrument.
- → Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations.
- → Make all connections to the unit before applying power.

NOTE

WARNING

Note the instrument's external markings described under "Symbols" on page 82.

Ground the Instrument

WARNING

Missing electrical ground Electrical shock

- If your product is provided with a grounding type power plug, the instrument chassis and cover must be connected to an electrical ground to minimize shock hazard.
- The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

WARNING

Do Not Operate in an Explosive Atmosphere

Presence of flammable gases or fumes

Explosion hazard

→ Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

WARNING

Instrument covers removed

Electrical shock

- Do Not Remove the Instrument Cover
- → Only Agilent authorized personnel are allowed to remove instrument covers. Always disconnect the power cables and any external circuits before removing the instrument cover.

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Sales and Service Office for service and repair to ensure that safety features are maintained.

In Case of Damage

WARNING

Damage to the module

Personal injury (for example electrical shock, intoxication)

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Solvents

WARNING

Toxic, flammable and hazardous solvents, samples and reagents

The handling of solvents, samples and reagents can hold health and safety risks.

- When working with these substances observe appropriate safety procedures (for example by wearing goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the vendor, and follow good laboratory practice.
- → Do not use solvents with an auto-ignition temperature below 200 °C (392 °F). Do not use solvents with a boiling point below 56 °C (133 °F).
- → Avoid high vapor concentrations. Always keep the temperature in the sample compartment at least 25 K below the boiling point of the solvent used.
- → Do not operate the instrument in an explosive atmosphere.
- → Reduce the volume of substances to the minimum required for the analysis.
- → Never exceed the maximum permissible volume of solvents (8 L) in the solvent cabinet. Do not use bottles that exceed the maximum permissible volume as specified in the usage guideline for solvent cabinet.
- → Ground the waste container.
- → Regularly check the filling level of the waste container. The residual free volume in the waste container must be large enough to collect the waste liquid.
- → To achieve maximal safety, regularly check the tubing for correct installation.

NOTE

For details, see the usage guideline for the solvent cabinet. A printed copy of the guideline has been shipped with the solvent cabinet, electronic copies are available in the Agilent Information Center or via the Internet.

Safety

Symbols

lable IU Symbols	
<u>_!</u>	The apparatus is marked with this symbol when the user should refer to the instruction manual in order to protect risk of harm to the operator and to protect the apparatus against damage.
<u> </u>	Indicates dangerous voltages.
	Indicates a protected ground terminal.
	The apparatus is marked with this symbol when hot surfaces are available and the user should not touch it when heated up.
**	Cooling unit is designed as vapor-compression refrigeration system. Contains fluorinated greenhouse gas (refrigerant) according to the Kyoto protocol. For specifications of refrigerant, charge capacity, carbon dioxide equivalent (CDE), and global warming potential (GWP) see instrument label.
CE	Confirms that a manufactured product complies with all applicable European Community directives. The European Declaration of Conformity is available at: http://regulations.corporate.agilent.com/DoC/search.htm
~~~	Manufacturing date.
Ċ	Power symbol indicates On/Off. The apparatus is not completely disconnected from the mains supply when the power switch is in the Off position
	Pacemaker Magnets could affect the functioning of pacemakers and implanted heart defibrillators. A pacemaker could switch into test mode and cause illness. A heart defibrillator may stop working. If you wear these devices keep at least 55 mm distance to magnets. Warn others who wear these devices from getting too close to magnets.

Table 10 Symbols

#### Table 10 Symbols

Magnetic field Magnets produce a far-reaching, strong magnetic field. They could damage TVs and laptops, computer hard drives, credit and ATM cards, data storage media, mechanical watches, hearing aids and speakers. Keep magnets at least 25 mm away from devices and objects that could be damaged by strong magnetic fields.
Indicates a pinching or crushing hazard
Indicates a piercing or cutting hazard.

## WARNING

### A WARNING

#### alerts you to situations that could cause physical injury or death.

→ Do not proceed beyond a warning until you have fully understood and met the indicated conditions.

## CAUTION

### A CAUTION

alerts you to situations that could cause loss of data, or damage of equipment.

→ Do not proceed beyond a caution until you have fully understood and met the indicated conditions.

5 Appendix

Agilent Technologies on Internet

# **Agilent Technologies on Internet**

For the latest information on products and services visit our worldwide web site on the Internet at:

http://www.agilent.com

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1260 Infinity II Quaternary System - Manual and Quick Guide

www.agilent.com

# In This Book

This manual contains technical reference information about the Agilent InfinityLab LC Series 1260 Infinity II Quaternary System.

The manual describes the following:

- introduction,
- product description,
- best practices,
- system optimization,
- quick start guide.

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Printed in Germany 04/2016



G7111-90300

