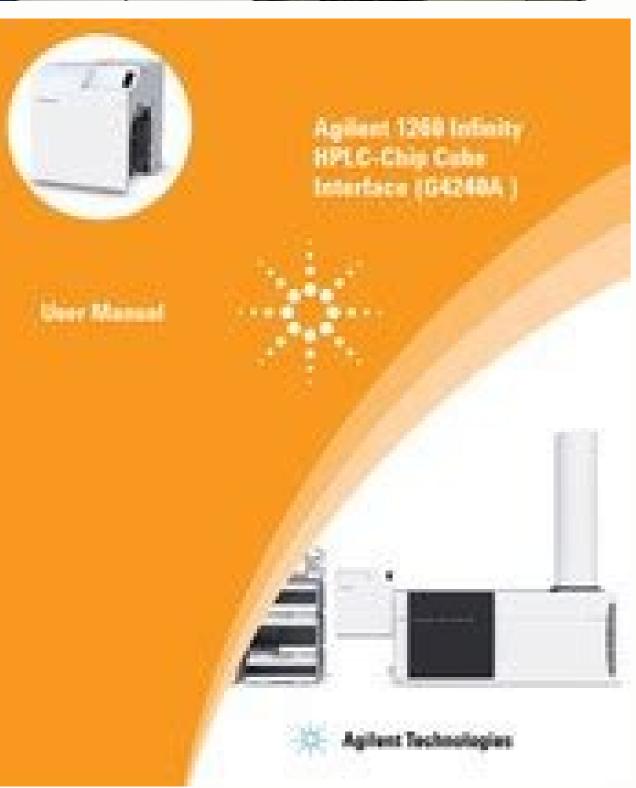
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Agilent 1260 Infinity High Performance Autosampler User Manual Agilent Technologies (in cluding electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws. Manual Part Number G1367-90014 Rev.In This Guide In Specifications This chapter provides information on environmental requirements, physical and performance specifications. 3 Installing the Autosampler This chapter provides information on unpacking, checking on completeness, stack considerations and installation of the autosampler. In This Guide 8 Test Functions This chapter describes the tests for the module. 9 Maintenance This chapter describes the maintenance of the Autosampler 10 Parts for Maintenance This chapter provides information on cables used with the Agilent 1200 Infinity Series modules. 12 Hardware Information This chapter describes the autosampler in more detail on hardware and electronics. Contents 1 Introduction 9 Features 10 Overview of the Module 11 Autosampler Principle 13 System Overview 19 2 Site Requirements 24 Physical Specifications 27 Specifications 28 3 Installing the Autosampler 31 Unpacking the Autosampler 32 Optimizing the Stack Configuration 35 Installation Information on Leak and Waste Handling Installing the Autosampler 44 Flow Connections to the Autosampler 46 4 Using the Module 47 Leak and Waste Handling 48 PrepContents 6 Troubleshooting and Diagnostics 79 Overview of the Module's Indicators and Test Functions Status Indicators 81 User Interfaces 83 Agilent Lab Advisor Software 84 7 Error Information 80 85 What are Error Messages 87 General Error Messages 88 Module Error Messages 89 Module Error Messages 89 Module Error Messages 89 Module Error Messages 80 Module Error Mess Introduction to Maintenance 120 Warnings and Cautions 121 OverContents 10 Parts for Maintenance 145 Overview of Maintenance Parts 150 Analytical Head Assembly 151 Injection Valve Assembly 152 Cover Parts 153 Leak System Parts 154 11 Identifying Cables 148 155 Cable Overview 156 Analog Cables 160 BCD Cables 160 BC 197 The Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) 198 Radio Interference 199 Sound Emission 200 Use of Solvents 201 Agilent Technologies on Internet 202 8 Agilent 1260 Infinity High Performance Autosampler User Manual 1 Introduction Features 10 Overview of the Module Autosampler Principle 11 13 System Overview 19 Leak and Waste Handling 19 This chapter gives an introduction to the autosampler features an increased pressure range (up to 600 bar) enabling the use of today's column technology (subtwo-micron narrow bore columns) with the Agilent 1260 Infinity Binary LC System .1 Introduction Overview of the Module Overview of the Module Overview of the Sampling arm on the well plate. Once the sampling arm is positioned over the programmed sample position, the programmed sample volume is drawn by the metering device into the sampling arm then moves to the injection position where the sample is flushed onto the column. I Introduction Overview of the Module Control of the vial/plate temperature in the thermostatted autosampler is achieved using an additional Agilent 1290 Infinity Series module; the Agilent 1290 Infinity Series thermostat for ALS/FC/Spotter. The thermostat contains Peltier- controlled heat- exchangers. A fan draws air from the area above the sample vial tray of the autosampler. It is then blown through the fins of the cooling/heating module. There it is cooled or heated according the temperature setting. Introduction Autosampler Principle 1 Autosampler Principle 1 Autosampler Principle 1 Autosampler processor. The processor defines specific time windows and mechanical ranges for each movement. If a specific step of the sampling sequence is not completed successfully, an error message is generated. Solvent is bypassed from the autosampler Principle Injection sequence. Introduction Autosampler Principle Injection sequence. Introduction Autosampler Principle Injection sequence. phase flows through the autosampler metering device, sample loop, and needle, ensuring all parts in contact with sample are flushed during the run, thus minimizing carry- over. Introduction Autosampler Principle 1 When the sample sequence begins, the valve unit at port 1, and flows directly to the column through port 6.1 Introduction Autosample Principle The standard injection starts with draw sample from vial. In order to do this the needle moves to the desired volume by moving its plunger back a certain distance. The needle is then raised again and moved onto the seat to close the sample loop. In case of an injector program several steps are interspersed at this point. Introduction Autosampler Principle Flush the Needle 1 Before injection and to reduce the carry- over for very sensitive analysis, the outside of the needle can be washed in a flush port located behind the injector port on the sampling unit. As soon as the needle is on the flush port a peristaltic pump delivers some solvent during a defined time to clean the outside of the needle is on the flush port and run step. The six- port valve is switched to the main- pass position, and directs the flow back through the sample onto the column, and separation begins. This is the beginning of a run within an analysis. In this stage, all major performance- influencing hardware is flushed internally by the solvent flow. Introduction System Overview 1 System Overview Leak and Waste Handling. It is important that all security concepts are understood and instructions are carefully followed. 1 Introduction System Overview & 6 ' 7 8 () \* , + , Figure 6 20 Leak and waste handling concept (overview - typical stack configuration as an example) Agilent 1260 Infinity High Performance Autosampler User Manual1 Introduction System Overview The solvent cabinet should not exceed 2.5 L. For details, see the usage quideline 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).1 22 Introduction System Overview Agilent 1260 Infinity High Performance Autosampler User Manual Agilent 1260 Infinity High Performance Autosampler User Manual 2 Site Requirements and Specifications Site Requirements and Specifications Site Requirements A suitable environment is important to ensure optimal performance of the module. Power Consideration The module power supply has wide ranging capabilities and accepts any line voltage in the rear of the module. There are also no externally accessible fuses, because automatic electronic fuses are implemented in the power supply. 2 Site Requirements and Specifications Site Requirements Power cords is identical. It plugs into the power- input socket at the rear. The male end of each power cord is different and designed to match the wall socket of a particular country or region. 2 Site Requirements and Specifications Site Requirements Bench Space The module dimensions and weight (see Table 1 on page 27) allow you to place the module on almost any desk or laboratory bench. It needs an additional 2.5 cm (1.0 inches) of space on either side and approximately 8 cm (3.1 inches) in the rear for air circulation and electric connections. If the bench shall carry a complete HPLC system, make sure that the bench is designed to bear the weight of all modules. 2 Site Requirements and Specifications Physical Specifications Physical Specifications Type Specifications. Weight 15.5 kg (35 lbs) Dimensions (height  $\times$  width  $\times$  depth) 200 x 345 x 440 mm (8 x 13.5 x 17 inches) Line voltage 100 - 240 VAC,  $\pm$  10 % Line frequency 50 or 60 Hz,  $\pm$  5 % Power consumption 200 VA / 200 W / 683 BTU Ambient operating temperature 4-55 °C (39-131 °F) Ambient non-operating temperature -40 - 70 °C (-40 - 158 °F) Humidity < 95 % r.h.2 Site Requirements and Specifications Specifications Specifications Specifications (G1367E) Type Specification required). Up to 1500 μL with multiple draw (hardware modification required). Precision 2 Site Requirements and Specifications Specifications Specifications Communications Controller-area network (CAN), RS-232C, APG Remote: ready, start, stop and shut-down signals, optional four external contact closures and BCD vial number out. 2 30 Site Requirements and Specifications Agilent 1260 Infinity High Performance Autosampler User Manual 3 Installing the Auto Accessory Kit Contents Optimizing the Stack Configuration One Stack Configuration 38 34 35 Installation Information on Leak and Waste Handling Installing the Autosampler 40 44 Flow Connections to the Autosampler 40 44 Flow Connections to the Autosampler 40 44 Flow Configuration One Stack Confi the Autosampler Unpacking the Autosampler Unpacking the Autosampler Damaged Packaging If the delivery packaging shows signs of external damage, please call your Agilent Technologies sales and service office immediately. Inform your service representative that the instrument may have been damaged during shipment. CAUTION "Defective on arrival" problems If there are signs of damage, please do not attempt to installing the Autosampler Unpacking the Autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler unpacking the Autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all parts and materials have been delivered with the autosampler 3 Delivery Checklist Ensure all pa missing or damaged parts to your local Agilent Technologies sales and service office. Installing the Autosampler Accessory Kit 5181-1519 CAN cable, Agilent module to module, 1 m G1367-87304 Capillary ST 0.17 mm x 250 mm S/S 01090-87306 Capillary ST 0.17 mm x 380 nm S/S G1329-43200 Adapter air channel 5063-6527 Tubing assembly, i.d. 6 mm, o.d. 9 mm, 1. Installing the Stack Configuration 3 Optimizing 1 Op installing the following configurations. These configurations optimize the system flow path, ensuring minimum delay volume. Installing the Mutosampler Optimizing the Agilent 1260 Infinity LC System in the following configuration (See Figure 7 on page 36 and Figure 8 on page 37). This configuration optimizes the flow path for minimum delay volume and minimizes the bench space required. Installing the Autosampler Optimizing the Stack Configuration 3 GZbdiZ XVWaZ 86C 7jh XVWaZ 6cVad\ YZiZXidg h^\cVa & dg ' djiejih eZg YZiZXidg A6C id A8 8]ZbHiVi^dc adXVi^dc YZeZcYh dc YZiZXidg Figure 8 Recommended Stack Configuration for 1260 Infinity (Rear View) Agilent 1260 Infinity High Performance Autosampler Optimizing the Stack Configuration Two Stack Configuration To avoid excessive height of the stack when the autosampler thermostat is added to the system it is recommended to form two stacks. Some users prefer the lower height of this arrangement even without the autosampler (See Figure 9 on page 38). Installing the Autosampler Optimizing the Stack Configuration 3 A6C id Xdcigda hd[ilVgZ 86C 7jh XVWaZ id >chiVci E^adi 6jidhVbeaZg\$; gVXi^dc 8daaZXidg 8VWaZ GZbdiZ XVWaZ 86C 7jh XVWaZ 86C 7j Information on Leak and Waste Handling Installation Information on Leak and Waste Handling The Agilent 1200 Infinity Series has been designed for safe leak and Waste Handling. It is important that all security concepts are understood and instructions are carefully followed. WARNINGTON. reagents The handling of solvents, samples and reagents can hold health and safety risks. Installing the Autosampler Installation Information on Leak and Waste Handling (overview - typical stack configuration as an example) Agilent 1260 Infinity High Performance Autosampler User Manual 413 Installing the Autosampler Installation Information on Leak and Waste tube of the autosampler cooler 6 Waste tube of the purge valve 7 Waste tube 1 Stack the modules according to the adequate stack configuration. Installing the Autosampler I required Description Autosampler Power cord Hardware required Other cables see below and section "Cable Overview" on page 28 WARNING Module is partially energized when switched off, as long as the power cord is plugged in. Repair work at the module can lead to personal injuries, e.g. Installing the Autosampler 1 Connect the POG remote cable (optional) for non-Agilent instruments. 6 Turn on the power by pushing the Autosampler Flow Connections to the Autosampler Flow Connections to the Autosampler Plow Connections to the Autosampler Flow Connections to the Autosample Accessory Kit. Preparations NOTE WA R N I N G Autosampler is installed in system. Agilent ChemStation Control Settings 55 Method Parameter Settings 56 Module Configuration 60 51 Main Screens of the Autosampler with Agilent Instant Pilot (G4208A) 61 This chapter provides information on how to set up the autosampler for an analysis and explains the basic settings. 4 Using the Module Leak and Waste Handling WARN ING 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. Using the Module Preparing the Autosampler of the autosample for inline filtering. • When using buffer solutions, flush the system with water before switching it off. 4 Using the Module Preparing the Autosampler • Priming and Purging the System - When the solvents have been exchanged or the system has been turned off for a certain time (for example, overnight) oxygen will re-diffuse into the solvent channel. Therefore priming and purging of the Station 4 Setting up the Autosampler with Agilent ChemStation 4 Setting up the Autosampler with Agilent ChemStation 5.04.02. SP1 DSP3. Depending on the controller (e.g. Agilent ChemStation 5.04.02) and the Autosampler with Agilent ChemStation 5.04.02. SP1 DSP3. Depending on the controller (e.g. Agilent ChemStation 5.04.02) are application. Instant Pilot, EZChrom Elite) the screens look different. For the Instant Pilot refer to "Main Screens of the Autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A)" on page 61. NOTE This section describes the autosampler with Agilent Instant Pilot (G4208A) with Agilent Pilot ( After successful load of the ChemStation, you should see the module as an active item in the graphical user interface & () Within the Autosampler user interface, there are active areas. 4 Using the Module Setting up the Autosampler with Agilent ChemStation Module Status shows Run / Ready / Error state and "Not Ready text" or "Error text". • Error (Red) • Not ready (yellow) • Ready (green) • Offline (dark gray) • Standby (light gray) EMF Status shows Run / Ready / Error state and "Not Ready text" or "Error text". • Offline (dark gray) • Standby (light gray) EMF Status shows Run / Ready / Error state and "Not Ready text" or "Error text". • Offline (dark gray) • Standby (light gray) EMF Status shows Run / Ready / Error state and "Not Ready text" or "Error text". (gray) • Ok. No Maintenance required (green) • EMF warning. Using the Module Setting up the Autosampler with Agilent ChemStation 4 Control Settings are available via right click on the Active Area of the ALS GUI. Missing Vessel: The handling of missing vessels can be configured. Linked Pump: To configure which pump delivers

```
lower part is not shown when opening the parameter settings via right mouse on the Autosampler user interface. Using the Module Setting up the Autosampler with Agilent ChemStation 4 Injection with Needle wash. Needle wash It is possible
to select between using the built in flush port of the Autosampler or using a non-capped vial. Using needle wash is required to obtain minimum carry-over. Stop Time An autosampler Stop Time can be set.4 Using the Module Setting up the Autosampler with Agilent ChemStation Injection Cleaning The Injection Valve Cleaning section allows you to
specify the valve switching times at the end of overlap or sample flush. Times 1 ... 4 are the times when the valve switches to bypass (for time 1) or to mainpass and bypass (for times 2, 3 and 4). The times must be specified in ascending order. You can also switch the times to off. Using the Module Setting up the Autosampler with Agilent ChemStation 4
 Injection Program The pretreatment/injector program comprises a series of numbered lines, each specifying an operation that the autosampler carries out sequentially. When you activate a pretreatment/injector program, it replaces the standard injection cycle. Select Append to add the contents of the edit line to the end of the table. Select Insert to
insert the contents of the edit line above the currently-selected line. 4 Using the Module Setting up the Autosampler with Agilent ChemStation Module Configuration. Device name: based on the module. Type ID: based on the module (product
number). Some modules may allow changing the type based on the module. Firmware revision: based on the module. Firmware revision: based on the module Main Screens of the Autosampler with Agilent Instant Pilot (G4208A) 4 Main Screens of
the Autosampler with Agilent Instant Pilot (G4208A) Below the main screens for the autosampler are shown. 4 Using the Module Main Screens of the Autosampler with Agilent Instant Pilot (G4208A) Below the main screen allows to configure sc
Out Pump • Serial Interface configuration • Sample Illumination The Method screen lists all method parameters of the autosampler with Agilent Instant Pilot (G4208A) 4 The Maintenance screen allows • EMF setup • logging of maintenance activities • module identification
(blinking LED) Firmware updates can be done via the System Maintenance screen, The Diagnosis screen provides access to module Main Screens of the Autosampler User Manual Agilent 1260 Infinity High Performance Autosampler User Manual Agilent 1260 Infinity High Performance Autosampler User Manual Agilent 1260 Infinity High Performance Autosampler With Agilent 1260 Infinity High Performance Autosampler User Manual Agilent 1260 Infinity High Performance Agilent 126
Autosampler User Manual 5 Optimizing Performance Delay Volume 66 66 How to Achieve Higher Injection Volume How to Achieve Higher Sensitivity 76 How to Achieve Lowest
Carry Over 77 This chapter gives hints on how to optimize the performance or use additional devices. 5 Optimizing Performance Delay Volume and Extra-Column Volume Delay Volume and Extra-Column Volume The delay volume The delay volume and Extra-Column Volume The delay volum
volume is defined as the volume between the injection point, excluding the volume in the column. Delay Volume In gradient separations, this volume the mixture changing in the pump and that change reaching the column. Delay Volume In gradient separations, this volume the mixture changing in the pump and that change reaching the column.
Configure the Optimum Delay Volume For very fast gradients over 0.5 min the delay volume of the system can be easily reduced without changing the physical configuration of the system. The change is achieved by changing the physical configuration of the system. The change is achieved by changing the physical configuration of the system.
bV^ceVhh! [adl i]gdj\] '# KVakZ ^c WneVhh! YgVl^c\ hVbeaZ (# KVakZ ^c WneVhh! IVh]^c\ cZZYaZ)# KVakZ ^c WneVhh! hVbeaZ ^c ZXiZY Figure 16 Schematic of injection steps in 1260 Infinity Autosampler When using ADVR it should be noted that the gradient has already started at the pump at the instant of injection. Optimizing
Performance How to Configure the Optimum Delay Volume 5 The ADVR function is unlikely to be suitable for applications involving compounds which are known to cause carry- over problems. The best solution to reduce the delay volume is to install the 40 µL injection upgrade kit (G4215A). The standard metering device is replaced by a 40 µL Micro
Analytical Head and a new 40 µL Loop must be installed. 5 Optimizing Performance How to Achieve Higher Injection Volumes The standard configuration of the Agilent 1260 Infinity Autosampler can inject a maximum volume of 100 µL with the standard loop capillary. To increase the injection volume the
Multidraw upgrade kit (G1313- 68711) can be installed. With the kit you can add a maximum of 400 µL to the injection volumes 5 but it is very dependent on the chemistry of the analyte and mobile phase as discussed above. In a gradient separation injection
volumes of about 5 % of the column volume might be achieved whilst maintaining good resolution and peak dispersion. One way to achieve larger injections is to use a trapping column selected by a switching valve to capture and concentrate the injection before switching it, i.e.5 Optimizing Performance How to Achieve High Throughput How to
Achieve High Throughput The injection can be optimized for speed remembering that drawing the sample too fast can reduce the reproducibility. Marginal gains are to be made here as the sample volumes used tend towards the sample too fast can reduce the reproducibility.
movements to and from the vial and into the flush port. 5 Optimizing Performance How to Achieve Higher Resolution How to Achieve Higher Resolution Increased resolution in a separation will improve the qualitative and quantitative data analysis, allow more peaks to be separated or offer further scope for speeding up the separation. 5 Optimizing
Performance How to Achieve Higher Resolution The resolution and to the particle size and directly proportional to the length of a column and so smaller particle size and a longer column will give
a higher plate number. The pressure rises with the inverse square of the particle size and proportionally with the length of the column. Optimizing Performance How to Achieve Higher Resolution 5 In isocratic separations, increasing the retention factor, k, results in better resolution because the solute is retained longer. In gradient separations the
retention is described by k^* in the following equation: where: • k^* = mean k value, • tG = time length of gradient (or segment of gradient, or segment of gradient or segment of gradient or segment of gradient or segment of gradient or segment or segment of gradient or segment or segment or segment or segment o
Achieve Higher Sensitivity The sensitivity The sensitivity of a separation method is linked to the choice of stationary and mobile phases as good separation with narrow peaks and a stable baseline with minimal noise are desirable. The choice of instrument configuration will have an effect and a major impact is the setup of the detector. Optimizing Performance How
to Achieve Lowest Carry Over 5 How to Achieve Lowest Carry Over 6 How to Achieve Lowest Carry over is measured when residual peaks from a previous active- containing injection appear in a subsequent blank solvent injection. There will be carry over between active injections which may lead to erroneous results. The level of carryover is reported as the area of the peak in
the blank solution expressed as a percentage of the area in the previous active injection. 5 Optimizing Performance How to Achieve Lowest Carry Over The flush port is located above and behind the needle seat and a peristaltic pump delivers the wash solvent. It has a volume of 0.68 ml and the previous active injection. 5 Optimizing Performance How to Achieve Lowest Carry Over The flush port is located above and behind the needle seat and a peristaltic pump delivers the wash solvent.
port volume is completely refilled with fresh solvent in 7 s. If the flush port is selected, the user can set how long the outside of the needle is to be washed with fresh solvent. Agilent 1260 Infinity High Performance Autosampler User Manual 6 Troubleshooting and Diagnostics Overview of the Module's Indicators and Test Functions 80 Status Indicators
81 Power Supply Indicator 81 Module Status Indicator 82 User Interfaces 83 Agilent Lab Advisor Software 84 This chapter gives an overview about the troubleshooting and Diagnostics Overview of the Module's Indicators and Test Functions Overview of the Module's
 Indicators and Test Functions Status Indicators The module is provided with two status indicators which indicators the operation of the module. Troubleshooting and Diagnostics Status Indicators 6 Status Indicators Two status indicators of the module.
 indicators are located on the front of the module. The lower left indicator is integrated into the module status. Figure 18 Location of Status Indicator is integrated into the main power switch. When the indicator is illuminated (green) the power is ON.6
Troubleshooting and Diagnostics Status Indicator shoule Status Indicator ind
an analysis (run mode). • A yellow indicator indicator indicator indicator on the user interfaces • Depending on the user interfaces • Depending on the user interfaces • User
ChemStation B.04.02 and above do not include any maintenance/test functions. • Screenshots used within these procedures are based on the Agilent Lab Advisor Software Agilent Lab Advisor Software is a standalone product that can be used with or
without data system. Agilent Lab Advisor software helps to manage the lab for high quality chromatographic results and can monitor in real time a single Agilent LC or all the Agilent LC or all the Agilent 1200 Infinity Series modules. Agilent 1260
Infinity High Performance Autosampler User Manual 7 Error Information What are Error Messages 87 General Error Messages 88 Timeout 89 Leak Sensor Open Compensation Sensor Open Compensation Sensor Short Fan Failed 92 91 92 Module Error Messages 88 Timeout 89 Leak Sensor Open Compensation Sensor Open Compensation Sensor Short Fan Failed 92 91 92 Module Error Messages 88 Timeout 89 Leak Sensor Open Compensation Sensor Open Sensor Open Compensation Sensor Open Compensati
Messages 93 Exhaust Fan Failed 95 Valve to Mainpass Failed 95 Valve to Mainpass Failed 95 Valve to Meedle 104 Rear Blind Seat Missing 104 This chapter
describes the meaning of error messages, and provides information on probable causes and suggested actions how to recover from error conditions. Error Messages Error messages are displayed in the user interface when an electronic, mechanical, or hydraulic (flow path) failure occurs which
requires attention before the analysis can be continued (for example, repair, or exchange of consumables is necessary). In the event of such a failure, the red status indicator at the front of the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on, and an entry is written into the module is switched on a written into the module is switched on the module is sw
messages are generic to all Agilent series HPLC modules and may show up on other modules as well. Timeout Error ID: 0062 The timeout threshold was exceeded. Probable cause Suggested actions 1 The analysis was completed successfully, Check the logbook for the occurrence and source of a not-ready condition. Restart the analysis where
required. and the timeout function switched off the module as requested. Error Information General Error Messages 7 Remote Timeout Error ID: 0070 A not- ready conditions (for example, a not- ready condition during detector balance) to
switch to run conditions within one minute of starting the analysis. If a not-ready condition is still present on the remote line after one minute the error message is generated. The signals from the two temperature sensors (leak sensor and board to run conditions within one minute of starting the analysis. If a not-ready condition is still present on the remote line after one minute the error message is generated. The signals from the two temperature sensors (leak sensor and board to run conditions) and the remote line after one minute of starting the analysis. If a not-ready condition is still present on the remote line after one minute the error message is generated.
mounted temperature- compensation sensor) are used by the leak sensor is cooled by the leak sensor is cooled by the solvent. This changes the resistance of the leak sensor which is sensed by the leak sensor circuit on the main board. Probable cause Suggested actions 1 Loose fittings. Error
Information General Error Messages 7 Leak Sensor in the module has failed (short circuit). The current through the leak sensor is dependent on temperature. A leak sensor in the module has failed (short circuit). The current through the leak sensor is dependent on temperature.
upper limit, the error message is generated. Probable cause Suggested actions 1 Defective leak sensor. Frror Information General Error Messages Compensation Sensor Short Error ID: 0080 The ambient- compensation sensor (NTC) on the main board in the module has failed (open circuit). The resistance across the temperature compensation
sensor (NTC) on the main board is dependent on ambient temperature. The change in resistance is used by the leak circuit to compensate for ambient temperature changes. If the resistance across the sensor falls below the lower limit, the error message is generated. Error Information Module Error Messages 7 Module Error Messages These errors
are autosampler specific. Exhaust Fan Failed Error ID: 4456, 4457 The exhaust fan in the module has failed. The hall sensor on the fan speed falls below a certain value the error message is generated and the module shuts down. Probable cause Suggested actions 1 Fan cable
disconnected. Please contact your Agilent service representative. 2 Defective fan. 7 Error Information Module Error Messages Side Door Error Error ID: 4355, 4459 The side door and/or the main board are damaged. Probable cause Suggested actions 1 The door is bent or the magnet is Please contact your Agilent service representative
misplaced/broken. 2 The sensor on the main board is defective. Please contact your Agilent service representative. Arm Movement Timeout Error ID: 4002 The transport assembly was unable to complete a movement in one of the axes. Error Information Module Error Messages 7 Valve to Bypass Failed Error ID: 4014, 4701
The injection valve failed to switch to the bypass position. The switching of the injection valve is monitored by two microswitches on the valve movement. If the valve fails to reach the bypass position, or if the microswitch does not close, the error message is generated. From
Information Module Error Messages Needle Lock Failed Error ID: 4702, 4703 The lock assembly on the sampling unit flex board. The sensors detect the successful completion of the needle lock movement. If the needle
lock fails to reach the end point, or if the sensors fail to recognize the needle lock movement, the error message is generated. Error Information Module Error Messages 7 Needle to Needle seat. The position of the needle is monitored by a position
 encoder on the needle carrier. If the needle fails to reach the end point, or if the encoder fails to recognize the needle carrier movement, the error ID: 4019, 4034, 4035, 4541, 4542, 4706, 4707 No vial was found in the position defined in the
method or sequence. When the needle carrier moves to a vial and the needle goes into the vial, the position of the needle is monitored by an encoder behind the vial pusher. If no vial is present, the encoder detects an error and the message "missing vial" is generated. Error Information Module Error Messages 7 Initialization Failed Error ID: 4020 The
autosampler failed to complete initialization procedure moves the needle arm and transport assembly to their home positions in a predefined routine. During initialization procedure moves the needle arm and transport assembly to their home positions in a predefined routine.
successful, or is not detected, the error message is generated. Terror Information Module Error Messages Metering Home Failed Error ID: 4054, 4704 The metering piston has failed to move back to the home position. The home position fails to move to the
home position, or if the sensor fails to recognize the piston position, the error message is generated. 100 Probable cause Suggested actions 1 Dirty or defective sensor. Please contact your Agilent service representative. Error Information Module Error Messages 7 Motor Temperature Error ID: 4027, 4040, 4261, 4451 One of the motors of the transport
assembly has drawn excessive current, causing the motor. • Motor 0 temperature: X- axis motor. • Motor 1 temperature: X- axis motor. • Motor 2 temperature: Theta motor. The processor monitors the current drawn by each motor and
the time the motor is drawing current. Terror Information Module Error Messages Invalid Vial Position defined in the method or sequence does not exist. The reflection sensors on the transport assembly flex board are used to automatically check which sample trays are installed (coding on tray). If the vial position defined in the method or sequence does not exist.
not exist in the current sample tray configuration, the error message is generated. Probable cause Suggested actions 1 Incorrect tray installed. Error ID: 4514 The peristaltic pump motor in the autosampler has failed. The current on the motor is used by the MTP board to monitor the
speed of the peristaltic pump motor. If the current falls below a certain value, the error message is generated. Probable cause Suggested actions 1 Defective motor. Please contact your Agilent service representative. 2 Defective motor. Please contact your Agilent service representative. 2 Defective motor. If the current falls below a certain value, the error message is generated. Probable cause Suggested actions 1 Defective motor. Please contact your Agilent service representative. 2 Defective motor. Please contact your Agilent service representative. 3 Defective motor. Please contact your Agilent service representative. 3 Defective motor. Please contact your Agilent service representative. 3 Defective motor. Please contact your Agilent service representative. 3 Defective motor. 3 Defective motor. 4 
Needle Error ID: 4453 The vessel sticks to the needle when the needle moves up. Probable cause Suggested actions 1 Closing mat to rigid/thick. Check that the closing mat to rigid/thick is not too thick. 2 Bad X or Theta positioning and the needle when the needle when the needle moves up. Probable cause Suggested actions 1 Closing mat to rigid/thick. Check that the closing mat to rigid/thick.
needle carrier assembly. Please contact your Agilent service representative. Agilent 1260 Infinity High Performance Autosampler User Manual 8 Test Functions 110 Maintenance Positions 112 Change Needle 113 Change Loop Capillary
113 Arm Position 114 Change Needle Carrier 114 Change Metering Device 115 Injector Steps 116 Step Commands 117 This chapter describes the tests for the module.8 Test Functions Introduction Introduction All tests are describes the tests for the module.8 Test Functions Introduction Introducti
few. Test Functions System Pressure Test 8 Sy
the pressure at which the test is performed.8 Test Functions System Pressure Test 8 System 
leakages Perform the Pump Head Leak test. 2 Loose or leaky fittings or replace capillaries. 3 Autosampler Leak test. 4 Thermostatted Column Compartment valve Replace the TCC valve rotor seal.8 Test Functions Sample Transport Self Alignment The sample Transport The sample Transport 
transport self alignment uses predefined positions on the well plate tray to calibrate the positioning of the needle carrier. The sample transport self alignment is required after disassembling the system or when you exchange the sample
transport, the sampling unit, the tray or the MTP main board. Test Functions Sample Transport Alignment 8 1 Run the Transport Alignment with the Agilent Lab Advisor (for further information see Online- Help of user interface).8 Test Functions Maintenance Positions Maintenance Positions Some maintenance procedures require the needle arm
module. Test Functions Maintenance Position is to the far left, and the current to the motors are off, so that the arm can be turned while servicing the module. Figure 23 Maintenance Positions- Change Needle Needle Carrier so that the arm can be turned while servicing the module.
Change Loop Capillary The Change Loop Capillary The Change Loop Capillary command positions the arm in the middle of the tray at half height to enable easy exchange of the loop cartridge. 8 Test Functions Maintenance Positions Arm Position The home position of the autosampler ensures a better access to the tray area and for exchanging trays. When transporting the
module it is highly recommended to use the Park Arm command, in order to place the Arm in a position for safe transport. Figure 25 Maintenance Positions- Arm Position Change Needle Carrier mechanism.8 Test
Functions Maintenance Positions Change Metering Device When removing the metering device is necessary (by exchanging the metering seal for instance), the metering device Steps Injector Steps Each movement of the sampling
sequence can be done under manual control. This is useful during troubleshooting, where close observation of each of the sampling steps is required to confirm a specific failure mode or verify successful completion of a repair. Each injector step command actually consists of a series of individual commands that move the autosampler components to
predefined positions, enabling the specific step to be done. Test Functions Injector Steps Step Commands Table 5 Step Commands Table
arm to the vial location on the plate. Needle up Lifts the needle into Sample Lowers the needle into the vial. Braw Metering device draws the defined injection volume. Needle up Lifts the needle out of the vial. Braw Metering device draws the defined injection volume. Needle up Lifts the needle into Sample Lowers the needle out of the vial. Braw Metering device draws the defined injection volume. Needle up Lifts the needle out of the vial. Braw Metering device draws the defined injection volume.
Manual 9 Maintenance Introduction to Maintenance Cleaning the medle assembly 124 Installing the medle assembly 124 Installing the Metering Seal 135 Installing the Metering Seal 138 Replacing
Peristaltic Pump Cartridge Installing the Interface Board Replacing the Module Firmware 140 143 144 Th9 Maintenance Introduction to Maintenance Introduction to Maintenance Figure 29 on page 120 shows the main user accessible assemblies of the autosampler. These parts can be accessed from the front (simple repairs) and don't require to
remove the autosampler from the system stack. 9 Maintenance Warnings and Cautions WARNING Toxic, flammable and hazardous solvents, samples and reagents The handling of solvents and reagents The handling of solvents are solvents.
(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. Maintenance Overview of Maint
clean, use a soft cloth slightly dampened with water, or a solution of water and mild detergent. WARNING Liquid dripping into the electronic compartment of your module can cause shock hazard and damage the module -> Do not use an excessively damp cloth during cleaning. -> Drain all solvent lines before opening any connections in the flow
path.9 Maintenance Removing the needle assembly Removing the needle assembly When When the limit in the needle into seat counter in the EMF is exceeded or when needle shows indications of damage, blockage or leaks. Tools required p/n Description 8710-0510 Wrench open 1/4 — 5/16 inch Parts required Preparations WARNING p/n
Description G4226-87201 Needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles. Maintenance Removing the needle assembly I not the needle 
Advisor software the Change needle/seat function can be found in the Tools section. 3 Turn the Needle assembly 5 Attach a 5/16 inch wrench to loosen the fitting of the loop capillary. 6 Pinch the
Description 8710-0510 Wrench open 1/4 — 5/16 inch Parts required Preparations WARNINGp/n Description G4226-87201 Needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles.9 Maintenance Installing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the shutoff valves in the pump or remove tubing the needle assembly In order to avoid leaks, close the needle assembly In order to avoid leaks.
over the needle assembly. Use a 1/4 inch wrench to holder clamp and reinsert the needle assembly into the needle assembly and 4 Attach a 5/16 inch wrench to hold the position at the needle assembly. Use a 1/4 inch wrench to tighten the fitting of the loop capillary. 9 Maintenance Installing
the needle assembly 5 Close the leak guide Next Steps: 6 Check the alignment of the needle pusher as all alignment by the Autosampler is calculated from the needle pusher. NOTE The needle pusher as all alignment by the Autosampler is calculated from the needle pusher.
pusher position. 7 Remove the silicon safety tube from the needle. 9 Maintenance Exchanging the Needle Seat Exchanging the Needle Seat When When seat is visibly damaged, blocked or leaks. Tools required p/n Description 1 G1367-87012
Needle seat In order to avoid leaks, close the shutoff valves in the pump or remove tubings from solvent bottles. Risk of injury by uncovered needle An uncovered needle An uncovered needle An uncovered needle Seat 3 Disconnect the seat capillary from the Injection valve. 9 4 With a Flat head screw driver carefully lift out
the needle seat from the holder. Next Steps: 5 Insert the maintenance mode. In the Lab Advisor software the Change needle/seat function can be found in the Tools section. 9 Maintenance Replacing the Rotor seal Replacing the Rotor
seal When When poor injection volume reproducibility or when injection valve is leaking. Tools required 1 Open the front door. # p/n Description 1 0101-1416 Injection valve rotor seal 2 Remove all capillaries from the Injection valve with a 1/4 inch
wrench. Maintenance Replacing the Rotor seal 3 Unscrew and remove the stator screws from the 9 4 Remove the stator head and the stator ring. stator head and the stator screws from the 9 4 Remove the 9 4 Remo
and stator head. The pins on stator ring and stator head must engage in the corresponding holes. 9 Insert and tighten the stator screws alternating with the Next Steps: 9/64 inch hex key, until the stator head is secure. 10 Reconnect all capillaries to the injection valve ports with a 1/4 inch wrench. The positions of the individual fittings can be seen or
the sticker on the sampling unit.9 Maintenance Removing the Metering Seal Removing the Metering Seal When When poor injection volume reproducibility or when metering device / analytical head is leaking. Tools required p/n Description 8710-0510 Wrench open 1/4 — 5/16 inch 8710-2392 4 mm Hex key G4226-43800 Seal insert tool Parts
required # p/n Description 1 5063-6589 Metering seal (pack of 2) for 100 µL analytical head 1 In the user interface start the maintenance mode and 2 Open the front door.9 Maintenance Removing the two fixing screws with a 4 mm hex key. 5 Pu
the metering device / analytical head away from the 6 Remove the two fixing screws at the base of the metering seal 17 Remove the metering seal using the steel side of the insert tool. Clean the chamber and ensure all particulate
matter is removed.9 Maintenance Installing the Metering Seal Installing the Metering Seal Installing the Metering Seal When when poor injection volume reproducibility or when metering device / analytical head is leaking. Tools required p/n Description 8710-2392 4 mm Hex key G4226-43800 Seal insert tool Parts required Preparations
# p/n Description 1 5063-6589 Metering Seal on page 135.9 Maintenance Installing the Metering Seal on page 135.9 Maintenance Installing the Metering Seal on page 135.9 Maintenance Installing the Metering Seal of the sampling unit by tightening the two fixing screws
alternately with a 4 mm hex key. 5 Connect the two capillaries to the metering device using Next Steps: a 1/4 inch wrench. 6 Close the front door. 7 In the user interface exit the Change Metering device function and exit the maintenance mode. 9 Maintenance Replacing Peristaltic Pump Cartridge Replacing Peristaltic Pump Cartridge When Tubing
blocked or broken Parts required NOTE # p/n Description 1 5065-4445 Peristaltic pump cartridge The peristaltic pump cartridge is a replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pump is not replaceable unit. The tubing inside the pum
Cartridge 3 Pull the cartridge forward off the motor shaft. 4 Disconnect the tubing leading to the wash port tubing from the solvent bottle to the lower tubing. 6 Connect the tubing coming from the solvent bottle to the lower tubing
of the new cartridge. 9 Maintenance Replacing Peristaltic Pump Cartridge onto the motor shaft until the clips 8 Reinstall the corrugated leak tubing. click into place. Maintenance Installing the Interface Board 9 Installing 1 Install
Parts required CAUTION # Description 1 Interface board Electronic boards and components can cause electrostatic discharge (ESD) and should be handled with care so as not to damage them. Touching electronic boards and components can cause electrostatic discharge (ESD) and should be handled with care so as not to damage them.
Firmware Replacing the Module Firmware when The installation of newer firmware might be necessary • to keep all systems on the same (validated) revision or • to keep all systems on the same (validated) revision or • to keep all systems on the same (validated) revision.
newer firmware is added to a system or • if third party control software requires a special version. Agilent 1260 Infinity High Performance Autosampler User Manual 10 Parts for Maintenance Overview of Maintenance Parts Vial Trays 146 147 Recommended Plates and Closing Mats Recommended Vial Plates Kits 148 149 150 Analytical Head
Assembly Injection Valve Assembly Cover Parts 151 152 153 Leak System Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information on parts material required for the module.10 Parts for Maintenance Parts 154 This chapter provides information parts material required for the module.10 Parts for Maintenance Parts 154 This chapter parts for Maintenance Parts 154 This chapter parts for Maintenance Parts 154 This chapter p
plates + 10 x 2 mL vials 2 0515-0866 Screws for springs 3 G1313-09101 Spring 4 0570-1574 Spring stud 5 G4226-60021 Tray for 100 micro vials 7 Agilent 1260 Infinity High Performance Autosampler User Manual 14710 Parts for Maintenance Recommended
 Plates and Closing Mats Recommended Plates and Closing Mats Table 7 Recommended plates and closing mat Description (Part Number) Rows Columns Plate height Volume (µL) Package 384Agilent (5042-1388) 16 24 14.4 80 30 384Corning (No Agilent PN) 16 24 14.4 80 30 384Corning (No Agilent PN) 16 24 14.4 80 384Nunc (No Agilent PN) 16 24 14.4 80 96 well plate 0.5 ml, PP (pack of 10)
(5042-1386) 96 well plate 0.5 ml, PP (pack of 120) (5042-1385) 8 12 14.Parts for Maintenance Recommended Vial Plates p/n Description G2255-68700 Vial plate for 27 Eppendorf tubes (1/pk) Agilent 1260 Infinity High
Performance Autosampler User Manual 14910 Parts for Maintenance Kits Kits Accessory Kit p/n Description G1367-68755 Accessory kit 5181-1519 CAN cable, Agilent module to module, 1 m G1367-87304 Capillary ST 0.17 mm x 250 mm S/S 01090-87306 SS Capillary 380 mmx 0.17 mm G1329-43200 Adapter air channel 5063-6527 Tubing assembly
i.d. 6 mm, o.d. 9 mm, 1.2 m (to waste) Injection Ugrade Kit Upgrade Kit for higher precision. 1260 HiP Autosampler option for RRLC configuration. The kit includes 40 µL analytical Head Assembly & '() * Figure 30 Item Analytical Head Assembly p/n Description
G1367-60003 Analytical head assembly (100 μL) 1 0515-0850 Screws 2 5063-6586 Piston 3 5001-3739 Support Seal assembly 4 5063-6589 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Metering seal (pack of 2) for 100 μL analytical head 5 01078-27710 Head body 6 G4226-60301 Mete
Assembly & '()* + 152 Item p/n Description 1 0101-1422 Injection valve 2 0100-1852 Isolation seal 3 5068-0118 Stator ring 4 0101-1416 Rotor seal (PEEK) 5 0101-1417 Stator head 6 5068-0018 Stator screws Agilent 1260 Infinity High Performance Autosampler User ManualParts for Maintenance Cover Parts 10 Cover Parts & Item p/n Description 1
 5067-4662 Cabinet kit (base, sides and top) 5043-0207 Name plate 1260 G4226-67001 Door repair kit, includes the front door Agilent 1260 Infinity High Performance Autosampler User Manual 15310 Parts for Maintenance Leak System Parts ) ( & ' Figure 31 154 Leak system parts Item p/n Description 1 5061-3356 Leak sensor 2
G4226-44511 Leak plane 3 0890-1711 Leak tubing 185 mm 4 5041-8388 Leak funnel Agilent 1260 Infinity High Performance Autosampler User Manual 11 Identifying Cables Cable Overview 156 Analog Cables 160 BCD Cables 163 CAN/LAN Cables 165 External
Contact Cable Agilent Module to PC 166 167 Agilent 1200 Module to Printer 168 This chapter provides information on cables used with the Agilent 1200 Infinity Series modules.11 Identifying Cables Cable Overview NOTE Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and
compliance with safety or EMC regulations. Identifying Cables Cable Overview 11 CAN cables p/n Description 5023-0203 Cross-over network cable, Agilent module to module, 0.5 m 5181-1519 CAN cables, Agilent module to module, 1 m LAN cables p/n Description 5023-0202 Twisted
pair network cable, shielded, 7 m (for point to 
end depends on the instrument to which connection is being made. Identifying Cables Analog - 3 Red Analog - 4 Rejlent 1260 Infinity High Performance Autosampler User Manual 15911 Identifying Cables Remote Cables Cables 11 Agilent Module to General Purpose p/n 01046-60105 Pin Pin Agilent module 1 Signal Name Not connected 2 Black Analog - 3 Red Analo
Remote Cables One end of these cables provides a Agilent Technologies APG (Analytical Products Group) remote connected to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Module to Jay 8 Feries III / 3395B Integrators p/n 03396-61010 Pin 33XX Pin Agilent Pin Agilent Pin Agilent Pin Agilent Pin Agil
module Signal Name 9 1 - White Digital ground NC 2 - Brown Prepare run Low 3 3 - Gray Start Low NC 4 - Blue Shut down Low NC 9 - Black Start request Low 13, 15 Active (TTL) Not connected Agilent Module to Agilent 35900 A/D Converters p/n
5061-3311 Identifying Cables Remote Cables Agilent Module to General Purpose p/n 01046-60201 162 Wire Color Pin Agilent module Signal Name Active (TTL) White 1 Digital ground Brown 2 Prepare run Low Gray 3 Start Low Blue 4 Shut down Low Pink 5 Not connected Yellow 6 Power on High Red 7 Ready High Green 8 Stop Low Black 9 Start
request Low Agilent 1260 Infinity High Performance Autosampler User ManualIdentifying Cables BCD Cables Agilent module Signal
Name BCD Digit 1 1 BCD 5 20 2 2 BCD 7 80 3 3 BCD 6 40 4 4 BCD 4 10 5 5 BCD0 1 6 6 BCD 3 8 7 7 BCD 2 4 8 8 BCD 1 2 9 9 Digital ground NC 15 +5V Low Agilent 1260 Infinity High Performance Autosampler User ManualIdentifying Cables 11 CAN/LAN Cables 11 CAN/LAN Cables Both ends of this cable provide a modular plug to be connected to
Agilent modules CAN or LAN connectors. CAN Cables p/n Description 5181-1516 CAN cable, Agilent module to module at 15- pin plug to be connected to Agilent modules interface board. The other end is for general
purpose.Identifying Cables Agilent Module to PC 11 Agilent Module to PC p/n Description G1530-60600 RS-232 cable, 2 m RS232-61601 RS-232 cable, 2 m RS232-61
the wiring is made between pins 1-1, 2-3, 3-2, 4-6, 5-5, 6-4, 7-8, 8-7, 9-9.11 Identifying Cables Agilent 1200 Module to Printer Agilent 1200 Module to Pri
Module. Agilent 1260 Infinity High Performance Autosampler User Manual 12 Hardware Information Firmware Description 170 Boot-up and Initialization Process 173 Electrical Connections 174 Rear view of the module 175 Interfaces 176 Overview Interfaces 176 Overview Interfaces 176 Overview Interfaces 177 Electrical Connections 174 Rear view of the module 175 Interfaces 176 Overview Interfaces 177 Electrical Connections 174 Rear view of the module 175 Interfaces 176 Overview Interfaces 177 Electrical Connections 178 Electrical Connections 178 Electrical Connections 178 Electrical Connections 179 Electrical Connect
resident system • an instrument specific section, called main system Resident System This res
with local files on the hard disk • Instant Pilot (G4208A) with files from a USB Flash Disk • Agilent Lab Advisor software B.01.03 and above The file naming conventions are: PPPP RVVV XXX.12 Hardware Information Firmware Description NOTE Some modules are limited in downgrading due to their main board version or their initial firmware
revision. For example, a G1315C DAD SL cannot be downgraded below firmware revision B.01.02 or to a A.xx.xx. Some modules can be re-branded (e.g. G1314C to G1314B) to allow operation in specific control software environments. In this case the feature set of the target type are use and the feature set of the original are lost. After re-branding
(e.g.Hardware Information Boot-up and Initialization Process 12 Boot-up and Initialization Process CAUTION Obstruction of transport unit Any obstruction of the transport unit Any obstruction of transport unit 
Firmware Boot Process. a Start Boot Loader. b Boot main firmware. OR Boot resident firmware (if set in VRAM, by DIP switch or if no/wrong main FW is found).12 Hardware Information Electrical Connections • The CAN bus is a serial bus with high speed data transfer. The two connectors for the CAN bus are used for internal
module data transfer and synchronization. • One analog output provides signals for integrators or data handling systems. • The REMOTE connector may be used in combination with other analytical instruments from Agilent Technologies if you want to use features such as start, stop, common shut down, prepare, and so on. Hardware Information
Electrical Connections 12 Rear view of the module Agilent 1200 Infinity Series modules provide the following interfaces: Table 8 Agilent 1200 Infinity Series Interfaces Module CAN LAN/BCD
G1314B VWD VL G1314C VWD VL+ 2 Yes No Yes 1 Yes G1314E/F VWD K1314F Clinical Ed. 2 No Yes Yes 1 Yes G4212A/B DAD Clinical Ed. 2 No Yes Yes 1 Yes G4315C DAD VL+ G1365D MWD VL 2 No Yes Yes 2 Yes G1321B FLD K1321B FLD Clinical Ed. 12 Hardware Information Interfaces Table 8
equipment) with a 9- pin male SUB- D type connector. The pins are defined as: Table 9 RS-232C Connection Function 1 In DCD 2 In RxD 3 Out TxD 4 Out DTR 5 Ground 6 In DSR 7 Out RTS 8 In CTS 9 In RI >chigjbZci BVaZ RS-232C Connection Function 1 In DCD 2 In RxD 3 Out TxD 4 Out DTR 5 Ground 6 In DSR 7 Out RTS 8 In CTS 9 In RI >chigjbZci BVaZ RS-232C Connection Function 1 In DCD 2 In RxD 3 Out TxD 4 Out DTR 5 Ground 6 In DSR 7 Out RTS 8 In CTS 9 In RI >chigjbZci BVaZ RS-232C Connection Function 1 In DCD 2 In RxD 3 Out TxD 4 Out DTR 5 Ground 6 In DSR 7 Out RTS 8 In CTS 9 In RI >chigjbZci BVaZ RS-232C Connection Function 1 In DCD 2 In RxD 3 Out TxD 4 Out DTR 5 Ground 6 In DSR 7 Out RTS 8 In CTS 9 In RI >chigjbZci BVaZ RS-232C Connection Function F
ensure coordinated analysis with simple coupling requirements. The subminiature D connector is used. The module provides one remote connector which is inputs/outputs (wired- or technique).12 Hardware Information Interfaces Table 10 Remote Signal Distribution Pin Signal Description 1 DGND Digital ground 2 PREPARE (L) Request to prepare
for analysis (for example, calibration, detector lamp on). Receiver is any module performing pre-analysis activities. 3 START (L) Request to start run / timetable. Receiver is any module performing run-time controlled activities. 4 SHUT DOWN (L) System has serious problem (for example, leak: stops pump). Hardware Information Setting the 8-bit run / timetable.
Configuration Switch NOTE With the introduction of the Agilent 1260 Infinity, all GPIB interfaces have been removed. The preferred communication is LAN. NOTE The following tables represent the configuration switch 12 Use the
following tables for selecting the settings are required for special settings are required for specific actions (normally in a service case). Boot-Resident
design of the module incorporates several innovative features. It uses Agilent's E-PAC concept for the packaging of electronics and mechanical assemblies. This concept is based upon the use of expanded polypropylene (EPP) layers of foam plastic spacers in which the mechanical and electronic boards components of the module are placed.12
Hardware Information Early Maintenance Feedback Mai
interval. Agilent 1260 Infinity High Performance Autosampler User Manual 13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment Connecting the autosampler to the Agilent ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment ChemStation PC.13 LAN Configuration Setting up the module in a LAN environment ChemStation PC.13 LAN Configuration PC.13 LAN CONF
Setting up the module in a LAN environment It is not recommended to connect an Agilent 1260 Infinity system via the G1367E Autosampler. The detector is producing the most data in the stack, followed by the pump, and it is therefore highly recommended to use either of these modules for the LAN connection. LAN Configuration Connecting the
module via LAN 13 Connecting the module or if a connection via LAN is required regardless of above mentioned recommendation, a G1369B/C documentation. 13 LAN Configuration Connecting the module via LAN is required regardless of above mentioned recommendation, a G1369B/C documentation.
LAN 192 Agilent 1260 Infinity High Performance Autosampler User Manual Agilent 1260 Infinity High Performance Autosampler User Manual 14 Appendix General Safety Information 194 197 The Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) 198 Radio Interference 199 Sound Emission 200
Use of Solvents 201 Agilent Technologies on Internet 202 This chapter provides addition information General Safety Information Ge
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. 14 Appendix General Safety Information Operation Before applying
power, comply with the installation section. Additionally the following must be observed. Do not remove instrument is switched on, all protective earth via a ground socket.14 Appendix
 General Safety Information Safety Symbols Table 18 Safety Symbols Symbol Description 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. Indicates dangerous voltages. Indicates a protected ground terminal
                                                       result from directly viewing the light produced by the deuterium lamp used in this product. Appendix Lithium Batteries Information 14 Lithium Batteries Information of discharged Lithium batteries through carriers regulated by
IATA/ICAO, ADR, RID, IMDG is not allowed. Danger of explosion if batteries shall be disposed off locally according to national waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) The Waste Electrical and Electronic
Equipment (WEEE) Directive (2002/96/EC) Abstract The Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electric and Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electric and Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing producer responsibility on all Electronic Equipment (WEEE) Directive (2002/96/EC), adopted by EU Commission on 13 February 2003, is introducing the European (European Equipment (WEEE) Directive (2002/96/EC)).
(2002/96/EC) marking requirements. Appendix Radio Interference 14 Radio Interference Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations. Test and Measurement If test and measurement is operated with equipment unscreened cables
and/or used for measurements on open set- ups, the user has to assure that under operating conditions the radio interference limits are still met within the premises. 14 Appendix Sound Emission Directive of 18
January 1991. This product has a sound pressure emission (at the operator position) < 70 dB. Appendix Use of Solvents 14 Use of Solvents as a sound pressure emission (at the operator position) < 70 dB. 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: Index 8 8-bit configuration switch without On-Board LAN 183 A accessory kit 34 Agilent Lab Advisor software 84 Agilent Lab Advisor 84 Agilent Lab Advisor 84 Agilent Lab Advisor 84 Agilent Lab Advisor 85 and 180 accessory kit 34 Agilent Lab Advisor 86 Agilent Lab Advisor 87 and 180 accessory kit 38 Agilent Lab Advisor 88 Agilent Lab Advisor 89 Agilent Lab Advisor 89 Agilent Lab Advisor 80 Agile
analog cable 158 apg remote 181 arm 114 position 17 B battery safety information BCD cable 163 bench space 26 197 connecting APG remote 39 connecting LAN 39
description 170 main system 170 resident system 170 updates 171, 144, 144 upgade/downgrade 144 frequency range 27 G general error messages 88 H humidity 27 I injection volume achieving higher volumes 70 injector steps 116 installation bench space 26 power considerations 24 installing metering seal
138 instrument layout 187 interfaces 176 internet 202 L LAN 204 cable 165 leak sensIndex S V safety class I 194 safety information 194 standards 27 symbols 196 sensitivity optimization 76 shutdown 88 site requirements power cords 25 solvents 201 special interfaces 182 special settings boot-resident
186 forced cold start 186 specification physical 27 stack configuration front view 38 rear view 39 status indicator 82 steps injector 116 step commands 117 system setup and installation optimizing stack configuration vial trays 147 voltage rawww.agilent.com In This Book This manual contains technical reference information about the Agilent 1260
Infinity High Performance Autosampler G1367E. • introduction and specifications, • using and optimizing, • troubleshooting and diagnose, • maintenance, • parts identification, • safety and related information. © Agilent Technologies 2010-2013, 2014 Printed in Germany 02/2014 *G1367-90014* G1367-90014* G
2Agilent 1260 Infinity High Performance Autosampler (G1367E)1 Introduction This GuideIn This Gui
requirements, physical and performance specifications. Installing the Autosampler for an analysis and explains the basic
settings. 5 Optimizing PerformanceThis chapter gives hints on how to optimize the performance or use additional devices. 6 Troubleshooting and diagnostic features and the different user interfaces. 7 Error InformationThis chapter gives an overview about the troubleshooting and diagnostic features and the different user interfaces. 7 Error InformationThis chapter gives hints on how to optimize the performance or use additional devices. 8 Troubleshooting and Diagnostic features and the different user interfaces. 9 Error InformationThis chapter gives hints on how to optimize the performance or use additional devices. 9 Error InformationThis chapter gives an overview about the troubleshooting and Diagnostic features and the different user interfaces. 9 Error InformationThis chapter gives an overview about the troubleshooting and Diagnostic features and the different user interfaces. 9 Error InformationThis chapter gives an overview about the troubleshooting and Diagnostic features and the different user interfaces. 9 Error Information This chapter gives an overview about the troubleshooting and Diagnostic features are the performance of th
provides information on probable causes and suggested actions how to recover from error conditions. Page 3Agilent 1260 Infinity High Performance Autosampler User ManualNotices© Agilent Technologies, Inc. 2010-2013, 2014No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or
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2013, 2014Printed in Germany 02/2014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367-90014*G1367
troubleshooting and diagnose, • maintenance, • parts identification, • safety and related information.
Agilent 1260 Infinity II Preparative Autosampler User Manual... Page 81 Sapphire, Ruby and Al -based ceramics based on aluminum oxide Al are inert to almost all common acids, bases and solvents. There are no documented incompatibilities for HPLC applications. Agilent 1260 Infinity II Preparative Autosampler User ...
Agilent 1260 Infinity II Preparative Autosampler User Manual... Page 81 Sapphire, Ruby and Al -based ceramics based on aluminum oxide Al are inert to almost all common acids, bases and solvents. There are no documented incompatibilities for HPLC applications. Agilent 1260 Infinity II Preparative Autosampler User ...
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flow to the Autosampler. Prime Flush Pump: Priming the Needle wash flush pump.4 Using the Module Settings are available via Menu > Instrument > Setup Agilent 1260 Infinity Autosampler or via right click on the Active area. NOTE The signal window in the

29/4/2021 · Agilent Zorbax StableBond bonding is superior at low pH and stable down to pH 1. This is a non-endcapped bonded phase and is designed for selectivity and lifetime at a low pH. Shown below is an image representing the patented sterically protecting bonding, which is offered in 5 different selectivities (R= C18, C8, CN, Phenyl, or C3). 29/4/2021 · Agilent Zorbax StableBond bonding is superior at low pH and stable down to pH 1. This is a non-endcapped bonded phase and is designed for selectivity and lifetime at a low pH. Shown below is an image representing the patented sterically protecting bonding, which is offered in 5 different selectivities (R= C18, C8, CN, Phenyl, or C3).

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